

TECHNICAL REPORT



pennsylvania
DEPARTMENT OF EDUCATION

2016–2017 CDT Technical Report

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GLOSSARY OF COMMON TERMS

The following table contains some terms used in this technical report and their meanings. Some of these terms are used universally in the assessment community, and some of these terms are used commonly by psychometric professionals.

Term	Common Definition
Ability	In Rasch scaling, <i>ability</i> is a generic term indicating the level of an individual on the construct measured by an exam. As an example for the CDT, a student's reading ability is measured by how the student performed on the CDT Reading/Literature test.
Alternative Forms	<i>Alternative forms</i> are two or more versions of a test that are considered exchangeable; for example, they measure the same constructs in the same ways, are intended for the same purposes, and are administered using the same directions. More specific terminology applies depending on the degree of statistical similarity between the test forms (e.g., parallel forms, equivalent forms, comparable forms), where parallel forms refers to the situation in which the test forms have the highest degree of similarity to each other.
Average	<i>Average</i> is a measure of central tendency in a score distribution that usually refers to the arithmetic mean of a set of scores. In this case, it is determined by adding all the scores in a distribution and then dividing the obtained value by the total number of scores. Sometimes people use the word average to refer to other measures of central tendency such as the median (the score in the middle of a distribution) or mode (the score value with the greatest frequency).
Benchmark Activity	Also referred to as benchmarking, <i>benchmark activity</i> is a procedure used in the determination of the cut score(s) for a given assessment. It is used to measure students' progress towards certain performance standards. Methods vary (e.g., modified Angoff, Bookmark Method), but most use a panel of educators and expert judgments to operationalize the level of achievement students must demonstrate in order to be categorized within each performance level.
Benchmark Cut	A <i>benchmark cut</i> marks a specified point on a score scale where scores at or above that point are interpreted differently from scores below that point (e.g., a score designated as the minimum level of performance needed to pass a competency test). A test can be divided into multiple proficiency levels by setting one or more cut scores. Methods for establishing cut scores vary. For the CDT, one benchmark cut was set that separates students into two categories: solidly ready for the next grade or course and not solidly ready for the next grade or course.
Bias	In a statistical context, <i>bias</i> refers to any source of systematic error in the measurement of a test score. In discussing test fairness, bias may refer to construct-irrelevant components of test scores that differentially affect the performance of different groups of test takers (e.g., gender, ethnicity). Attempts are made to reduce bias by conducting item fairness reviews and various differential item functioning (DIF) analyses, detecting potential areas of concern, and either removing or revising the flagged test items prior to including them in the final operational pools (see also <i>Differential Item Functioning</i>).
Computer Adaptive Test (CAT)	A <i>computer adaptive test (CAT)</i> is a computer-based test with an item selection routine that adjusts (adapts) to a student's performance during the test. For this reason, it has also been called a tailored test. Rather than all students taking the same set of items (fixed form), each student's test is individually tailored with items selected from a large item pool based on the student's performance.
Constructed-Response Item	A <i>constructed-response item</i> —referred to by some as an open-ended response item—is an item format that requires examinees to create their own responses, which can be expressed in various forms. This format is in contrast to multiple-choice items, which require students to make a choice from a supplied set of answer options. There are no constructed-response items on the CDT.
Content Validity Evidence	<i>Content validity evidence</i> shows the extent to which an exam provides an appropriate sampling of a content domain of interest (e.g., assessable portions of a state's grade 6 mathematics curriculum in terms of the knowledge, skills, objectives, and processes sampled).
Criterion-Referenced Interpretation	The <i>criterion-referenced interpretation</i> is a measure of a student's performance against an expected level of mastery, educational objective, or standard. The types of resulting score interpretations provide information about what a student knows or can do in a given content area.

Term	Common Definition
Decision Consistency	<i>Decision consistency</i> is the extent to which classifications based on test scores would match the decisions on students' proficiency levels based on scores from a second parallel form of the same test. It is often expressed as the proportion of examinees who are classified the same way from the two test administrations.
Diagnostic Category	A <i>diagnostic category</i> is a grouping used for reporting results on the CDT. Each CDT test has four or five diagnostic categories which are based on the Pennsylvania Academic Standards (Mathematics, Reading, and Writing) or the Pennsylvania Academic Standards (Science).
Differential Item Functioning (DIF)	<i>Differential item functioning (DIF)</i> is a statistical property of a test item in which different groups of test takers (who have the same total test score) have different average item scores. In other words, students with the same ability level but different group memberships do not have the same probability of answering the item correctly (see also <i>Bias</i>).
Distractor	A <i>distractor</i> is an incorrect option in a multiple-choice item (also called a foil).
Equating	<i>Equating</i> is the strongest of several linking methods used to establish comparability between scores from multiple tests. Equated test scores should be considered exchangeable. Consequently, the criteria needed to refer to a linkage as equating are strong and somewhat complex (equal construct and precision, equity, and invariance). In practical terms, it is often stated that it should be a "matter of indifference" to a student if he/she takes any of the equated tests (see also <i>Linking</i>).
Evidence-Based Selected-Response Item	A type of item that has two parts and requires the test taker to select a response from a group of possible answer choices in Part One, one of which is the correct answer (or key) to the question posed, and to then select one or two responses from a group of possible answer choices in Part Two, which provide evidence to support the correct answer in Part One.
Field-Test item	A <i>field-test item</i> is a newly developed item that is ready to be tried out to determine its statistical properties (e.g., see <i>p</i> -value and Point-Biserial Correlation). Items are field tested prior to operational administration. Items with acceptable statistical properties in field-test form the pool of CDT operational items.
Frequency	<i>Frequency</i> is the number of times that a certain value or range of values (score interval) occurs in a distribution of scores.
Frequency Distribution	<i>Frequency distribution</i> is a tabulation of scores from low to high or high to low with the number and/or percent of individuals who obtain each score or who fall within each score interval.
Infit/Outfit	<i>Infit</i> and <i>outfit</i> are statistical indicators of the agreement of the data and the measurement model. Infit and outfit are highly correlated, and they both are highly correlated with the point-biserial correlation. Underfit can be caused when low-ability students correctly answer difficult items (perhaps by guessing or atypical experience) or high-ability students incorrectly answer easy items (perhaps because of carelessness or gaps in instruction). Any model expects some level of variability, so overfit can occur when nearly all low-ability students miss an item while nearly all high-ability students get the item correct.
Item Difficulty	For the Rasch model, the dichotomous <i>item difficulty</i> represents the point along the latent trait continuum where an examinee has a 0.50 probability of making a correct response.
Key	The <i>key</i> is the correct response option or answer to a test item.
Learning Progression	A <i>learning progression</i> shows the developmental sequences or building blocks of content/skills students need to master as they progress toward career and college readiness and is tied directly to the Assessment Anchors and Eligible Content as well as the Voluntary Model Curriculum Units and Lesson Plans.
Linking	<i>Linking</i> is a generic term referring to one of a number of processes by which scores from one or more tests are made comparable to some degree. Linking includes several classes of transformations (equating, scale alignment, prediction, etc.). Equating is associated with the strongest degree of comparability (exchangeable scores). Other linkages may be very strong but fail to meet one or more of the strict criteria required of equating (see also <i>Equating</i>).
Logit	In Rasch scaling, <i>logits</i> are units used to express both examinee ability and item difficulty. When expressing examinee ability, if two students take the same set of items, a student who answers more items correctly has a higher logit than a student who answers fewer items correctly. Logits are transformed into scale scores through a linear transformation. When expressing item difficulty, logits are transformed <i>p</i> -value (see also <i>P-value</i>). The logit difficulty scale is inversely related to <i>p</i> -values. A higher logit value would represent a relatively harder item, while a lower logit value would represent a relatively easier item.

Term	Common Definition
Mean	<i>Mean</i> is also referred to as the arithmetic mean of a set of scores. It is found by adding all the score values in a distribution and dividing by the total number of scores. For example, the mean of the set {66, 76, 85, and 97} is 81. The value of a mean can be influenced by extreme values in a score distribution.
Measure	In Rasch scaling, <i>measure</i> generally refers to a specific estimate of an examinee's ability (often expressed as logits) or an item's difficulty (again, often expressed as logits). As an example for the CDT, a student's literature measure might be equal to 0.525 logit. Or, a CDT literature test item might have a logit equal to -0.905.
Median	The <i>median</i> is the middle point or score in a set of rank-ordered observations that divides the distribution into two equal parts; each part contains 50 percent of the total data set. More simply put, half of the scores are below the median value and half of the scores are above the median value. As an example, the median for the following ranked set of scores {2, 3, 6, 8, 9} is 6.
Multiple-Choice Item	A <i>multiple-choice item</i> is a type of item format that requires the test taker to select a response from a group of possible choices, one of which is the correct answer (or key) to the question posed. All items on the CDT are multiple-choice items.
N-count	Sometimes designated as <i>N</i> or <i>n</i> , it is the number of observations (usually individuals or students) in a particular group. Some examples include the number of students tested, the number of students tested from a specific subpopulation (e.g., females), and the number of students who attained a specific score. In the following set {23, 32, 56, 65, 78, 87}, <i>n</i> = 6.
Operational Item	After initial item tryout (field test), all items with acceptable statistical properties form the pool of CDT <i>operational items</i> . Students' tests are selected from this pool.
Percent Correct	When referring to an individual item, the <i>percent correct</i> is the item's <i>p</i> -value from the field test administration expressed as a percent (instead of a proportion). Under a computer adaptive administration, percent correct scores are not appropriate for individual items or students.
Percentile	<i>Percentile</i> is the score or point in a score distribution at or below which a given percentage of scores fall. It should be emphasized that it is a value on the score scale, not the associated percentage (although sometimes in casual usage this misinterpretation is made). For example, if 72 percent of the students score at or below a scale score of 1500 on a given test, then the scale score of 1500 would be considered the 72nd percentile. As another example, the median is the 50th percentile.
Percentile Rank	The <i>percentile rank</i> is the percentage of scores in a specified distribution that fall at/below a certain point on a score distribution. Percentile ranks range in value from 1 to 99. They indicate the status or relative standing of an individual within a specified group by indicating the percent of individuals in that group who obtained equal or lower scores. An individual's percentile rank can vary depending on which group is used to determine the ranking. As suggested above, percentiles and percentile ranks are sometimes used interchangeably; however, strictly speaking, a percentile is a value on the score scale.
Point-Biserial Correlation	In classical test theory, <i>point-biserial correlation</i> is an item discrimination index. It is the correlation between a dichotomously scored item and a continuous criterion, usually represented by the total test score (or the corrected total test score with the reference item removed). It reflects the extent to which an item differentiates between high-scoring and low-scoring examinees. This discrimination index ranges from -1.00 to +1.00. The higher the discrimination index (the closer to +1.00), the better the item is considered to be performing. For multiple-choice items scored as 0 or 1, it is rare for the value of this index to exceed 0.5.
P-value	A <i>p-value</i> is an index indicating an item's difficulty for some specified group (perhaps grade). It is calculated as the proportion (sometimes percent) of students in the group who answer an item correctly. <i>P</i> -values range from 0.0 to 1.0 on the proportion scale. Lower values correspond to more difficult items and higher values correspond to easier items. <i>P</i> -values are usually provided for multiple-choice items or other items worth one point. For open-ended items or items worth more than one point, difficulty on a <i>p</i> -value-like scale can be estimated by dividing the item mean score by the maximum number of points possible for the item (see also <i>Logit</i>).
Raw Score	<i>Raw score</i> is an unadjusted score usually determined by tallying the number of questions answered correctly or by the sum of item scores (i.e., points). Raw scores typically have little or no meaning by themselves and require additional information like the number of items on the test and the difficulty of the test items. Under a computer adaptive administration, where each student takes a unique set of items, raw scores are not comparable across students.

Term	Common Definition
Reliability	<i>Reliability</i> is the expected degree to which test scores for a group of examinees are consistent over exchangeable replications of an assessment procedure and, therefore, considered dependable and repeatable for an individual examinee. A test that produces highly consistent, stable results (i.e., relatively free from random error) is said to be highly reliable. The reliability of a test is typically expressed as a reliability coefficient or by the standard error of measurement derived by that coefficient.
Reliability Coefficient	<i>Reliability coefficient</i> is a statistical index that reflects the degree to which scores are free from random measurement error. Theoretically, it expresses the consistency of test scores as the ratio of true score variance to total score variance (true score variance plus error variance). This statistic is often expressed as a correlation coefficient (e.g., correlation between two forms of a test) or with an index that resembles a correlation coefficient (e.g., calculation of a test's internal consistency using coefficient alpha). Expressed this way, the reliability coefficient is a "unitless" index. The higher the value of the index (closer to 1.0), the greater the reliability of the test (see also <i>Standard Error of Measurement</i>).
Scale Score	<i>Scale score</i> is a mathematical transformation of a Rasch ability estimate developed through a process called scaling. Scale scores are most useful when comparing test results over time. Several different methods of scaling exist, but each is intended to provide a continuous and meaningful score scale across different forms of a test.
Standard Deviation	<i>Standard deviation</i> is a statistic that measures the degree of spread or dispersion of a set of scores. The value of this statistic is always greater than or equal to zero. If all of the scores in a distribution are identical, the standard deviation is equal to zero. The further the scores are away from one another in value, the greater the standard deviation. This statistic is calculated using the information about the deviations (distances) between each score and the distribution's mean. It is equivalent to the square root of the variance statistic. The standard deviation is a commonly used method of examining a distribution's variability since the standard deviation is expressed in the same units as the data.
Standard Error of Measurement (SEM)	<i>Standard error of measurement (SEM)</i> is the amount an observed score is expected to fluctuate around the true score. As an example, across replications of a measurement procedure, the true score will not differ by more than plus or minus one standard error from the observed score about 68 percent of the time (assuming normally distributed errors). The SEM is frequently used to obtain an idea of the consistency of a person's score in actual score units, or to set a confidence band around a score in terms of the error of measurement. Often a single SEM value is calculated for all test scores. On other occasions, however, the value of the SEM can vary along a score scale. Conditional standard error of measurement (CSEM) also indicates the degree of measurement error in scale score units but varies as a function of a student's unique set of items and actual scale score.
Technical Advisory Committee (TAC)	The <i>technical advisory committee (TAC)</i> is a group of individuals (most often professionals in the field of testing) that are either appointed or selected to make recommendations for and to guide the technical development of a given testing program.
Validity	<i>Validity</i> is the degree to which accumulated evidence and theory support specific interpretations of test scores entailed by the purpose of a test. There are various ways of gathering validity evidence.

PREFACE: AN OVERVIEW OF THE CDT

CLASSROOM DIAGNOSTIC TOOLS (CDT) OVERVIEW

The Pennsylvania Classroom Diagnostic Tools (CDT) is a set of online assessments, divided by content area, designed to provide diagnostic information in order to guide instruction and remediation. The CDT reporting system is fully integrated in Pennsylvania’s Standards Aligned System (SAS). It assists educators in identifying student academic strengths and areas in need of improvement by providing links to classroom resources. The diagnostic reports feature easy-to-follow links to targeted curricular resources and materials, including units and lesson plans found within the SAS system. Students in grades 3 through high school at all Pennsylvania schools may take the CDT up to five times throughout the school year at no cost.

The purpose of the CDT is to provide information that will help guide instruction by providing support to students and teachers. The CDT reports are designed to provide a picture or snapshot of how students are performing in relation to the Pennsylvania Assessment Anchors and Eligible Content and Keystone Assessment Anchors and Eligible Content. The CDT goes beyond focusing only on **What** students should know and be able to do at a particular grade and/or course. It also provides a snapshot of **How** and **Why** students may still be struggling or extending beyond the grade and/or course Eligible Content. This valuable information is typically not identified through other types of assessments. Teachers, through the use of the CDT reports, may access additional information through the Learning Progression Map. The Learning Progression Map allows teachers to pinpoint where students are struggling or where they are extending beyond the learning continuum. The CDT helps identify and provides suggestions for next steps in student academic development.

The CDT consists of only multiple-choice questions. The questions were developed to specifically align to the Pennsylvania Assessment Anchors and Eligible Content at kindergarten through high school and the Keystone Assessment Anchors and Eligible Content for end-of-course. The CDT is based on content assessed by the Pennsylvania System of School Assessments (PSSA) and the Keystone Exams. It includes interactive and dynamic reporting for various diagnostic reporting categories.

CDT Activities for the 2016–2017 School Year

Description	Date
Test Setup System Available	August 03, 2016
PA Online Assessment Software Available for Download	August 22, 2016
First Day of Testing	August 22, 2016

CHAPTER ONE: BACKGROUND OF THE CLASSROOM DIAGNOSTIC TOOLS

This brief overview of the Pennsylvania Classroom Diagnostic Tools summarizes the program’s intent and purpose, as well as key dates in the development process.

THE CLASSROOM DIAGNOSTIC TOOLS

The Classroom Diagnostic Tools (CDT) is a set of online assessments, divided by content area, designed to provide diagnostic information in order to guide instruction and enrichment. The CDT reporting system is fully integrated in the Standards Aligned System (SAS). It assists educators in identifying student academic strengths and areas in need of improvement by providing links to classroom resources. The diagnostic reports feature easy-to-follow links to targeted curricular resources and materials, including units and lesson plans found within the SAS system. The CDT is available to districts at no cost.

The CDT is:

- Offered to students in grades 3 through high school Available for use in the classroom throughout the school year on a voluntary basis
- Based on content assessed by the Keystone Exams and the Pennsylvania System of School Assessment (PSSA)
- Comprised of multiple-choice items and evidence-based selected-response items (in Reading and Literature only)
- Delivered as an online Computer Adaptive Test (CAT), ensuring valid and reliable measures of a student’s skills while minimizing testing time
- Designed to provide real-time results for students and teachers with links to Materials and Resources in SAS
- Available for Mathematics Lower Grades¹, Mathematics, Algebra I, Geometry, Algebra II, Reading Lower Grades, Reading/Literature, Science Lower Grades, Science, Biology, Chemistry, Writing Lower Grades, and Writing/English Composition

KEY DATES

The items for each course of the CDT were field tested online using fixed-form computer-based tests prior to their use in operational computer adaptive tests. Additional items were field tested as items embedded within the operational CDT to increase the pool of items aligned to the Pennsylvania Core Standards and to allow the extension of the CDT to students in grades 3 through 5. The timeline for implementation of the field tests and operational availability is shown in the following table.

¹ CDTs with the “Lower Grades” designation are for students in grades 3 through 5.

Course	Field Test Dates	Operational Rollout Dates
Mathematics, Algebra I, Geometry, Algebra II	Spring 2010	Fall 2010
Reading/Literature	Fall 2010	Spring 2011
Science, Biology, Chemistry	Fall 2010	Spring 2011
Writing/English Composition	Spring 2011	Fall 2011
Mathematics, Reading/Literature, and Writing/English Composition aligned to the Pennsylvania Core Standards ²	Spring 2013	Fall 2013
Mathematics Lower Grades, Reading Lower Grades, Science Lower Grades, and Writing Lower Grades	Fall 2013	Spring 2014

For more details on field-test events, see Chapter Six.

² The alignment of Mathematics, Reading/Literature, and Writing/English Composition to the Pennsylvania Core Standards did not include field-test items for Writing/English Composition, as the Writing/English Composition pool did not require additional items to be fully aligned to the Pennsylvania Core Standards.

CHAPTER TWO: TEST DEVELOPMENT OVERVIEW OF THE PENNSYLVANIA CDT FRAMEWORK

The Pennsylvania Classroom Diagnostic Tools (CDT) is available for Mathematics Lower Grades, Mathematics, Algebra I, Geometry, Algebra II, Reading Lower Grades, Reading/Literature, Science Lower Grades, Science, Biology, Chemistry, Writing Lower Grades, and Writing/English Composition for students in grades 3 through high school. The assessments are administered online in a computer adaptive test (CAT) format.

The Pennsylvania CDT consists of multiple-choice questions that align to the Pennsylvania Assessment Anchors and Eligible Content at grades 3 through high school for mathematics, reading, writing, and science and the Keystone Assessment Anchors and Eligible Content for end-of-course for Algebra I, Algebra II, Geometry, Literature, English Composition, Biology, and Chemistry and evidence-based selected-response questions that align to the Pennsylvania Assessment Anchors and Eligible Content at grade 3 through 8 for reading. With the exception of grades 3, 5, 6, and 7 for Science, these Pennsylvania Assessment Anchors and Eligible Content were developed previously for the PSSA and Keystone Exams as described in the following sections. In addition, Learning Progressions were developed to show the pathways along which students travel as they progress towards mastery of the skills in each content area.

BACKGROUND FOR THE PSSA ASSESSMENT ANCHORS AND ELIGIBLE CONTENT

The PSSA Assessment Anchor Content Standards and Eligible Content in Mathematics, Reading, and Writing are based on the Pennsylvania Core Standards. The PSSA Assessment Anchor Content Standards and Eligible Content in Science are based on the Pennsylvania Academic Standards. Although the Pennsylvania Core Standards and the Pennsylvania Academic Standards indicate what students should know and be able to do, educator concerns regarding the number and breadth of Academic Standards led to an initiative by the Pennsylvania Department of Education (PDE) to develop Assessment Anchor Content Standards (Assessment Anchors) to indicate which parts of the Academic Standards (Instructional Standards) would be assessed on the PSSA. Based on recommendations from Pennsylvania educators, the Assessment Anchors were designed as a tool to improve the articulation of curricular, instructional, and assessment practices. The Assessment Anchors clarify what is expected across each grade span and focus the content of the standards into what is assessable on a large-scale test. The Assessment Anchor documents also serve to communicate Eligible Content, also called assessment limits, or the range of knowledge and skills from which the PSSA would be designed.

The Assessment Anchor's coding is read like an outline. The coding includes the content, grade level, Reporting Category, Assessment Anchor, descriptor (Sub-Assessment Anchor), and Eligible Content. Thus, S.4.A.1.3.1 would be Science, Grade 4, Reporting Category A, Assessment Anchor 1, descriptor (Sub-Assessment Anchor) 3, and Eligible Content 1.

Each of the Assessment Anchors has one or more descriptors (Sub-Assessment Anchors) and Eligible Content varying to reflect grade-level appropriateness. The Assessment Anchors form the basis of the test design for the grades undergoing new test development. In turn, this hierarchy is the basis for organizing the total content scores (based on the core [common] sections).

With Pennsylvania's decision to adopt the Pennsylvania Core Standards based on the Common Core State Standards, committees of Pennsylvania educators met in October 2011 to write, review, and approve the Assessment Anchors and Eligible Content statements. To provide initial focus, each content and grade span committee was presented with materials specific to the content and grade span in question, including a basic blueprint structure, the Pennsylvania Academic Standards, the Pennsylvania Assessment Anchors and Eligible Content aligned to the Pennsylvania Academic Standards, the Common Core State Standards, and draft Eligible Content statements. Committees then completed an iterative process of reviewing and revising the draft Eligible Content statements followed by discussions across grade-span committees to ensure vertical articulation across the grades. The results from the committee work were evaluated by national, state, and local subject matter experts, and, following revisions, they were ultimately validated by another committee of Pennsylvania educators. Following committee approval, the Pennsylvania Core Standards-aligned Assessment Anchors and Eligible Content for English Language Arts and Mathematics were approved by the State Board of Education in September 2013.

The complete set of Assessment Anchors and Eligible Content can be referenced at PDE’s website: www.education.pa.gov.

- Click on ‘K-12’ in the dark blue bar across the top of the page.
- Select ‘Assessment and Accountability.’
- Click on the PSSA Link ‘Continue to Pennsylvania System of School Assessment (PSSA) Information...’ under the paragraph titled, “PENNSYLVANIA SYSTEM OF SCHOOL ASSESSMENT (PSSA).”

For Science, Assessment Anchors and Eligible Content had only been previously developed at grades 4, 8, and 11 for the PSSA and for the Biology and Chemistry Keystone Exams. Therefore, to provide a vertical articulation of science content from grade to grade, a group of Pennsylvania educators were brought together to develop Assessment Anchors and Eligible Content for the off grades (those that do not assess Science on the PSSA). These educators, in collaboration with DRC Science Test Development staff, used the Assessment Anchors and Eligible Content for grades 4, 8, and 11 as the foundation to develop Assessment Anchors and Eligible Content for grades 3, 5, 6, and 7.

With the extension of the CDT to allow students in grades 3 through 5 to participate in the assessments, it was necessary to include items appropriate to assess skills and understandings that students should learn in kindergarten through grade 2. For Mathematics, Reading, and Writing, test questions were developed based to align to the Pennsylvania Core Standards for grades K through 2. For Science, a group of Pennsylvania educators was brought together in March 2013 to develop the Science Grades K–2 Assessment Anchors and Eligible Content, which are organized as a single grade band and contain foundational science concepts in order to promote flexibility in classroom instruction for these early grade levels.

BACKGROUND FOR THE KEYSTONE ASSESSMENT ANCHORS AND ELIGIBLE CONTENT

The Keystone Test Blueprints—known as the Keystone Assessment Anchors and Eligible Content—are based on Pennsylvania Keystone Course Standards and the Common Core State Standards. Prior to the development of the Assessment Anchors, multiple groups of Pennsylvania educators convened to create a set of standards for each of the Keystone Exams. Derived from a review of existing standards, these Enhanced Standards (Course Standards) focus on what students need to know and be able to do in order to be college and career ready.

Although the Keystone Course Standards indicate what students should know and be able to do, Assessment Anchors are designed to indicate which parts of the Keystone Course Standards (Instructional Standards) will be assessed on the Keystone Exams. Based on recommendations from Pennsylvania educators, the Assessment Anchors were designed as a tool to improve the articulation of curricular, instructional, and assessment practices. The Assessment Anchors clarify what is expected and focus the content of the standards into what is assessable on a large-scale exam. The Assessment Anchor documents also serve to communicate Eligible Content, or the range of knowledge and skills from which the Keystone Exams are designed.

The Keystone Assessment Anchors and Eligible Content have been designed to hold together or *anchor* the state assessment system and curriculum/instructional practices in schools following these design parameters:

- **Clear:** The Assessment Anchors are easy to read and are user-friendly; they clearly detail which standards are assessed on the Keystone Exams.
- **Focused:** The Assessment Anchors identify a core set of standards that could be reasonably assessed on a large-scale assessment, which will keep educators from having to guess which standards are critical.
- **Rigorous:** The Assessment Anchors support the rigor of the state standards by assessing higher order and reasoning skills.
- **Manageable:** The Assessment Anchors define the standards in a way that can be easily incorporated into a course to prepare students for success.

The Assessment Anchors and Eligible Content are organized into cohesive blueprints, each structured with a common labeling system. This framework is organized first by Module (Reporting Category), then by Assessment Anchor, followed by Anchor Descriptor, and then finally, at the greatest level of detail, by an Eligible Content statement. The common format of this outline is followed across the Keystone Exams.

Here is a description of each level in the labeling system for the Keystone Exams.

- **Module:** The Assessment Anchors are organized into two thematic modules for each of the Keystone Exams, and these modules serve as the Reporting Categories for the Keystone Exams. The Module title appears at the top of each page in the Assessment Anchor document. The Module level is also important because the Keystone Exams are built using a Module format, with each of the Keystone Exams divided into two equally sized test modules. Each Module is made up of two or more Assessment Anchors.
- **Assessment Anchor:** The Assessment Anchor appears in the shaded bar across the top of each Assessment Anchor table in the Assessment Anchor document. The Assessment Anchors represent categories of subject matter that anchor the content of the Keystone Exams. Each Assessment Anchor is part of a Module and has one or more Anchor Descriptors unified under it.
- **Anchor Descriptor:** Below each Assessment Anchor in the Assessment Anchor document is a specific Anchor Descriptor. The Anchor Descriptor level provides further details that delineate the scope of content covered by the Assessment Anchor. Each Anchor Descriptor is part of an Assessment Anchor and has one or more Eligible Content statements unified under it.
- **Eligible Content:** The column to the right of the Anchor Descriptor in the Assessment Anchor document contains the Eligible Content statements. The Eligible Content is the most specific description of the content that is assessed on the Keystone Exams. This level is considered the assessment limit and helps educators identify the range of content covered on the Keystone Exams.
- **Enhanced Standard:** In the column to the right of each Eligible Content statement is a code representing one or more Enhanced Standards that correlate to the Eligible Content statement. Some Eligible Content statements include annotations that indicate certain clarifications about the scope of an Eligible Content.
- **Notes:** There are three types of notes included in the Assessment Anchor document:
 - “e.g.” (“for example”)—sample approach, but not a limit to the Eligible Content
 - “i.e.” (“that is”)—specific limit to the Eligible Content
 - “Note”—content exclusions or definable range of the Eligible Content

The Assessment Anchor’s coding is read like an outline. The coding includes the Subject (Exam), Reporting Category/Module, Assessment Anchor, Anchor Descriptor, and Eligible Content. Each exam has two modules. Each Module has two or more Assessment Anchors. Each of the Assessment Anchors has one or more Anchor Descriptors, and each Anchor Descriptor has at least one Eligible Content statements (generally more than one). The Assessment Anchors form the basis of the test design for the exams undergoing test development. In turn, this hierarchy is the basis for organizing the total Module and exam scores.

Table 2–1. Sample Keystone Assessment Anchor Coding

Sample Code	Subject (Exam)	Reporting Category (Module)	Assessment Anchor (AA)	Anchor Descriptor (AD)	Eligible Content (EC)
A1.1.1.2.1	A1–Algebra I	1 – Operations and Linear Equations & Inequalities	1 – Linear Equations	2 – Write, solve, and/or graph linear equations using various methods.	1 – Write, solve, and/or apply a linear equation (including problem situations).
BIO.A.2.1.1	BIO –Biology	A – Cells and Cell Processes	2 – The Chemical Basis for Life	1 – Describe how the unique properties of water support life on Earth.	1 – Describe the unique properties of water and how these properties support life on Earth (e.g., freezing point, high specific heat, cohesion).
L.F.2.4.1	L –Literature	F – Fiction	2 – Analyzing and Interpreting Literature— Fiction	4 – Use appropriate strategies to interpret and analyze the universal significance of literary fiction.	1 – Interpret and analyze works from a variety of genres for literary, historical, and/or cultural significance.

The complete set of Assessment Anchors and Eligible Content can be referenced at PDE’s Standards Aligned System (SAS) website at <http://www.pdesas.org/Standard>. Assessment Anchors and Eligible Content for Grades 3–8 can be found by selecting “Download PSSA and PASA Anchors and Eligible Content” while Assessment Anchors and Eligible Content for high school courses can be found by selecting “Download Keystone Anchors.”

DIAGNOSTIC CATEGORIES FOR THE CLASSROOM DIAGNOSTIC TOOLS

The Classroom Diagnostic Tools provide information for teachers, students, and other stakeholders regarding student performance at the Overall Score level and also for each diagnostic category within the selected assessment. These diagnostic categories provide more detailed information about student strengths and areas of need for a related group of Eligible Content. A description of the diagnostic categories for each assessment follows.

MATHEMATICS LOWER GRADES AND MATHEMATICS

There are four diagnostic categories for the mathematics assessments. These are *Numbers & Operations*, *Algebraic Concepts*, *Geometry*, and *Measurement, Data, and Probability*. The number of Eligible Content from each grade that map to these diagnostic categories is shown in the table below.

Table 2–2. Number of Eligible Content per Diagnostic Category by Grade for Mathematics Lower Grades and Mathematics

Diagnostic Category	Kindergarten*	Grade 1*	Grade 2*	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8	HS
Numbers & Operations	1	3	3	9	20	13	15	9	5	6
Algebraic Concepts	1	2	3	14	8	4	11	5	17	46
Geometry	2	2	2	3	3	3	6	8	8	29
Measurement, Data, and Probability	2	3	5	15	9	5	4	7	4	12

* Eligible Content for Kindergarten, Grade 1, and Grade 2 are not included in the Mathematics CDT.

ALGEBRA I

The Keystone Algebra I Assessment Anchors and Eligible Content has two reporting categories: Module 1, Operations and Linear Equations & Inequalities, and Module 2, Linear Functions and Data Organizations. These modules are each divided into two diagnostic categories. Module 1 is divided into *Operations with Real Numbers and Expressions* and *Linear Equations & Inequalities*. Module 2 is divided into *Functions & Coordinate Geometry* and *Data Analysis*. The number of Eligible Content from each grade that map to these diagnostic categories is shown in the following table.

Table 2–3. Number of Eligible Content per Diagnostic Category by Grade for Algebra I

Diagnostic Category	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8	HS
Module 1 – Operations with Real Numbers and Expressions	13	11	5	17	10	7	18
Module 1 – Linear Equations & Inequalities	0	0	0	3	3	8	16
Module 2 – Functions & Coordinate Geometry	0	3	1	4	1	10	21
Module 2 – Data Analysis	3	0	1	4	7	4	11

GEOMETRY

The Keystone Geometry Assessment Anchors and Eligible Content has two reporting categories: Module 1, Geometric Properties & Reasoning, and Module 2, Coordinate Geometry & Measurement. These modules are each divided into two diagnostic categories. Module 1 is divided into *Geometric Properties* and *Congruence, Similarity, & Proofs*. Module 2 is divided into *Coordinate Geometry & Right Triangles* and *Measurement*. The number of Eligible Content from each grade that map to these diagnostic categories is shown in the following table.

Table 2–4. Number of Eligible Content per Diagnostic Category by Grade for Geometry

Diagnostic Category	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8	HS
Module 1 – Geometric Properties	2	2	1	1	5	1	18
Module 1 – Congruence, Similarity, & Proofs	0	1	0	0	0	2	3
Module 2 – Coordinate Geometry & Right Triangles	0	0	1	3	1	7	5
Module 2 – Measurement	6	4	2	4	3	0	13

ALGEBRA II

The Keystone Algebra II Assessment Anchors and Eligible Content has two reporting categories: Module 1, Number Systems and Non-Linear Expressions & Equations, and Module 2, Functions and Data Analysis. These modules are each divided into two diagnostic categories. Module 1 is divided into *Operations with Complex Numbers* and *Non-Linear Expressions & Equations*. Module 2 is divided into *Functions* and *Data Analysis*. The number of Eligible Content from each grade that map to these diagnostic categories is shown in the following table.

Table 2–5. Number of Eligible Content per Diagnostic Category by Grade for Algebra II

Diagnostic Category	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8	HS
Module 1 – Operations with Complex Numbers	0	0	0	0	0	0	4
Module 1 – Non-Linear Expressions & Equations	0	1	1	16	9	8	30
Module 2 – Functions	0	3	0	1	0	5	20
Module 2 – Data Analysis	3	0	1	4	7	3	11

SCIENCE LOWER GRADES AND SCIENCE

There are four diagnostic categories for the science assessments. These are *The Nature of Science*, *Biological Sciences*, *Physical Sciences*, and *Earth/Space Sciences*. The number of Eligible Content from each grade that map to these diagnostic categories is shown in the table below.

Table 2–6. Number of Eligible Content per Diagnostic Category by Grade for Science Lower Grades and Science

Diagnostic Category	K–2	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8	HS
The Nature of Science	7	9	20	8	10	19	31	27
Biological Sciences	7	14	18	11	7	21	21	38
Physical Sciences	1	10	9	12	12	12	12	46
Earth/Space Sciences	8	13	16	8	7	11	13	14

BIOLOGY

The Keystone Biology Exam has two reporting categories: Module 1[A], Cells and Cell Processes, and Module 2[B], Continuity and Unity of Life. These modules are each divided into two diagnostic categories. Module 1 is divided into *Basic Biological Principles/Chemical Basis for Life* and *Bioenergetics/Homeostasis & Transport*. Module 2 is divided into *Cell Growth & Reproduction/Genetics* and *Theory of Evolution/Ecology*. The number of Eligible Content from each grade that map to these diagnostic categories is shown in the following table.

Table 2–7. Number of Eligible Content per Diagnostic Category by Grade for Biology

Diagnostic Category	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8	HS
Module 1 – Basic Biological Principles/Chemical Basis for Life	5	5	3	3	5	5	9
Module 1 – Bioenergetics/Homeostasis & Transport	0	0	0	0	0	0	7
Module 2 – Cell Growth & Reproduction/Genetics	2	1	1	0	5	4	10
Module 2 – Theory of Evolution/Ecology	8	13	5	3	18	18	12

CHEMISTRY

The Keystone Chemistry Assessment Anchors and Eligible Content has two reporting categories: Module 1[A], Structure and Properties of Matter, and Module 2[B], The Mole Concept and Chemical Interactions. These modules are each divided into two diagnostic categories. Module 1 is divided into *Properties & Classification of Matter* and *Atomic Structure & the Periodic Table*. Module 2 is divided into *The Mole & Chemical Bonding* and *Chemical Relationships & Reactions*. The number of Eligible Content from each grade that map to these diagnostic categories is shown in the following table.

Table 2–8. Number of Eligible Content per Diagnostic Category by Grade for Chemistry

Diagnostic Category	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8	HS
Module 1 – Properties & Classification of Matter	7	4	7	7	3	3	10
Module 1 – Atomic Structure & The Periodic Table	0	0	0	0	1	0	8
Module 1 – The Mole & Chemical Bonding	0	0	0	0	1	1	9
Module 2 – Chemical Relationships & Reactions	0	0	1	0	1	1	7

READING LOWER GRADES AND READING/LITERATURE

The Reading Lower Grades and Reading/Literature Assessments use the same diagnostic categories across grades 3 through 8 and the high school Literature course. These diagnostic categories are not divided across the two Keystone Literature Modules (reporting categories) of Fiction and Non-fiction. The diagnostic categories for Reading Lower Grades and Reading/Literature are *Key Ideas and Details – Literature Text*; *Key Ideas and Details – Informational Text*; *Craft and Structure/Integration of Knowledge and Ideas – Literature Text*; *Craft and Structure/Integration of Knowledge and Ideas – Informational Text*; and *Vocabulary Acquisition and Use*. The number of Eligible Content from each grade that map to these diagnostic categories is shown in the following table.

Table 2–9. Number of Eligible Content per Diagnostic Category by Grade for Reading Lower Grades and Reading/Literature

Diagnostic Category	Kindergarten*	Grade 1*	Grade 2*	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8	HS
Key Ideas and Details— Literature Text	3	3	3	3	3	3	3	3	3	8
Key Ideas and Details— Informational Text	3	3	3	3	3	3	3	3	3	12
Craft and Structure/ Integration of Knowledge and Ideas—Literature Text	2	2	2	2	2	2	4	4	4	14
Craft and Structure/ Integration of Knowledge and Ideas— Informational Text	4	4	4	5	5	5	5	5	5	18
Vocabulary Acquisition and Use	2	2	2	4	4	4	4	4	4	6

* Eligible Content for Kindergarten, Grade 1, and Grade 2 are not included in the Reading/Literature CDT.

WRITING LOWER GRADES AND WRITING/ENGLISH COMPOSITION

The Writing Lower Grades and Writing/English Composition Assessments use the same diagnostic categories across grades 3 through 8 and the high school English Composition course. The diagnostic categories for Writing Lower Grades and Writing/English Composition are *Quality of Writing: Focus and Organization*, *Quality of Writing: Content and Style*, *Quality of Writing: Editing*, *Conventions: Punctuation, Capitalization, and Spelling*, and *Conventions: Grammar and Sentence Formation*. The number of Eligible Content from each grade that map to these diagnostic categories is shown in the following table.

Table 2–10. Number of Eligible Content per Diagnostic Category by Grade for Writing Lower Grades and Writing/English Composition

Diagnostic Category	Kindergarten*	Grade 1*	Grade 2*	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8	HS
Quality of Writing: Focus and Organization	3	6	6	6	6	6	6	6	6	4
Quality of Writing: Content and Style	2	3	3	3	3	5	5	5	5	4
Quality of Writing: Editing	0	3	3	4	10	12	11	10	6	13
Conventions: Punctuation, Capitalization, and Spelling	1	3	2	6	4	5	3	3	3	5
Conventions: Grammar and Sentence Formation	2	3	2	10	9	9	9	7	5	2

* Eligible Content for Kindergarten, Grade 1, and Grade 2 are not included in the Writing/English Composition CDT.

CHAPTER THREE: GENERAL CLASSROOM DIAGNOSTIC TOOLS TEST DEVELOPMENT PROCESSES

The operational item pool for each Classroom Diagnostic Tool (CDT) subject is made up of multiple-choice items that were field tested in a stand-alone field test administration in addition to a smaller number of multiple choice and evidence-based selected-response (Reading only) items embedded later in operational assessments. Due to the large number of items needed for each CDT Computer Adaptive Test (CAT) to provide reliable information about student strengths and areas of need, it was decided to stagger the content areas for both development and field testing. Appendix A shows a graphic representation of the basic process flow and overlap of the development cycles.

Mathematics (comprising Mathematics, Algebra I, Algebra II, and Geometry) was developed first. After initial development and internal reviews by DRC, the items were taken to be reviewed by Pennsylvania educators. Upon completion of the educator reviews, edits were incorporated and items were placed into fixed-form, online field-test forms for a stand-alone, voluntary field test. For more information regarding the field test, see Chapter Six. After the field test, item statistics were reviewed, and those items that had questionable data were taken to an item data review with Pennsylvania educators. See Chapter Six for more information about this meeting. Following the item data review, all items administered during the field test were reviewed by a committee of Pennsylvania educators for alignment to the Learning Progression Maps. More information about this meeting is found later in this chapter. After the alignment review, committees of Pennsylvania educators participated in a benchmarking activity to determine the points on the scale at which students in each of grades 5 through high school could be considered solidly ready for the next course. For more information about the benchmarking process, see Chapter Ten. Following this set of meetings, the statuses of items were updated, and accepted items were included in the item pool for the operational administrations.

This same process was then repeated for Literature (comprising Reading and Literature) and for Science (comprising Science, Biology, and Chemistry), and then finally for Writing (comprising Writing and English Composition). See Appendix A for more information about the basic development cycles for these three subjects.

Additional items in Mathematics and Reading/Literature were developed for an embedded field test in spring 2013. The purpose of this development was to supplement the pool with additional items aligned to the Pennsylvania Core Standards in preparation for the transition to align all Mathematics and Literacy (Reading/Literature and Writing/English Composition) assessments with the Pennsylvania Core Standards. Following the field test, the items that had questionable data were taken to an item data review with Pennsylvania educators (more information about this meeting can be found in Chapter Six). Following the item data review, all items administered during the field test were reviewed by a committee of Pennsylvania educators for alignment to the Learning Progression Maps using the same procedure that was used for the initial development of each pool of items.

In fall 2013, a voluntary stand-alone field test was conducted for items aligned to the Mathematics and English Language Arts (Reading and Writing) Pennsylvania Core Standards in kindergarten through grade 2, the K–2 Science Assessment Anchors and Eligible Content, and the Mathematics, English Language Arts, and Science Assessment Anchors and Eligible Content for grades 3 and 4. These were administered to students in grades 3 through 5, as described in Chapter Six. At the same time, items developed to align to the Mathematics, English Language Arts, and Science Assessment Anchors and Eligible Content for grade 5 were administered as part of an embedded field test to students in grade 6 that completed an operational CDT administration. The purpose of these two field test administrations was to provide enough items to allow students in grades 3 through 5 to be included in the CDT assessments. The Mathematics Lower Grades, Reading Lower Grades, Science Lower Grades, and Writing Lower Grades assessments became available in spring 2014.

Additional items were developed in 2015 for an embedded field test in 2016. The purpose of this development was to supplement the pool with additional items including Evidence Based Selected Response (EBSR) items aligned to the Pennsylvania Core Standards for the reading/literature CDT. These EBSR items were developed to align to the English Language Arts Assessment Anchors and Eligible Content for grades 3 through 8 and were administered as part of an embedded field test to students that completed an operational CDT administration. Additional multiple-choice items were also field tested in mathematics and science.

ITEM DEVELOPMENT CONSIDERATIONS

Alignment to the PSSA and Keystone Assessment Anchors and Eligible Content, grade- or course-level appropriateness (as specified by PDE), depth of knowledge (DOK), item/task level of complexity, estimated difficulty level, relevancy of context, rationale for distractors, style, accuracy, and correct terminology were major considerations in the item development process. The *Standards for Educational and Psychological Testing* (AERA, APA, NCME, 1999) and the *Principles of Universal Design* (Thompson, Johnstone, & Thurlow, 2002) guided the development process. In addition, DRC's *Bias, Fairness, and Sensitivity Guidelines* were used for developing items. All items were reviewed for fairness by bias and sensitivity committees and for content by Pennsylvania educators and field specialists.

BIAS, FAIRNESS, AND SENSITIVITY OVERVIEW

At every stage of the item and test development process, DRC employs procedures that are designed to ensure that items and tests meet Standard 7.4 of the *Standards for Educational and Psychological Testing* (AERA, APA, NCME, 1999).

Standard 7.4: Test developers should strive to identify and eliminate language, symbols, words, phrases, and content that are generally regarded as offensive by members of racial, ethnic, gender, or other groups, except when judged to be necessary for adequate representation of the domain.

To meet Standard 7.4, DRC employs a series of internal quality steps. DRC provides specific training for test developers, item writers, and reviewers on how to write, review, revise, and edit items for issues of bias, fairness, and sensitivity (as well as for technical quality). Training also includes an awareness of and sensitivity to issues of cultural diversity. In addition to providing *internal* training in reviewing items in order to eliminate potential bias, DRC also provides *external* training to the review panels of minority experts, teachers, and other stakeholders.

DRC's guidelines for bias, fairness, and sensitivity includes instruction concerning how to eliminate language, symbols, words, phrases, and content that might be considered offensive by members of racial, ethnic, gender, or other groups. Areas of bias that are specifically targeted include, but are not limited to, stereotyping, gender, regional/geographic, ethnic/cultural, socioeconomic/class, religious, experiential, and biases against a particular age group (ageism) or persons with disabilities. DRC catalogues topics that should be avoided and maintains balance in gender and ethnic emphasis within the pool of available items and passages.

UNIVERSAL DESIGN OVERVIEW

The Principles of Universal Design were incorporated throughout the item development process to allow participation of the widest possible range of students in the Classroom Diagnostic Tools. The following checklist was used as a guideline:

- Items measure what they are intended to measure.
- Items respect the diversity of the assessment population.
- Items have a clear format for text.
- Stimuli and items have clear pictures and graphics.
- Items have concise and readable text.
- The arrangement of the items on the test has an overall appearance that is clean and well organized.

A more extensive description of the application of the Principles of Universal Design is found in Chapter Four.

DEPTH OF KNOWLEDGE (DOK) OVERVIEW

An important element in statewide assessments is the alignment between the overall assessment system and the state's standards. A methodology developed by Norman Webb (1999, 2006) offers a comprehensive model that can be applied to a wide variety of contexts. With regard to the alignment between standards statements and the assessment instruments, Webb's criteria include five categories, one of which deals with content. Within the content category is a useful set of levels for evaluating depth of knowledge (DOK). According to Webb (1999), "depth-of-knowledge consistency between standards and assessments indicates alignment if what is elicited from students on the assessment is as demanding cognitively as what students are expected to know and do as stated in the standards" (p. 7–8). The four levels of cognitive complexity (i.e., depths of knowledge) are as follows:

- Level 1: Recall
- Level 2: Application of Skill/Concept
- Level 3: Strategic Thinking
- Level 4: Extended Thinking

Depth-of-knowledge levels were incorporated in the item writing and review process, and items were coded with respect to the level each represented.

PASSAGE READABILITY OVERVIEW

Evaluating the readability of a passage is essentially a judgmental process by individuals familiar with the classroom context and what is linguistically appropriate. Although various readability indices were computed and reviewed, it is recognized that such methods measure different aspects of readability and are often fraught with particular interpretive liabilities. Thus, the commonly available readability formulas were not used in a rigid way, but more informally to provide for several snapshots of a passage that senior test development staff considered along with experience-based judgments in guiding the passage selection process. In addition, passages were reviewed by committees of Pennsylvania educators who evaluated each passage for readability and grade-level appropriateness.

TEST ITEM READABILITY OVERVIEW

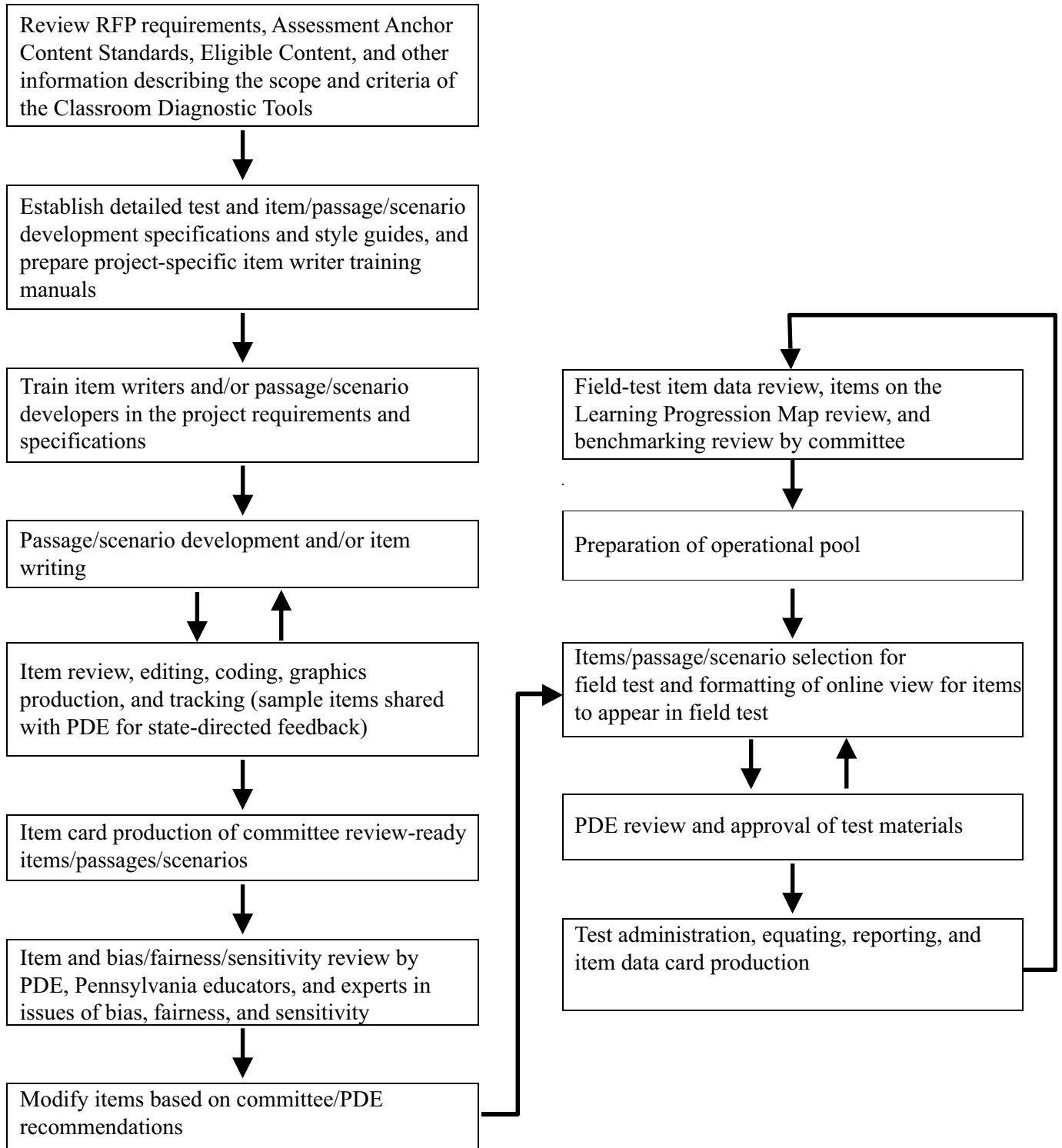
Careful attention was given to the readability of the items to make certain that the assessment focus of the item did not shift based on the difficulty of reading the item. Subject/course areas such as Mathematics, Algebra I, Science, or Biology contain many content-specific vocabulary terms. As a result, readability formulas were not used. However, wherever it was practicable and reasonable, every effort was made to keep the vocabulary at or one level below the grade or course level for non-Reading/Literature items. There was a conscious consideration made to ensure that each question was evaluating a student's ability to build toward mastery of the course standards versus the student's reading ability. Resources used to verify the vocabulary level were the *EDL Core Vocabularies* and the *Children's Writer's Word Book*.

In addition, every test question is brought before committees comprised of Pennsylvania educators who are course-level/grade-level experts in the content field in question. They review each question from the perspective of the students they teach, and they determine the validity of the vocabulary used and work to minimize the level of reading required.

ITEM AND TEST DEVELOPMENT CYCLE

The item development process for items followed a logical cycle and timeline, which is outlined in the figure on the following page. On the front end of the schedule, tasks were generally completed with the goal of presenting field test candidate items to committees of Pennsylvania educators. On the back end of the schedule, all tasks lead to the field test data review and operational test construction. This presentation represents a typical life cycle for a field test event.

DRC Item and Test Development Primary Cycle



GENERAL ITEM AND TEST DEVELOPMENT PROCESS

The following describes the processes which lead up to an operational assessment. These processes were used to develop the entire pool of items that appeared within the field test administrations for potential inclusion in the operational item pool.

ITEM DEVELOPMENT PLANNING MEETING

Prior to the start of any item development work, DRC's test development staff meets with PDE's assessment office to discuss the test development plans, including the test blueprint, the field test plan (including development counts), procedures, timelines, etc.

ITEM WRITER TRAINING

Item writers were selected and trained for the subject areas of Mathematics, Algebra I, Algebra II, Geometry, Science, Biology, Chemistry, Reading, Literature, Writing, and English Composition. Qualified writers were college graduates with teaching experience and a demonstrated base of knowledge in the content area. Many of these writers were content assessment specialists and curriculum specialists. The writers were trained individually and had previous experience in writing multiple-choice items. Prior to developing items for the Classroom Diagnostic Tools, the cadre of item writers was trained with regard to the following:

- PSSA and Keystone Assessment Anchors and Eligible Content
- Webb's Levels of Cognitive Complexity, Depth of Knowledge
- Bias, Fairness, and Sensitivity Guidelines
- Principles of Universal Design
- Item Quality Technical Style Guidelines
- Reference Information
- Sample Items

LITERATURE PASSAGE DEVELOPMENT

The task of developing passages was conducted by DRC professionals with classroom experience in reading/English language arts. These professionals also underwent specialized training (provided by DRC) in the characteristics of acceptable passages. Guidelines for passage development included appropriate length, text structure, density, and vocabulary. A judgment was also made about whether the reading level required by a particular passage was at the independent level—that is, where the average student should be able to read 90 percent of words in the text independently. Passage writers were given the task of writing a specified number of passages for each genre. Passages were commissioned by experienced authors.

Passages underwent an internal review by several test development content editors to judge their merit with regard to the following criteria:

- Passages have interest value for students.
- Passages are appropriate in terms of vocabulary and language characteristics.
- Passages are free of bias, fairness, and sensitivity issues.
- Passages represent different cultures.
- Passages are able to stand the test of time.
- Passages are sufficiently rich to generate a variety of multiple-choice items.
- Passages avoid dated subject matter unless a relevant historical context is provided.
- Passages should not require students to have extensive background knowledge in a certain discipline or area to understand a text.

Once through the internal review process, those passages deemed potentially acceptable were reviewed by the Reading Content Committee and Bias, Fairness, and Sensitivity Committee for final approval.

ITEM AUTHORIZING AND TRACKING

Initially, items are generated with software-prepared Classroom Diagnostic Tools Item Cards, which allows for preliminary sorting and reviewing. A column against the right margin includes codes to identify the subject area, grade, content categories, passage information (in the case of reading), item type, depth of knowledge (cognitive complexity), estimated difficulty, answer key, and calculator use (for mathematics items).

All items undergoing field testing were entered into the DRC Item Development and Educational Assessment System (IDEAS), which is a comprehensive, secure, online item banking system. It accommodates item writing, item viewing and reviewing, and item tracking and versioning. IDEAS manages the transition of an item from its developmental stage to its approval for use within a test form. The system supports item history records that include item usage within a form, item-level notes, content categories and subcategories, item statistics from both classical and Rasch item analyses, and classifications derived from analyses of differential item functioning (DIF).

INTERNAL REVIEWS

To ensure that the items produced were sufficient in number and adequately distributed across subcategories and levels of difficulty, item writers were informed of the required quantities of items. As items were written, an item authoring card was completed. It contained information about the item, such as subject, content category, and subcategories. Based on the item writer's classroom teaching experience, knowledge of the content area curriculum, and cognitive demands required by the item, estimates were recorded for level of cognitive complexity and difficulty level. Items were written to provide for a range of difficulties and cognitive complexities.

As part of the item construction process, each item was reviewed by content specialists and editors at DRC. Content specialists and editors evaluated each item to make sure that it measured the intended Eligible Content and Assessment Anchor. They also assessed each item to make certain that it was appropriate for the intended grade and that it provided only one correct answer. In addition, the difficulty level, depth of knowledge, graphics, language demand, and distractors were also evaluated. Other elements considered in this process include, but are not limited to, Universal Design, bias, source of challenge, grammar/punctuation, and Pennsylvania style. Following these reviews, the items were prepared for the content review meetings conducted with Pennsylvania educators.

ITEM CONTENT REVIEWS

Prior to the 2010, 2011, 2013, and 2015 field testing, all newly developed test items were submitted to content committees for review. The content committees consisted of Pennsylvania educators from school districts throughout the Commonwealth of Pennsylvania, some with postsecondary university affiliations. The primary responsibility of the content committee was to evaluate items with regard to quality and content classification, including grade-level or course appropriateness, estimated difficulty, depth of knowledge, and source of challenge. With source of challenge, items are identified where the cognitive demand is focused on an unintended content, concept, or skill (Webb, 2002). In addition, source of challenge may be attributed if the reason that an answer could be given results from a cultural bias, an inappropriate reading level, or a flawed graphic in an item, or if an item requires specialized, non-content-related knowledge to answer. Source of challenge could result in a student who has mastered the intended content or skill answering the item incorrectly or a student who has not mastered the intended content or skill answering the item correctly. Committee members were asked to note any items with a source of challenge and to suggest revisions to remove the source of challenge. They also suggested revisions and made recommendations for reclassification of items. The committee members also reviewed the items for adherence to the Principles of Universal Design, including language demand and issues of bias, fairness, and sensitivity.

The content review meetings were held in January 2010 for Mathematics, Algebra I, Algebra II, and Geometry, in May/June 2010 for Reading/Literature, Science, Biology, and Chemistry, and in January 2011 for Writing/English Composition. Additional content review meetings were held in November 2012 (for the additional items aligned to the Pennsylvania Core Standards) and in July 2013 (for the items to allow students in grades 3 through 5 to participate in the CDT). Content review meetings were again held in May of 2015 for Writing items and June of 2015 for Science, Reading, and Math (for additional items aligned to the Pennsylvania Core Standards and the Assessment Anchors and Eligible Content to supplement the pool). Committee members were approved by PDE, and PDE-approved invitations were sent to them by DRC. PDE also selected internal staff members for attendance. The meeting commenced with a welcome by PDE and DRC. This was followed by an overview of the test development process by DRC. PDE, along with DRC, also provided training on the procedures and forms to be used for item content review.

DRC content assessment specialists facilitated the reviews and were assisted by representatives of PDE. Committee members, grouped by content area, received training by working through and reviewing a group of items for quality and content, as well as for the following categories:

- Assessment Anchor Alignment
- Content Limits
- Grade-Level (Course-Level) Appropriateness
- Difficulty Level
- Depth of Knowledge
- Appropriate Source of Challenge
- Correct Answer
- Quality of Distractors
- Graphics in Regards to Appropriateness
- Appropriate Language Demand
- Freedom from Bias

The members then received a binder containing items to independently review and provided their recommendation for the status of each item: Approved, Accepted with Revision, or Rejected. All comments were reviewed and addressed by DRC content staff, and, when necessary, PDE staff were consulted.

Security was addressed by adhering to a strict set of procedures. All attendees, with the exception of PDE staff, were required to sign a confidentiality agreement. All materials not in use at any time were stored in a locked room. Secure materials that did not need to be retained after the meetings were deposited in secure barrels, the contents of which were shredded.

BIAS, FAIRNESS, AND SENSITIVITY REVIEWS

Prior to the 2010, 2011, and 2013 field testing, all newly developed test items were also submitted to a Bias, Fairness, and Sensitivity Committee for review. These reviews took place prior to the Item Content Review for each content area. The committee's primary responsibility was to evaluate items with regard to bias, fairness, and sensitivity issues. They also made recommendations for changes or deletion of items in order to remove the potential for issues of bias, fairness, and/or sensitivity. Included in the review were proposed reading passages. An expert, multi-ethnic committee composed of men and women was trained by a DRC test development lead to review items for bias, fairness, and sensitivity issues. Training materials included a manual developed by DRC (DRC, 2003–2013). Members of the committee also had expertise with special-needs students and English Language Learners. All items were read by a cross-section of committee members. Each member noted bias, fairness, and/or sensitivity comments on tracking sheets and on the item, if needed, for clarification. Committee members individually categorized any concerns as related to ageism, disability, ethnicity/culture, gender, region, religion, socioeconomics, or stereotypes. These categories were the framework through which recommendations for modification or rejection of items occurred during the subsequent committee consensus process. The committee discussed each of the issues as a group and came to a consensus as to which issues should represent the view of the committee. All consensus comments were then compiled, and the suggested actions on these items were recorded and submitted to DRC content staff. This review followed the same security procedures as outlined above.

ITEMS ALIGNED TO LEARNING PROGRESSION MAPS

Following the field test of items, all items were brought before a committee of Pennsylvania educators for review of each item's alignment to the Learning Progression Map. DRC and PDE provided a general overview of the item and test development process for the Classroom Diagnostic Tools and provided information about the Learning Progression Maps and the purpose of the Classroom Diagnostic Tools. Then the committee reviewed the Learning Progression Map, which shows the vertical articulation of the Assessment Anchors and Eligible Content across grades within a given subject area. Once it was determined that the Learning Progression Map containing the Assessment Anchors and Eligible Content was an accurate representation of how the content progressed across grades, teachers worked in grade-span committees to review items for their alignment with the Assessment Anchor and Eligible Content. When reviewing the alignment to the Assessment Anchor and Eligible Content, educators considered whether the test item measured the content that it purported to measure, as well as the appropriateness of the difficulty and cognitive complexity of the item in relation to the Assessment Anchor and Eligible Content to which the item was aligned. Committees came to a consensus regarding the status of each item: Accepted, Accepted with Revised Alignment, or Rejected.

Security was addressed by adhering to a strict set of procedures. All attendees, with the exception of PDE staff, were required to sign a confidentiality agreement. All materials not in use at any time were stored in a locked room. Secure materials that did not need to be retained after the meetings were deposited in secure barrels, the contents of which were shredded.

CHAPTER FOUR: UNIVERSAL DESIGN PROCEDURES APPLIED TO THE CLASSROOM DIAGNOSTIC TOOLS TEST DEVELOPMENT PROCESS

UNIVERSAL DESIGN

Universally designed assessments allow participation of the widest possible range of students and contribute to valid inferences about participating students. Principles of Universal Design are based on the premise that each child in school is a part of the population to be tested and that testing results should not be affected by disability, gender, race, or English language ability (Thompson, Johnstone, & Thurlow, 2002). At every stage of the item and test development process, procedures were employed to ensure that items and subsequent tests were designed and developed using the elements of universally designed assessments developed by the National Center for Educational Outcomes (NCEO).

Federal legislation addresses the need for universally designed assessments. The No Child Left Behind Act (Elementary and Secondary Education Act) requires that each state must “provide for the participation in [statewide] assessments of all students” [Section 1111(b)(3)(C)(ix)(I)]. Both Title I and IDEA regulations call for universally designed assessments that are accessible and valid for all students, including students with disabilities and English Language Learners. The benefits of universally designed assessments not only apply to these groups of students, but to all individuals with wide-ranging characteristics. Therefore, it is important that the development of all assessments, including voluntary assessments such as the Classroom Diagnostic Tools, be guided by the Principles of Universal Design.

DRC’s test development team was trained in the elements of Universal Design as it relates to developing large-scale statewide assessments. Team leaders were trained directly by NCEO, and other team members were subsequently trained by team leaders. Committees involved in content review included some members who were familiar with the unique needs of students with disabilities and English Language Learners. Likewise some members of the Bias, Fairness, and Sensitivity Committee were conversant with these issues. What follows are the Universal Design guidelines followed during all stages of the item development process for the Classroom Diagnostic Tools.

ELEMENTS OF UNIVERSALLY DESIGNED ASSESSMENTS

After a review of research relevant to the assessment development process and the Principles of Universal Design (Center for Universal Design, 1997), NCEO has produced seven elements of Universal Design as they apply to assessments (Thompson, Johnstone & Thurlow, 2002). These elements served to guide item development for the Classroom Diagnostic Tools.

- **Inclusive Assessment Population**

The target population includes students attending Commonwealth schools in grades 3 through 12 who will be participating in either the Pennsylvania System of School Assessment or the Keystone exams.

- **Precisely Defined Constructs**

An important function of well-designed assessments is that they actually measure what they are intended to measure. The Assessment Anchor Content Standards and Eligible Content for both PSSA and the Keystone Exams, as well as the Pennsylvania Academic Standards for Writing, provided clear descriptions of the constructs to be measured by the Classroom Diagnostic Tools assessments. Universally designed assessments must remove all non-construct-oriented cognitive, sensory, emotional, and physical barriers.

- **Accessible, Non-biased Items**

DRC conducted both internal and external reviews of items and test specifications to ensure that they did not create barriers because of lack of sensitivity to disability, culture, or other subgroups. Items and test specifications were developed by a team of individuals who understand the varied characteristics of items that might create difficulties for any group of students. Accessibility is incorporated as a primary dimension of test specifications, so accessibility was woven into the fabric of the test rather than being added after the fact.

- **Amenable to Accommodations**

Even though items on universally designed assessments are accessible for most students, there are some students who continue to need accommodations. This essential element of a universally designed assessment requires that the exam is compatible with accommodations and a variety of widely used adaptive equipment and assistive technology.

- **Simple, Clear, and Intuitive Instructions and Procedures**

Assessment instructions should be easy to understand, regardless of a student's experience, knowledge, language skills, or current concentration level. Questions that are posed using complex language can invalidate the test if students cannot understand how they are expected to respond to a question. To meet this guideline, directions and questions were prepared in simple, clear, and understandable language that underwent multiple reviews.

- **Maximum Readability and Comprehensibility**

A variety of guidelines exist to ensure the maximum readability and comprehensibility of a test. These features go beyond what is measured by readability formulas. Readability and comprehensibility are affected by many factors, including student background, sentence difficulty, text organization, and others. All of these features were considered as item text was developed.

Plain language is a concept now being highlighted in research on assessments. Plain language has been defined as language that is straightforward and concise. The following strategies for editing text to produce plain language were used during the editing process of the Classroom Diagnostic Tools items:

- Reduction of excessive length
- Use of common words
- Avoidance of ambiguous words
- Avoidance of irregularly spelled words
- Avoidance of proper names
- Avoidance of inconsistent naming and graphic conventions
- Avoidance of unclear signals about how to direct attention

- **Maximum Legibility**

Legibility is the physical appearance of text, the way that the shapes of letters and numbers enable people to read text easily. Bias can result when tests contain physical features that interfere with a student's focus on or understanding of the constructs that test items are intended to assess. A style guide was developed and was utilized which included dimensions of style consistent with Universal Design.

GUIDELINES FOR UNIVERSALLY DESIGNED ITEMS

All test items written and reviewed adhered closely to the following guidelines for Universal Design. Item writers and reviewers used a checklist during the item development process to ensure that each aspect was attended to.

1. **Items measure what they are intended to measure.** Item writing training included ensuring that writers and reviewers had a clear understanding of Pennsylvania's Core Standards, Pennsylvania's Academic Standards, and the PSSA and Keystone Assessment Anchors and Eligible Content. During all phases of test development, items were presented with content-standard information to ensure that each item reflected the intended Academic Standard (Mathematics, Reading, and Writing items aligned to Kindergarten, grade 1, or grade 2) or Eligible Content (all other grades and content areas). Careful consideration of the content standards was important in determining which skills involved in responding to an item were extraneous and which were relevant to what was being tested. In certain types of items an additional skill is necessary, such as the Algebra I test, which requires the student to read.

2. **Items respect the diversity of the assessment population.** To develop items that avoid content that might unfairly advantage or disadvantage any student subgroup, item writers, test developers, and reviewers were trained to write and review items to avoid issues of bias, fairness, and sensitivity. Training also included an awareness of, and sensitivity to, issues of cultural and regional diversity.
3. **Items have a clear format for text.** Decisions about how items are presented to students must allow for maximum readability for all students. Appropriate fonts and point sizes were employed with minimal use of italics, which is far less legible and is read considerably more slowly than standard typeface. Captions, keys, and legends were at least a 12-point size, while footnotes and sentence numbers use a 10-point font.¹ Legibility was enhanced by sufficient spacing between letters, words, and lines. Blank space around paragraphs and between columns and staggered right margins were used.
4. **Stimuli and items have clear pictures and graphics.** When pictures and graphics were used, they were designed to provide essential information in a clear and uncluttered manner. Illustrations were placed directly next to the information to which they referred, and labels were used where possible. Sufficient contrast between background and text, with minimal use of shading, increased readability for students with visual impairments. Color was not used to convey important information.
5. **Items have concise and readable text.** Linguistic demands of stimuli and items can interfere with a student's ability to demonstrate knowledge of the construct being assessed. During item writing and review, the following guidelines were used.
 - Simple, clear, commonly used words were used whenever possible.
 - Extraneous text was omitted.
 - Vocabulary and sentence complexity were appropriate for the grade level being assessed.
 - Technical terms and abbreviations were used only if they were related to the content being measured.
 - Definitions and examples were clear and understandable.
 - Idioms were avoided unless idiomatic speech was being assessed.
 - The questions to be answered were clearly identifiable.
6. **Items allow changes to format without changing meaning or difficulty.** An audio accommodation is available in Mathematics Lower Grades, Mathematics, Algebra I, Geometry, Algebra II, Science Lower Grades, Science, Biology, and Chemistry for any student with Individualized Education Program (IEP) requirements related to receiving audio assistance during testing. Additionally, a Magnifier tool that can be used to enlarge an area of the screen is available to all students. This tool can be used at the same time as other tools, such as the Highlighter or Line Guide.
7. **The test has an overall appearance that is clean and organized.** Images, pictures, and text that may not be necessary (e.g., sidebars, overlays, callout boxes, shading, visual crowding caused by excess information) and that could be potentially distracting to students were avoided. Also avoided were purely decorative features that did not serve a purpose. Information was organized in a left-right, top-bottom format.

ITEM DEVELOPMENT

DRC works closely with the Pennsylvania Department of Education to help ensure that the Classroom Diagnostic Tools comply with nationally recognized Principles of Universal Design. In addition to the Principles of Universal Design as described in the Classroom Diagnostic Tools Technical Report, DRC applies to each exam the standards for test accessibility as described in *Tests Access: Making Tests Accessible for Students with Visual Impairments—A Guide for Test Publishers, Test Developers, and State Assessment Personnel* (Allman, 2004).

To this end, DRC ensures that committee members at item and bias reviews are made aware of the Principles of Universal Design and of issues that may adversely affect students with disabilities with the goal of ensuring that Classroom Diagnostic Tools assessments are bias-free for all students.

¹ While font size follows specific requirements during online setup of an exam, the screen resolution used at the local level can impact the effective font size visible to the student.

ITEM FORMAT

For all Classroom Diagnostic Tools assessments, DRC formats the items to maximize accessibility for all students by using text that is in a size and font style that is easily readable. DRC limits shading, graphics, and charts. DRC ensures that graphics, pictures, diagrams, charts, and tables are positioned on the page with the associated test items. DRC uses high contrast for text and background where possible to convey pertinent information.

DRC ensures consistency across Classroom Diagnostic Tools assessments by following these Principles of Universal Design:

- High contrast and clarity is used to convey detailed information.
- Typically, shading is avoided; when necessary for content purposes, 10-percent screens are used as the standard.
- Overlaid print on diagrams, charts, and graphs is avoided.
- Charts, graphs, diagrams, and tables are clearly labeled with titles and with short descriptions where applicable.
- Only relevant information is included in diagrams, pictures, and graphics.
- Symbols used in keys and legends are meaningful and provide reasonable representations of the topics they depict.

ASSESSMENT ACCOMMODATIONS

While universally designed assessments provide for participation of the widest range of students, many students require accommodations in order to participate in the regular assessment. Clearly, the intent of providing accommodations for students is to ensure that students are not unfairly disadvantaged during testing and that the accommodations used during instruction, if appropriate, are made available as students take the test. The literature related to assessment accommodations is still evolving and often focuses on state policies regulating accommodations rather than on providing empirical data that supports the reliability and validity of the use of accommodations. On a yearly basis, the Pennsylvania Department of Education examines accommodations policies and current research to ensure that valid, acceptable accommodations are available for students. At this time, an audio accommodation is available in Mathematics Lower Grades, Mathematics, Algebra I, Geometry, Algebra II, Science Lower Grades, Science, Biology, and Chemistry for any student with Individualized Education Program (IEP) requirements related to receiving audio assistance during testing. A separate audio accommodation is available for all CDT assessments for students with visual impairments. Additionally, a color choices accommodation allows students who would benefit from a background other than white to select a background color from five available choices (in addition to the white background). A contrasting color allows students who would benefit from different text and background color combinations to select from seven options (in addition to black text on a white background).

CHAPTER FIVE: TEST ADMINISTRATION PROCEDURES

TEST SETUP

The process to set up students to take the Classroom Diagnostic Tools (CDT) is accomplished through an online interface located on the eDIRECT site (<https://www.drctdirect.com/all/eca-portal-ui/welcome/PA>). The eDIRECT site is a permission-based site that enables districts to assign users different roles and permissions depending on their role in the setup process. Each district can set up users with as much or as little permission as deemed necessary. A user's role and permission may be modified at any time.

The student and teacher information is imported by user upload at any time. Once the data is imported, users organize students into student groups and test sessions. Student groups and test sessions can be created by class, grade, school, or any other variation.

Each student group is assigned to a specific teacher. Students may belong to multiple student groups and multiple teachers can be assigned to the same student group. This allows districts/schools the ability to allow multiple users to view the data by class, grade, or even school. Student groups may be created and modified at any time during the administration window.

Test sessions are generated to create test tickets that will be distributed to students prior to testing. A test ticket contains the student's full name, user name, password, and the assessment he/she will be taking. The test session, like the student group, may also be created by class, grade, and school. Each time an assessment is administered, a new test session must be created. Test sessions can be copied to simplify administering the CDT to the same students multiple times each year.

SAMPLE TEST SESSION TICKET

<p>CDT</p> <p>ASHLEE ABBOTT</p> <p>Reading/Literature</p> <p>Username: 3924540101</p> <p>Password: SWAM8481</p>

Each CDT should take the typical student 50 to 90 minutes to complete; however, the test is untimed. Each CDT is between 48 and 60 items in length. The CDT may be administered in one sitting, but it is possible to administer the CDT over multiple days and recommended for the Grades 3-5 assessments.

It is recommended that a student take one of the available CDTs three times in a given school year. There should be enough time between CDT administrations to allow for instructional impact to be reflected in the student's results. Though there are no restrictions on the time between CDTs, there is a restriction in the Test Setup system that only allows a student to be associated with a single CDT a maximum of five (5) times within a given school year.

PA ONLINE ASSESSMENTS SOFTWARE

Prior to testing, each student computer needs to have the PA Online Assessments software installed. The testing software downloads are located on the eDIRECT site. The installer is an MSI file that can be pushed out across a server to expedite the installation process. Once the software is installed, users also have access to the PA Assessment Online Student Tutorials and the PA Assessment Online Tools Training (OTT). Users are encouraged to run the Online Tools Training prior to testing as it does interact with DRC servers exactly like an actual CDT assessment. Completion of the OTT will provide a good indication that the software installed correctly and everything is configured properly on the network.

The web-based PA Online Assessment Student Tutorials are available for each operational assessment and are designed to be used by students at all grade levels. They use pictures, motion, and sound to present visual and verbal descriptions of the features and functionality of the PA Online Assessment system. It is recommended to allow a minimum of 20 minutes to view the tutorials. Tutorials may be reviewed as often as needed.

Welcome to Pennsylvania Online Assessments

CLASSROOM DIAGNOSTIC TOOLS
Select a tutorial from the subjects below.

- Mathematics**
 - Math Grades 3-5
 - Mathematics
 - Algebra I
 - Algebra II
 - Geometry
- Literacy**
 - Reading Grades 3-5
 - Reading/Literature
 - Writing Grades 3-5
 - Writing/English Composition
- Science**
 - Science Grades 3-5
 - Science
 - Biology
 - Chemistry

PENNSYLVANIA SYSTEM OF SCHOOL ASSESSMENT
Select a tutorial from the subjects below.

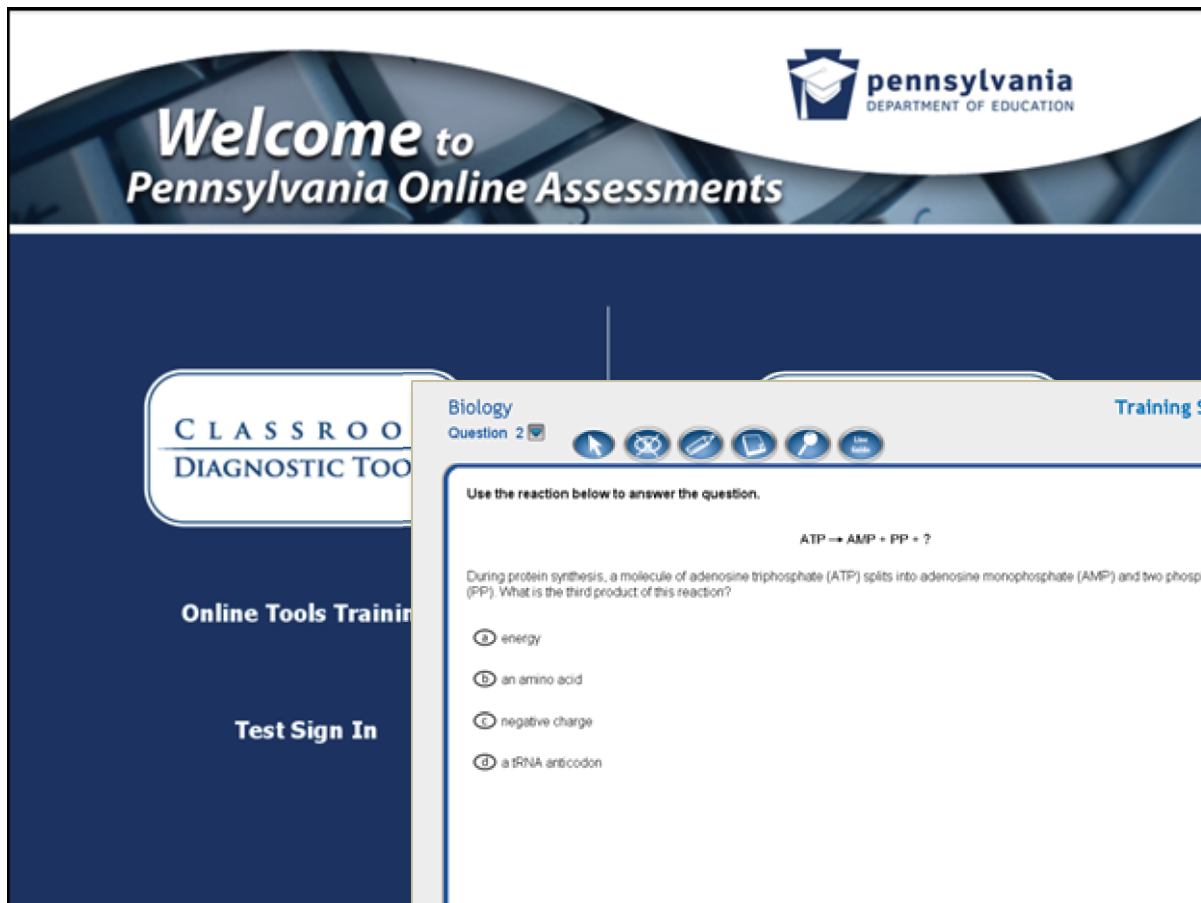
- Mathematics**
 - Grade 3
 - Grade 4
 - Grade 5
 - Grade 6
 - Grade 7
 - Grade 8
- Reading**
 - Grade 3
 - Grade 4
 - Grade 5
 - Grade 6
 - Grade 7
 - Grade 8
- Writing**
 - Grade 5
 - Grade 8

KEYSTONE EXAMS
Select a tutorial from the subjects below.

- Mathematics**
 - Algebra I
- Literacy**
 - Literature
- Science**
 - Biology

Accommodations

The PA Assessment Online Tools Training (OTT) is designed to provide an introductory experience using the online assessment software in preparation for taking the CDT. The purpose of the OTT is for students to observe and experiment with the features of the online assessment software prior to the actual assessment. The OTT is NOT designed to demonstrate complete coverage of the tested content, and it is NOT scored. Rather, sample items have been chosen to demonstrate online assessment features and uses.



TRAINING AND CUSTOMER SERVICE SUPPORT

Prior to testing, training was provided to District Technology Coordinators and District Assessment Coordinators. All training is administered via web conference and lasts approximately 1½ hours. Test Coordinator Training goes over tasks that need to be completed prior to testing. A large portion of the training is dedicated to the setup of users and the creation of student groups and test sessions.

Technology Coordinator Training focuses on all technical aspects required for the setup of the CDT. Detailed installation instructions of the PA Online Assessments Software and Testing Site Manager (TSM) are provided. The TSM runs on a server within the local network and helps mitigate internet traffic by allowing student machines to retrieve items from the TSM rather than from DRC servers. The CDT requires an internet connection at all times.

Student Interface System Requirements

Windows / Linux Installer System Requirements

- 4 GB of RAM recommended
- Screen resolution of 1024 X 768 or higher
- Mouse; Keyboard
- 20 GB of available hard disk space or greater
- Dual-core i5 at 2 GHz or equivalent

Window/Linus Supported Operating Systems

- Windows Vista, SP2
- Windows 7, SP1
- Windows 8 (including 8.1)
- Windows 10 (version 1507, 1511, and Redstone 1)
- Windows Server 2008 (SP2, R2, SP1)
- Windows Server 2012 (R2)
- Ubuntu (12.04 and 12.04) LTS version, with 32- and 64-bit Gnome 3.4, Unity Shell

Macintosh Installer System Requirements

- 4 GB of RAM recommended
- Screen resolution of 1024 X 768 or higher
- Mouse; Keyboard
- 20 GB of available hard disk space or greater
- Dual-core i5 at 2 GHz or equivalent

Supported Operating Systems

- Apple® Mac OS X® 10.7
- Apple® Mac OS X® 10.8
- Apple® Mac OS X® 10.9
- Apple® Mac OS X® 10.10
- Apple® Mac OS X® 10.11

Chrome OS Installer System Requirements

- 4 GB of RAM or more
- Screen resolution 1024 x 768 or higher
- 2 GHz or faster processor

Chrome OS Supported Operating Systems

- Chrome OS recent stable channel

Apple iOS Installer System Requirements

- Screen resolution of 1024 x 768 or higher

Apple iOS Supported Operating System

- 9.3.x

Android Installer System Requirements

- Screen resolution of 1024 x 768 or higher

Android Supported Operating System

- Lollipop 5.x

Users are encouraged to call or email with any questions or error messages that cannot be resolved. If the problem cannot be resolved via a customer service representative, the issue is escalated to DRC developers. Ninety percent of the time, a solution is provided within twenty-four hours. If the issue requires more research, DRC will contact the caller daily to provide an update.

CHAPTER SIX: FIELD TEST

FIELD TEST OVERVIEW

All items appearing in the 2016–2017 Classroom Diagnostic Tools (CDT) operational item pools were field tested prior to their use on the operational CDT. The purpose of administering field-test items is to obtain statistics for them so they can be reviewed and approved before becoming operational. Based on this statistical review, many of the field-test items were selected for use in the 2016–2017 CDT operational item pools.

There were six separate CDT field-test events that contributed items to the 2016–2017 operational item pools—four stand-alone field-test events and two embedded field-test events. Separate field-test events were needed because the operational CDT was rolled out in phases by content area and available grades.

There were three stand-alone field-test events to build the item pools for students in grade 6 and above. Items in mathematics were field tested in spring 2010. Items in reading and science were field tested in fall 2010. Items in writing were field tested in spring 2011. During these three field-test events, CDT items were field tested on stand-alone fixed forms. The forms were administered in computer-based format only. No paper/pencil versions were available. Field test administration mode was limited to computer-based to mirror the operational CDT, which is an adaptive test requiring computer administration. CDT stand-alone field tests were designed to build vertical scales across all grades and courses within a content area. In order to accomplish this, some field-test forms had items from one grade above or below in addition to on-grade level items. For example, some grade 7 mathematics forms contained items from grade 6 in addition to items from grade 7. Other grade 7 mathematics forms contained items from both grade 7 and grade 8. See Chapter Nine for more details.

There was one stand-alone field-test event to build the item pools for students in grades 3 through 5. Items in mathematics, reading, science, and writing were field tested in fall 2013. Again, CDT items were field tested on stand-alone fixed forms. The forms were administered in computer-based format only. No paper/pencil versions were available. In order to link to the existing operational scales, some operational grade-level items were included in the field-test forms. See Chapter Twelve for more details.

In addition to the four stand-alone field-test events that contributed items to the 2016–2017 operational item pools, there were three field-test events in which a small number of field-test items were included (embedded) within the operational CDT. In spring 2013, field-test items were included in mathematics and reading. The purpose of this embedded field test was to add items to the operational item pools that align to the Pennsylvania Core Standards. In fall 2013, field-test items were included in mathematics, reading, science, and writing. The purpose of this embedded field test was to field test additional items in grade 5 that could be used in the item pools for students in grades 3 through 5. In 2015–2016, seven of the thirteen CDTs included a small number of embedded field-test items. The purpose of this embedded field test was to supplement the existing item pools and to introduce the evidence-based selected-response (EBSR) item type in the reading content area. In the case of all three embedded field-test events, field-test items were included within the operational administration and students did not know which items were field-test items (items that do not count toward a student's score). Therefore, the embedded field-test items could be linked to the existing operational scales. See Chapter Twelve for details.

CDT STAND-ALONE FIELD TESTS

SPRING 2010 – MATHEMATICS

The stand-alone field test administered in spring 2010 was designed to yield enough items to populate the item pool for CDT Mathematics. Items covering the Eligible Content in grades 3 through 8 and courses Algebra I, Geometry, and Algebra II were field tested. Items covering grade 11 Eligible Content that were NOT covered in Algebra I, Geometry, or Algebra II were also field tested.

Participation in the field test was voluntary. All schools that wanted to participate were allowed to field test. All students in volunteer schools were encouraged, but not required, to participate.

In order to encourage participation, field-test forms were limited in length. Forms for grades 3, 4, and 5 had 25 items. Forms for grades 6, 7, and 8 and Algebra I, Geometry, and Algebra II courses had 35 items. There were not separate grade 11 forms. Instead, grade 11 items were included on grade 8, Algebra I, Geometry, and Algebra II forms.

Since testing occurred in spring, students had nearly a full year of instruction. Therefore, grade-level forms were assigned to students in the corresponding grade (e.g., students in grade 7 took grade 7 forms). Course-level forms were assigned to students currently taking the course (e.g., students in a Geometry course took Geometry forms).

Each student was randomly assigned one of the appropriate grade- or course-level forms at the time of testing.

Table 6–1. Spring 2010 Mathematics Field-Test Form Details

Grade/Course	Number of Items	Number of Forms	Number of Vertical Linking Forms
Grade 3	86	8	4
Grade 4	86	10	8
Grade 5	85	10	8
Grade 6	259	16	8
Grade 7	258	16	8
Grade 8	257	18	12
Grade 11*	149	0	0
Algebra I	256	18	8
Geometry	257	16	4
Algebra II	256	16	4

* Grade 11 items were tested on grade 8, Algebra I, Geometry, and Algebra II forms.

FALL 2010 – READING AND SCIENCE

The stand-alone field tests administered in fall 2010 were designed to yield enough items to populate the item pools for CDT Reading/Literature and CDT Science. Reading items covering the Eligible Content in grades 3 through 8 and Literature were field tested. Science items covering the Eligible Content in grades 3 through 8 and Biology and Chemistry courses were field tested. Items covering grade 11 science Eligible Content that were NOT covered in Biology or Chemistry were also field tested.

Participation in the field test was voluntary. All schools that wanted to participate were allowed to field test. All students in volunteer schools were encouraged, but not required, to participate. Schools were allowed to field test in both content areas.

In order to encourage participation, field-test forms were limited in length. Forms for grades 3, 4, and 5 had 25 items. Forms for grades 6, 7, and 8 and Literature, Biology, and Chemistry courses had 35 items. There were not separate grade 11 science forms. Instead, grade 11 science items were included on grade 8 science forms.

Since testing occurred in fall, students did NOT have a full year of instruction at their current grade level. Grade-level forms were therefore assigned one grade lower (e.g., students in grade 7 took grade 6 forms). Course-level forms were assigned to students who had completed the course during the prior school year.

Each student was randomly assigned one of the appropriate grade- or course-level forms at the time of testing.

Table 6–2. Fall 2010 Reading/Literature Field-Test Form Details

Grade/Course	Number of Items	Number of Forms	Number of Vertical Linking Forms
Grade 3	86	7	2
Grade 4	87	8	4
Grade 5	86	8	4
Grade 6	210	10	4
Grade 7	192	9	4
Grade 8	192	9	4
Literature	348	15	2

Table 6–3. Fall 2010 Science Field-Test Form Details

Grade/Course	Number of Items	Number of Forms	Number of Vertical Linking Forms
Grade 3	91	7	2
Grade 4	123	11	4
Grade 5	102	9	4
Grade 6	178	9	4
Grade 7	327	15	4
Grade 8	377	22	6
Grade 11*	115	0	0
Biology	390	16	2
Chemistry	335	14	2

* Grade 11 items were tested on grade 8 forms.

SPRING 2011 – WRITING

The stand-alone field test administered in spring 2011 was designed to yield enough items to populate the item pool for CDT Writing/English Composition. Items covering the Pennsylvania Academic Standards for Writing in grades 3 through 8 and the Eligible Content for English Composition were field tested.

Participation in the field test was voluntary. All schools that wanted to participate were allowed to field test. All students in volunteer schools were encouraged, but not required, to participate.

In order to encourage participation, field-test forms were limited in length. Forms for grades 3, 4, and 5 had 25 items. Forms for grades 6, 7, and 8 and English Composition had 35 items.

Since testing occurred in spring, students had nearly a full year of instruction. Therefore, grade-level forms were assigned to students in the corresponding grade (e.g., students in grade 7 took grade 7 forms).

Each student was randomly assigned one of the appropriate grade- or course-level forms at the time of testing.

Table 6–4. Spring 2011 Writing/English Composition Field-Test Form Details

Grade/Course	Number of Items	Number of Forms	Number of Vertical Linking Forms
Grade 3	140	10	2
Grade 4	149	12	4
Grade 5	165	13	4
Grade 6	193	9	4
Grade 7	176	9	4
Grade 8	195	9	4
English Composition	365	15	2

FALL 2013 – MATHEMATICS, READING, SCIENCE, AND WRITING

The stand-alone field tests administered in fall 2013 were designed to yield enough items to populate the item pools for each CDT for students in grades 3 through 5 in mathematics, reading, science, and writing. Items covering the Eligible Content in kindergarten through grade 4 were field tested¹. In order to link to the existing operational scales, some operational grade-level items were included in the field-test forms.

Participation in the field test was voluntary. All schools that wanted to participate were allowed to field test. All students in volunteer schools were encouraged, but not required, to participate. Schools were allowed to field test in all content areas. In order to encourage participation, field-test forms were limited in length. All field-test forms had 25 items.

Since testing occurred in fall, students did NOT have a full year of instruction at their current grade level. Grade-level forms were therefore assigned one grade lower (e.g., students in grade 4 took forms containing grade 3 items). Each student was randomly assigned one of the appropriate grade-level forms at the time of testing.

¹ Items in grade 5 were part of the fall 2013 embedded field test.

Table 6–5. Fall 2013 Mathematics Field-Test Form Details

Student Grade	Item Grade(s)	Item Type	Number of Items	Number of Forms
Grade 3	K, 1, 2	Field Test	60, 90, 130	14
Grade 3	3	Link to Op Scale	15	14
Grade 4	3	Field Test	235	12
Grade 4	3	Link to Op Scale	15	12
Grade 5	4	Field Test	248	13
Grade 5	4	Link to Op Scale	15	13

Table 6–6. Fall 2013 Reading Field-Test Form Details

Student Grade	Item Grade(s)	Item Type	Number of Items	Number of Forms
Grade 3	K, 1, 2	Field Test	84, 98, 98	14
Grade 3	3	Link to Op Scale	15	14
Grade 4	3	Field Test	178	9
Grade 4	3	Link to Op Scale	15	9
Grade 5	4	Field Test	189	10
Grade 5	4	Link to Op Scale	15	10

Table 6–7. Fall 2013 Science Field-Test Form Details

Student Grade	Item Grade(s)	Item Type	Number of Items	Number of Forms
Grade 3	K–2 grade span	Field Test	280	14
Grade 3	3	Link to Op Scale	15	14
Grade 4	3	Field Test	155	8
Grade 4	3	Link to Op Scale	15	8
Grade 5	4	Field Test	213	11
Grade 5	4	Link to Op Scale	15	11

Table 6–8. Fall 2013 Writing Field-Test Form Details

Student Grade	Item Grade(s)	Item Type	Number of Items	Number of Forms
Grade 3	K, 1, 2	Field Test	44, 118, 117	14
Grade 3	3	Link to Op Scale	15	14
Grade 4	3	Field Test	60	3
Grade 4	3	Link to Op Scale	15	3
Grade 5	4	Field Test	60	3
Grade 5	4	Link to Op Scale	15	3

CDT EMBEDDED FIELD TESTS

SPRING 2013 – MATHEMATICS AND READING

The embedded field test administered in spring 2013 was designed to augment the existing mathematics and reading/literature item pools. Items were aligned to the Pennsylvania Core Standards. Starting on February 14, 2013, all students testing CDT Mathematics took 5 field-test items. All students testing CDT Reading/Literature took 5–7 field-test items, depending on passage length. Students did not know which items were operational and which were field test. Field-test items did not count in calculation of total or diagnostic category scores. Since testing occurred in spring, students had received nearly a full year of instruction. Therefore, grade-level items were assigned to students in the corresponding grade wherever possible.

Table 6–9. Spring 2013 Embedded Field Test Details

Content Area	Grade/Course	Number of Items
Mathematics	Grade 3*	56
Mathematics	Grade 4*	67
Mathematics	Grade 5*	41
Mathematics	Grade 6	156
Mathematics	Grade 7	73
Mathematics	Grade 8	157
Reading	Grade 3*	58
Reading	Grade 4*	71
Reading	Grade 5*	60
Reading	Grade 6	56
Reading	Grade 7	58
Reading	Grade 8	57

*Items in grades 3 through 5 were initially field tested with students in grade 6 because CDT is available to students in grade 6 and above. However, this plan was revised after a few weeks of testing in favor of stand-alone field tests in fall 2013 with students in grades 3 through 5.

FALL 2013 – MATHEMATICS, READING, SCIENCE, AND WRITING

The embedded field test administered in fall 2013 was designed to field test the grade 5 items needed to populate the item pools for each CDT for students in grades 3 through 5 in mathematics, reading, science, and writing. Starting on August 26, 2013, students in grade 6 testing CDT Mathematics, CDT Science, or CDT Writing/English Composition took 5 field-test items. Students in grade 6 testing CDT Reading/Literature took 5–7 field-test items, depending on passage length. Students did not know which items were operational and which were field test. Field-test items did not count in calculation of total or diagnostic category scores. Since testing occurred in fall, students had not received a full year of instruction. Therefore, grade 5 items were assigned to grade 6 students.

Table 6–10. Fall 2013 Embedded Field Test Details

CDT	Grade	Number of Items
Mathematics	Grade 5	221
Reading/Literature	Grade 5	134
Science	Grade 5	152
Writing/English Composition	Grade 5	71

FALL 2015 – MATHEMATICS, READING, SCIENCE, AND WRITING

The embedded field test administered in fall 2015 was designed to field test new items to supplement the item pools in grades 6 and above in mathematics, reading, science, and writing as well as courses Algebra I and Biology. Additionally, the evidence-based selected-response item type was field tested in grades 3 through 8 reading.

Table 6–11. Fall 2015 Embedded Field Test Item Pools

Content Area	Item Grade/Course	Number of MC Items	Number of EBSR Items	Total Number of Items
Mathematics	6	122	0	122
Mathematics	7	177	0	177
Mathematics	8	151	0	151
Mathematics	Algebra I	150	0	150
Reading	3	0	22	22
Reading	4	0	22	22
Reading	5	0	22	22
Reading	6	105	21	126
Reading	7	105	21	126
Reading	8	105	21	126
Reading	Literature	126	0	126
Science	6	72	0	72
Science	7	159	0	159
Science	8	238	0	238
Science	Biology	136	0	136
Writing	6	93	0	93
Writing	7	93	0	93
Writing	8	110	0	110
Writing	English Composition	104	0	104

Starting on August 24, 2015, seven of the thirteen CDTs included embedded field-test items:

- Students using CDT Math Grades 6-8, CDT Science Grades 6-HS, and CDT Writing/Eng Comp Grades 6-HS took 5 field-test items. Since testing occurred throughout the year, items were given to students whose grade matched the item’s grade and to students one grade above the item’s grade (e.g., grade 7 items were given to students in grades 7 and 8).
- Students using CDT Math Grades 6-8, CDT Science Grades 6-HS, and CDT Writing/Eng Comp Grades 6-HS took 5 field-test items. Since testing occurred throughout the year, items were given to students whose grade matched the item’s grade and to students one grade above the item’s grade (e.g., grade 7 items were given to students in grades 7 and 8).
- Students using CDT Algebra I and CDT Biology took 5 field-test items from the relevant course.
- The only field-test items in grades 3 through 5 reading were EBSR items associated with existing operational passages. Students using CDT Reading Grades 3-5 were eligible to receive field-test EBSR items. However, operational passages that were not a good fit based on a student’s performance were not administered just for the sake of field-test items. Instead, a field-test EBSR was administered only if the operational passage was selected for the student. The number of field-test EBSRs was limited to 3 per test.

In all cases, students did not know which items were operational and which were field test. Field test items did not count in calculation of total or diagnostic category scores.

Table 6–12. Fall 2015 Embedded Field Test Design

Content Area	CDT	Item Grade/Course	Number of Items Embedded	Student Test Grade(s)
Mathematics	Math Grades 6-8	6	5 MC	6,7
Mathematics	Math Grades 6-8	7	5 MC	7, 8
Mathematics	Math Grades 6-8	8	5 MC	8, 9+
Mathematics	Algebra I	Algebra I	5 MC	Algebra I
Reading	Reading Grades 3-5	3	0-3 EBSR	3,4,5
Reading	Reading Grades 3-5	4	0-3 EBSR	3,4,5
Reading	Reading Grades 3-5	5	0-3 EBSR	3,4,5
Reading	Reading/Lit Grades 6-HS	6	1 passage*	6,7
Reading	Reading/Lit Grades 6-HS	7	1 passage*	7, 8
Reading	Reading/Lit Grades 6-HS	8	1 passage*	8, 9+
Reading	Reading/Lit Grades 6-HS	Literature	1 passage*	9+
Science	Science Grades 6-HS	6	5 MC	6,7
Science	Science Grades 6-HS	7	5 MC	7, 8
Science	Science Grades 6-HS	8	5 MC	8, 9+
Science	Biology	Biology	5 MC	Biology
Writing	Writing/Eng Comp Gr 6-HS	6	5 MC	6,7
Writing	Writing/Eng Comp Gr 6-HS	7	5 MC	7, 8
Writing	Writing/Eng Comp Gr 6-HS	8	5 MC	8, 9+
Writing	Writing/Eng Comp Gr 6-HS	English Composition	5 MC	9+

* FT reading passages include six multiple-choice items OR five multiple-choice items and one evidence-based selected-response item.

STATISTICAL ANALYSIS OF ITEM DATA

All field-tested items were analyzed statistically following conventional item analysis methods. For MC items, traditional or classical item statistics included the point-biserial correlation (Pt. Bis.) for the correct and incorrect responses (distractors), percent correct (*p*-value), and the percent selecting each incorrect response. For EBSR items, the statistical indices included the item-test correlation, the point-biserial correlation for each score category, and the percent in each score category.

In general, more capable students are expected to respond correctly to easy items and less capable students are expected to respond incorrectly to difficult items. If either of these situations does not occur, the item will be reviewed by DRC test development staff and committees of Pennsylvania educators to determine the nature of the potential problem and the characteristics of the students affected. The primary way of detecting such conditions is through the point-biserial correlation coefficient for MC items and the item-test correlation for EBSR items. In each case the statistic will be positive if the total-test mean score is higher for the students who respond correctly to MC items or attain a higher EBSR score and negative when the reverse is true.

Item statistics are used as a means of detecting items that deserve closer scrutiny rather than as a mechanism for automatic retention or rejection. Toward this end, a set of criteria was used as a screening tool to identify items needing a closer review by committees of Pennsylvania educators.

For an MC item to be flagged, the criteria included any of the following:

- Point-biserial correlation for the correct response of less than 0.10
- Point-biserial correlation for any incorrect response greater than the point-biserial correlation for the correct response
- Differential item functioning (DIF) code of either C- or C+²

For an EBSR item to be flagged, the criteria included any of the following:

- Part One point-biserial correlation for the correct response of less than 0.10
- Part One point-biserial correlation for any incorrect response greater than the point-biserial correlation for the correct response
- Score proportion less than 0.05
- Differential item functioning (DIF) code of either C- or C+

These criteria differ slightly from the criteria used for end-of-year/course summative tests such as the Pennsylvania System of School Assessment (PSSA) or the Keystone Exams. For example, CDT items are not flagged for low and high *p*-values. While very easy and very difficult items may not be appropriate for summative tests, they are needed in diagnostic item pools so the computer adaptive item selection routine can find appropriate items for students at various levels.

Item analysis results for field-test items are presented in Appendix B.

REVIEW OF ITEMS WITH DATA

In the preceding section on Statistical Analysis of Item Data, it was stated that content-area test development specialists used certain statistics from item and DIF analyses of the field tests to identify items for further review. Specific flagging criteria for this purpose were specified in the previous section. Items not identified for this review were those that had good statistical characteristics and, consequently, were regarded as statistically acceptable, or had extremely poor statistical quality and, consequently were regarded as unacceptable, were removed from the CDT item pools, and needed no further review. However, there were some items that DRC content-area test development specialists and DRC psychometric specialists regarded as needing further review by committees of Pennsylvania educators.

There were separate meetings to review items with data for each field-test event and content area. CDT mathematics items from the spring 2010 stand-alone field test were reviewed by fourteen Pennsylvania educators on August 9, 2010. CDT reading and science items from the fall 2010 stand-alone field test were reviewed by sixteen and fourteen Pennsylvania educators respectively on January 24, 2011. CDT writing items from the spring 2011 stand-alone field test were reviewed by fourteen Pennsylvania educators on August 1, 2011. CDT mathematics and reading items from the spring 2013 embedded field test were reviewed by twenty-two educators respectively on July 16–18, 2013. CDT mathematics, reading, science, and writing items from both the stand-alone and embedded field tests of fall 2013 were reviewed by seven, seven, seven, and eight Pennsylvania educators respectively on January 21–23, 2014. CDT mathematics, reading, science, and writing items from the embedded field tests of fall 2015 were reviewed by 10 Pennsylvania educators for each content group of June 9-10, 2016.

At each of the item data review meetings committee members were first trained with regard to the statistical indices used in item evaluation. This was followed by a discussion with examples concerning reasons that an item might be retained regardless of the statistics. The committee review process involved a brief exploration of possible reasons for the statistical profile of an item (e.g., possible sensitivity/bias, grade appropriateness, instructional issues) and a decision regarding acceptance. DRC content-area test development specialists facilitated the review of the items. Each committee reviewed the pool of field-test items and made recommendations (i.e., accept or reject) for each item.

² Items classified as C+ or C- have strong evidence of DIF. The plus sign indicates that the item favors the focal group (female or black) and a minus sign indicates that the item favors the reference group (male or white). For more details, see the section in this chapter on Differential Item Functioning.

Table 6–13a. CDT Data Review Results for Mathematics in August 2010

Grade/Course	Number of Items Field Tested	Number Flagged and Examined at Data Review Committee	Percent Flagged and Examined at Data Review Committee	Number Rejected by Data Review Committee	Percent Rejected by Data Review Committee	Number Removed from CDT Item Pools (all sources)*	Percent Removed from CDT Item Pools (all sources)*
3	86	4	4.7%	0	0.0%	0	0.0%
4	86	7	8.1%	0	0.0%	0	0.0%
5	85	0	0.0%	0	0.0%	0	0.0%
6	259	6	2.3%	0	0.0%	0	0.0%
7	258	19	7.4%	1	0.4%	1	0.4%
8	257	20	7.8%	1	0.4%	1	0.4%
11	149	13	8.7%	0	0.0%	0	0.0%
Algebra I	256	19	7.4%	6	2.3%	6	2.3%
Geometry	257	12	4.7%	3	1.2%	19	7.4%
Algebra II	256	15	5.9%	1	0.4%	2	0.8%

*Data Review Committee, PDE, and DRC

Table 6–13b. CDT Data Review Results for Reading in January 2011

Grade/Course	Number of Items Field Tested	Number Flagged and Examined at Data Review Committee	Percent Flagged and Examined at Data Review Committee	Number Rejected by Data Review Committee	Percent Rejected by Data Review Committee	Number Removed from CDT Item Pools (all sources)*	Percent Removed from CDT Item Pools (all sources)*
3	86	0	0.0%	0	0.0%	0	0.0%
4	87	2	2.3%	0	0.0%	0	0.0%
5	86	3	3.5%	0	0.0%	0	0.0%
6	210	13	6.2%	1	0.5%	4	1.9%
7	192	8	4.2%	1	0.5%	2	1.0%
8	192	3	1.6%	0	0.0%	2	1.0%
Literature	348	16	4.6%	1	0.3%	8	2.3%

*Data Review Committee, PDE, and DRC

Table 6–13c. CDT Data Review Results for Science in January 2011

Grade/Course	Number of Items Field Tested	Number Flagged and Examined at Data Review Committee	Percent Flagged and Examined at Data Review Committee	Number Rejected by Data Review Committee	Percent Rejected by Data Review Committee	Number Removed from CDT Item Pools (all sources)*	Percent Removed from CDT Item Pools (all sources)*
3	91	4	4.4%	1	1.1%	5	5.5%
4	123	6	4.9%	6	4.9%	9	7.3%
5	102	8	7.8%	3	2.9%	4	3.9%
6	178	13	7.3%	4	2.2%	10	5.6%
7	327	34	10.4%	28	8.6%	64	19.6%
8	377	43	11.4%	33	8.8%	56	14.9%
11	115	26	22.6%	9	7.8%	29	25.2%
Biology	390	43	11.0%	4	1.0%	61	15.6%
Chemistry	335	33	9.9%	8	2.4%	13	3.9%

*Data Review Committee, PDE, and DRC

Table 6–13d. CDT Data Review Results for Writing in August 2011

Grade/Course	Number of Items Field Tested	Number Flagged and Examined at Data Review Committee	Percent Flagged and Examined at Data Review Committee	Number Rejected by Data Review Committee	Percent Rejected by Data Review Committee	Number Removed from CDT Item Pools (all sources)*	Percent Removed from CDT Item Pools (all sources)*
3	140	4	2.9%	1	0.7%	1	0.7%
4	149	10	6.7%	1	0.7%	1	0.7%
5	165	11	6.7%	4	2.4%	4	2.4%
6	193	13	6.7%	5	2.6%	5	2.6%
7	176	16	9.1%	5	2.8%	5	2.8%
8	195	21	10.8%	2	1.0%	2	1.0%
Eng. Comp	365	28	7.7%	10	2.7%	10	2.7%

*Data Review Committee, PDE, and DRC

Table 6–13e. CDT Data Review Results for Mathematics in July 2013

Grade/Course	Number of Items Field Tested	Number Flagged and Examined at Data Review Committee	Percent Flagged and Examined at Data Review Committee	Number Rejected by Data Review Committee	Percent Rejected by Data Review Committee	Number Removed from CDT Item Pools (all sources)*	Percent Removed from CDT Item Pools (all sources)*
6	156	27	17.3%	7	4.5%	7	4.5%
7	73	15	20.5%	2	2.7%	2	2.7%
8	157	39	24.8%	4	2.5%	4	2.5%

*Data Review Committee, PDE, and DRC

Table 6–13f. CDT Data Review Results for Reading in July 2013

Grade/Course	Number of Items Field Tested	Number Flagged and Examined at Data Review Committee	Percent Flagged and Examined at Data Review Committee	Number Rejected by Data Review Committee	Percent Rejected by Data Review Committee	Number Removed from CDT Item Pools (all sources)*	Percent Removed from CDT Item Pools (all sources)*
6	56	1	1.8%	1	1.8%	2	3.6%
7	58	4	6.9%	3	5.2%	4	6.9%
8	57	2	3.5%	1	1.8%	1	1.8%

*Data Review Committee, PDE, and DRC

Table 6–13g. CDT Data Review Results for Mathematics in January 2014

Grade/Course	Number of Items Field Tested	Number Flagged and Examined at Data Review Committee	Percent Flagged and Examined at Data Review Committee	Number Rejected by Data Review Committee	Percent Rejected by Data Review Committee	Number Removed from CDT Item Pools (all sources)*	Percent Removed from CDT Item Pools (all sources)*
K	60	14	23.3%	0	0.0%	1	1.7%
1	90	15	16.7%	0	0.0%	0	0.0%
2	130	11	8.5%	4	3.1%	5	3.8%
3	235	31	13.2%	3	1.3%	6	2.6%
4	248	20	8.1%	4	1.6%	11	4.4%
5	221	21	9.5%	4	1.8%	10	4.5%

*Data Review Committee, PDE, and DRC

Table 6–13h. CDT Data Review Results for Reading in January 2014

Grade/Course	Number of Items Field Tested	Number Flagged and Examined at Data Review Committee	Percent Flagged and Examined at Data Review Committee	Number Rejected by Data Review Committee	Percent Rejected by Data Review Committee	Number Removed from CDT Item Pools (all sources)*	Percent Removed from CDT Item Pools (all sources)*
K	84	11	13.1%	0	0.0%	0	0.0%
1	98	8	8.2%	3	3.1%	3	3.1%
2	98	1	1.0%	0	0.0%	0	0.0%
3	178	17	9.6%	2	1.1%	2	1.1%
4	189	11	5.8%	2	1.1%	2	1.1%
5	134	15	11.2%	0	0.0%	0	0.0%

*Data Review Committee, PDE, and DRC

Table 6–13i. CDT Data Review Results for Science in January 2014

Grade/Course	Number of Items Field Tested	Number Flagged and Examined at Data Review Committee	Percent Flagged and Examined at Data Review Committee	Number Rejected by Data Review Committee	Percent Rejected by Data Review Committee	Number Removed from CDT Item Pools (all sources)*	Percent Removed from CDT Item Pools (all sources)*
K–2	280	31	11.1%	5	1.8%	9	3.2%
3	155	9	5.8%	1	0.6%	4	2.6%
4	213	23	10.8%	4	1.9%	13	6.1%
5	152	44	28.9%	7	4.6%	10	6.6%

*Data Review Committee, PDE, and DRC

Table 6–13j. CDT Data Review Results for Writing in January 2014

Grade/Course	Number of Items Field Tested	Number Flagged and Examined at Data Review Committee	Percent Flagged and Examined at Data Review Committee	Number Rejected by Data Review Committee	Percent Rejected by Data Review Committee	Number Removed from CDT Item Pools (all sources)*	Percent Removed from CDT Item Pools (all sources)*
K	44	13	29.5%	2	4.5%	2	4.5%
1	118	18	15.3%	6	5.1%	6	5.1%
2	117	7	6.0%	3	2.6%	4	3.4%
3	60	4	6.7%	2	3.3%	2	3.3%
4	60	10	16.7%	3	5.0%	3	5.0%
5	71	15	21.1%	6	8.5%	6	8.5%

*Data Review Committee, PDE, and DRC

Table 6–13k. CDT Data Review Results for Mathematics in June 2016

Grade/Course	Number of Items Field Tested	Number Flagged and Examined at Data Review Committee	Percent Flagged and Examined at Data Review Committee	Number Rejected by Data Review Committee	Percent Rejected by Data Review Committee	Number Removed from CDT Item Pools (all sources)*	Percent Removed from CDT Item Pools (all sources)*
6	122	17	13.9%	4	3.3%	4	3.3%
7	177	41	23.3%	10	5.7%	11	6.3%
8	151	31	20.4%	3	2.0%	4	2.6%
Algebra I	150	28	18.7%	1	0.7%	2	1.3%

*Data Review Committee, PDE, and DRC

Table 6–13l. CDT Data Review Results for Reading in June 2016

Grade/Course	Number of Items Field Tested	Number Flagged and Examined at Data Review Committee	Percent Flagged and Examined at Data Review Committee	Number Rejected by Data Review Committee	Percent Rejected by Data Review Committee	Number Removed from CDT Item Pools (all sources)*	Percent Removed from CDT Item Pools (all sources)*
3	22	5	22.7%	0	0.0%	0	0.0%
4	22	6	27.3%	1	4.5%	1	4.5%
5	22	3	13.6%	0	0.0%	1	4.5%
6	126	10	7.9%	1	0.8%	4	3.2%
7	126	10	7.9%	1	0.8%	1	0.8%
8	126	12	9.5%	1	0.8%	3	2.4%
Literature	126	14	11.1%	1	0.8%	2	1.6%

*Data Review Committee, PDE, and DRC

Table 6–13m. CDT Data Review Results for Science in June 2016

Grade/Course	Number of Items Field Tested	Number Flagged and Examined at Data Review Committee	Percent Flagged and Examined at Data Review Committee	Number Rejected by Data Review Committee	Percent Rejected by Data Review Committee	Number Removed from CDT Item Pools (all sources)*	Percent Removed from CDT Item Pools (all sources)*
6	72	12	16.7%	5	6.9%	6	8.3%
7	159	35	22.0%	6	3.8%	6	3.8%
8	238	65	27.3%	12	5.0%	12	5.0%
Biology	136	15	11.0%	1	0.7%	1	0.7%

*Data Review Committee, PDE, and DRC

Table 6–13n. CDT Data Review Results for Writing in June 2016

Grade/Course	Number of Items Field Tested	Number Flagged and Examined at Data Review Committee	Percent Flagged and Examined at Data Review Committee	Number Rejected by Data Review Committee	Percent Rejected by Data Review Committee	Number Removed from CDT Item Pools (all sources)*	Percent Removed from CDT Item Pools (all sources)*
6	93	10	10.8%	3	3.2%	3	3.2%
7	93	9	9.7%	1	1.1%	1	1.1%
8	110	13	11.8%	3	2.7%	4	3.6%
Eng. Comp	104	12	11.5%	2	1.9%	2	1.9%

*Data Review Committee, PDE, and DRC

DIFFERENTIAL ITEM FUNCTIONING

Differential item functioning occurs when examinees with the same ability level but different group memberships do not have the same probability of answering an item correctly. This pattern of results may suggest the presence of item bias. As a statistical concept, however, DIF can be differentiated from item sensitivity/bias, which is a content issue that can arise when an item presents negative group stereotypes, uses language that is more familiar to one subpopulation than to another, or is presented in a format that disadvantages certain learning styles. While the source of item sensitivity/bias is often easily recognized by trained judges, DIF may have no clear cause. However, studying how DIF arises and how it presents itself can help to detect and correct for it.

LIMITATIONS OF STATISTICAL DETECTION

No statistical procedure should be used as a substitute for rigorous, hands-on reviews by content and bias specialists. The statistical results can help organize the review so the effort is concentrated on the most problematic cases. Further, no items should be automatically rejected simply because a statistical method flagged them or accepted because they were not flagged.

Statistical detection of DIF is an inexact science. There have been a variety of methods proposed for detecting DIF, but no one statistic can be considered either necessary or sufficient. Different methods are more or less successful depending on the situation. No analysis can guarantee that a test is free of bias, but almost any thoughtful analysis will uncover the most flagrant problems.

A fundamental shortcoming of all statistical methods used in DIF evaluation is that all are intrinsic to the test being evaluated. If a test is unbiased overall but contains one or two DIF items, any method will locate the problems. If, however, all items on the test show consistent DIF to the disadvantage of a given subpopulation, a statistical analysis of the items will not be able to separate DIF effects from true differences in achievement.

MANTEL-HAENZSEL PROCEDURE OF DIFFERENTIAL ITEM FUNCTIONING

For MC items, the Mantel-Haenszel (MH) procedure (Mantel & Haenszel, 1959) for detecting differential item functioning is a commonly used technique in educational testing. It does not depend on the application or the fit of any specific measurement model. However, it does have significant philosophical overlap with the Rasch model since it uses a test's total score to organize the analysis.

The procedure as implemented by DRC contrasts a focal group with a reference group. While it makes no practical difference in the analysis which group is defined as the focal group, the group most apt to be disadvantaged by a biased measurement is typically defined as the focal group. In these analyses, the focal group was female for gender-based DIF and black for ethnicity-based DIF; reference groups were male and white respectively. The MH statistic for each item is computed from a contingency table. It has two groups (focal and reference) and two outcomes (right or wrong). The ability groups are defined by the test's score distribution for the total examinee population.

The basic MH statistic is a single degree of freedom chi-square that compares the observed number in each cell to the expected number. The expected counts are computed to ensure that the analysis is not confounded with differences in the achievement level of the two groups.

For EBSR items, a comparable statistic is computed based on the standardized mean difference (SMD) (Dorans, Schmitt, & Bleistein, 1992), which is computed as the differences in mean scores for the focal and reference groups if both groups had the same score distribution.

To assist the review committees in interpreting the analyses, the items are assigned a severity code based on the magnitude of the DIF statistic. Items classified as A+ or A- have little or no statistical indication of DIF. Items classified as B+ or B- have some indication of DIF but may be judged to be acceptable for future use. Items classified as C+ or C- have strong evidence of DIF and should be reviewed and possibly rejected from the eligible item pool. The plus sign indicates that the item favors the focal group and a minus sign indicates that the item favors the reference group.

RESULTS AND OBSERVATIONS

Counts of the number of items field tested from each content area and grade/course that were assigned to each severity code are shown in Table 6–14. Some field-test items are classified as N/A (not applicable) because the number of students in either the reference or focal groups who took the item was insufficient for analysis. Where there are sufficient data to run DIF analyses, relatively few items had B or C DIF for the Male/Female or White/Black reference and focal groups.

Table 6–14a. DIF Summary for Mathematics in August 2010

Grade/ Course	Number of Field-test items	Male/ Female A+	Male/ Female A-	Male/ Female B+	Male/ Female B-	Male/ Female C+	Male/ Female C-	Male/ Female N/A*	White/Black A+	White/Black A-	White/Black B+	White/Black B-	White/Black C+	White/Black C-	White/Black N/A*
3	86	49	22	12	1	1	1	0	25	44	3	12	0	2	0
4	86	40	31	7	5	0	3	0	31	33	3	10	0	3	6
5	85	42	36	5	2	0	0	0	19	54	2	10	0	0	0
6	259	121	112	14	8	3	1	0	79	143	8	27	0	2	0
7	258	109	112	18	9	4	6	0	88	124	13	20	0	2	11
8	257	101	104	31	15	5	1	0	62	65	7	14	0	0	109
11	149	53	75	4	11	0	6	0	20	41	1	8	0	1	78
Algebra I	256	122	120	7	6	1	0	0	107	110	9	11	1	3	15
Geometry	257	115	123	7	8	1	3	0	93	109	6	15	1	2	31
Algebra II	256	124	115	6	9	0	2	0	58	89	4	14	2	4	85

N/A* Items with insufficient counts for DIF analysis

The plus sign indicates that the item favors the focal group (female or black) and a minus sign indicates that the item favors the reference group (male or white).

Table 6–14b. DIF Summary for Reading in January 2011

Grade/ Course	Number of Field-test items	Male/ Female A+	Male/ Female A-	Male/ Female B+	Male/ Female B-	Male/ Female C+	Male/ Female C-	Male/ Female N/A*	White/Black A+	White/Black A-	White/Black B+	White/Black B-	White/Black C+	White/Black C-	White/Black N/A*
3	86	41	34	5	6	0	0	0	26	31	2	6	0	0	21
4	87	47	37	1	1	0	1	0	21	45	1	7	1	0	12
5	86	47	27	9	2	1	0	0	28	45	4	7	1	1	0
6	210	103	87	7	10	0	3	0	72	100	7	25	1	5	0
7	192	90	78	9	11	2	2	0	69	68	4	11	1	2	37
8	192	109	67	10	6	0	0	0	22	34	2	6	0	1	127
Literature	348	147	146	21	25	3	6	0	5	5	0	0	0	0	338

N/A* Items with insufficient counts for DIF analysis

The plus sign indicates that the item favors the focal group (female or black) and a minus sign indicates that the item favors the reference group (male or white).

Table 6–14c. DIF Summary for Science in January 2011

Grade/ Course	Number of Field-test items	Male/ Female A+	Male/ Female A-	Male/ Female B+	Male/ Female B-	Male/ Female C+	Male/ Female C-	Male/ Female N/A*	White/Black A+	White/Black A-	White/Black B+	White/Black B-	White/Black C+	White/Black C-	White/Black N/A*
3	91	47	41	1	2	0	0	0	20	29	2	4	0	3	33
4	123	55	53	6	5	3	1	0	15	22	1	5	0	1	79
5	102	48	45	4	2	2	1	0	25	36	3	4	0	0	34
6	178	80	84	4	7	1	2	0	10	11	1	1	0	0	155
7	327	123	143	28	27	2	4	0	58	56	2	15	0	0	196
8	377	155	154	28	32	3	5	0	5	6	0	0	0	1	365
11	115	47	49	4	12	1	2	0	0	0	0	0	0	0	115
Biology	390	154	183	22	23	2	6	0	4	6	0	0	0	0	380
Chemistry	335	143	148	17	21	2	4	0	6	4	2	0	0	0	323

N/A* Items with insufficient counts for DIF analysis

The plus sign indicates that the item favors the focal group (female or black) and a minus sign indicates that the item favors the reference group (male or white).

Table 6–14d. DIF Summary for Writing in August 2011

Grade/ Course	Number of Field-test items	Male/ Female A+	Male/ Female A-	Male/ Female B+	Male/ Female B-	Male/ Female C+	Male/ Female C-	Male/ Female N/A*	White/Black A+	White/Black A-	White/Black B+	White/Black B-	White/Black C+	White/Black C-	White/Black N/A*
3	140	71	59	4	4	1	1	0	24	44	3	4	0	0	65
4	149	69	67	7	5	1	0	0	15	26	3	2	0	0	103
5	165	78	62	15	7	3	0	0	12	14	1	2	0	1	135
6	193	94	82	8	7	1	1	0	53	67	4	12	0	4	53
7	176	73	81	16	3	3	0	0	11	20	1	3	0	0	141
8	195	95	81	10	3	3	3	0	4	3	0	2	0	1	185
Eng Comp	365	157	155	29	18	4	2	0	3	5	1	0	0	1	355

N/A* Items with insufficient counts for DIF analysis

The plus sign indicates that the item favors the focal group (female or black) and a minus sign indicates that the item favors the reference group (male or white).

Table 6–14e. DIF Summary for Mathematics in July 2013

Grade/ Course	Number of Field-test items	Male/ Female A+	Male/ Female A-	Male/ Female B+	Male/ Female B-	Male/ Female C+	Male/ Female C-	Male/ Female N/A*	White/Black A+	White/Black A-	White/Black B+	White/Black B-	White/Black C+	White/Black C-	White/Black N/A*
3	56	0	0	0	0	0	0	56	0	0	0	0	0	0	56
4	67	0	0	0	0	0	0	67	0	0	0	0	0	0	67
5	41	0	0	0	0	0	0	41	0	0	0	0	0	0	41
6	156	67	65	9	14	1	0	0	2	1	0	2	0	0	151
7	73	37	32	2	1	0	1	0	13	16	1	4	0	0	39
8	157	72	63	8	12	2	0	0	2	5	0	1	0	0	149

N/A* Items with insufficient counts for DIF analysis or those that were re-field tested in fall 2013.

The plus sign indicates that the item favors the focal group (female or black) and a minus sign indicates that the item favors the reference group (male or white).

Table 6–14f. DIF Summary for Reading in July 2013

Grade/ Course	Number of Field-test items	Male/ Female A+	Male/ Female A-	Male/ Female B+	Male/ Female B-	Male/ Female C+	Male/ Female C-	Male/ Female N/A*	White/Black A+	White/Black A-	White/Black B+	White/Black B-	White/Black C+	White/Black C-	White/Black N/A*
3	58	0	0	0	0	0	0	58	0	0	0	0	0	0	58
4	71	0	0	0	0	0	0	71	0	0	0	0	0	0	71
5	60	0	0	0	0	0	0	60	0	0	0	0	0	0	60
6	56	29	21	4	2	0	0	0	4	6	0	2	0	0	44
7	58	29	21	4	3	1	0	0	11	34	1	3	0	0	9
8	57	34	20	2	1	0	0	0	13	38	0	5	0	1	0

N/A* Items with insufficient counts for DIF analysis or those that were re-field tested in fall 2013.

The plus sign indicates that the item favors the focal group (female or black) and a minus sign indicates that the item favors the reference group (male or white).

Table 6–14g. DIF Summary for Mathematics in January 2014

Grade/ Course	Number of Field-test items	Male/ Female A+	Male/ Female A-	Male/ Female B+	Male/ Female B-	Male/ Female C+	Male/ Female C-	Male/ Female N/A*	White/Black A+	White/Black A-	White/Black B+	White/Black B-	White/Black C+	White/Black C-	White/Black N/A*
K	60	31	19	6	3	1	0	0	6	14	1	5	0	2	32
1	90	40	38	8	4	0	0	0	18	25	0	5	0	0	42
2	130	47	56	7	16	1	3	0	24	32	3	4	0	1	66
3	235	101	101	11	15	4	3	0	28	41	2	5	1	1	157
4	248	105	110	16	14	2	1	0	37	44	7	11	0	2	147
5	221	108	84	13	12	2	2	0	31	41	3	8	0	1	137

N/A* Items with insufficient counts for DIF analysis or those that were re-field tested in fall 2013.

The plus sign indicates that the item favors the focal group (female or black) and a minus sign indicates that the item favors the reference group (male or white).

Table 6–14h. DIF Summary for Reading in January 2014

Grade/ Course	Number of Field-test items	Male/ Female A+	Male/ Female A-	Male/ Female B+	Male/ Female B-	Male/ Female C+	Male/ Female C-	Male/ Female N/A*	White/Black A+	White/Black A-	White/Black B+	White/Black B-	White/Black C+	White/Black C-	White/Black N/A*
K	84	50	21	9	2	2	0	0	9	10	0	3	0	0	62
1	98	57	31	6	3	1	0	0	7	11	0	0	0	0	80
2	98	47	43	3	4	0	1	0	5	13	0	2	0	0	78
3	178	81	75	8	10	3	1	0	54	69	5	11	0	1	38
4	189	93	78	12	6	0	0	0	40	54	2	7	0	2	84
5	134	75	49	6	2	0	2	0	23	53	1	6	0	2	49

N/A* Items with insufficient counts for DIF analysis.

The plus sign indicates that the item favors the focal group (female or black) and a minus sign indicates that the item favors the reference group (male or white).

Table 6–14i. DIF Summary for Science in January 2014

Grade/ Course	Number of Field-test items	Male/ Female A+	Male/ Female A-	Male/ Female B+	Male/ Female B-	Male/ Female C+	Male/ Female C-	Male/ Female N/A*	White/Black A+	White/Black A-	White/Black B+	White/Black B-	White/Black C+	White/Black C-	White/Black N/A*
K–2	280	130	108	8	13	1	0	20	0	0	0	0	0	0	280
3	155	69	70	9	4	2	1	0	3	2	0	0	0	0	150
4	213	94	93	12	12	1	1	0	0	0	0	0	0	0	213
5	152	58	61	6	8	0	0	19	1	0	0	0	0	0	151

N/A* Items with insufficient counts for DIF analysis.

The plus sign indicates that the item favors the focal group (female or black) and a minus sign indicates that the item favors the reference group (male or white).

Table 6–14j. DIF Summary for Writing in January 2014

Grade/ Course	Number of Field-test items	Male/ Female A+	Male/ Female A-	Male/ Female B+	Male/ Female B-	Male/ Female C+	Male/ Female C-	Male/ Female N/A*	White/Black A+	White/Black A-	White/Black B+	White/Black B-	White/Black C+	White/Black C-	White/Black N/A*
K	44	20	22	2	0	0	0	0	0	0	0	0	0	0	44
1	118	71	42	2	3	0	0	0	0	0	0	0	0	0	118
2	117	56	49	6	5	1	0	0	0	0	0	0	0	0	117
3	60	33	22	3	1	0	1	0	12	17	4	7	0	0	20
4	60	24	29	4	1	2	0	0	20	14	0	6	0	0	20
5	71	40	22	5	3	1	0	0	0	0	0	0	0	0	71

N/A* Items with insufficient counts for DIF analysis.

The plus sign indicates that the item favors the focal group (female or black) and a minus sign indicates that the item favors the reference group (male or white)

Table 6–14k. DIF Summary for Mathematics in June 2016

Grade/ Course	Number of Field-test items	Male/ Female A+	Male/ Female A-	Male/ Female B+	Male/ Female B-	Male/ Female C+	Male/ Female C-	Male/ Female N/A*	White/Black A+	White/Black A-	White/Black B+	White/Black B-	White/Black C+	White/Black C-	White/Black N/A*
6	122	74	48	0	0	0	0	0	48	69	0	3	0	2	0
7	177	74	82	5	9	3	3	1	46	105	1	15	0	6	4
8	151	63	76	4	4	1	2	1	49	55	6	11	0	3	27
Algebra I	150	82	65	1	1	0	0	1	50	96	0	3	0	0	1

N/A* Items with insufficient counts for DIF analysis or those that were re-field tested in fall 2013.

The plus sign indicates that the item favors the focal group (female or black) and a minus sign indicates that the item favors the reference group (male or white).

Table 6–14l. DIF Summary for Reading in June 2016

Grade/ Course	Number of Field-test items	Male/ Female A+	Male/ Female A-	Male/ Female B+	Male/ Female B-	Male/ Female C+	Male/ Female C-	Male/ Female N/A*	White/Black A+	White/Black A-	White/Black B+	White/Black B-	White/Black C+	White/Black C-	White/Black N/A*
3	22	9	10	0	2	0	0	1	2	11	0	3	0	0	6
4	22	8	7	2	0	0	1	4	3	4	1	0	0	0	14
5	22	10	8	0	0	0	0	4	4	7	0	1	0	0	10
6	126	63	56	3	0	0	1	3	42	75	0	5	0	1	3
7	126	81	37	7	1	0	0	0	48	71	0	7	0	0	0
8	126	68	52	3	1	0	0	2	44	75	0	5	0	0	2
Literature	126	68	51	5	1	0	0	1	41	82	0	2	0	0	1

N/A* Items with insufficient counts for DIF analysis.

The plus sign indicates that the item favors the focal group (female or black) and a minus sign indicates that the item favors the reference group (male or white).

Table 6–14m. DIF Summary for Science in June 2016

Grade/ Course	Number of Field-test items	Male/ Female A+	Male/ Female A-	Male/ Female B+	Male/ Female B-	Male/ Female C+	Male/ Female C-	Male/ Female N/A*	White/Black A+	White/Black A-	White/Black B+	White/Black B-	White/Black C+	White/Black C-	White/Black N/A*
6	72	37	31	2	2	0	0	0	19	30	2	6	0	0	15
7	159	75	67	5	10	0	2	0	31	54	2	13	0	1	58
8	238	106	106	11	8	4	3	0	36	69	4	17	0	0	112
Biology	136	64	70	1	1	0	0	0	34	101	0	1	0	0	0

N/A* Items with insufficient counts for DIF analysis.

The plus sign indicates that the item favors the focal group (female or black) and a minus sign indicates that the item favors the reference group (male or white).

Table 6–14n. DIF Summary for Writing in June 2016

Grade/ Course	Number of Field-test items	Male/ Female A+	Male/ Female A-	Male/ Female B+	Male/ Female B-	Male/ Female C+	Male/ Female C-	Male/ Female N/A*	White/Black A+	White/Black A-	White/Black B+	White/Black B-	White/Black C+	White/Black C-	White/Black N/A*
6	93	53	34	2	4	0	0	0	26	27	2	11	0	0	27
7	93	48	38	2	3	2	0	0	6	13	1	3	0	0	70
8	110	66	38	3	1	1	1	0	3	6	0	2	0	0	99
Eng Comp	104	50	40	9	3	1	1	0	0	0	0	0	0	0	104

N/A* Items with insufficient counts for DIF analysis.

The plus sign indicates that the item favors the focal group (female or black) and a minus sign indicates that the item favors the reference group (male or white).

CHAPTER SEVEN: CLASSICAL ITEM STATISTICS

This chapter provides an overview of the two most familiar item-level statistics obtained from classical (traditional) item analysis: item difficulty and item discrimination. The following results pertain to all items field tested in the stand-alone and embedded field-test events. Other statistics such as Rasch item statistics are discussed in Chapter Eight.

ITEM-LEVEL STATISTICS

Appendix B provides classical item statistics for all items in mathematics, reading, science, and writing. Results are organized by content area, field-test event, and item type (multiple-choice and evidence-based selected-response). These statistics represent the item characteristics most often used to determine whether an item functioned properly and/or how a group of students performed on a particular item. The item statistics in Appendix B include:

- Number of students taking the item (denoted as N)
- Indicators of item difficulty (denoted as P Val)
 - p -values for multiple-choice (MC) items
 - item mean divided by maximum possible item score for evidence-based selected-response (EBSR) items
- Proportions by response option or score point
 - proportions of students who chose each response option for MC items (denoted as $P(A)$, $P(B)$, $P(C)$, $P(D)$)
 - proportions of students who gained each score point for EBSR items (denoted as $P(0)$, $P(1)$, $P(2)$, and/or $P(3)$)
 - Proportions of students who did not respond to an item (denoted as $P(-)$)
- Indicators of item discrimination
 - item-total correlations (denoted as $PtBis$)
 - point-biserial correlation for each response option for MC items (denoted as $PT(A)$, $PT(B)$, $PT(C)$, and $PT(D)$)
 - point-biserial correlation for each score point for EBSR items (denoted as $PT(0)$, $PT(1)$, $PT(2)$, and $PT(3)$)

ITEM DIFFICULTY

At the most general level, an item's difficulty is indicated by its mean score in some specified group (e.g., grade level).

$$\bar{x} = \frac{1}{n} \cdot \sum_{i=1}^n x_i$$

In the mean score formula above, the individual item scores (x_i) are summed and then divided by the total number of students (n). For MC items, student scores are represented by 0s and 1s (0 = wrong, 1 = right). With 0/1 scoring, the equation above also represents the number of students correctly answering the item divided by the total number of students. So, this is also the *proportion correct* for the item, or as it is better known, the p -value. In theory, p -values can range from 0.00¹ to 1.00 on the proportion-correct scale. For example, if an item has a p -value of 0.89, it means 89 percent of the students answered the item correctly. Additionally, this value might also suggest that the item is relatively easy and/or the students who attempted the item are relatively high achievers. In other words, item difficulty and student ability are somewhat confounded.

¹ For multiple-choice (MC) items with four response options, pure random guessing would lead to an expected p -value of 0.25.

For EBSR items, mean scores can range from the minimum possible score of zero to the maximum possible score of either two or three depending upon the item. A *pseudo p*-value is provided for an EBSR item by dividing the mean item score by the maximum possible item score.

The minimum and maximum extremes of the difficulty scale are virtually never seen in applied practice. However, understanding what those values are helps illustrate that relatively lower values correspond to more difficult items and that relatively higher values correspond to easier items. (Because of this, some assert that this index would be better referred to as the item's *easiness*.)

Item difficulty is an important consideration for the Classroom Diagnostic Tools (CDT) because it is a computer adaptive test. The item selection routine selects items based on student performance during the test. While very easy or very difficult items may not be appropriate for many students, they are needed in the CDT item pools to ensure that the item selection routine can find appropriate items for students at various levels.

Utilizing the proportion of students who chose each MC option can be helpful for verifying keys. For example, if a large proportion of students chose a distractor instead of the key answer, it may, but not always, indicate the key is not correct.

ITEM DISCRIMINATION

At the most general level, item discrimination² indicates an item's ability to differentiate between high and low achievers. It is expected that students with high ability (i.e., those who perform well on the CDT overall) would be more likely to answer any given CDT item correctly, while students with low ability (i.e., those who perform poorly on the CDT overall) would be more likely to answer the same item incorrectly. For the CDT, Pearson's product-moment correlation coefficient between item scores and test scores is used to indicate discrimination. The correlation coefficient can range from -1.0 to +1.0. If the aforementioned expectation is met (high-scoring students tend to get the item right while low-scoring students do not), the correlation between the item score and the total test score will be both positive and noticeably large in its magnitude (i.e., well above zero), meaning the item is a good discriminator between high- and low-ability students.

Item total correlation for each option is another indicator of an item's ability to differentiate between high and low achievers. It is expected that students with high ability (i.e., those who perform well on the CDT overall) would be less likely to choose any distractors, while students with low ability (i.e., those who perform poorly on the CDT overall) would be more likely to choose a distractor. In other words, the item total correlations for the distractors are expected to be negative.

In summary, the correlation will be positive in value when the mean test score of the students answering the item correctly is higher than the mean test score of the students answering the item incorrectly.³ In other words, this indicates that students who did well on the total test tended to do well on the item, as well. However, an interaction can exist between item discrimination and item difficulty. Items answered correctly (or incorrectly) by a large proportion of examinees (i.e., they have extreme *p*-values) can have reduced power to discriminate, and, thus, can have lower correlations.

Discrimination is an important consideration for the operational CDT because the use of more discriminating items on a test is associated with more precise score estimates (i.e., there will be smaller confidence intervals around the scores).

OBSERVATIONS AND INTERPRETATIONS

Table 7–1 provides the mean *p*-values and point-biserial correlations for the CDT item pools in each content area. The mean *p*-value ranged from about 0.354 to 0.824. The mean point-biserial correlations ranged from 0.204 to 0.462.

² As noted earlier, the discrimination index for dichotomous MC items is typically referred to as the *point-biserial correlation coefficient*. For EBSR items, the *item-test correlation* is sometimes used.

³ It is legitimate to view the point-biserial correlation as a standardized mean. A positive value indicates students who chose that response had a higher mean score than the average student; a negative value indicates students who chose that response had a lower-than-average mean score.

It is difficult to make global conclusions about overall quality from these item statistics alone. With that caveat in mind, the results presented in this chapter indicate that the CDT item pools contain items within expected and acceptable ranges of item difficulty and discrimination.

Table 7–1. Mean Pvalue and Point-Biserial

Meeting Date	Content Area	Grade/Course	Number of Items Field Tested	Mean P-value	Mean Point-Biserial
Aug 2010	Mathematics	3	86	0.824	0.415
Aug 2010	Mathematics	4	86	0.737	0.414
Aug 2010	Mathematics	5	85	0.717	0.439
Aug 2010	Mathematics	6	259	0.684	0.413
Aug 2010	Mathematics	7	258	0.575	0.432
Aug 2010	Mathematics	8	257	0.497	0.361
Aug 2010	Mathematics	11	149	0.521	0.339
Aug 2010	Mathematics	Algebra I	256	0.411	0.317
Aug 2010	Mathematics	Geometry	257	0.439	0.349
Aug 2010	Mathematics	Algebra II	256	0.419	0.369
Jan 2011	Reading	3	86	0.595	0.437
Jan 2011	Reading	4	87	0.665	0.440
Jan 2011	Reading	5	86	0.666	0.433
Jan 2011	Reading	6	210	0.607	0.423
Jan 2011	Reading	7	192	0.679	0.395
Jan 2011	Reading	8	192	0.623	0.404
Jan 2011	Reading	Literature	348	0.568	0.408
Jan 2011	Science	3	91	0.637	0.371
Jan 2011	Science	4	123	0.602	0.348
Jan 2011	Science	5	102	0.482	0.335
Jan 2011	Science	6	178	0.503	0.322
Jan 2011	Science	7	327	0.486	0.322
Jan 2011	Science	8	377	0.504	0.335
Jan 2011	Science	11	115	0.381	0.238
Jan 2011	Science	Biology	390	0.420	0.294
Jan 2011	Science	Chemistry	335	0.355	0.255
Aug 2011	Writing	3	140	0.584	0.392
Aug 2011	Writing	4	149	0.566	0.372
Aug 2011	Writing	5	165	0.566	0.380
Aug 2011	Writing	6	193	0.556	0.369
Aug 2011	Writing	7	176	0.550	0.346
Aug 2011	Writing	8	195	0.538	0.332
Aug 2011	Writing	English Composition	365	0.514	0.357
July 2013	Mathematics	6	156	0.448	0.290

Table 7–1 (continued). Mean *P*-value and Point-Biserial

Meeting Date	Content Area	Grade/Course	Number of Items Field Tested	Mean <i>P</i> -value	Mean Point-Biserial
July 2013	Mathematics	7	73	0.431	0.257
July 2013	Mathematics	8	157	0.354	0.204
July 2013	Reading	6	56	0.585	0.351
July 2013	Reading	7	58	0.545	0.339
July 2013	Reading	8	57	0.577	0.358
Jan 2014	Mathematics	K	60	0.798	0.408
Jan 2014	Mathematics	1	90	0.801	0.426
Jan 2014	Mathematics	2	130	0.695	0.437
Jan 2014	Mathematics	3	235	0.596	0.413
Jan 2014	Mathematics	4	248	0.595	0.413
Jan 2014	Mathematics	5	221	0.508	0.326
Jan 2014	Reading	K	84	0.734	0.426
Jan 2014	Reading	1	98	0.575	0.415
Jan 2014	Reading	2	98	0.506	0.441
Jan 2014	Reading	3	178	0.546	0.398
Jan 2014	Reading	4	189	0.577	0.413
Jan 2014	Reading	5	134	0.566	0.364
Jan 2014	Science	K–2 span	280	0.619	0.404
Jan 2014	Science	3	155	0.641	0.391
Jan 2014	Science	4	213	0.570	0.362
Jan 2014	Science	5	152	0.424	0.240
Jan 2014	Writing	K	44	0.823	0.462
Jan 2014	Writing	1	118	0.729	0.444
Jan 2014	Writing	2	117	0.642	0.444
Jan 2014	Writing	3	60	0.626	0.415
Jan 2014	Writing	4	60	0.642	0.398
Jan 2014	Writing	5	71	0.550	0.326
June 2016	Mathematics	6	122	0.473	0.298
June 2016	Mathematics	7	177	0.456	0.286
June 2016	Mathematics	8	151	0.396	0.232
June 2016	Mathematics	Algebra I	150	0.414	0.228
June 2016	Reading	3	22	0.467	0.430
June 2016	Reading	4	22	0.568	0.421
June 2016	Reading	5	22	0.603	0.394
June 2016	Reading	6	126	0.535	0.360
June 2016	Reading	7	126	0.557	0.397
June 2016	Reading	8	126	0.577	0.398

Table 7–1 (continued). Mean *P*-value and Point-Biserial

Meeting Date	Content Area	Grade/Course	Number of Items Field Tested	Mean <i>P</i>-value	Mean Point-Biserial
June 2016	Reading	Literature	126	0.532	0.339
June 2016	Science	6	72	0.431	0.233
June 2016	Science	7	159	0.446	0.231
June 2016	Science	8	238	0.447	0.236
June 2016	Science	Biology	136	0.439	0.246
June 2016	Writing	6	93	0.531	0.327
June 2016	Writing	7	93	0.522	0.322
June 2016	Writing	8	110	0.504	0.308
June 2016	Writing	English Composition	104	0.485	0.298

CHAPTER EIGHT: RASCH ITEM CALIBRATION

The particular item response theory (IRT) model used for the Classroom Diagnostic Tools (CDT) is based on the work of Georg Rasch. Rasch models have had a long-standing presence in applied testing programs and have been the methodology used to calibrate the Pennsylvania System of School Assessment (PSSA) items and Keystone Exam items. Consequently, this model was chosen to be used for the CDT. IRT has several advantages over classical test theory, so it has become the standard procedure for analyzing item response data in large-scale assessments. However, IRT models make a number of strong assumptions related to dimensionality, local independence, and model-data fit. Resulting inferences derived from any application of IRT rest strongly on the degree to which the underlying assumptions are met.

This chapter outlines the procedures used for calibrating the CDT items. Generally, item calibration is the process of assigning a difficulty-parameter estimate to each item so that they are placed onto a common scale. This chapter briefly introduces the Rasch model and reports the results from evaluations of the adequacy of the Rasch assumptions. See Chapter Nine for a description of the common scale across grades and courses within a content area and for summaries of the Rasch item statistics for the CDT item pools.

DESCRIPTION OF THE RASCH MODEL

The Rasch partial credit model (RPCM) (Wright & Masters, 1982) was used to calibrate CDT items because both multiple-choice (MC) and evidence-based selected-response (EBSR) items were part of the item pools. The RPCM extends the Rasch model (Rasch, 1960) for dichotomous (0, 1) items so that it accommodates the polytomous EBSR items. Under the RPCM, for a given item i with m_i score categories, the probability of person n scoring x ($x = 0, 1, 2, \dots, m_i$) is given by:

$$P_{ni}(X = x) = \frac{\exp \sum_{j=0}^x (\theta_n - D_{ij})}{\sum_{k=0}^{m_i} \exp \sum_{j=0}^k (\theta_n - D_{ij})}, \quad x = 0, 1, \dots, m_i$$

where θ_n represents a student's proficiency (ability) level, and D_{ij} is the step difficulty of the j^{th} step on item i . For dichotomous MC items, the RPCM reduces to the standard Rasch model and the single step difficulty is referred to as the item's difficulty. The Rasch model predicts the probability of person n getting item i correct as follows:

$$P_{ni}(X = 1) = \frac{\exp(\theta_n - D_{ij})}{1 + \exp(\theta_n - D_{ij})}.$$

The Rasch model places both student ability and item difficulty (estimated in terms of log-odds or logits) on the same continuum. When the model assumptions are met, it also provides person ability estimates that are independent of the items employed in the assessment, and, conversely, estimates item difficulty independently of the sample of examinees.

SOFTWARE AND ESTIMATION ALGORITHM

Item calibration was implemented via the WINSTEPS 3.69 computer program (Linacre, 2009). The unconditional, joint maximum likelihood (UCON) estimation procedure estimates the person parameters (i.e., ability) simultaneously with the item parameters (i.e., difficulty).

CHECKING RASCH ASSUMPTIONS

Because the Rasch model was the basis of all calibration, scoring, and scaling analyses associated with the CDT, the validity of the inferences from these results depends on the degree to which the assumptions of the model are met and how well the model fits the test data. Therefore, it is important to check these assumptions. This section evaluates the dimensionality of the data, local item independence, and model-data fit at the item level. Though a variety of methods are available for assessing these issues, the Rasch analyses and criteria available from WINSTEPS were used here.

UNIDIMENSIONALITY

Rasch models assume that one dominant dimension determines the difference in students' performances. WINSTEPS provides results from a principal components analysis (PCA) that can be used to assess the unidimensionality assumption. Different from standard applications of PCA, WINSTEPS conducts its PCA on the response residuals, not the original observations. That is, the primary dimension from the Rasch model is removed first and then the residual variance is analyzed. The purpose of the analysis is to verify whether any other dominant components exist among the residuals (i.e., they account for a practically significant amount of residual variance). If any other dimensions are found, the unidimensionality assumption would be violated.

WINSTEPS provides three PCA residuals: raw, standardized, and logit. All three should yield similar results. The mixed residual setting was used for the PCA because previous research has demonstrated that raw residuals (PRCOMP=R) give a more realistic estimate of explained variance than do standardized residuals (PRCOMP=S), and standardized residuals are better for decomposing the unexplained variance into contrasts (Linacre, 2009).

Table 8–1 presents the PCA results for the CDT Mathematics item pool. The results include the total variance, variance explained by the model, unexplained total variance, and unexplained variance explained by the first factor (both eigenvalue units and percentage values are shown in the table). In addition, the modeled column provides variance components that would be explained if the data complied with the Rasch definition of unidimensionality.

As can be seen from Table 8–1, the primary dimension in the Rasch model explained between 21 and 63 percent of the total variances across the grades and courses. The empirical and model-based percentages were close, suggesting that the estimation of a primary Rasch dimension was successful. The unexplained variances were between 38 and 79 percent. This includes the Rasch-predicted randomness and any departures in the data from the Rasch model (e.g., departure from unidimensionality).

The most important variance for evaluating dimensionality is in the row named “unexplained variance explained by 1st factor.” The eigenvalue of unexplained total variance equals the total number of items, since PCA was conducted with residuals. The eigenvalues of the first factor in the residual (again, this is the second dimension beyond the first Rasch model dimension in WINSTEPS PCA) were between 0.3 and 0.9 percent. Overall, WINSTEPS PCA suggests that there is one clearly dominant dimension for the CDT mathematics item pool.

Table 8–1. Results from PCA of Residuals in WINSTEPS for Mathematics

Date	Grade/Course	Statistic	Eigenvalue	Empirical	Modeled
Aug 2010	3	Total variance in observations	208.5	100.0%	100.0%
Aug 2010	3	Variance explained by model	122.5	58.7%	58.5%
Aug 2010	3	Unexplained variance (total)	86	41.3%	41.5%
Aug 2010	3	Unexplained variance explained by 1st factor	1.6	0.8%	
Aug 2010	4	Total variance in observations	167.8	100.0%	100.0%
Aug 2010	4	Variance explained by model	81.8	48.7%	48.1%
Aug 2010	4	Unexplained variance (total)	86	51.3%	51.9%
Aug 2010	4	Unexplained variance explained by 1st factor	1.5	0.9%	
Aug 2010	5	Total variance in observations	177.3	100.0%	100.0%
Aug 2010	5	Variance explained by model	92.3	52.1%	52.9%
Aug 2010	5	Unexplained variance (total)	85	47.9%	47.1%
Aug 2010	5	Unexplained variance explained by 1st factor	1.5	0.9%	
Aug 2010	6	Total variance in observations	606.2	100.0%	100.0%
Aug 2010	6	Variance explained by model	347.2	57.3%	58.0%
Aug 2010	6	Unexplained variance (total)	259	42.7%	42.0%
Aug 2010	6	Unexplained variance explained by 1st factor	2.0	0.3%	
Aug 2010	7	Total variance in observations	529.8	100.0%	100.0%
Aug 2010	7	Variance explained by model	271.8	51.3%	52.3%
Aug 2010	7	Unexplained variance (total)	258	48.7%	47.7%
Aug 2010	7	Unexplained variance explained by 1st factor	2.2	0.4%	
Aug 2010	8	Total variance in observations	476.9	100.0%	100.0%
Aug 2010	8	Variance explained by model	219.9	46.1%	47.3%
Aug 2010	8	Unexplained variance (total)	257	53.9%	52.7%
Aug 2010	8	Unexplained variance explained by 1st factor	2.1	0.4%	
Aug 2010	Algebra I*	Total variance in observations	365.4	100.0%	100.0%
Aug 2010	Algebra I*	Variance explained by model	109.4	29.9%	30.6%
Aug 2010	Algebra I*	Unexplained variance (total)	256	70.1%	69.4%
Aug 2010	Algebra I*	Unexplained variance explained by 1st factor	1.9	0.5%	
Aug 2010	Geometry*	Total variance in observations	408.9	100.0%	100.0%
Aug 2010	Geometry*	Variance explained by model	151.9	37.2%	38.3%
Aug 2010	Geometry*	Unexplained variance (total)	257	62.8%	61.7%
Aug 2010	Geometry*	Unexplained variance explained by 1st factor	1.9	0.5%	

*Grade 11 items were tested on grade 8, Algebra I, Geometry, and Algebra II forms.

Table 8–1 (continued). Results from PCA of Residuals in WINSTEPS for Mathematics

Date	Grade/Course	Statistic	Eigenvalue	Empirical	Modeled
Aug 2010	Algebra II*	Total variance in observations	464.8	100.0%	100.0%
Aug 2010	Algebra II*	Variance explained by model	208.8	44.9%	46.1%
Aug 2010	Algebra II*	Unexplained variance (total)	256	55.1%	53.9%
Aug 2010	Algebra II*	Unexplained variance explained by 1st factor	2.0	0.4%	
July 2013	6	Total variance in observations	323.3	100.0%	100.0%
July 2013	6	Variance explained by model	167.3	51.7%	48.4%
July 2013	6	Unexplained variance (total)	156	48.3%	51.6%
July 2013	6	Unexplained variance explained by 1st factor	1.3	0.4%	
July 2013	7	Total variance in observations	148.3	100.0%	100.0%
July 2013	7	Variance explained by model	75.3	50.8%	48.7%
July 2013	7	Unexplained variance (total)	73	49.2%	51.3%
July 2013	7	Unexplained variance explained by 1st factor	1.1	0.8%	
July 2013	8	Total variance in observations	243.3	100.0%	100.0%
July 2013	8	Variance explained by model	86.3	35.5%	33.0%
July 2013	8	Unexplained variance (total)	157	64.5%	67.0%
July 2013	8	Unexplained variance explained by 1st factor	1.3	0.6%	
Jan 2014	K–2**	Total variance in observations	728.0	100.0%	100.0%
Jan 2014	K–2**	Variance explained by model	448.0	61.5%	60.5%
Jan 2014	K–2**	Unexplained variance (total)	280	38.5%	39.5%
Jan 2014	K–2**	Unexplained variance explained by 1st factor	1.8	0.3%	
Jan 2014	3	Total variance in observations	564.0	100.0%	100.0%
Jan 2014	3	Variance explained by model	329.0	58.3%	59.4%
Jan 2014	3	Unexplained variance (total)	235	41.7%	40.6%
Jan 2014	3	Unexplained variance explained by 1st factor	1.9	0.3%	
Jan 2014	4	Total variance in observations	646.9	100.0%	100.0%
Jan 2014	4	Variance explained by model	398.9	61.7%	62.5%
Jan 2014	4	Unexplained variance (total)	248	38.3%	37.5%
Jan 2014	4	Unexplained variance explained by 1st factor	1.9	0.3%	
Jan 2014	5	Total variance in observations	417.9	100.0%	100.0%
Jan 2014	5	Variance explained by model	196.9	47.1%	43.1%
Jan 2014	5	Unexplained variance (total)	221	52.9%	56.9%
Jan 2014	5	Unexplained variance explained by 1st factor	1.2	0.3%	
June 2016	6	Total variance in observations	212.5	100.0%	100.0%
June 2016	6	Variance explained by model	94.5	44.5%	39.8%
June 2016	6	Unexplained variance (total)	118	55.5%	60.2%
June 2016	6	Unexplained variance explained by 1st factor	1.1	0.5%	

*Grade 11 items were tested on grade 8, Algebra I, Geometry, and Algebra II forms.

**Items in kindergarten through grade 2 were co-mingled on forms taken by students in grade 3.

Table 8–1 (continued). Results from PCA of Residuals in WINSTEPS for Mathematics.

Date	Grade/Course	Statistic	Eigenvalue	Empirical	Modeled
June 2016	7	Total variance in observations	267.9	100.0%	100.0%
June 2016	7	Variance explained by model	101.9	38.0%	32.0%
June 2016	7	Unexplained variance (total)	166	62.0%	68.0%
June 2016	7	Unexplained variance explained by 1st factor	1.1	0.4%	
June 2016	8	Total variance in observations	197.5	100.0%	100.0%
June 2016	8	Variance explained by model	50.5	25.6%	20.9%
June 2016	8	Unexplained variance (total)	147	74.4%	79.1%
June 2016	8	Unexplained variance explained by 1st factor	1.1	0.6%	
June 2016	Algebra I	Total variance in observations	243.8	100.0%	100.0%
June 2016	Algebra I	Variance explained by model	95.8	39.3%	36.8%
June 2016	Algebra I	Unexplained variance (total)	148	60.7%	63.2%
June 2016	Algebra I	Unexplained variance explained by 1st factor	1.1	0.4%	

Table 8–2 presents the PCA results for the CDT reading item pool. The primary dimension in the Rasch model explained between 37 and 58 percent of the total variances across the grades and courses. The second dimension (the row named “unexplained variance explained by 1st factor”) accounted for between 0.3 and 3.2 percent of the total variance in observations. These results suggest that the CDT reading item pool essentially measures a single dominant dimension.

Table 8–2. Results from PCA of Residuals in WINSTEPS for Reading

Date	Grade/Course	Statistic	Eigenvalue	Empirical	Modeled
Jan 2011	3	Total variance in observations	179.8	100.0%	100.0%
Jan 2011	3	Variance explained by model	93.8	52.2%	51.9%
Jan 2011	3	Unexplained variance (total)	86	47.8%	48.1%
Jan 2011	3	Unexplained variance explained by 1st factor	1.7	0.9%	
Jan 2011	4	Total variance in observations	157.4	100.0%	100.0%
Jan 2011	4	Variance explained by model	70.4	44.7%	43.9%
Jan 2011	4	Unexplained variance (total)	87	55.3%	56.1%
Jan 2011	4	Unexplained variance explained by 1st factor	1.6	1.0%	
Jan 2011	5	Total variance in observations	171.5	100.0%	100.0%
Jan 2011	5	Variance explained by model	85.5	49.8%	50.5%
Jan 2011	5	Unexplained variance (total)	86	50.2%	49.5%
Jan 2011	5	Unexplained variance explained by 1st factor	1.7	1.0%	
Jan 2011	6	Total variance in observations	442.8	100.0%	100.0%
Jan 2011	6	Variance explained by model	232.8	52.6%	53.5%
Jan 2011	6	Unexplained variance (total)	210	47.4%	46.5%
Jan 2011	6	Unexplained variance explained by 1st factor	2.3	0.5%	
Jan 2011	7	Total variance in observations	364.4	100.0%	100.0%
Jan 2011	7	Variance explained by model	172.4	47.3%	46.8%
Jan 2011	7	Unexplained variance (total)	192	52.7%	53.2%

Table 8–2 (continued). Results from PCA of Residuals in WINSTEPS for Reading

Date	Grade/Course	Statistic	Eigenvalue	Empirical	Modeled
Jan 2011	7	Unexplained variance explained by 1st factor	2.1	0.6%	
Jan 2011	8	Total variance in observations	345.5	100.0%	100.0%
Jan 2011	8	Variance explained by model	153.5	44.4%	44.5%
Jan 2011	8	Unexplained variance (total)	192	55.6%	55.5%
Jan 2011	8	Unexplained variance explained by 1st factor	2.0	0.6%	
Jan 2011	Literature	Total variance in observations	699.1	100.0%	100.0%
Jan 2011	Literature	Variance explained by model	351.1	50.2%	50.2%
Jan 2011	Literature	Unexplained variance (total)	348	49.8%	49.8%
Jan 2011	Literature	Unexplained variance explained by 1st factor	2.2	0.3%	
July 2013	6	Total variance in observations	111.7	100.0%	100.0%
July 2013	6	Variance explained by model	55.7	49.8%	47.3%
July 2013	6	Unexplained variance (total)	56	50.2%	52.7%
July 2013	6	Unexplained variance explained by 1st factor	1.5	1.3%	
July 2013	7	Total variance in observations	103.4	100.0%	100.0%
July 2013	7	Variance explained by model	45.4	43.9%	42.2%
July 2013	7	Unexplained variance (total)	58	56.1%	57.8%
July 2013	7	Unexplained variance explained by 1st factor	1.4	1.4%	
July 2013	8	Total variance in observations	105.4	100.0%	100.0%
July 2013	8	Variance explained by model	48.4	45.9%	44.8%
July 2013	8	Unexplained variance (total)	57	54.1%	55.2%
July 2013	8	Unexplained variance explained by 1st factor	1.4	1.3%	
Jan 2014	K–2*	Total variance in observations	656.5	100.0%	100.0%
Jan 2014	K–2*	Variance explained by model	376.5	57.4%	57.6%
Jan 2014	K–2*	Unexplained variance (total)	280	42.6%	42.4%
Jan 2014	K–2*	Unexplained variance explained by 1st factor	1.9	0.3%	
Jan 2014	3	Total variance in observations	391.5	100.0%	100.0%
Jan 2014	3	Variance explained by model	213.5	54.5%	55.6%
Jan 2014	3	Unexplained variance (total)	178	45.5%	44.4%
Jan 2014	3	Unexplained variance explained by 1st factor	1.9	0.5%	
Jan 2014	4	Total variance in observations	434.7	100.0%	100.0%
Jan 2014	4	Variance explained by model	245.7	56.5%	57.1%
Jan 2014	4	Unexplained variance (total)	189	43.5%	42.9%
Jan 2014	4	Unexplained variance explained by 1st factor	1.7	0.4%	
Jan 2014	4	Total variance in observations	434.7	100.0%	100.0%
Jan 2014	4	Variance explained by model	245.7	56.5%	57.1%
Jan 2014	4	Unexplained variance (total)	189	43.5%	42.9%
Jan 2014	4	Unexplained variance explained by 1st factor	1.7	0.4%	

Table 8–2 (continued). Results from PCA of Residuals in WINSTEPS for Reading

Date	Grade/Course	Statistic	Eigenvalue	Empirical	Modeled
June 2016	3	Total variance in observations	53.5	100.0%	100.0%
June 2016	3	Variance explained by model	31.5	58.8%	41.7%
June 2016	3	Unexplained variance (total)	22	41.2%	58.3%
June 2016	3	Unexplained variance explained by 1st factor	1.1	2.1%	
June 2016	4	Total variance in observations	54.3	100.0%	100.0%
June 2016	4	Variance explained by model	33.3	61.4%	37.4%
June 2016	4	Unexplained variance (total)	21	38.6%	62.6%
June 2016	4	Unexplained variance explained by 1st factor	1.7	3.2%	
June 2016	5	Total variance in observations	57.5	100.0%	100.0%
June 2016	5	Variance explained by model	36.5	63.5%	43.5%
June 2016	5	Unexplained variance (total)	21	36.5%	56.6%
June 2016	5	Unexplained variance explained by 1st factor	1.2	2.1%	
June 2016	6	Total variance in observations	232.3	100.0%	100.0%
June 2016	6	Variance explained by model	110.3	47.5%	45.1%
June 2016	6	Unexplained variance (total)	122	52.5%	54.9%
June 2016	6	Unexplained variance explained by 1st factor	1.6	0.7%	
June 2016	7	Total variance in observations	245.8	100.0%	100.0%
June 2016	7	Variance explained by model	120.8	49.1%	47.2%
June 2016	7	Unexplained variance (total)	125	50.9%	52.8%
June 2016	7	Unexplained variance explained by 1st factor	1.6	0.6%	
June 2016	8	Total variance in observations	255.5	100.0%	100.0%
June 2016	8	Variance explained by model	132.5	51.9%	49.8%
June 2016	8	Unexplained variance (total)	123	48.1%	50.2%
June 2016	8	Unexplained variance explained by 1st factor	1.7	0.7%	
June 2016	Literature	Total variance in observations	206.4	100.0%	100.0%
June 2016	Literature	Variance explained by model	82.4	39.9%	39.0%
June 2016	Literature	Unexplained variance (total)	124	60.1%	61.0%
June 2016	Literature	Unexplained variance explained by 1st factor	1.5	0.7%	

*Items in kindergarten through grade 2 were co-mingled on forms taken by students in grade 3.

Table 8–3 presents the PCA results for the CDT science item pool. The primary dimension in the Rasch model explained between 20 and 68 percent of the total variances across the grades and courses. The second dimension (the row named “unexplained variance explained by 1st factor”) accounted for between 0.3 and 1.1 percent of the total variance in observations. These results suggest that the CDT science item pool essentially measures a single dominant dimension.

Table 8–3. Results from PCA of Residuals in WINSTEPS for Science

Date	Grade/Course	Statistic	Eigenvalue	Empirical	Modeled
Jan 2011	3	Total variance in observations	229.1	100.0%	100.0%
Jan 2011	3	Variance explained by model	138.1	60.3%	60.3%
Jan 2011	3	Unexplained variance (total)	91	39.7%	39.7%
Jan 2011	3	Unexplained variance explained by 1st factor	1.7	0.7%	
Jan 2011	4	Total variance in observations	285.9	100.0%	100.0%
Jan 2011	4	Variance explained by model	162.9	57.0%	56.9%
Jan 2011	4	Unexplained variance (total)	123	43.0%	43.1%
Jan 2011	4	Unexplained variance explained by 1st factor	1.5	0.5%	
Jan 2011	5	Total variance in observations	161.9	100.0%	100.0%
Jan 2011	5	Variance explained by model	59.9	37.0%	37.4%
Jan 2011	5	Unexplained variance (total)	102	63.0%	62.6%
Jan 2011	5	Unexplained variance explained by 1st factor	1.5	0.9%	
Jan 2011	6	Total variance in observations	290.8	100.0%	100.0%
Jan 2011	6	Variance explained by model	112.8	38.8%	39.3%
Jan 2011	6	Unexplained variance (total)	178	61.2%	60.7%
Jan 2011	6	Unexplained variance explained by 1st factor	2.1	0.7%	
Jan 2011	7	Total variance in observations	487.1	100.0%	100.0%
Jan 2011	7	Variance explained by model	160.1	32.9%	33.3%
Jan 2011	7	Unexplained variance (total)	327	67.1%	66.7%
Jan 2011	7	Unexplained variance explained by 1st factor	2.2	0.4%	
Jan 2011	8*	Total variance in observations	658.8	100.0%	100.0%
Jan 2011	8*	Variance explained by model	281.8	42.8%	43.9%
Jan 2011	8*	Unexplained variance (total)	377	57.2%	56.1%
Jan 2011	8*	Unexplained variance explained by 1st factor	1.9	0.3%	
Jan 2011	Biology	Total variance in observations	545.2	100.0%	100.0%
Jan 2011	Biology	Variance explained by model	155.2	28.5%	29.7%
Jan 2011	Biology	Unexplained variance (total)	390	71.5%	70.3%
Jan 2011	Biology	Unexplained variance explained by 1st factor	2.0	0.4%	
Jan 2011	Chemistry	Total variance in observations	418.1	100.0%	100.0%
Jan 2011	Chemistry	Variance explained by model	83.1	19.9%	20.1%
Jan 2011	Chemistry	Unexplained variance (total)	335	80.1%	79.9%
Jan 2011	Chemistry	Unexplained variance explained by 1st factor	2.0	0.5%	

*Grade 11 items were tested on Grade 8 forms.

Table 8–3 (continued). Results from PCA of Residuals in WINSTEPS for Science

Date	Grade/Course	Statistic	Eigenvalue	Empirical	Modeled
Jan 2014	K–2	Total variance in observations	652.2	100.0%	100.0%
Jan 2014	K–2	Variance explained by model	372.2	57.1%	57.4%
Jan 2014	K–2	Unexplained variance (total)	280	42.9%	42.6%
Jan 2014	K–2	Unexplained variance explained by 1st factor	2.6	0.4%	
Jan 2014	3	Total variance in observations	369.9	100.0%	100.0%
Jan 2014	3	Variance explained by model	214.9	58.1%	57.8%
Jan 2014	3	Unexplained variance (total)	155	41.9%	42.2%
Jan 2014	3	Unexplained variance explained by 1st factor	2.0	0.5%	
Jan 2014	4	Total variance in observations	668.3	100.0%	100.0%
Jan 2014	4	Variance explained by model	455.3	68.1%	68.0%
Jan 2014	4	Unexplained variance (total)	213	31.9%	32.0%
Jan 2014	4	Unexplained variance explained by 1st factor	2.0	0.3%	
Jan 2014	5	Total variance in observations	235.5	100.0%	100.0%
Jan 2014	5	Variance explained by model	83.5	35.5%	34.5%
Jan 2014	5	Unexplained variance (total)	152	64.5%	65.5%
Jan 2014	5	Unexplained variance explained by 1st factor	1.3	0.6%	
June 2016	6	Total variance in observations	99.6	100.0%	100.0%
June 2016	6	Variance explained by model	33.6	33.7%	29.2%
June 2016	6	Unexplained variance (total)	66	66.3%	70.8%
June 2016	6	Unexplained variance explained by 1st factor	1.1	1.1%	
June 2016	7	Total variance in observations	218.9	100.0%	100.0%
June 2016	7	Variance explained by model	65.9	30.1%	24.9%
June 2016	7	Unexplained variance (total)	153	69.9%	75.1%
June 2016	7	Unexplained variance explained by 1st factor	1.1	0.5%	
June 2016	8	Total variance in observations	338.2	100.0%	100.0%
June 2016	8	Variance explained by model	112.2	33.2%	28.2%
June 2016	8	Unexplained variance (total)	226	66.8%	71.8%
June 2016	8	Unexplained variance explained by 1st factor	1.2	0.3%	
June 2016	Biology	Total variance in observations	205.4	100.0%	100.0%
June 2016	Biology	Variance explained by model	70.4	34.3%	32.0%
June 2016	Biology	Unexplained variance (total)	135	65.7%	68.0%
June 2016	Biology	Unexplained variance explained by 1st factor	1.1	0.5%	

Table 8–4 presents the PCA results for the CDT writing item pool. The primary dimension in the Rasch model explained between 22 and 55 percent of the total variances across the grades and courses. The second dimension (the row named “unexplained variance explained by 1st factor”) accounted for between 0.3 and 1.4 percent of the total variance in observations. These results suggest that the CDT writing item pool essentially measures a single dominant dimension.

Table 8–4. Results from PCA of Residuals in WINSTEPS for Writing

Date	Grade/Course	Statistic	Eigenvalue	Empirical	Modeled
Aug 2011	3	Total variance in observations	297.7	100.0%	100.0%
Aug 2011	3	Variance explained by model	157.7	53.0%	55.0%
Aug 2011	3	Unexplained variance (total)	140	47.0%	45.0%
Aug 2011	3	Unexplained variance explained by 1st factor	1.7	0.6%	
Aug 2011	4	Total variance in observations	283.6	100.0%	100.0%
Aug 2011	4	Variance explained by model	134.6	47.5%	49.0%
Aug 2011	4	Unexplained variance (total)	149	52.5%	51.0%
Aug 2011	4	Unexplained variance explained by 1st factor	1.8	0.6%	
Aug 2011	5	Total variance in observations	280.7	100.0%	100.0%
Aug 2011	5	Variance explained by model	115.7	41.2%	42.2%
Aug 2011	5	Unexplained variance (total)	165	58.8%	57.8%
Aug 2011	5	Unexplained variance explained by 1st factor	1.8	0.6%	
Aug 2011	6	Total variance in observations	340.5	100.0%	100.0%
Aug 2011	6	Variance explained by model	147.5	43.3%	44.2%
Aug 2011	6	Unexplained variance (total)	193	56.7%	55.8%
Aug 2011	6	Unexplained variance explained by 1st factor	2.0	0.6%	
Aug 2011	7	Total variance in observations	317.9	100.0%	100.0%
Aug 2011	7	Variance explained by model	141.9	44.6%	45.5%
Aug 2011	7	Unexplained variance (total)	176	55.4%	54.5%
Aug 2011	7	Unexplained variance explained by 1st factor	2.1	0.6%	
Aug 2011	8	Total variance in observations	336.0	100.0%	100.0%
Aug 2011	8	Variance explained by model	141.0	42.0%	42.4%
Aug 2011	8	Unexplained variance (total)	195	58.0%	57.6%
Aug 2011	8	Unexplained variance explained by 1st factor	2.3	0.7%	
Aug 2011	English Composition	Total variance in observations	763.2	100.0%	100.0%
Aug 2011	English Composition	Variance explained by model	398.2	52.2%	53.4%
Aug 2011	English Composition	Unexplained variance (total)	365	47.8%	46.6%
Aug 2011	English Composition	Unexplained variance explained by 1st factor	2.3	0.3%	
Jan 2014	K–2*	Total variance in observations	93.2	100.0%	100.0%
Jan 2014	K–2*	Variance explained by model	49.2	52.8%	39.9%
Jan 2014	K–2*	Unexplained variance (total)	44	47.2%	60.1%
Jan 2014	K–2*	Unexplained variance explained by 1st factor	2.0	2.2%	

*Items in kindergarten through grade 2 were co-mingled on forms taken by students in grade 3.

Table 8–4 (continued). Results from PCA of Residuals in WINSTEPS for Writing

Date	Grade/Course	Statistic	Eigenvalue	Empirical	Modeled
Jan 2014	3	Total variance in observations	132.5	100.0%	100.0%
Jan 2014	3	Variance explained by model	72.5	54.7%	54.6%
Jan 2014	3	Unexplained variance (total)	60	45.3%	45.4%
Jan 2014	3	Unexplained variance explained by 1st factor	1.8	1.4%	
Jan 2014	4	Total variance in observations	132.4	100.0%	100.0%
Jan 2014	4	Variance explained by model	72.4	54.7%	55.4%
Jan 2014	4	Unexplained variance (total)	60	45.3%	44.6%
Jan 2014	4	Unexplained variance explained by 1st factor	1.7	1.3%	
Jan 2014	5	Total variance in observations	146.5	100.0%	100.0%
Jan 2014	5	Variance explained by model	75.5	51.5%	47.7%
Jan 2014	5	Unexplained variance (total)	71	48.5%	52.3%
Jan 2014	5	Unexplained variance explained by 1st factor	1.3	0.9%	
June 2016	6	Total variance in observations	154.7	100.0%	100.0%
June 2016	6	Variance explained by model	64.7	41.8%	38.2%
June 2016	6	Unexplained variance (total)	90	58.2%	61.8%
June 2016	6	Unexplained variance explained by 1st factor	1.2	0.8%	
June 2016	7	Total variance in observations	126.6	100.0%	100.0%
June 2016	7	Variance explained by model	34.6	27.3%	22.4%
June 2016	7	Unexplained variance (total)	92	72.7%	77.6%
June 2016	7	Unexplained variance explained by 1st factor	1.2	0.9%	
June 2016	8	Total variance in observations	150.7	100.0%	100.0%
June 2016	8	Variance explained by model	44.7	29.7%	25.2%
June 2016	8	Unexplained variance (total)	106	70.3%	74.8%
June 2016	8	Unexplained variance explained by 1st factor	1.2	0.8%	
June 2016	English Composition	Total variance in observations	149.5	100.0%	100.0%
June 2016	English Composition	Variance explained by model	47.5	31.8%	26.3%
June 2016	English Composition	Unexplained variance (total)	102	68.2%	73.7%
June 2016	English Composition	Unexplained variance explained by 1st factor	1.3	0.9%	

LOCAL INDEPENDENCE

Local independence (LI) is a fundamental assumption of IRT. No relationship should exist between examinees' responses to different items after accounting for the abilities measured by a test. In formal statistical terms, a test X that is comprised of items X_1, X_2, \dots, X_n is locally independent with respect to the latent variable θ if, for all $\mathbf{x} = (x_1, x_2, \dots, x_n)$ and θ ,

$$P(\mathbf{X} = \mathbf{x} | \theta) = \prod_{i=1}^I P(X_i = x_i | \theta).$$

This formula essentially states that the probability of any pattern of responses across all items (\mathbf{x}), after conditioning on the abilities measured by the test, should be equal to the product of the conditional probabilities across each item (cf. the multiplication rule for independent events where the joint probabilities are equal to the product of the associated marginal probabilities).

The equation above shows the condition after satisfying the “strong form” of local independence. A “weak form” of local independence (WLI) was proposed by McDonald (1979). The distinction is important, as many indicators of local dependency are actually framed by WLI. The requirement here would be for the conditional covariances of all pairs of item responses, conditioned on the abilities, to be equal to zero. When this assumption is met, the joint probability of responses to an item pair, conditioned on abilities, is the product of the probabilities of responses to these two items, as show below. (This is a “weaker” form because higher-order dependencies among items are allowed.) Based on the WLI, the following expression can be derived:

$$P(X_i = x_i, X_j = x_j | \theta) = P(X_i = x_i | \theta)P(X_j = x_j | \theta).$$

Marais and Andrich (2008) pointed out that local item dependence in the Rasch model can occur in two ways that some may not distinguish. The first way occurs when the assumption of unidimensionality is violated. Here, other nuisance dimensions besides a dominant dimension also determine students' performance (this can be called “trait dependence”). The second violation occurs when responses to an item depend on responses to another. This is a violation of statistical independence and can be called “response dependence.” Many people treat the assumptions of “unidimensionality” and “local independence” as one phenomenon and believe that once unidimensionality holds, that local independence also holds. By distinguishing the two sources of local dependence, one can see that while local independence can be related to unidimensionality, the two are different assumptions, and, therefore, require different tests.

Residual item correlations provided in WINSTEPS for each item pair were used to assess the local dependence among the CDT items. In general, these residuals are computed as follows. First, expected item performance based on the Rasch model is determined using ability and item parameter estimates. Next, deviation (residual) between the examinees' expected and observed performance is determined for each item. Finally, for each item pair, a correlation between the respective deviations is computed.

As previously mentioned, three types of residual correlations are available in WINSTEPS: raw, standardized, and logit. Since the three residual correlations are very similar, the default “standardized residual correlation” in WINSTEPS was used for these analyses. Tables 8–5 through 8–8 show the summary statistics—mean, standard deviation (SD), minimum (Min), maximum (Max), and several percentiles (P10, P25, P50, P75, P90)—for all the residual correlations for each content area and grade/course. The total number of item pairs (N) and the number of pairs with the residual correlations greater than 0.20 are also reported in the tables.

Table 8–5. Summary of Item Residual Correlations for Mathematics

Date	Grade/ Course	N	Mean	SD	Min	P ₁₀	P ₂₅	P ₅₀	P ₇₅	P ₉₀	Max	< -.20	> .20
Aug 2010	3	1,372	-0.03	0.03	-0.15	-0.06	-0.04	-0.03	-0.01	0.01	0.32	0	2
Aug 2010	4	1,122	-0.03	0.04	-0.18	-0.08	-0.06	-0.03	-0.01	0.01	0.28	0	2
Aug 2010	5	1,132	-0.03	0.04	-0.17	-0.07	-0.05	-0.03	-0.01	0.01	0.38	0	1
Aug 2010	6	5,410	-0.02	0.04	-0.15	-0.06	-0.04	-0.02	0.00	0.02	0.34	0	12
Aug 2010	7	5,409	-0.02	0.04	-0.24	-0.07	-0.05	-0.02	0.00	0.03	0.35	3	4
Aug 2010	8	4,935	-0.02	0.06	-0.36	-0.10	-0.06	-0.02	0.01	0.05	0.27	18	3
Aug 2010	Algebra I	5,024	-0.02	0.04	-0.19	-0.07	-0.05	-0.02	0.00	0.02	0.26	0	2
Aug 2010	Geometry	5,470	-0.02	0.04	-0.20	-0.07	-0.04	-0.02	0.00	0.02	0.27	0	1
Aug 2010	Algebra II	5,457	-0.02	0.04	-0.18	-0.07	-0.05	-0.02	0.00	0.02	0.22	0	2
July 2013	6	12,090	-0.01	0.01	-0.12	-0.02	-0.01	0.00	0.00	0.00	0.06	0	0
July 2013	7	2,628	-0.01	0.01	-0.05	-0.03	-0.02	-0.01	-0.01	0.00	0.01	0	0
July 2013	8	12,246	-0.01	0.01	-0.09	-0.02	-0.01	0.00	0.00	0.01	0.06	0	0
Jan 2014	K–2	2,660	-0.04	0.06	-0.23	-0.11	-0.08	-0.05	-0.01	0.02	0.35	4	4
Jan 2014	3	2,278	-0.05	0.06	-0.24	-0.12	-0.09	-0.05	-0.01	0.02	0.27	12	2
Jan 2014	4	2,462	-0.05	0.05	-0.24	-0.11	-0.08	-0.05	-0.01	0.02	0.46	2	2
Jan 2014	5	24,310	0.00	0.01	-0.05	-0.01	-0.01	0.00	0.00	0.00	0.02	0	0
June 2016	6	6,903	-0.01	0.00	-0.03	-0.01	-0.01	-0.01	-0.01	0.00	0.01	0	0
June 2016	7	13,695	-0.01	0.00	-0.03	-0.01	-0.01	-0.01	0.00	0.00	0.01	0	0
June 2016	8	10,731	-0.01	0.01	-0.03	-0.01	-0.01	-0.01	0.00	0.00	0.01	0	0
June 2016	Algebra I	10,878	-0.01	0.00	-0.02	-0.01	-0.01	-0.01	0.00	0.00	0.01	0	0

Table 8–6. Summary of Item Residual Correlations for Reading

Date	Grade/ Course	N	Mean	SD	Min	P ₁₀	P ₂₅	P ₅₀	P ₇₅	P ₉₀	Max	< -.20	>.20
Jan 2011	3	1,334	-0.02	0.04	-0.17	-0.07	-0.04	-0.02	-0.01	0.01	0.14	0	0
Jan 2011	4	1,272	-0.02	0.03	-0.18	-0.07	-0.04	-0.02	-0.01	0.01	0.27	0	2
Jan 2011	5	1,262	-0.02	0.03	-0.17	-0.06	-0.04	-0.02	-0.01	0.01	0.18	0	0
Jan 2011	6	4,245	-0.02	0.05	-0.24	-0.07	-0.04	-0.02	0.00	0.02	0.35	2	13
Jan 2011	7	3,782	-0.02	0.04	-0.23	-0.07	-0.04	-0.02	0.00	0.02	0.22	2	1
Jan 2011	8	3,782	-0.02	0.04	-0.26	-0.07	-0.04	-0.02	0.00	0.03	0.34	2	5
Jan 2011	Literature	7,517	-0.02	0.05	-0.28	-0.09	-0.04	-0.01	0.01	0.04	0.40	25	10
July 2013	6	1,540	-0.02	0.05	-0.43	-0.03	-0.01	0.00	0.00	0.00	0.05	42	0
July 2013	7	1,653	-0.02	0.05	-0.33	-0.04	-0.01	0.00	0.00	0.00	0.01	38	0
July 2013	8	1,596	-0.02	0.05	-0.32	-0.04	-0.01	0.00	0.00	0.00	0.02	39	0
Jan 2014	K–2	2,660	-0.05	0.06	-0.26	-0.12	-0.09	-0.05	-0.01	0.02	0.29	7	5
Jan 2014	3	1,709	-0.05	0.05	-0.23	-0.11	-0.08	-0.05	-0.02	0.02	0.20	2	0
Jan 2014	4	1,888	-0.05	0.05	-0.23	-0.10	-0.08	-0.05	-0.02	0.01	0.20	1	0
Jan 2014	5	8,911	-0.01	0.02	-0.26	-0.01	-0.01	0.00	0.00	0.00	0.03	33	0
June 2016	3	231	-0.04	0.02	-0.10	-0.08	-0.06	-0.04	-0.02	-0.01	0.00	0	0
June 2016	4	210	-0.04	0.06	-0.74	-0.08	-0.06	-0.03	-0.02	0.00	0.01	1	0
June 2016	5	210	-0.04	0.03	-0.13	-0.09	-0.06	-0.04	-0.02	-0.01	0.00	0	0
June 2016	6	7,381	-0.01	0.04	-0.36	0.00	0.00	0.00	0.00	0.00	0.00	117	0
June 2016	7	7,750	-0.01	0.04	-0.40	0.00	0.00	0.00	0.00	0.00	0.09	123	0
June 2016	8	7,503	-0.01	0.04	-0.38	0.00	0.00	0.00	0.00	0.00	0.04	115	0
June 2016	Literature	7,626	-0.01	0.04	-0.33	0.00	0.00	0.00	0.00	0.00	0.00	161	0

Table 8–7. Summary of Item Residual Correlations for Science

Date	Grade/ Course	N	Mean	SD	Min	P ₁₀	P ₂₅	P ₅₀	P ₇₅	P ₉₀	Max	< -.20	>.20
Jan 2011	3	1,400	-0.03	0.03	-0.16	-0.07	-0.04	-0.02	-0.01	0.01	0.09	0	0
Jan 2011	4	1,950	-0.02	0.03	-0.19	-0.07	-0.04	-0.02	0.00	0.01	0.09	0	0
Jan 2011	5	1,530	-0.03	0.03	-0.17	-0.07	-0.04	-0.02	-0.01	0.01	0.08	0	0
Jan 2011	6	3,642	-0.02	0.04	-0.18	-0.07	-0.04	-0.02	0.00	0.02	0.19	0	0
Jan 2011	7	6,934	-0.02	0.04	-0.22	-0.08	-0.04	-0.01	0.00	0.03	0.24	7	2
Jan 2011	8	6,881	-0.02	0.05	-0.27	-0.09	-0.04	-0.01	0.00	0.02	0.24	30	2
Jan 2011	Biology	8,255	-0.02	0.05	-0.24	-0.09	-0.04	-0.01	0.00	0.03	0.26	17	1
Jan 2011	Chemistry	7,105	-0.02	0.05	-0.22	-0.08	-0.04	-0.01	0.01	0.03	0.24	8	2
Jan 2014	K–2	2,660	-0.05	0.10	-0.43	-0.17	-0.11	-0.05	0.01	0.08	0.68	152	28
Jan 2014	3	1,510	-0.05	0.06	-0.33	-0.12	-0.09	-0.05	-0.01	0.03	0.25	5	3
Jan 2014	4	2,069	-0.05	0.09	-0.31	-0.16	-0.11	-0.05	0.01	0.07	0.32	83	13
Jan 2014	5	11,476	-0.01	0.01	-0.08	-0.02	-0.01	-0.01	0.00	0.01	0.06	0	0
June 2016	6	2,145	-0.02	0.01	-0.05	-0.03	-0.02	-0.02	-0.01	0.00	0.02	0	0
June 2016	7	11,628	-0.01	0.01	-0.04	-0.01	-0.01	-0.01	0.00	0.00	0.01	0	0
June 2016	8	25,425	0.00	0.01	-0.03	-0.01	-0.01	0.00	0.00	0.00	0.02	0	0
June 2016	Biology	9,045	-0.01	0.00	-0.02	-0.01	-0.01	-0.01	-0.01	0.00	0.00	0	0

Table 8–8. Summary of Item Residual Correlations for Writing

Date	Grade/ Course	N	Mean	SD	Min	P ₁₀	P ₂₅	P ₅₀	P ₇₅	P ₉₀	Max	< -.20	>.20
Aug 2011	3	2,205	-0.02	0.05	-0.26	-0.08	-0.04	-0.02	0.00	0.02	0.19	6	0
Aug 2011	4	2,315	-0.02	0.05	-0.24	-0.09	-0.04	-0.02	0.00	0.02	0.28	9	2
Aug 2011	5	2,580	-0.02	0.05	-0.25	-0.09	-0.04	-0.02	0.00	0.02	0.19	11	0
Aug 2011	6	3,795	-0.02	0.05	-0.25	-0.08	-0.04	-0.02	0.01	0.03	0.27	4	5
Aug 2011	7	3,544	-0.02	0.05	-0.24	-0.08	-0.04	-0.02	0.00	0.03	0.24	10	2
Aug 2011	8	3,815	-0.02	0.07	-0.29	-0.11	-0.05	-0.02	0.01	0.06	0.29	58	13
Aug 2011	Eng. Comp	7,705	-0.02	0.06	-0.30	-0.10	-0.04	-0.01	0.01	0.05	0.33	72	18
Jan 2014	K–2	2,641	-0.05	0.09	-0.39	-0.15	-0.11	-0.05	0.01	0.06	0.35	84	19
Jan 2014	3	570	-0.05	0.06	-0.20	-0.12	-0.08	-0.05	-0.02	0.02	0.23	1	1
Jan 2014	4	570	-0.05	0.04	-0.18	-0.10	-0.08	-0.05	-0.02	0.01	0.21	0	1
Jan 2014	5	2,485	-0.01	0.02	-0.13	-0.04	-0.02	-0.01	0.00	0.01	0.05	0	0
June 2016	6	4,005	-0.01	0.01	-0.05	-0.02	-0.02	-0.01	-0.01	0.00	0.02	0	0
June 2016	7	4,186	-0.01	0.01	-0.06	-0.02	-0.02	-0.01	0.00	0.00	0.01	0	0
June 2016	8	5,565	-0.01	0.01	-0.05	-0.02	-0.01	-0.01	0.00	0.00	0.01	0	0
June 2016	Eng. Comp	5,151	-0.01	0.01	-0.13	-0.03	-0.02	-0.01	0.00	0.00	0.03	0	0

Across the content areas and grades/courses, the mean residual correlations were slightly negative and the values were close to zero. The vast majority of the correlations were very small, suggesting local item independence generally holds for the CDT mathematics, reading, science, and writing item pools.

ITEM FIT

WINSTEPS provides two item-fit statistics (infit and outfit) for evaluating the degree to which the Rasch model predicts the observed item responses. Each fit statistic can be expressed as a mean square (MnSq) statistic or on a standardized metric (Zstd with mean = 0 and variance = 1). MnSq values are more oriented toward practical significance, while Zstd values are more oriented toward statistical significance. MnSq values are presented in this chapter.

Both infit and outfit MnSq are the average of standardized residual variance (the difference between the observed score and the Rasch estimated score divided by the square root of the Rasch model variance). The difference is that the outfit statistic gives all examinees equal weight in computing the fit and tends to be affected more by unexpected responses far from the person, item, or rating scale category measure (i.e., it is more sensitive to outlying, off-target, low information responses). The infit statistic is weighted by the examinee locations relative to item difficulty and tends to be affected more by unexpected responses close to the person, item, or rating scale category measure (i.e., informative, on-target responses). Some feel that extreme infit values are a greater threat to the measurement process than extreme outfit values since most tests intend to measure the on-target population rather than extreme outliers.

The expected MnSq value is 1.0, and it can range from 0 to infinity. Deviation in excess of the expected value can be interpreted as noise or lack of fit between the items and the model. Values lower than the expected value can be interpreted as item redundancy or overfitting items (too predictable, too much redundancy), and values greater than the expected value indicate underfitting items (too unpredictable, too much noise). Rules of thumb regarding practically significant MnSq values vary. More conservative users might prefer items with MnSq values that range from 0.8 to 1.2. Others believe reasonable test results can be achieved with values from 0.5 to 1.5. In the following results, values outside of 0.7 to 1.3 are given practical importance.

Table 8–9 presents the summary statistics of infit and outfit mean square statistics for the CDT item pools, including the mean, standard deviation, minimum, and maximum values. The number of items within the range of (0.7, 1.3) is also reported in Table 8–9. As can be seen, the mean values for both fit statistics were close to 1.00 for all grades/courses. Nearly all items had infit values falling in the range of (0.7, 1.3). These results indicate that the Rasch model fits the CDT data well.

Table 8–9. Summary of Infit and Outfit Mean Square Statistics

Date	Content Area	Grade/Course	Number of Items	Infit Mean	Infit SD	Infit Min	Infit Max	Infit [0.7,1.3]	Outfit Mean	Outfit SD	Outfit Min	Outfit Max	Outfit [0.7,1.3]
Aug 2010	Mathematics	3	86	0.99	0.08	0.78	1.17	86/86	0.99	0.24	0.21	1.56	71/86
Aug 2010	Mathematics	4	86	0.99	0.08	0.81	1.20	86/86	0.98	0.18	0.50	1.65	78/86
Aug 2010	Mathematics	5	85	0.99	0.12	0.80	1.32	84/85	1.00	0.24	0.46	1.56	69/85
Aug 2010	Mathematics	6	259	0.99	0.11	0.80	1.38	256/259	1.00	0.31	0.40	3.92	217/259
Aug 2010	Mathematics	7	258	1.00	0.12	0.80	1.49	253/258	1.01	0.25	0.56	2.24	213/258
Aug 2010	Mathematics	8	257	1.00	0.11	0.75	1.37	254/257	1.03	0.22	0.48	2.40	226/257
Aug 2010	Mathematics	11	149	0.99	0.10	0.80	1.27	149/149	0.99	0.18	0.67	1.67	141/149
Aug 2010	Mathematics	Algebra I	256	1.00	0.09	0.79	1.28	256/256	1.02	0.14	0.65	1.61	249/256
Aug 2010	Mathematics	Geometry	257	1.00	0.10	0.81	1.31	256/257	1.02	0.17	0.66	1.78	239/257
Aug 2010	Mathematics	Algebra II	256	1.00	0.10	0.78	1.41	254/256	1.03	0.20	0.66	1.99	233/256
Jan 2011	Reading	3	86	0.99	0.12	0.74	1.30	86/86	0.97	0.24	0.40	1.53	66/86
Jan 2011	Reading	4	87	0.99	0.10	0.79	1.28	87/87	0.95	0.22	0.32	1.58	74/87
Jan 2011	Reading	5	86	0.96	0.09	0.78	1.22	86/86	0.91	0.20	0.44	1.64	72/86
Jan 2011	Reading	6	210	1.01	0.13	0.70	1.30	210/210	1.02	0.31	0.37	2.65	151/210
Jan 2011	Reading	7	192	1.00	0.10	0.76	1.30	192/192	0.96	0.23	0.21	2.00	162/192
Jan 2011	Reading	8	192	0.98	0.11	0.75	1.33	191/192	0.96	0.22	0.41	1.84	158/192
Jan 2011	Reading	Literature	348	1.01	0.13	0.75	1.31	347/348	1.01	0.25	0.38	2.00	282/348
Jan 2011	Science	3	91	1.01	0.09	0.83	1.20	91/91	1.00	0.21	0.45	1.48	80/91
Jan 2011	Science	4	123	1.01	0.08	0.85	1.23	123/123	1.00	0.18	0.52	1.81	112/123
Jan 2011	Science	5	102	1.00	0.08	0.84	1.21	102/102	1.02	0.16	0.74	1.85	98/102
Jan 2011	Science	6	178	1.00	0.09	0.80	1.22	178/178	1.02	0.17	0.61	1.82	165/178
Jan 2011	Science	7	327	0.99	0.09	0.78	1.22	327/327	1.01	0.17	0.54	1.83	300/327
Jan 2011	Science	8	377	1.02	0.12	0.77	1.37	372/377	1.06	0.24	0.57	2.12	307/377
Jan 2011	Science	11	115	1.08	0.10	0.81	1.30	115/115	1.19	0.26	0.73	2.19	82/115
Jan 2011	Science	Biology	390	1.00	0.08	0.84	1.28	390/390	1.03	0.14	0.73	1.63	372/390
Jan 2011	Science	Chemistry	335	1.00	0.06	0.85	1.26	335/335	1.02	0.09	0.79	1.48	333/335
Aug 2011	Writing	3	140	0.99	0.11	0.80	1.43	139/140	1.00	0.24	0.42	1.95	115/140
Aug 2011	Writing	4	149	0.99	0.10	0.79	1.26	149/149	1.00	0.24	0.52	1.74	123/149
Aug 2011	Writing	5	165	0.98	0.09	0.80	1.24	165/165	0.97	0.19	0.62	1.92	151/165
Aug 2011	Writing	6	193	0.99	0.10	0.78	1.23	193/193	0.98	0.20	0.53	1.76	170/193
Aug 2011	Writing	7	176	1.00	0.11	0.75	1.36	175/176	1.02	0.23	0.56	1.92	147/176
Aug 2011	Writing	8	195	0.99	0.11	0.77	1.31	194/195	0.99	0.21	0.45	1.68	166/195
Aug 2011	Writing	Eng. Comp.	365	1.00	0.12	0.77	1.38	362/365	1.03	0.25	0.38	2.16	304/365
July 2013	Mathematics	6	156	1.07	0.14	0.78	1.50	144/156	1.35	0.62	0.51	4.77	96/156
July 2013	Mathematics	7	73	1.11	0.13	0.82	1.40	69/73	1.52	0.68	0.76	4.74	33/73
July 2013	Mathematics	8	157	1.14	0.13	0.87	1.45	138/157	1.61	0.58	0.85	3.46	62/157
July 2013	Reading	6	56	1.03	0.13	0.78	1.31	55/56	1.13	0.37	0.58	2.48	35/56

Table 8–9. (continued). Summary of Infit and Outfit Mean Square Statistics

Date	Content Area	Grade/Course	Number of Items	Infit Mean	Infit SD	Infit Min	Infit Max	Infit [0.7,1.3]	Outfit Mean	Outfit SD	Outfit Min	Outfit Max	Outfit [0.7,1.3]
July 2013	Reading	7	58	1.05	0.14	0.82	1.42	55/58	1.17	0.38	0.65	2.91	41/58
July 2013	Reading	8	57	1.03	0.13	0.78	1.32	56/57	1.11	0.29	0.48	2.03	42/57
Jan 2014	Mathematics	K	60	0.98	0.12	0.77	1.34	58/60	0.90	0.30	0.40	1.53	37/60
Jan 2014	Mathematics	1	91	0.97	0.12	0.76	1.33	89/91	0.92	0.30	0.23	2.00	61/91
Jan 2014	Mathematics	2	130	0.99	0.10	0.77	1.29	130/130	0.98	0.27	0.36	1.95	99/130
Jan 2014	Mathematics	3	235	0.99	0.12	0.77	1.44	231/235	1.02	0.31	0.47	3.11	191/235
Jan 2014	Mathematics	4	248	1.00	0.12	0.75	1.31	247/248	1.03	0.27	0.45	2.21	199/248
Jan 2014	Mathematics	5	221	1.02	0.11	0.79	1.37	218/221	1.07	0.25	0.58	2.22	182/221
Jan 2014	Reading	K	84	0.97	0.11	0.77	1.36	83/84	0.91	0.24	0.39	1.51	61/84
Jan 2014	Reading	1	98	0.99	0.12	0.77	1.35	96/98	1.02	0.35	0.36	2.75	73/98
Jan 2014	Reading	2	98	0.98	0.11	0.76	1.24	98/98	1.02	0.25	0.44	1.80	77/98
Jan 2014	Reading	3	178	1.00	0.12	0.77	1.29	178/178	1.04	0.31	0.43	2.44	127/178
Jan 2014	Reading	4	189	1.00	0.11	0.78	1.35	188/189	1.01	0.28	0.40	2.70	149/189
Jan 2014	Reading	5	134	1.01	0.11	0.77	1.28	134/134	1.04	0.24	0.44	1.91	112/134
Jan 2014	Science	K-2 grade span	280	0.99	0.13	0.73	1.43	273/280	1.01	0.34	0.23	2.79	199/280
Jan 2014	Science	3	155	0.99	0.11	0.72	1.29	155/155	0.98	0.28	0.23	1.99	114/155
Jan 2014	Science	4	213	1.00	0.11	0.70	1.27	213/213	1.01	0.24	0.37	1.88	179/213
Jan 2014	Science	5	152	1.07	0.15	0.70	1.59	141/152	1.16	0.29	0.50	2.39	111/152
Jan 2014	Writing	K	44	0.90	0.11	0.73	1.20	44/44	0.72	0.26	0.33	1.38	20/44
Jan 2014	Writing	1	118	0.96	0.15	0.70	1.42	117/118	0.89	0.32	0.27	1.76	74/118
Jan 2014	Writing	2	117	0.98	0.13	0.70	1.46	115/117	0.99	0.26	0.32	1.65	93/117
Jan 2014	Writing	3	60	0.98	0.12	0.78	1.22	60/60	0.98	0.27	0.35	1.97	48/60
Jan 2014	Writing	4	60	1.00	0.11	0.83	1.34	59/60	1.02	0.29	0.60	2.41	51/60
Jan 2014	Writing	5	71	1.03	0.13	0.71	1.37	70/71	1.13	0.40	0.61	2.59	48/71
June 2016	Mathematics	6	122	1.08	0.13	0.87	1.49	113/122	1.31	0.36	0.72	2.38	70/122
June 2016	Mathematics	7	176	1.09	0.13	0.84	1.54	161/176	1.42	0.48	0.74	3.42	89/176
June 2016	Mathematics	8	150	1.13	0.12	0.85	1.61	139/150	1.61	0.50	0.82	3.32	51/150
June 2016	Mathematics	Algebra I	149	1.10	0.09	0.85	1.36	148/149	1.49	0.47	0.73	3.45	57/149
June 2016	Reading	3	22	1.13	0.17	0.85	1.49	18/22	1.15	0.19	0.82	1.54	16/22
June 2016	Reading	4	22	1.10	0.15	0.87	1.44	19/22	1.15	0.30	0.76	2.24	19/22
June 2016	Reading	5	21	1.10	0.13	0.96	1.40	20/21	1.14	0.20	0.91	1.67	18/21
June 2016	Reading	6	123	1.06	0.13	0.81	1.54	121/123	1.13	0.29	0.58	2.48	98/123
June 2016	Reading	7	126	1.04	0.15	0.79	1.51	122/126	1.12	0.37	0.40	2.91	90/126
June 2016	Reading	8	124	1.06	0.16	0.79	2.00	115/124	1.16	0.40	0.50	3.14	82/124
June 2016	Reading	Literature	125	1.07	0.12	0.75	1.36	122/125	1.24	0.38	0.60	2.53	83/125
June 2016	Science	6	72	1.08	0.10	0.87	1.30	72/72	1.27	0.35	0.73	2.36	45/72
June 2016	Science	7	159	1.08	0.09	0.82	1.34	158/159	1.29	0.32	0.64	2.28	98/159

Table 8–9. (continued). Summary of Infit and Outfit Mean Square Statistics

Date	Content Area	Grade/Course	Number of Items	Infit Mean	Infit SD	Infit Min	Infit Max	Infit [0.7,1.3]	Outfit Mean	Outfit SD	Outfit Min	Outfit Max	Outfit [0.7,1.3]
June 2016	Science	8	238	1.07	0.10	0.77	1.34	236/238	1.27	0.36	0.50	3.55	151/238
June 2016	Science	Biology	136	1.08	0.10	0.87	1.51	135/136	1.25	0.24	0.83	1.94	88/136
June 2016	Writing	6	93	1.06	0.12	0.83	1.34	91/93	1.24	0.47	0.70	4.66	62/93
June 2016	Writing	7	93	1.08	0.10	0.81	1.39	91/93	1.31	0.45	0.70	3.14	59/93
June 2016	Writing	8	110	1.09	0.11	0.88	1.37	106/110	1.37	0.48	0.76	3.93	63/110
June 2016	Writing	Eng. Comp.	104	1.08	0.11	0.75	1.34	103/104	1.46	0.84	0.58	8.30	51/104

RASCH ITEM STATISTICS

As noted earlier, the Rasch model expresses item difficulty (and student ability) in units referred to as *logits*, rather than on the percent-correct metric. In the simplest case, a logit is a transformed *p*-value with the average *p*-value becoming a logit of zero. In this form, logits resemble *z*-scores or standard normal deviates; a very difficult item might have a logit of +4.0 and a very easy item might have a logit of –4.0. However, they have no formal relationship to the normal distribution.

The logit metric has several mathematical advantages over *p*-values. Logits have an interval scale, meaning that two items with logits of 0.0 and +1.0, respectively, are the same distance apart as two items with logits of +3.0 and +4.0. Logits are not dependent on the ability level of the students. For example, a test form can have a mean logit of zero, whether the average item *p*-value for the student sample is 0.8 or 0.3.

The standard Rasch calibration procedure arbitrarily sets the mean difficulty of the items in any calibration at zero. For each CDT stand-alone field-test event and content area, all grades and courses were calibrated separately with the exception of grade 11 items in Mathematics and Science. As a result, items in each grade or course were centered at zero. See Chapter Nine for a description of how item parameters within a content area were re-scaled across grades and courses to build a single (vertical) scale.

For each CDT embedded field-test event and content area, field-test items were calibrated anchoring on operational items’ parameters. As a result, the embedded field-test items were placed on operational vertical scale.

Rasch item difficulty measure on the vertical scale and associated standard error for each item are presented in Appendix B.

CHAPTER NINE: VERTICAL LINKING

The Classroom Diagnostic Tools (CDT) is designed to enable educators to identify students' academic strengths and areas of need. As such, it is necessary for some students to take items out of grade or course level. In order to do this, all items within a content area must be on a common (vertical) scale.

As previously mentioned in Chapter Eight, items from the first stand-alone field-test event for each CDT content area and grade or course were calibrated separately and centered at zero. This chapter outlines the procedures used for vertically linking CDT items across grades and courses within a content area. The end results are four separate vertical scales—one for each content area.

Also mentioned in Chapter Eight, for each content area, the items from all embedded field-test events and the second stand-alone field-test event were calibrated anchoring on operational items' parameters. As a result, all field-test items after the first stand-alone field-test events were placed on the operational vertical scale.

VERTICAL LINKING DESIGN

The first CDT stand-alone field tests were designed to build vertical scales across all grades and courses within a content area. In order to accomplish this, some field-test forms had items from one grade above or below in addition to on-grade or course-level items.

Stand-alone field tests in each content area had two types of forms:

1. Vertical linking form
2. On-grade-only form

Students who received vertical linking forms took a set of on-grade items and a set of items either one grade above or one grade below. Students who received on-grade-only forms took just on-grade items.

All items in the pool were field tested on one or more forms. In Mathematics, on-grade items were chained across adjacent forms to provide a horizontal link across forms within a grade. There were eight to ten horizontal links across adjacent forms. In all other content areas, 10 on-grade items appeared on each form within a grade or course. These common items provide a horizontal link across forms within a grade.¹

Items used in vertical linking were administered to students one grade above or one grade below in order to link the forms across grades. DRC test development specialists selected items to be administered off-grade level with the following guidelines:

- There are two types of linking sets.
 - Items administered one grade below (e.g., grade 7 items administered to grade 6 students).
 - Items administered one grade above (e.g., grade 7 items administered to grade 8 students).
- Linking sets span the diagnostic categories.
- Linking sets span the estimated difficulty range (item developers estimate easy, medium, or hard).
- Students have a reasonable chance of correctly answering a linking item based on the instruction received.
 - For items administered in the grade above, students should have received instruction the previous year.
 - For items administered in the grade below, they should be extensions of concepts the students have already covered, not something completely new.

¹ The change in horizontal linking design after the Mathematics field test was in response to lower-than-expected participation. Using the same horizontal links on all forms within a grade results in higher *n*-counts.

In Mathematics, each set of linking items appeared on two forms, once located at the beginning and once located at the end to counterbalance possible position effect. In all other content areas, vertical linking items were co-mingled throughout the form with on-grade items.²

See Tables 6–1 through 6–4 in Chapter Six for details on the stand-alone field tests including number of items, number of forms, and number of vertical linking forms.

VERTICAL LINKING – MATHEMATICS

Links were made between adjacent grades, grade 8 to Algebra I, Algebra I to Algebra II, and grade 8 to Geometry. Table 9–1 below shows the number of linking items from the lower grade and the upper grade for each link. There were two sets of linking items for each link and direction. For example, in linking grade 5 to grade 6, there were 30 grade 5 items (lower grade) and 20 grade 6 items (upper grade). The 30 grade 5 items were in two sets of 15, while the 20 grade 6 items were in two sets of 10. The number of linking items differs across grades because forms in grades 3, 4, and 5 had 25 items total while all of the others had 35. There was no overlap of linking items among the sets.

Table 9–1. Mathematics Linking Item Detail

Link	Lower Grade	Upper Grade	Total
Grade 3 to Grade 4	20	20	40
Grade 4 to Grade 5	20	20	40
Grade 5 to Grade 6	30	20	50
Grade 6 to Grade 7	30	30	60
Grade 8 to Grade 7	30	30	60
Algebra I to Grade 8	30	30	60
Algebra II to Algebra I	30	30	60
Geometry to Grade 8	30	30	60

A visual representation of the vertical linking design is provided in Table 9–2. Rows are item level and columns are forms. For example, looking at the second row, you can see grade 4 items were on grades 3, 4, and 5 forms. Grade 4 items on grade 4 forms were on-grade items. Grade 4 items on grade 3 and grade 5 forms were vertical linking items. These items also appeared on grade 4 forms and were used to calculate the vertical linking shift parameter.

In linking grades 4 and 5, look at the four cells in Table 9–2 where grade 4 and grade 5 rows and columns cross. There were 86 grade 4 items, and of those 86 items, 20 items were also given to grade 5 as linking items. Similarly, there were 85 grade 5 items, and 20 out of the 85 items were given to grade 4 students as linking items.

Items used to link to a lower grade were different from items used to link to an upper grade. For example, the 30 grade 7 items administered on grade 6 forms were not the same as the 30 grade 7 items administered on grade 8 forms.

² The change in vertical linking design after the Mathematics field test was in response to lower-than-expected participation.

Table 9–2. Mathematics Vertical Linking Design

Forms

	Gr. 3	Gr. 4	Gr. 5	Gr. 6	Gr. 7	Gr. 8	Alg I	Geo	Alg II
Gr. 3	Gr. 3 Items (86)	Gr. 3 Items (20)							
Gr. 4	Gr. 4 Items (20)	Gr. 4 Items (86)	Gr. 4 Items (20)						
Gr. 5		Gr. 5 Items (20)	Gr. 5 Items (85)	Gr. 5 Items (30)					
Gr. 6			Gr. 6 Items (20)	Gr. 6 Items (259)	Gr. 6 Items (30)				
Gr. 7				Gr. 7 Items (30)	Gr. 7 Items (258)	Gr. 7 Items (30)			
Gr. 8					Gr. 8 Items (30)	Gr. 8 Items (257)	Gr. 8 Items (30)	Gr. 8 Items (30)	
Gr. 11						Gr. 11 Items (30)	Gr. 11 Items (50)	Gr. 11 Items (50)	Gr. 11 Items (50)
Alg I						Alg I Items (15)	Alg I Items (256)		Alg I Items (30)
Geo						Geo Items (15)		Geo Items (257)	
Alg II							Alg II Items (30)		Alg II Items (256)

See Appendix C for details related to vertical linking items such as *n*-counts, Eligible Content, and diagnostic categories.

VERTICAL LINKING – READING

Links were made between adjacent grades and grade 8 to Literature. Table 9–3 shows the number of linking items from the lower grade and the upper grade for each link. There were two sets of linking items for each link and direction. For example, in linking grade 5 to grade 6, there were 20 grade 5 items (lower grade) and 20 grade 6 items (upper grade). The number of linking items was the same across grades.

Table 9–3. Reading Linking Item Detail

Link	Lower Grade	Upper Grade	Total
Grade 3 to Grade 4	20	20	40
Grade 4 to Grade 5	20	20	40
Grade 5 to Grade 6	20	20	40
Grade 6 to Grade 7	20	20	40
Grade 8 to Grade 7	20	20	40
Literature to Grade 8	20	20	40

A visual representation of the vertical linking design is provided in Table 9–4.

Table 9–4. Reading Vertical Linking Design

Forms

	Gr. 3	Gr. 4	Gr. 5	Gr. 6	Gr. 7	Gr. 8	Lit
Gr. 3	Gr. 3 Items (86)	Gr. 3 Items (20)					
Gr. 4	Gr. 4 Items (20)	Gr. 4 Items (87)	Gr. 4 Items (20)				
Gr. 5		Gr. 5 Items (20)	Gr. 5 Items (86)	Gr. 5 Items (20)			
Gr. 6			Gr. 6 Items (20)	Gr. 6 Items (210)	Gr. 6 Items (20)		
Gr. 7				Gr. 7 Items (20)	Gr. 7 Items (192)	Gr. 7 Items (20)	
Gr. 8					Gr. 8 Items (20)	Gr. 8 Items (192)	Gr. 8 Items (20)
Lit						Lit Items (20)	Lit Items (348)

See Appendix C for details related to vertical linking items such as *n*-counts, Eligible Content, and diagnostic categories.

VERTICAL LINKING – SCIENCE

Links were made between adjacent grades, grade 8 to Biology, and grade 8 to Chemistry. Table 9–5 below shows the number of linking items from the lower grade and the upper grade for each link. There were two sets of linking items for each link and direction. For example, in linking grade 5 to grade 6, there were 20 grade 5 items (lower grade) and 20 grade 6 items (upper grade). The number of linking items was the same across grades.

Table 9–5. Science Linking Item Detail

Link	Lower Grade	Upper Grade	Total
Grade 3 to Grade 4	20	20	40
Grade 4 to Grade 5	20	20	40
Grade 5 to Grade 6	20	20	40
Grade 6 to Grade 7	20	20	40
Grade 8 to Grade 7	20	20	40
Biology to Grade 8	20	20	40
Chemistry to Grade 8	20	20	40

A visual representation of the vertical linking design is provided in Table 9–6.

Table 9–6. Science Vertical Linking Design

Forms

	Gr. 3	Gr. 4	Gr. 5	Gr. 6	Gr. 7	Gr. 8	Bio	Chem
Gr. 3	Gr. 3 Items (91)	Gr. 3 Items (20)						
Gr. 4	Gr. 4 Items (20)	Gr. 4 Items (123)	Gr. 4 Items (20)					
Gr. 5		Gr. 5 Items (20)	Gr. 5 Items (102)	Gr. 5 Items (20)				
Gr. 6			Gr. 6 Items (20)	Gr. 6 Items (178)	Gr. 6 Items (20)			
Gr. 7				Gr. 7 Items (20)	Gr. 7 Items (327)	Gr. 7 Items (20)		
Gr. 8					Gr. 8 Items (20)	Gr. 8 Items (377)	Gr. 8 Items (20)	Gr. 8 Items (20)
Gr. 11						Gr. 11 Items (115)		
Bio						Bio Items (20)	Bio Items (390)	
Chem						Chem Items (20)		Chem Items (335)

See Appendix C for details related to vertical linking items such as *n*-counts, Eligible Content, and diagnostic categories.

VERTICAL LINKING – WRITING

Links were made between adjacent grades and grade 8 to English Composition. Table 9–7 shows the number of linking items from the lower grade and the upper grade for each link. There were two sets of linking items for each link and direction. For example, in linking grade 5 to grade 6, there were 20 grade 5 items (lower grade) and 20 grade 6 items (upper grade). The number of linking items was the same across grades.

Table 9–7. Writing Linking Item Detail

Link	Lower Grade	Upper Grade	Total
Grade 3 to Grade 4	20	20	40
Grade 4 to Grade 5	20	20	40
Grade 5 to Grade 6	20	20	40
Grade 6 to Grade 7	20	20	40
Grade 8 to Grade 7	20	20	40
English Composition to Grade 8	20	20	40

A visual representation of the vertical linking design is provided in Table 9–8.

Table 9–8. Writing Vertical Linking Design

Forms

	Gr. 3	Gr. 4	Gr. 5	Gr. 6	Gr. 7	Gr. 8	Eng
Gr. 3	Gr. 3 Items (140)	Gr. 3 Items (20)					
Gr. 4	Gr. 4 Items (20)	Gr. 4 Items (149)	Gr. 4 Items (20)				
Gr. 5		Gr. 5 Items (20)	Gr. 5 Items (165)	Gr. 5 Items (20)			
Gr. 6			Gr. 6 Items (20)	Gr. 6 Items (193)	Gr. 6 Items (20)		
Gr. 7				Gr. 7 Items (20)	Gr. 7 Items (176)	Gr. 7 Items (20)	
Gr. 8					Gr. 8 Items (20)	Gr. 8 Items (195)	Gr. 8 Items (20)
Eng						Eng Items (20)	Eng Items (365)

See Appendix C for details related to vertical linking items such as *n*-counts, Eligible Content, and diagnostic categories.

THE VERTICAL LINKING PROCEDURE

Each of the CDT content area vertical scales was centered at grade 7. Adjacent-grade shift parameters were calculated and applied such that all items were vertically linked to grade 7. For example, grade 4 science items were placed on the science vertical scale by applying three shift parameters:

- shift between grades 4 and 5 science
- shift between grades 5 and 6 science
- shift between grades 6 and 7 science

The steps used to calculate adjacent-grade shift parameters are described below. All item calibrations were done with WINSTEPS software version 3.69 (Linacre, 2009). The grade 4 to grade 5 link is provided as an example for the steps.

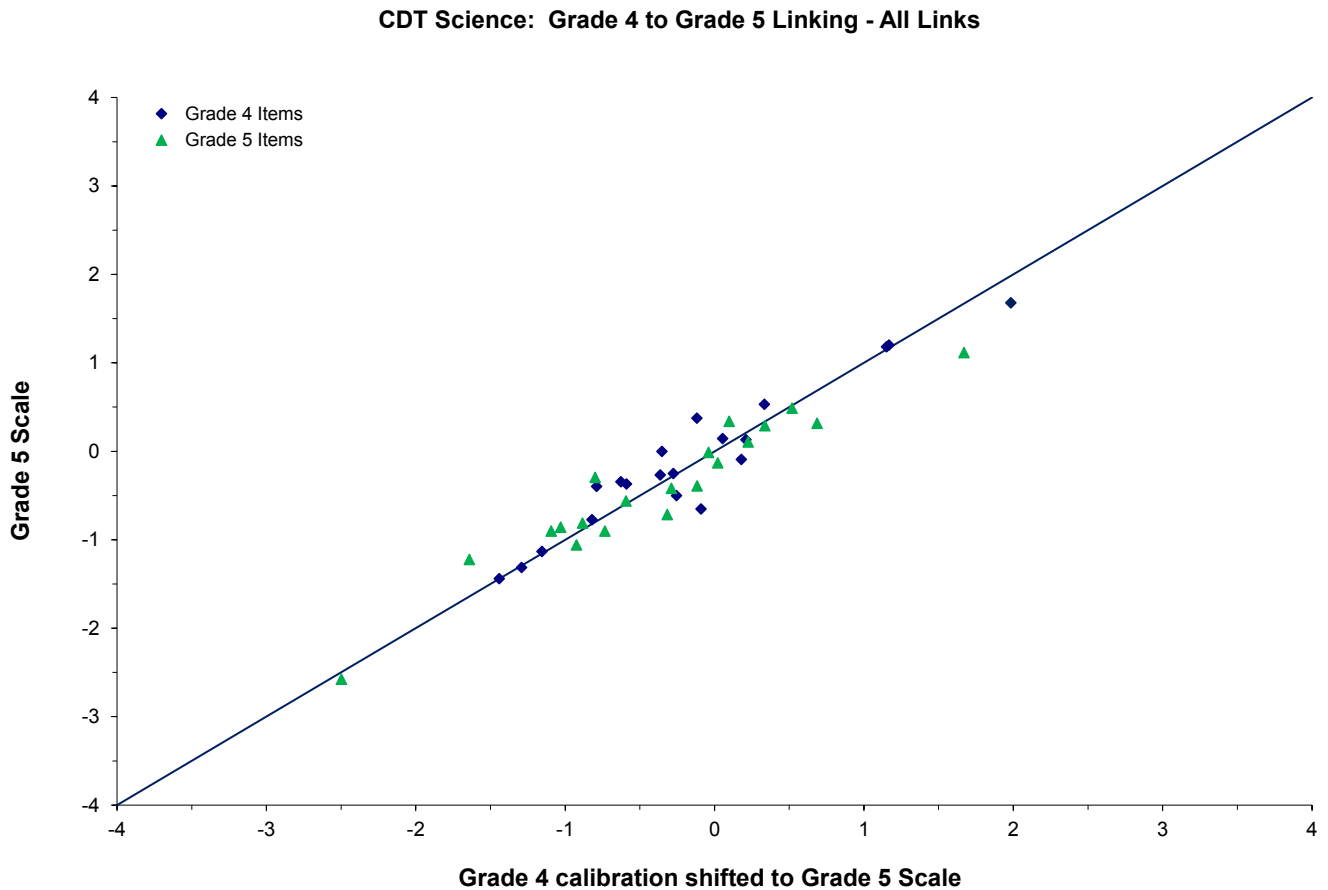
1. Calibrate all on-grade items.
 - Calibrate grade 4 items on grade 4 forms.
 - Calibrate grade 5 items on grade 5 forms.
2. Calibrate off-grade items anchoring on the on-grade items. Anchor values come from step 1.
 - Calibrate grade 5 items on grade 4 forms anchoring on item parameters determined in grade 4 calibration in step 1.
 - Calibrate grade 4 items on grade 5 forms anchoring on item parameters determined in grade 5 calibration in step 1.

Note: For the linking between grades 4 and 5, the calibration of off-grade items on grade 4 forms includes only grade 5 items. It does not include grade 3 items that appeared on grade 4 forms. That is, grade 3 and grade 5 items that appeared on grade 4 forms are not calibrated together.

For each of the linking items, there are two estimates of item difficulty—one from each of the two calibrations. Correlation between these should be high. If not, vertical linking will be problematic.

3. Calculate the difference between the two estimates of item difficulty from step 2 for each linking item. The average of these differences is the adjacent grade shift parameter.
 - If grade is less than 7, determine the shift parameter needed to place items on upper grade scale.
 - If grade is greater than 7, determine the shift parameter needed to place items on lower grade scale.
 - Calculate the difference in item difficulty estimates between step 2, bullet 1 (grade 4 scale) and step 2, bullet 2 (grade 5 scale). An example of an Excel table used for calculations can be found in Appendix C.
4. Apply the adjacent grade shift parameter and plot the linking items along with a 45° line. Figure 9–1 below is an example. The 45° line is for visual reference only. Outliers are NOT identified by comparing to the line. See step 5 for details.

Figure 9–1. Sample of Linking Items Plot



Plots for all adjacent grade links can be found in Appendix C.

5. Determine if any items should be removed from the vertical linking process. Identify potential outliers using a combination of correlation, ratio of standard deviation, and robust Z. Discuss these items with test development specialists to determine if they should be removed. An item may be removed from the linking process and still remain in the item pool. In this case, the item is not removed from the on-grade calibrations. That is, do not re-run calibrations in step 1. Repeat steps 2 through 4.
6. Calculate the final shift parameter to the base grade (center of scale) by chaining together adjacent grade shift parameters
 - Grade 7 is the base grade. The final shift parameter for grade 4 items is the shift parameter between grades 4 and 5 plus the shift parameter between grades 5 and 6 plus the shift parameter between grades 6 and 7.
7. Apply the final shift parameters in step 6 to the item parameters calibrated in step 1.

VERTICAL LINKING RESULTS

Table 9–9 shows the number of links, correlation, and shift parameter for the both the initial and final vertical linking for each content area. Initial vertical linking includes all items. Final values were determined after some links were dropped after consultation with test development specialists.

Table 9–9. Vertical Linking Summary

Content Area	Link	Number of Links Initial	Number of Links Final	Correlation Initial	Correlation Final	Shift Parameter Initial	Shift Parameter Final
Mathematics	Grade 3 to Grade 4	40	39	0.960	0.964	-1.245	-1.212
Mathematics	Grade 4 to Grade 5	40	40	0.892	0.892	-0.622	-0.622
Mathematics	Grade 5 to Grade 6	50	49	0.914	0.910	-0.416	-0.395
Mathematics	Grade 6 to Grade 7	60	60	0.935	0.935	-0.782	-0.782
Mathematics	Grade 8 to Grade 7	60	60	0.887	0.887	0.301	0.301
Mathematics	Algebra I to Grade 8	60	58	0.933	0.941	0.766	0.808
Mathematics	Algebra II to Algebra I	60	59	0.880	0.905	0.516	0.544
Mathematics	Geometry to Grade 8	60	60	0.907	0.907	1.022	1.022
Reading	Grade 3 to Grade 4	40	40	0.956	0.956	-0.257	-0.257
Reading	Grade 4 to Grade 5	40	38	0.940	0.954	-0.410	-0.348
Reading	Grade 5 to Grade 6	40	39	0.948	0.965	-0.419	-0.389
Reading	Grade 6 to Grade 7	40	37	0.914	0.945	-0.066	-0.092
Reading	Grade 8 to Grade 7	40	40	0.934	0.934	0.352	0.352
Reading	Literature to Grade 8	40	40	0.929	0.929	0.383	0.383
Science	Grade 3 to Grade 4	40	40	0.952	0.952	-0.570	-0.570
Science	Grade 4 to Grade 5	40	40	0.956	0.956	-0.773	-0.773
Science	Grade 5 to Grade 6	40	40	0.968	0.968	-0.211	-0.211
Science	Grade 6 to Grade 7	40	39	0.938	0.945	-0.135	-0.111
Science	Grade 8 to Grade 7	40	40	0.973	0.973	0.140	0.140
Science	Biology to Grade 8	40	38	0.858	0.904	0.815	0.821
Science	Chemistry to Grade 8	40	37	0.882	0.932	1.172	1.136
Writing	Grade 3 to Grade 4	40	40	0.957	0.957	-0.597	-0.597
Writing	Grade 4 to Grade 5	40	40	0.954	0.954	-0.221	-0.221
Writing	Grade 5 to Grade 6	40	40	0.967	0.967	-0.305	-0.305
Writing	Grade 6 to Grade 7	40	40	0.950	0.950	-0.237	-0.237
Writing	Grade 8 to Grade 7	40	40	0.967	0.967	0.221	0.221
Writing	English Composition to Grade 8	40	40	0.961	0.961	0.176	0.176

Recall that for each content area the vertical scale is centered at grade 7. If the item’s grade is less than 7, the shift parameter is the value that is added to place the item on the upper grade scale. For example, -1.212 is added to each grade 3 mathematics item’s difficulty to place them on the grade 4 scale. The negative sign indicates that grade 3 items are less difficult than grade 4 items. If the item’s grade is greater than 7, the shift parameter is the value added to place the item on the lower grade scale. For example, 0.301 is added to each grade 8 mathematics item’s difficulty to place them on the grade 7 scale. The positive sign indicates that grade 8 items are more difficult than grade 7 items.

Items dropped from vertical linking are shown in Table 9–10. Linking plots in Appendix C show all linking items with dropped items in red.

Table 9–10. Items Dropped from Vertical Linking

Content Area	Link	Linking Items Removed
Mathematics	Grade 3 to Grade 4	603609 (gr. 4 item)
Mathematics	Grade 4 to Grade 5	None
Mathematics	Grade 5 to Grade 6	602104 (gr. 6 item)
Mathematics	Grade 6 to Grade 7	None
Mathematics	Grade 8 to Grade 7	None
Mathematics	Algebra I to Grade 8	601126 (gr. 8 item) and 602644 (gr. 11 item*)
Mathematics	Algebra II to Algebra I	603086 (Alg II item)
Mathematics	Geometry to Grade 8	None
Reading	Grade 3 to Grade 4	None
Reading	Grade 4 to Grade 5	611272 (gr. 5 item) and 611274 (gr. 5 item)
Reading	Grade 5 to Grade 6	610309 (gr. 6 item)
Reading	Grade 6 to Grade 7	610135 (gr. 6 item), 609022 (gr. 6 item), and 609023 (gr. 6 item)
Reading	Grade 8 to Grade 7	None
Reading	Literature to Grade 8	None
Science	Grade 3 to Grade 4	None
Science	Grade 4 to Grade 5	None
Science	Grade 5 to Grade 6	None
Science	Grade 6 to Grade 7	615238 (gr. 7 item)
Science	Grade 8 to Grade 7	None
Science	Biology to Grade 8	617395 (Bio item) and 617880 (Bio item)
Science	Chemistry to Grade 8	618699 (Chem item), 616511 (Chem item), and 616365 (Chem item)
Writing	Grade 3 to Grade 4	None
Writing	Grade 4 to Grade 5	None
Writing	Grade 5 to Grade 6	None
Writing	Grade 6 to Grade 7	None
Writing	Grade 8 to Grade 7	None
Writing	English Composition to Grade 8	None

*The grade 11 item was embedded on an Algebra I form

The final shift parameters were calculated by summing adjacent grade shift parameters. For example, grade 4 items were placed on the vertical scale by applying the grade 4 to grade 5 shift, the grade 5 to grade 6 shift, and the grade 6 to grade 7 shift. Similarly, Algebra I items were placed on the vertical scale by applying the Algebra I to grade 8 shift and the grade 8 to grade 7 shift. Table 9–11 shows the final shift parameters for each content area.

Table 9–11. Final Vertical Linking Shift Parameters

Content Area	Grade/Course	Shift
Mathematics	Grade 3	-3.011
Mathematics	Grade 4	-1.799
Mathematics	Grade 5	-1.177
Mathematics	Grade 6	-0.782
Mathematics	Grade 7	0.000
Mathematics	Grade 8	0.301
Mathematics	Algebra I	1.109
Mathematics	Geometry	1.323
Mathematics	Algebra II	1.653
Reading	Grade 3	-1.086
Reading	Grade 4	-0.829
Reading	Grade 5	-0.481
Reading	Grade 6	-0.092
Reading	Grade 7	0.000
Reading	Grade 8	0.352
Reading	Literature	0.735
Science	Grade 3	-1.665
Science	Grade 4	-1.095
Science	Grade 5	-0.322
Science	Grade 6	-0.111
Science	Grade 7	0.000
Science	Grade 8	0.140
Science	Biology	0.961
Science	Chemistry	1.276
Writing	Grade 3	-1.360
Writing	Grade 4	-0.763
Writing	Grade 5	-0.542
Writing	Grade 6	-0.237
Writing	Grade 7	0.000
Writing	Grade 8	0.221
Writing	English Composition	0.397

The final vertical linking shift parameters for grade 7 in each content area is zero because it is the base grade. The final vertical linking parameter applied to grade 11 items in mathematics and science is based on the grade or course where the items were field tested. For example, the Algebra I vertical linking constant is applied to grade 11 mathematics items which appeared on Algebra I forms.

BANKED ITEM PARAMETERS FROM STAND-ALONE FIELD TESTS

Table 9–12 provides summary information based on the first stand-alone field-test events which were used to establish the content area vertical scales. The table shows the mean, standard deviation, minimum, and maximum of the item parameter estimates for each grade or course level on the content area vertical scales.

Table 9–12. Summary Statistics for Vertically Scaled Item Parameters from Stand-alone Field Test

Content Area	Grade/Course	Mean	SD	Min	Max
Mathematics	Grade 3	-3.011	1.222	-6.641	0.052
Mathematics	Grade 4	-1.799	1.008	-4.388	0.781
Mathematics	Grade 5	-1.177	1.031	-4.367	1.172
Mathematics	Grade 6	-0.782	1.122	-3.821	2.748
Mathematics	Grade 7	0.000	0.979	-2.385	2.800
Mathematics	Grade 8	0.301	0.939	-2.743	2.985
Mathematics	Grade 11	0.939	1.014	-1.175	3.713
Mathematics	Algebra I	1.109	0.763	-0.888	3.099
Mathematics	Geometry	1.323	0.865	-1.125	3.482
Mathematics	Algebra II	1.653	0.955	-1.377	4.181
Reading	Grade 3	-1.086	1.045	-3.761	1.855
Reading	Grade 4	-0.829	0.944	-3.242	2.177
Reading	Grade 5	-0.481	1.039	-3.201	1.964
Reading	Grade 6	-0.092	1.060	-2.653	3.580
Reading	Grade 7	0.000	1.077	-3.744	3.259
Reading	Grade 8	0.352	1.039	-3.127	3.093
Reading	Literature	0.735	0.929	-2.115	3.313
Science	Grade 3	-1.665	1.302	-5.319	0.813
Science	Grade 4	-1.095	1.145	-4.453	1.663
Science	Grade 5	-0.322	0.948	-2.899	1.683
Science	Grade 6	-0.111	0.971	-2.347	2.546
Science	Grade 7	0.000	0.910	-2.531	2.532
Science	Grade 8	0.140	1.035	-2.654	3.309
Science	Grade 11	0.773	0.892	-2.216	2.377
Science	Biology	0.961	0.867	-1.331	3.731
Science	Chemistry	1.276	0.688	-1.101	3.064
Writing	Grade 3	-1.360	1.196	-4.536	2.958
Writing	Grade 4	-0.763	1.140	-3.608	1.899
Writing	Grade 5	-0.542	1.073	-3.780	2.462
Writing	Grade 6	-0.237	1.052	-2.724	4.390
Writing	Grade 7	0.000	1.132	-2.866	3.593
Writing	Grade 8	0.221	1.120	-3.234	2.883
Writing	English Composition	0.397	1.087	-2.531	3.617

Figures 9–2 through 9–5 show the banked item parameter estimates following the first stand-alone field-test events for each grade or course on the content area vertical scales.

Figure 9–2. Mathematics Item Parameters Estimates from Stand-alone Field Test

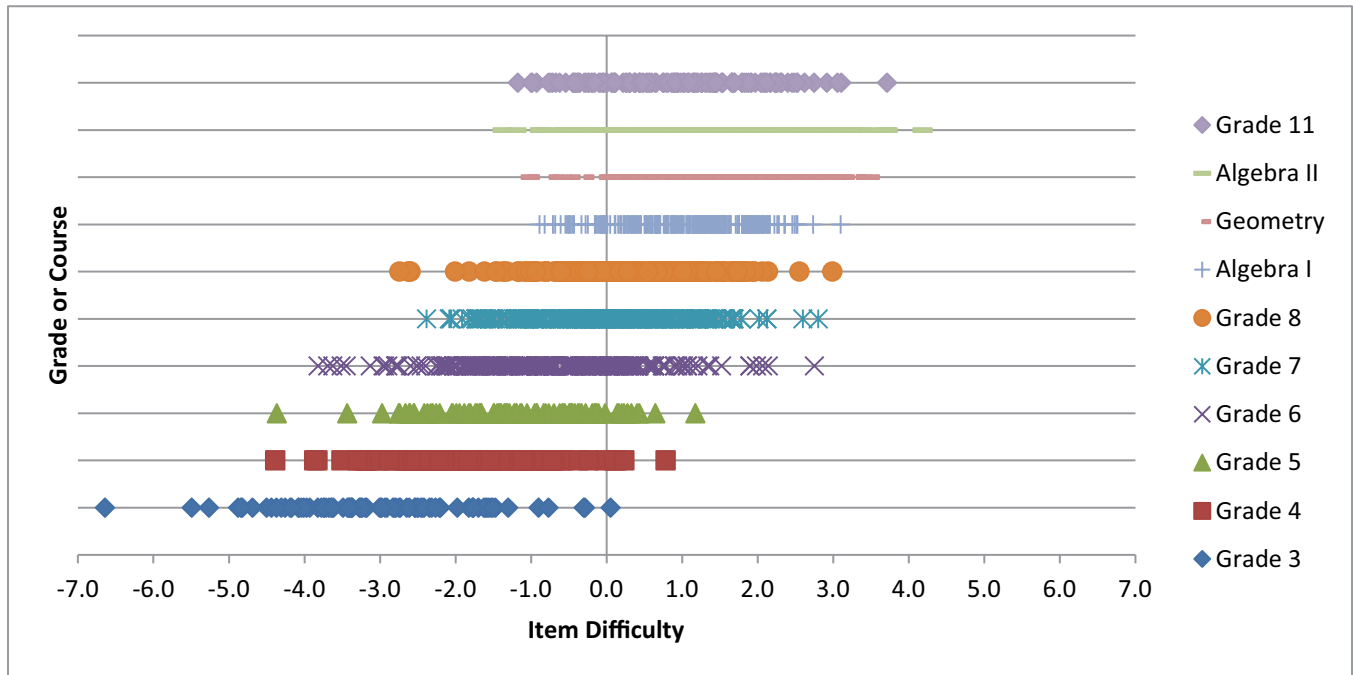


Figure 9–3. Reading Item Parameters Estimates from Stand-alone Field Test

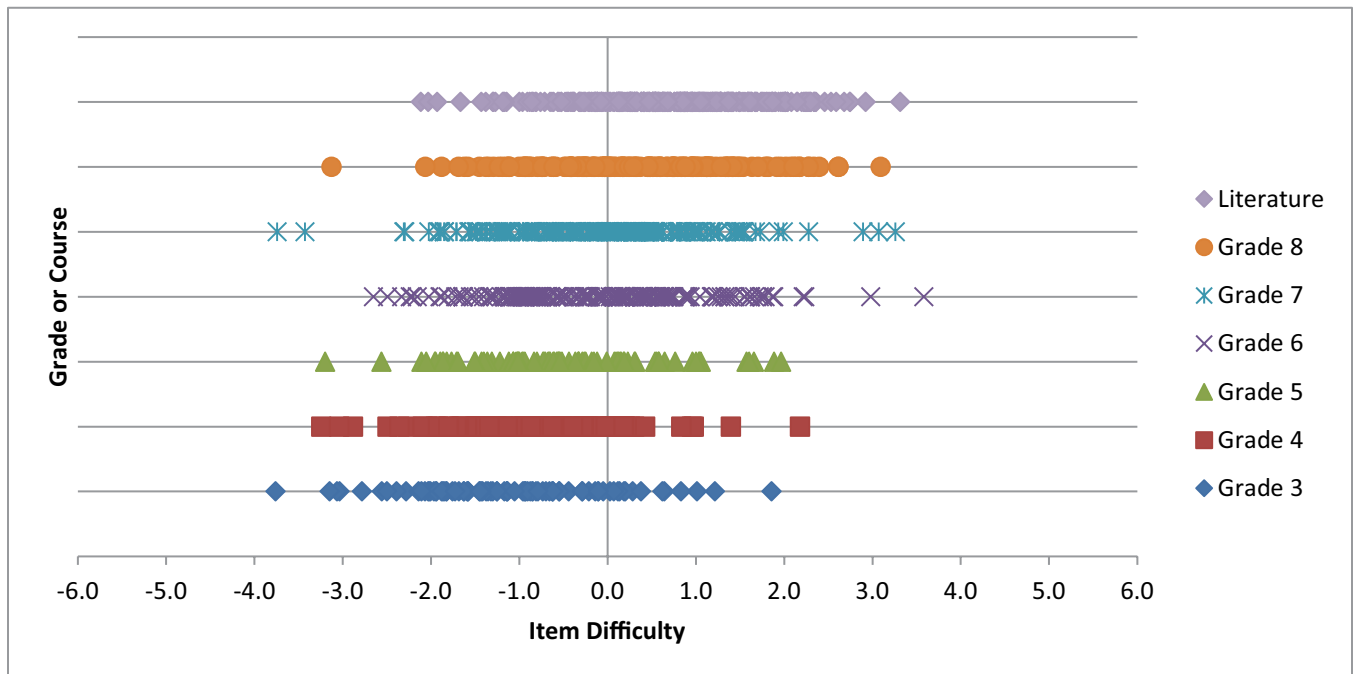


Figure 9–4. Science Item Parameters Estimates from Stand-alone Field Test

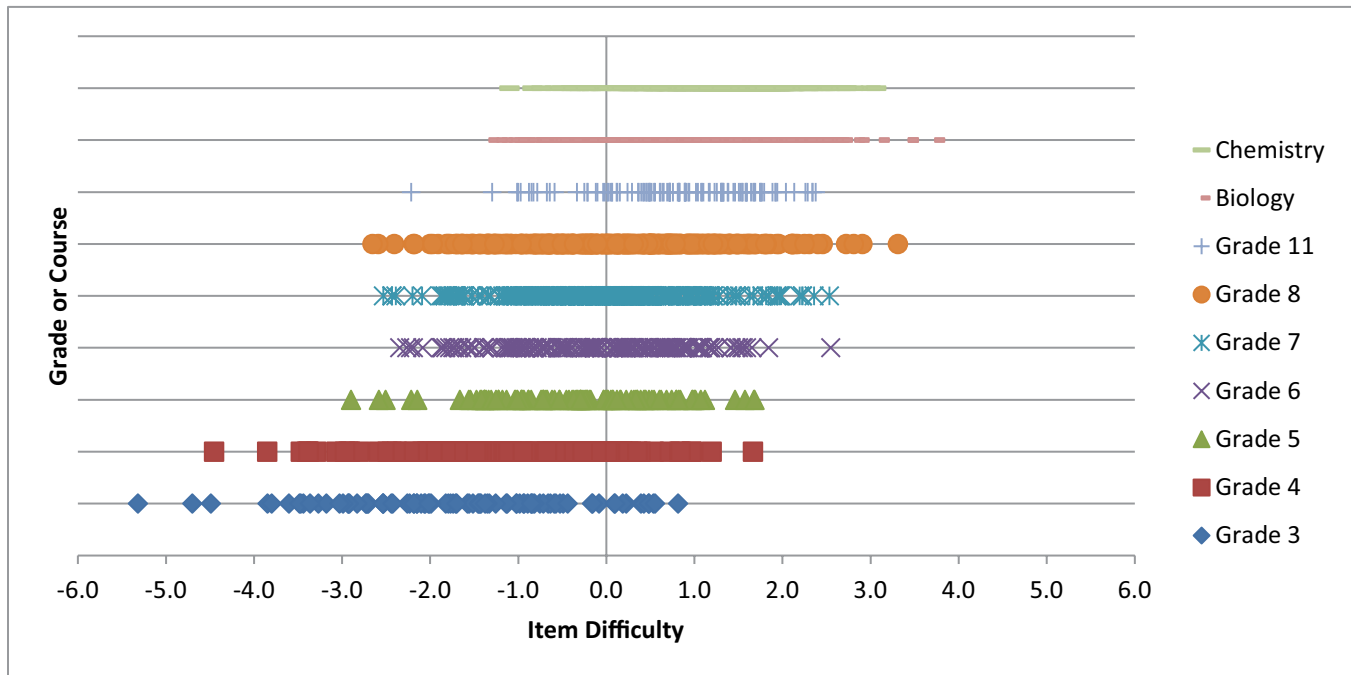
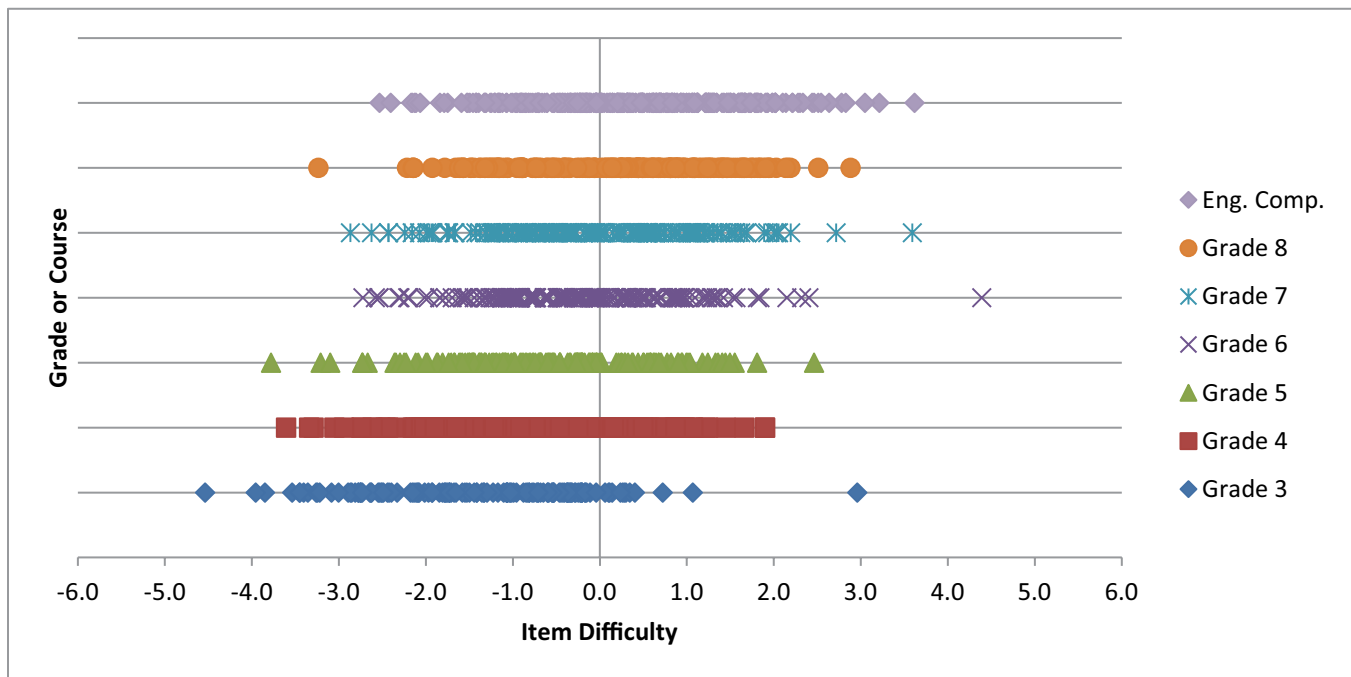


Figure 9–5. Writing Item Parameters Estimates from Stand-alone Field Test



Rasch item difficulty measure on the vertical scale and associated standard error for each item are presented in Appendix B.

BANKED ITEM PARAMETERS FOR THE 2016–2017 OPERATIONAL ITEM POOLS

A number of changes to the CDT item pools have occurred since the initial stand-alone field-test events and creation of the content area vertical scales. For example, there have been embedded field test events to augment the item pools as well as introduce items in kindergarten, grade 1, and grade 2. (See Chapter Six for details on the various field-test events.) Additionally, prior to the 2013–2014 school year CDT items in mathematics, reading, and writing were re-aligned to the new Pennsylvania Core Standards. Table 9–13 provides summary information based on the operational item pools for the 2016–2017 school year. The table shows the mean, standard deviation, minimum, and maximum of the item parameter estimates for each grade or course level on the content area vertical scales.

Table 9–13. Summary Statistics for Vertically Scaled Item Parameters for 2016–2017 School Year

Content Area	Grade/Course	Mean	SD	Min	Max
Mathematics	Kindergarten	-3.832	1.336	-6.360	-0.611
Mathematics	Grade 1	-3.697	1.083	-5.955	-0.610
Mathematics	Grade 2	-2.929	1.364	-5.987	0.402
Mathematics	Grade 3	-1.590	1.243	-5.492	2.158
Mathematics	Grade 4	-1.154	1.274	-6.641	2.748
Mathematics	Grade 5	-0.614	1.026	-2.990	2.139
Mathematics	Grade 6	-0.107	1.146	-3.821	3.389
Mathematics	Grade 7	0.324	0.946	-2.882	2.893
Mathematics	Grade 8	0.600	0.799	-1.662	3.651
Mathematics	Algebra I	1.011	0.800	-1.367	3.264
Mathematics	Geometry	1.171	0.926	-2.058	3.482
Mathematics	Algebra II	1.622	0.935	-1.377	4.181
Reading	Kindergarten	-2.586	0.942	-4.352	-0.009
Reading	Grade 1	-1.716	1.041	-4.780	0.831
Reading	Grade 2	-1.226	0.853	-3.869	0.533
Reading	Grade 3	-0.890	1.069	-4.500	1.855
Reading	Grade 4	-0.407	1.092	-3.608	2.464
Reading	Grade 5	-0.172	0.947	-3.201	1.964
Reading	Grade 6	0.030	0.958	-2.653	2.232
Reading	Grade 7	0.213	0.957	-3.744	3.259
Reading	Grade 8	0.461	0.968	-3.127	2.799
Reading	Literature	0.757	0.870	-2.115	2.822
Science	Grades K-2 span	-2.285	1.151	-5.446	1.864
Science	Grade 3	-1.775	1.269	-5.319	0.806
Science	Grade 4	-1.107	1.192	-7.111	1.689
Science	Grade 5	-0.497	0.829	-2.899	1.721
Science	Grade 6	-0.192	0.897	-2.723	1.655
Science	Grade 7	-0.059	0.846	-2.531	2.532
Science	Grade 8	0.025	0.920	-2.654	3.309

Table 9–13 (continued). Summary Statistics for Vertically Scaled Item Parameters for 2016–2017 School Year

Content Area	Grade/Course	Mean	SD	Min	Max
Science	Grade 11	0.672	0.944	-2.216	2.391
Science	Biology	0.855	0.851	-1.377	3.731
Science	Chemistry	1.266	0.685	-1.101	3.064
Writing	Kindergarten	-3.190	1.026	-5.685	0.047
Writing	Grade 1	-2.514	1.025	-5.107	0.693
Writing	Grade 2	-1.885	0.891	-4.436	-0.064
Writing	Grade 3	-1.037	1.300	-4.536	2.958
Writing	Grade 4	-0.609	1.145	-3.683	2.137
Writing	Grade 5	-0.579	1.069	-3.780	1.929
Writing	Grade 6	-0.300	0.979	-2.580	3.006
Writing	Grade 7	-0.037	0.898	-2.625	2.194
Writing	Grade 8	0.090	0.975	-3.234	2.192
Writing	English Composition	0.399	1.002	-2.531	3.214

Figures 9–6 through 9–9 show the banked item parameter estimates for the operational item pools for the 2016–2017 school year for each grade or course on the content area vertical scales.

Figure 9–6. Mathematics Item Parameters Estimates for 2016–2017 School Year

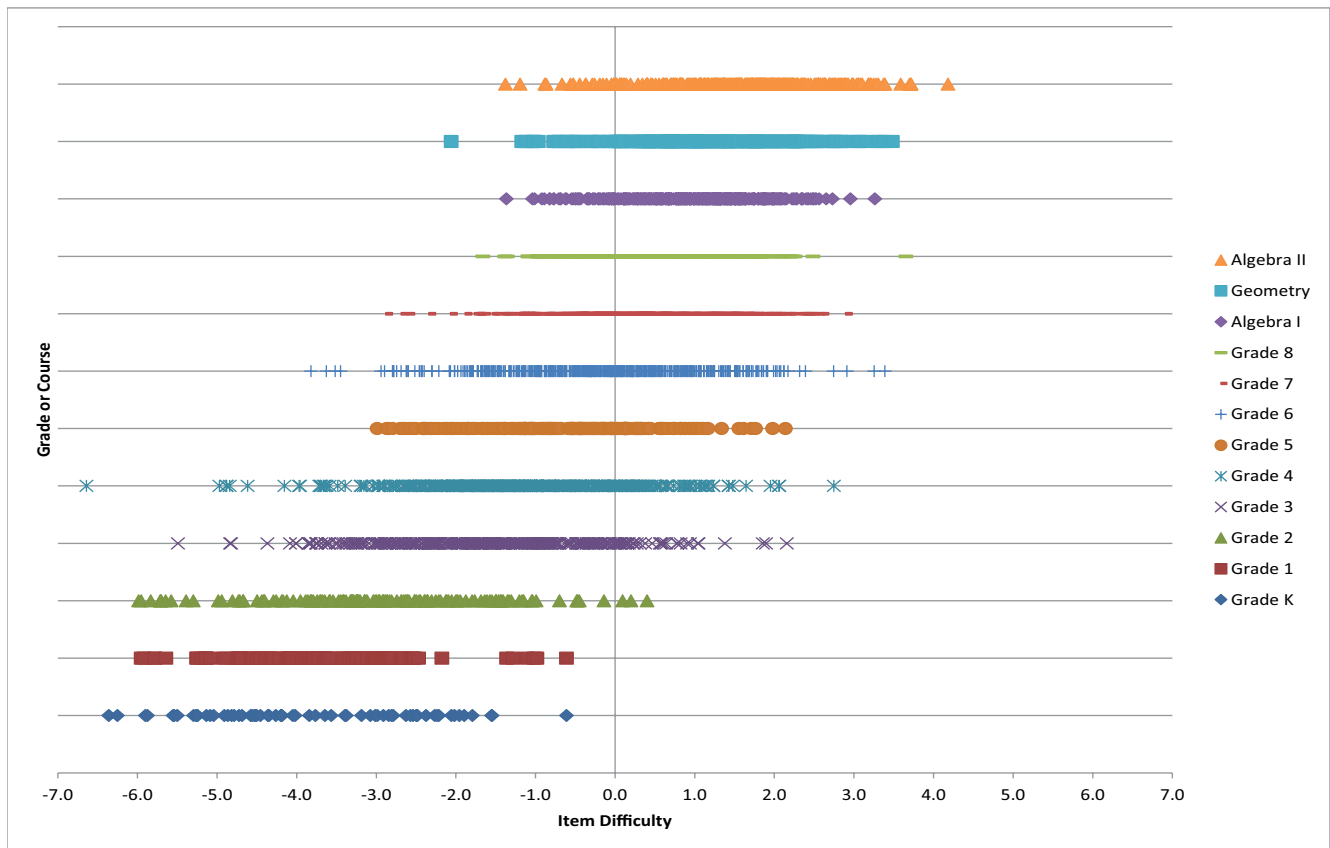


Figure 9–7. Reading Item Parameters Estimates for 2016–2017 School Year

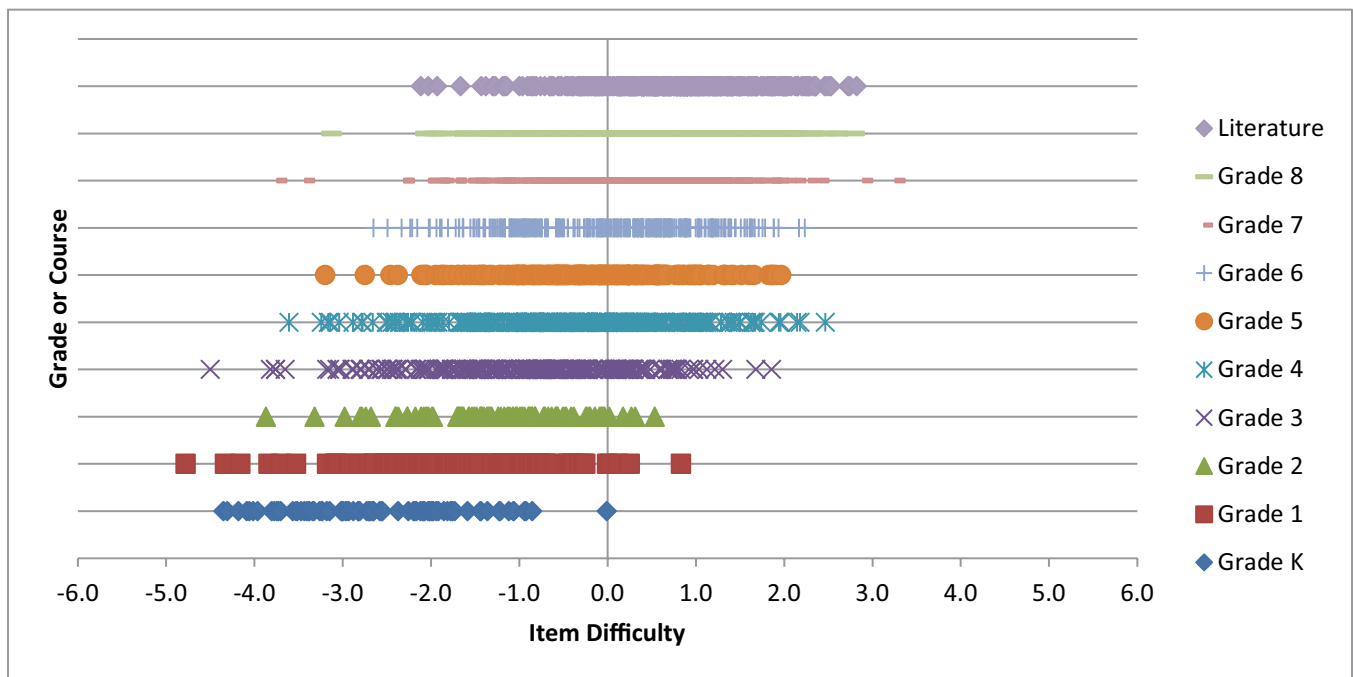


Figure 9–8. Science Item Parameters Estimates for 2016–2017 School Year

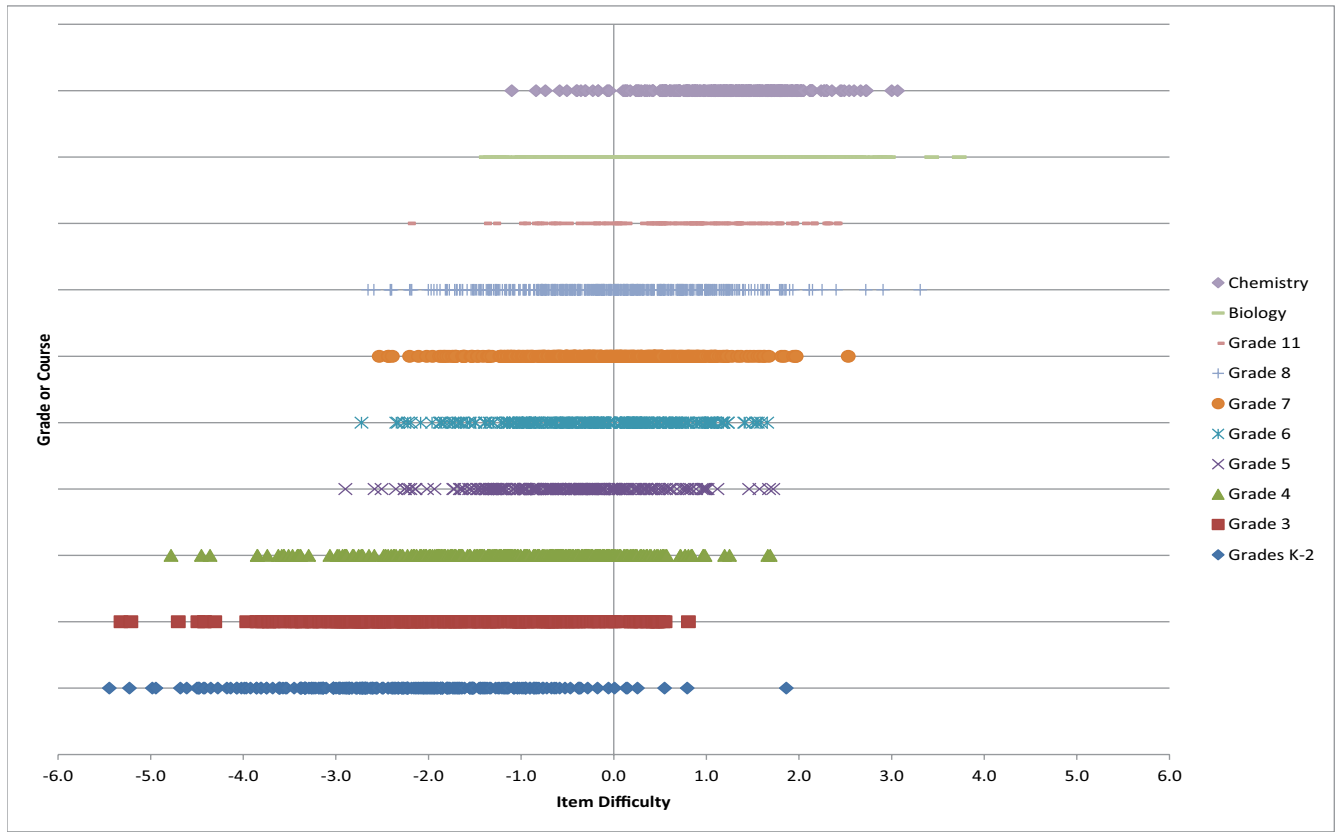
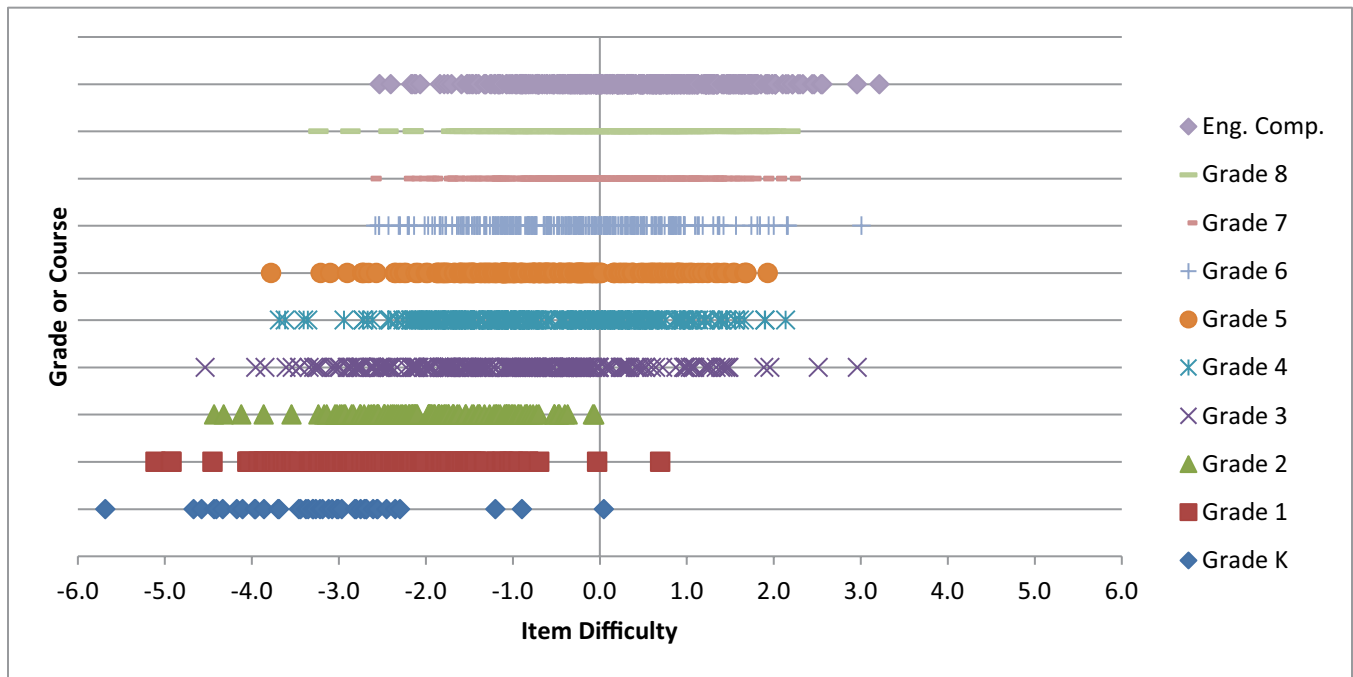


Figure 9–9. Writing Item Parameters Estimates for 2016–2017 School Year



Rasch item difficulty measure on the vertical scale and associated standard error for each item are presented in Appendix B.

CHAPTER TEN: BENCHMARKING

As described in Chapter Fourteen, CDT scores are placed along a continuum from “Areas of Need” to “Strengths to Build On.” These are represented in the dynamic reporting suite with colors red, green, and blue. “Areas of Need” are depicted in the red range, while “Strengths to Build On” are depicted in the green and blue ranges. The center of the green range is the point that separates students into two categories: solidly ready for the next grade or course and not solidly ready for the next grade or course. In each content area, the center of the green range for grades 5 and above was established by panels of Pennsylvania educators during benchmarking activities¹.

BENCHMARKING ACTIVITIES

Table 10–1 below presents general information about the preliminary benchmarking activities for mathematics, reading, science, and writing. The cut points established are considered preliminary because they were set prior to the first operational administration of the CDT. This was necessary so teachers and students would have access to immediate scores and reports following operational administration. As operational data become available, preliminary cut points are reevaluated and possibly revised (see Chapter Nineteen for details including the benchmark cuts in place for the 2016-2017 school year).

Table 10–1. General Information about CDT Benchmarking Activities

Category	Information
Event Date	Mathematics: August 12–13, 2010
Event Date	Reading: January 27–28, 2011
Event Date	Science: January 27–28, 2011
Event Date	Writing: August 4–5, 2011
Grades/Courses	Mathematics: Grades 5–8, High School, Algebra I, Geometry, Algebra II
Grades/Courses	Reading: Grades 5–8, Literature
Grades/Courses	Science: Grades 5–8, High School, Biology, Chemistry
Grades/Courses	Writing: Grades 5–8, English Composition
Methodology	Randomly Ordered Item Booklet (ROIB) Angoff (Yes/No) Method
Categories	Not solidly ready for the next grade or course
Categories	Solidly ready for the next grade or course
Number of Panelists	Mathematics: 28
Number of Panelists	Reading: 23
Number of Panelists	Science: 20
Number of Panelists	Writing: 46
Rounds	Two

There were three separate CDT benchmarking events because the operational CDT was rolled out in phases by content area. Each benchmarking event followed the initial stand-alone field-test event for that content area.

When initially launched, the CDT was available to students in grades 6 and above. However, cut points were established for grades 5 and above. This is because CDT is available throughout the school year. Early in the school year it may be more appropriate to evaluate a student’s scores based on the prior grade cut. For example, in October, a teacher may choose to evaluate a grade 6 student’s scores relative to the grade 5 cut.

¹ The center of the green range for grades 2 through 4 was extrapolated from grades 5 and above prior to the launch of each CDT for students in grades 3 through 5 in spring of 2014. See Chapter Nineteen for details.

The Randomly Ordered Item Booklet (ROIB) Angoff (Yes/No) method was used to set CDT benchmark cut points. Panels of educators worked in grade/course groups to establish cut points for grades 5 through 8, high school, and content area courses Algebra I, Geometry, Algebra II, Literature, Biology, Chemistry, and English Composition. After a training session describing the process and definition of roles, a discussion was held in which panelists were asked to describe what “solidly ready for the next grade or course” means. Thereafter, panelists were asked to review approximately 40 test questions and make individual yes/no judgments as to whether a “solidly ready” student would be successful in answering each question. The judgments were made over two iterations or rounds with a sequence of Round 1 judgments, show and verification of Round 1 results, group discussion, and Round 2 judgments.

After cut points were set for each grade and course within a content area, the vertical articulation of cut points across grades and courses was reviewed. Given that each content area is vertically scaled, it was expected that cut points would increase as grade increased. For example, the grade 8 cut point would not be lower than the grade 7 cut point on the vertical scale. In some cases, post-smoothing was required to ensure increasing cut points across grades/courses and smooth transitions.

Complete descriptions of each benchmarking activity including post-smoothing are available in TAC documents:

- Classroom Diagnostic Tools – Results for Preliminary Benchmarking Activity – Mathematics
- Classroom Diagnostic Tools – Results for Preliminary Benchmarking Activity – Reading and Science
- Classroom Diagnostic Tools – Results for Preliminary Benchmarking Activity – Writing

BENCHMARKING RESULTS

Preliminary cut points in the logit metric for each content area are shown in Figures 10–1 through 10–4. In general, the difference between cut points is greater in the lower grades and then levels off.

Figure 10–1. Preliminary Benchmark Cut Points for Mathematics

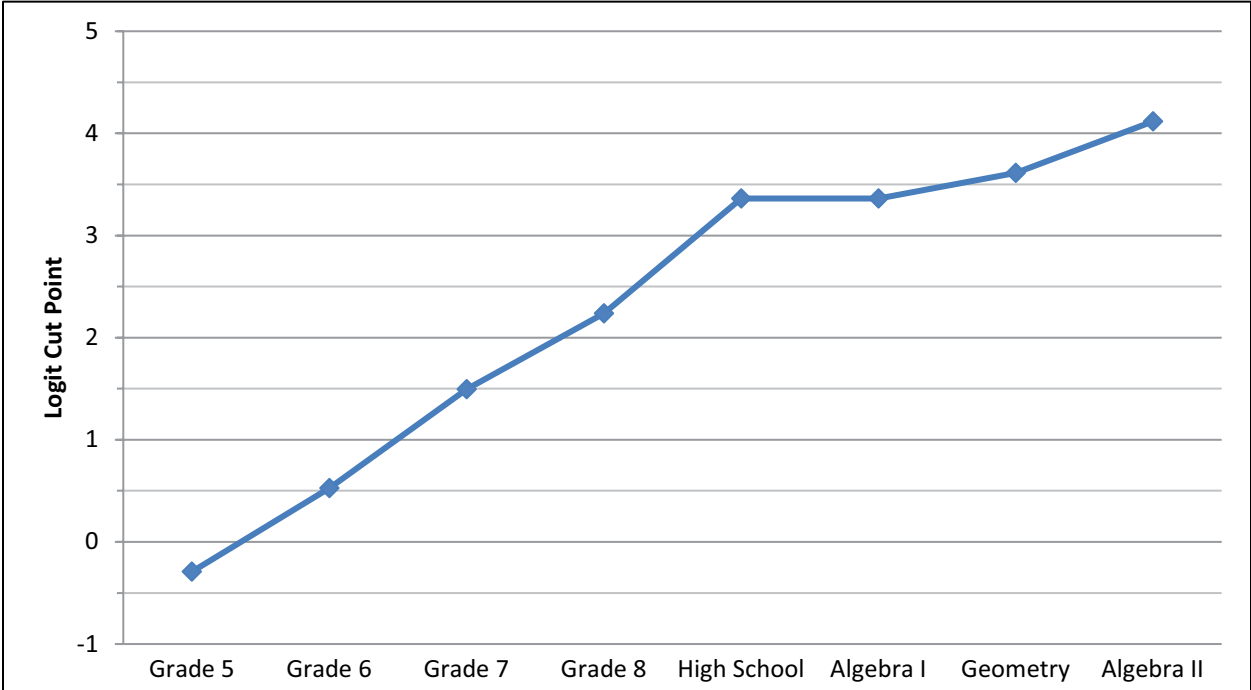


Figure 10–2. Preliminary Benchmark Cut Points for Reading

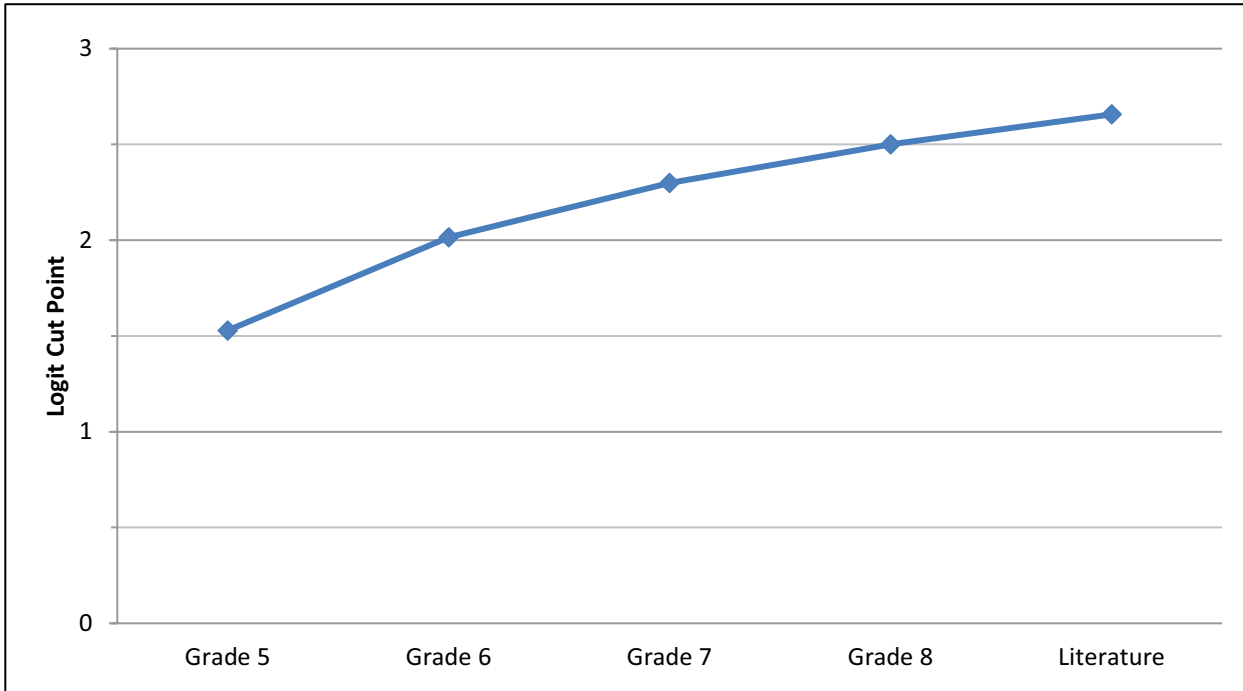


Figure 10–3. Preliminary Benchmark Cut Points for Science

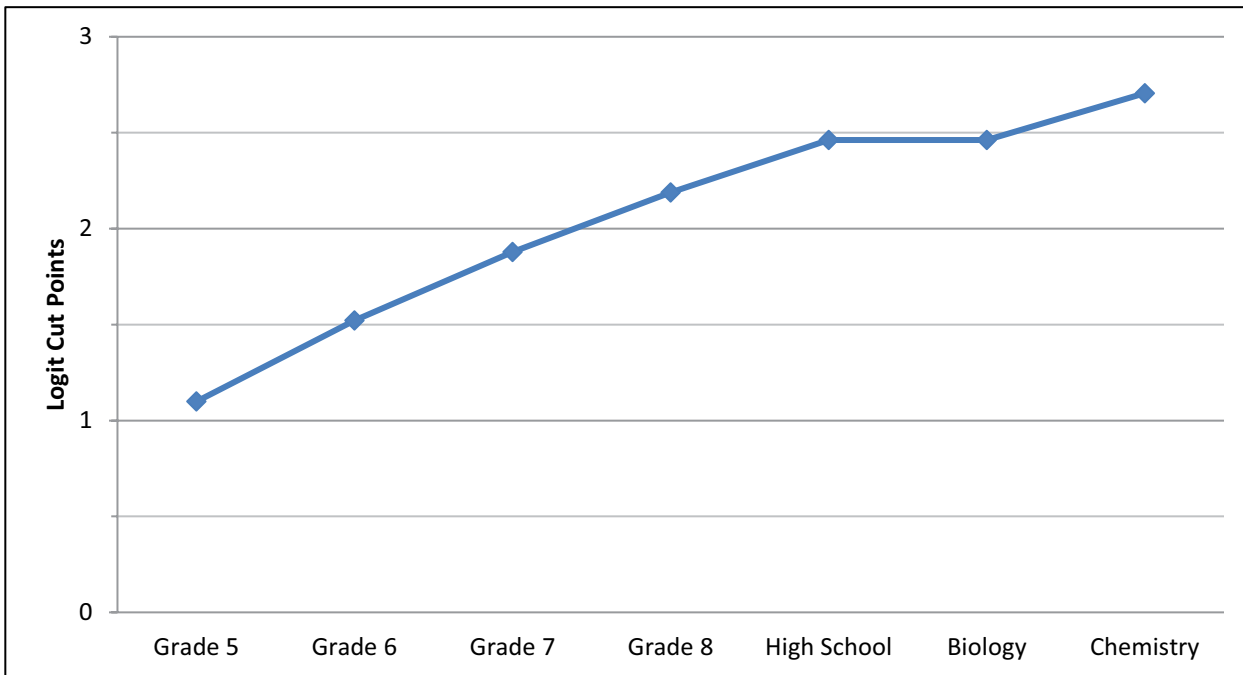


Figure 10–4. Preliminary Benchmark Cut Points for Writing

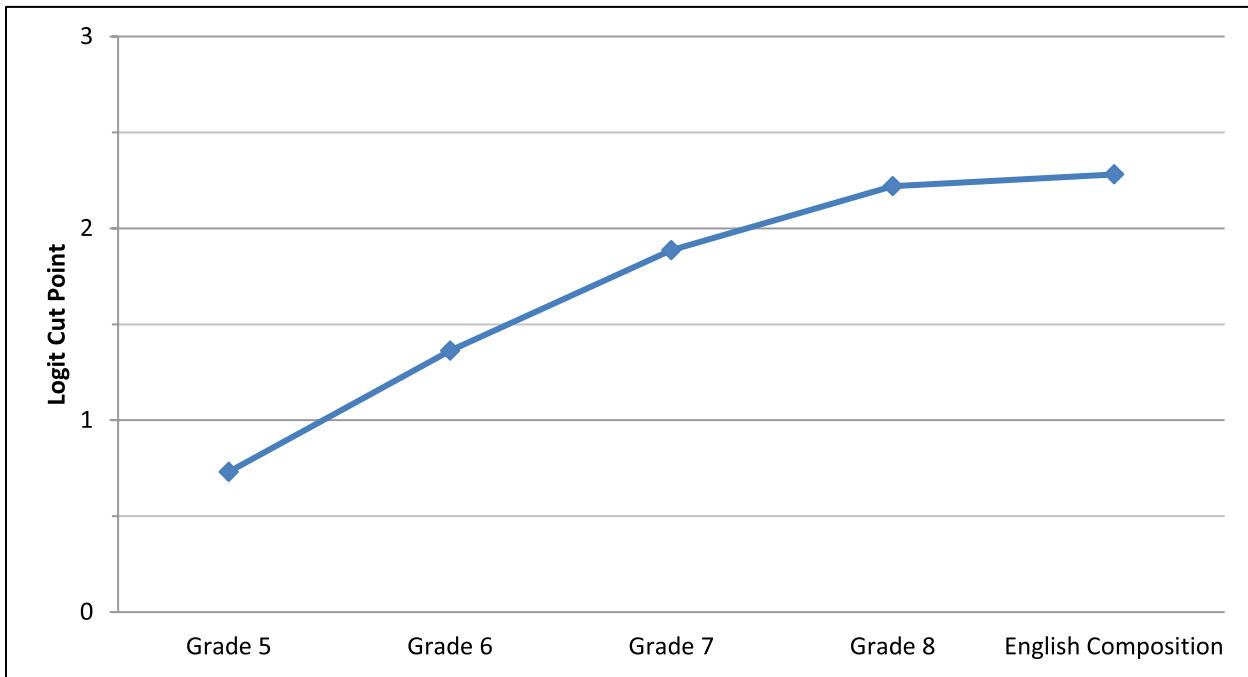


Table 10–2 shows the preliminary benchmark cuts in the logit metric for each content area. Also presented are the scale score ranges for each color on the CDT reports.

Table 10–2. Preliminary Benchmark Cuts and Scale Score Ranges

Content Area	Grade or Course	Logit Cut Point (Center of Green)	Red Scale Score Range	Green Scale Score Range	Blue Scale Score Range
Mathematics	Grade 5	-0.292	400 - 895	896 - 1058	1059 - 2000
Mathematics	Grade 6	0.526	400 - 997	998 - 1160	1161 - 2000
Mathematics	Grade 7	1.495	400 - 1118	1119 - 1281	1282 - 2000
Mathematics	Grade 8	2.238	400 - 1211	1212 - 1374	1375 - 2000
Mathematics	High School	3.363	400 - 1351	1352 - 1514	1515 - 2000
Mathematics	Algebra I	3.363	400 - 1351	1352 - 1514	1515 - 2000
Mathematics	Geometry	3.614	400 - 1383	1384 - 1546	1547 - 2000
Mathematics	Algebra II	4.117	400 - 1446	1447 - 1609	1610 - 2000
Reading	Grade 5	1.529	400 - 982	983 - 1197	1198 - 2000
Reading	Grade 6	2.015	400 - 1051	1052 - 1266	1267 - 2000
Reading	Grade 7	2.299	400 - 1092	1093 - 1307	1308 - 2000
Reading	Grade 8	2.500	400 - 1121	1122 - 1336	1337 - 2000
Reading	Literature	2.657	400 - 1143	1144 - 1358	1359 - 2000
Science	Grade 5	1.099	400 - 1009	1010 - 1182	1183 - 2000
Science	Grade 6	1.522	400 - 1066	1067 - 1239	1240 - 2000
Science	Grade 7	1.879	400 - 1113	1114 - 1286	1287 - 2000
Science	Grade 8	2.189	400 - 1154	1155 - 1327	1328 - 2000
Science	High School	2.462	400 - 1190	1191 - 1363	1364 - 2000
Science	Biology	2.462	400 - 1190	1191 - 1363	1364 - 2000
Science	Chemistry	2.706	400 - 1223	1224 - 1396	1397 - 2000
Writing	Grade 5	0.731	400 - 959	960 - 1132	1133 - 2000
Writing	Grade 6	1.363	400 - 1043	1044 - 1216	1217 - 2000
Writing	Grade 7	1.886	400 - 1113	1114 - 1286	1287 - 2000
Writing	Grade 8	2.219	400 - 1157	1158 - 1330	1331 - 2000
Writing	English Composition	2.281	400 - 1166	1167 - 1339	1340 - 2000

CHAPTER ELEVEN: SCALING

Scaling is used to transform test score values onto a scale that can be interpreted by users easily and correctly. Raw scores cannot be used to compare students' achievement on the CDT because they depend on the difficulty of the test items administered. Given the adaptive nature of the CDT, each student receives test items targeted at his or her level of achievement. Therefore, two students may have taken very different sets of items in terms of difficulty but have the same raw score. This makes use of raw scores for comparison across students, across administrations, or to a specific standard (cut point) meaningless. Rasch ability estimates in the logit metric do take into consideration the difficulty of the items administered. Therefore, they may be used to make comparisons. However, scale scores are introduced to report CDT results since scale scores may be easier to understand and interpret than logits.

Essentially, CDT scale scores are derived through a two-step process. First, there is a nonlinear transformation that converts an individual raw score on a unique set of items to Rasch ability (in logits). Second, a linear transformation is used to convert logits to scale scores. These and some additional considerations (e.g., rounding rules) are discussed in more detail below.

RAW SCORES TO RASCH ABILITY ESTIMATES

For each CDT test, the calibrated item difficulties associated with the unique set of items administered were used to obtain Rasch person ability estimates and asymptotic standard errors of measurement for the overall test, as well as each diagnostic category. Calibrated item difficulties were based on the field tests and vertical linking (further discussed in Chapter Eight and Chapter Nine).

Raw scores (total and diagnostic category) on the unique set of items that makes up an individual CDT test were mapped to Rasch ability estimates using unconditional, joint-maximum likelihood estimation. In the case of zero or perfect raw scores, a fractional raw score (a value less than one) was added to zero scores and subtracted from perfect scores to determine the corresponding logit values for these extreme scores. The Rasch ability estimates were then transformed to scale scores as discussed in the next section.

RASCH ABILITY ESTIMATES TO SCALE SCORES

Generally, scale scores are preferred over Rasch ability estimates for reporting purposes. One issue is that Rasch ability estimates are on a scale that includes negative and decimal values. By transforming the Rasch ability estimates to scale scores, all reported values can become positive integers, which makes more sense to teachers, parents, and students. Since Rasch ability estimates are comparative, the transformed scale scores have a common scale across administrations.

Scale scores are usually obtained through some linear transformation of Rasch ability estimates. Before the linear equation was established for each content area, a few points were considered for the CDT:

- Avoid scales that might be confused with scores for other types of assessment; for example:
 - Scale scores ranging from 0 to 100 (because this might be confused with percent correct scores or percentile ranks)
 - Scale scores ranging from 200 to 800 (because this might be confused with SAT scores)
 - Scale scores with similar ranges as the ones for the Pennsylvania System of School Assessment (PSSA) or Keystone Exams
- Avoid scales similar to raw scores.
- Avoid scales that might suggest the scores are more precise than they actually are (in other words, suggesting more precision than can be supported by the test scores).
- Avoid scales with negative numbers and decimals.

In terms of industry standard practice, a common perspective is that scale scores should facilitate score interpretation while at the same time minimize misinterpretation and unwarranted inferences. Often this is done

by incorporating some kind of meaning to the scores¹ (Peterson, Kolen, and Hoover, 1989). The incorporation of content meaning is one way to facilitate score interpretation. This might be done in several different ways. For example, PSSA scaled scores, like those of many other state assessments, try to input some content meaning by having the PSSA performance level cut scores have known values on the scaled score metric. Such an approach appears to make good sense given the purposes of the criterion-reference test like the PSSA.

For CDT, the scale must be sufficiently large to cover the entire vertical scale. As a result, an initial scale score range of 400 to 2000 was established for each content area. When CDT was expanded in spring of 2014 and made available to students in grades 3 through 5, the scale score range was expanded to 200 to 2000 for those students. Initially, the grade 7 benchmark logit cut point was mapped to a scale score of 1200 for all content areas. It is worth noting that, although careful consideration was given to the selection of these values, they are completely arbitrary. For example, the label of 1200 could have been called 100 or any other value without affecting any of the relationships among schools, administrations, students, or items. In other words, changing the scale would simply be changing the labels on the axis of a graph without moving any of the points.

LINEAR TRANSFORMATION FORMULAS

The scale scores for the CDT for each content area are obtained through a linear transformation of the Rasch ability estimates ($\hat{\beta}$). Specifically,

$$SS = m\hat{\beta} + b,$$

where m is the slope and b is the intercept. The linear transformation for each CDT content area was derived by anchoring the grade 7 benchmark cut (i.e., Rasch ability estimate) to the scale score 1200 and a Rasch ability estimate of 7.9 to the scale score of 2000. The slopes of the scaling equations influence the variability of the scale scores. It is important that the slopes are sufficiently large to cover the full range of the vertical scale. The CDT scaling equations produce scale score distributions with standard deviations of approximately 150 scale score points and cover logit ranges of approximately -6.5 to 7.9. The final slopes and intercepts for deriving scale scores for the CDT are provided in Table 11–1.

Table 11–1. Scaling Constants by Content Area

Content Area	Slope	Intercept
Mathematics	124.90	1013.30
Reading	142.83	871.63
Science	132.87	950.34
Writing	133.02	949.12

ROUNDING

The linearly transformed scale scores are rounded to the nearest integer value for reporting purposes. Values greater than or equal to 0.50 are rounded up. Values less than 0.50 are rounded down.

¹ Not everyone agrees with this sentiment. Some have argued the opposite point—that is, any attempt to add meaning to test scores actually predisposes the scores to be misinterpreted (see Angoff, 1984).

LOWEST OBTAINABLE SCALE SCORES

Each general content area CDT (mathematics, reading, science, and writing) has a lowest obtainable scale score (LOSS) of 200. Course specific CDTs (Algebra I, Geometry, Algebra II, Biology, and Chemistry) have a lowest obtainable scale score (LOSS) of 400. Any derived scale score less than LOSS is truncated to this minimum value. The selection of a LOSS is mainly based on two considerations:

1. Extremely low scale scores may have an impact on the average of the scale scores if CDT data is summarized at school, district, or state level.
2. Score truncation makes sense from a score precision perspective given measurement errors at the extremes are large.

HIGHEST OBTAINABLE SCALE SCORES

A highest obtainable scale score (HOSS), 2000, is set for the CDT for the same reasons as described for the LOSS value.

CHAPTER TWELVE: EQUATING

Equating is a statistical process that is used to adjust scores on test forms so that scores on the forms can be used interchangeably (Kolen & Brennan, 2004), even though the test forms consist of different items. In the case of the CDT, the adaptive nature of the test means that each student takes a unique test form with items targeted at his or her level of achievement.

To make meaningful comparisons of test scores across administrations, various equating models and procedures have been developed in the literature. For example, in terms of design, there are randomly equivalent groups design and common-item non-equivalent groups design. In terms of testing model, the model can be classified as either classical test theory based equating model or modern test theory (e.g., Rasch model or item response theory) based equating model. In terms of when the equating is conducted in the assessment cycle, the model can be classified as pre-equating or post-equating.

Given the requirements of adaptive testing and immediate score reporting, CDT is pre-equated. Also, it was based on the Rasch model. The following sections will focus on the discussion of pre-equating and the equating design for the CDT.

PRE-EQUATING VERSUS POST-EQUATING

Like other Pennsylvania assessment programs, the CDT uses the Rasch model to guide test design, calibration, scaling, and equating. The key element of equating test forms using the Rasch model is to place the item parameters on the same scale. Once this is done, raw scores can be converted to Rasch ability estimates and then to scale scores as described in Chapter Eleven. As a result, the scale scores can be compared across forms and administrations with different items.

A common practice in many K–12 large-scale assessment programs is to have all the items field tested before they are administered in an operational setting. Once the field-test items' difficulties are placed on the base scale or common metric, in theory, one should not expect the Rasch item difficulties for these items to change, except within a reasonable range of measurement error, after they are administered in an operational test, providing the Rasch model fits the data. Based on this theoretical advantage of using Rasch models, equating can be conducted using the item parameters calibrated from field-test data. This statistical procedure is referred to as pre-equating. In contrast, post-equating involves the use of Rasch item difficulties calibrated from the data of the operational test to be equated.

Although, in theory, the two equating procedures should provide identical results when the model fits the data, each of them has its own advantages and disadvantages. The use of pre-equating can facilitate the operational process in terms of adaptive item selection, rapid or immediate score reporting, and more flexibility in the assessment. However, a variety of issues need to be considered when using pre-equating in practice. For example, students may not be motivated to take the field tests, especially stand-alone field tests, which may make the items appear harder in the field test than in the operational test (Eignor, 1985; Eignor and Stocking, 1986; Stocking and Eignor, 1986; Kolen and Harris, 1990). Other concerns for the field-test items include item context, item position, and sample size. In contrast, the use of post-equating, when applicable, does not have the same motivational concerns because students cannot distinguish between operational and field-test items. Also, post-equating is sometimes considered to yield more accurate analysis results given the large number of students who take the operational tests. On the other hand, post-equating does not allow for adaptive item selection or immediate score reporting as required of the CDT.

EQUATING DESIGN FOR THE CDT

The CDT is an adaptive test, meaning that the test items selected are tailored to each student's achievement as the test progresses. This requires that all items in the pool be on the same scale and known at the time of testing. For CDT, this is accomplished by vertical linking the entire item pool within a content area based on the field-test events. See Chapter Eight and Chapter Nine for details. The known (pre-equated) item parameters are used in selecting items targeted for the student and to provide immediate scores to teachers and students.

In implementing the pre-equating model for the CDT, efforts were made to enhance the accuracy of pre-equating results. To address the concerns on students' motivation to take field tests, records were excluded from item calibrations if the student did not answer at least 5 questions. Also, records with high person outfit mean-squares values were excluded following the WINSTEPS suggestion that these may be the result of a few random responses by low performers. To address concerns of sample sizes, windows for field testing were scheduled so they did not overlap other testing in an attempt to increase volunteer participation. Also, field-test windows were extended in cases where schools were unable to complete testing in the allotted time. A small study of mathematics vertical linking items revealed no position effects. However, it should be noted that with adaptive tests students do not take the same items. Even if two students do take the same item, it will likely not be in the same test position.

EVALUATION OF ITEM PARAMETER STABILITY

After each school year, item parameter stability studies are conducted for each content area. If the differences between the newly estimated Rasch item difficulties and the estimates based on the field-test events are not statistically significant, the pre-equating results should be valid. See Chapter Eighteen for results of item parameter stability studies based on operational data from the 2016–2017 school year.

EQUATING ADDITIONAL FIELD-TEST ITEMS

Over time, additional items have been, and will continue to be, needed to replenish the CDT item pools. Plans to field test additional items must include an equating plan. Equating is needed to place the new items onto the existing vertical scale. In the case of stand-alone field-test events, common-item equating was used. That is, field-test forms included items from the current CDT item pool. In the case of embedded field-test events, field-test items were included within an operational administration such that students did not know which items were field test. With both stand-alone and embedded field test, equating was accomplished by running the calibration of field-test items with item parameters of operational items fixed/anchored to the bank values using WINSTEPS. For each content area, the entire item pool, including field-test items, was calibrated using WINSTEPS with operational items anchored on the banked values.

CHAPTER THIRTEEN: OPERATIONAL TEST DESIGN AND CAT CONFIGURATIONS

The Pennsylvania Classroom Diagnostic Tools (CDT) was initially developed to support teachers and students in grades 6 through 12. In spring 2014, CDT was made available to students in grades 3 through 5 as well. The tools are fully integrated and aligned in the Standards Aligned System (SAS) and enable educators to identify students' academic strengths and areas of need as well as provide links to classroom resources. The assessment is voluntary and administered completely online using a computer adaptive test (CAT) model.

The CDT features a number of tests. Tests in Mathematics, Algebra I, Geometry, and Algebra II were introduced in October 2010 for students in grades 6 and above. Tests in Reading/Literature, Science, Biology, and Chemistry were first available in April 2011 for students in grades 6 and above. Tests in Writing /English Composition began in October 2011 for students in grades 6 and above. Tests in Mathematics, Reading, Science, and Writing for students in grades 3 through 5 started in April 2014.

This chapter details the operational CDT test design and configuration of the CAT algorithm. Test design elements include the number of diagnostic categories, the number of operational items to administer per diagnostic category, and the number of embedded field-test items. CAT algorithm elements include entry point, item selection criteria, test navigation, and termination.

OPERATIONAL TEST DESIGN

NUMBER OF DIAGNOSTIC CATEGORIES

The CDT tests include multiple-choice (MC) and evidence-based selected-response (EBSR) items. All items in the content areas of mathematics, reading, and writing are aligned to the Pennsylvania Core Standards. All items in the content area of science are aligned to the Pennsylvania Academic Standards. Each CDT is broken into four or five diagnostic categories and the items in the pool are grouped by these diagnostic categories based on the Assessment Anchors and Eligible Content. The diagnostic categories for each of the CDT tests are listed below.

Math Grades 3-5 and Math Grades 6-8

- Numbers & Operations
- Algebraic Concepts
- Geometry
- Measurement, Data, and Probability

Algebra I

- Operations with Real Numbers and Expressions
- Linear Equations & Inequalities
- Functions & Coordinate Geometry
- Data Analysis

Geometry

- Geometric Properties
- Congruence, Similarity, & Proofs
- Coordinate Geometry & Right Triangles
- Measurement

Algebra II

- Operations with Complex Numbers
- Non-Linear Expressions & Equations
- Functions
- Data Analysis

Reading Grades 3-5 and Reading/Lit Grades 6-HS

- Key Ideas and Details—Literature Text
- Key Ideas and Details—Informational Text
- Craft and Structure/Integration of Knowledge and Ideas—Literature Text
- Craft and Structure/Integration of Knowledge and Ideas—Informational Text
- Vocabulary Acquisition and Use

Science Grades 3-5 and Science Grades 6-HS

- The Nature of Science
- Biological Sciences
- Physical Sciences
- Earth/Space Sciences

Biology

- Basic Biological Principles/Chemical Basis for Life
- Bioenergetics/Homeostasis & Transport
- Cell Growth & Reproduction/Genetics
- Theory of Evolution/Ecology

Chemistry

- Properties & Classification of Matter
- Atomic Structure & The Periodic Table
- The Mole & Chemical Bonding
- Chemical Relationships & Reactions

Writing Grades 3-5 and Writing/Eng Comp Grades 6-HS

- Quality of Writing: Focus and Organization
- Quality of Writing: Content and Style
- Quality of Writing: Editing
- Conventions: Punctuation, Capitalization, and Spelling
- Conventions: Grammar and Sentence Formation

NUMBER OF ITEMS PER DIAGNOSTIC CATEGORY

There were various factors considered when determining the number of operational items to administer per diagnostic category. The goal of the CDT is to provide diagnostic information. Therefore, the test must include a sufficient number of items to provide meaningful scores with low standard errors. However, testing time is limited and the item pools are finite. A very long test may produce lower standard errors, but if it is considered to be “too long” will teachers use it? Also, the longer the test, the more the items are exposed.

Prior to the launch of the first operational CDT in fall of 2010, simulations were run of various test lengths. Table 13–1 shows the average conditional standard error of measurement (CSEM) for total test and each diagnostic category¹ (DC) for five test lengths in simulations of CDT Mathematics. Also included is the theoretical minimum standard error that is possible for each test length. This is the standard error if the ability is known and there are sufficient items to administer where the item’s difficulty is equal to the known ability and the test constraints are met.

Table 13–1. Average Standard Errors for Various Test Lengths – Mathematics

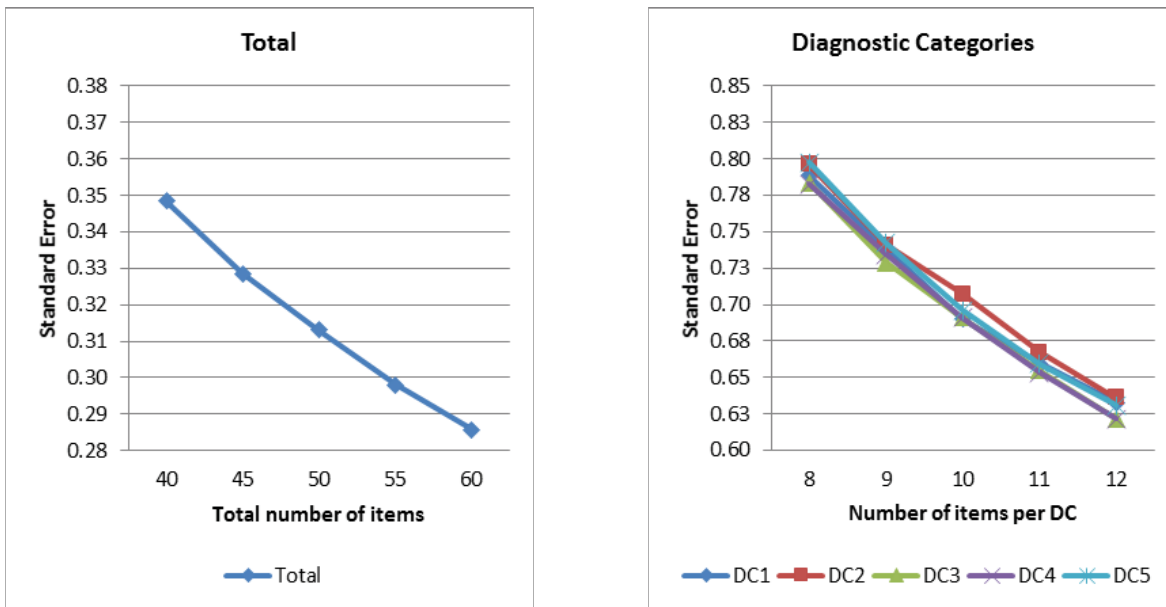
Total Number of Points	Total Min Error	Total Avg Error	Diagnostic Categories Number of Points	Diagnostic Categories Min Error	Diagnostic Categories DC1 Avg Error	Diagnostic Categories DC2 Avg Error	Diagnostic Categories DC3 Avg Error	Diagnostic Categories DC4 Avg Error	Diagnostic Categories DC5 Avg Error
40	0.316	0.348	8	0.707	0.789	0.796	0.784	0.783	0.798
45	0.298	0.329	9	0.667	0.738	0.741	0.729	0.734	0.742
50	0.283	0.313	10	0.632	0.690	0.707	0.691	0.691	0.696
55	0.270	0.298	11	0.603	0.660	0.667	0.655	0.653	0.659
60	0.258	0.286	12	0.577	0.633	0.636	0.622	0.622	0.631

As expected, increasing the number of items decreases the standard error. Differences in standard errors at the diagnostic category level for the same number of items are a reflection of differences in the diagnostic category item pools.

Figure 13–1 shows average standard errors as a function of test length.

¹ At that time, there were five diagnostic categories in CDT Mathematics.

Figure 13–1. Average Standard Errors for Various Test Lengths – Mathematics



Considering test time factors and simulation results for various test lengths, it was determined that CDT tests with four diagnostic categories would have 12–15 items per category (48–60 items total) and CDT tests with five diagnostic categories would have 10–12 items per category (50–60 items total).

NUMBER OF EMBEDDED FIELD-TEST ITEMS

Over time, additional items will be needed to replenish the CDT item pools. Embedding field-test items within an operational CDT test is advantageous for two reasons. First, sufficient item level data can be gathered without the time and expense of a separate stand-alone administration. Second, it allows the new items to be placed on the existing operational scale. See Chapter Twelve for details.

As detailed in Chapter Six, there have been three embedded field-test events. Starting on February 14, 2013, field-test items were embedded within CDT Mathematics and Reading/Literature tests. Starting on August 26, 2013, items were embedded within CDT Mathematics, Reading/Literature, Science, and Writing/English Composition tests for students in grade 6. Starting on August 24, 2015, items were embedded within seven of the thirteen CDTs: Math Grades 6-8, Algebra I, Reading Grades 3-5, Reading/Lit Grades 6-HS, Science Grades 6-HS, Biology, and Writing/Eng Comp Grades 6-HS.

For each embedded field-test event, the factors considered when determining the number of field-test items to embed included the number of items to be field tested, the expected number of students testing, and the desired n-count per item for field-test analyses. In mathematics, science, and writing, field-test items were randomly assigned to fixed positions spread throughout the operational test. In reading, a field-test passage was randomly assigned near the middle of the test and students took all of the items associated with the passage. In all content areas, the positions of field-test items were unknown to students. Field-test items were not clustered at the end of the test in an effort to avoid any fatigue effect when placing the items on the operational scale.

There were no embedded field test items administered during the 2016-2017 school year.

CAT ALGORITHM

This section covers elements of the CAT algorithm including entry point, item selection criteria, test navigation, and termination.

ENTRY POINT

All CDT tests other than Reading Grades 3-5 and Reading/Lit Grades 6-HS begin with a small “locator” section in which one or two items per diagnostic category are administered. The order of the diagnostic categories is random. The two CDT tests in the reading content area are slightly different because they are passage-based. Those, too, have a small “locator” section, but they may not contain one or two items for each diagnostic category because not all passages have an item for each diagnostic category.

The CAT algorithm is designed to administer items targeted for the individual student based on performance. However, student performance in the current test setting is not known at the beginning of the test. With no prior information about a student, the starting point in each diagnostic category is an item of average difficulty. For CDT tests that are not course-specific (Math Grades 3-5, Math Grades 6-8, Reading Grades 3-5, Reading/Lit Grades 6-HS, Science Grades 3-5, Science Grades 6-HS, Writing Grades 3-5, and Writing/Eng Comp Grades 6-HS), the student’s grade is considered in selecting an item of average difficulty. For example, a grade 7 student taking CDT Math Grades 6-8 will start with an item near the average difficulty of grade 7 items in the pool. For CDT tests that are course-specific (Algebra I, Geometry, Algebra II, Biology, and Chemistry), an average item will be selected regardless of the student’s grade. For example, a grade 7 student taking CDT Algebra I will start with an item near the average difficulty of Algebra I items in the pool.

If a student has previously taken the CDT, the prior CDT scores are used to give the CAT algorithm a “head start.” In this case, the first item in each diagnostic category is selected to match the characteristics of the prior information rather than an average item. For example, if a student previously took the CDT Math Grades 6-8 test and scored very high in “Measurement, Data, and Probability,” then the first item selected in that diagnostic category will be more difficult than the grade level average.

The CAT algorithm includes a randomization component when selecting items to control item exposure. That is, one item is selected from among a set of items that are near the targeted item difficulty. This is especially important at the beginning of the CDT when no prior information is available. Randomization of items and diagnostic categories ensure that students will not see the same set of items in the same order even when all of the students are assigned items of average difficulty.

ITEM SELECTION CRITERIA

Once the initial set of items has been administered, the CAT algorithm is designed to administer items targeted for the individual student based on performance. In targeting items, the CAT algorithm uses Rasch ability estimates from the current test session and considers a number of factors including test blueprint, response probability, item pool refinement, and passage-related concerns. Each of these is discussed in detail on the following pages.

RASCH ABILITY ESTIMATES

As described in Chapter Eight and Chapter Nine, CDT item pools are scaled using the Rasch partial credit model (Wright & Masters, 1982) and vertically linked across grades and courses. The CAT algorithm has access to all item parameters in the item pool. After each item response, Rasch ability estimates and standard errors are calculated via maximum likelihood estimation (MLE) for the total test and each diagnostic category. In the case of zero (all items incorrect) and perfect (all items correct) scores, a correction factor is applied before computing the relevant maximum likelihood estimates. A fractional value is added to a zero score and subtracted from a perfect score before estimation.

After the locator section of the CDT, but before a student has taken many items in each diagnostic category, the total Rasch ability estimate is used in item selection. This is because total and diagnostic category ability estimates tend to be highly correlated, and the total estimate does not change as dramatically as diagnostic category estimates given one additional item. Using the total estimate at this point prevents students from experiencing extreme fluctuations in the difficulty of items.

While use of the total Rasch ability estimate makes sense early in the test, the goal of the CDT is to be diagnostic, and some students exhibit clear strengths and areas of need in different diagnostic categories. Therefore, after four or five items have been administered in a diagnostic category, the corresponding Rasch ability estimate for that diagnostic category is used in item selection. This ensures, for example, that a student struggling in “Biological Sciences” while at the same time excelling in “Earth and Space Sciences” will be administered easier “Biological Sciences” items and more challenging “Earth and Space Sciences” items.

TEST BLUEPRINT

The CAT algorithm closely resembles a modified constrained CAT (MCCAT) design (Leung, Chang, & Hau, 2003). The general idea is that the CAT algorithm is configured with upper and lower bounds that specify the minimum and maximum numbers of items that will be administered to students for both total and diagnostic categories.

RESPONSE PROBABILITY

No matter which Rasch ability estimate is used in selecting an item, total or diagnostic category estimate, the CAT algorithm targets items where the student has response probability (RP) of answering correctly, based on the Rasch ability estimate and item’s difficulty. The most efficient way to run a CAT is to select items where RP is 0.5. That is, select items where the student has a 50% chance of getting the item correct. This response probability produces the smallest standard error for any given number of items.

Prior to the launch of the first operational CDT in fall of 2010, simulations were run for various response probabilities. Table 13–2 shows the average person standard errors for total test and each diagnostic category² for seven response probabilities in simulations of CDT Mathematics with 50 items. Figure 13–2 shows average standard errors as a function of response probability.

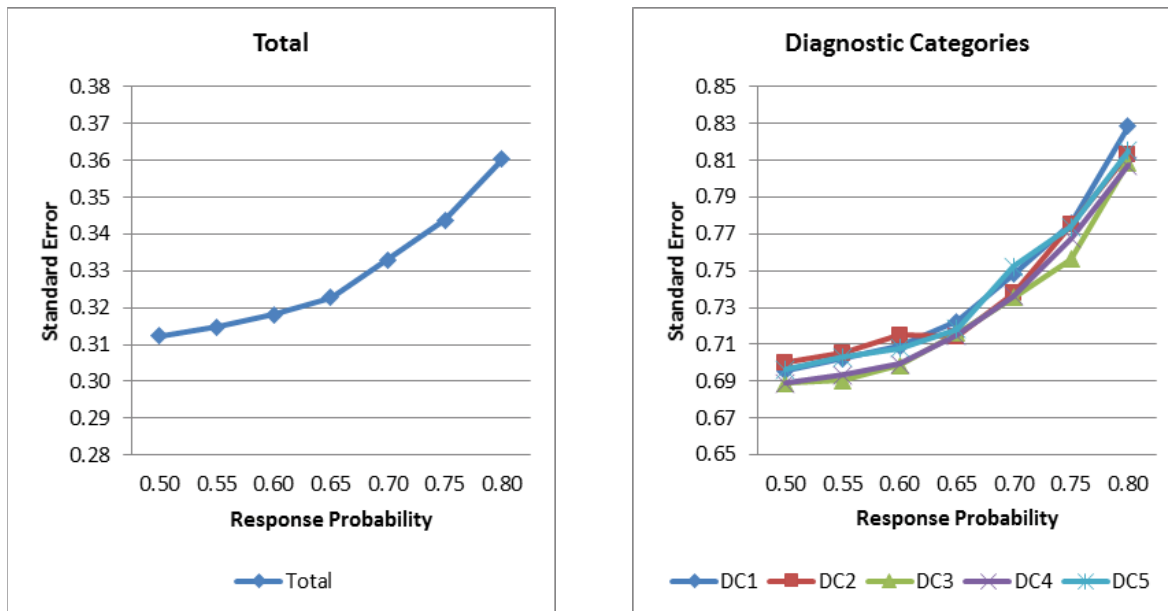
Table 13–2. Average Standard Errors for Various Response Probabilities – Mathematics

Number of Items	Response Probability	Total	DC 1	DC 2	DC 3	DC 4	DC 5
50 total (10 per DC)	0.50	0.312	0.696	0.700	0.689	0.689	0.696
50 total (10 per DC)	0.55	0.315	0.702	0.705	0.690	0.693	0.703
50 total (10 per DC)	0.60	0.318	0.709	0.715	0.699	0.699	0.708
50 total (10 per DC)	0.65	0.323	0.722	0.714	0.716	0.715	0.719
50 total (10 per DC)	0.70	0.333	0.748	0.738	0.735	0.736	0.752
50 total (10 per DC)	0.75	0.344	0.776	0.775	0.756	0.767	0.774
50 total (10 per DC)	0.80	0.360	0.829	0.813	0.809	0.807	0.815

As expected, increasing the response probability increases the standard error. Differences in standard errors at the diagnostic category level for the same response probability are a reflection of differences in the diagnostic category item pools.

² At that time, there were five diagnostic categories in CDT Mathematics.

Figure 13–2. Average Standard Errors for Various Response Probabilities — Mathematics



As can be seen in Figure 13–2, increasing response probability incrementally from 0.50 leads to increases in standard error. The increase in standard error is gradual at first and becomes more pronounced around 0.65.

Prior to the launch of the CDT for students in grades 3 through 5, the topic of response probability was revisited for each content area. Simulations for various response probabilities were run with fixed length tests equal to average test length. Results for each content area are presented in Tables 13–3 through 13–6 and Figures 13–3 through 13–6.

Table 13–3. Average Standard Errors for Various Response Probabilities — Mathematics

Number of Items	Response Probability	Total	DC 1	DC 2	DC 3	DC 4
52 total (13 per DC)	0.50	0.300	0.602	0.592	0.601	0.606
52 total (13 per DC)	0.55	0.300	0.602	0.594	0.602	0.607
52 total (13 per DC)	0.60	0.301	0.605	0.597	0.604	0.610
52 total (13 per DC)	0.65	0.304	0.613	0.608	0.613	0.619
52 total (13 per DC)	0.70	0.310	0.626	0.622	0.625	0.631
52 total (13 per DC)	0.75	0.318	0.646	0.644	0.645	0.651

Figure 13–3. Average Standard Errors for Various Response Probabilities — Mathematics

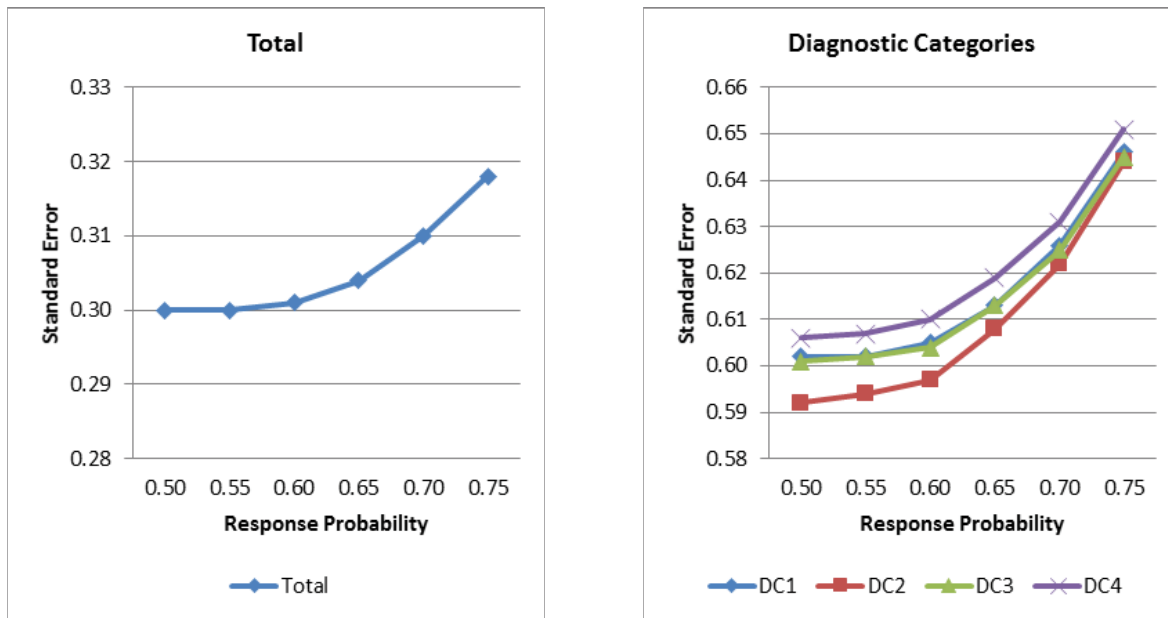


Table 13–4. Average Standard Errors for Various Response Probabilities — Reading

Number of Items	Response Probability	Total	DC 1	DC 2	DC 3	DC 4	DC 5
55 total (11 per DC)	0.50	0.302	0.738	0.739	0.723	0.743	0.743
55 total (11 per DC)	0.55	0.304	0.739	0.744	0.731	0.741	0.751
55 total (11 per DC)	0.60	0.307	0.742	0.744	0.733	0.756	0.771
55 total (11 per DC)	0.65	0.310	0.747	0.751	0.742	0.766	0.781
55 total (11 per DC)	0.70	0.313	0.755	0.756	0.751	0.772	0.800
55 total (11 per DC)	0.75	0.317	0.767	0.762	0.764	0.784	0.823

Figure 13–4. Average Standard Errors for Various Response Probabilities — Reading

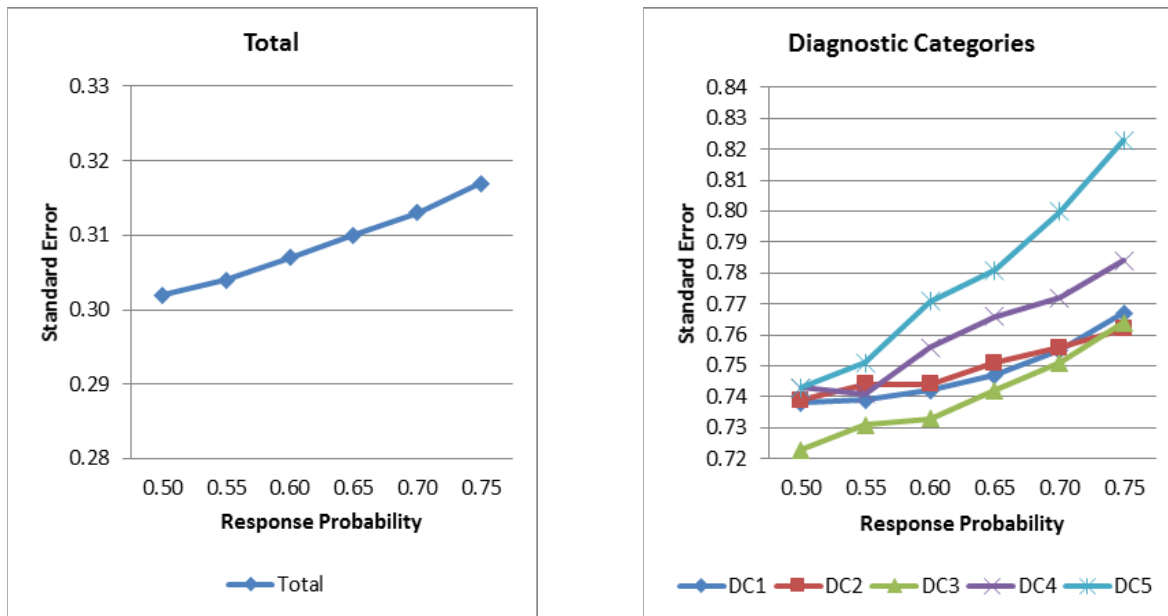


Table 13–5. Average Standard Errors for Various Response Probabilities — Science

Number of Items	Response Probability	Total	DC 1	DC 2	DC 3	DC 4
52 total (13 per DC)	0.50	0.300	0.601	0.599	0.602	0.599
52 total (13 per DC)	0.55	0.299	0.600	0.599	0.600	0.599
52 total (13 per DC)	0.60	0.300	0.602	0.601	0.603	0.604
52 total (13 per DC)	0.65	0.303	0.612	0.608	0.609	0.611
52 total (13 per DC)	0.70	0.308	0.624	0.622	0.619	0.626
52 total (13 per DC)	0.75	0.315	0.642	0.642	0.636	0.644

Figure 13–5. Average Standard Errors for Various Response Probabilities — Science

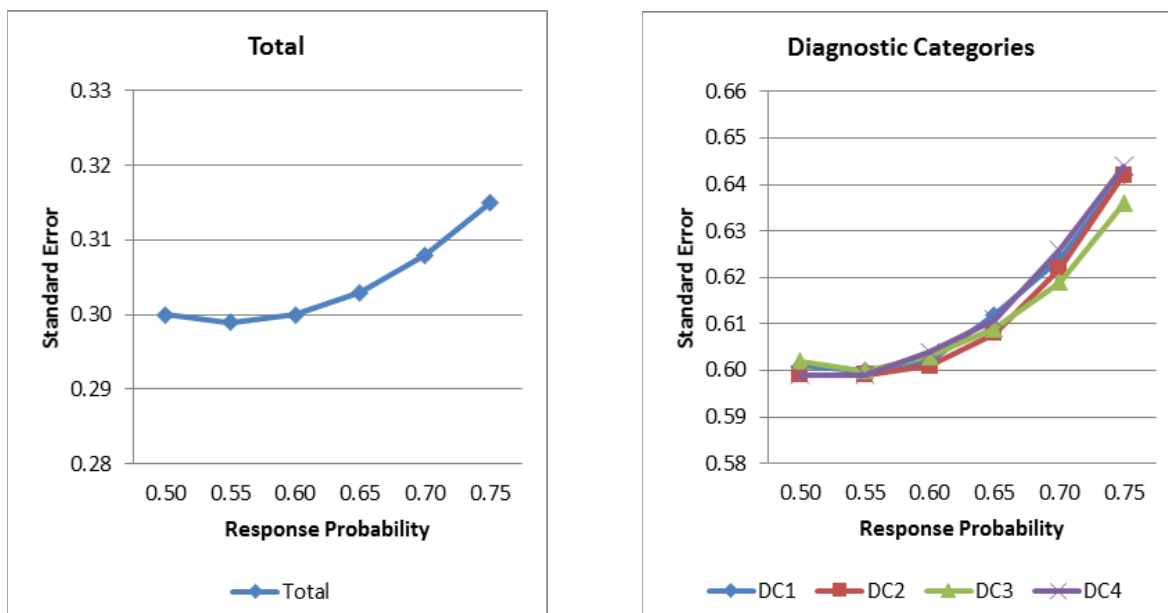
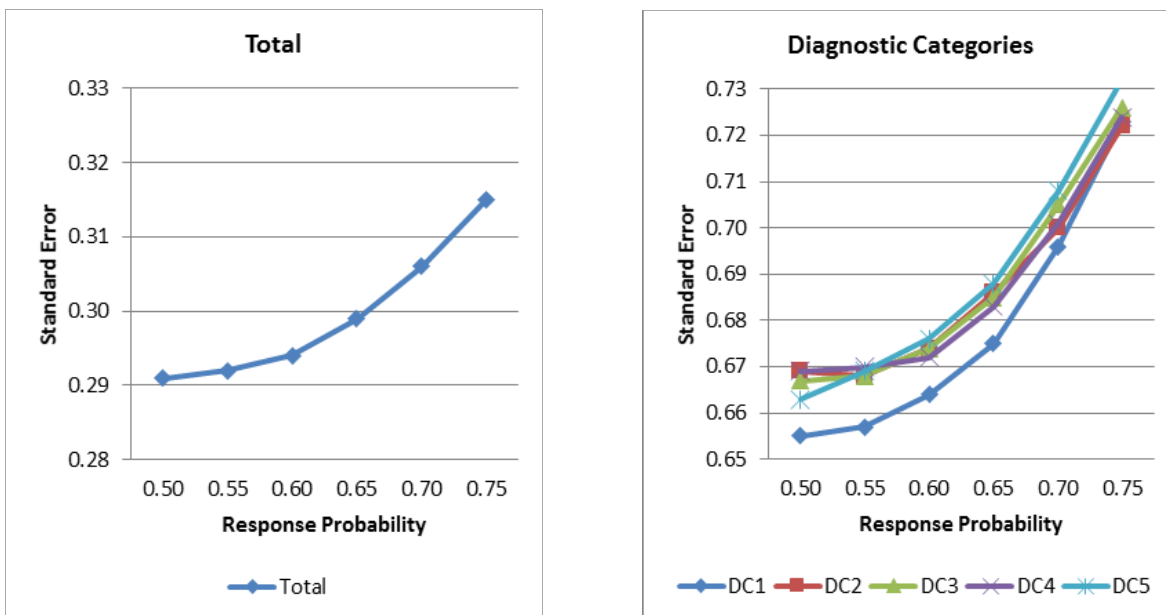


Table 13–6. Average Standard Errors for Various Response Probabilities – Writing

Number of Items	Response Probability	Total	DC 1	DC 2	DC 3	DC 4	DC 5
52 total (13 per DC)	0.50	0.291	0.655	0.669	0.667	0.669	0.663
52 total (13 per DC)	0.55	0.292	0.657	0.668	0.668	0.670	0.669
52 total (13 per DC)	0.60	0.294	0.664	0.674	0.674	0.672	0.676
52 total (13 per DC)	0.65	0.299	0.675	0.686	0.685	0.683	0.688
52 total (13 per DC)	0.70	0.306	0.696	0.700	0.705	0.701	0.708
52 total (13 per DC)	0.75	0.315	0.723	0.722	0.726	0.724	0.732

Figure 13–6. Average Standard Errors for Various Response Probabilities – Writing



Again, increasing response probability incrementally from 0.50 leads to increases in standard error. The increase in standard error is gradual at first and becomes more pronounced around 0.65.

For CDT tests designed for students in grade 6 and above, the response probability is set at 0.5. This is based on the desire for low standard errors at the diagnostic category level and the grade level of students testing. As part of the CDT training, students are told that the test is computer adaptive and designed to challenge them.

For CDT tests designed for students in grades 3 through 5, the response probability is set at 0.65. This response probability results in higher standard errors for the same number of items. However, there was concern that younger students may not have much experience with tests designed to be so challenging and could conceivably give up on a test that is perceived to be “too hard.”

ITEM POOL REFINEMENT

The CAT algorithm has configurable elements that allow for refinement of the item pool used in item selection. The two configurable elements are:

- **Restrict pool**—The ability to restrict the available item pool by grade/course at various points in the test.

For example, Chemistry items are not available for the first 20 items of CDT Science Grades 6-HS test.

- **Favor items**—The ability to favor items that are close to the student's grade when evaluating items near a student's estimated score.

For example, if a student is in grade 8 and the item selection routine finds appropriate items (in terms of difficulty) in grades 4, 5, 6, 7, and 8, item selection can favor items at or close to grade 8. It is possible that no items near a student's grade are appropriate in terms of difficulty. In such a case, the CAT algorithm will select items further away from the student's grade but appropriate based on item difficulty.

The difference between restricting the pool and favoring items is that when the pool is restricted, some items may NOT be selected. With favoring, all non-restricted items are eligible for administration, but they are made more or less LIKELY to be selected based on closeness to student grade.

PASSAGE RELATED CONCERNS

As previously mentioned, the CDT tests in the reading content area are passage-based. CDT passages have between one and seven associated items. The CAT algorithm does not require that all items associated with a passage be administered. Instead, it evaluates all possible combinations of items within a passage. Item sequencing within a passage is preserved when items are presented to the student. For example, if a six-item passage is selected and items 1 and 4 are NOT administered, then the items administered in order will be 2, 3, 5, and 6.

The configurable elements of passage-based CAT include:

- **Passage minimum percent**—Define the minimum percentage of the items associated with a passage to be used.

For example, if the passage minimum percent is set at 80, then the selection routine will consider combinations such as 1 of 1 (100%), 4 of 5 (80%), 5 of 6 (83%), and 6 of 6 (100%). It will not consider combinations such as 1 of 2 (50%), 3 of 4 (75%), 3 of 5 (60%), etc. Near the end of a test, the passage minimum percent constraint may need to be loosened in order to meet content constraints such as number of items per diagnostic category.

- **Passage evaluation criteria**—Multiple factors are considered when evaluating and ranking each passage combination to determine the best combination to administer to a student. They include:
 - Percent of items associated with the passage used; the higher the percent, the higher the combination is ranked
 - Number of items associated with the passage used; the higher the number, the higher the combination is ranked
 - Distance between items' difficulties and student's estimated score; the smaller the distance, the higher the combination is ranked
 - Distance between the items' grade levels and the student's grade level; the smaller the distance, the higher the combination is ranked

Different weights may be assigned to each of the factors. For example, if all of the weight is put on number of items used, then the algorithm will select the passages with the most associated items and administer all of them until the maximum number of items is reached.

TEST NAVIGATION

Many versions of computer adaptive tests do not allow students to skip items in the test or back up to previously answered items and change answers due to some complicating factors.

If students are allowed to skip items, the CAT algorithm would need to select additional items without any additional information (no change to Rasch ability estimates). Taken to the extreme, a student with no prior CDT scores who skipped every item starting with the first would receive an entire test of average items. It would not be adaptive at all.

If students are allowed to back up and change answers, Rasch ability estimates are re-calculated when answered are changed. This additional information can be used to select additional items but would not change previously selected items. For example, suppose a student is on item twenty-five and goes back to change the answer to item eleven from wrong to right. The total and corresponding diagnostic category Rasch ability estimates would go up. That additional information can be used in selection of items twenty-six and beyond. However, items twelve through twenty-five are not reselected even though different items may have been selected if item eleven was initially answered correctly. When it comes to items twelve through twenty-five, “the train has left the station.”

Also, if students are allowed to back up in the test, additional considerations must be put in place to ensure that the answer to one item does not cue another.

Currently all CDT tests except Reading Grades 3-5 and Reading/Lit Grades 6-HS do not allow skipping items or backing up and changing answers. On CDT tests in the reading content area, students are allowed to skip items within a passage. For example, when presented with a passage and five associated items, the student does not have to answer questions one through five in that order without skipping. If a student tries to navigate to the next passage without answering all of the items associated with a passage, the test engine will prompt the student to answer all items and will not move on to the next passage until all are answered.

TERMINATION

The CAT algorithm allows for both a fixed- or variable-length test.

With fixed length, the test ends when a student has taken a predefined number of items total and in each diagnostic category.

With variable length, the algorithm stops administering items from a diagnostic category when one of two conditions is satisfied:

- A student has taken at least a predefined minimum number of items in that diagnostic category and the standard error is below a predefined threshold
- OR
- A student has taken a predefined maximum number of items in that diagnostic category

The test ends when one of the two conditions above is satisfied for each of the diagnostic categories.

Note that with both fixed- and variable-length tests, there is no requirement that the predefined number of items in diagnostic categories be equal.

CAT CONFIGURATION – MATH GRADES 6-8

The test has four diagnostic categories. Each student will take between 12 and 15 operational items per diagnostic category for a total test of 48 to 60 operational items. With no prior information about a student, the starting point in each diagnostic category will be an item of average difficulty by grade level. For example, a grade 7 student will start with an item near the average difficulty of grade 7 items. Items are selected where the response probability is 0.5, meaning a student has a 50% chance of answering correctly. The CAT algorithm will stop administering items in a diagnostic category when one of two conditions is satisfied:

- a student has taken at least 12 operational items in that diagnostic category and the standard error is below 0.60, or
- a student has taken 15 operational items in that diagnostic category.

Functionality is used to restrict the pool and to favor items close to a student's grade. The pool restrictions are:

- no Algebra I items will be administered in the first 5 items,
- no Geometry items will be administered in the first 10 items, and
- no Algebra II items will be administered in the first 20 items.

Simulations were run with this configuration. On average:

- a total of 52 operational items are administered—about 13 per diagnostic category,
- standard error for the total score is 0.30, and
- standard errors for the diagnostic categories are in the range of 0.59 to 0.61.

CAT CONFIGURATION – ALGEBRA I

The test has four diagnostic categories. Each student will take between 12 and 15 operational items per diagnostic category for a total test of 48 to 60 operational items. With no prior information about a student, the starting point in each diagnostic category will be an item of average difficulty. Items are selected where the response probability is 0.5, meaning a student has a 50% chance of answering correctly. The CAT algorithm will stop administering items in a diagnostic category when one of two conditions is satisfied:

- a student has taken at least 12 operational items in that diagnostic category and the standard error is below 0.60, or
- a student has taken 15 operational items in that diagnostic category.

Functionality is used to restrict the pool and to favor items close to Algebra I. The pool restriction is that no Algebra II items will be administered in the first 16 items.

Simulations were run with this configuration. On average:

- a total of 52 operational items are administered—about 13 per diagnostic category,
- standard error for the total score is 0.30, and
- standard errors for the diagnostic categories are in the range of 0.59 to 0.61.

CAT CONFIGURATION – GEOMETRY

The test has four diagnostic categories. Each student will take between 12 and 15 operational items per diagnostic category for a total test of 48 to 60 operational items. With no prior information about a student, the starting point in each diagnostic category will be an item of average difficulty. Items are selected where the response probability is 0.5, meaning a student has a 50% chance of answering correctly. The CAT algorithm will stop administering items in a diagnostic category when one of two conditions is satisfied:

- a student has taken at least 12 operational items in that diagnostic category and the standard error is below 0.60, or
- a student has taken 15 operational items in that diagnostic category.

Functionality is used to favor items close to Geometry. There are no pool restrictions.

Simulations were run with this configuration. On average:

- a total of 53 operational items are administered—about 13 per diagnostic category,
- standard error for the total score is 0.30, and
- standard errors for the diagnostic categories are in the range of 0.59 to 0.61.

CAT CONFIGURATION – ALGEBRA II

The test has four diagnostic categories. Each student will take between 12 and 15 operational items per diagnostic category for a total test of 48 to 60 operational items. With no prior information about a student, the starting point in each diagnostic category will be an item of average difficulty. Items are selected where the response probability is 0.5, meaning a student has a 50% chance of answering correctly. The CAT algorithm will stop administering items in a diagnostic category when one of two conditions is satisfied:

- a student has taken at least 12 operational items in that diagnostic category and the standard error is below 0.60, or
- a student has taken 15 operational items in that diagnostic category.

Functionality is used to favor items close to Algebra II. There are no pool restrictions.

Simulations were run with this configuration. On average:

- a total of 53 operational items are administered—about 13 per diagnostic category,
- standard error for the total score is 0.30, and
- standard errors for the diagnostic categories are in the range of 0.60 to 0.65.

CAT CONFIGURATION – MATH GRADES 3-5

The test has four diagnostic categories. Each student will take between 12 and 15 operational items per diagnostic category for a total test of 48 to 60 operational items. With no prior information about a student, the starting point in each diagnostic category will be an item of average difficulty by grade level. For example, a grade 4 student will start with an item near the average difficulty of grade 4 items. Items are selected where the response probability is 0.65, meaning a student has a 65% chance of answering correctly. The CAT algorithm will stop administering items in a diagnostic category when one of two conditions is satisfied:

- a student has taken at least 12 operational items in that diagnostic category and the standard error is below 0.62, or
- a student has taken 15 operational items in that diagnostic category.

Functionality is used to restrict the pool and to favor items close to a student's grade. The pool restrictions are:

- no grade 7 items will be administered in the first 5 items,
- no grade 8 items will be administered in the first 10 items,
- no Algebra I items will be administered in the first 20 items, and
- no Geometry or Algebra II items will be administered.

Simulations were run with this configuration. On average:

- a total of 52 operational items are administered—about 13 per diagnostic category,
- standard error for the total score is 0.31, and
- standard errors for the diagnostic categories are in the range of 0.61 to 0.62.

CAT CONFIGURATION – READING/LIT GRADES 6-HS

The test has five diagnostic categories. Each student will take between 10 and 12 operational items per diagnostic category for a total test of 50 to 60 operational items. With no prior information about a student, the starting point in each diagnostic category will be an item of average difficulty by grade level. For example, a grade 7 student will start with an item near the average difficulty of grade 7 items. Items are selected where the response probability is 0.5, meaning a student has a 50% chance of answering correctly. The CAT algorithm will stop administering items in a diagnostic category when one of two conditions is satisfied:

- a student has taken at least 10 operational items in that diagnostic category and the standard error is below 0.75, or
- a student has taken 12 operational items in that diagnostic category.

Functionality is used to run CAT with passages and favor items close to student's grade. There are no pool restrictions.

Passage minimum percent is set at 66%. That is, whenever possible, only passage combinations that use 66% or more of the associated items are used. (Near the end of a test, the passage minimum percent constraint may need to be loosened in order to meet content constraints.) Many simulations were run to arrive at this percent. On the one hand, testing time and reading load should be minimized. Therefore, students should not have to read long passages for only one or two items. On the other hand, using all items associated with a passage may not be desirable since some items are far from a student's estimated score. Given a limited number of items, those that are either too easy or too hard should not be used.

In evaluating and ranking passages, percent of items associated with the passage is not used. Simulation results indicate that if it is factored into evaluations, students take many short passages because 1 of 1 (100%) and 2 of 2 (100%) are ranked higher than 5 of 6 (83%) and 4 of 5 (80%), for example.

Simulations were run with this configuration. On average:

- a total of 56 operational items are administered—about 11 per diagnostic category,
- a total of 14 passages are administered,
- standard error for the total score is 0.30, and
- standard errors for the diagnostic categories are in the range of 0.74 to 0.80.

CAT CONFIGURATION – READING GRADES 3-5

The test has five diagnostic categories. Each student will take between 10 and 12 operational items per diagnostic category for a total test of 50 to 60 operational items. With no prior information about a student, the starting point in each diagnostic category will be an item of average difficulty by grade level. For example, a grade 4 student will start with an item near the average difficulty of grade 4 items. Items are selected where the response probability is 0.65, meaning a student has a 65% chance of answering correctly. The CAT algorithm will stop administering items in a diagnostic category when one of two conditions is satisfied:

- a student has taken at least 10 operational items in that diagnostic category and the standard error is below 0.77, or
- a student has taken 12 operational items in that diagnostic category.

Functionality is used to run CAT with passages and favor items close to student's grade. There are no pool restrictions.

Passage minimum percent is set at 66%. That is, whenever possible, only passage combinations that use 66% or more of the associated items are used. (Near the end of a test, the passage minimum percent constraint may need to be loosened in order to meet content constraints.) Many simulations were run to arrive at this percent. On the one hand, testing time and reading load should be minimized. Therefore, students should not have to read long passages for only one or two items. On the other hand, using all items associated with a passage may not be desirable since some items are far from a student's estimated score. Given a limited number of items, those that are either too easy or too hard should not be used.

In evaluating and ranking passages, percent of items associated with the passage is not used. Simulation results indicate that if it is factored into evaluations, students take many short passages because 1 of 1 (100%) and 2 of 2 (100%) are ranked higher than 5 of 6 (83%) and 4 of 5 (80%), for example.

Simulations were run with this configuration. On average:

- a total of 56 operational items are administered—about 11 per diagnostic category,
- a total of 14 passages are administered,
- standard error for the total score is 0.31, and
- standard errors for the diagnostic categories are in the range of 0.74 to 0.79.

Note that the standard error is higher for in reading than the other content areas. This is because Reading/Lit Grades 6-HS and Reading Grades 3-5 are passage-based. Rather than selecting one targeted item at a time, the item selection routine evaluates and selects multiple items associated with a given passage. In general, items selected in this manner are not as close to the targeted response probability as stand-alone items selected one by one.

CAT CONFIGURATION – SCIENCE GRADES 6-HS

The test has four diagnostic categories. Each student will take between 12 and 15 operational items per diagnostic category for a total test of 48 to 60 operational items. With no prior information about a student, the starting point in each diagnostic category will be an item of average difficulty by grade level. For example, a grade 7 student will start with an item near the average difficulty of grade 7 items. Items are selected where the response probability is 0.5, meaning a student has a 50% chance of answering correctly. The CAT algorithm will stop administering items in a diagnostic category when one of two conditions is satisfied:

- a student has taken at least 12 operational items in that diagnostic category and the standard error is below 0.60, or
- a student has taken 15 operational items in that diagnostic category.

Functionality is used to restrict the pool and to favor items close to a student's grade. The pool restrictions are:

- no grade 11 items will be administered in the first 20 items UNLESS the student is in grade 11 or 12,
- no Biology or Chemistry items will be administered in the first 20 items, and

Simulations were run with this configuration. On average:

- a total of 52 operational items are administered—about 13 per diagnostic category,
- standard error for the total score is 0.30, and
- standard errors for the diagnostic categories are in the range of 0.60 to 0.62.

CAT CONFIGURATION – BIOLOGY

The test has four diagnostic categories. Each student will take between 12 and 15 operational items per diagnostic category for a total test of 48 to 60 operational items. With no prior information about a student, the starting point in each diagnostic category will be an item of average difficulty. Items are selected where the response probability is 0.5, meaning a student has a 50% chance of answering correctly. The CAT algorithm will stop administering items in a diagnostic category when one of two conditions is satisfied:

- a student has taken at least 12 operational items in that diagnostic category and the standard error is below 0.60, or
- a student has taken 15 operational items in that diagnostic category.

Functionality is used to favor items close to Biology. There are no pool restrictions.

Simulations were run with this configuration. On average:

- a total of 53 operational items are administered—about 13 per diagnostic category,
- standard error for the total score is 0.30, and
- standard errors for the diagnostic categories are in the range of 0.60 to 0.61.

CAT CONFIGURATION – CHEMISTRY

The test has four diagnostic categories. Each student will take between 12 and 15 operational items per diagnostic category for a total test of 48 to 60 operational items. With no prior information about a student, the starting point in each diagnostic category will be an item of average difficulty. Items are selected where the response probability is 0.5, meaning a student has a 50% chance of answering correctly. The CAT algorithm will stop administering items in a diagnostic category when one of two conditions is satisfied:

- a student has taken at least 12 operational items in that diagnostic category and the standard error is below 0.60, or
- a student has taken 15 operational items in that diagnostic category.

Functionality is used to favor items close to Chemistry. There are no pool restrictions.

Simulations were run with this configuration. On average:

- a total of 53 operational items are administered—about 13 per diagnostic category,
- standard error for the total score is 0.30, and
- standard errors for the diagnostic categories are in the range of 0.60 to 0.64.

CAT CONFIGURATION – SCIENCE GRADES 3-5

The test has four diagnostic categories. Each student will take between 12 and 15 operational items per diagnostic category for a total test of 48 to 60 operational items. With no prior information about a student, the starting point in each diagnostic category will be an item of average difficulty by grade level. For example, a grade 4 student will start with an item near the average difficulty of grade 4 items. Items are selected where the response probability is 0.65, meaning a student has a 65% chance of answering correctly. The CAT algorithm will stop administering items in a diagnostic category when one of two conditions is satisfied:

- a student has taken at least 12 operational items in that diagnostic category and the standard error is below 0.62, or
- a student has taken 15 operational items in that diagnostic category.

Functionality is used to restrict the pool and to favor items close to a student's grade. The pool restrictions are:

- no grade 11 items will be administered in the first 40 items, and
- no Biology or Chemistry items will be administered.

Simulations were run with this configuration. On average:

- a total of 52 operational items are administered—about 13 per diagnostic category,
- standard error for the total score is 0.31, and
- standard errors for the diagnostic categories are in the range of 0.61 to 0.62.

CAT CONFIGURATION – WRITING/ENG COMP GRADES 6-HS

The test has five diagnostic categories. Each student will take between 10 and 12 operational items per diagnostic category for a total test of 50 to 60 operational items. With no prior information about a student, the starting point in each diagnostic category will be an item of average difficulty by grade level. For example, a grade 7 student will start with an item near the average difficulty of grade 7 items. Items are selected where the response probability is 0.5, meaning a student has a 50% chance of answering correctly. The CAT algorithm will stop administering items in a diagnostic category when one of two conditions is satisfied:

- a student has taken at least 10 operational items in that diagnostic category and the standard error is below 0.65, or
- a student has taken 12 operational items in that diagnostic category.

Functionality is used to favor items close to the student's grade. There are no pool restrictions.

Simulations were run with this configuration. On average:

- a total of 56 operational items are administered—about 11 per diagnostic category,
- standard error for the total score is 0.29, and
- standard errors for the diagnostic categories are in the range of 0.65 to 0.69.

CAT CONFIGURATION – WRITING GRADES 3-5

The test has five diagnostic categories. Each student will take between 10 and 12 operational items per diagnostic category for a total test of 50 to 60 operational items. With no prior information about a student, the starting point in each diagnostic category will be an item of average difficulty by grade level. For example, a grade 4 student will start with an item near the average difficulty of grade 4 items. Items are selected where the response probability is 0.65, meaning a student has a 65% chance of answering correctly. The CAT algorithm will stop administering items in a diagnostic category when one of two conditions is satisfied:

- a student has taken at least 10 operational items in that diagnostic category and the standard error is below 0.67, or
- a student has taken 12 operational items in that diagnostic category.

Functionality is used to favor items close to the student’s grade. There are no pool restrictions.

Simulations were run with this configuration. On average:

- a total of 56 operational items are administered—about 11 per diagnostic category,
- standard error for the total score is 0.30, and
- standard errors for the diagnostic categories are in the range of 0.67 to 0.69.

Tables 13–7 through 13–12 summarize CAT configurations by content area.

Table 13–7. CAT Configuration Summary – Mathematics

	Math Grades 3-5	Math Grades 6-8
Number of DCs	4	4
Number of OP Items per DC	12–15	12–15
Number of OP Items Total	48–60	48–60
Number of FT Items Total	0	0
Entry Point: No Prior CDT	average item by grade	average item by grade
Entry Point: Prior CDT	prior diagnostic scores	prior diagnostic scores
Item Selection: Rasch Ability Estimates	After locator, use total estimate until the fifth item in a DC; then switch to DC estimate	After locator, use total estimate until the fifth item in a DC; then switch to DC estimate
Item Selection: Response Probability	0.65	0.50
Item Selection: Favor Items	close to student grade	close to student grade
Item Selection: Pool Restriction	Items 1–5: no Grade 7	Items 1–5: no Algebra I
Item Selection: Pool Restriction	Items 1–10: no Grade 8	Items 1–10: no Geometry
Item Selection: Pool Restriction	Items 1–20: no Algebra I	Items 1–20: no Algebra II
Item Selection: Pool Restriction	No Geometry	
Item Selection: Pool Restriction	No Algebra II	
Navigation	no skip; no backtrack	no skip; no backtrack
Termination	12 items per DC, SE < 0.62 OR 15 items per DC	12 items per DC, SE < 0.60 OR 15 items per DC

DC = Diagnostic Category

Table 13–8. CAT Configuration Summary – Algebra I, Geometry, and Algebra II

	Algebra I	Geometry	Algebra II
Number of DCs	4	4	4
Number of OP Items per DC	12–15	12–15	12–15
Number of OP Items Total	48–60	48–60	48–60
Number of FT Items Total	0	0	0
Entry Point: No Prior CDT	average item	average item	average item
Entry Point: Prior CDT	prior diagnostic scores	prior diagnostic scores	prior diagnostic scores
Item Selection: Rasch Ability Estimates	After locator, use total estimate until the fifth item in a DC; then switch to DC estimate	After locator, use total estimate until the fifth item in a DC; then switch to DC estimate	After locator, use total estimate until the fifth item in a DC; then switch to DC estimate
Item Selection: Response Probability	0.50	0.50	0.50
Item Selection: Favor Items	close to Algebra I	close to Geometry	close to Algebra II
Item Selection: Pool Restriction	Items 1–16: no Algebra II	None	None
Navigation	no skip; no backtrack	no skip; no backtrack	no skip; no backtrack
Termination	12 items per DC, SE < 0.60 OR 15 items per DC	12 items per DC, SE < 0.60 OR 15 items per DC	12 items per DC, SE < 0.60 OR 15 items per DC

DC = Diagnostic Category

Table 13–9. CAT Configuration Summary – Reading

	Reading Grades 3-5	Reading/Lit Grades 6-HS
Number of DCs	5	5
Number of OP Items per DC	10–12	10–12
Number of OP Items Total	50–60	50–60
Number of FT Items Total	0	0
Entry Point: No Prior CDT	average item by grade	average item by grade
Entry Point: Prior CDT	prior diagnostic scores	prior diagnostic scores
Item Selection: Rasch Ability Estimates	After locator, use total estimate until the fifth item in a DC; then switch to DC estimate	After locator, use total estimate until the fifth item in a DC; then switch to DC estimate
Item Selection: Response Probability	0.65	0.50
Item Selection: Favor Items	close to student grade	close to student grade
Item Selection: Pool Restriction	None	None
Passage Min %	66	66
Navigation	skip items within passage	skip items within passage
Termination	10 items per DC, SE < 0.77 OR 12 items per DC	10 items per DC, SE < 0.75 OR 12 items per DC

DC = Diagnostic Category

Table 13–10. CAT Configuration Summary – Science

	Science Grades 3-5	Science Grades 6-HS
Number of DCs	4	4
Number of OP Items per DC	12–15	12–15
Number of OP Items Total	48–60	48–60
Number of FT Items Total	0	0
Entry Point: No Prior CDT	average item by grade	average item by grade
Entry Point: Prior CDT	prior diagnostic scores	prior diagnostic scores
Item Selection: Rasch Ability Estimates	After locator, use total estimate until the fifth item in a DC; then switch to DC estimate	After locator, use total estimate until the fifth item in a DC; then switch to DC estimate
Item Selection: Response Probability	0.65	0.50
Item Selection: Favor Items	close to student grade	close to student grade
Item Selection: Pool Restriction	Items 1–40: no grade 11	Students in grades 6–10 Items 1–20: no grade 11, Biology, or Chemistry
Item Selection: Pool Restriction	No Biology	Students in grades 11–12 Items 1–20: no Biology, or Chemistry
Item Selection: Pool Restriction	No Chemistry	
Navigation	no skip; no backtrack	no skip; no backtrack
Termination	12 items per DC, SE < 0.62 OR 15 items per DC	12 items per DC, SE < 0.60 OR 15 items per DC

DC = Diagnostic Category

Table 13–11. CAT Configuration Summary – Biology and Chemistry

	Biology	Chemistry
Number of DCs	4	4
Number of OP Items per DC	12–15	12–15
Number of OP Items Total	48–60	48–60
Number of FT Items Total	0	0
Entry Point: No Prior CDT	average item	average item
Entry Point: Prior CDT	prior diagnostic scores	prior diagnostic scores
Item Selection: Rasch Ability Estimates	After locator, use total estimate until the fifth item in a DC; then switch to DC estimate	After locator, use total estimate until the fifth item in a DC; then switch to DC estimate
Item Selection: Response Probability	0.50	0.50
Item Selection: Favor Items	close to Biology	close to Chemistry
Item Selection: Pool Restriction	None	None
Navigation	no skip; no backtrack	no skip; no backtrack
Termination	12 items per DC, SE < 0.60 OR 15 items per DC	12 items per DC, SE < 0.60 OR 15 items per DC

DC = Diagnostic Category

Table 13–12. CAT Configuration Summary – Writing

	Writing Grades 3-5	Writing/Eng Comp Gr 6-HS
Number of DCs	5	5
Number of OP Items per DC	10–12	10–12
Number of OP Items Total	50–60	50–60
Number of FT Items Total	0	0
Entry Point: No Prior CDT	average item by grade	average item by grade
Entry Point: Prior CDT	prior diagnostic scores	prior diagnostic scores
Item Selection: Rasch Ability Estimates	After locator, use total estimate until the fifth item in a DC; then switch to DC estimate	After locator, use total estimate until the fifth item in a DC; then switch to DC estimate
Item Selection: Response Probability	0.65	0.50
Item Selection: Favor Items	close to student grade	close to student grade
Item Selection: Pool Restriction	None	None
Navigation	no skip; no backtrack	no skip; no backtrack
Termination	10 items per DC, SE < 0.67 OR 12 items per DC	10 items per DC, SE < 0.65 OR 12 items per DC

DC = Diagnostic Category

CHAPTER FOURTEEN: SCORES AND SCORE REPORTS

Teachers will receive immediate and usable data to be used for targeting instruction to meet the needs of individual students. The CDT online reports provide direct links to resources in SAS, including specific lesson plans, interventions, and other resources. The reports can also show the progress of students across test administrations. This overview summarizes the steps in accessing the interactive reports, as well as the types of information available for each type of report.

ACCESSING THE INTERACTIVE REPORTS

Any user with the role of District, School, or Teacher has the ability to view the interactive reports. Once the user is logged in, Reporting Tools is an option on the left side of the screen. Next, the user selects Interactive Reports. The appropriate administration, district, school, teacher, and student group should be selected by the user. After the Continue button is selected, the user will be prompted to select the Map Configuration.

Figure 14–1. Student Diagnostic Maps Screen

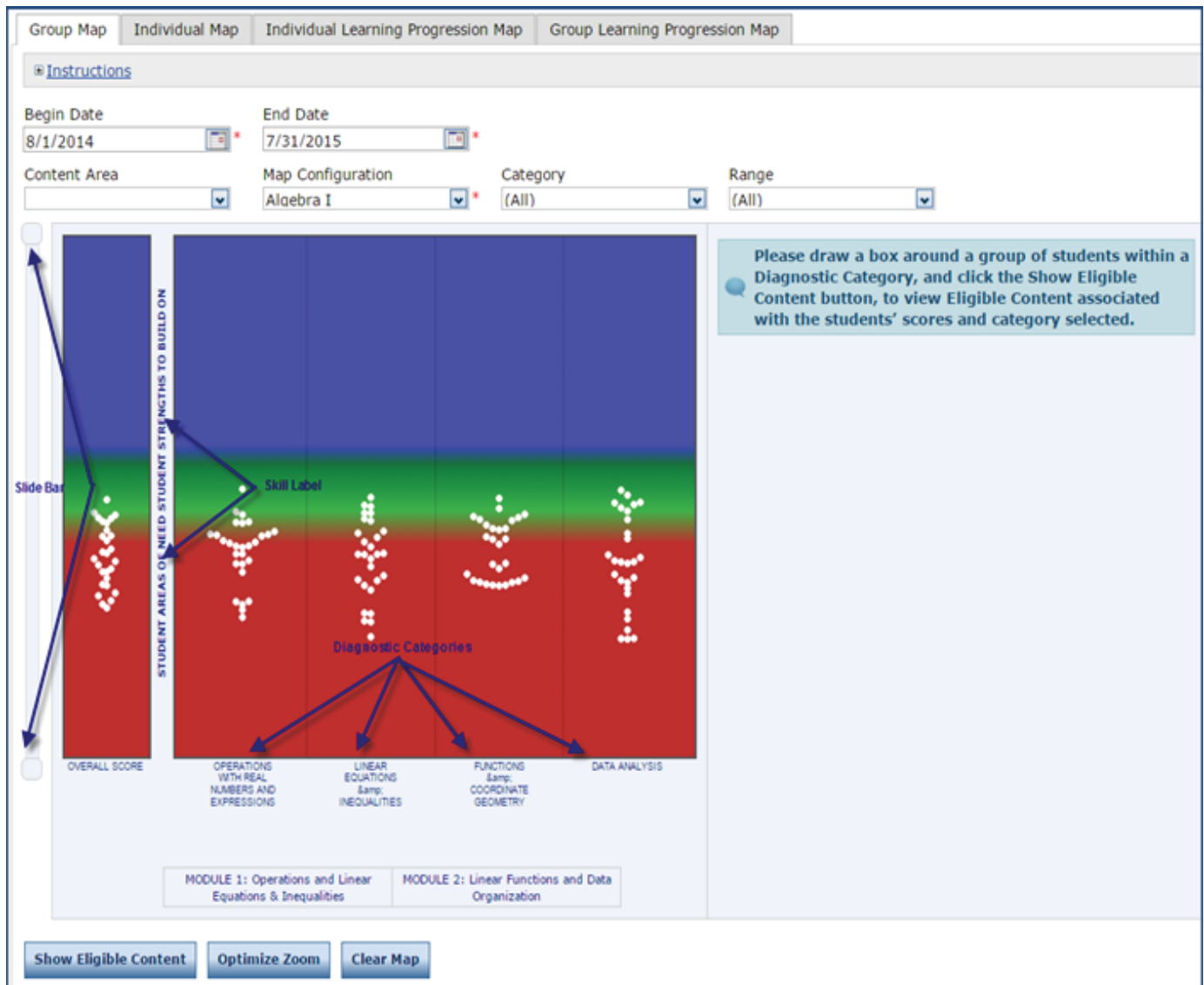
The screenshot displays the 'Student Diagnostic Maps' interface. At the top, there is a section for 'Instructions' and a note: '* Indicates required fields'. Below this, there are three columns of dropdown menus for 'Administration' (2014/2015 Classroom Dia*), 'District' (SAMPLE DISTRICT - 4123*), and 'School' (SAMPLE SCHOOL 1 - 012*). Underneath are input fields for 'Last Name', 'First Name', and 'PAsureID'. Further down are dropdowns for 'Grade', 'Teacher' (Teacher, One (34242234)), and 'Student Group' (Algebra I). There are 'Continue' and 'Clear' buttons. Below this section are four tabs: 'Group Map', 'Individual Map', 'Individual Learning Progression Map', and 'Group Learning Progression Map'. The 'Group Map' tab is selected. Below the tabs, there is another 'Instructions' section and fields for 'Begin Date' (8/1/2014*), 'End Date' (7/31/2015*), 'Content Area', 'Map Configuration' ((Select)*), 'Category', and 'Range'.

GROUP MAP

The Interactive Reports use colors to indicate relative **Strengths to Build On** and **Areas of Need**. Each descriptor correlates with a color range on the scale: Green/Blue = Strengths to Build On; Red = Areas of Need.

- Each white dot on the Group Map represents a single student score.
- Only students within the Student Group with scores will appear as white dots on the map.
- All dots represent the most recent assessment score (during the administration window selected using the Begin Date and End Date) for each student within the Student Group selected.
- The Group Map is intended to provide general assessment information based on a group of student scores within a Diagnostic Category.

Figure 14–2. Group Map



Initially, the Group Map shows the entire vertical scale (representing scores from 200 to 2000 for Lower Grades Mathematics, Lower Grades Reading, Lower Grades Science, and Lower Grades Writing; representing scores from 400 to 2000 for Mathematics, Algebra I, Algebra II, Geometry, Reading/Literature, Science, Biology, Chemistry, and Writing/English Composition). The **Optimize Zoom** button provides the ability to narrow the window to show only the portion of the scale that includes the highest and lowest scores for the Student Group selected. The area in between the slider bars indicates what portion of the total scale is currently being displayed.

Slider Bar—The upper and lower sliders on the bar to the left of the map can be used to adjust the map focus. The area between the sliders is the area of the scale displayed on the map.

Skill Labels—These identify the area on the scale above which are **Student Strengths to Build On** and below which are **Student Areas of Need**.

Diagnostic Categories—These appear below each of the columns at the bottom of the map.

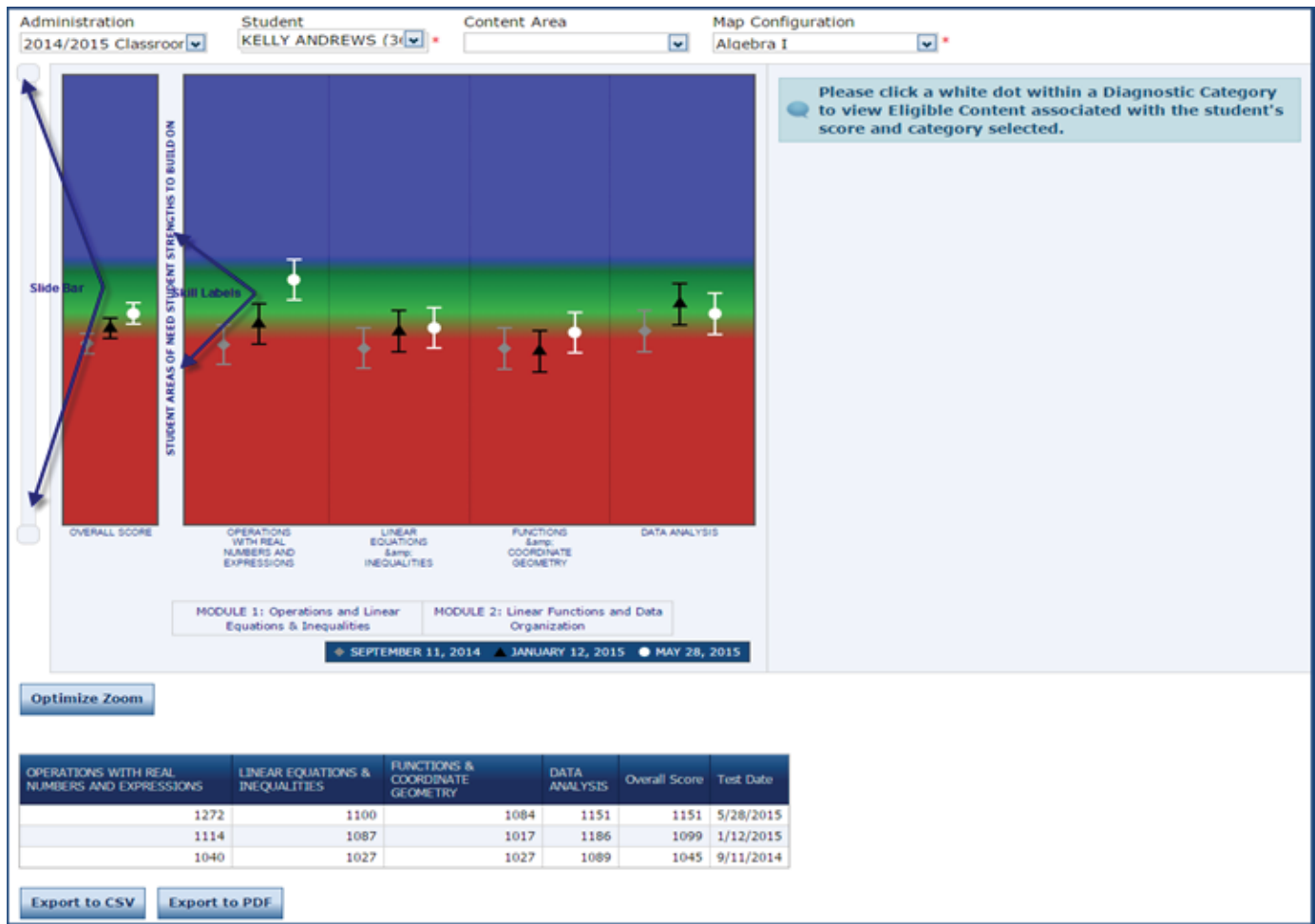
Hover Over—A pop-up of the Name, PAsecureID, Test Date, and Score shows whenever an educator hovers over a white dot representing a student score.

Group Map Grid—This appears below the map and provides a complete list of the students within the selected Student Group as well as additional information, including the date of the most recent test event for each student and his or her diagnostic category and overall scores.

INDIVIDUAL MAP

The Individual Map has the ability to show the three most recent assessments that apply to the Map Configuration selected for an individual student. The Individual Map is intended to provide general Instructional Enrichment (a set of Eligible Content) based on a student's score within a Diagnostic Category.

Figure 14–3. Individual Map



Student Filter—The **Student** drop-down menu can be used to select a student to show the Individual map. When a new student is selected, the map will refresh.

Slider Bar—The upper and lower sliders on the bar to the left of the map can be used to adjust the map's focus. The area between the sliders is the area of the scale that is displayed on the map.

Skill Labels—These identify the area on the scale above which are **Student Strengths to Build On** and below which are **Student Areas of Need**.

Diagnostic Categories—These appear below each of the columns at the bottom of the map.

Hover Over—A pop-up of the Assessment Date and Score shows when an educator hovers over the dot in the middle of the white, gray, or black line.

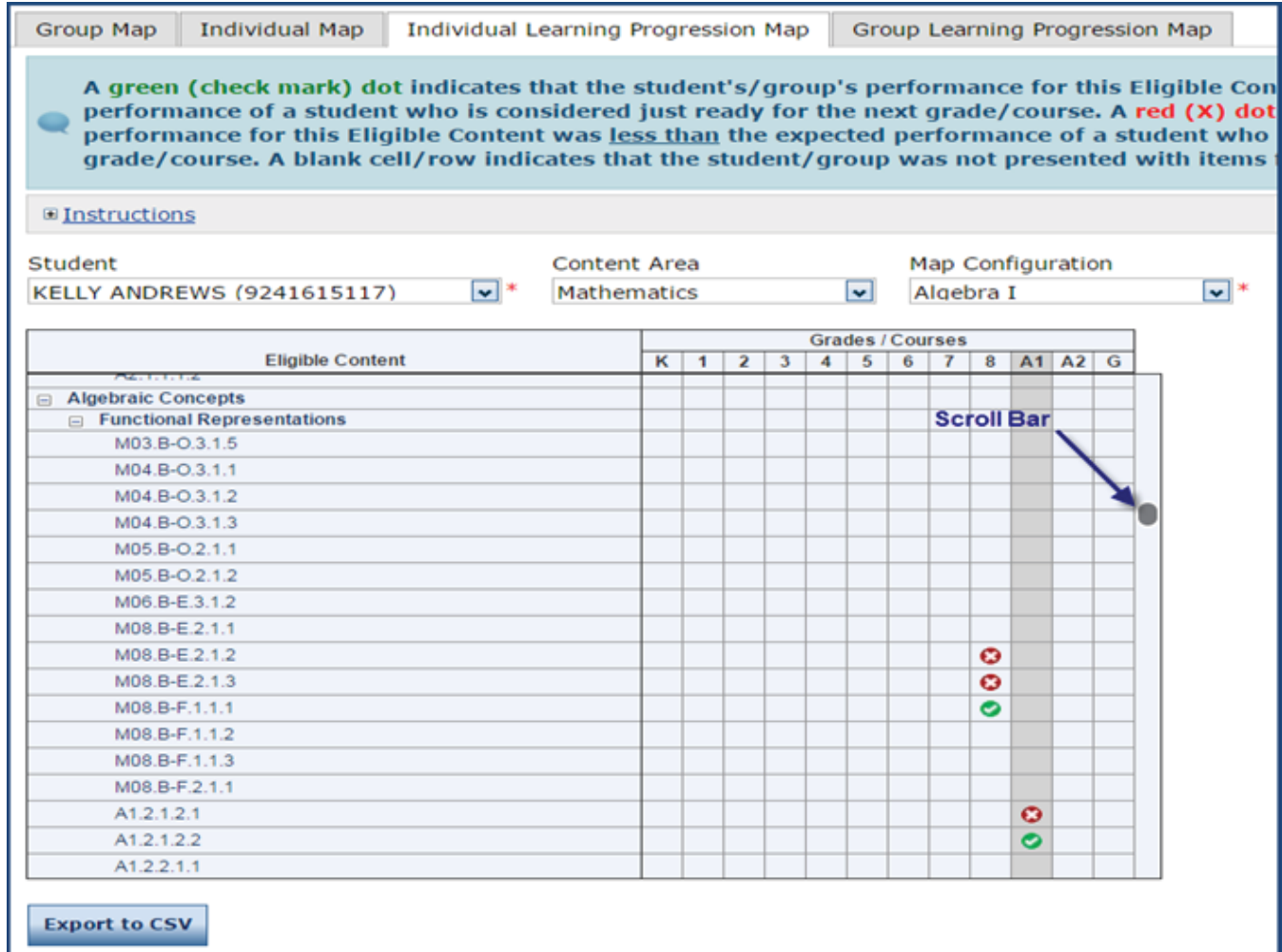
Export to PDF—The **Export to PDF** button can be used to export a PDF image of the current view of the map, search criteria, and Instructional Strategies. Instructional Strategies will only appear in the PDF if the **Show Eligible Content** button has been selected. They will appear in the bar to the right of the map.

Export to CSV—The **Export to CSV** button can be used to export map data to a CSV-formatted table.

INDIVIDUAL LEARNING PROGRESSION MAP

The Individual Learning Progression Map is a graphical representation about how learning may typically move toward increased understanding over time based on Eligible Content. Each row represents the Eligible Content in a subject's domain and subdomain and for a specific grade level or course. The column of the grade/course is highlighted based on the Map Configuration that has been selected.

Figure 14–4. Individual Learning Progression Map

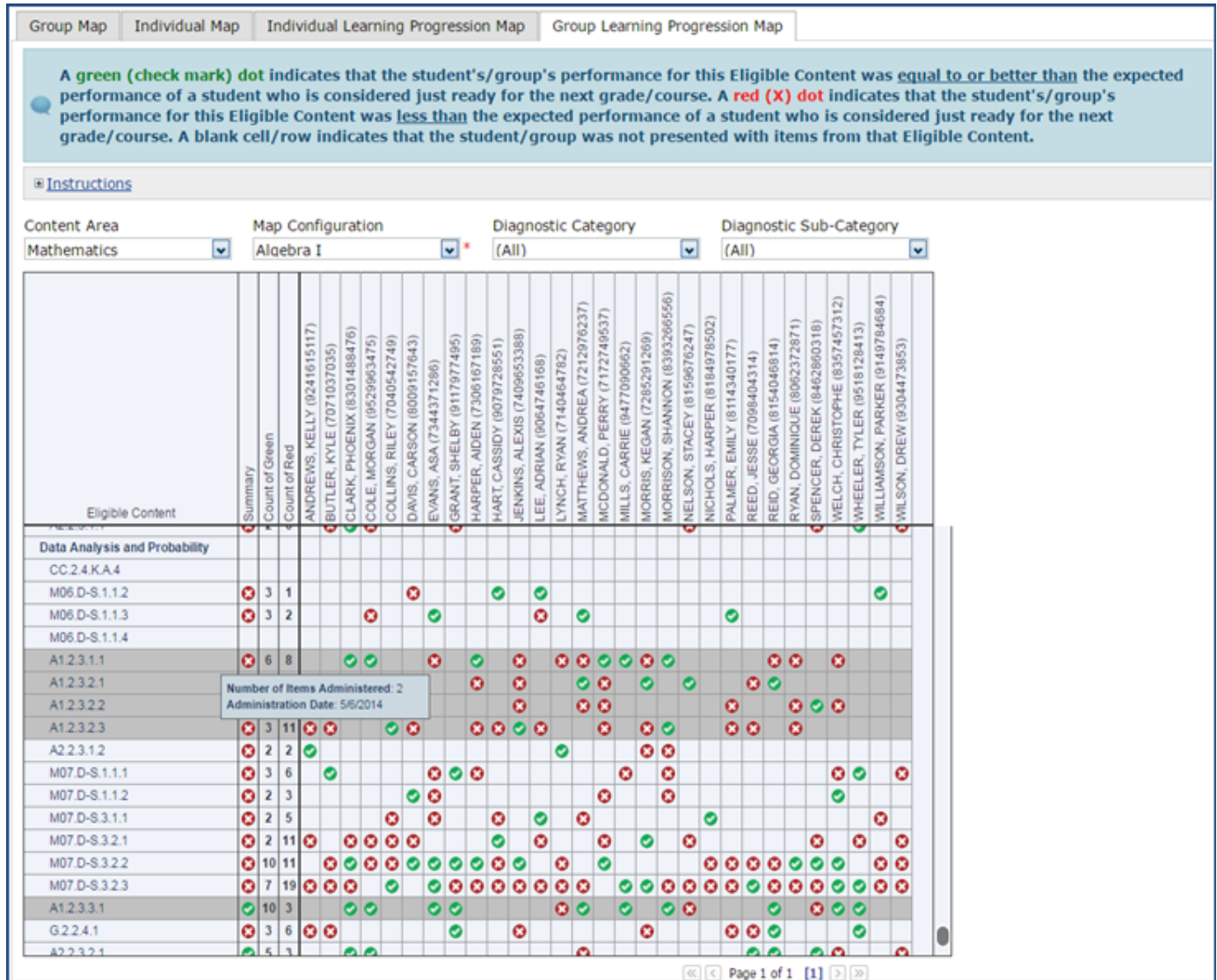


- A **green (check mark)** dot indicates that the student was presented with at least one test item for the Eligible Content and performed as well or better than the expected performance of a student who is considered just ready for the next grade/course.
- A **red (X)** dot indicates that the student was presented with at least one test item from the Eligible Content and the student's performance was less than the expected performance of a student who is considered just ready for the next grade/course.
- An empty box represents Eligible Content that is available, but the student was not presented with any test items from that Eligible Content.
- **Hover Over**—A pop-up showing the number of items administered and the administration date appears when an educator hovers over a dot (either a red (X) dot or a green (check mark) dot). When an educator hovers over an Eligible Content code, a pop-up showing the Eligible Content Description and links to available Materials and Resources and a sample item for that Eligible Content appears.

GROUP LEARNING PROGRESSION MAP

The Group Learning Progression Map shows information about the Learning Progression of Eligible Content for a given content area for all students in a student group. Each row represents the Eligible Content in a subject's domain and subdomain and for a specific grade level or course. Columns show a Summary dot, Count of Green, Count of Red, and one column for each student in the student group.

Figure 14–5. Group Learning Progression Map



- The **Summary** dot shows the average performance of students in the group that received one or more items for that Eligible Content. When determining the color of the summary dot, all students in the group who received at least one item for that Eligible Content count equally, even though they may have taken different numbers of items for the Eligible Content. Additionally, how close each student's performance is to the expected performance of a student just ready for the next grade/course is taken into account. Therefore, a group's summary dot may not be the same as the most frequently-occurring color for the group.
- **Count of Green** shows the number of students in the student group who were administered one or more items for a given Eligible Content and received a green dot.
- **Count of Red** shows the number of students in the student group who were administered one or more items for a given Eligible Content and received a red dot.

- **Hover Over**— A pop-up showing the number of items administered and the administration date appears when an educator hovers over a dot (either a red (X) dot or a green (check mark) dot). When an educator hovers over a Summary dot, a pop-up appears showing the number of students and number of items used to determine the color of the Summary dot. When an educator hovers over an Eligible Content code, a pop-up showing the Eligible Content Description and links to available Materials and Resources and a sample item for that Eligible Content appears.

CHAPTER FIFTEEN: OPERATIONAL ADMINISTRATION 2016–2017

This chapter contains summary information about the operational administration of the Classroom Diagnostic Tools (CDT) during the 2016–2017 school year. Tests were available from August 22, 2016, through the end of the school year (June 28, 2017).

The CDT is administered completely online using a computer adaptive test (CAT) model, and participation is voluntary. CDT scores are available immediately after testing in the dynamic reporting suite. In addition to the scores, this suite includes links to instructional resources. The CDT may be administered multiple times throughout the school year.

FREQUENCIES

Tables 15–1 through 15–3 present information related to the number of students who were administered one or more CDT tests in the 2016–2017 school year. Table 15–1 shows the number of students who have taken each CDT. Some of these students have taken the same CDT test multiple times or have taken multiple CDT tests. Table 15–1 counts only the first administration of each CDT test. Data about multiple administrations of the same test and multiple CDT tests are presented in Tables 15–2 and 15–3, respectively.

Table 15–1. Number of Students Taking the First Administration of a CDT Test by Grade Level

CDT	3	4	5	6	7	8	9	10	11	12	TOTAL
Math Grades 3-5	24,434	27,838	29,515	-	-	-	-	-	-	-	81,787
Math Grades 6-8	-	-	-	37,541	36,678	31,923	0	0	0	0	106,142
Algebra I	-	-	-	150	2,537	10,817	30,376	12,728	4,939	967	62,514
Geometry	-	-	-	0	24	680	1,267	2,154	1,791	300	6,216
Algebra II	-	-	-	4	7	375	1,157	2,360	1,304	563	5,770
Reading Grades 3-5	20,975	23,328	25,376	-	-	-	-	-	-	-	69,679
Reading/Lit Grades 6-HS	-	-	-	31,959	34,202	33,479	31,572	46,389	8,420	2,656	188,677
Science Grades 3-5	2,597	12,535	2,461	-	-	-	-	-	-	-	17,593
Science Grades 6-HS	-	-	-	11,006	17,909	28,417	543	100	99	145	58,219
Biology	-	-	-	3	10	465	27,333	32,817	6,588	799	68,015
Chemistry	-	-	-	0	0	11	33	1,757	2,005	379	4,185
Writing Grades 3-5	3,394	3,745	5,000	-	-	-	-	-	-	-	12,139
Writing/Eng Comp Gr 6-HS	-	-	-	7,939	10,018	10,295	2,367	1,911	441	70	33,041

Table 15–2. Multiple Administrations of the Same CDT Test

CDT	Students with 1 Administration	Students with 2 Administrations	Students with 3 Administrations	Students with 4 Administrations	Students with 5 Administrations
Math Grades 3-5	81,787	64,232	28,347	971	18
Math Grades 6-8	106,142	77,763	30,418	668	5
Algebra I	62,514	38,441	14,655	1,098	41
Geometry	6,216	4,228	1,920	38	0
Algebra II	5,770	4,001	1,666	35	0
Reading Grades 3-5	69,679	56,411	22,533	645	9
Reading/Lit Grades 6-HS	188,677	124,084	36,799	940	63
Science Grades 3-5	17,593	8,108	3,234	3	0
Science Grades 6-HS	58,219	35,358	12,532	326	88
Biology	68,015	44,559	17,435	1,301	122
Chemistry	4,185	2,735	996	37	0
Writing Grades 3-5	12,139	7,795	4,056	199	0
Writing/Eng Comp Gr 6-HS	33,041	18,851	6,379	235	0

Table 15–3a. Number of Students in Grades 3 through 5 Taking Multiple CDT Tests

Grades 3 through 5	Math	Reading	Science	Writing
Math Grades 3-5	-	-	-	-
Reading Grades 3-5	64,952	-	-	-
Science Grades 3-5	12,342	11,545	-	-
Writing Grades 3-5	11,599	11,782	4,079	-

Table 15–3b. Number of Students in Grades 6 and above Taking Multiple CDT Tests

Grades 6 and above	Math	Algebra I	Geometry	Algebra II	Reading/Literature	Science	Biology	Chemistry	Writing/English Comp.
Math Grades 6-8	-	-	-	-	-	-	-	-	-
Algebra I	2,940	-	-	-	-	-	-	-	-
Geometry	186	754	-	-	-	-	-	-	-
Algebra II	121	554	360	-	-	-	-	-	-
Reading/Lit Grades 6-HS	84,232	35,211	4,083	3,729	-	-	-	-	-
Science Grades 6-HS	38,171	6,661	358	273	38,384	-	-	-	-
Biology	45	19,784	2,500	2,298	37,555	459	-	-	-
Chemistry	11	351	580	805	1,743	20	451	-	-
Writing/Eng Comp Gr 6-HS	23,030	4,040	361	402	27,216	15,769	1,834	226	-

Further demographic information about students tested with the CDT is found in the next section.

DEMOGRAPHIC CHARACTERISTICS

COMPOSITION OF SAMPLE USED IN SUBSEQUENT TABLES

To avoid double counting of students, the following demographic tables are based on students' first administration for a given CDT test. Students who took the same test multiple times are counted only once. Students who took different tests are counted for each test. For example, if a student took CDT Algebra I twice, he or she is counted only once in the Algebra I counts; if a student took Algebra I once and Biology once, he or she is counted in both Algebra I and Biology counts.

COLLECTION OF STUDENT DEMOGRAPHIC INFORMATION

Data for analyses of demographic characteristics were obtained primarily from information supplied by school district personnel through the Pennsylvania Information Management System (PIMS) and subsequently transmitted to DRC. However, teachers may assign CDT tests to students who do not have data in PIMS at the time of testing. This may result in CDT records with incomplete demographic information.

DEMOGRAPHIC CHARACTERISTICS

Frequency data for various demographic categories are presented in Tables 15–4 through 15–16. Shown at the bottom of the appropriate table is the number of students with a total test score on which the column percentages are based. Percentages in some categories may sum to a quantity below 100 percent due to missing data.

Analyses are broken out by grade level. However, in the case of course-specific CDT tests (Algebra I, Geometry, Algebra II, Biology, and Chemistry), students across multiple grades may be enrolled in the course.

Caution should be used in interpreting CDT demographic data, since participation is voluntary and complete demographic data via PIMS is not required for testing. This is especially true for rows in the lower half of the tables (e.g. IEP, Title I, Title II, Migrant, ELL, and Economically Disadvantaged) because these typically have more than ninety-five percent blank responses.

Table 15–4. Demographic Characteristics of Students Taking CDT Math Grades 3-5

Demographic or Educational Characteristic	Gr. 3	Gr. 4	Gr. 5	Total
Female (N)	11,945	13,615	14,371	39,931
Female (Pct)	48.89%	48.91%	48.69%	48.82%
Male (N)	12,489	14,223	15,144	41,856
Male (Pct)	51.11%	51.09%	51.31%	51.18%
American Indian or Alaskan Native (N)	50	64	45	159
American Indian or Alaskan Native (Pct)	0.20%	0.23%	0.15%	0.19%
Black/African American non-Hispanic (N)	2,578	3,014	2,866	8,458
Black/African American non-Hispanic (Pct)	10.55%	10.83%	9.71%	10.34%
Hispanic (N)	1,920	2,309	2,428	6,657
Hispanic (Pct)	7.86%	8.29%	8.23%	8.14%
White/Caucasian non-Hispanic (N)	18,152	20,413	22,266	60,831
White/Caucasian non-Hispanic (Pct)	74.29%	73.33%	75.44%	74.38%
Multi-Racial non-Hispanic (N)	1,017	1,156	1,107	3,280
Multi-Racial non-Hispanic (Pct)	4.16%	4.15%	3.75%	4.01%
Asian non-Hispanic (N)	624	785	732	2,141
Asian non-Hispanic (Pct)	2.55%	2.82%	2.48%	2.62%

Table 15–4 (continued). Demographic Characteristics of Students Taking CDT Math Grades 3-5

Demographic or Educational Characteristic	Gr. 3	Gr. 4	Gr. 5	Total
Native Hawaiian or Pacific Islander (N)	93	97	71	261
Native Hawaiian or Pacific Islander (Pct)	0.38%	0.35%	0.24%	0.32%
IEP (N)	94	78	108	280
IEP (Pct)	0.38%	0.28%	0.37%	0.34%
Title I (N)	81	59	74	214
Title (Pct)	0.33%	0.21%	0.25%	0.26%
Title III served (N)	3	5	7	15
Title III served (Pct)	0.01%	0.02%	0.02%	0.02%
Title III not served (N)	1	0	3	4
Title III not served (Pct)	0.00%	0.00%	0.01%	0.00%
Migrant student (N)	0	0	1	1
Migrant student (Pct)	0.00%	0.00%	0.00%	0.00%
ELL - enrolled after 05-06-16 (N)	6	7	8	21
ELL - enrolled after 05-06-16 (Pct)	0.02%	0.03%	0.03%	0.03%
ELL - enrolled before 05-06-16 (N)	6	4	7	17
ELL - enrolled before 05-06-16 (Pct)	0.02%	0.01%	0.02%	0.02%
Exited ESL - first year of monitoring (N)	0	0	0	0
Exited ESL - first year of monitoring (Pct)	0.00%	0.00%	0.00%	0.00%
Exited ESL - second year of monitoring (N)	0	1	0	1
Exited ESL - second year of monitoring (Pct)	0.00%	0.00%	0.00%	0.00%
Former ELL and no longer monitored (N)	0	0	0	0
Former ELL and no longer monitored (Pct)	0.00%	0.00%	0.00%	0.00%
Economically disadvantaged (N)	103	125	106	334
Economically disadvantaged (Pct)	0.42%	0.45%	0.36%	0.41%
Number of students	24,434	27,838	29,515	81,787

Table 15–5. Demographic Characteristics of Students Taking CDT Math Grades 6-8

Demographic or Educational Characteristic	Gr. 6	Gr. 7	Gr. 8	Gr. 9	Gr. 10	Gr. 11	Gr. 12	Total
Female (N)	18,379	17,679	15,370	0	0	0	0	51,428
Female (Pct)	48.96%	48.20%	48.15%	N/A	N/A	N/A	N/A	48.45%
Male (N)	19,162	18,999	16,553	0	0	0	0	54,714
Male (Pct)	51.04%	51.80%	51.85%	N/A	N/A	N/A	N/A	51.55%
American Indian or Alaskan Native (N)	65	73	69	0	0	0	0	207
American Indian or Alaskan Native (Pct)	0.17%	0.20%	0.22%	N/A	N/A	N/A	N/A	0.20%
Black/African American non-Hispanic (N)	3,445	3,577	3,390	0	0	0	0	10,412
Black/African American non-Hispanic (Pct)	9.18%	9.75%	10.62%	N/A	N/A	N/A	N/A	9.81%
Hispanic (N)	3,897	3,324	2,800	0	0	0	0	10,021
Hispanic (Pct)	10.38%	9.06%	8.77%	N/A	N/A	N/A	N/A	9.44%
White/Caucasian non-Hispanic (N)	27,233	26,868	23,168	0	0	0	0	77,269
White/Caucasian non-Hispanic (Pct)	72.54%	73.25%	72.57%	N/A	N/A	N/A	N/A	72.80%
Multi-Racial non-Hispanic (N)	1,486	1,398	1,206	0	0	0	0	4,090
Multi-Racial non-Hispanic (Pct)	3.96%	3.81%	3.78%	N/A	N/A	N/A	N/A	3.85%
Asian non-Hispanic (N)	1,011	1,031	841	0	0	0	0	2,883
Asian non-Hispanic (Pct)	2.69%	2.81%	2.63%	N/A	N/A	N/A	N/A	2.72%
Native Hawaiian or Pacific Islander (N)	404	407	449	0	0	0	0	1,260
Native Hawaiian or Pacific Islander (Pct)	1.08%	1.11%	1.41%	N/A	N/A	N/A	N/A	1.19%
IEP (N)	88	189	160	0	0	0	0	437
IEP (Pct)	0.23%	0.52%	0.50%	N/A	N/A	N/A	N/A	0.41%
Title I (N)	76	52	46	0	0	0	0	174
Title (Pct)	0.20%	0.14%	0.14%	N/A	N/A	N/A	N/A	0.16%
Title III served (N)	9	5	15	0	0	0	0	29
Title III served (Pct)	0.02%	0.01%	0.05%	N/A	N/A	N/A	N/A	0.03%
Title III not served (N)	1	1	1	0	0	0	0	3
Title III not served (Pct)	0.00%	0.00%	0.00%	N/A	N/A	N/A	N/A	0.00%
Migrant student (N)	0	0	1	0	0	0	0	1
Migrant student (Pct)	0.00%	0.00%	0.00%	N/A	N/A	N/A	N/A	0.00%
ELL - enrolled after 05-06-16 (N)	10	8	11	0	0	0	0	29
ELL - enrolled after 05-06-16 (Pct)	0.03%	0.02%	0.03%	N/A	N/A	N/A	N/A	0.03%
ELL - enrolled before 05-06-16 (N)	7	26	24	0	0	0	0	57
ELL - enrolled before 05-06-16 (Pct)	0.02%	0.07%	0.08%	N/A	N/A	N/A	N/A	0.05%
Exited ESL - first year of monitoring (N)	1	0	0	0	0	0	0	1
Exited ESL - first year of monitoring (Pct)	0.00%	0.00%	0.00%	N/A	N/A	N/A	N/A	0.00%
Exited ESL - second year of monitoring (N)	0	0	0	0	0	0	0	0
Exited ESL - second year of monitoring (Pct)	0.00%	0.00%	0.00%	N/A	N/A	N/A	N/A	0.00%
Former ELL and no longer monitored (N)	0	1	0	0	0	0	0	1

Table 15–5 (continued). Demographic Characteristics of Students Taking CDT Math Grades 6-8

Demographic or Educational Characteristic	Gr. 6	Gr. 7	Gr. 8	Gr. 9	Gr. 10	Gr. 11	Gr. 12	Total
Former ELL and no longer monitored (Pct)	0.00%	0.00%	0.00%	N/A	N/A	N/A	N/A	0.00%
Economically disadvantaged (N)	83	202	132	0	0	0	0	417
Economically disadvantaged (Pct)	0.22%	0.55%	0.41%	N/A	N/A	N/A	N/A	0.39%
Number of students	37,541	36,678	31,923	0	0	0	0	106,142

Table 15–6. Demographic Characteristics of Students Taking CDT Algebra I

Demographic or Educational Characteristic	Gr. 6	Gr. 7	Gr. 8	Gr. 9	Gr. 10	Gr. 11	Gr. 12	Total
Female (N)	55	1,193	5,634	14,496	5,735	2,119	389	29,621
Female (Pct)	36.67%	47.02%	52.08%	47.72%	45.06%	42.90%	40.23%	47.38%
Male (N)	95	1,344	5,183	15,880	6,993	2,820	578	32,893
Male (Pct)	63.33%	52.98%	47.92%	52.28%	54.94%	57.10%	59.77%	52.62%
American Indian or Alaskan Native (N)	9	5	31	61	49	53	13	221
American Indian or Alaskan Native (Pct)	6.00%	0.20%	0.29%	0.20%	0.38%	1.07%	1.34%	0.35%
Black/African American non-Hispanic (N)	2	91	658	3,672	2,089	784	170	7,466
Black/African American non-Hispanic (Pct)	1.33%	3.59%	6.08%	12.09%	16.41%	15.87%	17.58%	11.94%
Hispanic (N)	5	65	596	3,155	1,769	725	152	6,467
Hispanic (Pct)	3.33%	2.56%	5.51%	10.39%	13.90%	14.68%	15.72%	10.34%
White/Caucasian non-Hispanic (N)	113	2,169	8,999	21,779	8,237	3,099	580	44,976
White/Caucasian non-Hispanic (Pct)	75.33%	85.49%	83.19%	71.70%	64.72%	62.75%	59.98%	71.95%
Multi-Racial non-Hispanic (N)	1	57	206	946	335	152	27	1,724
Multi-Racial non-Hispanic (Pct)	0.67%	2.25%	1.90%	3.11%	2.63%	3.08%	2.79%	2.76%
Asian non-Hispanic (N)	20	149	315	734	240	119	22	1,599
Asian non-Hispanic (Pct)	13.33%	5.87%	2.91%	2.42%	1.89%	2.41%	2.28%	2.56%
Native Hawaiian or Pacific Islander (N)	0	1	12	29	9	7	3	61
Native Hawaiian or Pacific Islander (Pct)	0.00%	0.04%	0.11%	0.10%	0.07%	0.14%	0.31%	0.10%
IEP (N)	0	1	7	96	61	44	15	224
IEP (Pct)	0.00%	0.04%	0.06%	0.32%	0.48%	0.89%	1.55%	0.36%
Title I (N)	0	1	65	41	53	15	5	180
Title (Pct)	0.00%	0.04%	0.60%	0.13%	0.42%	0.30%	0.52%	0.29%
Title III served (N)	0	0	0	6	1	2	3	12
Title III served (Pct)	0.00%	0.00%	0.00%	0.02%	0.01%	0.04%	0.31%	0.02%
Title III not served (N)	0	0	0	1	1	0	0	2
Title III not served (Pct)	0.00%	0.00%	0.00%	0.00%	0.01%	0.00%	0.00%	0.00%
Migrant student (N)	0	0	0	0	0	0	0	0
Migrant student (Pct)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
ELL - enrolled after 05-06-16 (N)	0	0	0	9	4	3	1	17
ELL - enrolled after 05-06-16 (Pct)	0.00%	0.00%	0.00%	0.03%	0.03%	0.06%	0.10%	0.03%
ELL - enrolled before 05-06-16 (N)	0	0	5	10	6	2	4	27
ELL - enrolled before 05-06-16 (Pct)	0.00%	0.00%	0.05%	0.03%	0.05%	0.04%	0.41%	0.04%
Exited ESL - first year of monitoring (N)	0	0	0	0	0	0	0	0
Exited ESL - first year of monitoring (Pct)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Exited ESL - second year of monitoring (N)	0	0	0	0	0	0	0	0
Exited ESL - second year of monitoring (Pct)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Former ELL and no longer monitored (N)	0	0	0	0	1	0	0	1

Table 15–6 (continued). Demographic Characteristics of Students Taking CDT Algebra I

Demographic or Educational Characteristic	Gr. 6	Gr. 7	Gr. 8	Gr. 9	Gr. 10	Gr. 11	Gr. 12	Total
Former ELL and no longer monitored (Pct)	0.00%	0.00%	0.00%	0.00%	0.01%	0.00%	0.00%	0.00%
Economically disadvantaged (N)	1	3	75	132	98	34	9	352
Economically disadvantaged (Pct)	0.67%	0.12%	0.69%	0.43%	0.77%	0.69%	0.93%	0.56%
Number of students	150	2,537	10,817	30,376	12,728	4,939	967	62,514

Table 15–7. Demographic Characteristics of Students Taking CDT Geometry

Demographic or Educational Characteristic	Gr. 6	Gr. 7	Gr. 8	Gr. 9	Gr. 10	Gr. 11	Gr. 12	Total
Female (N)	0	7	338	627	1,054	827	125	2,978
Female (Pct)	N/A	29.17%	49.71%	49.49%	48.93%	46.18%	41.67%	47.91%
Male (N)	0	17	342	640	1,100	964	175	3,238
Male (Pct)	N/A	70.83%	50.29%	50.51%	51.07%	53.82%	58.33%	52.09%
American Indian or Alaskan Native (N)	0	0	1	3	9	8	0	21
American Indian or Alaskan Native (Pct)	N/A	0.00%	0.15%	0.24%	0.42%	0.45%	0.00%	0.34%
Black/African American non-Hispanic (N)	0	0	23	87	256	225	63	654
Black/African American non-Hispanic (Pct)	N/A	0.00%	3.38%	6.87%	11.88%	12.56%	21.00%	10.52%
Hispanic (N)	0	0	5	109	243	280	37	674
Hispanic (Pct)	N/A	0.00%	0.74%	8.60%	11.28%	15.63%	12.33%	10.84%
White/Caucasian non-Hispanic (N)	0	17	602	1,005	1,540	1,187	192	4,543
White/Caucasian non-Hispanic (Pct)	N/A	70.83%	88.53%	79.32%	71.49%	66.28%	64.00%	73.09%
Multi-Racial non-Hispanic (N)	0	0	12	38	67	67	6	190
Multi-Racial non-Hispanic (Pct)	N/A	0.00%	1.76%	3.00%	3.11%	3.74%	2.00%	3.06%
Asian non-Hispanic (N)	0	7	36	25	35	22	2	127
Asian non-Hispanic (Pct)	N/A	29.17%	5.29%	1.97%	1.62%	1.23%	0.67%	2.04%
Native Hawaiian or Pacific Islander (N)	0	0	1	0	4	2	0	7
Native Hawaiian or Pacific Islander (Pct)	N/A	0.00%	0.15%	0.00%	0.19%	0.11%	0.00%	0.11%
IEP (N)	0	0	0	2	0	11	2	15
IEP (Pct)	N/A	0.00%	0.00%	0.16%	0.00%	0.61%	0.67%	0.24%
Title I (N)	0	0	0	1	0	4	0	5
Title (Pct)	N/A	0.00%	0.00%	0.08%	0.00%	0.22%	0.00%	0.08%
Title III served (N)	0	0	0	0	0	2	0	2
Title III served (Pct)	N/A	0.00%	0.00%	0.00%	0.00%	0.11%	0.00%	0.03%
Title III not served (N)	0	0	0	0	0	0	0	0
Title III not served (Pct)	N/A	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Migrant student (N)	0	0	0	0	0	0	0	0
Migrant student (Pct)	N/A	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
ELL - enrolled after 05-06-16 (N)	0	0	0	0	0	1	0	1
ELL - enrolled after 05-06-16 (Pct)	N/A	0.00%	0.00%	0.00%	0.00%	0.06%	0.00%	0.02%
ELL - enrolled before 05-06-16 (N)	0	0	0	0	0	1	0	1
ELL - enrolled before 05-06-16 (Pct)	N/A	0.00%	0.00%	0.00%	0.00%	0.06%	0.00%	0.02%
Exited ESL - first year of monitoring (N)	0	0	0	0	0	0	0	0
Exited ESL - first year of monitoring (Pct)	N/A	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Exited ESL - second year of monitoring (N)	0	0	0	0	0	0	0	0
Exited ESL - second year of monitoring (Pct)	N/A	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Former ELL and no longer monitored (N)	0	0	0	0	0	0	0	0

Table 15–7 (continued). Demographic Characteristics of Students Taking CDT Geometry

Demographic or Educational Characteristic	Gr. 6	Gr. 7	Gr. 8	Gr. 9	Gr. 10	Gr. 11	Gr. 12	Total
Former ELL and no longer monitored (Pct)	N/A	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Economically disadvantaged (N)	0	0	0	1	0	18	3	22
Economically disadvantaged (Pct)	N/A	0.00%	0.00%	0.08%	0.00%	1.01%	1.00%	0.35%
Number of students	0	24	680	1,267	2,154	1,791	300	6,216

Table 15–8. Demographic Characteristics of Students Taking CDT Algebra II

Demographic or Educational Characteristic	Gr. 6	Gr. 7	Gr. 8	Gr. 9	Gr. 10	Gr. 11	Gr. 12	Total
Female (N)	0	1	186	619	1,204	616	271	2,897
Female (Pct)	0.00%	14.29%	49.60%	53.50%	51.02%	47.24%	48.13%	50.21%
Male (N)	4	6	189	538	1,156	688	292	2,873
Male (Pct)	100.00%	85.71%	50.40%	46.50%	48.98%	52.76%	51.87%	49.79%
American Indian or Alaskan Native (N)	0	0	1	38	12	9	0	60
American Indian or Alaskan Native (Pct)	0.00%	0.00%	0.27%	3.28%	0.51%	0.69%	0.00%	1.04%
Black/African American non-Hispanic (N)	0	0	7	90	251	207	117	672
Black/African American non-Hispanic (Pct)	0.00%	0.00%	1.87%	7.78%	10.64%	15.87%	20.78%	11.65%
Hispanic (N)	0	0	9	64	191	175	103	542
Hispanic (Pct)	0.00%	0.00%	2.40%	5.53%	8.09%	13.42%	18.29%	9.39%
White/Caucasian non-Hispanic (N)	2	4	335	913	1,792	840	327	4,213
White/Caucasian non-Hispanic (Pct)	50.00%	57.14%	89.33%	78.91%	75.93%	64.42%	58.08%	73.02%
Multi-Racial non-Hispanic (N)	0	0	13	17	39	41	9	119
Multi-Racial non-Hispanic (Pct)	0.00%	0.00%	3.47%	1.47%	1.65%	3.14%	1.60%	2.06%
Asian non-Hispanic (N)	2	3	10	32	68	32	7	154
Asian non-Hispanic (Pct)	50.00%	42.86%	2.67%	2.77%	2.88%	2.45%	1.24%	2.67%
Native Hawaiian or Pacific Islander (N)	0	0	0	3	7	0	0	10
Native Hawaiian or Pacific Islander (Pct)	0.00%	0.00%	0.00%	0.26%	0.30%	0.00%	0.00%	0.17%
IEP (N)	0	0	0	0	0	6	8	14
IEP (Pct)	0.00%	0.00%	0.00%	0.00%	0.00%	0.46%	1.42%	0.24%
Title I (N)	0	0	0	0	0	2	1	3
Title (Pct)	0.00%	0.00%	0.00%	0.00%	0.00%	0.15%	0.18%	0.05%
Title III served (N)	0	0	0	0	0	0	0	0
Title III served (Pct)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Title III not served (N)	0	0	0	0	0	0	2	2
Title III not served (Pct)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.36%	0.03%
Migrant student (N)	0	0	0	0	0	0	0	0
Migrant student (Pct)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
ELL - enrolled after 05-06-16 (N)	0	0	0	0	0	0	0	0
ELL - enrolled after 05-06-16 (Pct)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
ELL - enrolled before 05-06-16 (N)	0	0	0	0	0	0	0	0
ELL - enrolled before 05-06-16 (Pct)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Exited ESL - first year of monitoring (N)	0	0	0	0	0	1	0	1
Exited ESL - first year of monitoring (Pct)	0.00%	0.00%	0.00%	0.00%	0.00%	0.08%	0.00%	0.02%
Exited ESL - second year of monitoring (N)	0	0	0	0	0	0	1	1
Exited ESL - second year of monitoring (Pct)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.18%	0.02%
Former ELL and no longer monitored (N)	0	0	0	0	0	3	3	6

Table 15–8 (continued). Demographic Characteristics of Students Taking CDT Algebra II

Demographic or Educational Characteristic	Gr. 6	Gr. 7	Gr. 8	Gr. 9	Gr. 10	Gr. 11	Gr. 12	Total
Former ELL and no longer monitored (Pct)	0.00%	0.00%	0.00%	0.00%	0.00%	0.23%	0.53%	0.10%
Economically disadvantaged (N)	0	0	0	0	1	3	16	20
Economically disadvantaged (Pct)	0.00%	0.00%	0.00%	0.00%	0.04%	0.23%	2.84%	0.35%
Number of students	4	7	375	1,157	2,360	1,304	563	5,770

Table 15–9. Demographic Characteristics of Students Taking CDT Reading Grades 3-5

Demographic or Educational Characteristic	Gr. 3	Gr. 4	Gr. 5	Total
Female (N)	10,233	11,393	12,362	33,988
Female (Pct)	48.79%	48.84%	48.72%	48.78%
Male (N)	10,742	11,935	13,014	35,691
Male (Pct)	51.21%	51.16%	51.28%	51.22%
American Indian or Alaskan Native (N)	38	49	36	123
American Indian or Alaskan Native (Pct)	0.18%	0.21%	0.14%	0.18%
Black/African American non-Hispanic (N)	1,993	2,279	2,265	6,537
Black/African American non-Hispanic (Pct)	9.50%	9.77%	8.93%	9.38%
Hispanic (N)	1,921	2,078	2,112	6,111
Hispanic (Pct)	9.16%	8.91%	8.32%	8.77%
White/Caucasian non-Hispanic (N)	15,342	16,966	19,084	51,392
White/Caucasian non-Hispanic (Pct)	73.14%	72.73%	75.20%	73.76%
Multi-Racial non-Hispanic (N)	821	953	920	2,694
Multi-Racial non-Hispanic (Pct)	3.91%	4.09%	3.63%	3.87%
Asian non-Hispanic (N)	498	605	590	1,693
Asian non-Hispanic (Pct)	2.37%	2.59%	2.33%	2.43%
Native Hawaiian or Pacific Islander (N)	362	398	369	1,129
Native Hawaiian or Pacific Islander (Pct)	1.73%	1.71%	1.45%	1.62%
IEP (N)	88	72	104	264
IEP (Pct)	0.42%	0.31%	0.41%	0.38%
Title I (N)	74	52	63	189
Title (Pct)	0.35%	0.22%	0.25%	0.27%
Title III served (N)	3	3	7	13
Title III served (Pct)	0.01%	0.01%	0.03%	0.02%
Title III not served (N)	1	0	2	3
Title III not served (Pct)	0.00%	0.00%	0.01%	0.00%
Migrant student (N)	0	0	1	1
Migrant student (Pct)	0.00%	0.00%	0.00%	0.00%
ELL - enrolled after 05-06-16 (N)	5	2	7	14
ELL - enrolled after 05-06-16 (Pct)	0.02%	0.01%	0.03%	0.02%
ELL - enrolled before 05-06-16 (N)	3	4	6	13
ELL - enrolled before 05-06-16 (Pct)	0.01%	0.02%	0.02%	0.02%
Exited ESL - first year of monitoring (N)	0	0	0	0
Exited ESL - first year of monitoring (Pct)	0.00%	0.00%	0.00%	0.00%
Exited ESL - second year of monitoring (N)	0	1	0	1
Exited ESL - second year of monitoring (Pct)	0.00%	0.00%	0.00%	0.00%
Former ELL and no longer monitored (N)	0	0	0	0

Table 15–9 (continued). Demographic Characteristics of Students Taking CDT Reading Grades 3-5

Demographic or Educational Characteristic	Gr. 3	Gr. 4	Gr. 5	Total
Former ELL and no longer monitored (Pct)	0.00%	0.00%	0.00%	0.00%
Economically disadvantaged (N)	83	87	92	262
Economically disadvantaged (Pct)	0.40%	0.37%	0.36%	0.38%
Number of students	20,975	23,328	25,376	69,679

Table 15–10. Demographic Characteristics of Students Taking CDT Reading/Lit Grades 6–HS

Demographic or Educational Characteristic	Gr. 6	Gr. 7	Gr. 8	Gr. 9	Gr. 10	Gr. 11	Gr. 12	Total
Female (N)	15,588	16,441	16,400	15,470	22,658	3,691	1,231	91,479
Female (Pct)	48.77%	48.07%	48.99%	49.00%	48.84%	43.84%	46.35%	48.48%
Male (N)	16,371	17,761	17,079	16,102	23,731	4,729	1,425	97,198
Male (Pct)	51.23%	51.93%	51.01%	51.00%	51.16%	56.16%	53.65%	51.52%
American Indian or Alaskan Native (N)	58	65	70	79	110	61	20	463
American Indian or Alaskan Native (Pct)	0.18%	0.19%	0.21%	0.25%	0.24%	0.72%	0.75%	0.25%
Black/African American non-Hispanic (N)	2,681	3,180	3,242	3,462	4,287	1,313	611	18,776
Black/African American non-Hispanic (Pct)	8.39%	9.30%	9.68%	10.97%	9.24%	15.59%	23.00%	9.95%
Hispanic (N)	2,948	3,098	2,782	2,471	3,290	996	261	15,846
Hispanic (Pct)	9.22%	9.06%	8.31%	7.83%	7.09%	11.83%	9.83%	8.40%
White/Caucasian non-Hispanic (N)	23,910	25,576	25,212	23,685	36,226	5,606	1,628	141,843
White/Caucasian non-Hispanic (Pct)	74.81%	74.78%	75.31%	75.02%	78.09%	66.58%	61.30%	75.18%
Multi-Racial non-Hispanic (N)	1,102	1,061	993	941	1,067	263	74	5,501
Multi-Racial non-Hispanic (Pct)	3.45%	3.10%	2.97%	2.98%	2.30%	3.12%	2.79%	2.92%
Asian non-Hispanic (N)	859	818	725	894	1,351	171	55	4,873
Asian non-Hispanic (Pct)	2.69%	2.39%	2.17%	2.83%	2.91%	2.03%	2.07%	2.58%
Native Hawaiian or Pacific Islander (N)	401	404	455	40	58	10	7	1,375
Native Hawaiian or Pacific Islander (Pct)	1.25%	1.18%	1.36%	0.13%	0.13%	0.12%	0.26%	0.73%
IEP (N)	73	135	113	52	67	34	15	489
IEP (Pct)	0.23%	0.39%	0.34%	0.16%	0.14%	0.40%	0.56%	0.26%
Title I (N)	63	52	43	15	70	8	5	256
Title (Pct)	0.20%	0.15%	0.13%	0.05%	0.15%	0.10%	0.19%	0.14%
Title III served (N)	6	5	11	0	3	0	0	25
Title III served (Pct)	0.02%	0.01%	0.03%	0.00%	0.01%	0.00%	0.00%	0.01%
Title III not served (N)	1	1	0	1	1	0	0	4
Title III not served (Pct)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Migrant student (N)	0	0	1	0	0	0	0	1
Migrant student (Pct)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
ELL - enrolled after 05-06-16 (N)	5	1	7	3	3	2	0	21
ELL - enrolled after 05-06-16 (Pct)	0.02%	0.00%	0.02%	0.01%	0.01%	0.02%	0.00%	0.01%
ELL - enrolled before 05-06-16 (N)	6	27	23	4	6	2	0	68
ELL - enrolled before 05-06-16 (Pct)	0.02%	0.08%	0.07%	0.01%	0.01%	0.02%	0.00%	0.04%
Exited ESL - first year of monitoring (N)	0	0	0	0	0	0	0	0
Exited ESL - first year of monitoring (Pct)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Exited ESL - second year of monitoring (N)	0	0	0	0	0	0	0	0
Exited ESL - second year of monitoring (Pct)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Former ELL and no longer monitored (N)	0	1	0	0	1	0	0	2

Table 15–10 (continued). Demographic Characteristics of Students Taking CDT Reading/Lit Grades 6-HS

Demographic or Educational Characteristic	Gr. 6	Gr. 7	Gr. 8	Gr. 9	Gr. 10	Gr. 11	Gr. 12	Total
Former ELL and no longer monitored (Pct)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Economically disadvantaged (N)	72	126	108	60	130	25	5	526
Economically disadvantaged (Pct)	0.23%	0.37%	0.32%	0.19%	0.28%	0.30%	0.19%	0.28%
Number of students	31,959	34,202	33,479	31,572	46,389	8,420	2,656	188,677

Table 15–11. Demographic Characteristics of Students Taking CDT Science Grades 3-5

Demographic or Educational Characteristic	Gr. 3	Gr. 4	Gr. 5	Total
Female (N)	1,304	6,083	1,194	8,581
Female (Pct)	50.21%	48.53%	48.52%	48.78%
Male (N)	1,293	6,452	1,267	9,012
Male (Pct)	49.79%	51.47%	51.48%	51.22%
American Indian or Alaskan Native (N)	6	33	1	40
American Indian or Alaskan Native (Pct)	0.23%	0.26%	0.04%	0.23%
Black/African American non-Hispanic (N)	501	2,369	374	3,244
Black/African American non-Hispanic (Pct)	19.29%	18.90%	15.20%	18.44%
Hispanic (N)	600	1,386	344	2,330
Hispanic (Pct)	23.10%	11.06%	13.98%	13.24%
White/Caucasian non-Hispanic (N)	1,368	7,870	1,623	10,861
White/Caucasian non-Hispanic (Pct)	52.68%	62.78%	65.95%	61.73%
Multi-Racial non-Hispanic (N)	58	492	78	628
Multi-Racial non-Hispanic (Pct)	2.23%	3.93%	3.17%	3.57%
Asian non-Hispanic (N)	61	367	40	468
Asian non-Hispanic (Pct)	2.35%	2.93%	1.63%	2.66%
Native Hawaiian or Pacific Islander (N)	3	18	1	22
Native Hawaiian or Pacific Islander (Pct)	0.12%	0.14%	0.04%	0.13%
IEP (N)	11	62	10	83
IEP (Pct)	0.42%	0.49%	0.41%	0.47%
Title I (N)	22	37	0	59
Title (Pct)	0.85%	0.30%	0.00%	0.34%
Title III served (N)	5	6	1	12
Title III served (Pct)	0.19%	0.05%	0.04%	0.07%
Title III not served (N)	0	1	0	1
Title III not served (Pct)	0.00%	0.01%	0.00%	0.01%
Migrant student (N)	0	0	0	0
Migrant student (Pct)	0.00%	0.00%	0.00%	0.00%
ELL - enrolled after 05-06-16 (N)	4	4	3	11
ELL - enrolled after 05-06-16 (Pct)	0.15%	0.03%	0.12%	0.06%
ELL - enrolled before 05-06-16 (N)	2	5	1	8
ELL - enrolled before 05-06-16 (Pct)	0.08%	0.04%	0.04%	0.05%
Exited ESL - first year of monitoring (N)	0	2	0	2
Exited ESL - first year of monitoring (Pct)	0.00%	0.02%	0.00%	0.01%
Exited ESL - second year of monitoring (N)	0	1	0	1
Exited ESL - second year of monitoring (Pct)	0.00%	0.01%	0.00%	0.01%
Former ELL and no longer monitored (N)	0	0	0	0

Table 15–11 (continued). Demographic Characteristics of Students Taking CDT Science Grades 3-5

Demographic or Educational Characteristic	Gr. 3	Gr. 4	Gr. 5	Total
Former ELL and no longer monitored (Pct)	0.00%	0.00%	0.00%	0.00%
Economically disadvantaged (N)	19	68	3	90
Economically disadvantaged (Pct)	0.73%	0.54%	0.12%	0.51%
Number of students	2,597	12,535	2,461	17,593

Table 15–12. Demographic Characteristics of Students Taking CDT Science Grades 6-HS

Demographic or Educational Characteristic	Gr. 6	Gr. 7	Gr. 8	Gr. 9	Gr. 10	Gr. 11	Gr. 12	Total
Female (N)	5,323	8,588	13,968	244	28	32	60	28,243
Female (Pct)	48.36%	47.95%	49.15%	44.94%	28.00%	32.32%	41.38%	48.51%
Male (N)	5,683	9,321	14,449	299	72	67	85	29,976
Male (Pct)	51.64%	52.05%	50.85%	55.06%	72.00%	67.68%	58.62%	51.49%
American Indian or Alaskan Native (N)	23	39	56	0	2	0	0	120
American Indian or Alaskan Native (Pct)	0.21%	0.22%	0.20%	0.00%	2.00%	0.00%	0.00%	0.21%
Black/African American non-Hispanic (N)	1,509	1,902	3,482	78	29	12	11	7,023
Black/African American non-Hispanic (Pct)	13.71%	10.62%	12.25%	14.36%	29.00%	12.12%	7.59%	12.06%
Hispanic (N)	1,367	1,864	2,338	73	18	12	39	5,711
Hispanic (Pct)	12.42%	10.41%	8.23%	13.44%	18.00%	12.12%	26.90%	9.81%
White/Caucasian non-Hispanic (N)	7,424	13,030	20,780	369	50	72	94	41,819
White/Caucasian non-Hispanic (Pct)	67.45%	72.76%	73.13%	67.96%	50.00%	72.73%	64.83%	71.83%
Multi-Racial non-Hispanic (N)	334	514	900	16	1	3	1	1,769
Multi-Racial non-Hispanic (Pct)	3.03%	2.87%	3.17%	2.95%	1.00%	3.03%	0.69%	3.04%
Asian non-Hispanic (N)	342	491	680	7	0	0	0	1,520
Asian non-Hispanic (Pct)	3.11%	2.74%	2.39%	1.29%	0.00%	0.00%	0.00%	2.61%
Native Hawaiian or Pacific Islander (N)	7	69	181	0	0	0	0	257
Native Hawaiian or Pacific Islander (Pct)	0.06%	0.39%	0.64%	0.00%	0.00%	0.00%	0.00%	0.44%
IEP (N)	23	54	123	11	13	3	2	229
IEP (Pct)	0.21%	0.30%	0.43%	2.03%	13.00%	3.03%	1.38%	0.39%
Title I (N)	30	34	39	6	4	2	2	117
Title (Pct)	0.27%	0.19%	0.14%	1.10%	4.00%	2.02%	1.38%	0.20%
Title III served (N)	10	6	13	0	0	0	0	29
Title III served (Pct)	0.09%	0.03%	0.05%	0.00%	0.00%	0.00%	0.00%	0.05%
Title III not served (N)	2	1	1	0	0	0	0	4
Title III not served (Pct)	0.02%	0.01%	0.00%	0.00%	0.00%	0.00%	0.00%	0.01%
Migrant student (N)	1	0	1	0	0	0	0	2
Migrant student (Pct)	0.01%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
ELL - enrolled after 05-06-16 (N)	10	7	11	0	0	0	0	28
ELL - enrolled after 05-06-16 (Pct)	0.09%	0.04%	0.04%	0.00%	0.00%	0.00%	0.00%	0.05%
ELL - enrolled before 05-06-16 (N)	4	0	6	0	0	0	0	10
ELL - enrolled before 05-06-16 (Pct)	0.04%	0.00%	0.02%	0.00%	0.00%	0.00%	0.00%	0.02%
Exited ESL - first year of monitoring (N)	0	0	0	0	0	0	0	0
Exited ESL - first year of monitoring (Pct)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Exited ESL - second year of monitoring (N)	0	0	0	0	0	0	0	0
Exited ESL - second year of monitoring (Pct)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Former ELL and no longer monitored (N)	0	0	0	0	0	0	0	0

Table 15–12 (continued). Demographic Characteristics of Students Taking CDT Science Grades 6-HS

Demographic or Educational Characteristic	Gr. 6	Gr. 7	Gr. 8	Gr. 9	Gr. 10	Gr. 11	Gr. 12	Total
Former ELL and no longer monitored (Pct)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Economically disadvantaged (N)	32	39	78	8	12	0	0	169
Economically disadvantaged (Pct)	0.29%	0.22%	0.27%	1.47%	12.00%	0.00%	0.00%	0.29%
Number of students	11,006	17,909	28,417	543	100	99	145	58,219

Table 15–13. Demographic Characteristics of Students Taking CDT Biology

Demographic or Educational Characteristic	Gr. 6	Gr. 7	Gr. 8	Gr. 9	Gr. 10	Gr. 11	Gr. 12	Total
Female (N)	1	5	225	13,648	15,755	2,955	322	32,911
Female (Pct)	33.33%	50.00%	48.39%	49.93%	48.01%	44.85%	40.30%	48.39%
Male (N)	2	5	240	13,685	17,062	3,633	477	35,104
Male (Pct)	66.67%	50.00%	51.61%	50.07%	51.99%	55.15%	59.70%	51.61%
American Indian or Alaskan Native (N)	0	5	7	129	105	79	22	347
American Indian or Alaskan Native (Pct)	0.00%	50.00%	1.51%	0.47%	0.32%	1.20%	2.75%	0.51%
Black/African American non-Hispanic (N)	0	1	9	2,905	3,638	1,035	221	7,809
Black/African American non-Hispanic (Pct)	0.00%	10.00%	1.94%	10.63%	11.09%	15.71%	27.66%	11.48%
Hispanic (N)	0	2	13	1,861	2,965	872	130	5,843
Hispanic (Pct)	0.00%	20.00%	2.80%	6.81%	9.03%	13.24%	16.27%	8.59%
White/Caucasian non-Hispanic (N)	3	1	425	20,676	24,510	4,266	378	50,259
White/Caucasian non-Hispanic (Pct)	100.00%	10.00%	91.40%	75.64%	74.69%	64.75%	47.31%	73.89%
Multi-Racial non-Hispanic (N)	0	0	1	809	771	186	17	1,784
Multi-Racial non-Hispanic (Pct)	0.00%	0.00%	0.22%	2.96%	2.35%	2.82%	2.13%	2.62%
Asian non-Hispanic (N)	0	1	10	927	798	145	31	1,912
Asian non-Hispanic (Pct)	0.00%	10.00%	2.15%	3.39%	2.43%	2.20%	3.88%	2.81%
Native Hawaiian or Pacific Islander (N)	0	0	0	26	30	5	0	61
Native Hawaiian or Pacific Islander (Pct)	0.00%	0.00%	0.00%	0.10%	0.09%	0.08%	0.00%	0.09%
IEP (N)	0	0	0	34	42	21	6	103
IEP (Pct)	0.00%	0.00%	0.00%	0.12%	0.13%	0.32%	0.75%	0.15%
Title I (N)	0	0	0	52	23	12	4	91
Title (Pct)	0.00%	0.00%	0.00%	0.19%	0.07%	0.18%	0.50%	0.13%
Title III served (N)	0	0	0	0	4	2	0	6
Title III served (Pct)	0.00%	0.00%	0.00%	0.00%	0.01%	0.03%	0.00%	0.01%
Title III not served (N)	0	0	0	1	1	0	0	2
Title III not served (Pct)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Migrant student (N)	3	6	32	720	946	266	45	2,018
Migrant student (Pct)	100.00%	60.00%	6.88%	2.63%	2.88%	4.04%	5.63%	2.97%
ELL - enrolled after 05-06-16 (N)	0	0	0	4	6	3	0	13
ELL - enrolled after 05-06-16 (Pct)	0.00%	0.00%	0.00%	0.01%	0.02%	0.05%	0.00%	0.02%
ELL - enrolled before 05-06-16 (N)	0	0	0	0	6	1	0	7
ELL - enrolled before 05-06-16 (Pct)	0.00%	0.00%	0.00%	0.00%	0.02%	0.02%	0.00%	0.01%
Exited ESL - first year of monitoring (N)	0	0	0	0	0	0	0	0
Exited ESL - first year of monitoring (Pct)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Exited ESL - second year of monitoring (N)	0	0	0	0	0	0	0	0
Exited ESL - second year of monitoring (Pct)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Former ELL and no longer monitored (N)	0	0	0	0	0	0	0	0

Table 15–13 (continued). Demographic Characteristics of Students Taking CDT Biology

Demographic or Educational Characteristic	Gr. 6	Gr. 7	Gr. 8	Gr. 9	Gr. 10	Gr. 11	Gr. 12	Total
Former ELL and no longer monitored (Pct)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Economically disadvantaged (N)	0	0	0	95	80	37	7	219
Economically disadvantaged (Pct)	0.00%	0.00%	0.00%	0.35%	0.24%	0.56%	0.88%	0.32%
Number of students	3	10	465	27,333	32,817	6,588	799	68,015

Table 15–14. Demographic Characteristics of Students Taking CDT Chemistry

Demographic or Educational Characteristic	Gr. 6	Gr. 7	Gr. 8	Gr. 9	Gr. 10	Gr. 11	Gr. 12	Total
Female (N)	0	0	7	17	924	1,029	206	2,183
Female (Pct)	N/A	N/A	63.64%	51.52%	52.59%	51.32%	54.35%	52.16%
Male (N)	0	0	4	16	833	976	173	2,002
Male (Pct)	N/A	N/A	36.36%	48.48%	47.41%	48.68%	45.65%	47.84%
American Indian or Alaskan Native (N)	0	0	0	0	4	5	1	10
American Indian or Alaskan Native (Pct)	N/A	N/A	0.00%	0.00%	0.23%	0.25%	0.26%	0.24%
Black/African American non-Hispanic (N)	0	0	0	3	158	147	36	344
Black/African American non-Hispanic (Pct)	N/A	N/A	0.00%	9.09%	8.99%	7.33%	9.50%	8.22%
Hispanic (N)	0	0	0	6	138	405	91	640
Hispanic (Pct)	N/A	N/A	0.00%	18.18%	7.85%	20.20%	24.01%	15.29%
White/Caucasian non-Hispanic (N)	0	0	11	24	1,332	1,348	239	2,954
White/Caucasian non-Hispanic (Pct)	N/A	N/A	100.00%	72.73%	75.81%	67.23%	63.06%	70.59%
Multi-Racial non-Hispanic (N)	0	0	0	0	84	69	3	156
Multi-Racial non-Hispanic (Pct)	N/A	N/A	0.00%	0.00%	4.78%	3.44%	0.79%	3.73%
Asian non-Hispanic (N)	0	0	0	0	38	31	8	77
Asian non-Hispanic (Pct)	N/A	N/A	0.00%	0.00%	2.16%	1.55%	2.11%	1.84%
Native Hawaiian or Pacific Islander (N)	0	0	0	0	3	0	1	4
Native Hawaiian or Pacific Islander (Pct)	N/A	N/A	0.00%	0.00%	0.17%	0.00%	0.26%	0.10%
IEP (N)	0	0	0	0	2	14	1	17
IEP (Pct)	N/A	N/A	0.00%	0.00%	0.11%	0.70%	0.26%	0.41%
Title I (N)	0	0	0	1	4	1	0	6
Title (Pct)	N/A	N/A	0.00%	3.03%	0.23%	0.05%	0.00%	0.14%
Title III served (N)	0	0	0	0	0	4	0	4
Title III served (Pct)	N/A	N/A	0.00%	0.00%	0.00%	0.20%	0.00%	0.10%
Title III not served (N)	0	0	0	0	0	0	1	1
Title III not served (Pct)	N/A	N/A	0.00%	0.00%	0.00%	0.00%	0.26%	0.02%
Migrant student (N)	0	0	0	0	0	0	0	0
Migrant student (Pct)	N/A	N/A	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
ELL - enrolled after 05-06-16 (N)	0	0	0	0	0	1	0	1
ELL - enrolled after 05-06-16 (Pct)	N/A	N/A	0.00%	0.00%	0.00%	0.05%	0.00%	0.02%
ELL - enrolled before 05-06-16 (N)	0	0	0	0	0	4	0	4
ELL - enrolled before 05-06-16 (Pct)	N/A	N/A	0.00%	0.00%	0.00%	0.20%	0.00%	0.10%
Exited ESL - first year of monitoring (N)	0	0	0	0	0	2	0	2
Exited ESL - first year of monitoring (Pct)	N/A	N/A	0.00%	0.00%	0.00%	0.10%	0.00%	0.05%
Exited ESL - second year of monitoring (N)	0	0	0	1	0	0	1	2
Exited ESL - second year of monitoring (Pct)	N/A	N/A	0.00%	3.03%	0.00%	0.00%	0.26%	0.05%
Former ELL and no longer monitored (N)	0	0	0	0	0	5	1	6

Table 15–14 (continued). Demographic Characteristics of Students Taking CDT Chemistry

Demographic or Educational Characteristic	Gr. 6	Gr. 7	Gr. 8	Gr. 9	Gr. 10	Gr. 11	Gr. 12	Total
Former ELL and no longer monitored (Pct)	N/A	N/A	0.00%	0.00%	0.00%	0.25%	0.26%	0.14%
Economically disadvantaged (N)	0	0	0	0	0	2	5	7
Economically disadvantaged (Pct)	N/A	N/A	0.00%	0.00%	0.00%	0.10%	1.32%	0.17%
Number of students	0	0	11	33	1,757	2,005	379	4,185

Table 15–15. Demographic Characteristics of Students Taking CDT Writing Grades 3-5

Demographic or Educational Characteristic	Gr. 3	Gr. 4	Gr. 5	Total
Female (N)	1,609	1,817	2,453	5,879
Female (Pct)	47.41%	48.52%	49.06%	48.43%
Male (N)	1,785	1,928	2,547	6,260
Male (Pct)	52.59%	51.48%	50.94%	51.57%
American Indian or Alaskan Native (N)	4	5	5	14
American Indian or Alaskan Native (Pct)	0.12%	0.13%	0.10%	0.12%
Black/African American non-Hispanic (N)	459	472	464	1,395
Black/African American non-Hispanic (Pct)	13.52%	12.60%	9.28%	11.49%
Hispanic (N)	144	183	237	564
Hispanic (Pct)	4.24%	4.89%	4.74%	4.65%
White/Caucasian non-Hispanic (N)	2,584	2,885	4,023	9,492
White/Caucasian non-Hispanic (Pct)	76.13%	77.04%	80.46%	78.19%
Multi-Racial non-Hispanic (N)	119	110	150	379
Multi-Racial non-Hispanic (Pct)	3.51%	2.94%	3.00%	3.12%
Asian non-Hispanic (N)	83	86	119	288
Asian non-Hispanic (Pct)	2.45%	2.30%	2.38%	2.37%
Native Hawaiian or Pacific Islander (N)	1	4	2	7
Native Hawaiian or Pacific Islander (Pct)	0.03%	0.11%	0.04%	0.06%
IEP (N)	47	42	55	144
IEP (Pct)	1.38%	1.12%	1.10%	1.19%
Title I (N)	11	13	0	24
Title (Pct)	0.32%	0.35%	0.00%	0.20%
Title III served (N)	0	0	0	0
Title III served (Pct)	0.00%	0.00%	0.00%	0.00%
Title III not served (N)	0	0	0	0
Title III not served (Pct)	0.00%	0.00%	0.00%	0.00%
Migrant student (N)	0	0	1	1
Migrant student (Pct)	0.00%	0.00%	0.02%	0.01%
ELL - enrolled after 05-06-16 (N)	0	0	0	0
ELL - enrolled after 05-06-16 (Pct)	0.00%	0.00%	0.00%	0.00%
ELL - enrolled before 05-06-16 (N)	0	0	1	1
ELL - enrolled before 05-06-16 (Pct)	0.00%	0.00%	0.02%	0.01%
Exited ESL - first year of monitoring (N)	0	0	0	0
Exited ESL - first year of monitoring (Pct)	0.00%	0.00%	0.00%	0.00%
Exited ESL - second year of monitoring (N)	0	0	0	0
Exited ESL - second year of monitoring (Pct)	0.00%	0.00%	0.00%	0.00%
Former ELL and no longer monitored (N)	0	0	0	0
Former ELL and no longer monitored (Pct)	0.00%	0.00%	0.00%	0.00%

Table 15–15 (continued). Demographic Characteristics of Students Taking CDT Writing Grades 3-5

Demographic or Educational Characteristic	Gr. 3	Gr. 4	Gr. 5	Total
Economically disadvantaged (N)	10	15	19	44
Economically disadvantaged (Pct)	0.29%	0.40%	0.38%	0.36%
Number of students	3,394	3,745	5,000	12,139

Table 15–16. Demographic Characteristics of Students Taking CDT Writing/Eng Comp Grades 6-HS

Demographic or Educational Characteristic	Gr. 6	Gr. 7	Gr. 8	Gr. 9	Gr. 10	Gr. 11	Gr. 12	Total
Female (N)	3,870	4,831	5,054	1,110	938	208	37	16,048
Female (Pct)	48.75%	48.22%	49.09%	46.89%	49.08%	47.17%	52.86%	48.57%
Male (N)	4,069	5,187	5,241	1,257	973	233	33	16,993
Male (Pct)	51.25%	51.78%	50.91%	53.11%	50.92%	52.83%	47.14%	51.43%
American Indian or Alaskan Native (N)	17	22	15	2	3	0	0	59
American Indian or Alaskan Native (Pct)	0.21%	0.22%	0.15%	0.08%	0.16%	0.00%	0.00%	0.18%
Black/African American non-Hispanic (N)	782	1,022	1,050	139	195	68	16	3,272
Black/African American non-Hispanic (Pct)	9.85%	10.20%	10.20%	5.87%	10.20%	15.42%	22.86%	9.90%
Hispanic (N)	493	528	629	128	95	55	1	1,929
Hispanic (Pct)	6.21%	5.27%	6.11%	5.41%	4.97%	12.47%	1.43%	5.84%
White/Caucasian non-Hispanic (N)	6,223	7,886	8,127	1,945	1,541	293	49	26,064
White/Caucasian non-Hispanic (Pct)	78.39%	78.72%	78.94%	82.17%	80.64%	66.44%	70.00%	78.88%
Multi-Racial non-Hispanic (N)	256	315	282	50	26	5	3	937
Multi-Racial non-Hispanic (Pct)	3.22%	3.14%	2.74%	2.11%	1.36%	1.13%	4.29%	2.84%
Asian non-Hispanic (N)	159	238	183	100	49	20	1	750
Asian non-Hispanic (Pct)	2.00%	2.38%	1.78%	4.22%	2.56%	4.54%	1.43%	2.27%
Native Hawaiian or Pacific Islander (N)	9	7	9	3	2	0	0	30
Native Hawaiian or Pacific Islander (Pct)	0.11%	0.07%	0.09%	0.13%	0.10%	0.00%	0.00%	0.09%
IEP (N)	29	43	60	2	1	0	0	135
IEP (Pct)	0.37%	0.43%	0.58%	0.08%	0.05%	0.00%	0.00%	0.41%
Title I (N)	4	3	0	2	0	0	0	9
Title (Pct)	0.05%	0.03%	0.00%	0.08%	0.00%	0.00%	0.00%	0.03%
Title III served (N)	0	0	0	0	0	0	0	0
Title III served (Pct)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Title III not served (N)	0	0	0	0	0	0	0	0
Title III not served (Pct)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Migrant student (N)	0	0	1	0	0	0	0	1
Migrant student (Pct)	0.00%	0.00%	0.01%	0.00%	0.00%	0.00%	0.00%	0.00%
ELL - enrolled after 05-06-16 (N)	0	0	1	0	0	0	0	1
ELL - enrolled after 05-06-16 (Pct)	0.00%	0.00%	0.01%	0.00%	0.00%	0.00%	0.00%	0.00%
ELL - enrolled before 05-06-16 (N)	2	0	0	0	0	0	0	2
ELL - enrolled before 05-06-16 (Pct)	0.03%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.01%
Exited ESL - first year of monitoring (N)	0	0	0	0	0	0	0	0
Exited ESL - first year of monitoring (Pct)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Exited ESL - second year of monitoring (N)	0	0	0	0	0	0	0	0
Exited ESL - second year of monitoring (Pct)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Former ELL and no longer monitored (N)	0	0	0	0	0	0	0	0

Table 15–16 (continued). Demographic Characteristics of Students Taking CDT Writing/Eng Comp Grades 6-HS

Demographic or Educational Characteristic	Gr. 6	Gr. 7	Gr. 8	Gr. 9	Gr. 10	Gr. 11	Gr. 12	Total
Former ELL and no longer monitored (Pct)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Economically disadvantaged (N)	13	19	19	9	1	0	0	61
Economically disadvantaged (Pct)	0.16%	0.19%	0.18%	0.38%	0.05%	0.00%	0.00%	0.18%
Number of students	7,939	10,018	10,295	2,367	1,911	441	70	33,041

SUMMARY STATISTICS – TEST LENGTH

The analyses from here until the section titled “Multiple Administrations of the Same CDT Test” include all records in the CDT operational assessments. When a student took CDT Math Grades 6-8 twice, for example, both records were used in the analyses.

As noted in Chapter Thirteen, CDT tests have either four or five diagnostic categories. On tests with five diagnostic categories (Reading Grades 3-5, Reading/Lit Grades 6-HS, Writing Grades 3-5, and Writing/Eng Comp Grades 6-HS), students take between 10 and 12 operational items per diagnostic category for a total test of 50 to 60 operational items. On tests with four diagnostic categories (Math Grades 3-5, Math Grades 6-8, Algebra I, Geometry, Algebra II, Science Grades 3-5, Science Grades 6-HS, Biology, and Chemistry), students take between 12 and 15 operational items per diagnostic category for a total test of 48 to 60 operational items.

Table 15–17 shows the summary statistics for the test length for each assessment. Summary statistics are based on the number of items presented to the student and include minimum, maximum, quartiles 1 and 3, mean, and median.

Table 15–17. Summary Statistics for CDT Test Length (Number of Operational Items Administered)

CDT	N	Minimum	Q1	Median	Mean	Q3	Maximum
Math Grades 3-5	175,355	48	50	51	51.60	53	60
Math Grades 6-8	214,996	48	50	51	51.66	53	60
Algebra I	116,749	48	50	51	51.86	53	60
Geometry	12,402	48	50	52	52.27	54	60
Algebra II	11,472	48	50	52	52.54	54	60
Reading Grades 3-5	149,277	50	54	55	55.02	56	60
Reading/Lit Grades 6-HS	350,563	50	54	55	55.33	57	60
Science Grades 3-5	28,938	48	50	51	51.39	53	60
Science Grades 6-HS	106,523	48	49	51	51.53	53	60
Biology	131,432	48	50	51	51.94	54	60
Chemistry	7,953	48	50	52	52.59	55	60
Writing Grades 3-5	24,189	50	53	55	54.81	56	60
Writing/Eng Comp Gr 6-HS	58,506	50	54	55	55.29	57	60

The minimum number of items was quite similar, ranging from 48 to 50. The mean and median were higher for tests in the reading and writing content areas, which have five diagnostic categories. The maximum number of items administered was fixed at 60 for all CDT tests.

SUMMARY STATISTICS – SCALE SCORES AND CONDITIONAL STANDARD ERRORS FOR TOTAL TEST

Table 15–18 shows the summary statistics for the scale scores based on total test. Tests with multiple benchmark cuts are broken down to match the grade level of the cuts. Tests that are course-specific are not broken down.

Table 15–18. Summary Statistics for Scale Score Based on Total Test

CDT	N	Minimum	Q1	Median	Mean	Q3	Maximum
Math – G3	51,976	202	652	756	745.75	848	1395
Math – G4	59,764	245	761	859	850.17	947	1471
Math – G5	63,615	308	813	906	896.66	989	1554
Math – G6	77,419	436	866	964	957.71	1054	1631
Math – G7	76,299	476	909	1006	997.01	1092	1796
Math – G8	61,278	200	937	1038	1022.86	1118	1827
Algebra I	116,749	480	974	1073	1052.21	1146	1737
Geometry	12,402	500	1018	1107	1101.65	1196	1663
Algebra II	11,472	587	1051	1140	1131.68	1222	1862
Reading – G3	44,702	270	611	719	726.27	833	1258
Reading – G4	49,847	307	691	819	810.91	930	1334
Reading – G5	54,728	353	763	895	875.56	996	1351
Reading – G6	63,315	396	826	946	927.64	1037	1415
Reading – G7	65,930	431	845	966	947.04	1058	1436
Reading – G8	63,068	463	869	993	972.59	1088	1488
Literature	158,250	362	914	1042	1013.81	1132	1653
Science – G3	4,010	200	618	730	706.57	819	1090
Science – G4	20,476	207	709	806	785.78	887	1186
Science – G5	4,452	247	747	845	823.95	923	1189
Science – G6	20,659	355	771	873	853.64	948	1256
Science – G7	33,151	428	797	905	881.80	979	1289
Science – G8	51,426	426	836	937	911.96	1005	1444
Science – HS	1,287	483	733	872	860.80	993	1276
Biology	131,432	400	901	993	979.94	1069	1655
Chemistry	7,953	419	926	1002	993.67	1070	1477
Writing – G3	6,943	260	634	767	740.96	866	1180
Writing – G4	7,504	324	719	849	818.74	942	1248
Writing – G5	9,742	323	789	909	878.84	993	1271
Writing – G6	15,543	444	815	940	912.82	1024	1406
Writing – G7	17,971	413	843	967	936.76	1050	1328
Writing – G8	17,828	414	866	985	954.15	1065	1498
English Composition	7,164	410	906	1021	988.49	1095	1444

Table 15–19 shows the summary statistics for the conditional standard errors of measurement (CSEMs) in the scale score metric based on total test. The final column in the table shows the theoretical minimum CSEM that is possible for a test length equal to the mean number of points. This is the standard error if the student’s ability is known and there are sufficient items in the operational pool to administer where the item’s difficulty is equal to the known ability and the test constraints are met.

Table 15–19. Summary Statistics for Conditional Standard Errors Based on Total Test

CDT	<i>N</i>	Minimum	Q1	Median	Mean	Q3	Maximum	Theoretical Minimum
Math – G3	51,976	35	37	38	38.18	39	56	36.31
Math – G4	59,764	35	37	38	38.15	39	62	36.31
Math – G5	63,615	35	37	38	38.06	38	65	36.67
Math – G6	77,419	34	37	37	37.19	37	75	34.64
Math – G7	76,299	34	37	37	37.10	37	127	34.64
Math – G8	61,278	34	37	37	37.17	37	229	34.64
Algebra I	116,749	34	37	37	37.34	38	91	34.64
Geometry	12,402	34	37	37	37.35	38	74	34.64
Algebra II	11,472	34	37	37	37.45	38	126	34.31
Reading – G3	44,702	38	41	42	43.05	44	81	39.66
Reading – G4	49,847	38	41	42	42.62	44	76	39.66
Reading – G5	54,728	38	41	42	42.55	43	65	39.66
Reading – G6	63,315	38	40	41	42.01	43	76	37.84
Reading – G7	65,930	38	40	41	42.06	43	76	37.84
Reading – G8	63,068	38	41	42	42.53	43	86	38.17
Literature	158,250	38	41	42	43.25	44	145	37.84
Science – G3	4,010	37	40	40	40.51	41	54	38.63
Science – G4	20,476	37	40	40	40.46	41	58	39.01
Science – G5	4,452	38	40	40	40.37	41	56	39.01
Science – G6	20,659	37	39	39	39.48	40	65	36.85
Science – G7	33,151	37	39	39	39.49	40	58	36.85
Science – G8	51,426	37	39	39	39.49	40	56	37.21
Science – HS	1,287	37	39	39	39.90	40	53	36.50
Biology	131,432	37	39	39	39.60	40	244	36.85
Chemistry	7,953	37	39	39	40.00	40	86	36.50
Writing – G3	6,943	36	39	39	39.40	40	56	37.60
Writing – G4	7,504	36	39	39	39.30	40	52	37.60
Writing – G5	9,742	37	39	39	39.24	40	53	37.60
Writing – G6	15,543	36	38	38	38.20	38	58	35.87
Writing – G7	17,971	36	38	38	38.21	38	58	35.87
Writing – G8	17,828	36	38	38	38.23	38	63	35.87
English Composition	7,164	36	38	38	38.28	38	56	35.87

Values in the “Minimum” column that are less than the “Theoretical Minimum” are due to students taking more than the mean number of points. Recall that calculation of “Theoretical Minimum” is based on the mean number of points.

Figures 15–1 through 15–8 show the scale score distributions for the total test for the content areas mathematics, reading, science, and writing. Tests with multiple benchmark cuts are broken down to match the grade level of the cuts while tests that are course-specific are not broken down. The benchmark cuts in place during the 2016–2017 school year are shown in green¹. The bottom plot in each figure represents the distribution of items in the content area pools.

¹ For details on benchmark cuts, see Chapter Ten and Chapter Nineteen.

Figure 15–1. Scale Score Distribution – Math Grades 3-5 Total Scores

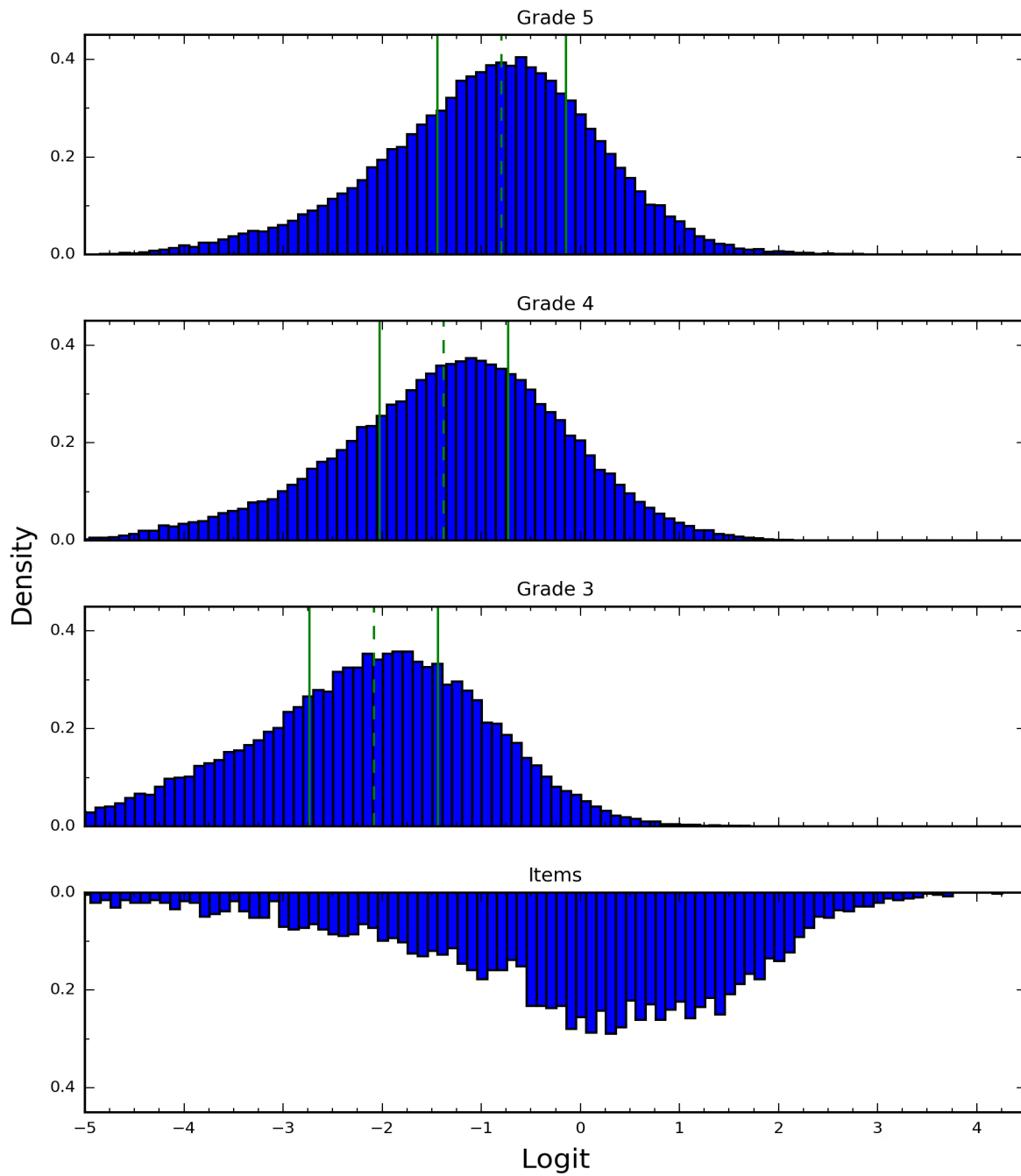


Figure 15–2. Scale Score Distribution – Math Total Scores

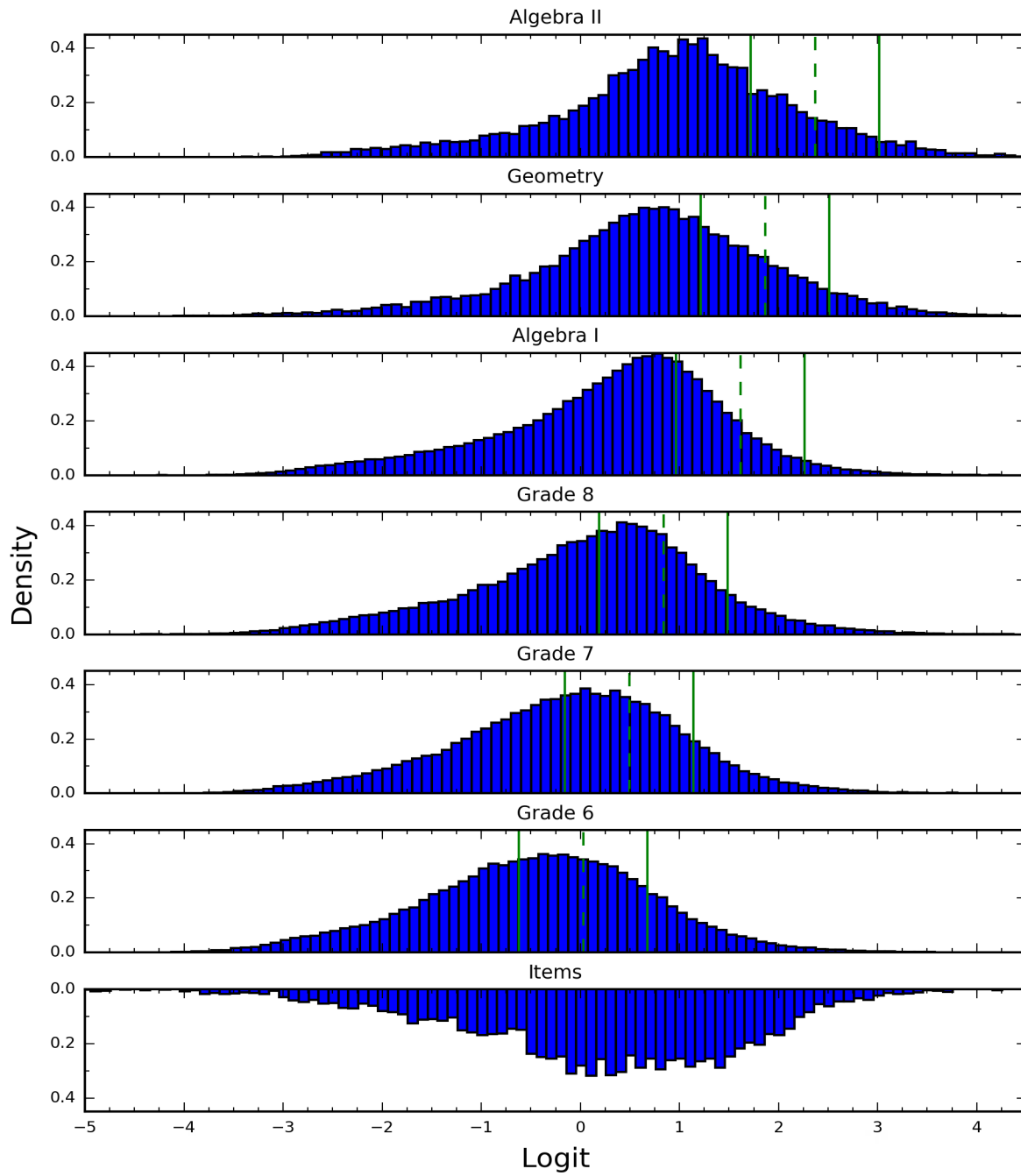


Figure 15–3. Scale Score Distribution – Reading Grades 3-5 Total Scores

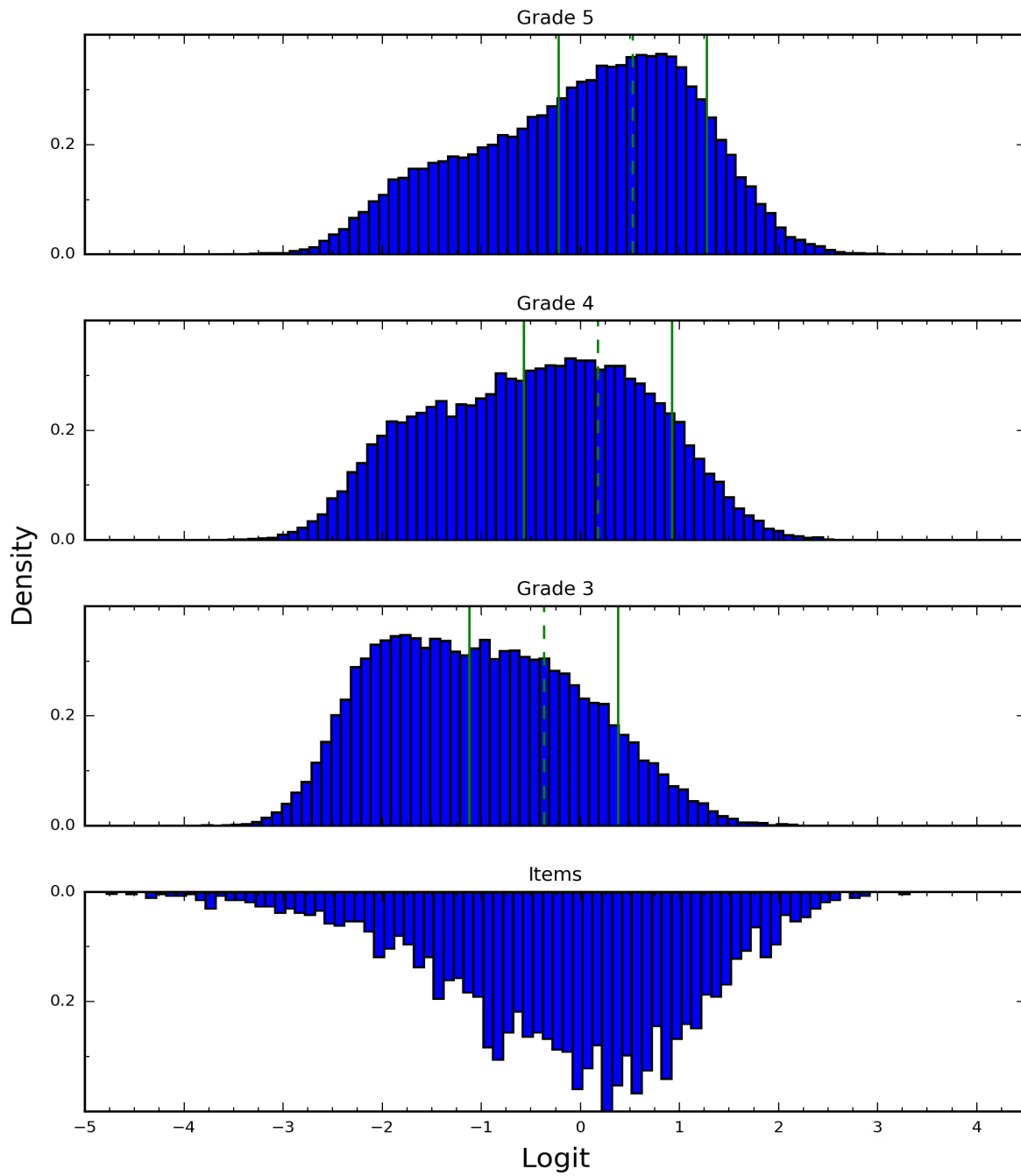


Figure 15–4. Scale Score Distribution – Reading/Literature Total Scores

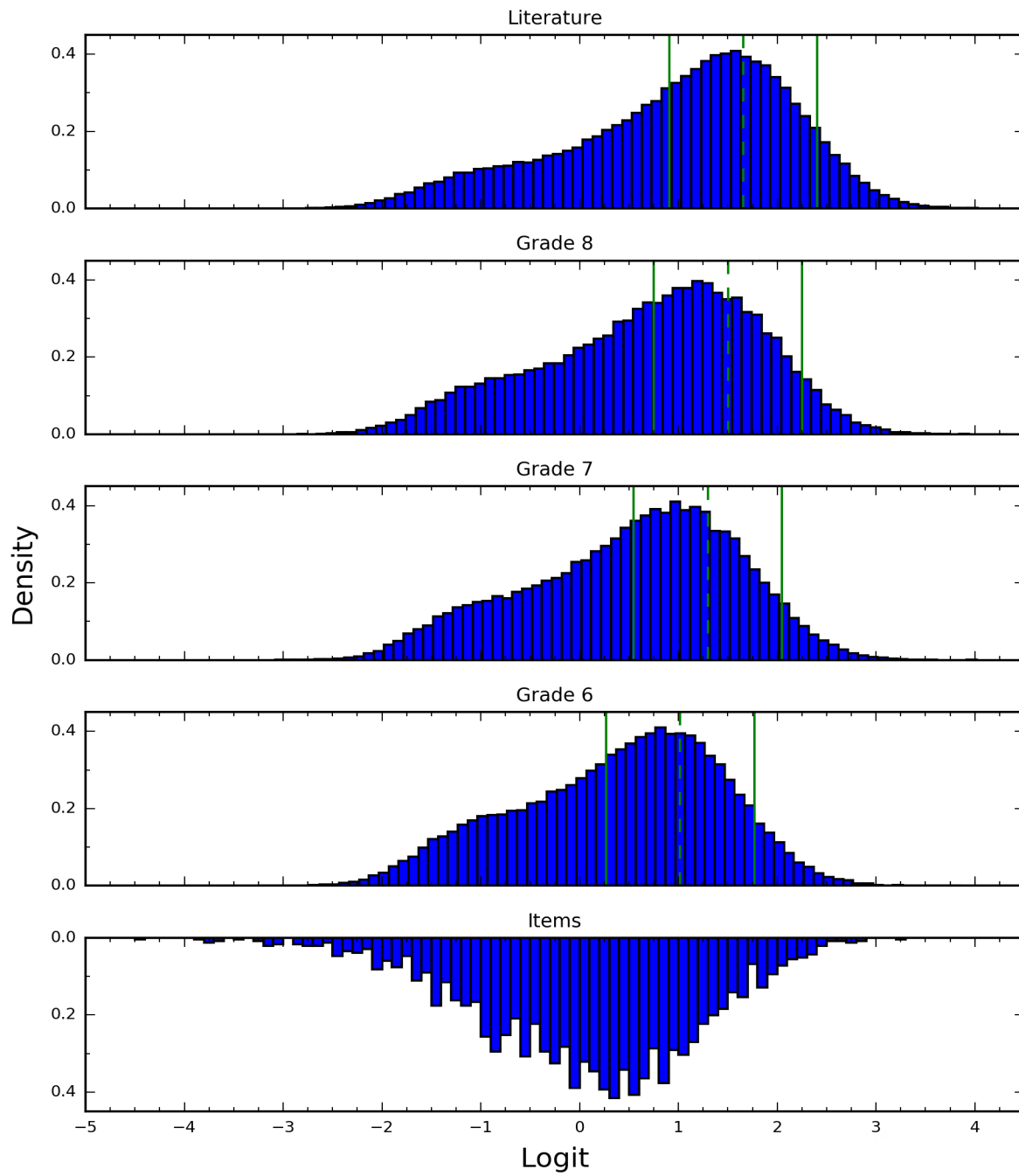


Figure 15–5. Scale Score Distribution – Science Grades 3-5 Total Scores

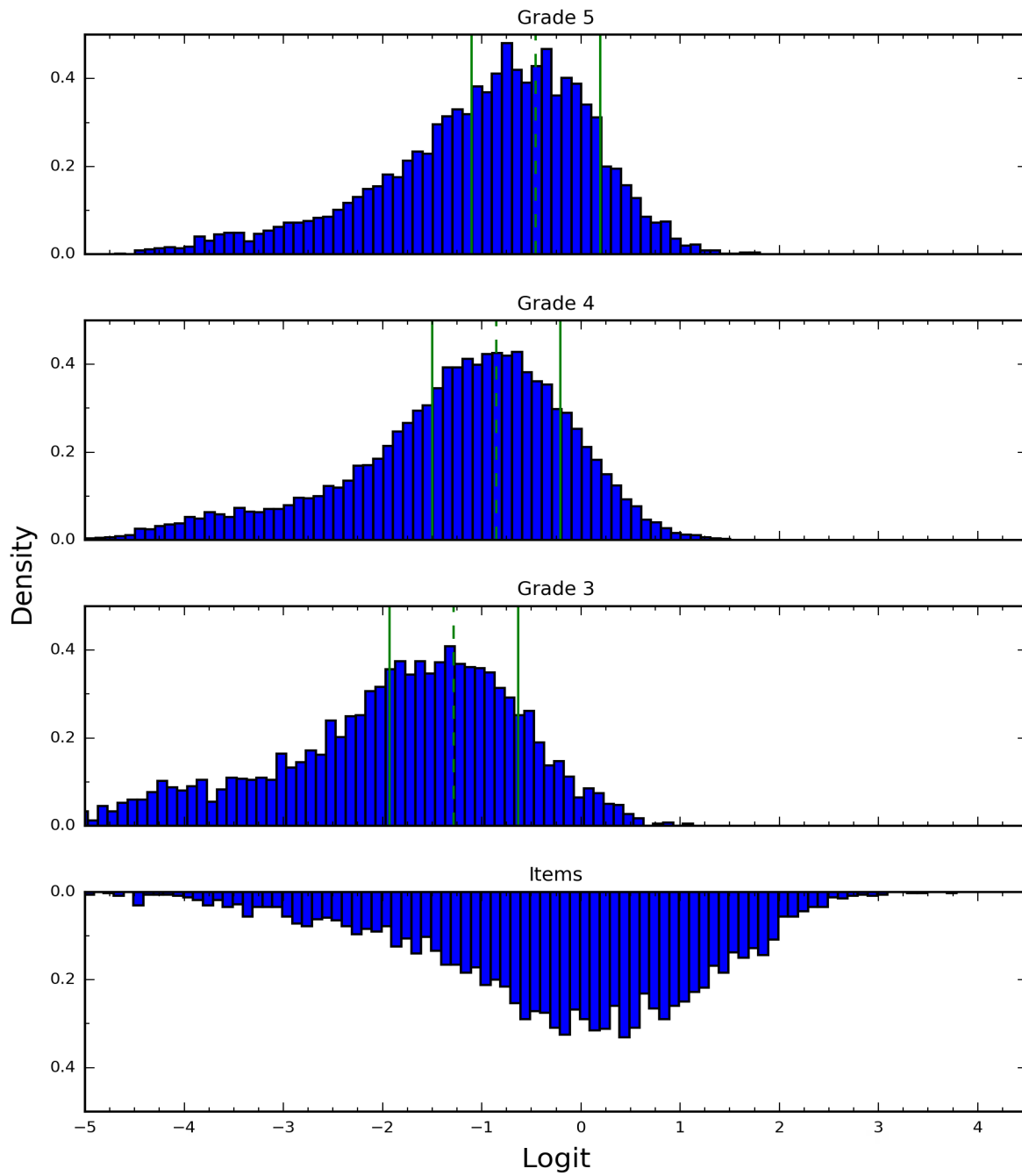


Figure 15–6. Scale Score Distribution – Science Total Scores

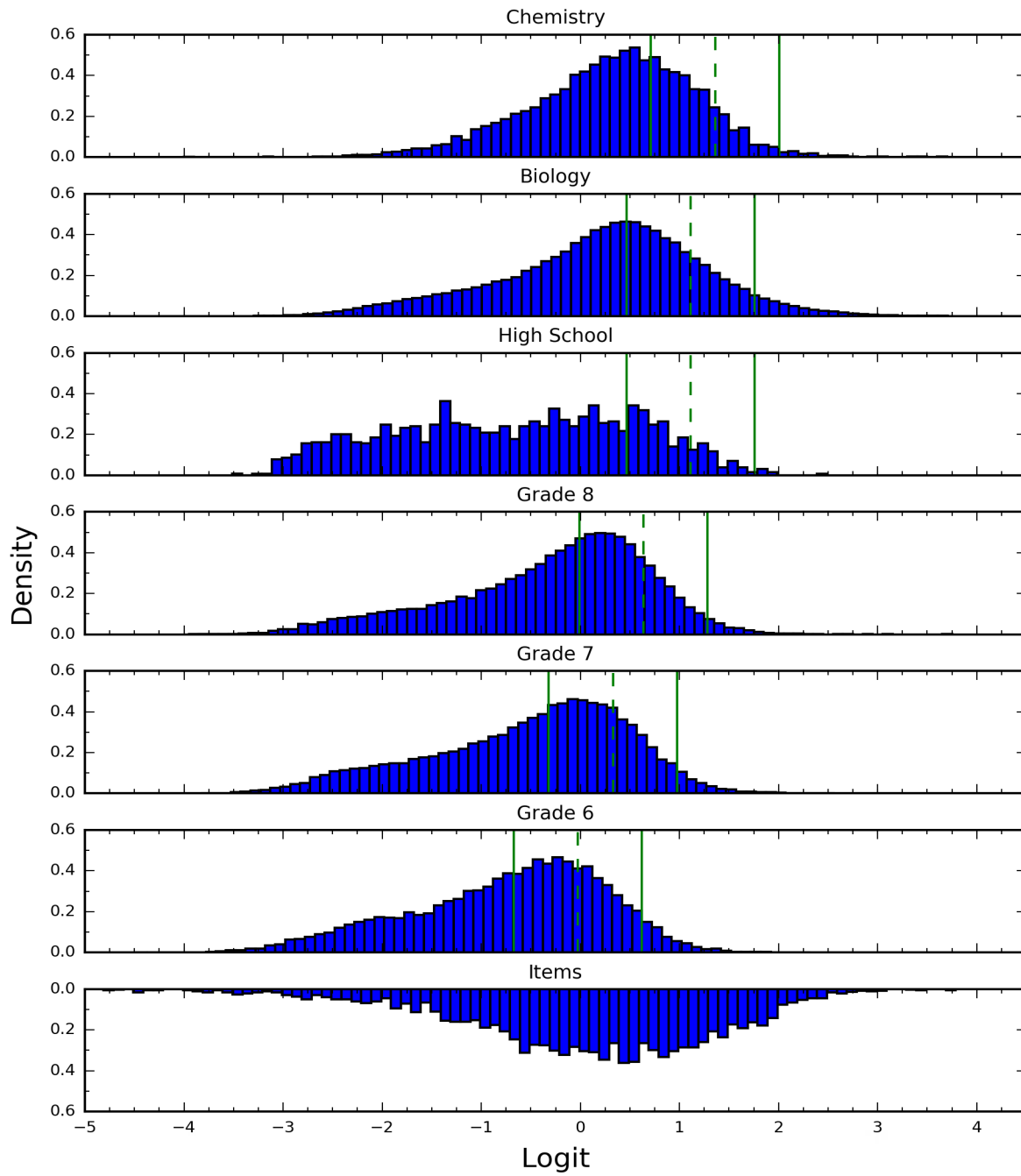


Figure 15–7. Scale Score Distribution – Writing Grades 3-5 Total Scores

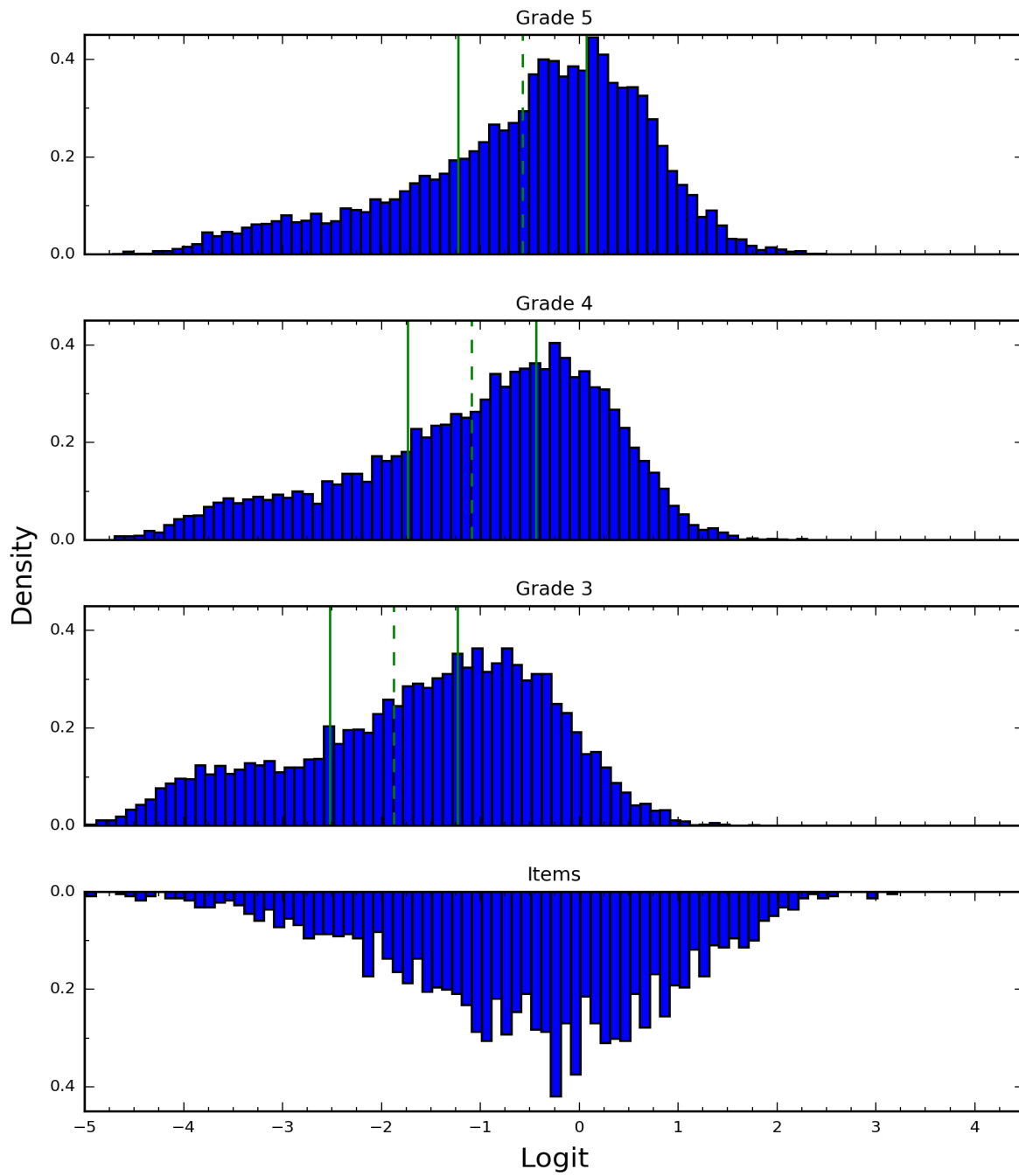
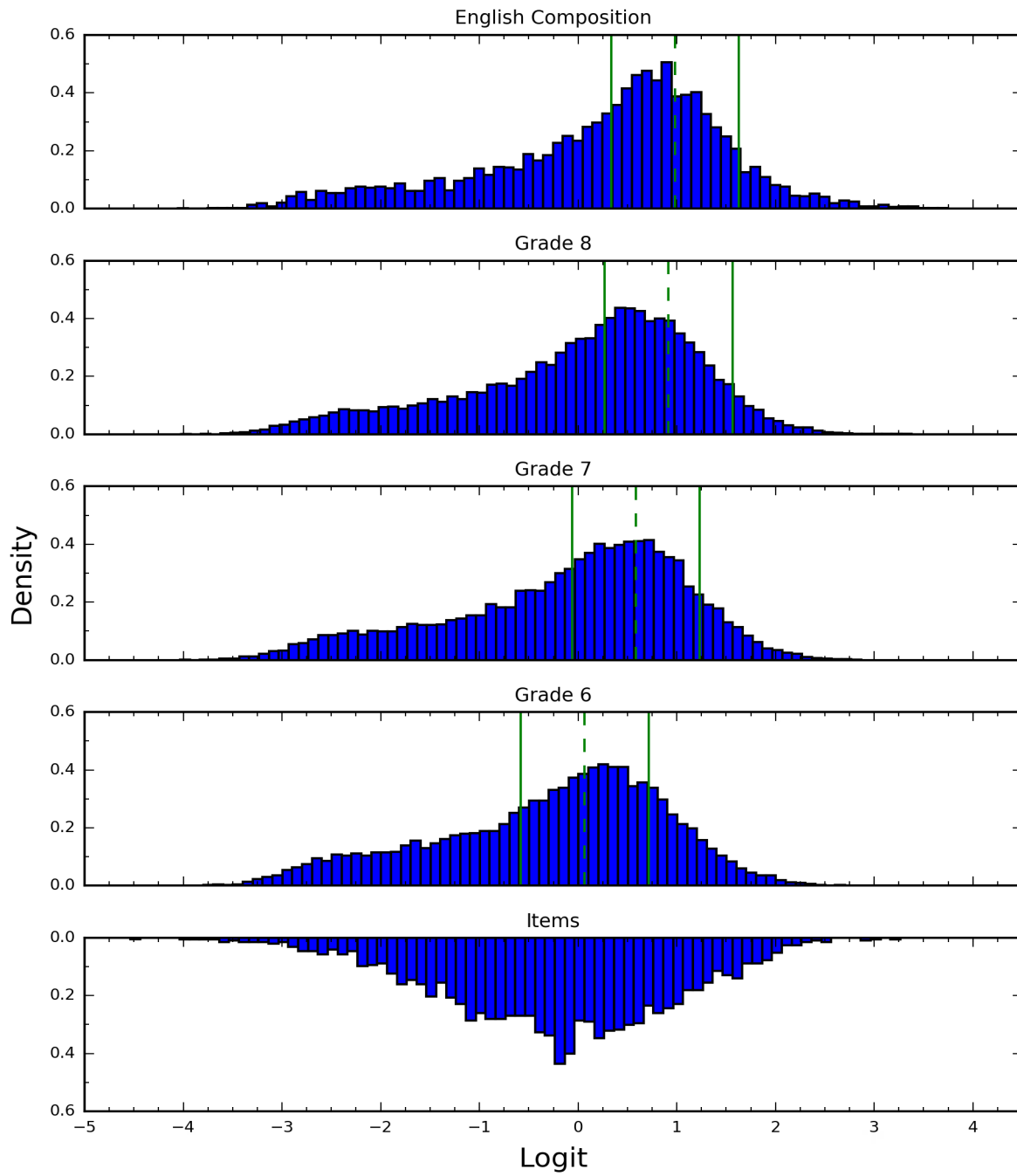


Figure 15–8. Scale Score Distribution – Writing/English Composition Total Scores



SUMMARY STATISTICS – SCALE SCORES AND CONDITIONAL STANDARD ERRORS FOR DIAGNOSTIC CATEGORIES

Table 15–20 shows the summary statistics for the scale scores based on diagnostic categories. To be consistent with Table 15–18, tests with multiple benchmark cuts are broken down to match the grade level of the cuts, while tests that are course-specific are not broken down. Full diagnostic category names can be found in Chapter Thirteen.

Table 15–20. Summary Statistics for Scale Score Based on Diagnostic Categories

CDT	Diagnostic Category	N	Minimum	Q1	Median	Mean	Q3	Maximum
Math – G3	1	51,976	200	633	738	732.41	835	1664
Math – G3	2	51,976	200	650	775	764.22	883	1416
Math – G3	3	51,976	200	627	724	717.65	802	1405
Math – G3	4	51,976	200	635	771	757.41	890	1399
Math – G4	1	59,764	200	741	844	843.39	944	1677
Math – G4	2	59,764	200	774	876	865.91	978	1752
Math – G4	3	59,764	200	711	796	817.21	936	1461
Math – G4	4	59,764	200	759	883	861.73	975	1537
Math – G5	1	63,615	200	806	918	911.52	1024	1681
Math – G5	2	63,615	200	795	900	884.58	983	1591
Math – G5	3	63,615	200	778	893	885.39	997	1712
Math – G5	4	63,615	200	809	898	894.25	987	1579
Math – G6	1	77,419	210	861	983	972.21	1093	1710
Math – G6	2	77,419	200	850	966	954.67	1072	1791
Math – G6	3	77,419	235	875	965	959.58	1049	1754
Math – G6	4	77,419	219	837	943	947.02	1062	1789
Math – G7	1	76,299	223	912	1026	1013.50	1130	1719
Math – G7	2	76,299	208	912	1017	1002.54	1108	1814
Math – G7	3	76,299	200	902	997	992.45	1084	1790
Math – G7	4	76,299	263	867	990	982.07	1098	1798
Math – G8	1	61,278	200	934	1062	1034.16	1161	1794
Math – G8	2	61,278	200	942	1045	1030.54	1131	1825
Math – G8	3	61,278	301	918	1023	1016.08	1117	1851
Math – G8	4	61,278	200	902	1027	1013.45	1126	1799
Algebra I	1	116,749	400	970	1081	1051.07	1167	1829
Algebra I	2	116,749	400	971	1079	1063.18	1166	1828
Algebra I	3	116,749	400	973	1079	1062.25	1167	1845
Algebra I	4	116,749	400	938	1056	1035.63	1148	1828
Geometry	1	12,402	400	1018	1118	1097.46	1199	1779
Geometry	2	12,402	400	1026	1109	1113.05	1219	1794
Geometry	3	12,402	400	998	1111	1102.31	1211	1795
Geometry	4	12,402	400	987	1110	1095.86	1215	1826

Table 15–20 (continued). Summary Statistics for Scale Score Based on Diagnostic Categories

CDT	Diagnostic Category	N	Minimum	Q1	Median	Mean	Q3	Maximum
Algebra II	1	11,472	571	1029	1133	1166.74	1277	1843
Algebra II	2	11,472	400	1041	1144	1124.52	1233	1869
Algebra II	3	11,472	400	1055	1160	1137.52	1241	1853
Algebra II	4	11,472	400	1014	1122	1104.86	1210	1832
Reading – G3	1	44,702	200	594	715	720.55	846	1542
Reading – G3	2	44,702	200	596	720	721.70	853	1499
Reading – G3	3	44,702	200	640	746	750.17	864	1577
Reading – G3	4	44,702	200	605	719	722.53	841	1502
Reading – G3	5	44,702	200	582	717	703.19	832	1504
Reading – G4	1	49,847	200	673	814	809.59	948	1543
Reading – G4	2	49,847	200	674	816	804.95	940	1580
Reading – G4	3	49,847	200	711	835	832.43	960	1581
Reading – G4	4	49,847	200	680	816	811.22	948	1576
Reading – G4	5	49,847	200	678	804	790.47	911	1552
Reading – G5	1	54,728	200	746	897	878.53	1016	1627
Reading – G5	2	54,728	200	750	890	873.27	1005	1619
Reading – G5	3	54,728	200	771	904	892.84	1021	1613
Reading – G5	4	54,728	200	741	895	872.52	1013	1586
Reading – G5	5	54,728	200	747	872	859.98	983	1555
Reading – G6	1	63,315	200	818	945	934.12	1056	1633
Reading – G6	2	63,315	200	816	946	931.16	1051	1613
Reading – G6	3	63,315	244	821	946	931.86	1048	1640
Reading – G6	4	63,315	200	808	946	925.16	1055	1649
Reading – G6	5	63,315	200	802	938	919.20	1044	1587
Reading – G7	1	65,930	200	826	958	945.85	1073	1659
Reading – G7	2	65,930	200	838	975	956.26	1082	1623
Reading – G7	3	65,930	248	836	963	950.04	1070	1640
Reading – G7	4	65,930	200	828	965	942.38	1071	1662
Reading – G7	5	65,930	200	828	962	944.14	1072	1623
Reading – G8	1	63,068	200	840	980	967.36	1100	1649
Reading – G8	2	63,068	200	865	1006	985.42	1117	1642
Reading – G8	3	63,068	214	865	993	977.90	1098	1662
Reading – G8	4	63,068	229	855	993	971.03	1099	1653
Reading – G8	5	63,068	200	854	990	967.12	1097	1636

Table 15–20 (continued). Summary Statistics for Scale Score Based on Diagnostic Categories

CDT	Diagnostic Category	N	Minimum	Q1	Median	Mean	Q3	Maximum
Literature	1	158,250	200	879	1020	1001.64	1134	1687
Literature	2	158,250	200	916	1053	1029.44	1160	1653
Literature	3	158,250	205	903	1034	1014.16	1137	1654
Literature	4	158,250	200	908	1042	1019.34	1148	1666
Literature	5	158,250	200	908	1041	1020.94	1146	1640
Science – G3	1	4,010	200	584	712	695.12	820	1236
Science – G3	2	4,010	200	600	721	703.03	823	1207
Science – G3	3	4,010	200	609	744	716.33	842	1216
Science – G3	4	4,010	200	605	722	703.42	822	1141
Science – G4	1	20,476	200	677	793	776.79	894	1334
Science – G4	2	20,476	200	690	797	782.80	899	1301
Science – G4	3	20,476	200	713	812	792.11	902	1273
Science – G4	4	20,476	200	691	799	781.49	885	1295
Science – G5	1	4,452	200	721	828	816.23	926	1409
Science – G5	2	4,452	200	723	839	821.14	936	1310
Science – G5	3	4,452	200	751	847	829.12	931	1260
Science – G5	4	4,452	200	735	835	819.87	926	1231
Science – G6	1	20,659	200	748	872	850.17	974	1386
Science – G6	2	20,659	200	758	869	851.35	956	1412
Science – G6	3	20,659	200	771	871	861.59	959	1334
Science – G6	4	20,659	200	767	870	854.08	959	1382
Science – G7	1	33,151	200	779	905	878.88	998	1443
Science – G7	2	33,151	200	772	900	879.40	999	1441
Science – G7	3	33,151	200	801	906	893.11	995	1364
Science – G7	4	33,151	200	792	896	878.94	981	1394
Science – G8	1	51,426	200	821	936	911.05	1023	1703
Science – G8	2	51,426	200	819	935	913.38	1030	1523
Science – G8	3	51,426	200	835	940	923.76	1027	1405
Science – G8	4	51,426	200	818	922	902.49	1003	1434
Science – HS	1	1,287	326	702	875	853.62	1008	1326
Science – HS	2	1,287	242	719	866	863.90	1008	1356
Science – HS	3	1,287	409	752	891	877.85	1003	1310
Science – HS	4	1,287	200	722	864	849.90	991	1282

Table 15–20 (continued). Summary Statistics for Scale Score Based on Diagnostic Categories

CDT	Diagnostic Category	<i>N</i>	Minimum	Q1	Median	Mean	Q3	Maximum
Biology	1	131,432	400	886	995	981.67	1091	1783
Biology	2	131,432	400	901	993	993.79	1090	1725
Biology	3	131,432	400	895	993	984.67	1080	1770
Biology	4	131,432	400	868	988	962.08	1077	1769
Chemistry	1	7,953	400	880	1003	964.51	1080	1734
Chemistry	2	7,953	479	939	1021	1014.66	1097	1568
Chemistry	3	7,953	431	927	1014	1004.97	1091	1726
Chemistry	4	7,953	426	911	997	995.61	1090	1559
Writing – G3	1	6,943	200	614	759	738.42	886	1516
Writing – G3	2	6,943	200	628	756	730.24	860	1263
Writing – G3	3	6,943	200	622	754	736.66	865	1292
Writing – G3	4	6,943	200	612	753	743.78	876	1295
Writing – G3	5	6,943	200	625	763	745.54	880	1289
Writing – G4	1	7,504	200	689	839	810.26	950	1365
Writing – G4	2	7,504	200	701	829	808.02	938	1558
Writing – G4	3	7,504	200	695	830	813.43	946	1392
Writing – G4	4	7,504	200	711	844	829.98	966	1622
Writing – G4	5	7,504	200	714	843	820.18	950	1464
Writing – G5	1	9,742	200	754	895	865.73	1003	1544
Writing – G5	2	9,742	200	763	892	873.06	1002	1589
Writing – G5	3	9,742	200	766	900	875.17	1001	1598
Writing – G5	4	9,742	200	774	911	886.67	1014	1450
Writing – G5	5	9,742	200	789	906	881.73	1001	1428
Writing – G6	1	15,543	200	783	933	899.62	1037	1553
Writing – G6	2	15,543	216	790	938	918.14	1045	1609
Writing – G6	3	15,543	200	803	933	908.51	1036	1664
Writing – G6	4	15,543	214	828	953	928.63	1044	1625
Writing – G6	5	15,543	200	811	931	906.40	1021	1450
Writing – G7	1	17,971	200	815	965	925.73	1060	1579
Writing – G7	2	17,971	240	816	964	939.83	1072	1619
Writing – G7	3	17,971	200	829	960	931.36	1064	1493
Writing – G7	4	17,971	234	860	978	958.45	1082	1696
Writing – G7	5	17,971	200	834	950	925.65	1039	1391

Table 15–20 (continued). Summary Statistics for Scale Score Based on Diagnostic Categories

CDT	Diagnostic Category	<i>N</i>	Minimum	Q1	Median	Mean	Q3	Maximum
Writing – G8	1	17,828	200	838	983	947.25	1081	1611
Writing – G8	2	17,828	233	839	981	951.87	1083	1616
Writing – G8	3	17,828	200	848	979	950.16	1074	1711
Writing – G8	4	17,828	200	876	990	971.69	1092	1684
Writing – G8	5	17,828	200	855	971	946.37	1064	1684
English Composition	1	7,164	204	890	1025	990.98	1119	1634
English Composition	2	7,164	236	887	1022	985.49	1111	1609
English Composition	3	7,164	200	886	1013	981.23	1101	1696
English Composition	4	7,164	207	899	1022	1002.82	1124	1714
English Composition	5	7,164	200	894	1002	979.96	1092	1685

Table 15–21 shows the summary statistics for the conditional standard errors of measurement (CSEMs) in the scale score metric based on diagnostic categories. The final column in the table shows the theoretical minimum CSEM that is possible for a test length equal to the mean number of points. Minimum values in the table that are less than the theoretical minimum are due to students taking more than the mean number of points.

Table 15–21. Summary Statistics for Conditional Standard Errors Based on Diagnostic Categories

CDT	Diagnostic Category	N	Min	Q1	Median	Mean	Q3	Max	Theoretical Minimum
Math – G3	1	51,976	71	74	76	75.85	77	234	72.63
Math – G3	2	51,976	72	74	76	75.86	77	235	72.63
Math – G3	3	51,976	72	75	76	75.96	77	236	72.63
Math – G3	4	51,976	71	74	76	75.97	77	234	72.63
Math – G4	1	59,764	72	74	75	75.75	77	231	72.63
Math – G4	2	59,764	72	74	76	75.66	77	233	72.63
Math – G4	3	59,764	71	75	76	75.72	77	235	72.63
Math – G4	4	59,764	71	74	76	75.77	77	234	72.63
Math – G5	1	63,615	72	74	76	75.77	77	231	72.63
Math – G5	2	63,615	72	74	76	75.58	77	234	72.63
Math – G5	3	63,615	72	74	76	75.60	77	239	72.63
Math – G5	4	63,615	72	74	76	75.60	77	236	72.63
Math – G6	1	77,419	69	73	74	73.94	74	231	69.28
Math – G6	2	77,419	69	73	74	74.13	74	237	69.28
Math – G6	3	77,419	69	73	74	73.78	74	232	69.28
Math – G6	4	77,419	69	73	74	74.11	74	233	69.28
Math – G7	1	76,299	69	73	74	73.99	74	232	69.28
Math – G7	2	76,299	69	73	74	73.94	74	234	69.28
Math – G7	3	76,299	69	73	74	73.67	74	234	69.28
Math – G7	4	76,299	69	73	74	74.13	74	232	69.28
Math – G8	1	61,278	69	73	74	73.84	74	233	69.28
Math – G8	2	61,278	69	73	74	74.19	74	236	69.28
Math – G8	3	61,278	69	73	74	74.03	74	233	69.28
Math – G8	4	61,278	69	73	74	74.32	74	241	69.28
Algebra I	1	116,749	69	73	74	74.06	74	233	69.28
Algebra I	2	116,749	69	73	74	74.68	74	234	69.28
Algebra I	3	116,749	69	73	74	74.41	74	234	69.28
Algebra I	4	116,749	69	73	74	74.51	74	233	69.28
Geometry	1	12,402	69	73	74	74.11	74	235	69.28
Geometry	2	12,402	69	73	74	75.44	75	254	69.28
Geometry	3	12,402	69	73	74	74.89	74	232	69.28
Geometry	4	12,402	69	73	74	74.38	74	234	69.28

Table 15–21 (continued). Summary Statistics for Conditional Standard Errors Based on Diagnostic Categories

CDT	Diagnostic Category	N	Min	Q1	Median	Mean	Q3	Max	Theoretical Minimum
Algebra II	1	11,472	69	73	74	79.41	75	231	66.76
Algebra II	2	11,472	70	73	74	74.29	74	234	69.28
Algebra II	3	11,472	69	73	74	74.42	74	254	69.28
Algebra II	4	11,472	69	73	74	74.74	74	233	69.28
Reading – G3	1	44,702	73	90	96	98.66	102	277	86.44
Reading – G3	2	44,702	74	92	97	100.49	102	282	90.29
Reading – G3	3	44,702	73	93	98	102.14	104	285	90.29
Reading – G3	4	44,702	69	90	95	99.73	102	285	86.44
Reading – G3	5	44,702	75	93	98	101.30	103	279	90.29
Reading – G4	1	49,847	71	90	96	98.56	101	277	86.44
Reading – G4	2	49,847	73	91	96	98.61	101	285	90.29
Reading – G4	3	49,847	72	91	96	99.04	102	284	86.44
Reading – G4	4	49,847	68	89	94	97.60	100	277	86.44
Reading – G4	5	49,847	77	94	99	101.38	103	274	90.29
Reading – G5	1	54,728	71	90	96	98.87	101	279	86.44
Reading – G5	2	54,728	73	90	95	97.93	101	281	90.29
Reading – G5	3	54,728	72	90	95	97.71	101	277	86.44
Reading – G5	4	54,728	69	89	94	97.36	100	279	86.44
Reading – G5	5	54,728	76	94	99	102.48	104	277	90.29
Reading – G6	1	63,315	70	88	93	98.01	100	275	82.46
Reading – G6	2	63,315	71	89	93	97.17	99	289	82.46
Reading – G6	3	63,315	72	89	93	96.32	99	272	86.13
Reading – G6	4	63,315	73	88	93	96.95	100	279	82.46
Reading – G6	5	63,315	78	95	99	103.27	104	278	86.13
Reading – G7	1	65,930	72	88	93	98.06	100	278	82.46
Reading – G7	2	65,930	72	89	94	97.54	100	285	86.13
Reading – G7	3	65,930	73	89	93	96.41	99	276	86.13
Reading – G7	4	65,930	73	89	93	96.72	100	273	86.13
Reading – G7	5	65,930	80	95	99	103.64	104	278	86.13
Reading – G8	1	63,068	72	89	95	101.00	102	281	82.46
Reading – G8	2	63,068	75	90	95	99.15	101	292	86.13
Reading – G8	3	63,068	75	90	94	97.15	100	276	86.13
Reading – G8	4	63,068	74	89	93	97.21	100	274	86.13
Reading – G8	5	63,068	82	96	100	104.51	104	277	86.13

Table 15–21 (continued). Summary Statistics for Conditional Standard Errors Based on Diagnostic Categories

CDT	Diagnostic Category	N	Min	Q1	Median	Mean	Q3	Max	Theoretical Minimum
Literature	1	158,250	72	90	96	103.60	104	277	82.46
Literature	2	158,250	75	91	96	101.51	102	290	86.13
Literature	3	158,250	73	90	95	98.39	100	274	86.13
Literature	4	158,250	74	89	94	98.87	100	281	86.13
Literature	5	158,250	80	97	101	110.15	107	282	86.13
Science – G3	1	4,010	76	79	80	80.79	82	158	77.26
Science – G3	2	4,010	76	79	80	80.60	81	246	77.26
Science – G3	3	4,010	76	79	81	80.91	82	247	77.26
Science – G3	4	4,010	76	79	80	80.56	81	140	77.26
Science – G4	1	20,476	76	79	80	80.77	82	266	77.26
Science – G4	2	20,476	76	79	80	80.51	82	247	77.26
Science – G4	3	20,476	76	79	81	80.62	82	248	77.26
Science – G4	4	20,476	76	79	80	80.51	81	247	77.26
Science – G5	1	4,452	76	79	80	80.66	81	182	77.26
Science – G5	2	4,452	76	79	80	80.50	81	143	77.26
Science – G5	3	4,452	76	79	80	80.44	81	144	77.26
Science – G5	4	4,452	76	79	80	80.45	81	142	77.26
Science – G6	1	20,659	74	77	78	78.91	79	274	73.70
Science – G6	2	20,659	74	77	78	79.15	79	251	73.70
Science – G6	3	20,659	74	77	78	79.22	79	250	73.70
Science – G6	4	20,659	74	77	78	78.98	79	249	73.70
Science – G7	1	33,151	74	77	78	78.82	79	246	73.70
Science – G7	2	33,151	74	77	78	79.20	79	246	73.70
Science – G7	3	33,151	74	77	78	78.88	79	248	73.70
Science – G7	4	33,151	74	77	78	79.05	79	250	73.70
Science – G8	1	51,426	74	77	78	78.76	79	246	73.70
Science – G8	2	51,426	74	77	78	78.93	79	253	73.70
Science – G8	3	51,426	74	77	78	78.87	79	251	73.70
Science – G8	4	51,426	74	77	78	78.86	79	251	73.70
Science – HS	1	1,287	74	77	78	79.98	79	142	73.70
Science – HS	2	1,287	74	77	79	80.38	79	246	73.70
Science – HS	3	1,287	74	77	78	80.05	79	141	73.70
Science – HS	4	1,287	74	77	79	80.53	79	247	73.70
Biology	1	131,432	74	77	78	79.06	79	254	73.70
Biology	2	131,432	74	77	78	79.58	79	247	73.70
Biology	3	131,432	74	77	78	79.62	79	256	73.70
Biology	4	131,432	74	77	78	79.26	79	261	73.70

Table 15–21 (continued). Summary Statistics for Conditional Standard Errors Based on Diagnostic Categories

CDT	Diagnostic Category	N	Min	Q1	Median	Mean	Q3	Max	Theoretical Minimum
Chemistry	1	7,953	74	77	78	79.44	79	253	73.70
Chemistry	2	7,953	74	77	79	81.48	79	247	73.70
Chemistry	3	7,953	74	77	79	79.95	79	246	73.70
Chemistry	4	7,953	74	77	79	80.54	79	246	73.70
Writing – G3	1	6,943	82	86	87	88.68	89	249	84.09
Writing – G3	2	6,943	82	86	87	89.00	89	256	84.09
Writing – G3	3	6,943	82	86	87	89.16	89	254	84.09
Writing – G3	4	6,943	82	86	87	89.61	89	246	84.09
Writing – G3	5	6,943	82	86	87	88.55	89	249	84.09
Writing – G4	1	7,504	82	86	87	88.33	89	248	84.09
Writing – G4	2	7,504	82	86	87	88.58	89	258	84.09
Writing – G4	3	7,504	82	86	87	88.12	89	248	84.09
Writing – G4	4	7,504	82	86	87	88.51	89	247	84.09
Writing – G4	5	7,504	82	86	87	88.03	89	248	84.09
Writing – G5	1	9,742	82	86	87	88.36	89	252	84.09
Writing – G5	2	9,742	82	86	87	88.29	89	250	84.09
Writing – G5	3	9,742	82	86	87	87.96	88	248	84.09
Writing – G5	4	9,742	82	86	87	88.16	89	247	84.09
Writing – G5	5	9,742	82	86	87	87.70	88	249	84.09
Writing – G6	1	15,543	80	83	85	87.25	86	248	80.21
Writing – G6	2	15,543	81	84	85	88.45	86	248	80.21
Writing – G6	3	15,543	81	83	85	85.98	86	248	80.21
Writing – G6	4	15,543	81	83	85	86.34	86	248	80.21
Writing – G6	5	15,543	80	83	85	85.77	86	249	80.21
Writing – G7	1	17,971	81	84	85	87.10	86	249	80.21
Writing – G7	2	17,971	81	84	85	87.68	86	248	80.21
Writing – G7	3	17,971	81	83	85	85.80	86	251	80.21
Writing – G7	4	17,971	81	83	85	86.22	86	249	80.21
Writing – G7	5	17,971	81	83	85	85.60	86	249	80.21
Writing – G8	1	17,828	80	83	85	87.05	86	250	80.21
Writing – G8	2	17,828	81	83	85	87.30	86	248	80.21
Writing – G8	3	17,828	81	83	85	85.88	86	252	80.21
Writing – G8	4	17,828	80	83	85	86.17	86	248	80.21
Writing – G8	5	17,828	81	83	85	85.94	86	256	80.21

Table 15–21 (continued). Summary Statistics for Conditional Standard Errors Based on Diagnostic Categories

CDT	Diagnostic Category	<i>N</i>	Min	Q1	Median	Mean	Q3	Max	Theoretical Minimum
English Composition	1	7,164	80	84	85	87.87	86	250	80.21
English Composition	2	7,164	81	84	85	87.53	86	248	80.21
English Composition	3	7,164	81	83	85	86.11	86	250	80.21
English Composition	4	7,164	80	83	85	86.66	86	248	80.21
English Composition	5	7,164	81	83	85	86.09	86	254	80.21

DIAGNOSTIC CATEGORY SCORE DIFFERENCES

As described in Chapter Fourteen, the CDT reports that are available to teachers display scale scores and probable score ranges for each diagnostic category. The probable score range is the scale score \pm one standard error. Probable score range differences—ranges that do not overlap—may indicate to teachers a meaningful difference between two diagnostic category scores. Tables 15–22a through 15–34a show the number of students with score range differences (non-overlapping probable score ranges) between pairs of diagnostic categories for each CDT test. For example, according to Table 15–22a, 35,182 students who took the Math Grades 3-5 assessment had score range differences between diagnostic categories 1 and 2 while 140,173 students did not. Tables 15–22b through 15–34b show the total number of score range differences. For example, 32,268 students had two pairs of diagnostic categories with score range differences, which was 18.4% of the total students who took Math Grades 3-5.

Table 15–22a. Diagnostic Category Score Range Differences – Math Grades 3-5

Group 1	Group 2	Yes	No	% Yes	% No
DC1	DC2	35,182	140,173	20.1%	79.9%
DC1	DC3	44,527	130,828	25.4%	74.6%
DC1	DC4	36,608	138,747	20.9%	79.1%
DC2	DC3	46,550	128,805	26.5%	73.5%
DC2	DC4	33,367	141,988	19.0%	81.0%
DC3	DC4	47,064	128,291	26.8%	73.2%

Table 15–22b. Total Number of Diagnostic Category Score Range Differences – Math Grades 3-5

Number of Score Range Differences	Number of Students	Percent of Students
0	66,674	38.0%
1	31,620	18.0%
2	32,268	18.4%
3	33,711	19.2%
4	9,413	5.4%
5	1,657	0.9%
6	12	0.0%

Table 15–23a. Diagnostic Category Score Range Differences – Math Grades 6-8

Group 1	Group 2	Yes	No	% Yes	% No
DC1	DC2	47,114	167,882	21.9%	78.1%
DC1	DC3	52,158	162,838	24.3%	75.7%
DC1	DC4	51,535	163,461	24.0%	76.0%
DC2	DC3	50,691	164,305	23.6%	76.4%
DC2	DC4	52,169	162,827	24.3%	75.7%
DC3	DC4	51,484	163,512	23.9%	76.1%

Table 15–23b. Total Number of Diagnostic Category Score Range Differences – Math Grades 6-8

Number of Score Range Differences	Number of Students	Percent of Students
0	81,067	37.7%
1	37,976	17.7%
2	39,140	18.2%
3	41,043	19.1%
4	13,137	6.1%
5	2,580	1.2%
6	53	0.0%

Table 15–24a. Diagnostic Category Score Range Differences – Algebra I

Group 1	Group 2	Yes	No	% Yes	% No
DC1	DC2	30,312	86,437	26.0%	74.0%
DC1	DC3	30,283	86,466	25.9%	74.1%
DC1	DC4	32,518	84,231	27.9%	72.1%
DC2	DC3	25,879	90,870	22.2%	77.8%
DC2	DC4	30,235	86,514	25.9%	74.1%
DC3	DC4	29,466	87,283	25.2%	74.8%

Table 15–24b. Total Number of Diagnostic Category Score Range Differences – Algebra I

Number of Score Range Differences	Number of Students	Percent of Students
0	41,446	35.5%
1	19,687	16.9%
2	20,968	18.0%
3	23,661	20.3%
4	8,882	7.6%
5	2,071	1.8%
6	34	0.0%

Table 15–25a. Diagnostic Category Score Range Differences – Geometry

Group 1	Group 2	Yes	No	% Yes	% No
DC1	DC2	3,153	9,249	25.4%	74.6%
DC1	DC3	3,160	9,242	25.5%	74.5%
DC1	DC4	3,144	9,258	25.4%	74.6%
DC2	DC3	3,276	9,126	26.4%	73.6%
DC2	DC4	3,453	8,949	27.8%	72.2%
DC3	DC4	3,208	9,194	25.9%	74.1%

Table 15–25b. Total Number of Diagnostic Category Score Range Differences – Geometry

Number of Score Range Differences	Number of Students	Percent of Students
0	4,216	34.0%
1	2,171	17.5%
2	2,264	18.3%
3	2,567	20.7%
4	934	7.5%
5	242	2.0%
6	8	0.1%

Table 15–26a. Diagnostic Category Score Range Differences – Algebra II

Group 1	Group 2	Yes	No	% Yes	% No
DC1	DC2	4,073	7,399	35.5%	64.5%
DC1	DC3	4,125	7,347	36.0%	64.0%
DC1	DC4	4,732	6,740	41.2%	58.8%
DC2	DC3	2,633	8,839	23.0%	77.0%
DC2	DC4	3,017	8,455	26.3%	73.7%
DC3	DC4	3,004	8,468	26.2%	73.8%

Table 15–26b. Total Number of Diagnostic Category Score Range Differences – Algebra II

Number of Score Range Differences	Number of Students	Percent of Students
0	3,237	28.2%
1	1,660	14.5%
2	1,928	16.8%
3	2,978	26.0%
4	1,222	10.7%
5	436	3.8%
6	11	0.1%

Table 15–27a. Diagnostic Category Score Range Differences – Reading Grades 3-5

Group 1	Group 2	Yes	No	% Yes	% No
DC1	DC2	29,039	120,238	19.5%	80.5%
DC1	DC3	28,131	121,146	18.8%	81.2%
DC1	DC4	29,916	119,361	20.0%	80.0%
DC1	DC5	29,007	120,270	19.4%	80.6%
DC2	DC3	29,828	119,449	20.0%	80.0%
DC2	DC4	27,389	121,888	18.3%	81.7%
DC2	DC5	28,185	121,092	18.9%	81.1%
DC3	DC4	29,745	119,532	19.9%	80.1%
DC3	DC5	31,118	118,159	20.8%	79.2%
DC4	DC5	28,949	120,328	19.4%	80.6%

Table 15–27b. Total Number of Diagnostic Category Score Range Differences – Reading Grades 3-5

Number of Score Range Differences	Number of Students	Percent of Students
0	46,647	31.2%
1	22,965	15.4%
2	24,715	16.6%
3	20,141	13.5%
4	21,922	14.7%
5	7,260	4.9%
6	4,974	3.3%
7	569	0.4%
8	82	0.1%
9	2	0.0%
10	0	0.0%

Table 15–28a. Diagnostic Category Score Range Differences – Reading/Lit Grades 6-HS

Group 1	Group 2	Yes	No	% Yes	% No
DC1	DC2	68,430	282,133	19.5%	80.5%
DC1	DC3	65,422	285,141	18.7%	81.3%
DC1	DC4	69,872	280,691	19.9%	80.1%
DC1	DC5	67,657	282,906	19.3%	80.7%
DC2	DC3	67,010	283,553	19.1%	80.9%
DC2	DC4	61,440	289,123	17.5%	82.5%
DC2	DC5	65,395	285,168	18.7%	81.3%
DC3	DC4	67,068	283,495	19.1%	80.9%
DC3	DC5	66,623	283,940	19.0%	81.0%
DC4	DC5	63,880	286,683	18.2%	81.8%

Table 15–28b. Total Number of Diagnostic Category Score Range Differences – Reading/Lit Grades 6-HS

Number of Score Range Differences	Number of Students	Percent of Students
0	115,424	32.9%
1	54,595	15.6%
2	56,852	16.2%
3	45,049	12.9%
4	49,136	14.0%
5	16,245	4.6%
6	11,507	3.3%
7	1,501	0.4%
8	253	0.1%
9	1	0.0%
10	0	0.0%

Table 15–29a. Diagnostic Category Score Range Differences – Science Grades 3-5

Group 1	Group 2	Yes	No	% Yes	% No
DC1	DC2	5,187	23,751	17.9%	82.1%
DC1	DC3	5,346	23,592	18.5%	81.5%
DC1	DC4	5,326	23,612	18.4%	81.6%
DC2	DC3	5,161	23,777	17.8%	82.2%
DC2	DC4	5,169	23,769	17.9%	82.1%
DC3	DC4	5,191	23,747	17.9%	82.1%

Table 15–29b. Total Number of Diagnostic Category Score Range Differences – Science Grades 3-5

Number of Score Range Differences	Number of Students	Percent of Students
0	13,696	47.3%
1	5,384	18.6%
2	4,792	16.6%
3	4,000	13.8%
4	921	3.2%
5	142	0.5%
6	3	0.0%

Table 15–30a. Diagnostic Category Score Range Differences – Science Grades 6-HS

Group 1	Group 2	Yes	No	% Yes	% No
DC1	DC2	21,778	84,745	20.4%	79.6%
DC1	DC3	22,620	83,903	21.2%	78.8%
DC1	DC4	22,650	83,873	21.3%	78.7%
DC2	DC3	22,859	83,664	21.5%	78.5%
DC2	DC4	22,509	84,014	21.1%	78.9%
DC3	DC4	22,287	84,236	20.9%	79.1%

Table 15–30b. Total Number of Diagnostic Category Score Range Differences – Science Grades 6-HS

Number of Score Range Differences	Number of Students	Percent of Students
0	45,350	42.6%
1	18,849	17.7%
2	18,330	17.2%
3	17,769	16.7%
4	5,253	4.9%
5	957	0.9%
6	15	0.0%

Table 15–31a. Diagnostic Category Score Range Differences – Biology

Group 1	Group 2	Yes	No	% Yes	% No
DC1	DC2	28,554	102,878	21.7%	78.3%
DC1	DC3	30,298	101,134	23.1%	76.9%
DC1	DC4	31,084	100,348	23.7%	76.3%
DC2	DC3	28,469	102,963	21.7%	78.3%
DC2	DC4	34,402	97,030	26.2%	73.8%
DC3	DC4	31,516	99,916	24.0%	76.0%

Table 15–31b. Total Number of Diagnostic Category Score Range Differences – Biology

Number of Score Range Differences	Number of Students	Percent of Students
0	50,505	38.4%
1	23,047	17.5%
2	23,610	18.0%
3	24,518	18.7%
4	8,274	6.3%
5	1,462	1.1%
6	16	0.0%

Table 15–32a. Diagnostic Category Score Range Differences – Chemistry

Group 1	Group 2	Yes	No	% Yes	% No
DC1	DC2	2,195	5,758	27.6%	72.4%
DC1	DC3	1,994	5,959	25.1%	74.9%
DC1	DC4	2,139	5,814	26.9%	73.1%
DC2	DC3	1,491	6,462	18.7%	81.3%
DC2	DC4	1,660	6,293	20.9%	79.1%
DC3	DC4	1,594	6,359	20.0%	80.0%

Table 15–32b. Total Number of Diagnostic Category Score Range Differences – Chemistry

Number of Score Range Differences	Number of Students	Percent of Students
0	3,137	39.4%
1	1,348	16.9%
2	1,382	17.4%
3	1,497	18.8%
4	478	6.0%
5	108	1.4%
6	3	0.0%

Table 15–33a. Diagnostic Category Score Range Differences – Writing Grades 3-5

Group 1	Group 2	Yes	No	% Yes	% No
DC1	DC2	4,094	20,095	16.9%	83.1%
DC1	DC3	4,443	19,746	18.4%	81.6%
DC1	DC4	5,209	18,980	21.5%	78.5%
DC1	DC5	4,878	19,311	20.2%	79.8%
DC2	DC3	4,282	19,907	17.7%	82.3%
DC2	DC4	5,142	19,047	21.3%	78.7%
DC2	DC5	4,695	19,494	19.4%	80.6%
DC3	DC4	4,442	19,747	18.4%	81.6%
DC3	DC5	4,234	19,955	17.5%	82.5%
DC4	DC5	4,714	19,475	19.5%	80.5%

Table 15–33b. Total Number of Diagnostic Category Score Range Differences – Writing Grades 3-5

Number of Score Range Differences	Number of Students	Percent of Students
0	7,934	32.8%
1	3,733	15.4%
2	3,929	16.2%
3	3,070	12.7%
4	3,444	14.2%
5	1,117	4.6%
6	797	3.3%
7	132	0.5%
8	32	0.1%
9	1	0.0%
10	0	0.0%

Table 15–34a. Diagnostic Category Score Range Differences – Writing/Eng Comp Grades 6-HS

Group 1	Group 2	Yes	No	% Yes	% No
DC1	DC2	12,428	46,078	21.2%	78.8%
DC1	DC3	11,886	46,620	20.3%	79.7%
DC1	DC4	13,817	44,689	23.6%	76.4%
DC1	DC5	12,646	45,860	21.6%	78.4%
DC2	DC3	12,146	46,360	20.8%	79.2%
DC2	DC4	13,801	44,705	23.6%	76.4%
DC2	DC5	13,364	45,142	22.8%	77.2%
DC3	DC4	12,343	46,163	21.1%	78.9%
DC3	DC5	11,609	46,897	19.8%	80.2%
DC4	DC5	12,682	45,824	21.7%	78.3%

Table 15–34b. Total Number of Diagnostic Category Score Range Differences – Writing/Eng Comp Grades 6-HS

Number of Score Range Differences	Number of Students	Percent of Students
0	16,895	28.9%
1	8,407	14.4%
2	9,150	15.6%
3	7,651	13.1%
4	9,391	16.1%
5	3,413	5.8%
6	2,898	5.0%
7	567	1.0%
8	130	0.2%
9	4	0.0%
10	0	0.0%

Significant differences among diagnostic categories were tested based on t-test. Using the diagnostic category scale scores and the conditional standard errors for each student, the differences between pairs of diagnostic category scores were examined based on t-test for each student. A Bonferroni correction for multiple comparisons was performed to keep the familywise Type I error rate at 0.32. This results in the number of significant differences being smaller than the number of score range differences (non-overlapping probable score ranges) presented above. Tables 15–35a through 15–47a show the number of students who had significant differences between pairs of diagnostic categories for each assessment. Tables 15–35b through 15–47b show the total number of significant differences.

Table 15–35a. Diagnostic Category Significant Differences – Math Grades 3-5

Group 1	Group 2	Yes	No	% Yes	% No
DC1	DC2	2,712	172,643	1.5%	98.5%
DC1	DC3	4,999	170,356	2.9%	97.1%
DC1	DC4	3,120	172,235	1.8%	98.2%
DC2	DC3	5,808	169,547	3.3%	96.7%
DC2	DC4	2,776	172,579	1.6%	98.4%
DC3	DC4	5,592	169,763	3.2%	96.8%

Note: Z value is 1.94

Table 15–35b. Total Number of Diagnostic Category Significant Differences – Math Grades 3-5

Number of Significant Differences	Number of Students	Percent of Students
0	157,441	89.8%
1	12,274	7.0%
2	4,269	2.4%
3	1,290	0.7%
4	80	0.0%
5	1	0.0%
6	0	0.0%

Table 15–36a. Diagnostic Category Significant Differences – Math Grades 6-8

Group 1	Group 2	Yes	No	% Yes	% No
DC1	DC2	5,265	209,731	2.4%	97.6%
DC1	DC3	6,038	208,958	2.8%	97.2%
DC1	DC4	6,059	208,937	2.8%	97.2%
DC2	DC3	5,707	209,289	2.7%	97.3%
DC2	DC4	6,116	208,880	2.8%	97.2%
DC3	DC4	5,943	209,053	2.8%	97.2%

Note: Z value is 1.94

Table 15–36b. Total Number of Diagnostic Category Significant Differences – Math Grades 6-8

Number of Significant Differences	Number of Students	Percent of Students
0	190,986	88.8%
1	15,473	7.2%
2	6,171	2.9%
3	2,155	1.0%
4	207	0.1%
5	4	0.0%
6	0	0.0%

Table 15–37a. Diagnostic Category Significant Differences – Algebra I

Group 1	Group 2	Yes	No	% Yes	% No
DC1	DC2	4,411	112,338	3.8%	96.2%
DC1	DC3	4,472	112,277	3.8%	96.2%
DC1	DC4	5,303	111,446	4.5%	95.5%
DC2	DC3	2,513	114,236	2.2%	97.8%
DC2	DC4	3,835	112,914	3.3%	96.7%
DC3	DC4	3,925	112,824	3.4%	96.6%

Note: Z value is 1.94

Table 15–37b. Total Number of Diagnostic Category Significant Differences – Algebra I

Number of Significant Differences	Number of Students	Percent of Students
0	100,603	86.2%
1	9,844	8.4%
2	4,487	3.8%
3	1,622	1.4%
4	190	0.2%
5	3	0.0%
6	0	0.0%

Table 15–38a. Diagnostic Category Significant Differences – Geometry

Group 1	Group 2	Yes	No	% Yes	% No
DC1	DC2	358	12,044	2.9%	97.1%
DC1	DC3	393	12,009	3.2%	96.8%
DC1	DC4	430	11,972	3.5%	96.5%
DC2	DC3	458	11,944	3.7%	96.3%
DC2	DC4	496	11,906	4.0%	96.0%
DC3	DC4	433	11,969	3.5%	96.5%

Note: Z value is 1.94

Table 15–38b. Total Number of Diagnostic Category Significant Differences – Geometry

Number of Significant Differences	Number of Students	Percent of Students
0	10,723	86.5%
1	1,012	8.2%
2	469	3.8%
3	174	1.4%
4	24	0.2%
5	0	0.0%
6	0	0.0%

Table 15–39a. Diagnostic Category Significant Differences – Algebra II

Group 1	Group 2	Yes	No	% Yes	% No
DC1	DC2	883	10,589	7.7%	92.3%
DC1	DC3	822	10,650	7.2%	92.8%
DC1	DC4	1,333	10,139	11.6%	88.4%
DC2	DC3	353	11,119	3.1%	96.9%
DC2	DC4	470	11,002	4.1%	95.9%
DC3	DC4	446	11,026	3.9%	96.1%

Note: Z value is 1.94

Table 15–39b. Total Number of Diagnostic Category Significant Differences – Algebra II

Number of Significant Differences	Number of Students	Percent of Students
0	8,850	77.1%
1	1,408	12.3%
2	789	6.9%
3	382	3.3%
4	40	0.3%
5	3	0.0%
6	0	0.0%

Table 15–40a. Diagnostic Category Significant Differences – Reading Grades 3-5

Group 1	Group 2	Yes	No	% Yes	% No
DC1	DC2	404	148,873	0.3%	99.7%
DC1	DC3	403	148,874	0.3%	99.7%
DC1	DC4	460	148,817	0.3%	99.7%
DC1	DC5	347	148,930	0.2%	99.8%
DC2	DC3	488	148,789	0.3%	99.7%
DC2	DC4	328	148,949	0.2%	99.8%
DC2	DC5	382	148,895	0.3%	99.7%
DC3	DC4	462	148,815	0.3%	99.7%
DC3	DC5	746	148,531	0.5%	99.5%
DC4	DC5	518	148,759	0.3%	99.7%

Note: Z value is 2.15

Table 15–40b. Total Number of Diagnostic Category Significant Differences – Reading Grades 3-5

Number of Significant Differences	Number of Students	Percent of Students
0	145,561	97.5%
1	3,035	2.0%
2	554	0.4%
3	113	0.1%
4	14	0.0%
5	0	0.0%
6	0	0.0%
7	0	0.0%
8	0	0.0%
9	0	0.0%
10	0	0.0%

Table 15–41a. Diagnostic Category Significant Differences – Reading/Lit Grades 6-HS

Group 1	Group 2	Yes	No	% Yes	% No
DC1	DC2	1,040	349,523	0.3%	99.7%
DC1	DC3	803	349,760	0.2%	99.8%
DC1	DC4	1,121	349,442	0.3%	99.7%
DC1	DC5	1,199	349,364	0.3%	99.7%
DC2	DC3	814	349,749	0.2%	99.8%
DC2	DC4	690	349,873	0.2%	99.8%
DC2	DC5	1,276	349,287	0.4%	99.6%
DC3	DC4	869	349,694	0.2%	99.8%
DC3	DC5	1,542	349,021	0.4%	99.6%
DC4	DC5	1,284	349,279	0.4%	99.6%

Note: Z value is 2.15

Table 15–41b. Total Number of Diagnostic Category Significant Differences – Reading/Lit Grades 6-HS

Number of Significant Differences	Number of Students	Percent of Students
0	342,271	97.6%
1	6,383	1.8%
2	1,537	0.4%
3	311	0.1%
4	58	0.0%
5	2	0.0%
6	1	0.0%
7	0	0.0%
8	0	0.0%
9	0	0.0%
10	0	0.0%

Table 15–42a. Diagnostic Category Significant Differences – Science Grades 3-5

Group 1	Group 2	Yes	No	% Yes	% No
DC1	DC2	382	28,556	1.3%	98.7%
DC1	DC3	389	28,549	1.3%	98.7%
DC1	DC4	404	28,534	1.4%	98.6%
DC2	DC3	357	28,581	1.2%	98.8%
DC2	DC4	374	28,564	1.3%	98.7%
DC3	DC4	366	28,572	1.3%	98.7%

Note: Z value is 1.94

Table 15–42b. Total Number of Diagnostic Category Significant Differences – Science Grades 3-5

Number of Significant Differences	Number of Students	Percent of Students
0	27,259	94.2%
1	1,209	4.2%
2	356	1.2%
3	105	0.4%
4	9	0.0%
5	0	0.0%
6	0	0.0%

Table 15–43a. Diagnostic Category Significant Differences – Science Grades 6-HS

Group 1	Group 2	Yes	No	% Yes	% No
DC1	DC2	2,227	104,296	2.1%	97.9%
DC1	DC3	2,446	104,077	2.3%	97.7%
DC1	DC4	2,195	104,328	2.1%	97.9%
DC2	DC3	2,367	104,156	2.2%	97.8%
DC2	DC4	2,238	104,285	2.1%	97.9%
DC3	DC4	2,046	104,477	1.9%	98.1%

Note: Z value is 1.94

Table 15–43b. Total Number of Diagnostic Category Significant Differences – Science Grades 6-HS

Number of Significant Differences	Number of Students	Percent of Students
0	97,261	91.3%
1	6,021	5.7%
2	2,311	2.2%
3	844	0.8%
4	86	0.1%
5	0	0.0%
6	0	0.0%

Table 15–44a. Diagnostic Category Significant Differences – Biology

Group 1	Group 2	Yes	No	% Yes	% No
DC1	DC2	3,029	128,403	2.3%	97.7%
DC1	DC3	3,165	128,267	2.4%	97.6%
DC1	DC4	3,496	127,936	2.7%	97.3%
DC2	DC3	2,363	129,069	1.8%	98.2%
DC2	DC4	3,993	127,439	3.0%	97.0%
DC3	DC4	3,453	127,979	2.6%	97.4%

Note: Z value is 1.94

Table 15–44b. Total Number of Diagnostic Category Significant Differences – Biology

Number of Significant Differences	Number of Students	Percent of Students
0	117,597	89.5%
1	9,310	7.1%
2	3,483	2.7%
3	945	0.7%
4	97	0.1%
5	0	0.0%
6	0	0.0%

Table 15–45a. Diagnostic Category Significant Differences – Chemistry

Group 1	Group 2	Yes	No	% Yes	% No
DC1	DC2	490	7,463	6.2%	93.8%
DC1	DC3	371	7,582	4.7%	95.3%
DC1	DC4	389	7,564	4.9%	95.1%
DC2	DC3	70	7,883	0.9%	99.1%
DC2	DC4	103	7,850	1.3%	98.7%
DC3	DC4	91	7,862	1.1%	98.9%

Note: Z value is 1.94

Table 15–45b. Total Number of Diagnostic Category Significant Differences – Chemistry

Number of Significant Differences	Number of Students	Percent of Students
0	6,963	87.6%
1	595	7.5%
2	267	3.4%
3	127	1.6%
4	1	0.0%
5	0	0.0%
6	0	0.0%

Table 15–46a. Diagnostic Category Significant Differences – Writing Grades 3-5

Group 1	Group 2	Yes	No	% Yes	% No
DC1	DC2	127	24,062	0.5%	99.5%
DC1	DC3	154	24,035	0.6%	99.4%
DC1	DC4	219	23,970	0.9%	99.1%
DC1	DC5	209	23,980	0.9%	99.1%
DC2	DC3	132	24,057	0.5%	99.5%
DC2	DC4	155	24,034	0.6%	99.4%
DC2	DC5	175	24,014	0.7%	99.3%
DC3	DC4	130	24,059	0.5%	99.5%
DC3	DC5	162	24,027	0.7%	99.3%
DC4	DC5	181	24,008	0.7%	99.3%

Note: Z value is 2.15

Table 15–46b. Total Number of Diagnostic Category Significant Differences – Writing Grades 3-5

Number of Significant Differences	Number of Students	Percent of Students
0	23,076	95.4%
1	743	3.1%
2	247	1.0%
3	87	0.4%
4	34	0.1%
5	2	0.0%
6	0	0.0%
7	0	0.0%
8	0	0.0%
9	0	0.0%
10	0	0.0%

Table 15–47a. Diagnostic Category Significant Differences – Writing/Eng Comp Grades 6-HS

Group 1	Group 2	Yes	No	% Yes	% No
DC1	DC2	455	58,051	0.8%	99.2%
DC1	DC3	521	57,985	0.9%	99.1%
DC1	DC4	707	57,799	1.2%	98.8%
DC1	DC5	595	57,911	1.0%	99.0%
DC2	DC3	490	58,016	0.8%	99.2%
DC2	DC4	612	57,894	1.0%	99.0%
DC2	DC5	524	57,982	0.9%	99.1%
DC3	DC4	551	57,955	0.9%	99.1%
DC3	DC5	506	58,000	0.9%	99.1%
DC4	DC5	573	57,933	1.0%	99.0%

Note: Z value is 2.15

Table 15–47b. Total Number of Diagnostic Category Significant Differences – Writing/Eng Comp Grades 6-HS

Number of Significant Differences	Number of Students	Percent of Students
0	54,838	93.7%
1	2,374	4.1%
2	869	1.5%
3	299	0.5%
4	110	0.2%
5	11	0.0%
6	5	0.0%
7	0	0.0%
8	0	0.0%
9	0	0.0%
10	0	0.0%

Low numbers of significant differences across diagnostic categories, along with the high disattenuated correlations between categories and exploratory factor analyses discussed in Chapter Seventeen, suggest that some diagnostic categories might be measuring essentially the same construct. While this may be the case in general, when looking at group summary information, diagnostic category scores for individual students can provide useful information to teachers. For example, while 86.2% of students showed no significant differences between Algebra I diagnostic categories, 13.8% of students did. CDT diagnostic category scores for these students along with links to instructional resources are a valuable tool for teachers.

The tables in Appendix D show the significant differences with the familywise Type I error rate at 0.10.

DISTRIBUTION OF BENCHMARK RANGES

As described in Chapter Ten, committees of Pennsylvania educators established preliminary CDT cut scores for grade 5 and above prior to the first operational use. Following the 2010–2011 school year, the preliminary cut scores were revised for the mathematics content-area tests. See Chapter Nineteen of the 2010–2011 technical report for details. Following the 2011–2012 school year, the preliminary cut scores were revised for the reading, science, and writing content-area tests. See Chapter Nineteen of the 2011–2012 technical report for details. Cut points for grades 2 through 4 were interpolated from existing cuts in grade 5 and above prior to the first operational use of CDT tests for grades 3 through 5. See Chapter Nineteen of the 2013–2014 technical report for details. Following the 2014–2015 school year, the cut scores were revised for the mathematics, reading, and writing content-area tests based on the revised PSSA tests. See Chapter Nineteen of the 2015–2016 technical report for details.

The benchmark cuts in place during the 2016–2017 school year determine the color ranges (red/green/blue) in the CDT dynamic reporting suite. The cut scores and standard errors (SE)² were used to define ranges as follows: The green range is defined as the scale score cut \pm one SE. The red range is defined as the scale minimum (200 for all CDTs except Algebra I, Geometry, Algebra II, Biology, and Chemistry which are 400) to the lower bound of the green range. The blue range is defined as the upper bound of the green range to the scale maximum (2000).

Table 15–48 shows the number and percentage of students in each benchmark range for each CDT test. Tests with multiple benchmark cuts are broken down to match the grade level of the cuts. Tests that are course-specific are not broken down. All results are based on the cut points in place for the 2016–2017 school year.

² The standard error was estimated based on simulations using the operational configuration of the CAT in terms of the content constraints and stopping rules.

Table 15–48. Number and Percent of Students in Each CDT Score Range

CDT	Red <i>N</i>	Red Percent	Green <i>N</i>	Green Percent	Blue <i>N</i>	Blue Percent
Math – G3	35,466	68.2%	14,480	27.9%	2,030	3.9%
Math – G4	38,671	64.7%	18,264	30.6%	2,829	4.7%
Math – G5	42,014	66.0%	19,214	30.2%	2,387	3.8%
Math – G6	51,635	66.7%	22,030	28.5%	3,754	4.8%
Math – G7	55,091	72.2%	18,832	24.7%	2,376	3.1%
Math – G8	46,458	75.8%	13,086	21.4%	1,734	2.8%
Algebra I	82,895	71.0%	31,069	26.6%	2,785	2.4%
Geometry	8,335	67.2%	3,374	27.2%	693	5.6%
Algebra II	8,732	76.1%	2,322	20.2%	418	3.6%
Reading – G3	24,614	55.1%	17,270	38.6%	2,818	6.3%
Reading – G4	25,677	51.5%	21,140	42.4%	3,030	6.1%
Reading – G5	26,682	48.8%	25,311	46.2%	2,735	5.0%
Reading – G6	31,467	49.7%	29,614	46.8%	2,234	3.5%
Reading – G7	35,145	53.3%	28,882	43.8%	1,903	2.9%
Reading – G8	34,311	54.4%	27,071	42.9%	1,686	2.7%
Literature	75,573	47.8%	75,948	48.0%	6,729	4.3%
Science – G3	1,615	40.3%	1,853	46.2%	542	13.5%
Science – G4	6,938	33.9%	10,326	50.4%	3,212	15.7%
Science – G5	1,683	37.8%	2,301	51.7%	468	10.5%
Science – G6	9,572	46.3%	10,009	48.4%	1,078	5.2%
Science – G7	16,820	50.7%	15,256	46.0%	1,075	3.2%
Science – G8	27,757	54.0%	22,548	43.8%	1,121	2.2%
Science – HS	839	65.2%	406	31.5%	42	3.3%
Biology	74,126	56.4%	50,686	38.6%	6,620	5.0%
Chemistry	5,258	66.1%	2,595	32.6%	100	1.3%
Writing – G3	3,674	52.9%	2,748	39.6%	521	7.5%
Writing – G4	3,804	50.7%	3,178	42.4%	522	7.0%
Writing – G5	4,605	47.3%	4,426	45.4%	711	7.3%
Writing – G6	7,648	49.2%	6,819	43.9%	1,076	6.9%
Writing – G7	9,323	51.9%	7,733	43.0%	915	5.1%
Writing – G8	8,908	50.0%	7,939	44.5%	981	5.5%
English Composition	3,010	42.0%	3,536	49.4%	618	8.6%

MULTIPLE ADMINISTRATIONS OF THE SAME CDT TEST

As previously indicated, there are a number of students who took the same CDT test multiple times. This section focuses on the number of days between administrations and both changes in scale score and benchmark range across a student's first and last administrations.

Table 15–49 shows the summary statistics for the number of days from the first to last administration.

Table 15–49. Summary Statistics for Number of Days between Administrations

CDT	<i>N</i>	Minimum	Q1	Median	Mean	Q3	Maximum
Math Grades 3-5	64,232	1	124	147	167.86	231	287
Math Grades 6-8	77,763	0	122	148	165.04	224	279
Algebra I	38,441	0	119	155	157.75	203	281
Geometry	4,228	2	118	189	169.63	224	275
Algebra II	4,001	1	114	147	158.46	202	274
Reading Grades 3-5	56,411	0	120	143	163.37	225	278
Reading/Lit Grades 6-HS	124,084	0	116	139	151.64	186	286
Science Grades 3-5	8,108	0	121	135	150.47	175	279
Science Grades 6-HS	35,358	0	121	154	163.12	217	270
Biology	44,559	0	110	147	152.61	198	278
Chemistry	2,735	14	132	159	167.97	206	273
Writing Grades 3-5	7,795	2	118	161	158.20	183	271
Writing/Eng Comp Gr 6-HS	18,851	0	112	140	148.65	175	276

Table 15–50 shows the summary statistics for the change in total scale score from the first to last administration.

Table 15–50. Summary Statistics for Change in Total Scale Score between Administrations

CDT	<i>N</i>	Minimum	Q1	Median	Mean	Q3	Maximum
Math Grades 3-5	64,232	-623	28	81	83.23	136	657
Math Grades 6-8	77,763	-999	-5	46	45.27	98	584
Algebra I	38,441	-607	-11	46	41.60	101	574
Geometry	4,228	-468	20	78	76.14	140	599
Algebra II	4,001	-584	7	74	69.09	137	491
Reading Grades 3-5	56,411	-495	-15	42	43.97	102	546
Reading/Lit Grades 6-HS	124,084	-641	-48	9	6.73	64	573
Science Grades 3-5	8,108	-481	-1	51	53.75	105	616
Science Grades 6-HS	35,358	-511	-28	23	21.32	73	519
Biology	44,559	-747	7	64	61.62	120	802
Chemistry	2,735	-410	-5	55	53.51	112	692
Writing Grades 3-5	7,795	-563	1	54	56.76	110	541
Writing/Eng Comp Gr 6-HS	18,851	-536	-29	24	21.04	74	577

Tables 15–51a through 15–51m show the changes in benchmark range from the first to last administration. For example, 16,174 students who scored in the red range on the first administration of the Math Grades 3-5 test scored in the green range on the last administration.

Table 15–51a. Change in Benchmark Range between First and Last Administrations – Math Grades 3-5

	Red–last test	Green – last test	Blue – last test
Red–first test	33,651	16,174	942
Green–first test	928	8,485	3,386
Blue–first test	2	91	573

Table 15–51b. Change in Benchmark Range between First and Last Administrations – Math Grades 6-8

	Red – last test	Green – last test	Blue – last test
Red–first test	48,099	12,936	346
Green–first test	1,864	10,367	2,886
Blue–first test	2	163	1,100

Table 15–51c. Change in Benchmark Range between First and Last Administrations – Algebra I

	Red – last test	Green – last test	Blue – last test
Red–first test	22,373	7,907	231
Green–first test	1,127	5,266	1,275
Blue–first test	0	30	232

Table 15–51d. Change in Benchmark Range between First and Last Administrations – Geometry

	Red – last test	Green – last test	Blue – last test
Red–first test	2,178	1,049	75
Green–first test	42	479	316
Blue–first test	0	9	80

Table 15–51e. Change in Benchmark Range between First and Last Administrations – Algebra II

	Red – last test	Green – last test	Blue – last test
Red–first test	2,571	917	71
Green–first test	39	220	129
Blue–first test	0	3	51

Table 15–51f. Change in Benchmark Range between First and Last Administrations – Reading Grades 3-5

	Red – last test	Green – last test	Blue – last test
Red–first test	23,222	9,018	112
Green–first test	2,082	16,840	2,865
Blue–first test	2	785	1,485

Table 15–51g. Change in Benchmark Range between First and Last Administrations – Reading/Lit Grades 6-HS

	Red – last test	Green – last test	Blue – last test
Red–first test	51,558	12,318	30
Green–first test	8,582	44,485	3,100
Blue–first test	20	2,241	1,750

Table 15–51h. Change in Benchmark Range between First and Last Administrations – Science Grades 3-5

	Red – last test	Green – last test	Blue – last test
Red–first test	1,834	1,384	55
Green–first test	274	2,711	1,012
Blue–first test	2	171	665

Table 15–51i. Change in Benchmark Range between First and Last Administrations – Science Grades 6-HS

	Red – last test	Green – last test	Blue – last test
Red–first test	14,325	5,380	25
Green–first test	2,139	11,751	1,056
Blue–first test	1	251	430

Table 15–51j. Change in Benchmark Range between First and Last Administrations – Biology

	Red – last test	Green – last test	Blue – last test
Red–first test	18,289	11,485	490
Green–first test	1,318	9,339	3,112
Blue–first test	3	65	458

Table 15–51k. Change in Benchmark Range between First and Last Administrations – Chemistry

	Red – last test	Green – last test	Blue – last test
Red–first test	1,315	843	10
Green–first test	81	436	33
Blue–first test	0	6	11

Table 15–51l. Change in Benchmark Range between First and Last Administrations – Writing Grades 3-5

	Red – last test	Green – last test	Blue – last test
Red–first test	3,225	1,405	21
Green–first test	224	2,094	546
Blue–first test	0	52	228

Table 15–51m. Change in Benchmark Range between First and Last Administrations – Writing/Eng Comp Grades 6-HS

	Red – last test	Green – last test	Blue – last test
Red–first test	7,842	2,280	10
Green–first test	1,052	5,996	889
Blue–first test	2	198	582

CHAPTER SIXTEEN: RELIABILITY

This chapter addresses the reliability of Classroom Diagnostic Tools (CDT) test scores. According to the *Standards for Educational and Psychological Testing* (AERA, APA, & NCME, 2014), the general notion of reliability/precision refers to

the consistency of scores across replications of a testing procedure, regardless of how this consistency is estimated or reported (p.33).

Frisbie (2005) highlighted several elements of reliability. First, reliability is a property of test scores, not of a test itself. Many may appreciate this distinction, but in casual usage, individuals frequently make reference to a “reliable test.” While reliability concerns test scores (and not the test specifically), it’s important to appreciate the fact that test scores can be affected by characteristics of the instrument. For example, all other things being equal, tests with more items/points tend to be more reliable than tests with fewer items/points. Second, reliability coefficients are group specific. Reliabilities tend to be higher in populations that are more heterogeneous and lower in populations that are more homogeneous. Consequently, both test length and population heterogeneity should be considered when evaluating reliability.

There are other reliability considerations that may be less evident from the *Standards’* definition yet are still important for test users to understand. While freedom from measurement error is very important, reliability is specifically concerned with random sources of error. Indeed, the degree of inconsistency due to random error sources is what determines reliability: less consistency is associated with lower reliability and more consistency is associated with higher reliability. Of course, systematic error sources also exist. These can artificially increase reliability and decrease validity. Validity is further discussed in Chapter Seventeen.

Another noteworthy issue is that multiple sources of error exist (e.g., the day of testing, the items used). However, most widely used reliability indices only reflect a single type of error. Consequently, it is important for test users to understand what specific type of error is being considered in a reliability study, and equally, if not more importantly, what types are not.

Understanding the distinction between relative error and absolute error is also important, as many reliability indices only reflect relative error. Relative error is of interest whenever the relative ordering of individuals with respect to their test performance is of interest. Understanding examinee rank-order stability is important; however, such stability might be well achieved even when the specific score values are considerably different. When specific score values are considered important (e.g., if cut scores are used), then absolute error is of interest, too. Generally, there is more error variance when considering the absolute scores of examinees, which, in turn, suggests lower reliability.

As the above discussion suggests, reliability is a complex, nonunitary notion that cannot be adequately represented by a single number. There are several reliability indices available, and these may not provide the same results (Frisbie, 2005). The remainder of this chapter covers the following:

- Reliability coefficients and their interpretation
- Unconditional and conditional standard errors of measurement (SEMs and CSEMs)
- Decision consistency

RELIABILITY INDICES

As shown below, the reliability coefficient expresses the consistency of test scores as the ratio of true score variance to total score variance. The total variance contains two components: 1) variance in true scores and 2) variance due to the imperfections in the measurement process. Put differently, total variance equals true score variance plus error variance.¹

$$\rho_x^2 = \frac{\sigma_T^2}{\sigma_X^2} = \frac{\sigma_T^2}{\sigma_T^2 + \sigma_E^2}$$

Reliability coefficients indicate the degree to which differences in test scores reflect true differences in the attribute being tested rather than random fluctuations. Total test score variance (i.e., individual differences) is partly due to real differences in the attribute (true variance) and partly due to random error in the measurement process (error variance).

Reliability coefficients range from 0.0 to 1.0. If all test score variance were true, the index would equal 1.0. The index would be 0.0 if none of the test score variance were true. Such scores would be pure random noise (i.e., all measurement error). If the index had a value of 1.0, scores would be perfectly consistent (i.e., contain no measurement error). Although values of 1.0 are never achieved in practice, it is clear that larger coefficients are more desirable, as they indicate that test scores are less influenced by random error. “How big is big enough?” and “how small is too small?” are issues considered in a later section.

As noted in the introduction, there are several different indices that can be used to estimate this ratio. One approach is referred to as internal consistency, which is derived from analyzing the performance consistency of individuals over the items within a test. As discussed below, these internal consistency indices do not take into account other sources of error, such as day-to-day variations (student health, testing environment, etc.).

COEFFICIENT ALPHA

Although a number of reliability indices exist, one of the most frequently reported for achievement tests is coefficient alpha. For example, both PSSA and Keystone programs report alpha.

FORMULA FOR ALPHA

Consider the following data matrix representing the scores of persons (rows) on items (columns):

Table 16–1. Person × Item Score (X_{pi}) Infinite (Population-Universe) Matrix

Person	Item 1	Item 2	...	Item i	...	Item k
Person 1	Y11	Y12	...	Y1 <i>i</i>	...	X1 <i>k</i>
Person 2	Y21	Y22	...	Y2 <i>i</i>	...	X2 <i>k</i>
....
Person p	Y <i>p</i> 1	Y <i>p</i> 2	...	Y <i>p</i> <i>i</i>	...	X <i>p</i> <i>k</i>
....
Person N	Y <i>N</i> 1	Y <i>N</i> 2	...	Y <i>N</i> <i>i</i>	...	X <i>N</i> <i>k</i>

Note: Adapted from Cronbach and Shavelson (2004).

¹ A covariance term is not required, as true scores and error are assumed to be uncorrelated in classical test theory.

Then, a general computational formula for alpha is as follows:

$$\alpha = \frac{N}{N-1} \left(1 - \frac{\sum_{i=1}^N \sigma_{Yi}^2}{\sigma_X^2} \right),$$

where N is the number of parts (items or testlets), σ_X^2 is the variance of the observed total test scores, and σ_{Yi}^2 is the variance of part i .

Examination of the formula for alpha indicates why the coefficient is not appropriate for CDT. In the case of CDT, tests are adaptive. Each student takes a unique set of test items rather than the same fixed form. A person item score matrix for CDT analogous to Table 16–1 would include all items in the available item pool (over 2,500 in some cases). Each student takes only a small subset of items (48–60) from the available pool. Summing the variance of more than 2,500 item scores and dividing by the variance of test scores based on 48–60 items is not appropriate. Therefore, a measure of reliability other than alpha must be used for CDT.

SPLIT-HALF RELIABILITY

Like alpha, split-half is an internal consistency index. It can be conceptualized as the extent to which an exchangeable set of items from the same domain would result in a similar rank ordering of students. Note that relative error is reflected in this index. Variation in student performance from one sample of items to the next should be of particular concern for any test user. Consider two hypothetical vocabulary tests intended for the same group of students. Each test contains different sets of unique words that are believed to be randomly equivalent, perhaps like the ones shown below:

Table 16–2. Two Hypothetical Vocabulary Tests

Test One	Test Two
Abase	Abate
Boon	Bilk
Capricious	Circuitous
Deface	Debase
....
Zealous	Zenith

If a representative group of students could take both of these tests, the correlation between the scores obtained would represent the parallel forms reliability of the test scores. However, such data-collection designs are impractical in large-scale settings and experimental confounds like fatigue and practice effects are likely to affect the results. Internal-consistency reliability indices arose in part to provide reliability measures using the data from just a single test administration. So, if students only took Test One and the split-half reliability index for those test scores was high, this would suggest that Test Two would provide a very similar rank ordering of the students if they had taken it instead. If split-half reliability was low, dissimilar rank orderings would likely be observed—again, relative-error variance is reflected.

CALCULATION OF SPLIT-HALF RELIABILITY

To determine split-half reliability for a given CDT test, such as Biology, each administration of the test was split into two halves. Each item's difficulty was considered in the split so the halves represent approximately equivalent alternative forms. Rasch ability estimates were then calculated for each of the two halves. Then, Pearson correlation was computed between the Rasch ability estimates from the two halves. Finally, the Pearson correlation was adjusted for test length using the Spearman-Brown prediction formula as described below.

$$\text{Split-Half reliability} = \frac{2r}{1+r} \quad \text{where } r = \text{Pearson correlation}$$

Split-half reliability is related to coefficient alpha in that alpha is often interpreted as the mean of all possible split-half coefficients.

FURTHER INTERPRETATIONS

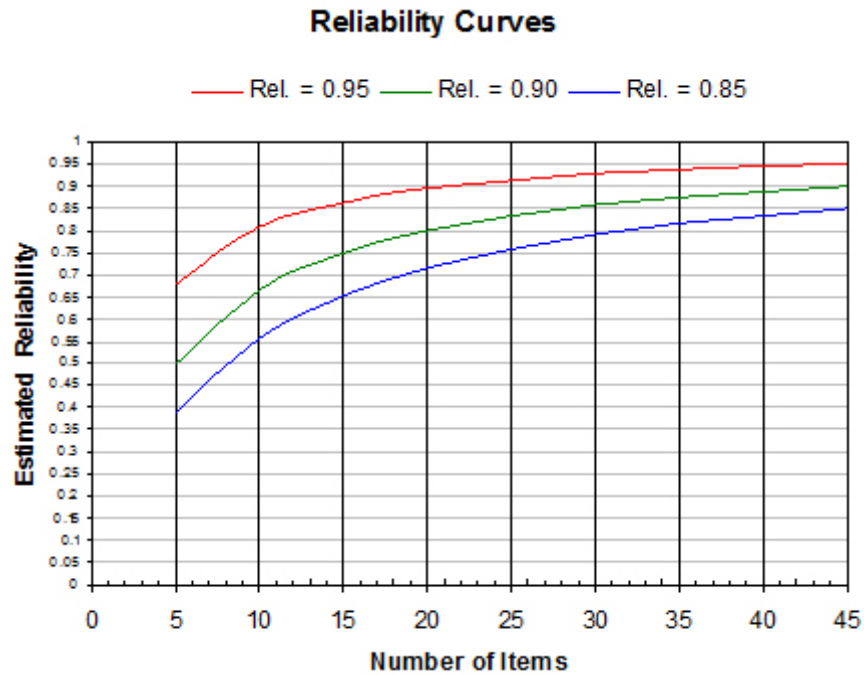
What reliability value is considered high enough? What values are considered too low? Although frequently asked for, any rules of thumb for interpreting the magnitude of reliability indices are mostly arbitrary. One approach is to research the reliabilities from similar testing instruments to see what values are commonly observed. For 2017 PSSA tests in Mathematics, English Language Arts (ELA), and Science, reliability coefficients ranged from 0.91 to 0.95. For spring 2017 Keystone exams in Algebra I, Literature, and Biology, reliability coefficients were 0.91, 0.93, and 0.92, respectively. For many other state assessment programs, reliabilities in the low 0.90s are usually the highest observed, and reliabilities in the high 0.80s are very common.

The lower a given reliability coefficient, the greater the potential for over-interpretation of the associated results. As suggested earlier, there is no firm guideline regarding how low is too low. However, as an informative point of reference, a reliability coefficient of 0.50 would mean that there is as much error variance as true-score variance in the scores.

DIAGNOSTIC CATEGORY SCORE RELIABILITY

As noted in the introduction, reliabilities tend to be higher with an increase in test length and lower with a decrease in test length. Figure 16–1 illustrates this relationship for a hypothetical 45-item test with three total score reliabilities: 0.95, 0.90, and 0.85. As an example, the curve for reliability equal to 0.90 suggests that a 10-item diagnostic category score would be expected to have a score reliability of just over 0.65. The use of the Spearman-Brown prediction formula assumes all items are exchangeable, which, in practice, they may not be. While such a chart may not perfectly model actual diagnostic category reliability, the intent is to illustrate the substantial impact that limited numbers of items can have on diagnostic category score reliability.

Figure 16–1. Example of the Relationship between Test Length and Reliability



STANDARD ERROR OF MEASUREMENT

The reliability coefficient is a unit-free indicator that reflects the degree to which scores are free of measurement error. It always ranges between 0.0 and 1.0 regardless of the test’s scale. Reliability coefficients best reflect the extent to which measurement inconsistencies may be present or absent in a group. However, they are not that useful for helping users interpret test scores. The standard error of measurement (SEM) is another indicator of test score precision that is better suited for determining the effect of measurement inconsistencies on the scores obtained by individual examinees. This is particularly so for conditional SEMs (CSEM) discussed further below.

TRADITIONAL STANDARD ERROR OF MEASUREMENT

A precise, theoretical interpretation of the SEM is somewhat unwieldy. A beginning point for understanding the concept is as follows. If everyone being tested had the same true score,² there would still be some variation in observed scores due to imperfections in the measurement process, such as random differences in attention during instruction or concentration during testing, the sampling of test items, etc. The standard error is defined as the standard deviation³ of the distribution of observed scores for students with identical true scores. Because the SEM is an index of the random variability in test scores in actual score units, it represents very important information for test score users.

The SEM formula is provided below:

$$SEM = SD\sqrt{1-reliability}$$

It indicates that the value of the SEM depends on both the reliability coefficient and the standard deviation of test scores. If the reliability were equal to 0.00 (the lowest possible value), the SEM would be equal to the standard deviation of the test scores. If test reliability were equal to 1.00 (the highest possible value), the SEM would be 0.0. In other words, a perfectly reliable test has no measurement error (Harvill, 1991). Additionally, the value of the SEM takes the group variation (i.e., score standard deviation) into account.

² True score is the score the person would receive if the measurement process were perfect.

³ The standard deviation of a distribution is a measure of the dispersion of the observations. For the normal distribution, about 16 percent of the observations are more than one standard deviation above the mean.

TRADITIONAL SEM CONFIDENCE INTERVALS

The SEM is an index of the random variability in test scores in actual score units, which is why it has such great utility for test score users. SEMs allow statements regarding the precision of individual tests scores. SEMs help place reasonable limits (Gulliksen, 1950) around observed scores through construction of an approximate score band. Often referred to as confidence intervals, these bands are constructed by taking the observed scores, X , and adding and subtracting a multiplicative factor of the SEM. As an example, students with a given true score will have observed scores that fall between ± 1 SEM about two-thirds of the time.⁴ For ± 2 SEM confidence intervals, the percentage increases to about 95 percent.

FURTHER INTERPRETATIONS

ONE SEM FOR ALL TEST SCORES

The SEM approach described above only provides a single numerical estimate for constructing the confidence intervals for examinees regardless of their score levels. In reality, however, such confidence intervals vary according to one's score. Consequently, care should be taken when using the SEM for students with extreme scores. An alternate approach is described in the next section that conditions the SEM on a student's score estimate.

GROUP SPECIFIC

As noted in the introduction, reliabilities are group specific. The same is true for SEMs because both score reliabilities and score standard deviations vary across groups.

SCALE SCORE METRIC

The SEM approach is calculated using scale scores, and as such, the resulting confidence interval bands are in the scale score metric.

TYPE OF ERROR REFLECTED

The interpretation of the SEM should be driven by the type of score reliability that underpins it. So, the CDT SEMs involve the same source of error relevant to internal consistency indices. As noted earlier, a precise technical explanation of the SEM (and resulting confidence intervals) can be unwieldy. Because of this, score users are often provided less complex interpretations.

One simpler description sometimes used is that a confidence interval represents the possible score range that one would observe if a student could be tested twice with the same instrument. Taking the same test on a different day implies the only source of random error being considered is related to the occasion of testing—such as a student might be sleepier one day than another, might be sick, or might not have eaten a good breakfast. There is a reliability index that captures this source of random error and it is referred to as the test-retest reliability coefficient. This is not the type of reliability computed for the CDT. When internal consistency reliability estimates are used, such an explanation blurs the fact that random error based on the occasion of testing is not considered.

When SEMs are derived from internal consistency reliability estimates, a better approach is to describe the confidence interval as providing reasonable bounds for the range of scores that a student might receive if he or she took an equivalent version of the test. That is, the student took a test that covered exactly the same content, but included a different set of items. As an example, if the Algebra I score was 1078 and the SEM band was 1038 to 1118, then a student would be likely to receive a score somewhere between 1038 and 1118 if he or she took a different version of the test without additional instruction.

⁴ Some prefer the following interpretation: if a student were tested an infinite number of times, the ± 1 SEM confidence intervals constructed for each score would capture the student's true score 68 percent of the time.

RESULTS AND OBSERVATIONS

Split-half reliability coefficients and associated (traditional) SEMs for CDT tests are presented in Table 16–3. Values were derived using the operational data from the 2016–2017 school year. The results are presented for total scores and each diagnostic category score. The statistics reported include number of students tested (*N*), mean scale score, standard deviation of scale score, split-half reliability, and traditional standard error of measurement (SEM) in the scale score metric.

Table 16–3. CDT Reliabilities

CDT	Score	Average Number of Points	<i>N</i>	Scale Score Mean	Scale Score SD	Split-Half Reliability	SEM in Scale Score Metric
Math Grades 3-5	Total	51.6	175,355	836.085	154.155	0.934	39.5
Math Grades 3-5	Numbers and Operations	12.9	175,355	835.211	178.104	0.793	81.0
Math Grades 3-5	Algebraic Concepts	12.9	175,355	842.543	166.318	0.766	80.5
Math Grades 3-5	Geometry	13.0	175,355	812.434	167.171	0.766	80.9
Math Grades 3-5	Measurement, Data, and Probability	12.9	175,355	842.608	175.747	0.788	80.9
Math Grades 6-8	Total	51.7	214,996	990.227	145.149	0.931	38.2
Math Grades 6-8	Numbers and Operations	12.9	214,996	1004.519	172.860	0.804	76.5
Math Grades 6-8	Algebraic Concepts	12.9	214,996	993.283	165.729	0.785	76.8
Math Grades 6-8	Geometry	12.9	214,996	987.348	147.272	0.726	77.1
Math Grades 6-8	Measurement, Data, and Probability	13.0	214,996	978.393	172.034	0.797	77.6
Algebra I	Total	51.9	116,749	1052.206	140.756	0.924	38.8
Algebra I	Operations with Real Numbers and Expressions	13.0	116,749	1051.068	174.051	0.807	76.5
Algebra I	Linear Equations & Inequalities	12.9	116,749	1063.180	151.448	0.731	78.5
Algebra I	Functions & Coordinate Geometry	12.9	116,749	1062.248	156.664	0.754	77.6
Algebra I	Data Analysis	13.0	116,749	1035.627	168.009	0.784	78.1
Geometry	Total	52.3	12,402	1101.650	148.512	0.930	39.3
Geometry	Geometric Properties	12.9	12,402	1097.464	156.702	0.757	77.3
Geometry	Congruence, Similarity, & Proofs	13.1	12,402	1113.046	170.482	0.783	79.4
Geometry	Coordinate Geometry and Right Triangles	13.1	12,402	1102.305	176.211	0.799	78.9
Geometry	Measurement	13.1	12,402	1095.856	181.100	0.816	77.7
Algebra II	Total	52.5	11,472	1131.676	149.205	0.931	39.2
Algebra II	Operations with Complex Numbers	13.5	11,472	1166.740	200.824	0.840	80.3
Algebra II	Non-linear Expressions & Equations	13.0	11,472	1124.524	174.479	0.801	77.8
Algebra II	Functions	12.9	11,472	1137.518	160.766	0.767	77.6
Algebra II	Data Analysis	13.1	11,472	1104.861	176.624	0.807	77.7

Table 16–3 (continued). CDT Reliabilities

CDT	Score	Average Number of Points	N	Scale Score Mean	Scale Score SD	Split-Half Reliability	SEM in Scale Score Metric
Reading Grades 3-5	Total	57.3	149,277	809.266	163.854	0.924	45.2
Reading Grades 3-5	Key Ideas and Details-Literature Text	11.7	149,277	808.201	203.258	0.733	105.1
Reading Grades 3-5	Key Ideas and Details-Informational Text	11.4	149,277	805.067	196.854	0.718	104.5
Reading Grades 3-5	Craft and Structure-Literature Text	11.5	149,277	829.944	184.921	0.663	107.4
Reading Grades 3-5	Craft and Structure-Informational Text	11.7	149,277	807.132	197.334	0.724	103.7
Reading Grades 3-5	Vocabulary Acquisition and Use	11.0	149,277	789.818	197.834	0.713	106.0
Reading/Lit Grades 6-HS	Total	56.7	350,563	978.272	159.929	0.923	44.4
Reading/Lit Grades 6-HS	Key Ideas and Details-Literature Text	11.7	350,563	972.786	199.398	0.721	105.3
Reading/Lit Grades 6-HS	Key Ideas and Details-Informational Text	11.4	350,563	990.006	195.904	0.715	104.5
Reading/Lit Grades 6-HS	Craft and Structure-Literature Text	11.3	350,563	980.713	178.782	0.665	103.5
Reading/Lit Grades 6-HS	Craft and Structure-Informational Text	11.4	350,563	979.165	195.524	0.720	103.5
Reading/Lit Grades 6-HS	Vocabulary Acquisition and Use	10.8	350,563	978.440	207.352	0.727	108.4
Science Grades 3-5	Total	51.4	28,938	780.677	149.322	0.923	41.5
Science Grades 3-5	The Nature of Science	12.8	28,938	771.544	174.114	0.753	86.5
Science Grades 3-5	Biological Sciences	12.8	28,938	777.645	166.449	0.738	85.2
Science Grades 3-5	Physical Sciences	12.9	28,938	787.303	161.716	0.723	85.2
Science Grades 3-5	Earth and Space Sciences	12.8	28,938	776.578	162.808	0.722	85.8
Science Grades 6-HS	Total	51.5	106,523	890.647	133.211	0.907	40.5
Science Grades 6-HS	The Nature of Science	12.9	106,523	888.538	164.255	0.752	81.8
Science Grades 6-HS	Biological Sciences	12.9	106,523	890.178	163.424	0.749	81.9
Science Grades 6-HS	Physical Sciences	12.9	106,523	901.608	147.071	0.687	82.3
Science Grades 6-HS	Earth and Space Sciences	12.9	106,523	885.138	146.460	0.681	82.8
Biology	Total	51.9	131,432	979.941	135.682	0.909	40.9
Biology	Basic Biological Principles/Chemical Basis for Life	13.0	131,432	981.665	168.768	0.761	82.5
Biology	Bioenergetics/Homeostasis and Transport	13.0	131,432	993.788	144.247	0.662	83.9
Biology	Cell Growth and Reproduction/Genetics	13.0	131,432	984.669	153.734	0.708	83.0

Table 16–3 (continued). CDT Reliabilities

CDT	Score	Average Number of Points	N	Scale Score Mean	Scale Score SD	Split-Half Reliability	SEM in Scale Score Metric
Biology	Theory of Evolution/Ecology	12.9	131,432	962.081	167.980	0.762	82.0
Chemistry	Total	52.6	7,953	993.673	110.513	0.858	41.6
Chemistry	Properties and Classification of Matter	13.0	7,953	964.507	171.852	0.772	82.1
Chemistry	Atomic Structure and the Periodic Table	13.3	7,953	1014.664	123.714	0.523	85.5
Chemistry	The Mole and Chemical Bonding	13.1	7,953	1004.975	124.329	0.534	84.9
Chemistry	Chemical Relationships and Reactions	13.2	7,953	995.606	133.567	0.605	83.9
Writing Grades 3-5	Total	54.8	24,189	820.620	173.064	0.946	40.3
Writing Grades 3-5	Quality of Writing: Focus and Organization	11.0	24,189	811.981	203.436	0.794	92.4
Writing Grades 3-5	Quality of Writing: Content and Style	11.0	24,189	811.888	196.491	0.774	93.4
Writing Grades 3-5	Quality of Writing: Editing	10.9	24,189	816.259	192.372	0.769	92.4
Writing Grades 3-5	Conventions: Punctuation, Capitalization, and Spelling	10.9	24,189	828.067	188.937	0.760	92.5
Writing Grades 3-5	Conventions: Grammar and Sentence Formation	11.0	24,189	823.545	187.860	0.759	92.2
Writing/Eng Comp Gr 6-HS	Total	55.3	58,506	942.030	156.957	0.937	39.4
Writing/Eng Comp Gr 6-HS	Quality of Writing: Focus and Organization	11.1	58,506	933.341	192.747	0.772	92.1
Writing/Eng Comp Gr 6-HS	Quality of Writing: Content and Style	11.1	58,506	943.330	191.432	0.767	92.4
Writing/Eng Comp Gr 6-HS	Quality of Writing: Editing	11.0	58,506	937.126	181.721	0.757	89.6
Writing/Eng Comp Gr 6-HS	Conventions: Punctuation, Capitalization, and Spelling	11.0	58,506	959.997	180.386	0.752	89.7
Writing/Eng Comp Gr 6-HS	Conventions: Grammar and Sentence Formation	11.0	58,506	933.500	170.386	0.723	89.6

The overall test score reliability values are high and similar to those reported for PSSA and Keystone Exams. The reliabilities at the diagnostic category level are lower due to the fact that each diagnostic category contains fewer items.

RASCH CONDITIONAL STANDARD ERRORS OF MEASUREMENT

The CSEM also indicates the degree of measurement error in scale score units, but varies as a function of a student's actual scale score. Therefore, the CSEM may be especially useful in characterizing measurement precision in the neighborhood of a score level used for decision-making—such as cut scores for identifying students who meet a performance standard.

Technically, when a Rasch model is applied, the CSEM at any given point on the ability continuum is defined as the reciprocal of the square root of the test information function derived from the Rasch scaling model:

$$CSEM(\hat{\beta}_n) = \frac{1}{\sqrt{I(\hat{\beta}_n)}},$$

where $CSEM(\hat{\beta}_n)$ is the conditional standard error of measurement and $I(\hat{\beta}_n)$ is the test information function. Test information depends on the sum of the corresponding information functions for the test items. Item information depends on each item's difficulty and conditional item score variance. The formula above utilizes the Rasch ability ($\hat{\beta}_n$) metric. The conditional standard error on the scale score (SS) metric is determined simply by multiplying the $CSEM(\hat{\beta}_n)$ by the slope (multiplicative constant, m) of the linear transformation equation used to convert the Rasch ability estimates to scale scores:

$$CSEM(SS) = CSEM(\hat{\beta}_n) * m$$

Chapter Eleven provides the linear transformation formulas for each of the CDT content areas.

RASCH CSEM CONFIDENCE INTERVALS

CSEMs also allow statements regarding the precision of individual tests scores. And like SEMs, they help place reasonable limits around observed scale scores through construction of an approximate score band. The confidence intervals are constructed by adding and subtracting a multiplicative factor of the CSEM and may be interpreted as described in the earlier section.

FURTHER INTERPRETATIONS

DIFFERENT CSEMS FOR DIFFERENT TEST SCORES

The CSEM approach provides different numerical estimates for constructing the confidence intervals for examinees depending on their specific score. On fixed form tests, the magnitude of the CSEM values is often “U” shaped, with larger CSEM values associated with lower and higher scores. With a fixed set of items, there is less information for students scoring at the extremes, and CSEM is inversely related to the information function (the more information, the lower the CSEM). Given that CDT tests are adaptive, this “U” shape tends to be less pronounced as students are presented with items targeted at their level. While there is some “U” shape at the extreme ends of the vertical scale, there is a much larger area on the scale where CSEMs are relatively flat compared to fixed form tests. The adaptive tests allow for greater information and, therefore, lower CSEMs across a wide range of the vertical scale.

GROUP SPECIFIC

Assuming reasonable model-data fit—as explored in Chapter Eight—the Rasch based CSEMs (conditioned on score level) should not vary across groups.

SCALE SCORE METRIC

The CSEM and associated confidence interval bands are in the scale score metric.

TYPE OF ERROR REFLECTED

The CSEMs reported in the dynamic reporting suite are the Rasch-based conditional standard errors of measurement described above. Score report content is considered in greater detail in Chapter Fourteen.

RESULTS AND OBSERVATIONS

Figures 16–2 through 16–14 show the average Rasch CSEMs associated with various scale score ranges based on operational data from the 2016–2017 school year. The values are fairly consistent across a large range of scores on the vertical scale. The values increase at the low and high ends of the scale score range.

Figure 16–2. Average Conditional Standard Errors for Math Grades 3-5

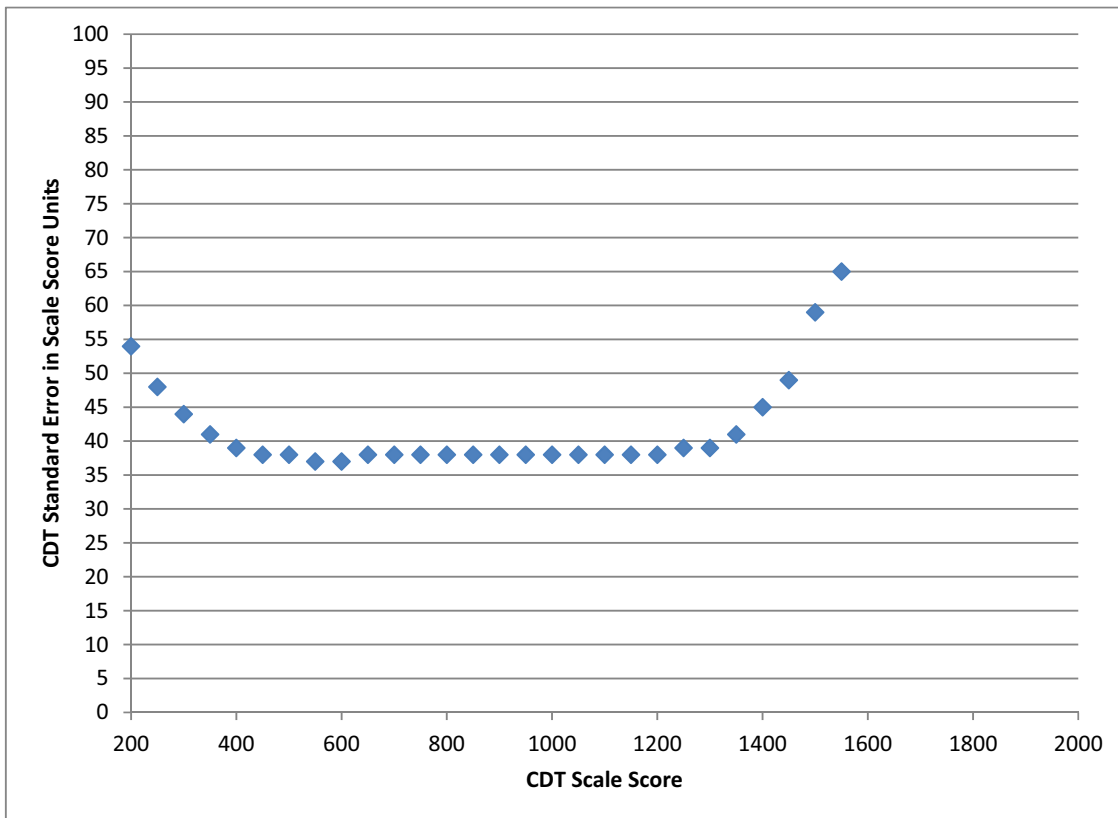


Figure 16–3. Average Conditional Standard Errors for Math Grades 6-8

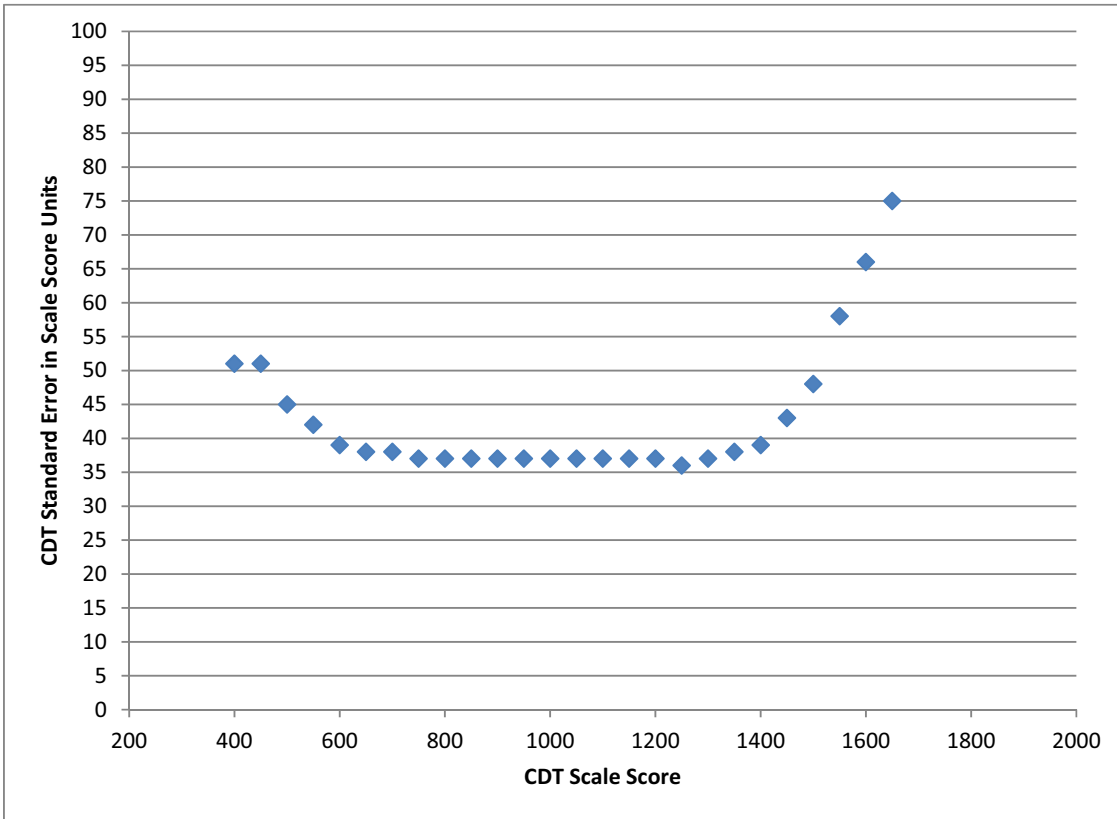


Figure 16–4. Average Conditional Standard Errors for Algebra I

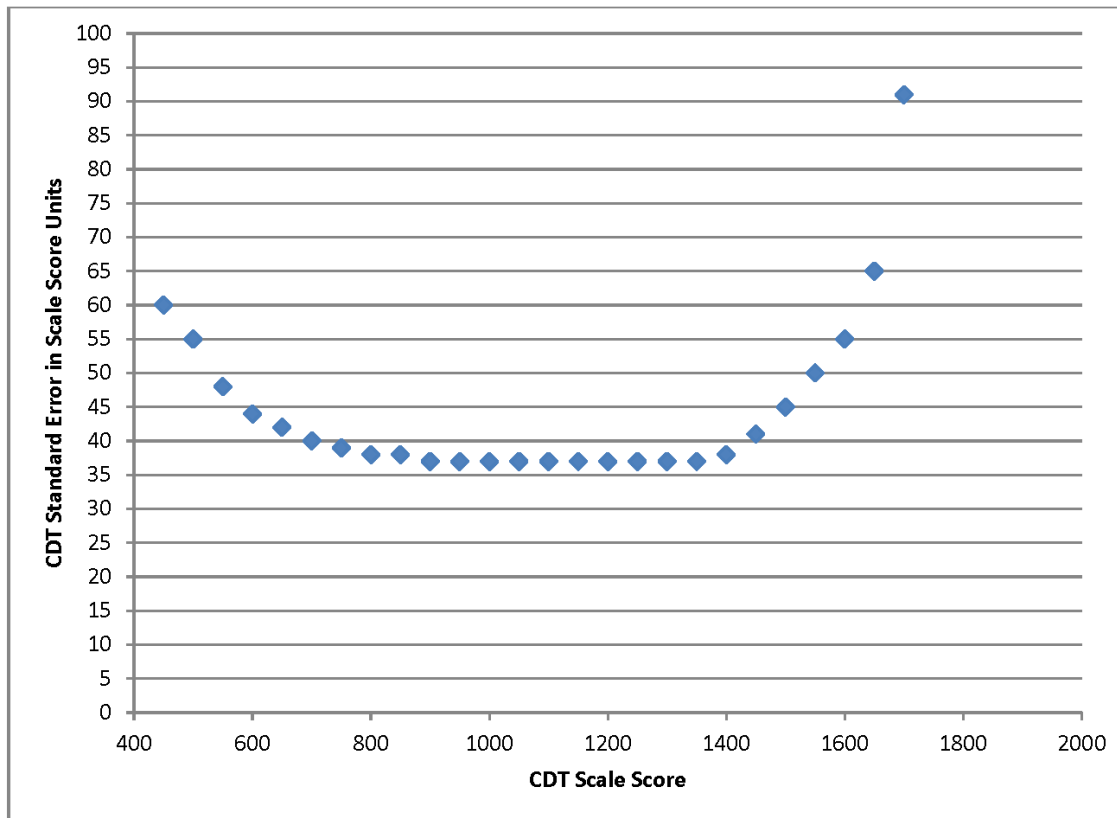


Figure 16–5. Average Conditional Standard Errors for Geometry

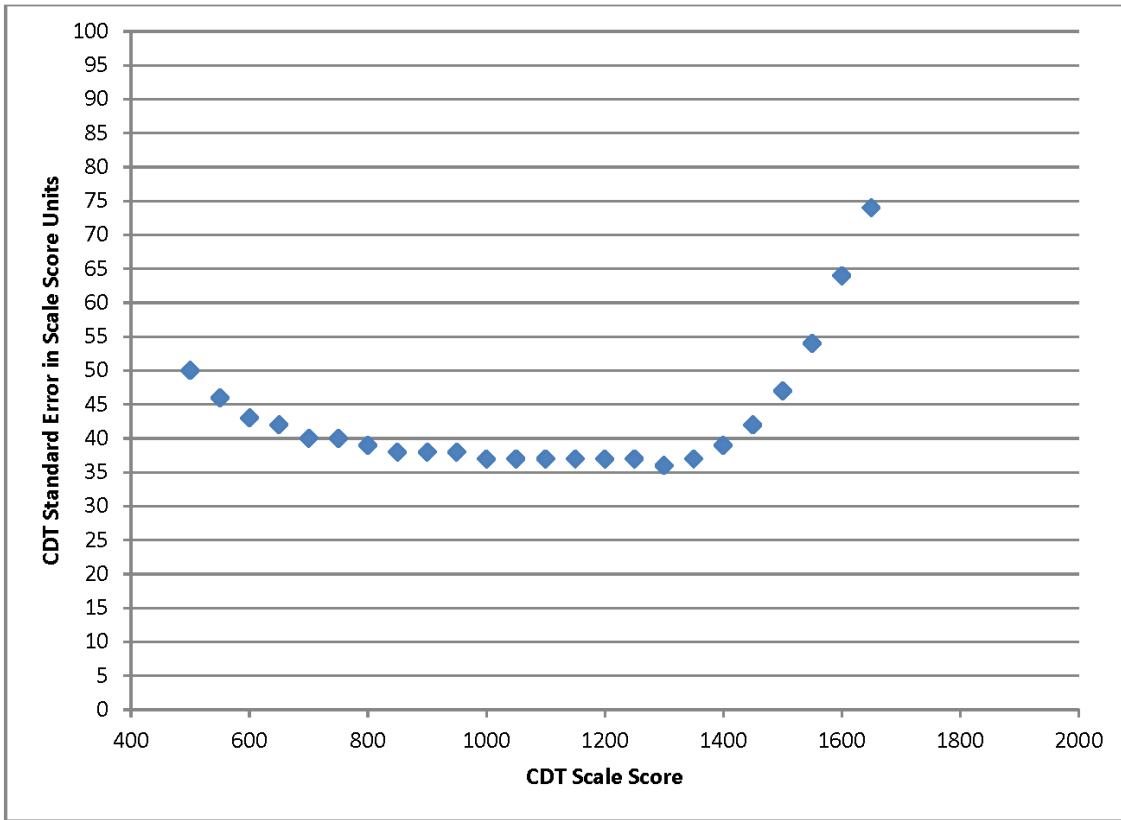


Figure 16–6. Average Conditional Standard Errors for Algebra II

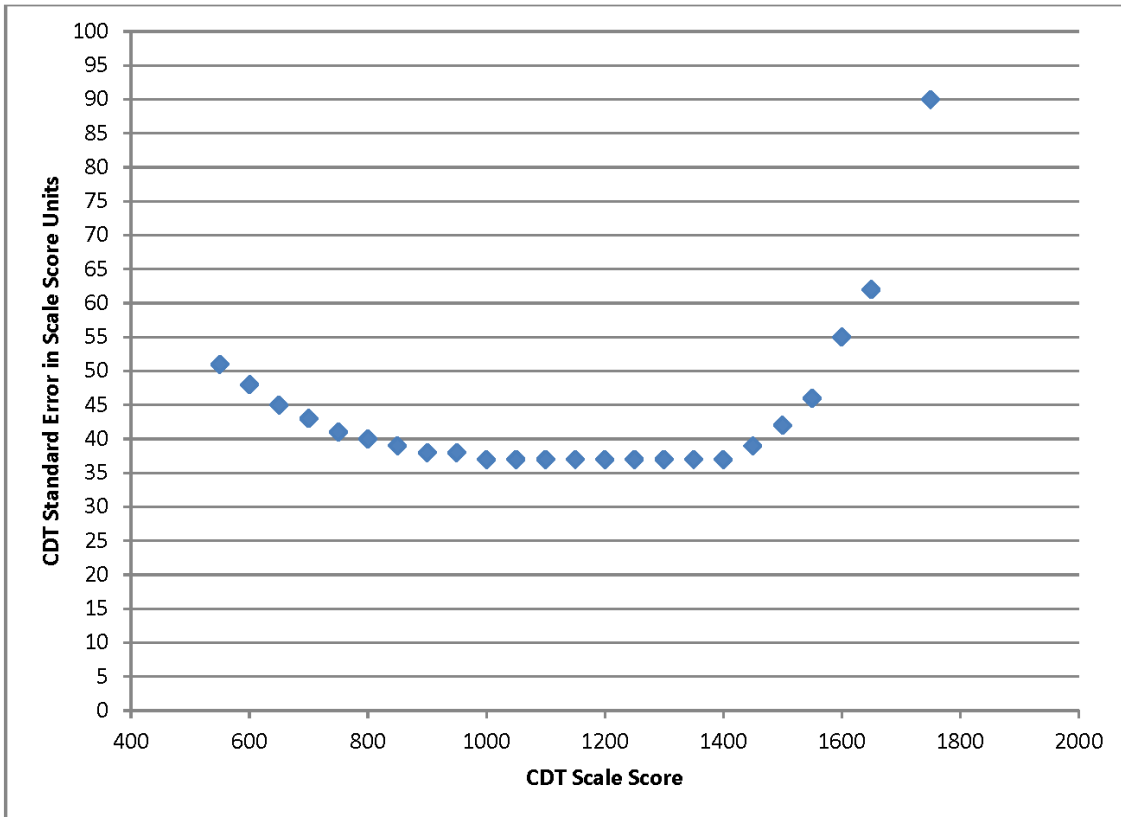


Figure 16–7. Average Conditional Standard Errors for Reading Grades 3-5

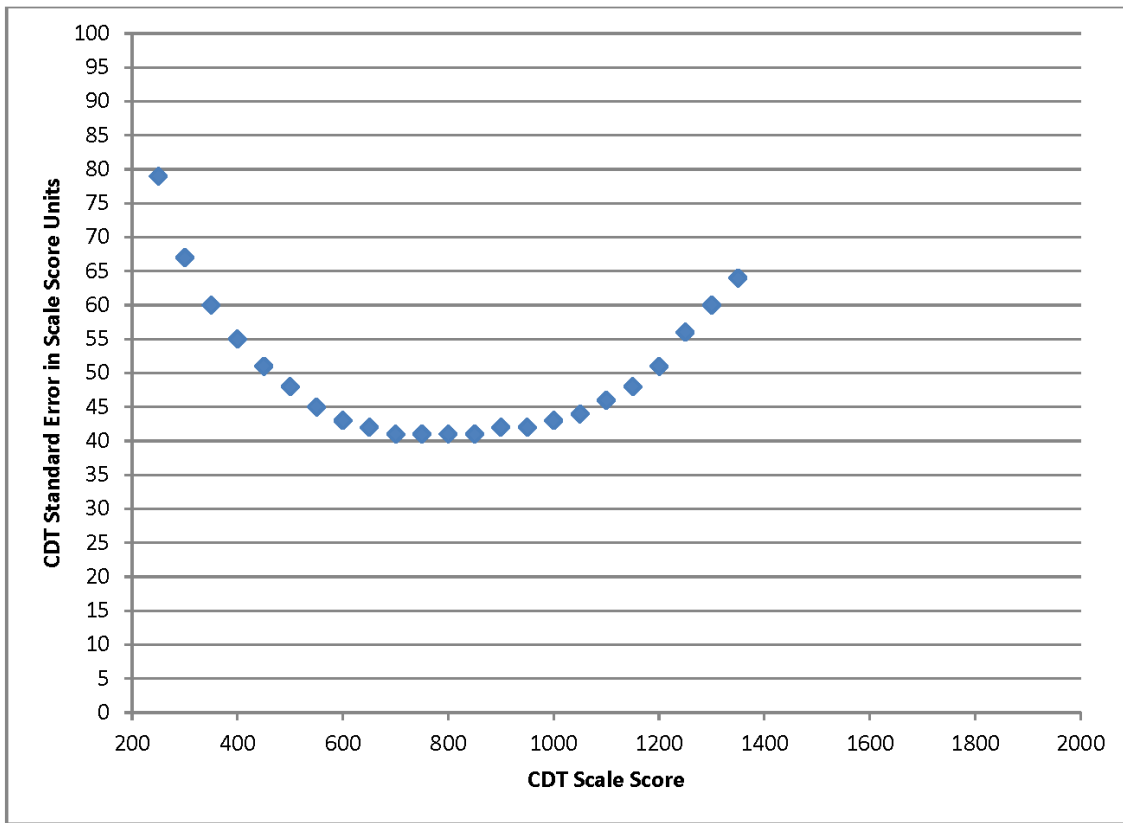
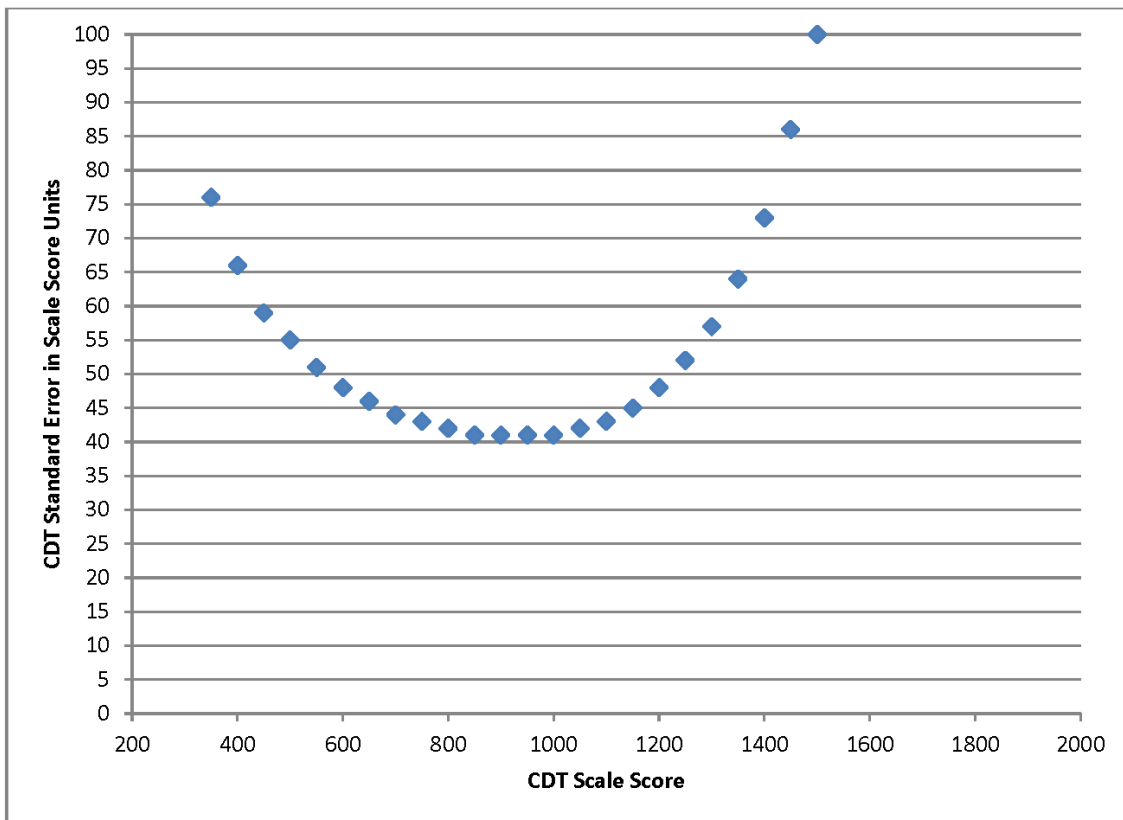


Figure 16–8. Average Conditional Standard Errors for Reading/Lit Grades 6-HS



CSEMs tend to be higher in the reading content area. This is due to the fact that CDT Reading Grades 3-5 and CDT Reading/Lit Grades 6-HS are passage-based. The items from a selected passage may not be as closely targeted to the student's level as when individual items are selected one at a time. For more information on adaptive selection of passages, see Chapter Thirteen.

Figure 16–9. Average Conditional Standard Errors for Science Grades 3-5

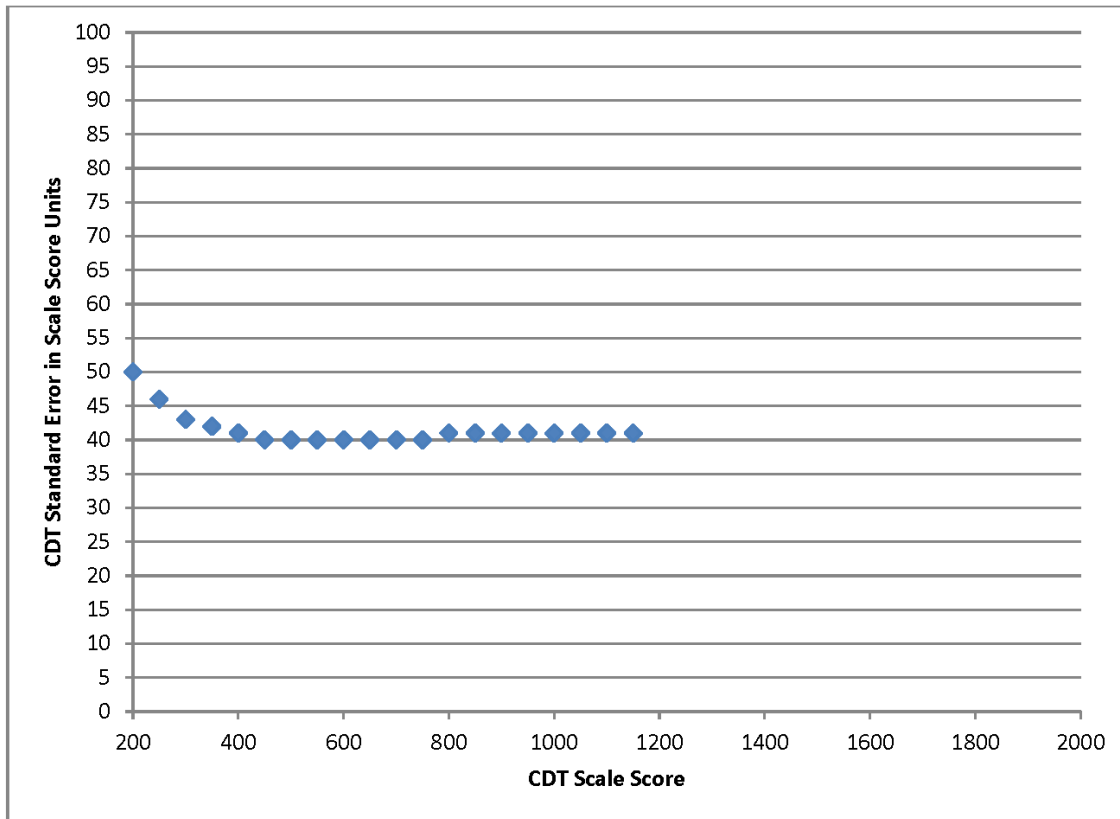


Figure 16–10. Average Conditional Standard Errors for Science Grades 6-HS

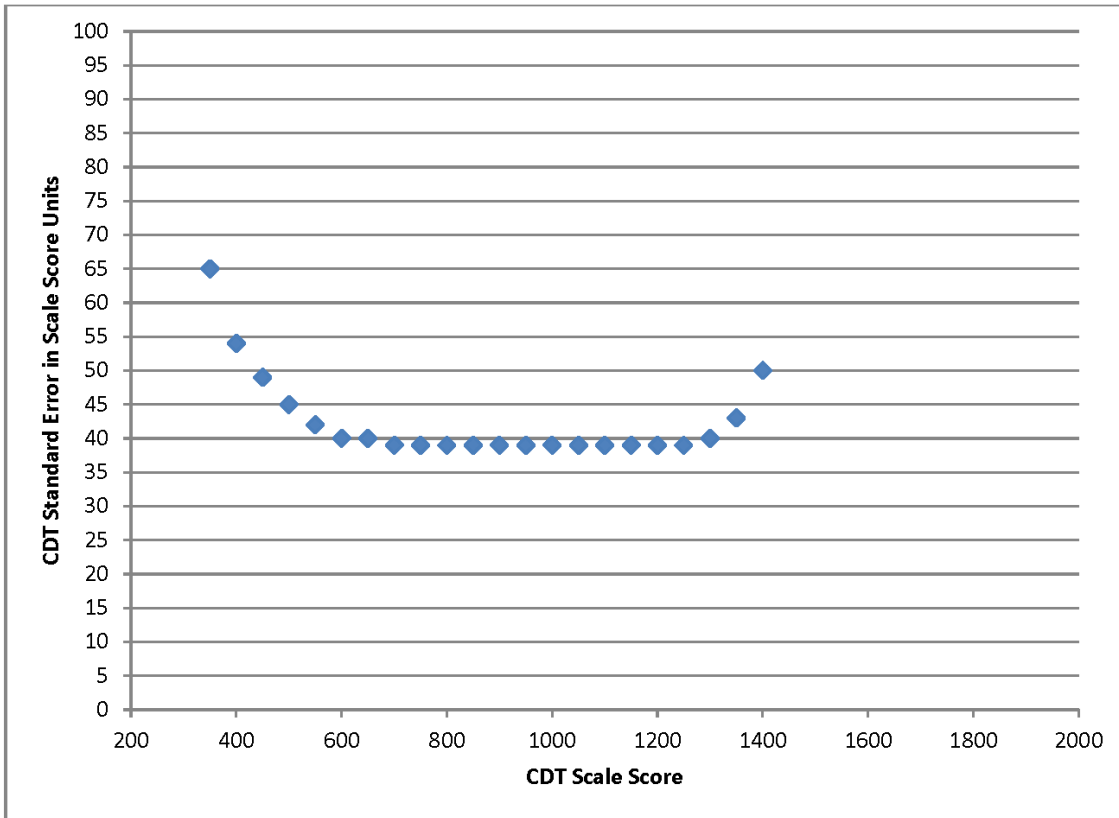


Figure 16–11. Average Conditional Standard Errors for Biology

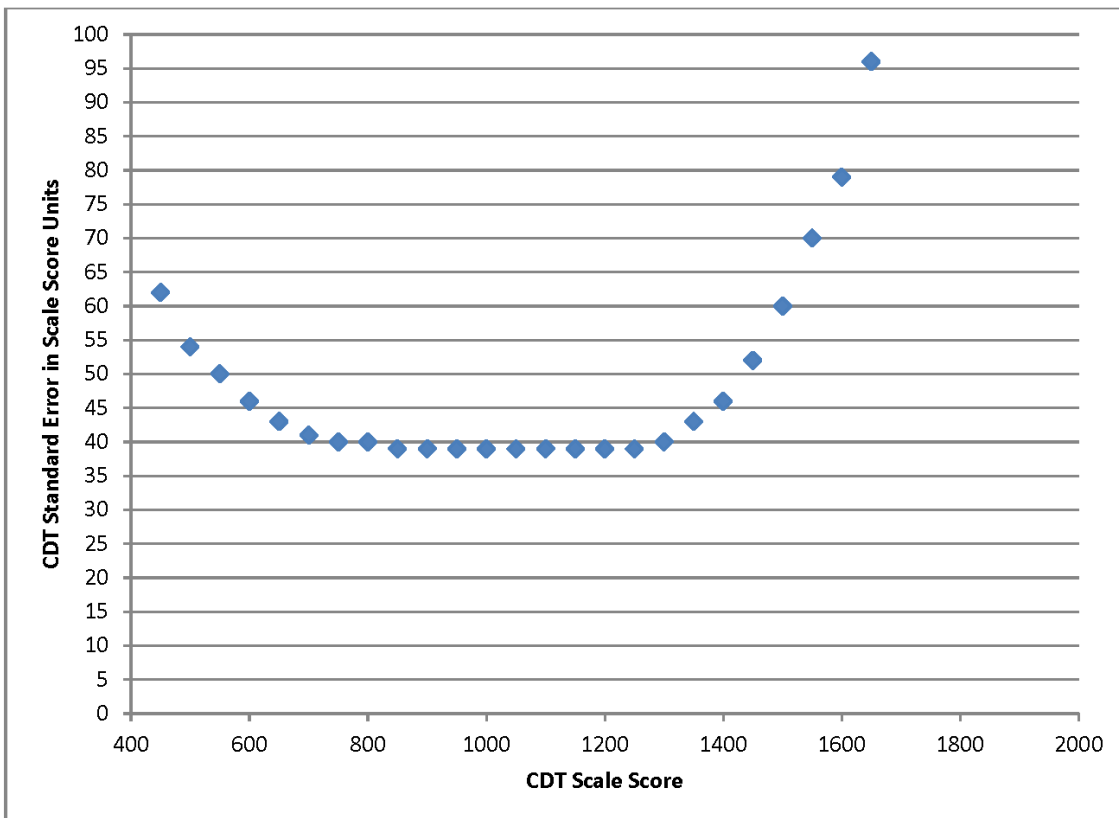


Figure 16–12. Average Conditional Standard Errors for Chemistry

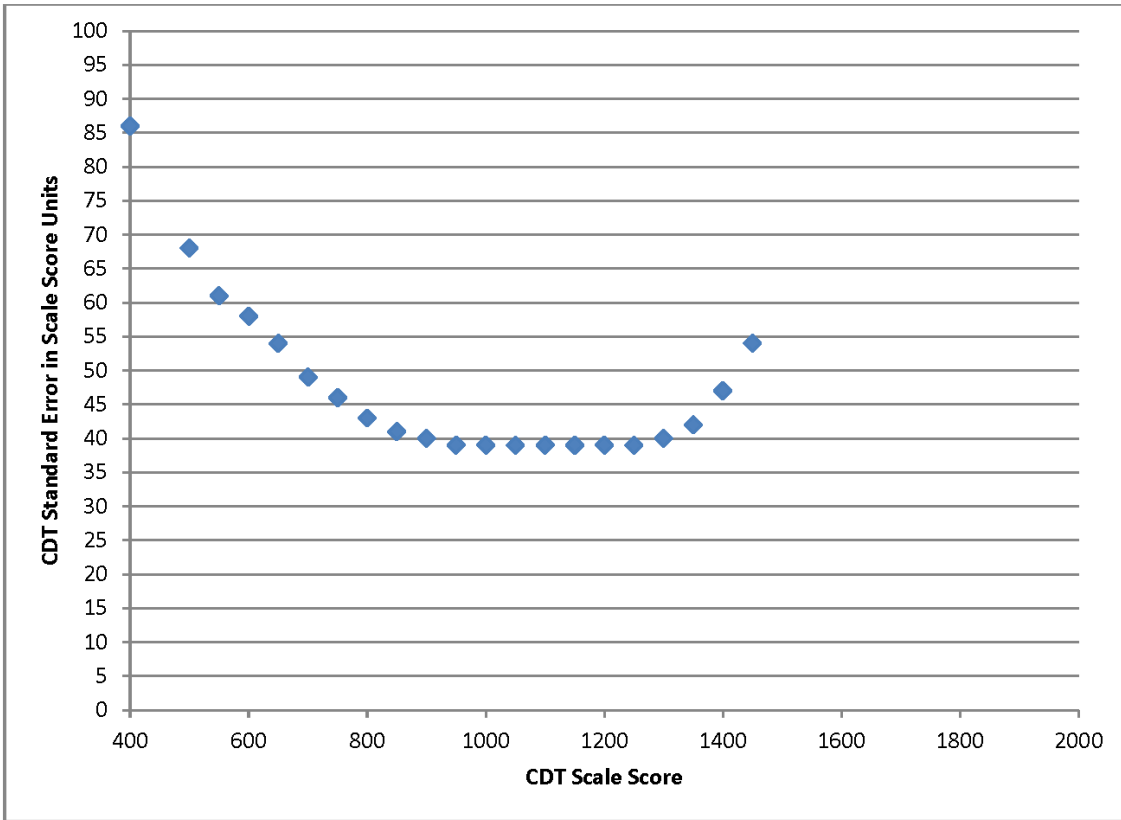


Figure 16–13. Average Conditional Standard Errors for Writing Grades 3-5

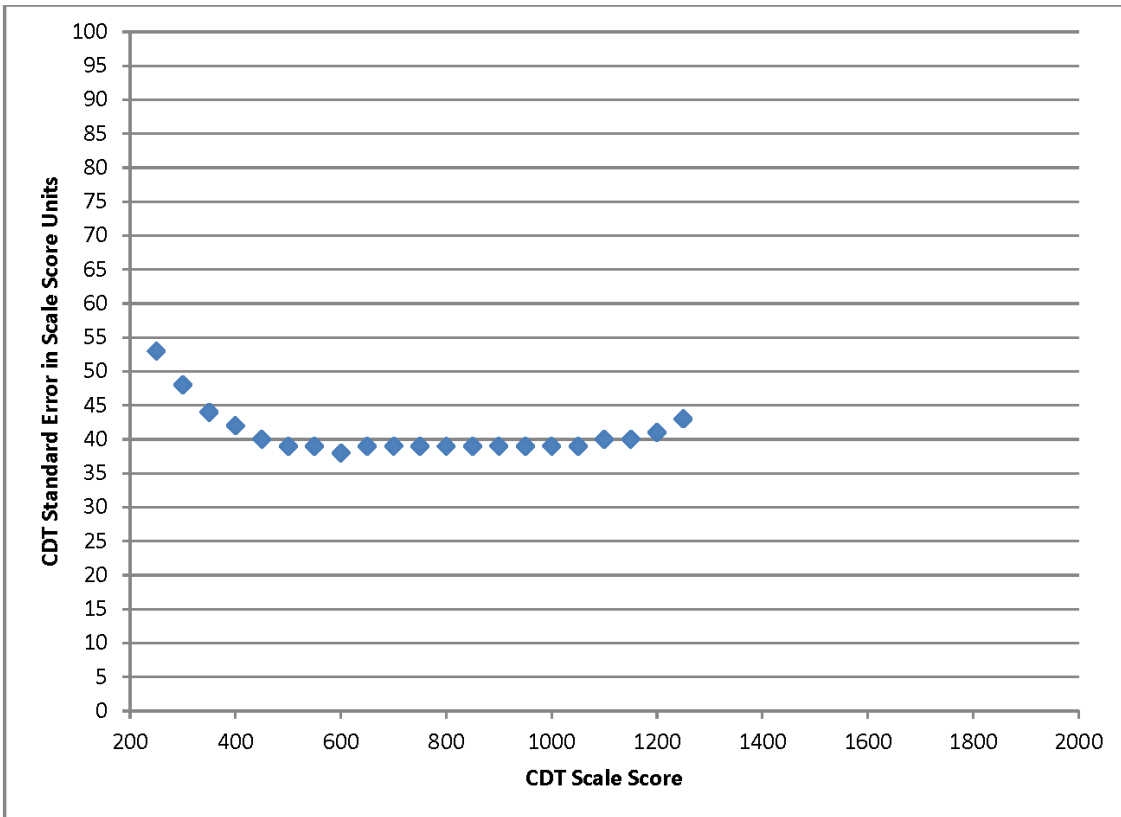
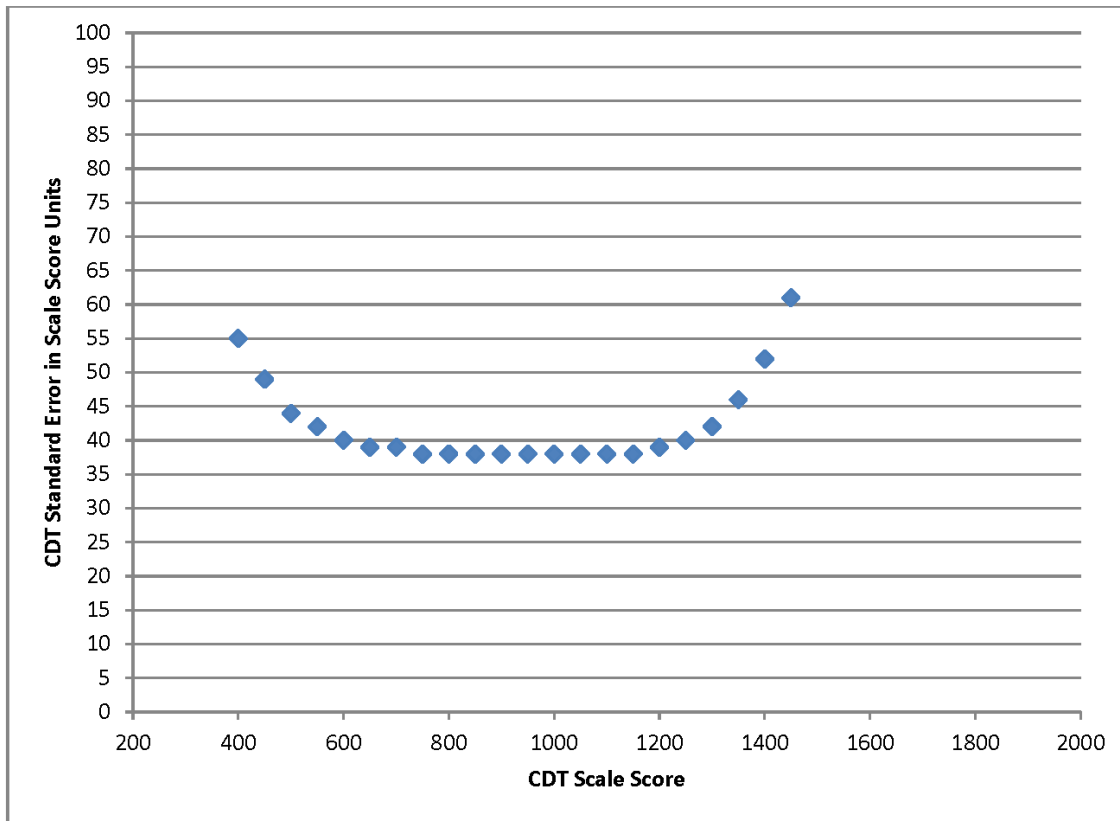


Figure 16–14. Average Conditional Standard Errors for Writing/Eng Comp Grades 6-HS



DECISION CONSISTENCY

Classification decision consistency refers to the degree to which the achievement level for each student can be replicated upon retesting using an equivalent form (Huynh, 1976). While CDT is designed to be administered multiple times in the school year to gauge progress following instruction, retesting in the context of decision consistency refers to retesting shortly after testing without additional instruction.

In a standards-based testing program, there should be great interest in knowing how accurately students are classified into performance categories. In contrast to reliability, which is concerned with the relative rank-ordering of students, it is the absolute values of student scores that are important in decision consistency.

Decision consistency answers the question “What is the agreement between the classifications based on two non-overlapping, equally difficult forms of the test?” If two parallel forms of the test were given to the same students (without additional instruction), the consistency of the measure would be reflected by the extent to which the classification decisions made based on the first set of test scores matched the decisions based on the second set of test scores. Consider Table 16–4:

Table 16–4. Pseudo-Decision Table for Three Hypothetical Categories

Test Level	Test One – Level I	Test One – Level II	Test One – Level III	Test One – Marginal
Test Two – Level I	φ_{11}	φ_{12}	φ_{13}	$\varphi_{1\bullet}$
Test Two – Level II	φ_{21}	φ_{22}	φ_{23}	$\varphi_{2\bullet}$
Test Two – Level III	φ_{31}	φ_{32}	φ_{33}	$\varphi_{3\bullet}$
Test Two – Marginal	$\varphi_{\bullet 1}$	$\varphi_{\bullet 2}$	$\varphi_{\bullet 3}$	1

If a student is classified as in one category based on Test One's score, how probable would it be that the student would be reclassified in the same category if he or she took Test Two (a non-overlapping, equally difficult form of the test)?

The proportions of correct decisions, ϕ , for three categories is computed as:

$$\phi = \phi_{11} + \phi_{22} + \phi_{33}$$

It is the sum of the diagonal entries—that is, the proportion of students classified by the two forms into exactly the same level—that would signify the overall consistency.

Since it is not feasible to repeat CDT tests one right after the other with no additional instruction in order to estimate the proportion of students who would be reclassified in the same performance levels, a statistical model needs to be imposed on the data in order to project the consistency of classifications solely using data from the available administration (Hambleton and Novick, 1973). Two well-known methods were developed by Hanson and Brennan (1990) and Livingston and Lewis (1995) utilizing specific true score models. While both measures are reported for PSSA and Keystone Exams, the statistical models imposed on the data depend upon a beta binomial distribution of raw scores. Given that the CDT is adaptive (i.e., raw scores using a response probability of 0.5 are generally equal to one-half of test length), these measures are not reported for CDT. Instead, decision consistency measures in this section are a Rasch-based index that relies on conditional standard errors (CSEMs). Also reported are results based on simulations and kappa.

The decision consistency measures reported in the section are based on the Rasch model and conditional standard errors (Stearns and Smith, 2007). Each person's scale score has an associated conditional standard error. Each of the performance levels on the test has an established benchmark cut in the scale score metric. Given these three pieces of information, the assumption of a normal distribution of measurement error allows one to calculate the probability that a student would receive the same classification on retesting. Using the statistic:

$$z = \frac{SS_n - SSBC}{SE_{SS_n}}$$

where SS_n is the scale score estimate for person n , $SSBC$ is the scale score benchmark cut, and SE_{SS_n} is the asymptotic standard error of the person scale score estimate. Using cumulative normal probabilities, the probability that a retest would produce the same performance level classification and the probability of a different performance level classification were calculated. The process was repeated for each cut score which results in a probability of classification in each of the performance levels. The total classification rate for the entire sample is the average of the probabilities of the same classification on retesting.

Table 16–5 provides an example based on CDT Algebra I operational data from the 2016–2017 school year. Recall that in the dynamic reporting suite, scores are classified into one of three color ranges—red, green, or blue. The benchmark cut points used for the analyses are the cut points in place during the 2016–2017 school year.

Table 16–5. Retest Classification Probability – Algebra I

	Red – retest	Green – retest	Blue – retest
Red – test	0.927	0.073	0.000
Green – test	0.156	0.810	0.034
Blue – test	0.000	0.186	0.814

Consider students with scores in the green range: The probability of scoring in the red range if retested is 0.156. The probability of scoring in the green range again is 0.810. The probability of scoring in the blue range is 0.034.

The total classification rate is determined by taking the weighted average of the diagonal probabilities where the weights are the number of students in the corresponding range. There are 116,749 students in the sample: 82,895 with total scores in the red range, 31,069 in the green range, and 2,785 in the blue range. The total classification rate is

$$[(0.927)*(82,895)+(0.810)*(31,069)+(0.814)*(2,785)]/116,749 = 0.893$$

In addition to the exact agreement rate, Cohen’s kappa⁵ was also calculated as 0.752.

In cases with multiple categories, an alternative to kappa, which treats every misclassification as equally important, is a weighted kappa that considers differences that are non-adjacent as more “off.” While relevant, given there are three categories, weighted kappa is the same as kappa in this case because both the red/blue and blue/red cells in Table 16–5 are zero.

3 X 3 retest classification probability tables for all CDT tests and benchmark cuts comparable to Table 16–5 are presented in Appendix E.

Stearns and Smith (2007) point out that one advantage of this method is that each student can understand how likely it is that he or she would be classified in the same range if the student took the test over without additional instruction. In addition, each student can learn the probability with which he or she would be reclassified in any of the ranges. A student scoring right at the cut score will have a lower rate of consistent classification than a student scoring in the middle of a performance level band. This can be seen in Table 16–6, which is based on the same Algebra I data set and cut points and shows for various scale scores the percent chance of scoring in each color range if retested.

⁵ Kappa, κ , takes into account the agreement occurring by chance.

Table 16–6. Retest Classification Percent for Various Scale Score Ranges – Algebra I

Scale Score Range	Number of Students	Red (% Chance in Category if Retested*)	Green (% Chance in Category if Retested*)	Blue (% Chance in Category if Retested*)	% Chance in Same Category if Retested*
< 400	0	N/A	N/A	N/A	N/A
400 to 449	0	N/A	N/A	N/A	N/A
450 to 499	1	>99.9%	0.0%	0.0%	>99.9%
500 to 549	12	>99.9%	0.0%	0.0%	>99.9%
550 to 599	98	>99.9%	0.0%	0.0%	>99.9%
600 to 649	471	>99.9%	0.0%	0.0%	>99.9%
650 to 699	1,326	>99.9%	0.0%	0.0%	>99.9%
700 to 749	2,236	>99.9%	0.0%	0.0%	>99.9%
750 to 799	3,040	>99.9%	0.0%	0.0%	>99.9%
800 to 849	4,173	>99.9%	0.0%	0.0%	>99.9%
850 to 899	5,538	>99.9%	0.0%	0.0%	>99.9%
900 to 949	7,585	>99.9%	0.0%	0.0%	>99.9%
950 to 999	10,661	>99.9%	0.0%	0.0%	>99.9%
1000 to 1049	14,710	99.7%	0.3%	0.0%	99.7%
1050 to 1099	19,255	92.6%	7.4%	0.0%	92.6%
1100 to 1149 (Red/ Green cut = 1134)	19,802	59.0%	41.0%	0.0%	64.3%
1150 to 1199	14,195	16.1%	83.8%	0.1%	83.8%
1200 to 1249	7,514	1.2%	96.0%	2.8%	96.0%
1250 to 1299 (Green/ Blue cut = 1297)	3,495	0.0%	74.2%	25.7%	74.3%
1300 to 1349	1,558	0.0%	27.3%	72.7%	72.7%
1350 to 1399	706	0.0%	2.9%	97.1%	97.1%
1400 to 1449	235	0.0%	0.1%	99.9%	99.9%
1450 to 1499	92	0.0%	0.0%	>99.9%	>99.9%
1500 to 1549	30	0.0%	0.0%	>99.9%	>99.9%
1550 to 1599	13	0.0%	0.0%	>99.9%	>99.9%
1600 to 1649	1	0.0%	0.0%	>99.9%	>99.9%
1650 to 1699	1	0.0%	0.0%	>99.9%	>99.9%
1700 to 1749	1	0.0%	0.0%	>99.9%	>99.9%
1750 to 1799	0	N/A	N/A	N/A	N/A
1800 to 1849	0	N/A	N/A	N/A	N/A
1850 to 1899	0	N/A	N/A	N/A	N/A
1900 to 1949	0	N/A	N/A	N/A	N/A
1950 to 1999	0	N/A	N/A	N/A	N/A
>= 2000	0	N/A	N/A	N/A	N/A
TOTAL	116,749	N/A	N/A	N/A	N/A

* Retest assuming no additional instruction

Tables for all CDT tests and benchmark cuts comparable to Table 16–6 are presented in Appendix E.

As previously mentioned, it is not feasible to repeat CDT tests one right after the other with no additional instruction in order to estimate decision consistency. However, simulations were run as a validation of the results based on the Stearns and Smith method. The reported Algebra I scores from 2016–2017 were used as true scores in order to simulate retest results. Table 16–7 repeats the Algebra I results from Table 16–5, shows the simulation results, and displays the differences.

Table 16–7. Compare Stearns and Smith Results to Simulation Retest Classification Probability – Algebra I

	Red – retest	Green – retest	Blue – retest
Red – Stearns & Smith	0.927	0.073	0.000
Green – Stearns & Smith	0.156	0.810	0.034
Blue – Stearns & Smith	0.000	0.186	0.814

Exact Agreement Rate = 0.893

Kappa = 0.752

	Red – retest	Green – retest	Blue – retest
Red – Simulated test	0.924	0.076	0.000
Green – Simulated test	0.159	0.807	0.034
Blue – Simulated test	0.000	0.185	0.815

Exact Agreement Rate = 0.890

Kappa = 0.745

	Red – retest	Green – retest	Blue – retest
Red – Difference	0.003	-0.003	0.000
Green – Difference	-0.003	0.003	0.000
Blue – Difference	0.000	0.001	-0.001

Exact Agreement Rate = 0.003

Kappa = 0.007

Based on results of the simulation validation, Stearns and Smith methodology was applied to all CDT tests and benchmark cut points using data from the 2016–2017 school year. Results are presented in Table 16–8.

Table 16–8. Decision Consistency for All CDT Tests

CDT	Benchmark Cut	N-count	Exact Agreement Rate	Kappa
Math Grades 3-5	Grade 3	51,976	0.899	0.779
Math Grades 3-5	Grade 4	59,764	0.890	0.775
Math Grades 3-5	Grade 5	63,615	0.889	0.766
Math Grades 6-8	Grade 6	77,419	0.900	0.789
Math Grades 6-8	Grade 7	76,299	0.906	0.778
Math Grades 6-8	Grade 8	61,278	0.908	0.762
Algebra I	Algebra I	116,749	0.893	0.752
Geometry	Geometry	12,402	0.898	0.787
Algebra II	Algebra II	11,472	0.918	0.788
Reading Grades 3-5	Grade 3	44,702	0.893	0.804
Reading Grades 3-5	Grade 4	49,847	0.890	0.802
Reading Grades 3-5	Grade 5	54,728	0.889	0.799
Reading/Lit Grades 6-HS	Grade 6	63,315	0.889	0.793
Reading/Lit Grades 6-HS	Grade 7	65,930	0.890	0.792
Reading/Lit Grades 6-HS	Grade 8	63,068	0.892	0.793
Reading/Lit Grades 6-HS	Literature	158,250	0.884	0.787
Science Grades 3-5	Grade 3	4,010	0.856	0.765
Science Grades 3-5	Grade 4	20,476	0.849	0.754
Science Grades 3-5	Grade 5	4,452	0.851	0.747
Science Grades 6-HS	Grade 6	20,659	0.867	0.761
Science Grades 6-HS	Grade 7	33,151	0.874	0.765
Science Grades 6-HS	Grade 8	51,426	0.873	0.755
Science Grades 6-HS	High School	1,287	0.908	0.808
Biology	Biology	131,432	0.871	0.758
Chemistry	Chemistry	7,953	0.879	0.738
Writing Grades 3-5	Grade 3	6,943	0.882	0.790
Writing Grades 3-5	Grade 4	7,504	0.878	0.784
Writing Grades 3-5	Grade 5	9,742	0.871	0.773
Writing/Eng Comp Gr 6-HS	Grade 6	15,543	0.880	0.787
Writing/Eng Comp Gr 6-HS	Grade 7	17,971	0.881	0.783
Writing/Eng Comp Gr 6-HS	Grade 8	17,828	0.879	0.781
Writing/Eng Comp Gr 6-HS	English Composition	7,164	0.877	0.789

See Appendix E for the 3 X 3 retest classification probability tables.

CHAPTER SEVENTEEN: VALIDITY

As defined in the *Standards for Educational and Psychological Testing* (AERA, APA, & NCME, 2014), validity refers to “the degree to which evidence and theory support the interpretations of test scores for proposed uses of tests” (p. 11). The *Standards* provides a framework for describing the sources of evidence that should be considered when evaluating validity. These sources include evidence based on 1) test content, 2) response processes, 3) the internal structure of the test, 4) the relationships between test scores and other variables, and 5) the consequences of testing. In addition, when Item Response Theory (IRT) models are used to analyze assessment data, validity considerations related to those processes should also be explored.

The validity process involves the collection of a variety of evidence to support the proposed test score interpretations and uses. The entire technical report describes the technical aspects of the Classroom Diagnostic Tools (CDT) in support of its score interpretations and uses. Each of the previous chapters contributes important evidence components that pertain to score validation: test development, test administration, test scoring, item analysis, Rasch calibration, scaling, equating, score reporting, and reliability. This chapter is used to summarize and synthesize the evidence based on the framework of the *Standards*. The purposes and intended use of the CDT is reviewed first, and then each type of validity evidence is addressed in turn.

PURPOSES AND INTENDED USES OF THE CDT

The *Standards* emphasize that validity pertains to how test scores are used. To help contextualize the evidence that will be presented below, the purposes of the CDT will be reviewed first. The CDT was developed to support teachers and students in grades 3 through 12. These tools, available at no cost to districts, are fully integrated and aligned in the Standards Aligned System (SAS) and enable educators to identify students’ academic strengths and areas of need, as well as provide links to classroom resources. The assessment is administered completely online using a computer adaptive test (CAT) model, and participation is voluntary. CDT scores are available immediately after testing in the dynamic reporting suite. In addition to the scores, this suite includes links to instructional resources. The CDT may be used multiple times throughout the school year.

EVIDENCE BASED ON TEST CONTENT

Test content validity evidence for the CDT rests greatly on establishing a link between each piece of the assessment (i.e., the items) and what students should know and be able to do as prescribed by the Assessment Anchors and Eligible Content. The CDT is intended to measure the knowledge and skills described in the Assessment Anchors and Eligible Content for grades 3 through 8 and high school in mathematics, reading, science, and writing, and courses Algebra I, Geometry, Algebra II, Literature, Biology, Chemistry, and English Composition.

Lane (1999) suggests taking the following steps to support the content validity of an assessment. In the case of the operational CDT, one should:

- evaluate the degree to which the test specifications represent and align with the knowledge and skills described in the corresponding Assessment Anchors and Eligible Content.
- evaluate the alignment between the CDT items and test specifications to ensure representativeness.
- evaluate the extent to which the curriculum aligns with the Assessment Anchors and Eligible Content.
- conduct content reviews of the CDT items using a panel of content experts to see whether items measure the intended construct or are the sources of construct-irrelevant variance.
- conduct fairness reviews of the items to avoid issues related to a specific subpopulation.
- evaluate procedures for administration and scoring such as the appropriateness of instructions to examinees, practice/training with online tools and tests, and time limits for the assessments.
- submit operational tests to third-party independent reviews.

Chapters Two through Five of this report present a considerable amount of evidence related to test content. As described in these chapters, all the items were developed and aligned with the Assessment Anchors and Eligible Content. After development and prior to field testing, items were reviewed for content and bias issues. After being field tested, items were reviewed with respect to their statistical properties and alignment with the learning progressions. Items selected for inclusion in the operational pools had to pass content, psychometric, and PDE reviews. Tests were administered according to standardized procedures with allowable accommodations.

Some of the efforts made to ensure content validity are summarized below.

- DRC used Webb’s (1999) Depth of Knowledge (DOK) model to ensure the CDT items aligned with the Assessment Anchors and Eligible Content and the Academic Content Standards in terms of both content and cognitive levels.
- DRC established detailed test and item/passage development specifications and ensured the items were sufficient in number and adequately distributed across content, levels of cognitive complexity, and levels of difficulty.
- DRC selected qualified item writers and provided training to help ensure they wrote high-quality items.
- All newly developed items were first reviewed by content specialists and editors at DRC to make sure they measured the intended Assessment Anchors and Eligible Content. Appropriateness for the intended students was also considered, as well as depth of knowledge, graphics, grammar/punctuation, language demand, and distractor reasonableness.
- Prior to field testing, the test items were submitted to content committees (composed of Pennsylvania educators) for review using, but not limited to, the following categories:
 - Overall quality and clarity
 - Anchor, Eligible Content, and/or standard alignment
 - Grade-level appropriateness
 - Difficulty level
 - Depth of knowledge
 - Appropriate sources of challenge (e.g., unintended content and skills)
 - Correct answer
 - Quality of distractors
 - Graphics
 - Appropriate language demand
 - Freedom from bias
- The items were also submitted to a Bias, Fairness, and Sensitivity Committee for review. This committee reviewed items for issues related to diversity, gender, and other pertinent factors.
- Items passing all prior hurdles were tried out in a stand-alone or embedded field-test event. Several statistical analyses were conducted on the field-test data including classical item analyses, distractor analyses, and differential item functioning (DIF) analyses. Items were again carefully reviewed by DRC staff and a committee of Pennsylvania teachers with respect to their statistical characteristics. DIF was used to detect test items that might bias test scores for particular groups. Empirical investigation of DIF strengthens the validity evidence related to score interpretations for students in particular groups by eliminating potential sources of construct-irrelevant variance.
- Following field testing, the items were submitted to content committees (composed of Pennsylvania educators) for review and alignment with the learning progressions.
- The CDT was administered according to standardized procedures with allowable accommodations. Students were given ample time to complete the tests (i.e., there were no speediness issues).

EVIDENCE BASED ON RESPONSE PROCESS

Response-process evidence is used to examine the extent to which the cognitive skills and processes employed by students match those identified in the test developer’s defined construct domains for all students and for each subgroup. Think-aloud procedures or “cognitive labs” can be used to collect this type of evidence.

For the operational 2016–2017 CDT, no cognitive lab studies were conducted to collect the response process evidence.

EVIDENCE BASED ON INTERNAL STRUCTURE

As described in the *Standards* (2014), internal-structure evidence refers to the degree to which the relationships among test items and test components conform to the construct on which the proposed test interpretations are based. For each CDT, one total test score as well as diagnostic category scores were reported (see Chapter Fourteen for more information about CDT scores). Several dimensionality studies were conducted in order to provide internal-structure evidence relating to the use of both types of scores.

ITEM-TEST CORRELATIONS

Item-test correlations are discussed in Chapter Seven and provided in Appendix B. All items in the final operational pools had values that were positive and of acceptable magnitude.

DIMENSIONALITY

Dimensionality analyses were conducted for the CDT using WINSTEPS’s principal components analyses on response residuals for each content area. Results are shown in Chapter Eight. The principal component analysis results provided evidence that each CDT test was essentially unidimensional, supporting the validity of using the total scores to estimate a student’s overall ability.

DIAGNOSTIC CATEGORY CORRELATIONS

Correlations and disattenuated correlations among diagnostic category scores for the CDT are presented below. Values were derived from the CDT operational data from the 2016–2017 school year. This data can also provide information on score dimensionality that is part of internal-structure evidence. Each CDT has either four or five diagnostic categories. Full diagnostic category names can be found in Chapter Thirteen.

Table 17–1. Correlations among Diagnostic Categories — Math Grades 3-5

Diagnostic Category	Numbers.	Alg. Con	Geo.	Meas.
Numbers.	-	-	-	-
Alg. Con.	0.757	-	-	-
Geo.	0.704	0.672	-	-
Meas.	0.758	0.759	0.690	-

Table 17–2. Correlations among Diagnostic Categories — Math Grades 6-8

Diagnostic Category	Numbers.	Alg. Con	Geo.	Meas.
Numbers.	-	-	-	-
Alg. Con.	0.727	-	-	-
Geo.	0.684	0.665	-	-
Meas.	0.724	0.701	0.677	-

Table 17–3. Correlations among Diagnostic Categories – Algebra I

Diagnostic Category	Operations.	Linear.	Functions.	Data.
Operations.	-	-	-	-
Linear.	0.644	-	-	-
Functions.	0.655	0.662	-	-
Data.	0.647	0.651	0.663	-

Table 17–4. Correlations among Diagnostic Categories – Geometry

Diagnostic Category	Properties.	Congruence.	Coordinate.	Measure.
Properties.	-	-	-	-
Congruence.	0.656	-	-	-
Coordinate.	0.671	0.669	-	-
Measure.	0.679	0.665	0.700	-

Table 17–5. Correlations among Diagnostic Categories – Algebra II

Diagnostic Category	Complex.	Non-Linear.	Functions.	Data.
Complex.	-	-	-	-
Non-Linear.	0.577	-	-	-
Functions.	0.540	0.693	-	-
Data.	0.503	0.678	0.673	-

Table 17–6. Correlations among Diagnostic Categories – Reading Grades 3-5

Diagnostic Category	Key – Lit.	Key – Info.	Craft – Lit.	Craft – Info.	Vocab.
Key – Lit.	-	-	-	-	-
Key – Info.	0.686	-	-	-	-
Craft – Lit.	0.683	0.655	-	-	-
Craft – Info.	0.682	0.691	0.657	-	-
Vocab.	0.682	0.678	0.648	0.675	-

Table 17–7. Correlations among Diagnostic Categories – Reading/Lit Grades 6-HS

Diagnostic Category	Key – Lit.	Key – Info.	Craft – Lit.	Craft – Info.	Vocab.
Key – Lit.	-	-	-	-	-
Key – Info.	0.664	-	-	-	-
Craft – Lit.	0.656	0.646	-	-	-
Craft – Info.	0.660	0.689	0.650	-	-
Vocab.	0.663	0.674	0.650	0.680	-

Table 17–8. Correlations among Diagnostic Categories — Science Grades 3-5

Diagnostic Category	Nature.	Bio.	Phys.	Earth/Space.
Nature.	-	-	-	-
Bio.	0.739	-	-	-
Phys.	0.730	0.723	-	-
Earth/Space.	0.727	0.721	0.715	-

Table 17–9. Correlations among Diagnostic Categories — Science Grades 6-HS

Diagnostic Category	Nature.	Bio.	Phys.	Earth/Space.
Nature.	-	-	-	-
Bio.	0.684	-	-	-
Phys.	0.647	0.641	-	-
Earth/Space.	0.646	0.644	0.610	-

Table 17–10. Correlations among Diagnostic Categories — Biology

Diagnostic Category	Basic.	Bioenerg.	Cell Growth.	Evol./Ecol.
Basic.	-	-	-	-
Bioenerg.	0.643	-	-	-
Cell Growth.	0.639	0.604	-	-
Evol./Ecol.	0.666	0.594	0.632	-

Table 17–11. Correlations among Diagnostic Categories — Chemistry

Diagnostic Category	Matter.	Atomic.	Mole.	Chem.
Matter.	-	-	-	-
Atomic.	0.461	-	-	-
Mole.	0.544	0.470	-	-
Chem.	0.515	0.461	0.501	-

Table 17–12. Correlations among Diagnostic Categories — Writing Grades 3-5

Diagnostic Category	Focus.	Content.	Edit.	Punct.	Gram.
Focus.	-	-	-	-	-
Content.	0.777	-	-	-	-
Edit.	0.760	0.758	-	-	-
Punct.	0.722	0.721	0.743	-	-
Gram.	0.736	0.731	0.747	0.720	-

Table 17–13. Correlations among Diagnostic Categories – Writing/Eng Comp Grades 6-HS

Diagnostic Category	Focus.	Content.	Edit.	Punct.	Gram.
Focus.	-	-	-	-	-
Content.	0.710	-	-	-	-
Edit.	0.710	0.702	-	-	-
Punct.	0.675	0.669	0.692	-	-
Gram.	0.680	0.664	0.686	0.672	-

The correlations in Tables 17–1 through 17–13 are based on the observed diagnostic category scores. These observed-score correlations are weakened by existing measurement error contained within each diagnostic category. As a result, disattenuated correlations could provide an estimate of the relationships among diagnostic categories if there were no measurement error. (An important caveat is explained further below.) The disattenuated correlation coefficients (R_{12}) can be computed by using the formula (Spearman 1904, 1910) below:

$$R_{12} = \frac{r_{12}}{\sqrt{r_{11}r_{22}}},$$

where r_{12} is the observed correlation, and r_{11} and r_{22} are the reliabilities for diagnostic categories 1 and 2. Disattenuated correlations very near 1.00 suggest that the same or very similar constructs are being measured. Values somewhat less than 1.00 suggest that different diagnostic categories are measuring slightly different aspects of the same construct. Values markedly less than 1.00 suggest the diagnostic categories reflect different constructs.

Tables 17–14 through 17–26 show the corresponding disattenuated correlations. Given that none of these diagnostic categories had perfect reliabilities (see Chapter Sixteen), the disattenuated module correlations are higher than their observed score counterparts.

Table 17–14. Disattenuated Correlations among Diagnostic Categories – Math Grades 3-5

Diagnostic Category	Numbers.	Alg. Con	Geo.	Meas.
Numbers.	-	-	-	-
Alg. Con.	0.971	-	-	-
Geo.	0.902	0.878	-	-
Meas.	0.959	0.977	0.888	-

Table 17–15. Disattenuated Correlations among Diagnostic Categories – Math Grades 6-8

Diagnostic Category	Numbers.	Alg. Con	Geo.	Meas.
Numbers.	-	-	-	-
Alg. Con.	0.915	-	-	-
Geo.	0.895	0.880	-	-
Meas.	0.905	0.887	0.891	-

Table 17–16. Disattenuated Correlations among Diagnostic Categories – Algebra I

Diagnostic Category	Operations.	Linear.	Functions.	Data.
Operations.	-	-	-	-
Linear.	0.838	-	-	-
Functions.	0.839	0.890	-	-
Data.	0.814	0.860	0.862	-

Table 17–17. Disattenuated Correlations among Diagnostic Categories – Geometry

Diagnostic Category	Properties.	Congruence.	Coordinate.	Measure.
Properties.	-	-	-	-
Congruence.	0.852	-	-	-
Coordinate.	0.862	0.845	-	-
Measure.	0.864	0.832	0.866	-

Table 17–18. Disattenuated Correlations among Diagnostic Categories – Algebra II

Diagnostic Category	Complex.	Non-Linear.	Functions.	Data.
Complex.	-	-	-	-
Non-Linear.	0.703	-	-	-
Functions.	0.673	0.883	-	-
Data.	0.611	0.843	0.855	-

Table 17–19. Disattenuated Correlations among Diagnostic Categories – Reading Grades 3-5

Diagnostic Category	Key – Lit.	Key – Info.	Craft – Lit.	Craft – Info.	Vocab.
Key – Lit.	-	-	-	-	-
Key – Info.	0.945	-	-	-	-
Craft – Lit.	0.980	0.949	-	-	-
Craft – Info.	0.937	0.959	0.949	-	-
Vocab.	0.944	0.947	0.942	0.940	-

Table 17–20. Disattenuated Correlations among Diagnostic Categories – Reading/Lit Grades 6-HS

Diagnostic Category	Key – Lit.	Key – Info.	Craft – Lit.	Craft – Info.	Vocab.
Key – Lit.	-	-	-	-	-
Key – Info.	0.925	-	-	-	-
Craft – Lit.	0.947	0.937	-	-	-
Craft – Info.	0.916	0.960	0.939	-	-
Vocab.	0.915	0.935	0.935	0.941	-

Table 17–21. Disattenuated Correlations among Diagnostic Categories — Science Grades 3-5

Diagnostic Category	Nature.	Bio.	Phys.	Earth/Space.
Nature.	-	-	-	-
Bio.	0.991	-	-	-
Phys.	0.989	0.990	-	-
Earth/Space.	0.986	0.988	0.989	-

Table 17–22. Disattenuated Correlations among Diagnostic Categories — Science Grades 6-HS

Diagnostic Category	Nature.	Bio.	Phys.	Earth/Space.
Nature.	-	-	-	-
Bio.	0.911	-	-	-
Phys.	0.900	0.894	-	-
Earth/Space.	0.903	0.903	0.893	-

Table 17–23. Disattenuated Correlations among Diagnostic Categories — Biology

Diagnostic Category	Basic.	Bioenerg.	Cell Growth.	Evol./Ecol.
Basic.	-	-	-	-
Bioenerg.	0.906	-	-	-
Cell Growth.	0.871	0.882	-	-
Evol./Ecol.	0.875	0.837	0.860	-

Table 17–24. Disattenuated Correlations among Diagnostic Categories — Chemistry

Diagnostic Category	Matter.	Atomic.	Mole.	Chem.
Matter.	-	-	-	-
Atomic.	0.725	-	-	-
Mole.	0.848	0.890	-	-
Chem.	0.753	0.819	0.882	-

Table 17–25. Disattenuated Correlations among Diagnostic Categories — Writing Grades 3-5

Diagnostic Category	Focus.	Content.	Edit.	Punct.	Gram.
Focus.	-	-	-	-	-
Content.	0.991	-	-	-	-
Edit.	0.973	0.982	-	-	-
Punct.	0.929	0.939	0.972	-	-
Gram.	0.949	0.954	0.978	0.948	-

Table 17–26. Disattenuated Correlations among Diagnostic Categories – Writing/Eng Comp Grades 6-HS

Diagnostic Category	Focus.	Content.	Edit.	Punct.	Gram.
Focus.	-	-	-	-	-
Content.	0.922	-	-	-	-
Edit.	0.928	0.920	-	-	-
Punct.	0.886	0.881	0.917	-	-
Gram.	0.911	0.892	0.927	0.910	-

In reviewing the differences between the simple correlations and the disattenuated ones, it is clear that the impact of the “less than perfect” reliabilities on the disattenuated correlations is large for most of the tests. For example, Science Grades 3-5 found virtually no differences between any pair of disattenuated correlations. This indicates that, for the majority of students, the diagnostic category scores are merely shorter versions of what the total scores are measuring. Note that, while the theoretical maximum for observed correlations is 1.00, disattenuated correlations can exceed this value when high observed correlations are combined with low reliabilities. The other tests’ disattenuated correlations are somewhat lower, generally in the range of .86 to .93. The test with the lowest disattenuated correlations is Algebra II, with Complex Numbers showing the most uniqueness.

As a practical consideration, and despite these results, diagnostic category scores for individual students may still provide useful information to the teacher. For example, a student may still have statistically significant differences between pairs of diagnostic scores (“areas of needs” versus “strengths to build on”) with large observed scale score differences. The diagnostic reporting suite shows these differences in a graphic that includes the level of precision for each scale score in the form of an “error band.” The error band is the scale score \pm one conditional standard error. Any two pairs of scores can be interpreted as statistically different if their respective error bands do not overlap. More details about the use and interpretation of error bands may be found in Chapter Fourteen. Additionally, Chapter Fifteen provides summary information about conditional standard errors for each diagnostic category and tables that indicate the incidence of non-overlapping error bands in the 2016–2017 operational testing population.

EXPLORATORY FACTOR ANALYSIS

In order to further explore the internal structure of each CDT, an exploratory factor analysis (EFA) of the diagnostic category scores was conducted. Operational data from the 2016–2017 school year was used to create the observed correlation matrices shown in Tables 17–1 through 17–13. These, in turn, were used in the EFA. In the *Statistical Package for the Social Sciences (SPSS)*, Principal Axis Factor extraction was utilized with an oblique rotation (Promax) of the initial factor solution to improve interpretability. Oblique rotations allow for correlated factors.

Tables 17–27 through 17–39 present the eigenvalues and the explained variance for the extracted factors. Figures 17–1 through 17–13 are scree plot graphs of the eigenvalues against the factor number. In general, the first factor accounts for approximately 75% of the total variance for all CDT tests except Chemistry, while the second factor accounts for approximately 9% of the total variance. For Chemistry, the first factor accounts for 62% of the total variance, while the second factor accounts for 14%. For each CDT, only the first factor had an eigenvalue greater than 1.0, typically suggesting a one-factor solution using the Kaiser criterion.

Table 17–27. Eigenvalues and Explained Variance for Math Grades 3-5 Diagnostic Categories

Factor	Eigenvalue	Percent
1	3.17	79.28
2	0.35	8.71
3	0.24	6.03
4	0.24	5.97

Figure 17–1. Scree Plot for Math Grades 3-5 Diagnostic Categories

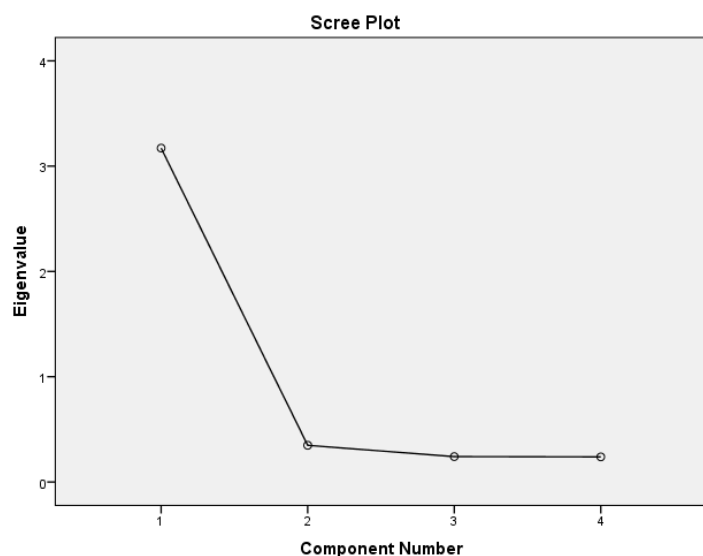


Table 17–28. Eigenvalues and Explained Variance for Math Grades 6-8 Diagnostic Categories

Factor	Eigenvalue	Percent
1	3.09	77.24
2	0.35	8.67
3	0.30	7.45
4	0.27	6.65

Figure 17–2. Scree Plot for Math Grades 6-8 Diagnostic Categories

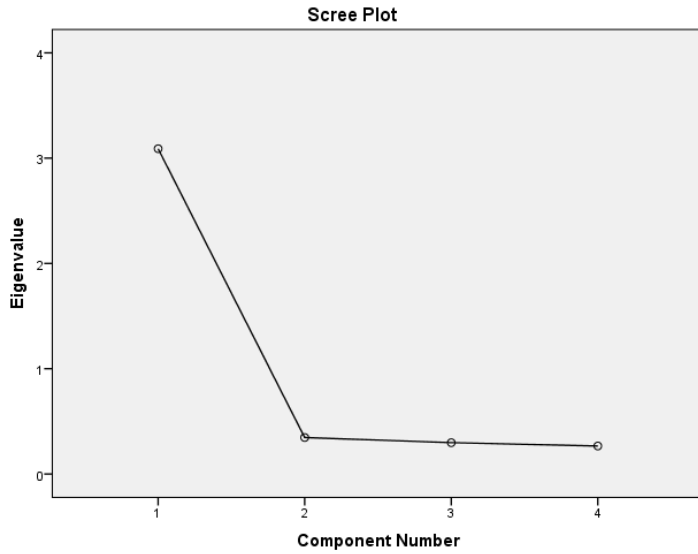


Table 17–29. Eigenvalues and Explained Variance for Algebra I Diagnostic Categories

Factor	Eigenvalue	Percent
1	2.96	74.03
2	0.36	8.93
3	0.35	8.72
4	0.33	8.32

Figure 17–3. Scree Plot for Algebra I Diagnostic Categories

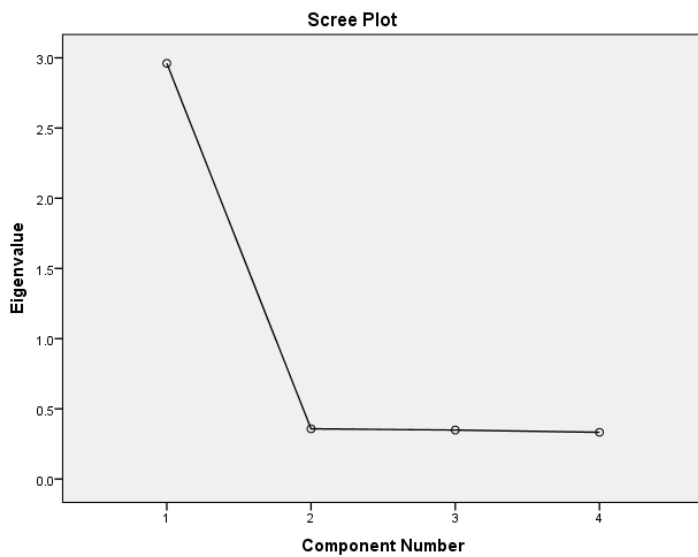


Table 17–30. Eigenvalues and Explained Variance for Geometry Diagnostic Categories

Factor	Eigenvalue	Percent
1	3.02	75.50
2	0.35	8.68
3	0.33	8.34
4	0.30	7.48

Figure 17–4. Scree Plot for Geometry Diagnostic Categories

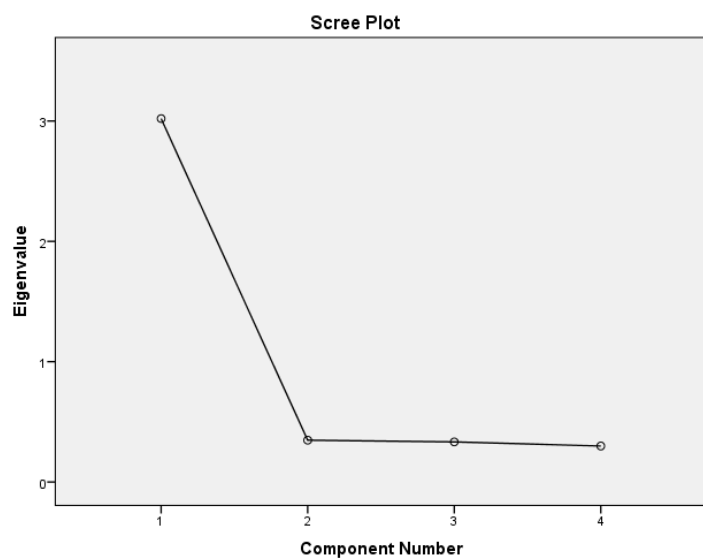


Table 17–31. Eigenvalues and Explained Variance for Algebra II Diagnostic Categories

Factor	Eigenvalue	Percent
1	2.84	70.97
2	0.53	13.32
3	0.33	8.14
4	0.30	7.56

Figure 17–5. Scree Plot for Algebra II Diagnostic Categories

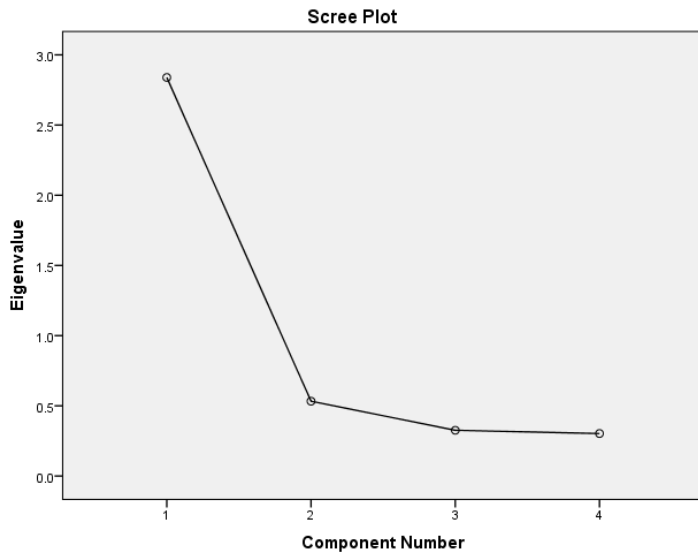


Table 17–32. Eigenvalues and Explained Variance for Reading Grades 3-5 Diagnostic Categories

Factor	Eigenvalue	Percent
1	3.70	73.90
2	0.36	7.25
3	0.33	6.58
4	0.31	6.20
5	0.30	6.07

Figure 17–6. Scree Plot for Reading Grades 3-5 Diagnostic Categories

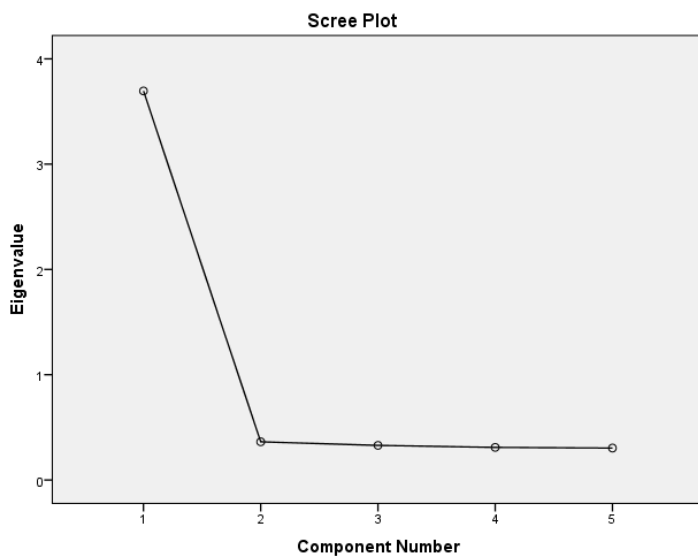


Table 17–33. Eigenvalues and Explained Variance for Reading/Lit Grades 6-HS Diagnostic Categories

Factor	Eigenvalue	Percent
1	3.65	73.06
2	0.37	7.40
3	0.34	6.81
4	0.33	6.54
5	0.31	6.19

Figure 17–7. Scree Plot for Reading/Lit Grades 6-HS Diagnostic Categories

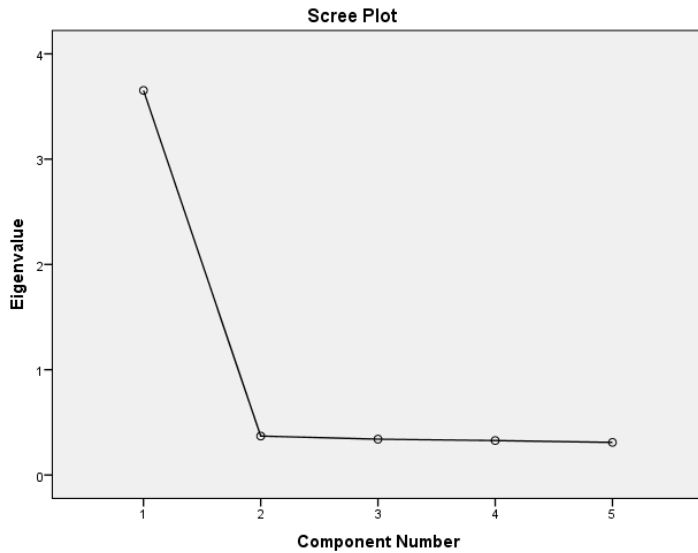


Table 17–34. Eigenvalues and Explained Variance for Science Grades 3-5 Diagnostic Categories

Factor	Eigenvalue	Percent
1	3.18	79.44
2	0.29	7.13
3	0.28	6.94
4	0.26	6.49

Figure 17–8. Scree Plot for Science Grades 3-5 Diagnostic Categories

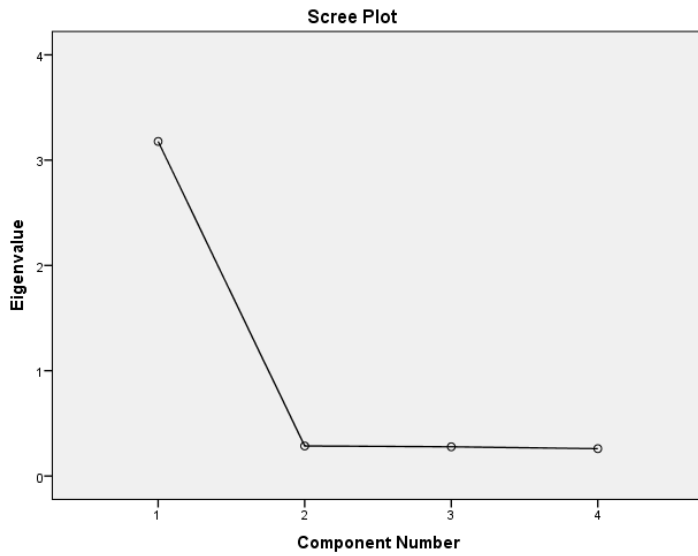


Table 17–35. Eigenvalues and Explained Variance for Science Grades 6-HS Diagnostic Categories

Factor	Eigenvalue	Percent
1	2.94	73.41
2	0.39	9.75
3	0.36	8.94
4	0.32	7.89

Figure 17–9. Scree Plot for Science Grades 6-HS Diagnostic Categories

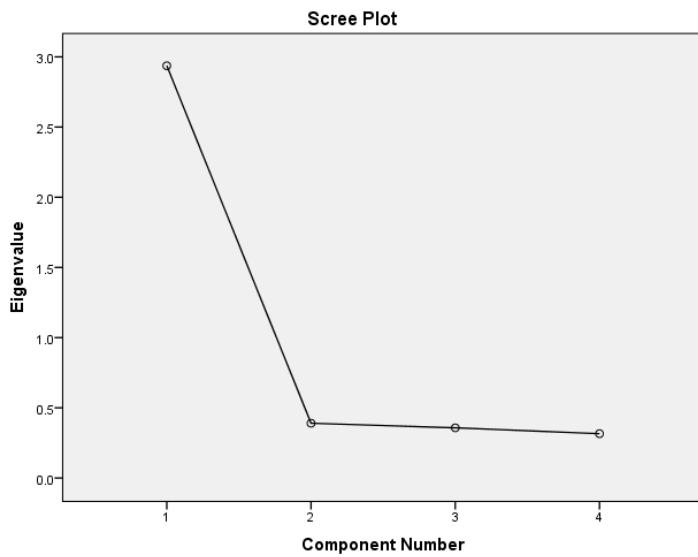


Table 17–36. Eigenvalues and Explained Variance for Biology Diagnostic Categories

Factor	Eigenvalue	Percent
1	2.89	72.24
2	0.41	10.32
3	0.37	9.37
4	0.32	8.07

Figure 17–10. Scree Plot for Biology Diagnostic Categories

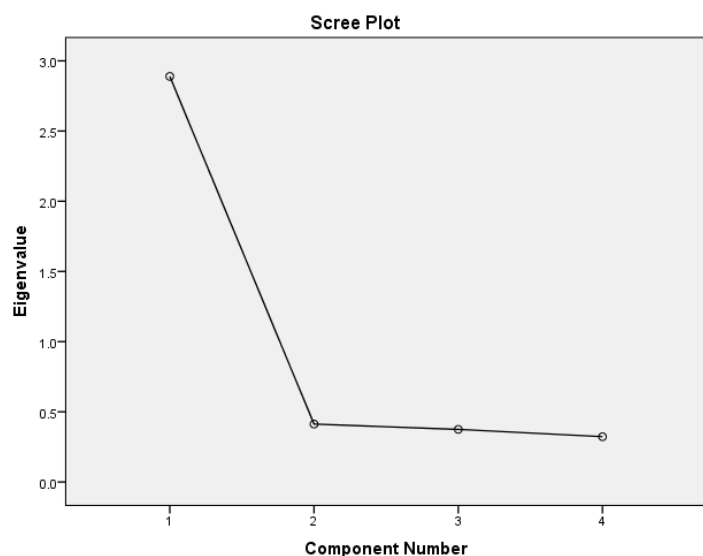


Table 17–37. Eigenvalues and Explained Variance for Chemistry Diagnostic Categories

Factor	Eigenvalue	Percent
1	2.48	61.93
2	0.56	14.09
3	0.50	12.62
4	0.45	11.35

Figure 17–11. Scree Plot for Chemistry Diagnostic Categories

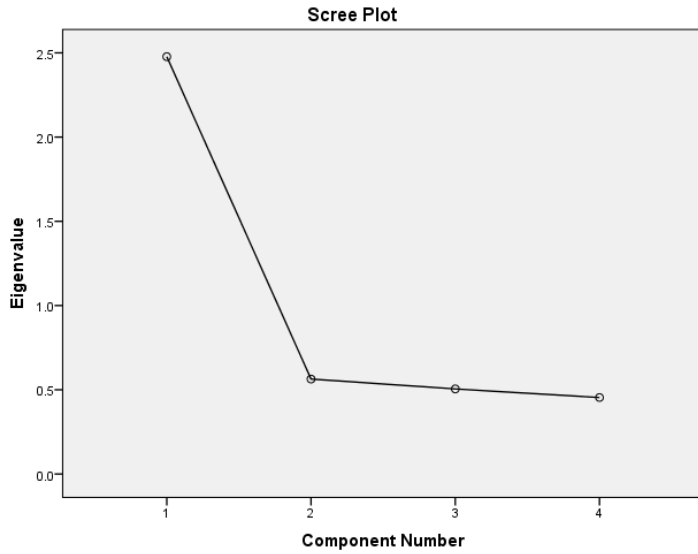


Table 17–38. Eigenvalues and Explained Variance for Writing Grades 3-5 Diagnostic Categories

Factor	Eigenvalue	Percent
1	3.97	79.33
2	0.30	5.95
3	0.28	5.52
4	0.24	4.75
5	0.22	4.46

Figure 17–12. Scree Plot for Writing Grades 3-5 Diagnostic Categories

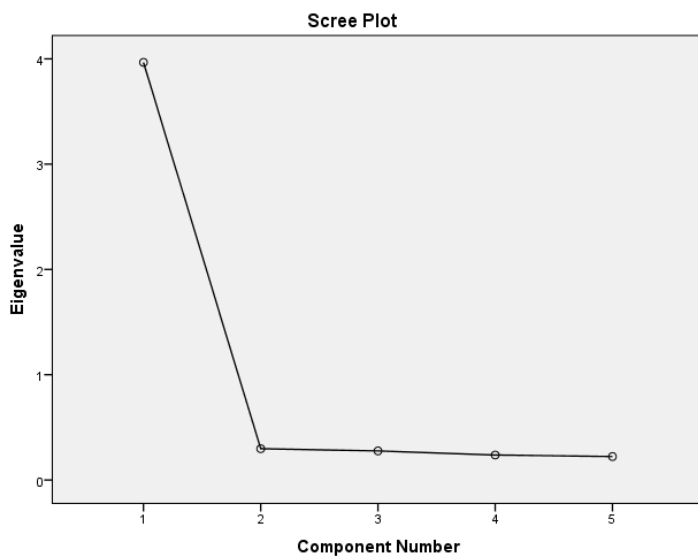
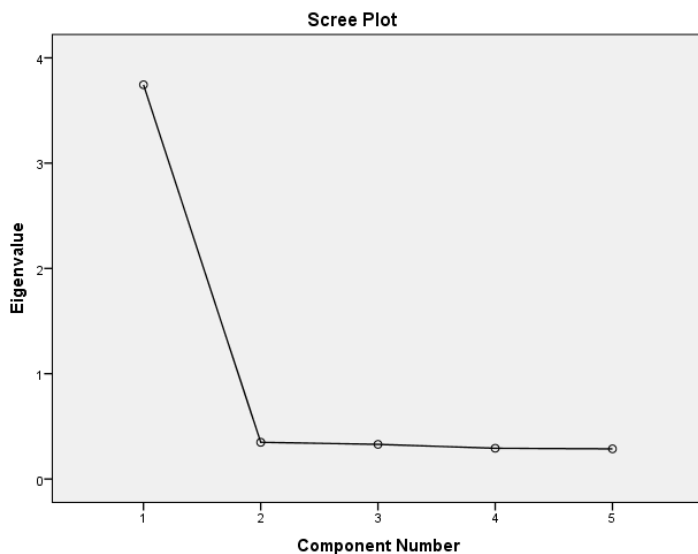


Table 17–39. Eigenvalues and Explained Variance for Writing/Eng Comp Grades 6-HS Diagnostic Categories

Factor	Eigenvalue	Percent
1	3.74	74.89
2	0.35	6.97
3	0.33	6.58
4	0.29	5.84
5	0.29	5.72

Figure 17–13. Scree Plot for Writing/Eng Comp Grades 6-HS Diagnostic Categories



Taken as a whole, the internal structure evidence presented generally indicates that related elements of each of the CDT tests are correlated in the intended manner. This further supports using a total score to report students’ performances in the different content areas.

The diagnostic category scores present more of a mixed message. Since the diagnostic categories in each of the CDT tests were designed to measure distinct components, it is reasonable to expect that the diagnostic category correlations should be positive and strong but, ideally, not extremely high. However, the disattenuated correlations imply that some diagnostic categories are essentially measuring the same constructs. While there is content rationale underlying the creation of the diagnostic category scores, the empirical correlations illustrate that caution is required when using these scores when identifying an individual student’s areas of need and strengths to build on.

EVIDENCE BASED ON RELATIONSHIPS WITH OTHER VARIABLES

As described in the *Standards* (AERA, APA, & NCME, 2014), “. . . Evidence based on relationships with other variables provides evidence about the degree to which these relationships are consistent with the construct underlying the proposed test score interpretations” (p. 16). This category of evidence refers to “external structure evidence” and has been classified as three types of evidence: *convergent*, *discriminant*, and *criterion-related*. *Convergent evidence* is provided by relationships among students’ performances on different assessments intended to measure a similar construct. *Discriminant evidence* is provided by relationships among students’ performances on different tests intended to measure different constructs. *Criterion-related evidence*, either predictive or concurrent, is provided by relationships between students’ test scores and their performances on a criterion measure (Cronbach, 1971; Messick, 1989).

Correlations and disattenuated correlations among students’ test scores across different CDT content areas provide some discriminant validity evidence. These are provided in Tables 17–40 and 17–41.

Table 17–40a. Correlations among CDT Grades 3-5 Tests

CDT	Math Grades 3-5	Reading Grades 3-5	Science Grades 3-5	Writing Grades 3-5
Math Grades 3-5	-	-	-	-
Reading Grades 3-5	0.768	-	-	-
Science Grades 3-5	0.760	0.777	-	-
Writing Grades 3-5	0.785	0.846	0.779	-

Table 17–40b. Correlations among CDT Tests

CDT	Math Gr 6-8	Algebra I	Geometry	Algebra II	Read/Lit Gr 6-HS	Science Gr 6-HS	Biology	Chemistry	Writing/ Eng Comp Gr 6-HS
Math Gr 6-8	-	-	-	-	-	-	-	-	-
Algebra I	0.747	-	-	-	-	-	-	-	-
Geometry	0.556	0.719	-	-	-	-	-	-	-
Algebra II	0.709	0.790	0.788	-	-	-	-	-	-
Read/Lit Gr 6-HS	0.729	0.666	0.629	0.661	-	-	-	-	-
Science Gr 6-HS	0.720	0.652	0.509	0.673	0.751	-	-	-	-
Biology	0.821	0.597	0.609	0.616	0.725	0.774	-	-	-
Chemistry	0.431	0.520	0.652	0.585	0.647	0.433	0.668	-	-
Writing Gr 6-HS	0.737	0.660	0.667	0.621	0.814	0.724	0.716	0.615	-

Table 17–41a. Disattenuated Correlations among CDT Grades 3-5 Tests

CDT	Math Grades 3-5	Reading Grades 3-5	Science Grades 3-5	Writing Grades 3-5
Math Grades 3-5	-	-	-	-
Reading Grades 3-5	0.827	-	-	-
Science Grades 3-5	0.818	0.841	-	-
Writing Grades 3-5	0.835	0.904	0.834	-

Table 17–41b. Disattenuated Correlations among CDT Tests

CDT	Math Gr 6-8	Algebra I	Geometry	Algebra II	Read/Lit Gr 6-HS	Science Gr 6-HS	Biology	Chemistry	Writing/Eng Comp Gr 6-HS
Math Gr 6-8	-	-	-	-	-	-	-	-	-
Algebra I	0.806	-	-	-	-	-	-	-	-
Geometry	0.598	0.775	-	-	-	-	-	-	-
Algebra II	0.762	0.852	0.847	-	-	-	-	-	-
Read/Lit Gr 6-HS	0.787	0.722	0.679	0.713	-	-	-	-	-
Science Gr 6-HS	0.783	0.712	0.554	0.732	0.820	-	-	-	-
Biology	0.893	0.651	0.662	0.670	0.791	0.852	-	-	-
Chemistry	0.483	0.584	0.730	0.655	0.727	0.490	0.756	-	-
Writing Gr 6-HS	0.789	0.709	0.714	0.665	0.875	0.785	0.776	0.685	-

Each CDT test measures a different construct, so the correlations among them were not expected to be extremely high. The values in the tables are consistent with this expectation. Correlations among the CDT tests ranged from 0.431 to 0.821. Correlations across tests within a content area are more highly correlated than across content areas. For example, the correlation between Math Grades 6-8 and Algebra I is 0.747, whereas the correlation between Math Grades 6-8 and Chemistry is 0.431.

External evidence for the CDT is examined by using students’ scores on the 2017 Pennsylvania System of School Assessment (PSSA) and/or 2017 Keystone Exams as external criteria. For each content area, CDT results from the 2016–2017 school year were matched to spring 2017 PSSA in the corresponding content area using the PA secure ID. Similarly, CDT tests in Algebra I, Biology, and Reading/Literature were matched to corresponding spring 2017 Keystone Exams. The correlations between students’ total scale scores on the CDT and PSSA or Keystone are calculated as one piece of external evidence. Table 17–42 summarizes the sample sizes.

Table 17–42. Correlation between CDT and PSSA or Keystone Exams Scores

Student Grade	CDT	PSSA or Keystone Test	<i>N</i>	Correlation of Total Scale Scores
3	Math Grades 3-5	PSSA Math Grade 3	22,784	0.800
4	Math Grades 3-5	PSSA Math Grade 4	26,058	0.816
5	Math Grades 3-5	PSSA Math Grade 5	28,062	0.822
6	Math Grades 6-8	PSSA Math Grade 6	35,481	0.836
7	Math Grades 6-8	PSSA Math Grade 7	34,653	0.839
8	Math Grades 6-8	PSSA Math Grade 8	29,835	0.815
3	Reading Grades 3-5	PSSA ELA Grade 3	19,668	0.808
4	Reading Grades 3-5	PSSA ELA Grade 4	21,778	0.815
5	Reading Grades 3-5	PSSA ELA Grade 5	24,070	0.819
6	Reading/Lit Grades 6-HS	PSSA ELA Grade 6	30,280	0.808
7	Reading/Lit Grades 6-HS	PSSA ELA Grade 7	32,426	0.799
8	Reading/Lit Grades 6-HS	PSSA ELA Grade 8	31,568	0.783
4	Science Grades 3-5	PSSA Science Grade 4	11,782	0.778
8	Science Grades 6-HS	PSSA Science Grade 8	26,591	0.779
3	Writing Grades 3-5	PSSA ELA Grade 3	3,193	0.789
4	Writing Grades 3-5	PSSA ELA Grade 4	3,486	0.806
5	Writing Grades 3-5	PSSA ELA Grade 5	4,788	0.802
6	Writing/Eng Comp Gr 6-HS	PSSA ELA Grade 6	7,538	0.821
7	Writing/Eng Comp Gr 6-HS	PSSA ELA Grade 7	9,531	0.796
8	Writing/Eng Comp Gr 6-HS	PSSA ELA Grade 8	9,792	0.773
6–12	Algebra I	Keystone Algebra I	37,633	0.777
6–12	Biology	Keystone Biology	48,408	0.810
6–12	Reading/Literature	Keystone Literature	41,321	0.762

These results provide external evidence in support of CDT as a valid measure of students’ achievement.

The collection of external evidence related to the CDT is an ongoing process. As more CDT data become available, other criterion-related evidence will be evaluated. In addition to examining the relationship between CDT and PSSA or Keystone Exams, other criterion variables such as Scholastic Aptitude Test (SAT) scores, American College Test (ACT) scores, or student grade point average (GPA) may be considered.

EVIDENCE BASED ON CONSEQUENCES OF TESTS

According to the *Standards* (AERA, APA, & NCME, 2014), evidence of the consequences of implementing an assessment program is an additional source of validity information. Both positive and negative (intended and unintended) consequences of score-based inferences must be investigated to fully evaluate the pool of validity evidence.

Lane and Stone (2002) summarized the general *intended* consequences for state assessments and accountability programs:

- Student, teacher, and administrator motivation and effort
- Curriculum and instruction practices (including content and strategies)
- Improved learning for all students
- Content and format of classroom assessments
- Professional development support
- Use and nature of test preparation activities
- Student, teacher, administrator, and public awareness and beliefs about the assessment, criteria for judging performance, and the use of assessment results

Evidence for the improvement of student learning can be seen by looking at the changes in scale scores for students who took the same CDT test multiple times. Table 17–43 below summarizes scale score changes between the first and last administrations of the CDT.

Table 17–43. Summary of Scale Score Changes between CDT Administrations

CDT	<i>N</i>	Minimum	Q1	Median	Mean	Q3	Maximum
Math Grades 3-5	64,232	-623	28	81	83.23	136	657
Math Grades 6-8	77,763	-999	-5	46	45.27	98	584
Algebra I	38,441	-607	-11	46	41.60	101	574
Geometry	4,228	-468	20	78	76.14	140	599
Algebra II	4,001	-584	7	74	69.09	137	491
Reading Grades 3-5	56,411	-495	-15	42	43.97	102	546
Reading/Lit Grades 6-HS	124,084	-641	-48	9	6.73	64	573
Science Grades 3-5	8,108	-481	-1	51	53.75	105	616
Science Grades 6-HS	35,358	-511	-28	23	21.32	73	519
Biology	44,559	-747	7	64	61.62	120	802
Chemistry	2,735	-410	-5	55	53.51	112	692
Writing Grades 3-5	7,795	-563	1	54	56.76	110	541
Writing/Eng Comp Gr 6-HS	18,851	-536	-29	24	21.04	74	577

Lane and Stone (2002) also summarized the possible *unintended* outcomes:

- Narrowing of curriculum and instruction to focus only on the specific standards assessed and ignoring the broader construct reflected in the specified standards
- Use of test preparation materials that are closely linked to the assessment without making changes to instruction
- Use of unethical test preparation materials or administration procedures
- Differential performance gains for subgroups of students
- Inappropriate or unfair uses of test scores, such as questionable practices in reassignment of teachers or principals
- For some students, decreased confidence and motivation to learn and to perform well on the assessment because of past experiences with assessments

As noted above, one important piece of consequential evidence pertains to the use of assessment results. As shown in Chapter Fourteen, CDT offers a dynamic suite of reports. The extent to which various groups of users (e.g., students and teachers) interpret these reports appropriately affects the validity of subsequent uses of these results. As noted in Chapter Fourteen, there are report training scenarios for each content area. The intent is that the scenarios will help users avoid unintended uses and interpretations of the CDT results.

EVIDENCE RELATED TO USE OF THE RASCH MODEL

Since the Rasch model is the basis of all calibration, scaling, and equating analyses associated with the CDT, the validity of the inferences from these results depends on the degree to which the assumptions of the model are met, as well as the fit between the model and the test data. As discussed in Chapter Eight, the underlying assumptions of Rasch models were essentially met for all the CDT data, indicating the appropriateness of using Rasch models to analyze the CDT data.

VALIDITY EVIDENCE SUMMARY

Validity evidence related to test content was reviewed earlier in this chapter. On the whole, the early chapters of this technical report show that a strong link can be established between each CDT item and its associated Eligible Content. Detailed information regarding educator reviews are presented in Chapter Six.

Diagnostic category score intercorrelations were also presented in this chapter. They provide some favorable evidence regarding the internal relationships between the tests' components.

Validity of score inferences is bolstered when test scores are consistent. Here, the reliabilities of the total test scores (presented in Chapter Sixteen) were very good, with many in the low 0.90s.

Reported in Chapter Six, differential item functioning (DIF) with respect to gender and ethnicity helps address construct-irrelevant variance, which represents an important threat to the validity of inferences made from achievement test scores. As noted in that chapter, field-test items are screened and reviewed for DIF. Only items approved by teacher committees are eligible for operational use.

CHAPTER EIGHTEEN: PARAMETER STABILITY

The Classroom Diagnostic Tools (CDT) features a number of tests. Tests in Mathematics, Algebra I, Geometry, and Algebra II have been available since October 2010 for students in grades 6 and above. Tests in Reading/Literature, Science, Biology, and Chemistry have been available since April 2011 for students in grades 6 and above. Tests in Writing /English Composition have been available since October 2011 for students in grades 6 and above. Tests in Mathematics, Reading, Science, and Writing have been available since April 2014 for students in grades 3 through 5. During the 2016–2017 school year, CAT item selection and Rasch ability estimates were based on initial item parameters estimated from the stand-alone and embedded field-test events and vertical linking (see Chapter Eight and Chapter Nine for details). The only exceptions were 113 items in the mathematics content area that had parameters re-estimated following the 2010–2011 school year and 74 items in the science content area that had parameters re-estimated following the 2011–2012 school year. Following the 2016–2017 school year, item parameter stability was checked for all items in the banks.

METHODOLOGY

In the first two years of CDT, four separate methods were investigated to evaluate the stability of the item parameters in the CDT operational administration

1. Calibrate the entire bank within a content area in a single concurrent calibration. Do not anchor item parameters on banked values. Compare new parameter estimates to the banked values.
2. Calibrate the entire bank within a content area in a single concurrent calibration. Anchor item parameters on banked values. Examine displacements.
3. Calibrate each grade/course level item with students in that grade/course. Do not anchor item parameters on banked values. Compare new parameter estimates to the banked values.
4. Calibrate each grade/course level item with students in that grade/course. Anchor item parameters on banked values. Examine displacements.

As noted in Chapter Twelve, CDT tests are pre-equated. Immediate score reports are based on banked item parameters. Therefore, this chapter focuses on anchored calibrations and examination of displacement values to evaluate item parameter stability¹.

ANCHORED CONCURRENT CALIBRATION WITHIN CONTENT AREA ACROSS GRADES/ COURSES

One method used to evaluate the stability of the item parameters in the operational administration was to calibrate the entire bank within a content area anchoring on the banked item parameters and examine the displacements. For each item, the displacement value is the size of the change in the parameter estimate that would be estimated if the parameter for the item was unanchored and all other parameters were anchored at their current value. Given that the banked values were developed into a single, vertical scale, all items within a content area were calibrated in a single concurrent calibration using WINSTEPS software version 3.69 (Linacre, 2009).

MATHEMATICS

Figure 18–1 shows the displacements from a concurrent anchored calibration of all mathematics items using the operational data set. Items are color-coded by grade/course.

¹ For results of all four methods for the 2011–2012 school year, see Chapter Eighteen of the 2011–2012 technical report.

Figure 18–1. Anchored Calibration Displacements — All Items

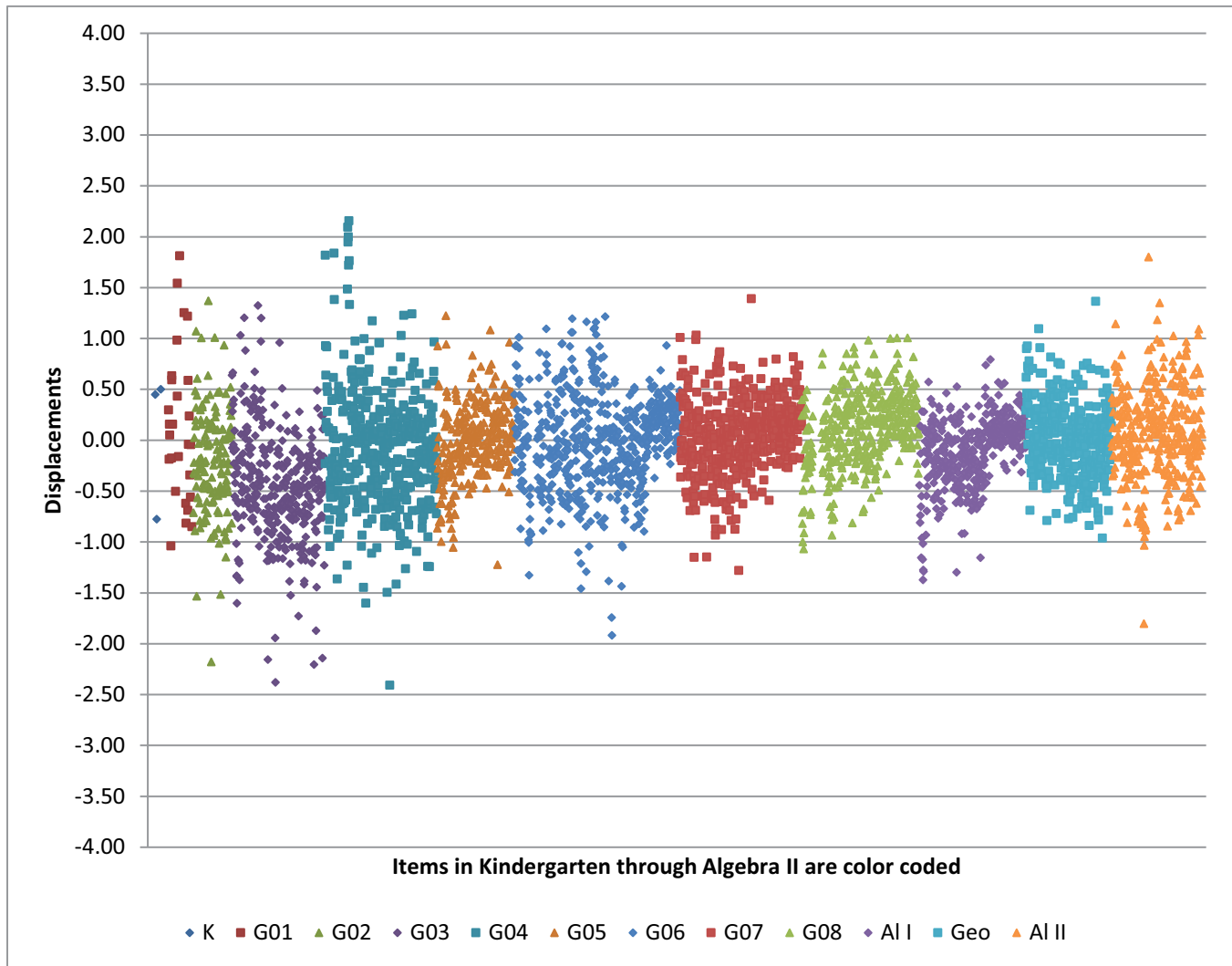


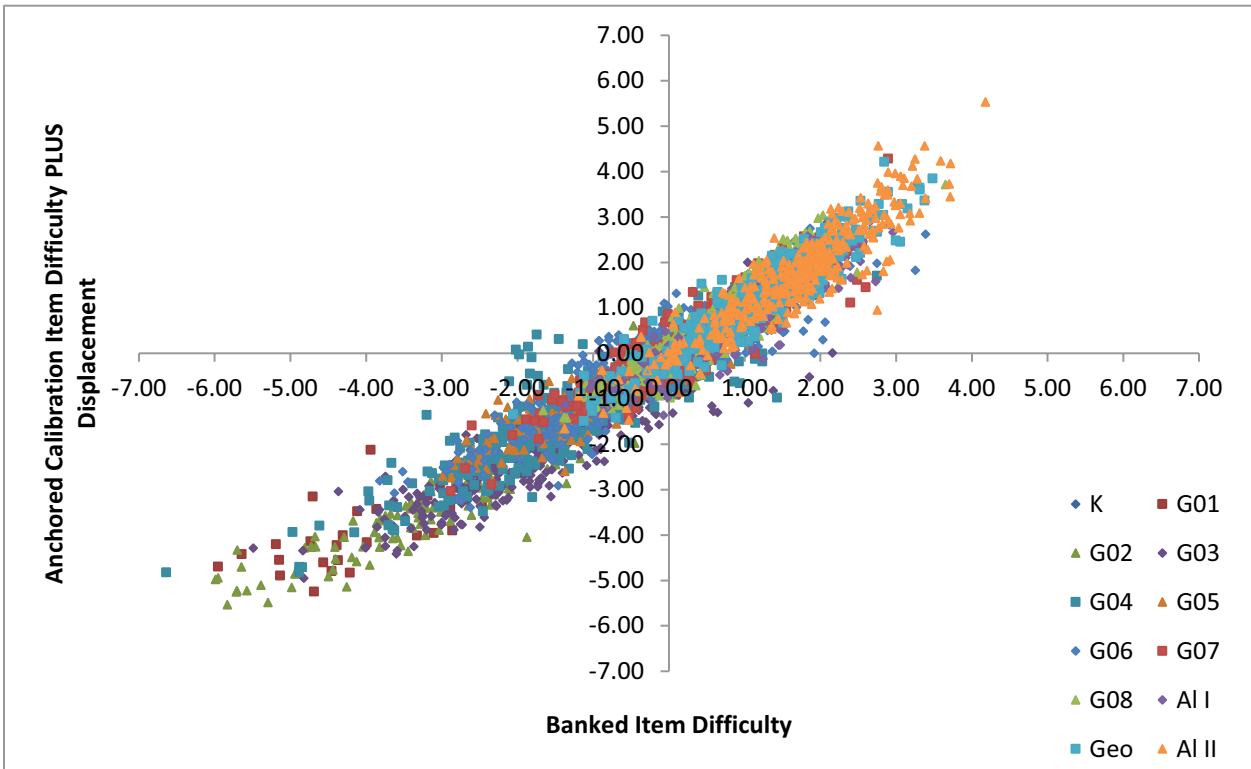
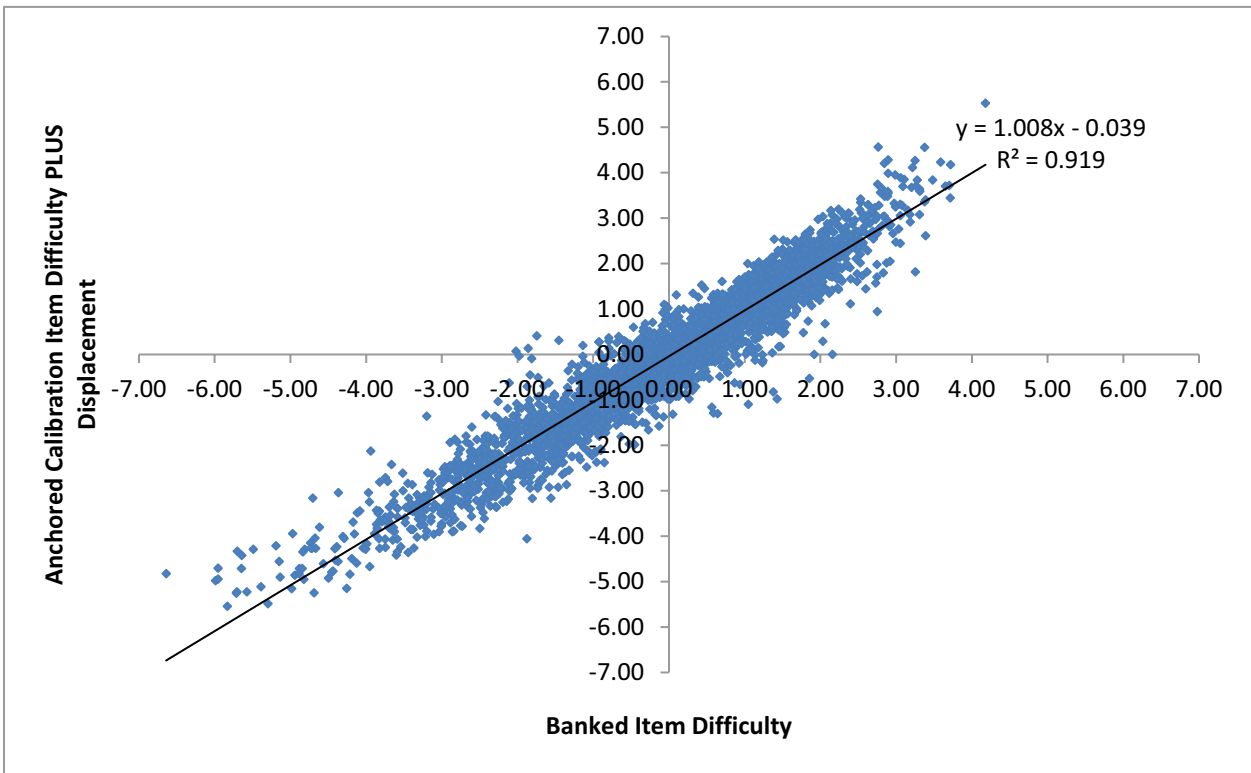
Table 18–1 summarizes the data in Figure 18–1. It contains item counts by grade/course and displacements in intervals of 0.1 logits. According to the WINSTEPS manual, in an anchored calibration, half of the displacements are expected to be negative and half positive. Displacements less than 0.5 in magnitude are considered small (unlikely to have much impact). Seventy-five percent of the items in the bank have a displacement less than 0.5 in magnitude (gray shaded in Table 18–1).

Table 18–1. Number of Mathematics Items by Grade/Course and Displacement Interval

Interval	K	G01	G02	G03	G04	G05	G06	G07	G08	ALI	GEO	ALII	Total
Disp. ≤ -1.0	0	1	5	51	17	2	13	3	1	8	0	2	103
-1.0 < Disp. ≤ -0.9	0	0	6	11	7	2	3	1	3	5	1	1	40
-0.9 < Disp. ≤ -0.8	0	2	6	12	8	4	10	3	2	1	1	7	56
-0.8 < Disp. ≤ -0.7	1	0	7	30	13	5	12	3	7	3	6	8	95
-0.7 < Disp. ≤ -0.6	0	2	5	27	21	5	14	9	4	12	10	7	116
-0.6 < Disp. ≤ -0.5	0	2	8	33	24	5	24	19	2	19	7	7	150
-0.5 < Disp. ≤ -0.4	0	0	16	31	18	11	31	9	10	15	15	12	168
-0.4 < Disp. ≤ -0.3	0	1	9	20	32	18	32	20	16	33	26	21	228
-0.3 < Disp. ≤ -0.2	0	0	14	26	33	26	38	33	27	37	26	21	281
-0.2 < Disp. ≤ -0.1	0	3	6	26	31	30	40	40	26	36	29	35	302
-0.1 < Disp. ≤ 0.0	0	2	8	17	23	25	46	41	39	47	38	31	317
0.0 < Disp. ≤ 0.1	0	1	10	13	44	38	57	49	42	67	38	31	390
0.1 < Disp. ≤ 0.2	0	2	15	10	31	33	60	68	48	58	32	26	383
0.2 < Disp. ≤ 0.3	0	2	6	10	22	23	53	50	52	30	29	39	316
0.3 < Disp. ≤ 0.4	0	0	5	10	18	17	45	25	38	18	20	18	214
0.4 < Disp. ≤ 0.5	2	1	7	6	15	19	24	25	33	5	14	17	168
0.5 < Disp. ≤ 0.6	0	2	1	3	9	5	23	15	18	6	12	20	114
0.6 < Disp. ≤ 0.7	0	1	2	3	15	4	16	11	10	0	7	10	79
0.7 < Disp. ≤ 0.8	0	0	0	0	5	3	10	9	8	2	9	12	58
0.8 < Disp. ≤ 0.9	0	0	0	1	3	1	8	3	6	0	2	6	30
0.9 < Disp. ≤ 1.0	0	1	1	2	7	3	8	1	2	0	2	5	32
1.0 < Disp.	0	4	4	4	15	2	11	3	3	0	2	7	55
TOTAL	3	27	141	346	411	281	578	440	397	402	326	343	3695

Figure 18–2 shows banked item difficulties plotted against the item difficulties plus displacement from the anchored concurrent calibration of operational data for the mathematics item bank. A line of best fit is included in the upper plot. If item difficulties from the operational calibration are close to the banked values, the line will approach an intercept of zero and a slope of one. The lower plot displays the same data as the upper, but color codes items by grade/course in an attempt to lend insight into the possible causes for the deviations.

Figure 18–2. Mathematics Banked Item Parameters vs. Anchored Calibration — All Items



Based on Figure 18–2, one can see that there are a number of items with operational estimates that differ from their banked values. Some of these are in kindergarten through grade 2. Recall that the operational CDT is available to students in grade 3 and above. While items were developed to sample content in kindergarten through grade 2 to provide better diagnostic information for lower-performing students, the data from the operational administration did not include students below grade 3. To investigate whether this had an impact on the stability of the item parameter estimates, a concurrent anchored calibration of all items in grade 3 and above was run.

Figure 18–3 and Table 18–2 summarize the displacements from a concurrent anchored calibration of all items in grade 3 and above. Seventy-five percent of the items in the calibration have displacement less than 0.5 in magnitude (gray shaded in Table 18–2). Figure 18–4 shows banked item difficulties plotted against the item difficulties plus displacement. Again, a line of best fit is included in the upper plot.

Figure 18–3. Mathematics Anchored Calibration Displacements — All Items in Grade 3 and Above

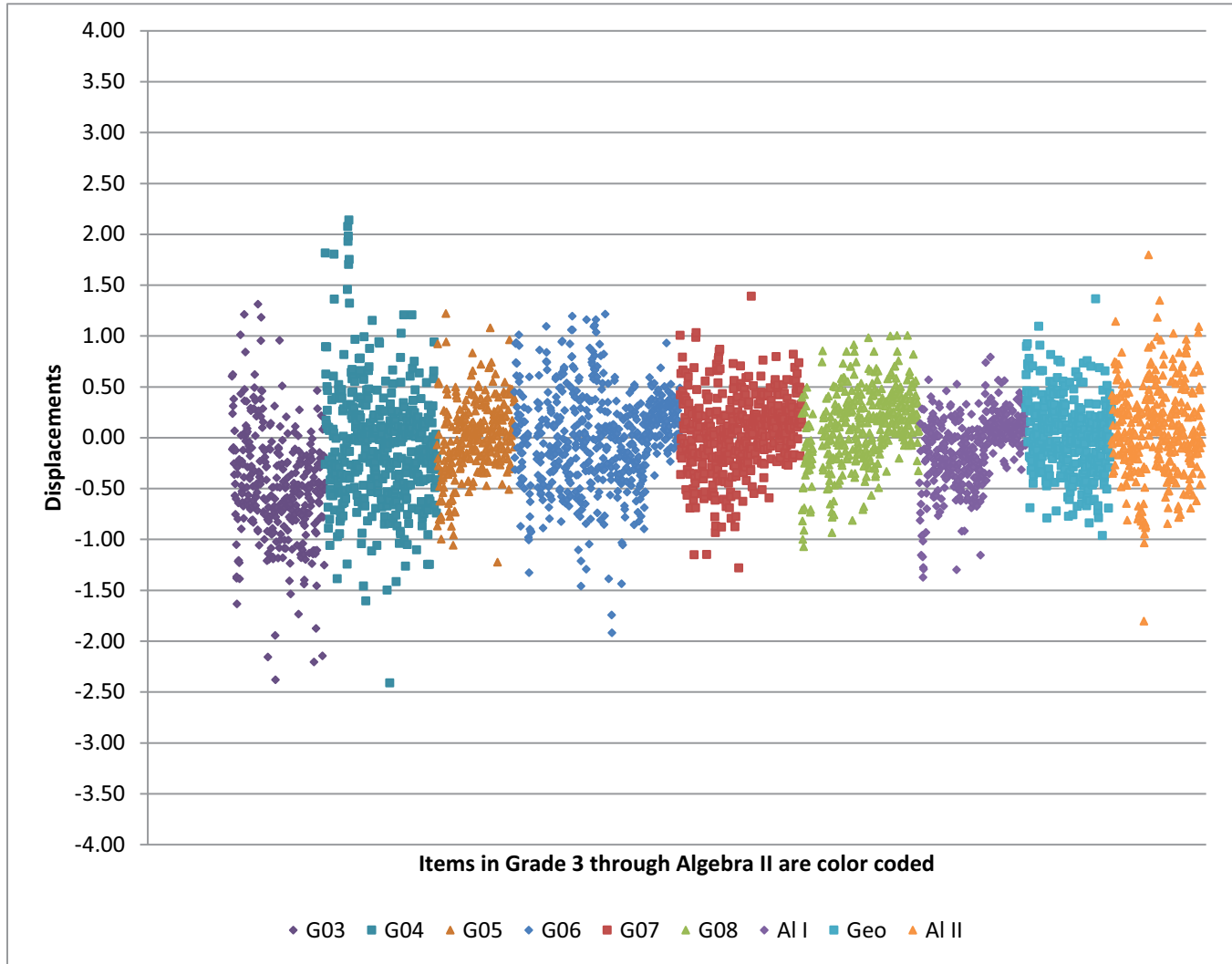
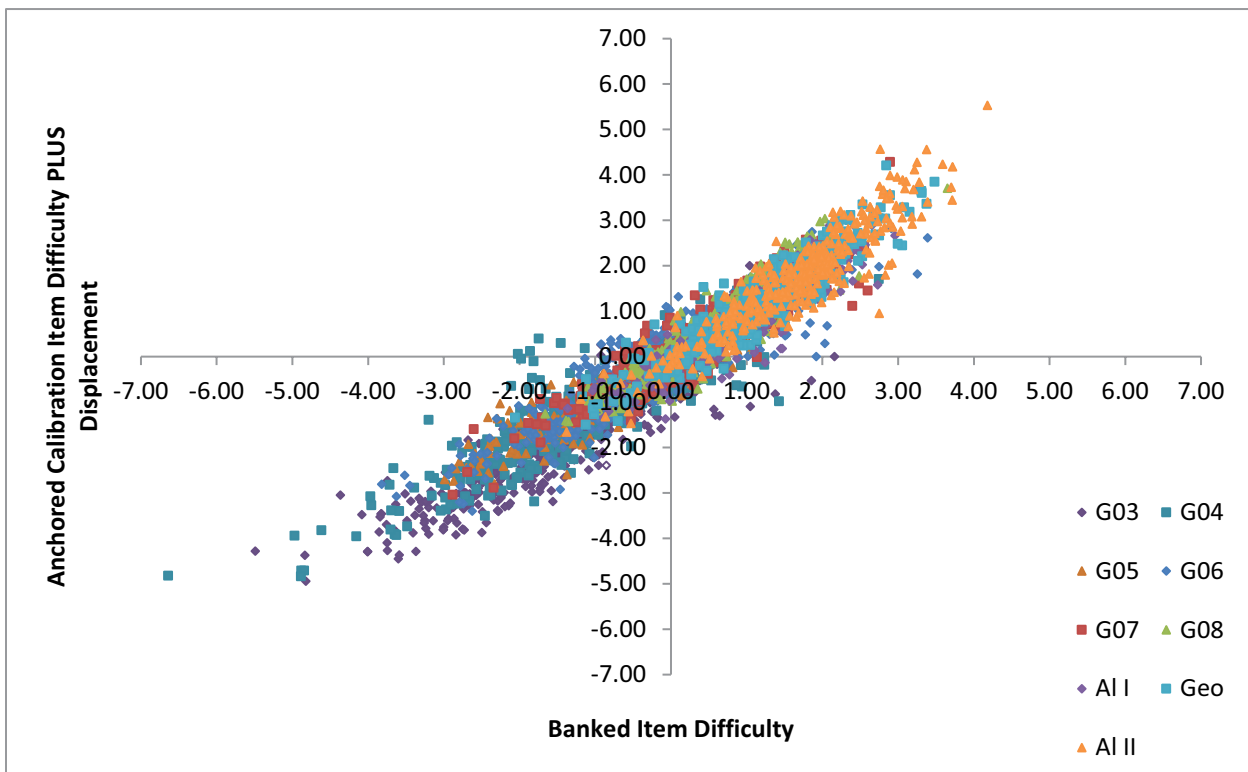
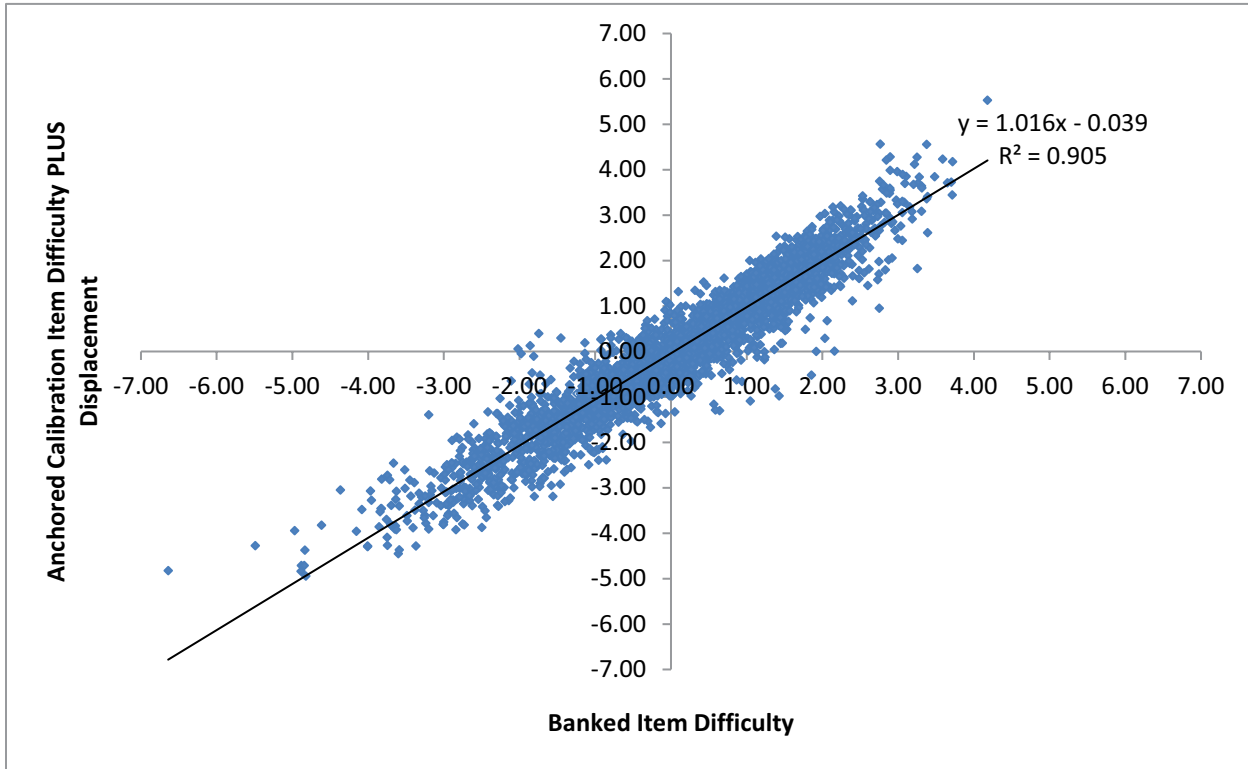


Table 18–2. Number of Mathematics Items by Grade/Course and Displacement Interval

Interval	G03	G04	G05	G06	G07	G08	ALI	GEO	ALII	Total
Disp. \leq -1.0	56	18	2	13	3	1	8	0	2	103
-1.0 < Disp. \leq -0.9	10	6	2	3	1	3	5	1	1	32
-0.9 < Disp. \leq -0.8	16	9	4	10	3	2	1	1	7	53
-0.8 < Disp. \leq -0.7	29	15	5	12	3	7	3	6	8	88
-0.7 < Disp. \leq -0.6	31	22	5	14	9	4	12	10	7	114
-0.6 < Disp. \leq -0.5	25	24	5	24	19	2	19	7	7	132
-0.5 < Disp. \leq -0.4	33	20	11	31	9	10	15	15	12	156
-0.4 < Disp. \leq -0.3	18	31	18	33	20	16	33	26	21	216
-0.3 < Disp. \leq -0.2	33	32	26	37	33	27	37	26	21	272
-0.2 < Disp. \leq -0.1	24	30	30	40	40	26	36	29	35	290
-0.1 < Disp. \leq 0.0	11	27	25	46	41	39	47	38	31	305
0.0 < Disp. \leq 0.1	13	41	38	57	49	42	67	38	31	376
0.1 < Disp. \leq 0.2	8	31	34	60	68	48	58	32	26	365
0.2 < Disp. \leq 0.3	14	20	22	53	50	52	30	29	39	309
0.3 < Disp. \leq 0.4	7	21	17	45	25	38	18	20	18	209
0.4 < Disp. \leq 0.5	7	10	18	24	25	33	5	14	17	153
0.5 < Disp. \leq 0.6	1	11	6	23	15	18	6	12	20	112
0.6 < Disp. \leq 0.7	3	14	4	16	11	10	0	7	10	75
0.7 < Disp. \leq 0.8	0	5	3	10	9	8	2	9	12	58
0.8 < Disp. \leq 0.9	1	4	1	8	3	6	0	2	6	31
0.9 < Disp. \leq 1.0	2	5	3	8	1	2	0	2	5	28
1.0 < Disp.	4	15	2	11	3	3	0	2	7	47
TOTAL	346	411	281	578	440	397	402	326	343	3524

Figure 18–4. Mathematics Banked Item Parameters vs. Anchored Calibration — All Items in Grade 3 and Above



It is evident from this series of plots that the item parameter estimates are reasonably stable for the items in grade 3 and above.

For both of the anchored calibrations described in this section, banked item parameters were compared to the banked item parameters plus the displacements by calculating a robust Z statistic for each item pairing. If item difficulties from the operational calibration are close to the banked values, the correlation will be high and the additive constant near zero. Table 18–3 shows the number of items in each grade/course and the number and percent of items with absolute value of robust Z greater than 1.645 in each of the calibrations.

Table 18–3. Summary of Robust Z across Anchored Calibrations in Mathematics

Grade/ Course	Cal 1: Number of Items	Cal 1: Number of Items with ABS(Z) > 1.645	Cal 1: Percent of Items with ABS(Z) > 1.645	Cal 2: Number of Items	Cal 2: Number of Items with ABS(Z) > 1.645	Cal 2: Percent of Items with ABS(Z) > 1.645
Kindergarten	3	1	33%	0	0	N/A
Grade 1	27	9	33%	0	0	N/A
Grade 2	141	31	22%	0	0	N/A
Grade 3	346	117	34%	346	130	38%
Grade 4	411	84	20%	411	87	21%
Grade 5	281	23	8%	281	23	8%
Grade 6	578	82	14%	578	83	14%
Grade 7	440	32	7%	440	33	8%
Grade 8	397	35	9%	397	36	9%
Algebra I	402	21	5%	402	24	6%
Geometry	326	27	8%	326	29	9%
Algebra II	343	51	15%	343	53	15%
Total	3695	513	14%	3524	498	14%
	Correlation = 0.958			Correlation = 0.951		
	Additive Constant = -0.039			Additive Constant = -0.037		

For the most part, whether high absolute displacement values or robust Z was used to identify items with operational estimates that differ from banked values, the same items were identified. For example, in calibration 1, all items with absolute displacement greater than 0.677 have an absolute value of robust Z greater than 1.645. In the displacement range of 0.674 to 0.677, some items have absolute value of robust Z greater than 1.645 while others do not. No items with absolute displacement less than 0.674 have absolute value of robust Z greater than 1.645.

READING/LITERATURE

Figure 18–5 shows the displacements from a concurrent anchored calibration of all reading items using the operational data set. Items are color-coded by grade/course.

Figure 18-5. Reading Anchored Calibration Displacements - All Items

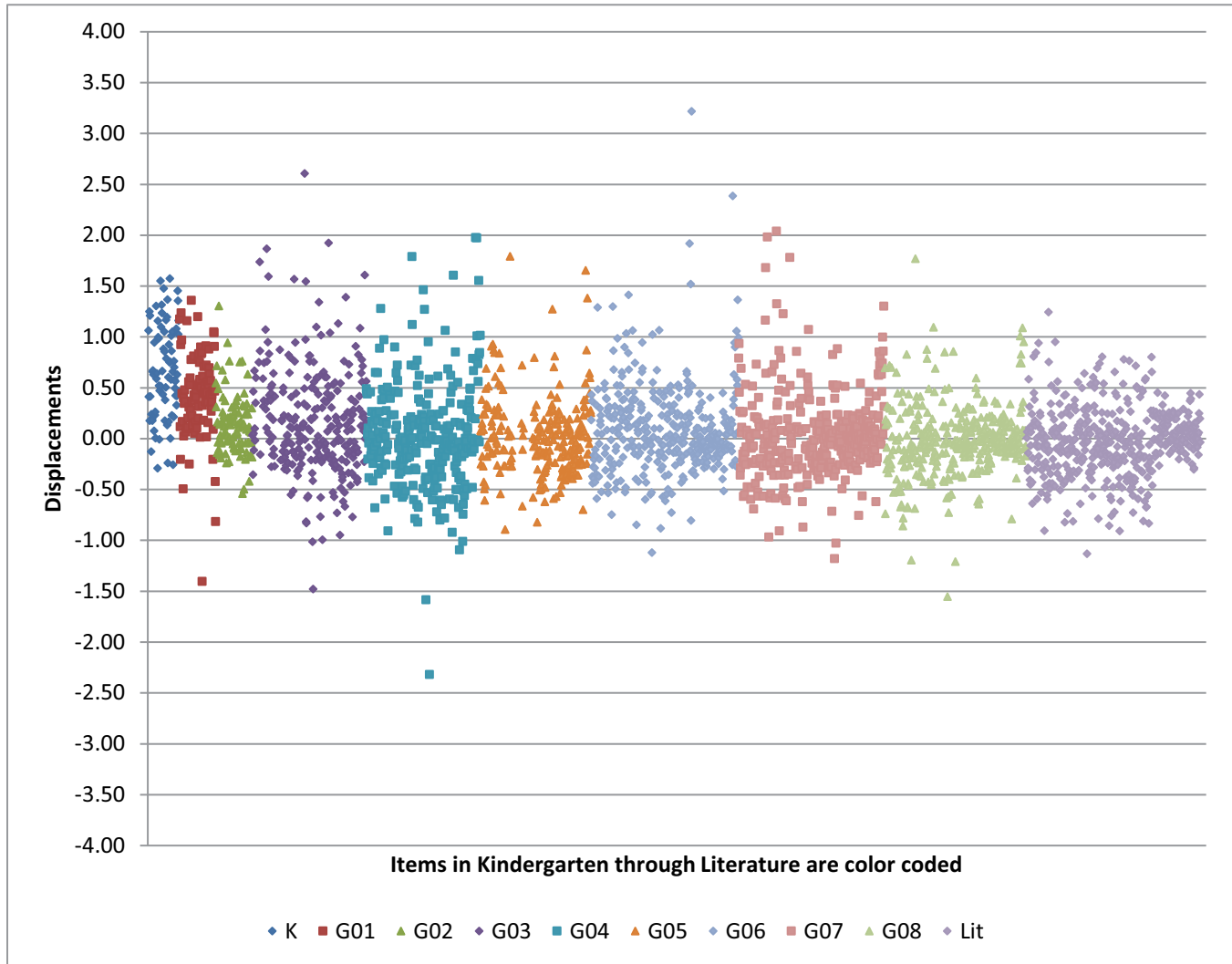


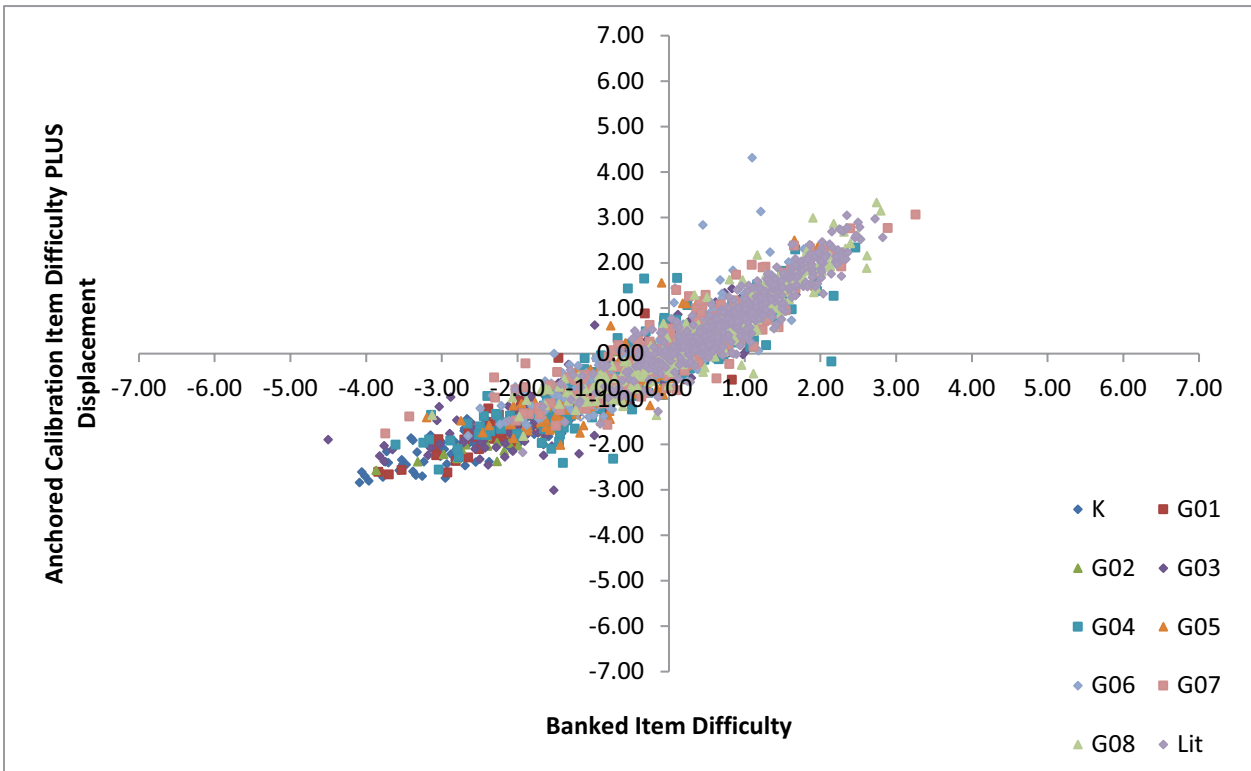
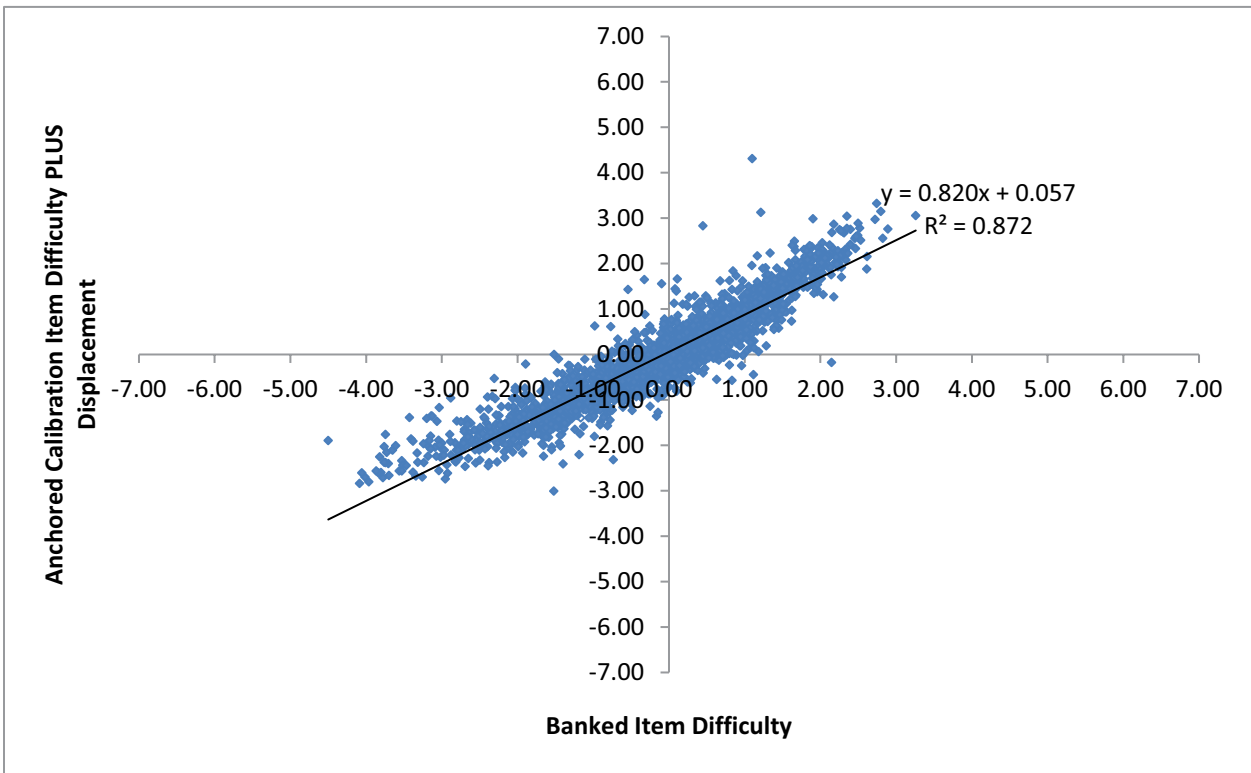
Table 18–4 summarizes the data in Figure 18–5. It contains item counts by grade/course and displacements in intervals of 0.1 logits. According to the WINSTEPS manual, in an anchored calibration, half of the displacements are expected to be negative and half positive. Displacements less than 0.5 in magnitude are considered small (unlikely to have much impact). Eighty percent of the items in the bank have a displacement less than 0.5 in magnitude (gray shaded in Table 18–4).

Table 18–4. Number of Reading Items by Grade/Course and Displacement Interval

Interval	K	G01	G02	G03	G04	G05	G06	G07	G08	LIT	Total
Disp. ≤ -1.0	0	1	0	2	4	0	1	2	3	1	14
-1.0 < Disp. ≤ -0.9	0	0	0	2	2	0	0	2	0	2	8
-0.9 < Disp. ≤ -0.8	0	1	0	2	2	2	3	1	1	5	17
-0.8 < Disp. ≤ -0.7	0	0	0	3	4	0	2	2	4	5	20
-0.7 < Disp. ≤ -0.6	0	0	0	2	10	4	1	4	7	7	35
-0.6 < Disp. ≤ -0.5	0	0	1	8	13	6	12	12	10	13	75
-0.5 < Disp. ≤ -0.4	0	2	2	5	14	9	11	11	12	22	88
-0.4 < Disp. ≤ -0.3	0	0	0	11	16	18	20	18	17	35	135
-0.3 < Disp. ≤ -0.2	3	3	3	22	20	24	26	38	27	33	199
-0.2 < Disp. ≤ -0.1	1	0	12	28	27	31	45	45	50	50	289
-0.1 < Disp. ≤ 0.0	1	0	15	28	35	22	54	44	74	72	345
0.0 < Disp. ≤ 0.1	3	8	13	19	22	33	43	53	48	75	317
0.1 < Disp. ≤ 0.2	6	10	18	25	30	21	37	38	37	46	268
0.2 < Disp. ≤ 0.3	5	4	11	20	18	22	30	20	20	38	188
0.3 < Disp. ≤ 0.4	2	11	9	14	10	11	25	11	16	14	123
0.4 < Disp. ≤ 0.5	8	14	4	15	13	5	21	9	10	16	115
0.5 < Disp. ≤ 0.6	7	11	2	15	7	6	11	11	2	13	85
0.6 < Disp. ≤ 0.7	8	3	2	10	8	4	10	9	4	5	63
0.7 < Disp. ≤ 0.8	5	4	4	11	7	3	1	6	4	5	50
0.8 < Disp. ≤ 0.9	3	5	0	7	5	5	2	7	5	4	43
0.9 < Disp. ≤ 1.0	4	5	1	4	2	2	6	2	1	2	29
1.0 < Disp.	22	7	1	16	12	4	13	9	4	1	89
TOTAL	78	89	98	269	281	232	374	354	356	464	2595

Figure 18–6 shows banked item difficulties plotted against the item difficulties plus displacement from the anchored concurrent calibration of operational data for the reading item bank. A line of best fit is included in the upper plot. The lower plot displays the same data as the upper, but color codes items by grade/course in an attempt to lend insight into the possible causes for the deviations.

Figure 18–6. Reading Banked Item Parameters vs. Anchored Calibration — All Items



Based on Figure 18–6, one can see that there are a number of items with operational estimates that differ from their banked values. Some of these are in kindergarten through grade 2. Recall that the operational CDT is available to students in grade 3 and above. While items were developed to sample content in kindergarten through grade 2 to provide better diagnostic information for lower performing students, the data from the operational administration did not include students below grade 3. To investigate whether this had an impact on the stability of the item parameter estimates, a concurrent anchored calibration of all items in grade 3 and above was run.

Figure 18–7 and Table 18–5 summarize the displacements from a concurrent anchored calibration of all items in grade 3 and above. Eighty-one percent of the items in the calibration have displacement less than 0.5 in magnitude (gray shaded in Table 18–5). Figure 18–8 shows banked item difficulties plotted against the item difficulties plus displacement. Again, a line of best fit is included in the upper plot.

Figure 18–7. Reading Anchored Calibration Displacements — All Items in Grade 3 and Above

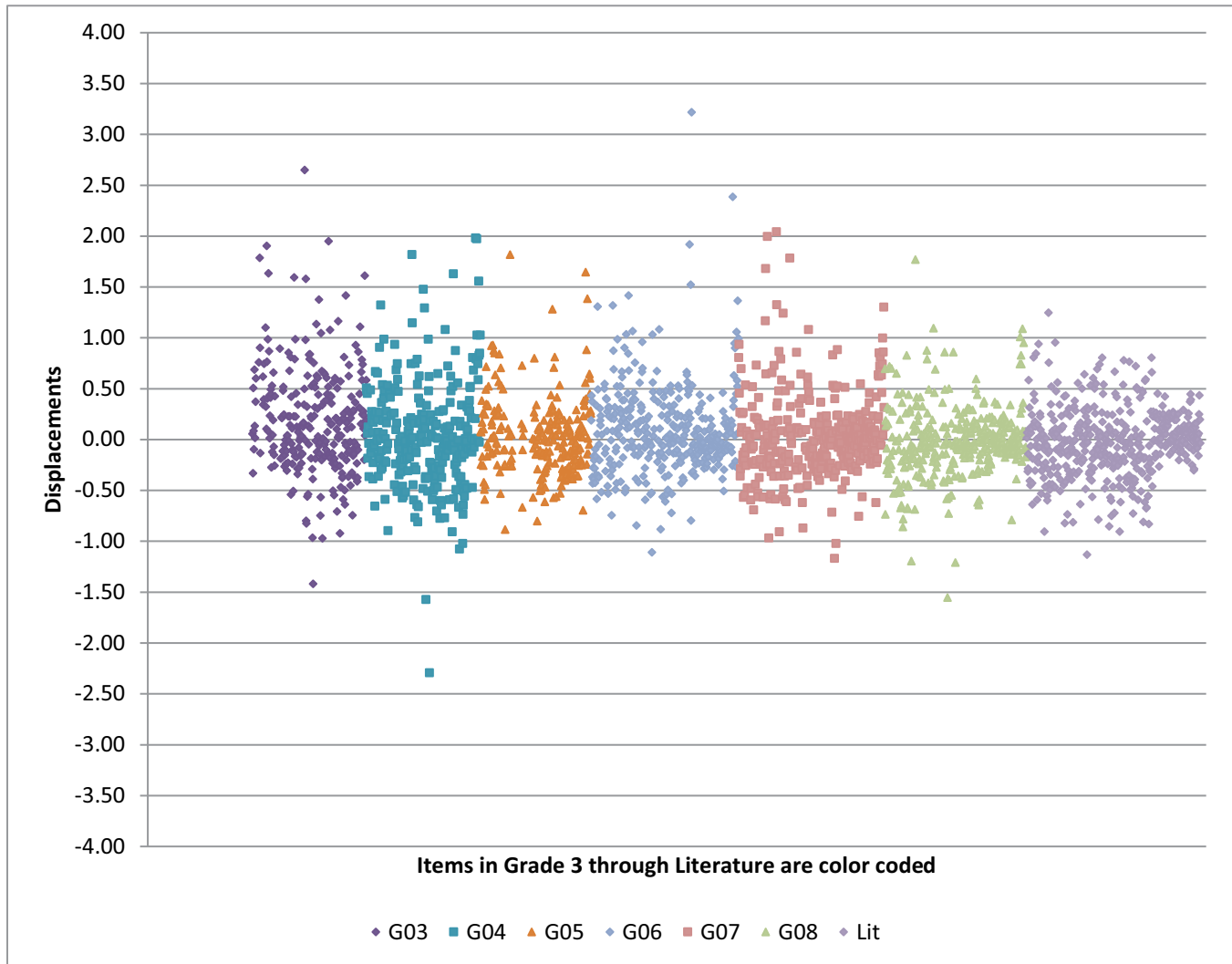
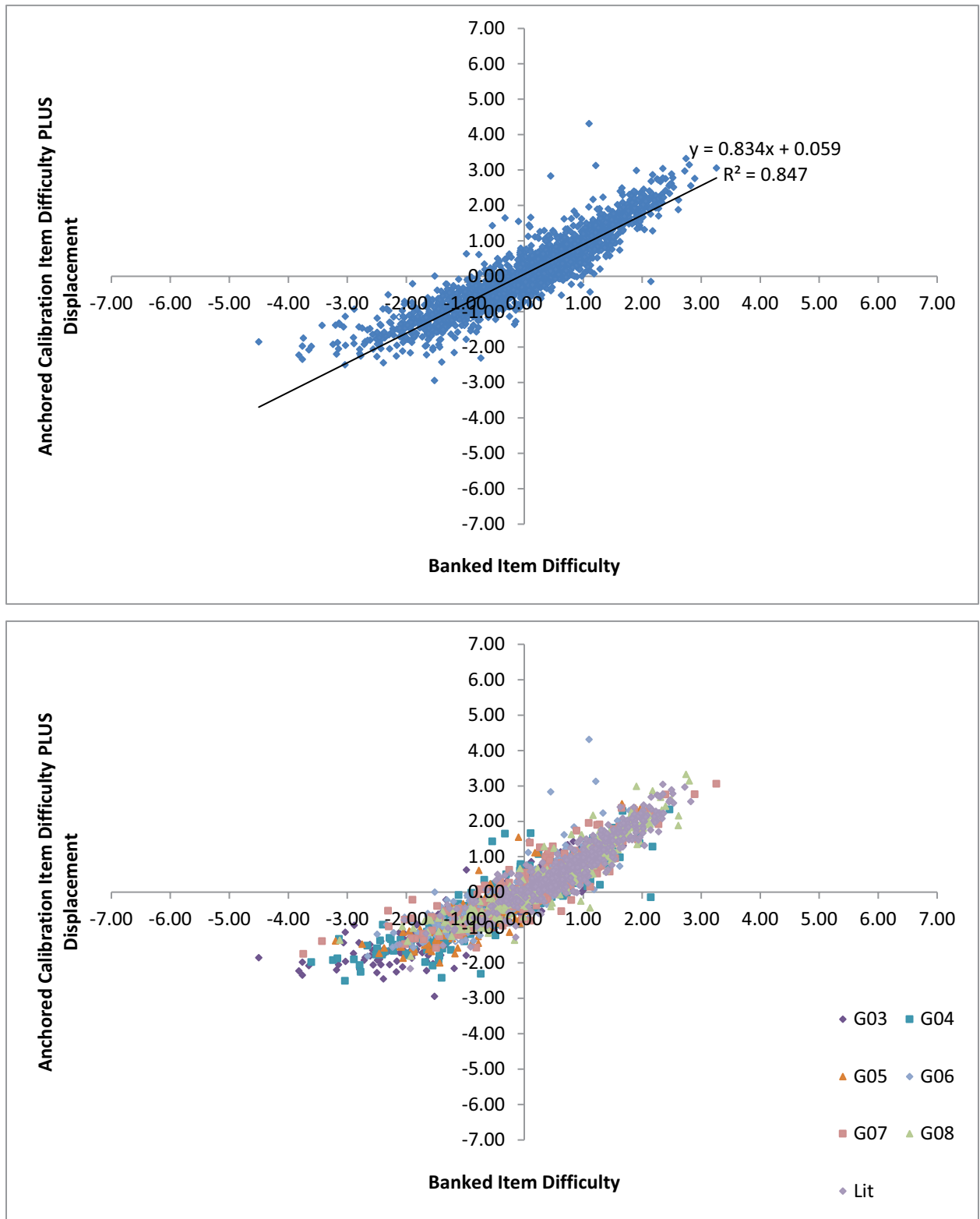


Table 18–5. Number of Reading Items by Grade/Course and Displacement Interval

Interval	G03	G04	G05	G06	G07	G08	LIT	Total
Disp. ≤ -1.0	1	4	0	1	2	3	1	12
-1.0 < Disp. ≤ -0.9	3	1	0	0	2	0	2	8
-0.9 < Disp. ≤ -0.8	1	2	2	2	1	1	5	14
-0.8 < Disp. ≤ -0.7	4	5	0	3	2	4	5	23
-0.7 < Disp. ≤ -0.6	1	7	3	1	4	7	6	29
-0.6 < Disp. ≤ -0.5	8	15	7	12	12	10	13	77
-0.5 < Disp. ≤ -0.4	4	13	9	11	11	11	23	82
-0.4 < Disp. ≤ -0.3	11	15	17	18	17	17	35	130
-0.3 < Disp. ≤ -0.2	17	21	24	27	39	28	33	189
-0.2 < Disp. ≤ -0.1	31	24	31	45	45	48	50	274
-0.1 < Disp. ≤ 0.0	25	34	22	55	44	76	72	328
0.0 < Disp. ≤ 0.1	20	27	31	41	52	48	75	294
0.1 < Disp. ≤ 0.2	24	30	24	38	39	37	46	238
0.2 < Disp. ≤ 0.3	23	18	22	30	20	19	38	170
0.3 < Disp. ≤ 0.4	15	8	10	26	10	17	14	100
0.4 < Disp. ≤ 0.5	16	11	6	18	9	9	15	84
0.5 < Disp. ≤ 0.6	12	11	5	14	12	3	14	71
0.6 < Disp. ≤ 0.7	15	8	3	9	9	4	5	53
0.7 < Disp. ≤ 0.8	9	7	5	2	5	4	5	37
0.8 < Disp. ≤ 0.9	8	4	5	2	8	5	4	36
0.9 < Disp. ≤ 1.0	5	4	2	6	2	1	2	22
1.0 < Disp.	16	12	4	13	9	4	1	59
TOTAL	269	281	232	374	354	356	464	2330

Figure 18–8. Reading Banked Item Parameters vs. Anchored Calibration — All Items in Grade 3 and Above



It is evident from this series of plots that the item parameter estimates are reasonably stable for the items in grade 3 and above.

For both of the anchored calibrations described in this section, banked item parameters were compared to the banked item parameters plus the displacements by calculating a robust Z statistic for each item pairing. Table

18–6 shows the number of items in each grade/course and the number and percent of items with absolute value of robust Z greater than 1.645 in each of the calibrations.

Table 18–6. Summary of Robust Z across Anchored Calibrations in Reading

Grade/ Course	Cal 1: Number of Items	Cal 1: Number of Items with ABS(Z) > 1.645	Cal 1: Percent of Items with ABS(Z) > 1.645	Cal 2: Number of Items	Cal 2: Number of Items with ABS(Z) > 1.645	Cal 2: Percent of Items with ABS(Z) > 1.645
Kindergarten	78	46	59%	0	0	N/A
Grade 1	89	30	34%	0	0	N/A
Grade 2	98	10	10%	0	0	N/A
Grade 3	269	72	27%	269	79	29%
Grade 4	281	69	25%	281	76	27%
Grade 5	232	30	13%	232	35	15%
Grade 6	374	52	14%	374	61	16%
Grade 7	354	57	16%	354	67	19%
Grade 8	356	42	12%	356	43	12%
Literature	464	51	11%	464	59	13%
Total	2595	459	18%	2330	420	18%
	Correlation = 0.934			Correlation = 0.920		
	Additive Constant = 0.074			Additive Constant = 0.045		

For the most part, whether high absolute displacement values or robust Z was used to identify items with operational estimates that differ from banked values, the same items were identified. For example, in calibration 1, all items with absolute displacement greater than 0.557 have an absolute value of robust Z greater than 1.645. In the displacement range of 0.518 to 0.557, some items have absolute value of robust Z greater than 1.645 while others do not. No items with absolute displacement less than 0.518 have absolute value of robust Z greater than 1.645.

SCIENCE

Figure 18–9 shows the displacements from a concurrent anchored calibration of all science items using the operational data set. Items are color-coded by grade/course.

Figure 18–9. Science Anchored Calibration Displacements — All Items

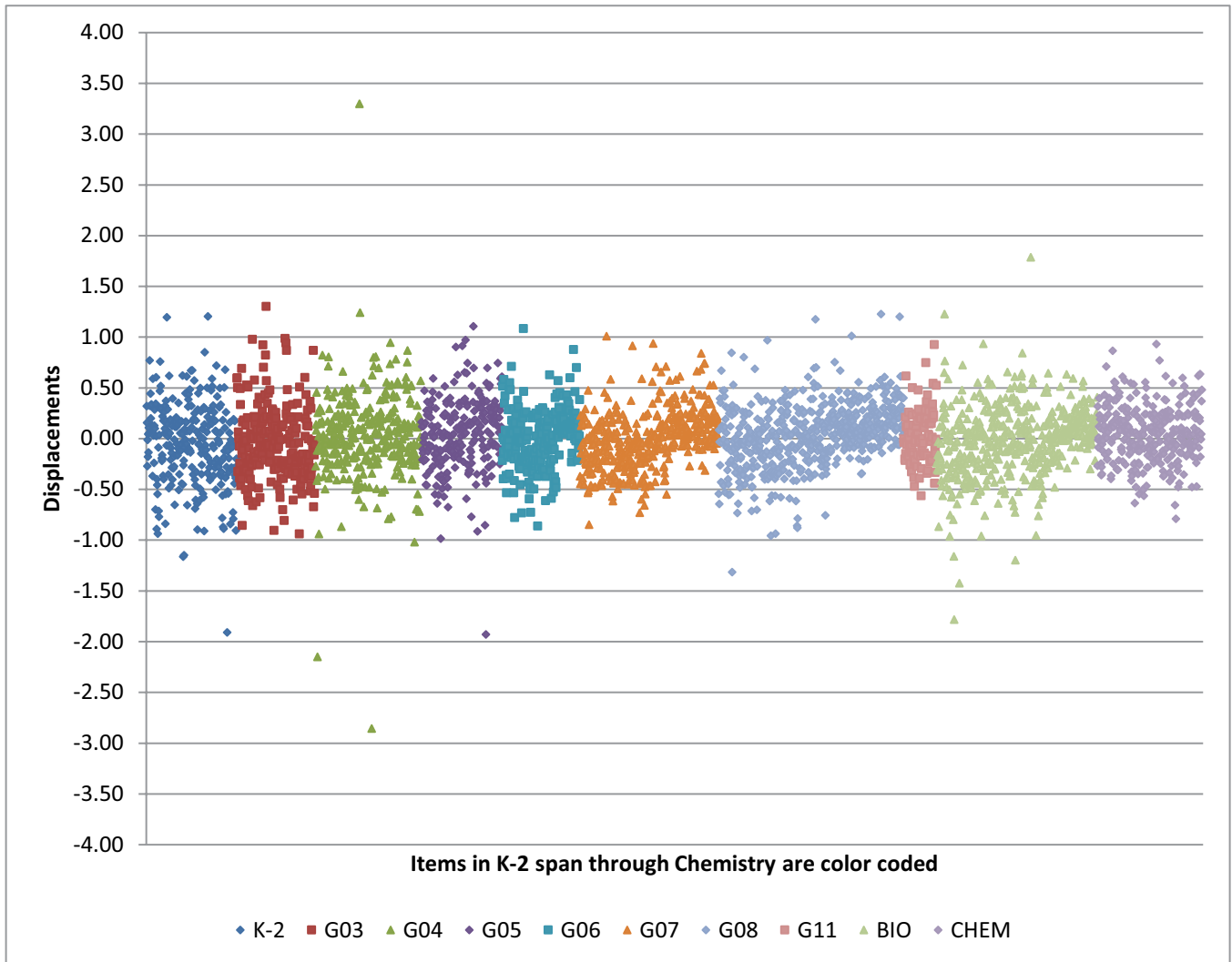


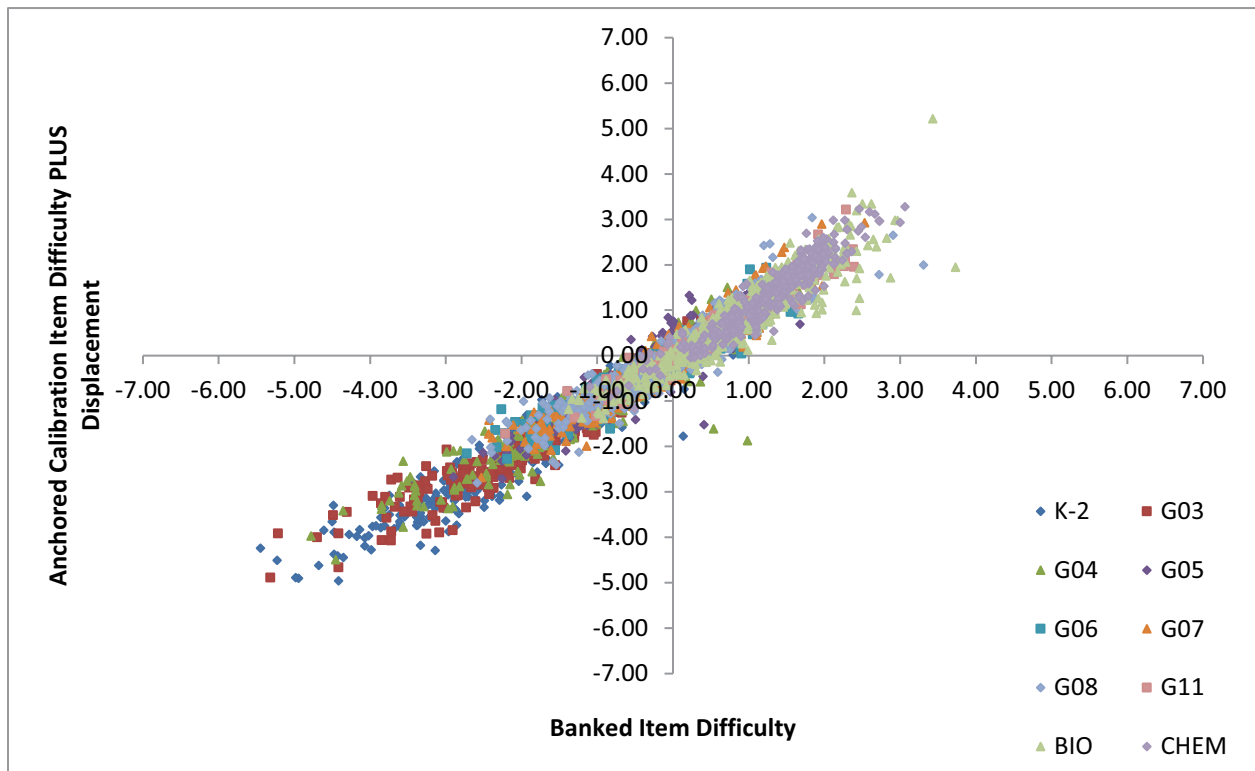
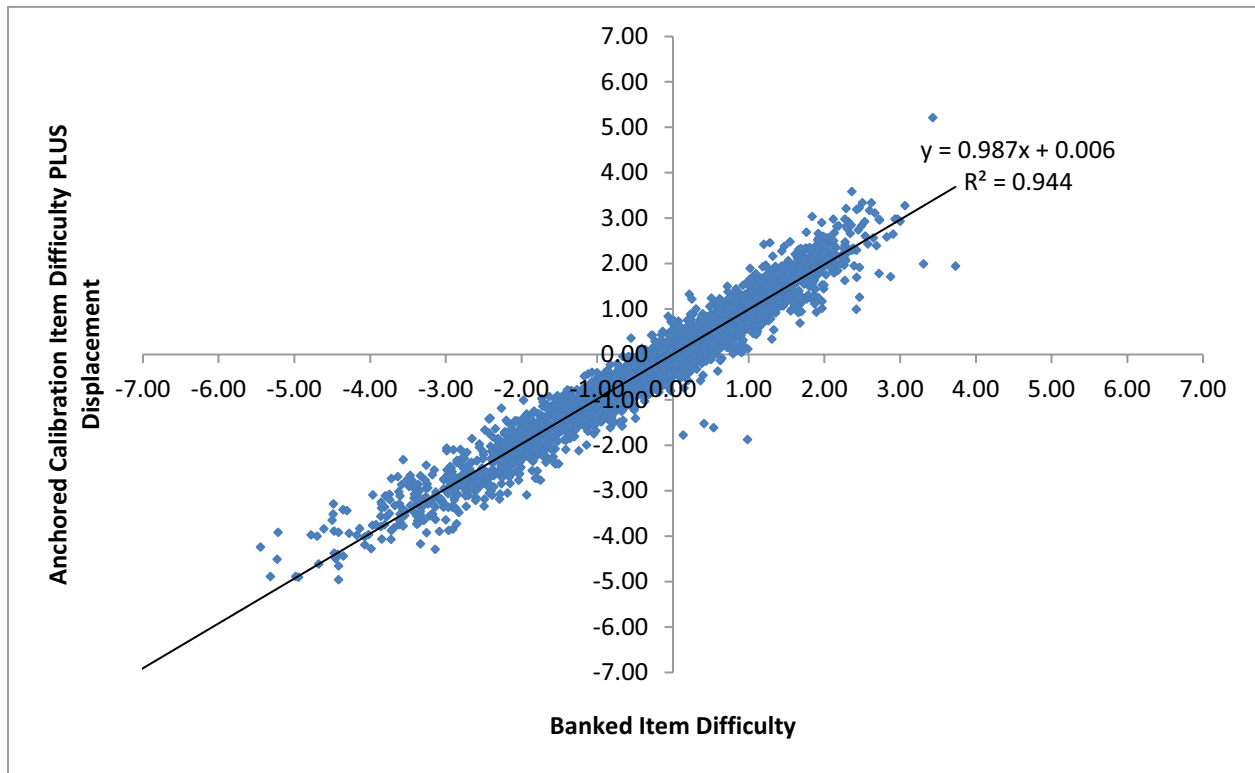
Table 18–7 summarizes the data in Figure 18–9. It contains item counts by grade/course and displacements in intervals of 0.1 logits. According to the WINSTEPS manual, in an anchored calibration, half of the displacements are expected to be negative and half positive. Displacements less than 0.5 in magnitude are considered small (unlikely to have much impact). Eighty-nine percent of the items in the bank have a displacement less than 0.5 in magnitude (gray shaded in Table 18–7).

Table 18–7. Number of Science Items by Grade/Course and Displacement Interval

Interval	K-2	G03	G04	G05	G06	G07	G08	G11	BIO	CHEM	Total
Disp. ≤ -1.0	3	0	3	1	0	0	1	0	4	0	12
-1.0 < Disp. ≤ -0.9	3	2	1	2	0	0	2	0	3	0	13
-0.9 < Disp. ≤ -0.8	6	2	1	1	1	1	2	0	1	0	15
-0.8 < Disp. ≤ -0.7	5	1	3	1	3	1	5	0	5	1	25
-0.7 < Disp. ≤ -0.6	7	5	4	2	1	2	4	0	6	2	33
-0.6 < Disp. ≤ -0.5	9	8	5	4	6	6	9	1	14	4	66
-0.5 < Disp. ≤ -0.4	14	11	11	10	8	31	13	2	29	8	137
-0.4 < Disp. ≤ -0.3	18	25	12	13	14	18	34	6	25	18	183
-0.3 < Disp. ≤ -0.2	25	35	29	17	24	40	37	10	47	24	288
-0.2 < Disp. ≤ -0.1	24	22	32	27	26	45	48	16	47	30	317
-0.1 < Disp. ≤ 0.0	29	31	45	26	30	65	80	18	64	49	437
0.0 < Disp. ≤ 0.1	31	26	35	28	33	72	87	10	86	56	464
0.1 < Disp. ≤ 0.2	36	20	47	28	33	55	78	17	58	39	411
0.2 < Disp. ≤ 0.3	14	17	25	27	26	41	67	12	38	42	309
0.3 < Disp. ≤ 0.4	17	8	15	24	9	16	42	2	28	18	179
0.4 < Disp. ≤ 0.5	10	7	19	8	10	11	25	2	13	14	119
0.5 < Disp. ≤ 0.6	7	8	11	9	5	7	11	3	15	11	87
0.6 < Disp. ≤ 0.7	7	2	4	6	2	4	7	1	7	4	44
0.7 < Disp. ≤ 0.8	3	1	5	2	1	4	2	1	2	2	23
0.8 < Disp. ≤ 0.9	1	3	5	0	1	1	2	0	1	1	15
0.9 < Disp. ≤ 1.0	0	4	1	3	0	2	1	1	1	1	14
1.0 < Disp.	2	1	2	1	1	1	4	0	2	0	14
TOTAL	271	239	315	240	234	423	561	102	496	324	3205

Figure 18–10 shows banked item difficulties plotted against the item difficulties plus displacement from the anchored concurrent calibration of operational data for the science item bank. A line of best fit is included in the upper plot. If item difficulties from the operational calibration are close to the banked values, the line will approach an intercept of zero and a slope of one. The lower plot displays the same data as the upper, but color codes items by grade/course in an attempt to lend insight into the possible causes for the deviations.

Figure 18–10. Science Banked Item Parameters vs. Anchored Calibration — All Items



Based on Figure 18–10, one can see that there are a number of items with operational estimates that differ from their banked values. Some of these are in the K–2 span. Recall that the operational CDT is available to students in grade 3 and above. While items were developed to sample content in the K–2 span to provide better diagnostic information for lower performing students, the data from the operational administration did not include students below grade 3. To investigate whether this had an impact on the stability of the item parameter estimates, a concurrent anchored calibration of all items in grade 3 and above was run.

Figure 18–11 and Table 18–8 summarize the displacements from a concurrent anchored calibration of all items in grade 3 and above. Eighty-nine percent of the items in the calibration have displacement less than 0.5 in magnitude (gray shaded in Table 18–8). Figure 18–12 shows banked item difficulties plotted against the item difficulties plus displacement. Again, a line of best fit is included in the upper plot.

Figure 18–11. Science Anchored Calibration Displacements — All Items in Grade 3 and Above

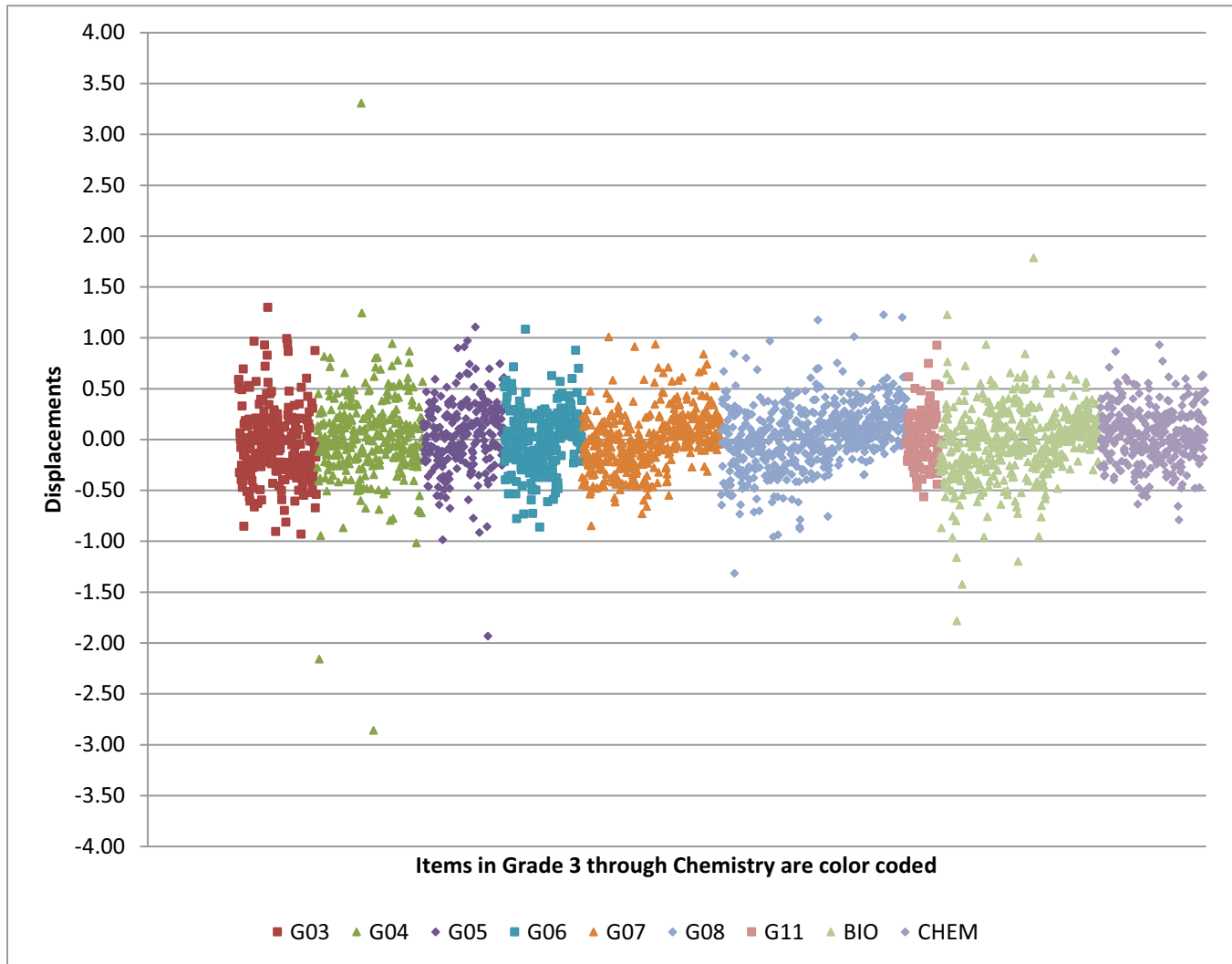
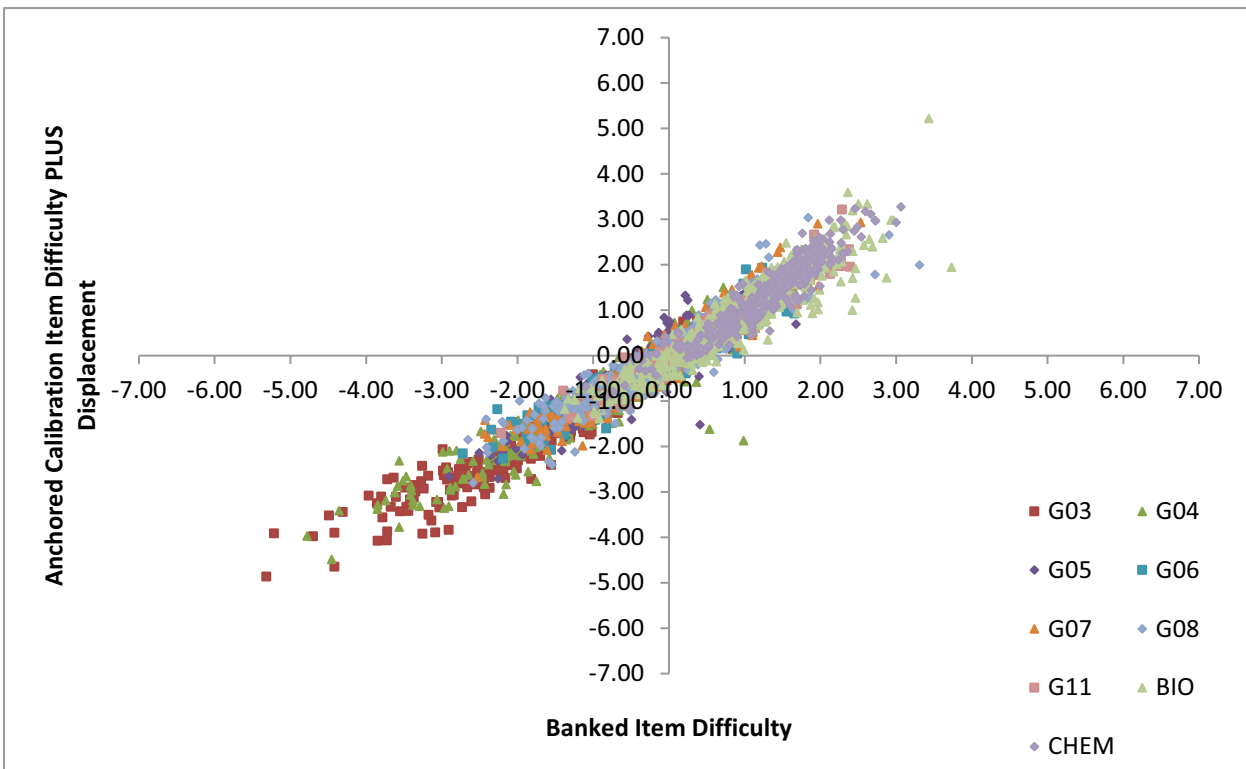
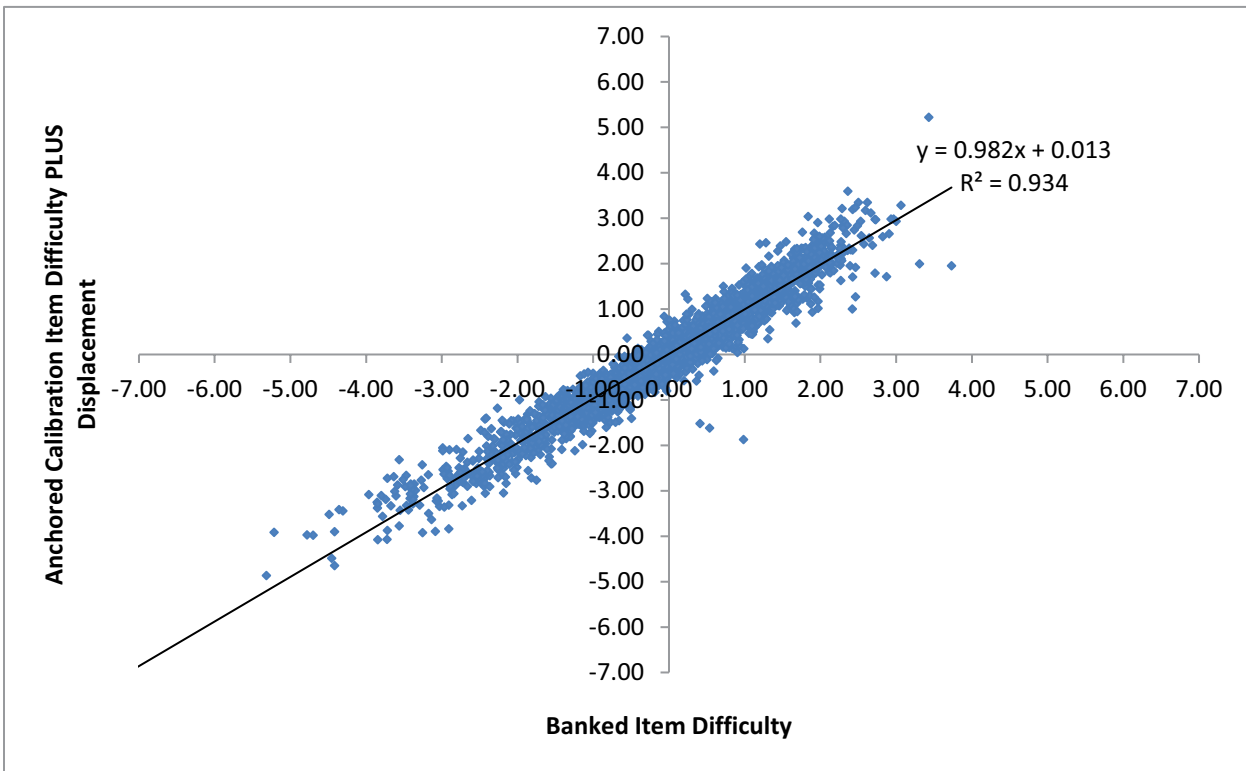


Table 18–8. Number of Science Items by Grade/Course and Displacement Interval

Interval	G03	G04	G05	G06	G07	G08	G11	BIO	CHEM	Total
Disp. ≤ -1.0	0	3	1	0	0	1	0	4	0	9
-1.0 < Disp. ≤ -0.9	2	1	2	0	0	2	0	3	0	10
-0.9 < Disp. ≤ -0.8	2	1	1	1	1	2	0	1	0	9
-0.8 < Disp. ≤ -0.7	0	4	1	3	1	5	0	5	1	20
-0.7 < Disp. ≤ -0.6	6	4	2	1	2	4	0	6	2	27
-0.6 < Disp. ≤ -0.5	9	5	4	6	6	9	1	14	4	58
-0.5 < Disp. ≤ -0.4	12	11	10	8	31	13	2	29	8	124
-0.4 < Disp. ≤ -0.3	23	12	13	14	18	34	6	25	18	163
-0.3 < Disp. ≤ -0.2	37	30	18	24	40	37	10	47	24	267
-0.2 < Disp. ≤ -0.1	20	31	26	26	45	48	16	47	30	289
-0.1 < Disp. ≤ 0.0	33	46	26	30	65	80	18	64	49	411
0.0 < Disp. ≤ 0.1	24	35	28	33	72	87	10	86	56	431
0.1 < Disp. ≤ 0.2	19	47	28	33	55	78	17	58	39	374
0.2 < Disp. ≤ 0.3	17	25	27	27	41	67	12	38	42	296
0.3 < Disp. ≤ 0.4	10	13	24	8	16	42	2	28	18	161
0.4 < Disp. ≤ 0.5	6	19	8	10	11	25	2	13	14	108
0.5 < Disp. ≤ 0.6	8	11	9	5	7	11	3	15	11	80
0.6 < Disp. ≤ 0.7	2	4	6	2	4	7	1	7	4	37
0.7 < Disp. ≤ 0.8	1	5	2	1	4	2	1	2	2	20
0.8 < Disp. ≤ 0.9	3	5	0	1	1	2	0	1	1	14
0.9 < Disp. ≤ 1.0	4	1	3	0	2	1	1	1	1	14
1.0 < Disp.	1	2	1	1	1	4	0	2	0	12
TOTAL	239	315	240	234	423	561	102	496	324	2934

Figure 18–12. Science Banked Item Parameters vs. Anchored Calibration — All Items in Grade 3 and Above



It is evident from this series of plots that the item parameter estimates are reasonably stable for the items in grade 3 and above.

For both of the anchored calibrations described in this section, banked item parameters were compared to the banked item parameters plus the displacements by calculating a robust Z statistic for each item pairing. If item difficulties from the operational calibration are close to the banked values, the correlation will be high and the additive constant near zero. Table 18–9 shows the number of items in each grade/course and the number and percent of items with absolute value of robust Z greater than 1.645 in each of the calibrations.

Table 18–9. Summary of Robust Z across Anchored Calibrations in Science

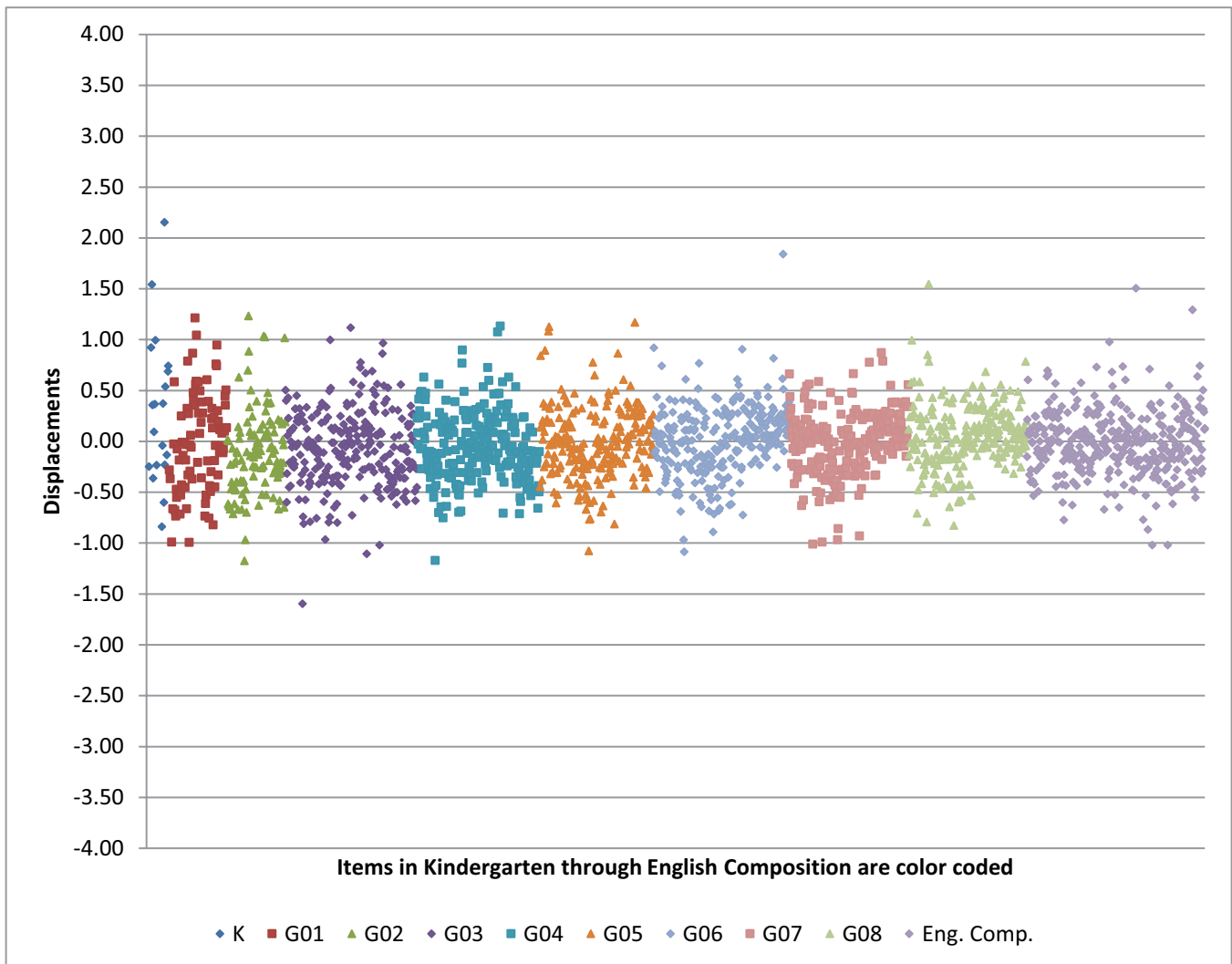
Grade/ Course	Cal 1: Number of Items	Cal 1: Number of Items with ABS(Z) > 1.645	Cal 1: Percent of Items with ABS(Z) > 1.645	Cal 2: Number of Items	Cal 2: Number of Items with ABS(Z) > 1.645	Cal 2: Percent of Items with ABS(Z) > 1.645
K–2 span	271	57	21%	0	0	N/A
Grade 3	239	42	18%	239	45	19%
Grade 4	315	53	17%	315	55	17%
Grade 5	240	35	15%	240	38	16%
Grade 6	234	24	10%	234	25	11%
Grade 7	423	34	8%	423	38	9%
Grade 8	561	54	10%	561	57	10%
Grade 11	102	8	8%	102	8	8%
Biology	496	72	15%	496	76	15%
Chemistry	324	31	10%	324	31	10%
Total	3205	410	13%	2934	373	13%
	Correlation = 0.972			Correlation = 0.967		
	Additive Constant = 0.009			Additive Constant = 0.013		

For the most part, whether high absolute displacement values or robust Z was used to identify items with operational estimates that differ from banked values, the same items were identified. For example, in calibration 1, all items with absolute displacement greater than 0.493 have an absolute value of robust Z greater than 1.645. In the displacement range of 0.463 to 0.493, some items have absolute value of robust Z greater than 1.645 while others do not. No items with absolute displacement less than 0.463 have absolute value of robust Z greater than 1.645.

WRITING/ENGLISH COMPOSITION

Figure 18–13 shows the displacements from a concurrent anchored calibration of all writing items using the operational data set. Items are color-coded by grade/course.

Figure 18–13. Writing Anchored Calibration Displacements — All Items



Note: Many kindergarten items were not estimated by WINSTEPS software due to insufficient counts.

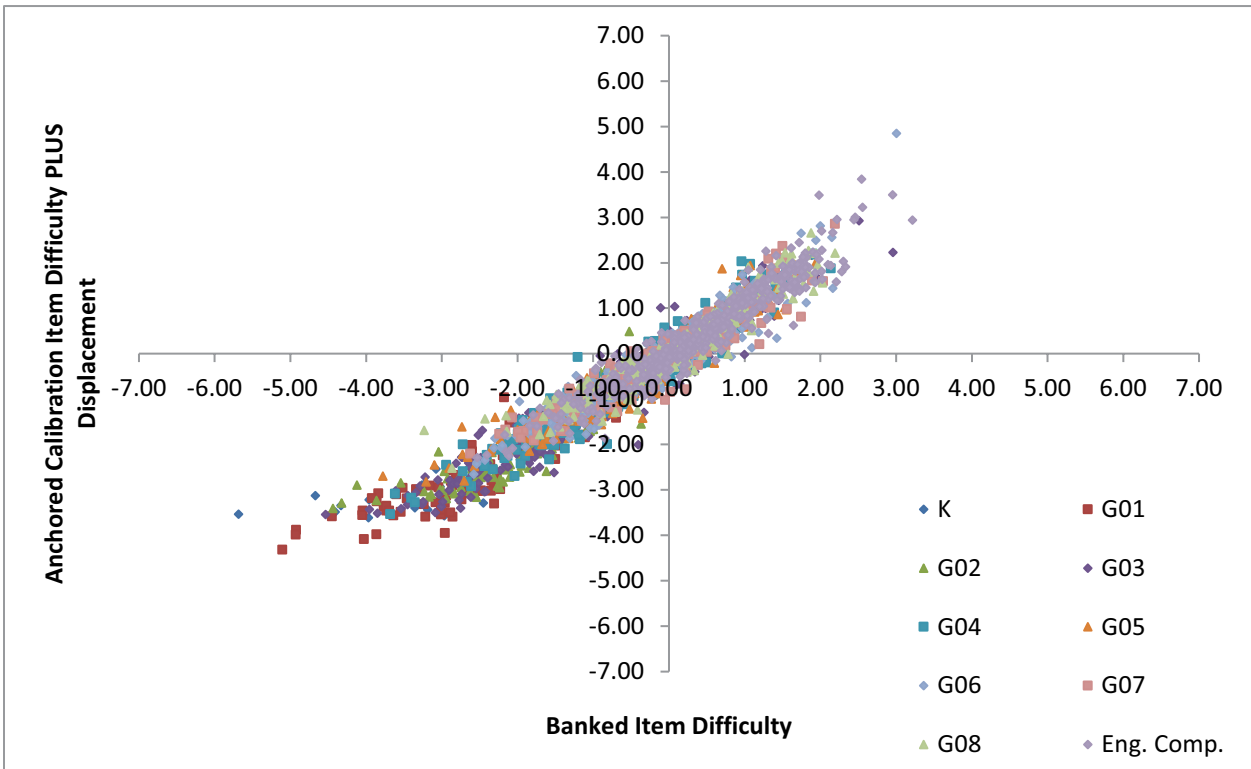
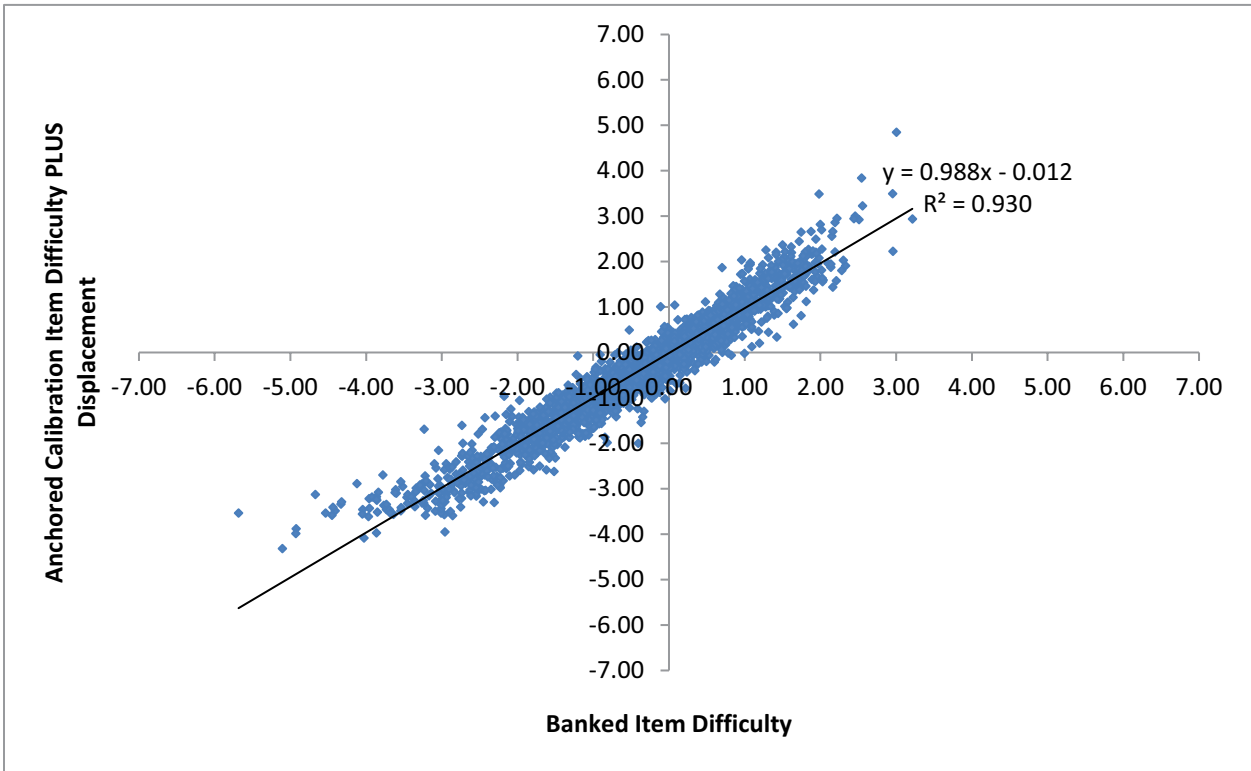
Table 18–10 summarizes the data in Figure 18–13. It contains item counts by grade/course and displacements in intervals of 0.1 logits. According to the WINSTEPS manual, in an anchored calibration, half of the displacements are expected to be negative and half positive. Displacements less than 0.5 in magnitude are considered small (unlikely to have much impact). Eighty-six percent of the items in the bank have a displacement less than 0.5 in magnitude (gray shaded in Table 18–10).

Table 18–10. Number of Writing Items by Grade/Course and Displacement Interval

Interval	K	G01	G02	G03	G04	G05	G06	G07	G08	COMP	Total
Disp. ≤ -1.0	0	0	1	3	1	1	1	1	0	2	10
-1.0 < Disp. ≤ -0.9	0	2	1	1	0	0	1	3	0	0	8
-0.9 < Disp. ≤ -0.8	1	1	0	1	0	1	1	1	1	1	8
-0.8 < Disp. ≤ -0.7	0	4	1	7	4	2	2	0	2	2	24
-0.7 < Disp. ≤ -0.6	0	4	11	3	5	5	8	1	1	6	44
-0.6 < Disp. ≤ -0.5	1	4	6	13	8	8	7	10	5	5	67
-0.5 < Disp. ≤ -0.4	0	6	7	20	21	9	11	5	12	18	109
-0.4 < Disp. ≤ -0.3	1	5	10	23	19	14	10	18	8	25	133
-0.3 < Disp. ≤ -0.2	3	4	15	31	26	23	24	24	10	30	190
-0.2 < Disp. ≤ -0.1	1	7	10	22	33	26	19	15	28	67	228
-0.1 < Disp. ≤ 0.0	1	10	12	37	28	30	33	36	37	56	280
0.0 < Disp. ≤ 0.1	1	3	13	19	22	26	39	34	31	62	250
0.1 < Disp. ≤ 0.2	0	6	8	26	19	19	35	26	34	56	229
0.2 < Disp. ≤ 0.3	0	6	4	17	24	17	35	34	21	51	209
0.3 < Disp. ≤ 0.4	3	8	5	16	8	22	18	14	17	36	147
0.4 < Disp. ≤ 0.5	0	3	1	7	13	5	13	7	12	13	74
0.5 < Disp. ≤ 0.6	1	5	1	9	5	3	4	5	8	11	52
0.6 < Disp. ≤ 0.7	1	1	1	2	2	2	3	2	1	8	23
0.7 < Disp. ≤ 0.8	1	3	1	2	2	1	2	2	2	5	21
0.8 < Disp. ≤ 0.9	0	1	1	1	1	3	1	1	1	0	10
0.9 < Disp. ≤ 1.0	2	1	0	2	0	0	2	0	1	1	9
1.0 < Disp.	2	2	4	1	2	3	1	0	1	2	18
TOTAL	19	86	113	263	243	220	270	239	233	457	2143

Figure 18–14 shows banked item difficulties plotted against the item difficulties plus displacement from the anchored concurrent calibration of operational data for the writing item bank. A line of best fit is included in the upper plot. If item difficulties from the operational calibration are close to the banked values, the line will approach an intercept of zero and a slope of one. The lower plot displays the same data as the upper, but color codes items by grade/course in an attempt to lend insight into the possible causes for the deviations.

Figure 18–14. Writing Banked Item Parameters vs. Anchored Calibration — All Items



Based on Figure 18–14, one can see that there are a number of items with operational estimates that differ from their banked values. Some of these are in kindergarten through grade 2. Recall that the operational CDT is available to students in grade 3 and above. While items were developed to sample content in kindergarten through grade 2 to provide better diagnostic information for lower performing students, the data from the operational administration did not include students below grade 3. To investigate whether this had an impact on the stability of the item parameter estimates, a concurrent anchored calibration of all items in grade 3 and above was run.

Figure 18–15 and Table 18–11 summarize the displacements from a concurrent anchored calibration of all items in grade 3 and above. Eighty-eight percent of the items in the calibration have displacement less than 0.5 in magnitude (gray shaded in Table 18–11). Figure 18–16 shows banked item difficulties plotted against the item difficulties plus displacement. Again, a line of best fit is included in the upper plot.

Figure 18–15. Writing Anchored Calibration Displacements — All Items in Grade 3 and Above

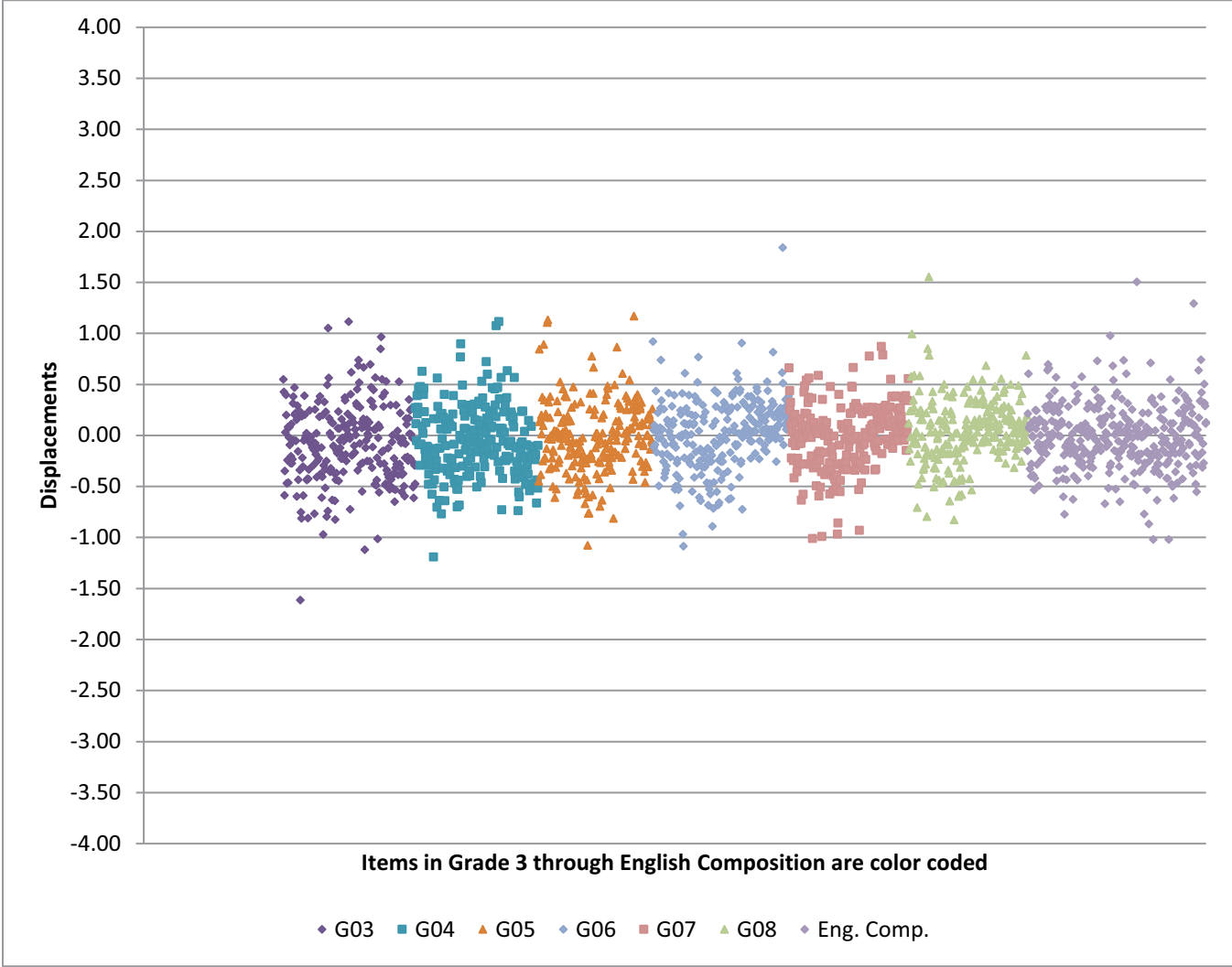
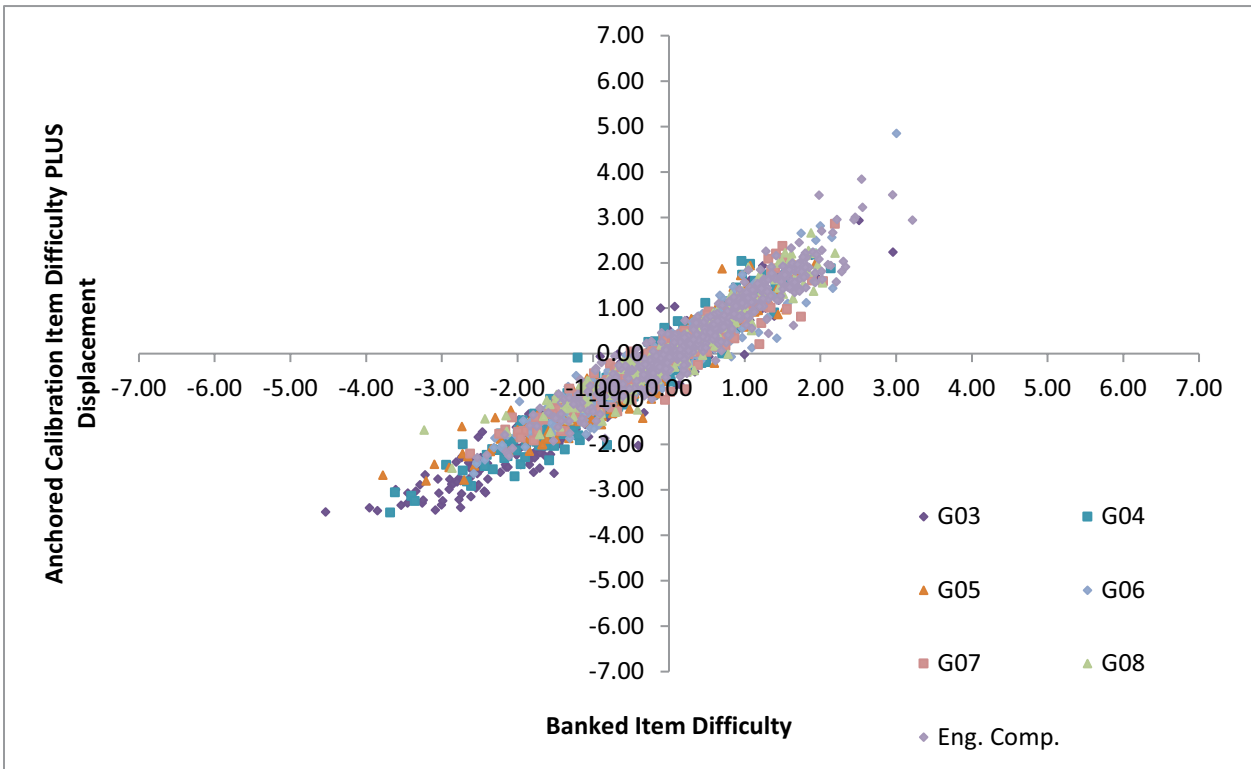
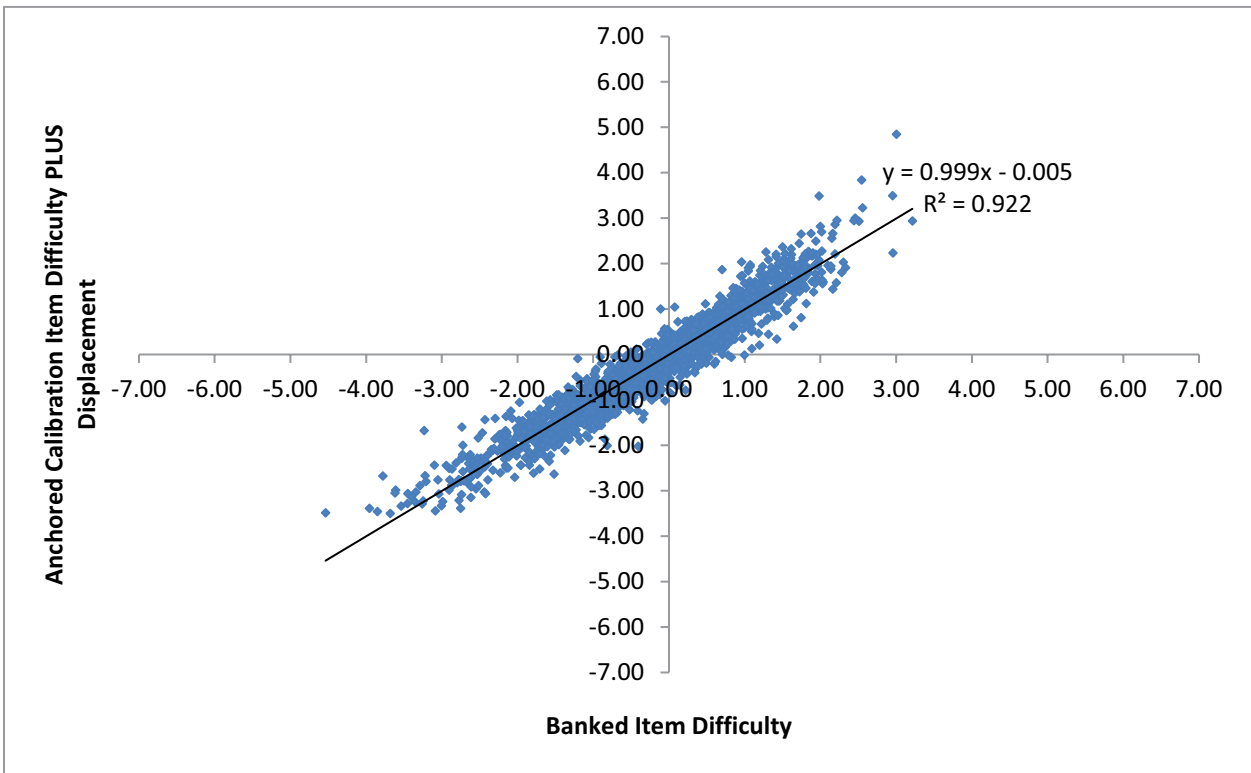


Table 18–11. Number of Writing Items by Grade/Course and Displacement Interval

Interval	G03	G04	G05	G06	G07	G08	COMP	Total
Disp. ≤ -1.0	3	1	1	1	1	0	2	9
-1.0 < Disp. ≤ -0.9	1	0	0	1	3	0	0	5
-0.9 < Disp. ≤ -0.8	3	0	1	1	1	1	1	8
-0.8 < Disp. ≤ -0.7	5	5	2	2	0	2	2	18
-0.7 < Disp. ≤ -0.6	5	5	5	8	1	1	6	31
-0.6 < Disp. ≤ -0.5	12	8	7	7	10	5	5	54
-0.5 < Disp. ≤ -0.4	21	22	10	11	5	12	18	99
-0.4 < Disp. ≤ -0.3	24	18	15	10	18	8	25	118
-0.3 < Disp. ≤ -0.2	31	28	22	24	24	10	30	169
-0.2 < Disp. ≤ -0.1	23	33	27	19	15	28	67	212
-0.1 < Disp. ≤ 0.0	30	25	30	33	37	37	56	248
0.0 < Disp. ≤ 0.1	23	22	24	39	33	31	62	234
0.1 < Disp. ≤ 0.2	23	20	19	35	26	34	56	213
0.2 < Disp. ≤ 0.3	21	23	18	35	34	21	51	203
0.3 < Disp. ≤ 0.4	14	9	20	18	14	17	36	128
0.4 < Disp. ≤ 0.5	8	12	8	13	7	12	13	73
0.5 < Disp. ≤ 0.6	7	5	2	4	5	8	11	42
0.6 < Disp. ≤ 0.7	4	2	2	3	2	1	8	22
0.7 < Disp. ≤ 0.8	1	2	1	2	2	2	5	15
0.8 < Disp. ≤ 0.9	1	1	3	1	1	1	0	8
0.9 < Disp. ≤ 1.0	1	0	0	2	0	1	1	5
1.0 < Disp.	2	2	3	1	0	1	2	11
TOTAL	263	243	220	270	239	233	457	1925

Figure 18–16. Writing Banked Item Parameters vs. Anchored Calibration — All Items in Grade 3 and Above



It is evident from this series of plots that the item parameter estimates are reasonably stable for the items in grade 3 and above.

For both of the anchored calibrations described in this section, banked item parameters were compared to the banked item parameters plus the displacements by calculating a robust Z statistic for each item pairing. If item difficulties from the operational calibration are close to the banked values, the correlation will be high and the additive constant near zero. Table 18–12 shows the number of items in each grade/course and the number and percent of items with absolute value of robust Z greater than 1.645 in each of the calibrations.

Table 18–12. Summary of Robust Z across Anchored Calibrations in Writing

Grade/ Course	Cal 1: Number of Items	Cal 1: Number of Items with ABS(Z) > 1.645	Cal 1: Percent of Items with ABS(Z) > 1.645	Cal 2: Number of Items	Cal 2: Number of Items with ABS(Z) > 1.645	Cal 2: Percent of Items with ABS(Z) > 1.645
Kindergarten	19	9	47%	0	0	N/A
Grade 1	86	24	28%	0	0	N/A
Grade 2	113	24	21%	0	0	N/A
Grade 3	263	37	14%	263	41	16%
Grade 4	243	25	10%	243	28	12%
Grade 5	220	22	10%	220	24	11%
Grade 6	270	27	10%	270	29	11%
Grade 7	239	21	9%	239	24	10%
Grade 8	233	19	8%	233	20	9%
English Comp	457	35	8%	457	38	8%
Total	2143	243	11%	1925	204	11%
	Correlation = 0.964			Correlation = 0.960		
	Additive Constant = -0.007			Additive Constant = -0.005		

For the most part, whether high absolute displacement values or robust Z was used to identify items with operational estimates that differ from banked values, the same items were identified. For example, in calibration 1, all items with absolute displacement greater than 0.543 have an absolute value of robust Z greater than 1.645. In the displacement range of 0.532 to 0.543, some items have absolute value of robust Z greater than 1.645 while others do not. No items with absolute displacement less than 0.532 have absolute value of robust Z greater than 1.645.

ANCHORED GRADE LEVEL CALIBRATIONS

While the CDT content area item banks are vertically scaled with items from Kindergarten through high school courses, the assessments themselves are first made available in grade 3. Also, while the items are selected adaptively, most students take a large number of items at grade level. Given these conditions, item parameters were also evaluated by running anchored grade level item calibrations—grade 3 items calibrated with grade 3 students, and so on. This is similar to how field-test items were calibrated. Table 18–13 shows the number of students in each grade level calibration.

Table 18–13. Number of Students in Grade Level Calibrations

Content Area	Grade/Course	Number of Students
Mathematics	Grade 3	51,976
Mathematics	Grade 4	59,764
Mathematics	Grade 5	63,615
Mathematics	Grade 6	77,419
Mathematics	Grade 7	76,299
Mathematics	Grade 8	61,278
Mathematics	Algebra I	116,749
Mathematics	Geometry	12,402
Mathematics	Algebra II	11,472
Reading	Grade 3	44,702
Reading	Grade 4	49,847
Reading	Grade 5	54,728
Reading	Grade 6	63,315
Reading	Grade 7	65,930
Reading	Grade 8	63,068
Reading	Reading/Literature	158,250
Science	Grade 3	4,010
Science	Grade 4	20,476
Science	Grade 5	4,452
Science	Grade 6	20,659
Science	Grade 7	33,151
Science	Grade 8	51,426
Science	High School	1,287
Science	Biology	131,432
Science	Chemistry	7,953
Writing	Grade 3	6,943
Writing	Grade 4	7,504
Writing	Grade 5	9,742
Writing	Grade 6	15,543
Writing	Grade 7	17,971
Writing	Grade 8	17,828
Writing	Writing/English Composition	7,164

MATHEMATICS

Figure 18–17 shows the displacements from the anchored grade level calibrations of operational data for the mathematics item bank. Items are color-coded by grade/course.

Figure 18–17. Mathematics Anchored Grade Level Calibrations Displacements — All Items in Grade 3 and Above

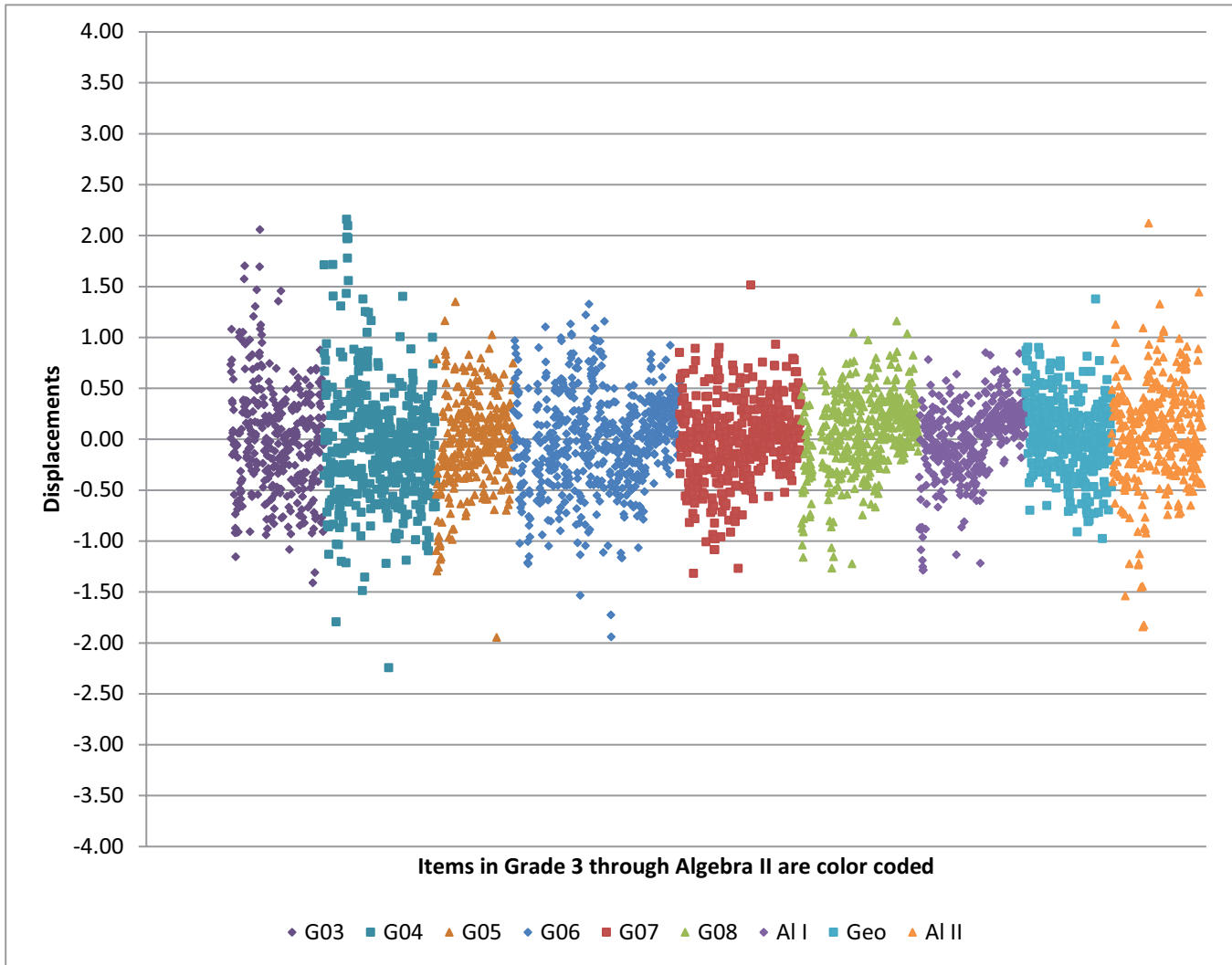


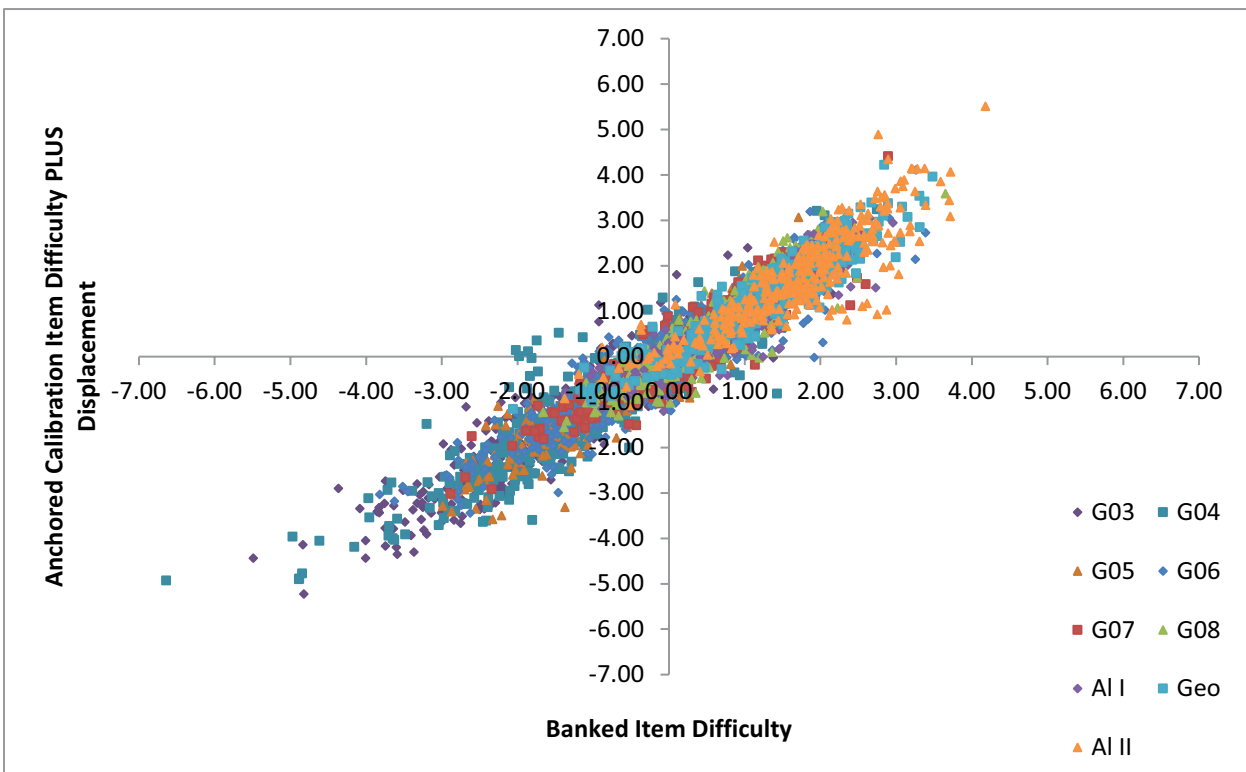
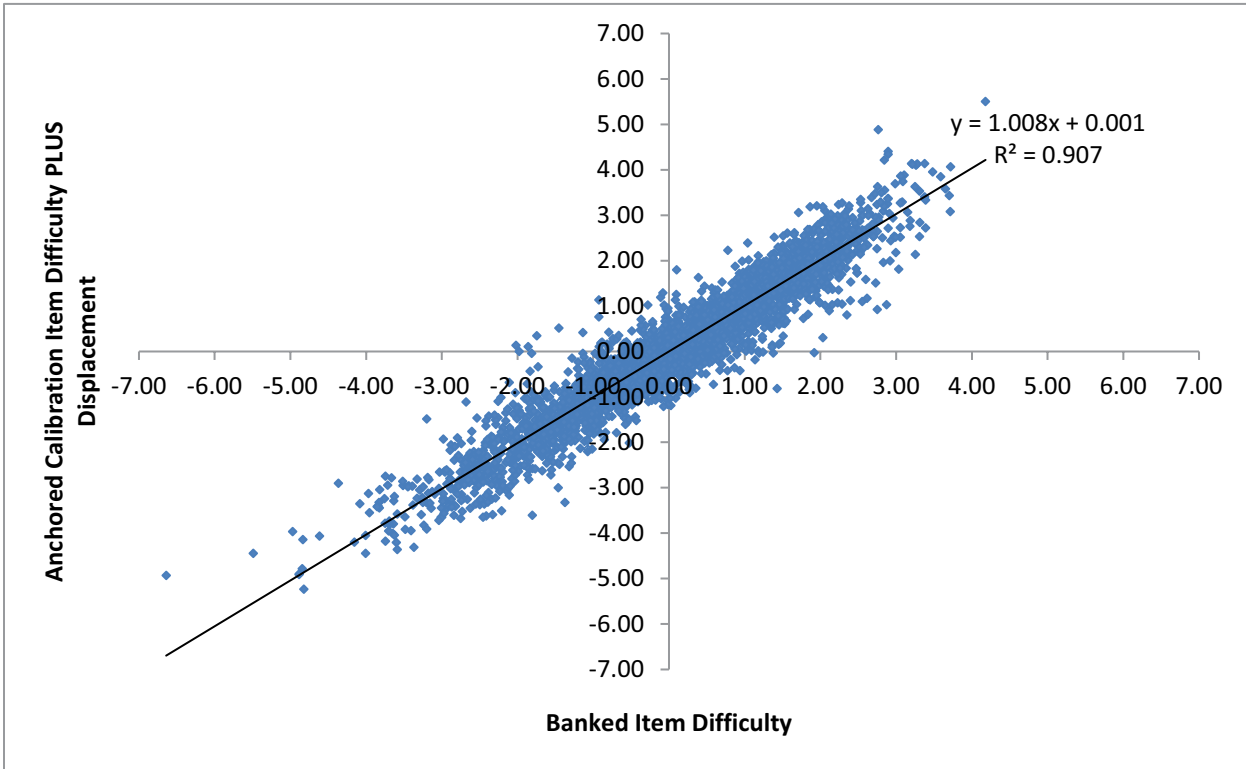
Table 18–14 summarizes the data in Figure 18–17. It contains item counts by grade/course and displacements in intervals of 0.1 logits. According to the WINSTEPS manual, in an anchored calibration, half of the displacements are expected to be negative and half positive. Displacements less than 0.5 in magnitude are considered small (unlikely to have much impact). Seventy-six percent of the items in the bank have a displacement less than 0.5 in magnitude (gray shaded in Table 18–14).

Table 18–14. Number of Mathematics Items by Grade/Course and Displacement Interval

Interval	G03	G04	G05	G06	G07	G08	ALI	GEO	ALII	Total
Disp. \leq -1.0	4	13	9	18	5	6	7	0	9	71
-1.0 < Disp. \leq -0.9	8	8	3	4	4	1	1	2	2	33
-0.9 < Disp. \leq -0.8	9	10	4	6	3	5	7	1	2	47
-0.8 < Disp. \leq -0.7	13	9	3	15	9	4	0	7	7	67
-0.7 < Disp. \leq -0.6	12	25	7	18	8	4	4	7	7	92
-0.6 < Disp. \leq -0.5	15	27	12	20	20	9	13	6	7	129
-0.5 < Disp. \leq -0.4	22	20	12	32	15	15	11	15	18	160
-0.4 < Disp. \leq -0.3	21	28	16	36	29	22	26	17	21	216
-0.3 < Disp. \leq -0.2	16	39	25	38	31	28	22	30	21	250
-0.2 < Disp. \leq -0.1	27	20	28	47	44	33	39	28	30	296
-0.1 < Disp. \leq 0.0	29	35	30	56	51	38	40	50	36	365
0.0 < Disp. \leq 0.1	31	27	26	52	60	41	42	31	21	331
0.1 < Disp. \leq 0.2	22	32	22	47	50	43	78	31	34	359
0.2 < Disp. \leq 0.3	20	24	25	41	35	49	47	31	30	302
0.3 < Disp. \leq 0.4	27	16	14	38	16	35	31	24	29	230
0.4 < Disp. \leq 0.5	15	19	11	31	22	24	15	14	20	171
0.5 < Disp. \leq 0.6	13	15	11	25	12	15	9	11	12	123
0.6 < Disp. \leq 0.7	10	3	8	14	11	9	6	6	10	77
0.7 < Disp. \leq 0.8	6	12	8	14	9	9	1	8	8	75
0.8 < Disp. \leq 0.9	5	8	4	9	4	3	3	5	7	48
0.9 < Disp. \leq 1.0	5	1	0	9	1	1	0	1	5	23
1.0 < Disp.	16	20	3	8	1	3	0	1	7	59
TOTAL	346	411	281	578	440	397	402	326	343	3524

Figure 18–18 shows banked item difficulties plotted against the item difficulties plus displacement from the anchored grade level calibrations of all items using the operational data set. Again, a line of best fit is included in the upper plot.

Figure 18–18. Mathematics Banked Item Parameters vs. Anchored Grade Level Calibrations — All Items in Grade 3 and Above



For the anchored grade level calibrations described above, banked item parameters were compared to the newly calibrated values by calculating a robust Z statistic for each item pairing. If item difficulties from the operational calibration are close to the banked values, the correlation will be high and the additive constant near zero. Table 18–15 shows the number of items in each grade/course and the number and percent of items with absolute value of robust Z greater than 1.645 in the calibrations.

Table 18–15. Summary of Robust Z across Anchored Grade Level Calibrations in Mathematics

Grade/ Course	Cal 1: Number of Items	Cal 1: Number of Items with ABS(Z) > 1.645	Cal 1: Percent of Items with ABS(Z) > 1.645
Kindergarten	0	0	N/A
Grade 1	0	0	N/A
Grade 2	0	0	N/A
Grade 3	346	79	23%
Grade 4	411	96	23%
Grade 5	281	39	14%
Grade 6	578	95	16%
Grade 7	440	42	10%
Grade 8	397	34	9%
Algebra I	402	21	5%
Geometry	326	29	9%
Algebra II	343	57	17%
Total	3524	492	14%
	Correlation = 0.952		
	Additive Constant = 0.003		

For the most part, whether high absolute displacement values or robust Z was used to identify items with operational estimates that differ from banked values, the same items were identified. For example, all items with absolute displacement greater than 0.670 have an absolute value of robust Z greater than 1.645. In the displacement range of 0.645 to 0.670, some items have absolute value of robust Z greater than 1.645 while others do not. No items with absolute displacement less than 0.645 have absolute value of robust Z greater than 1.645.

READING/LITERATURE

Figure 18–19 shows the displacements from the anchored grade level calibrations of operational data for the reading item bank. Items are color-coded by grade/course.

Figure 18–19. Reading Anchored Grade Level Calibrations Displacements — All Items in Grade 3 and Above

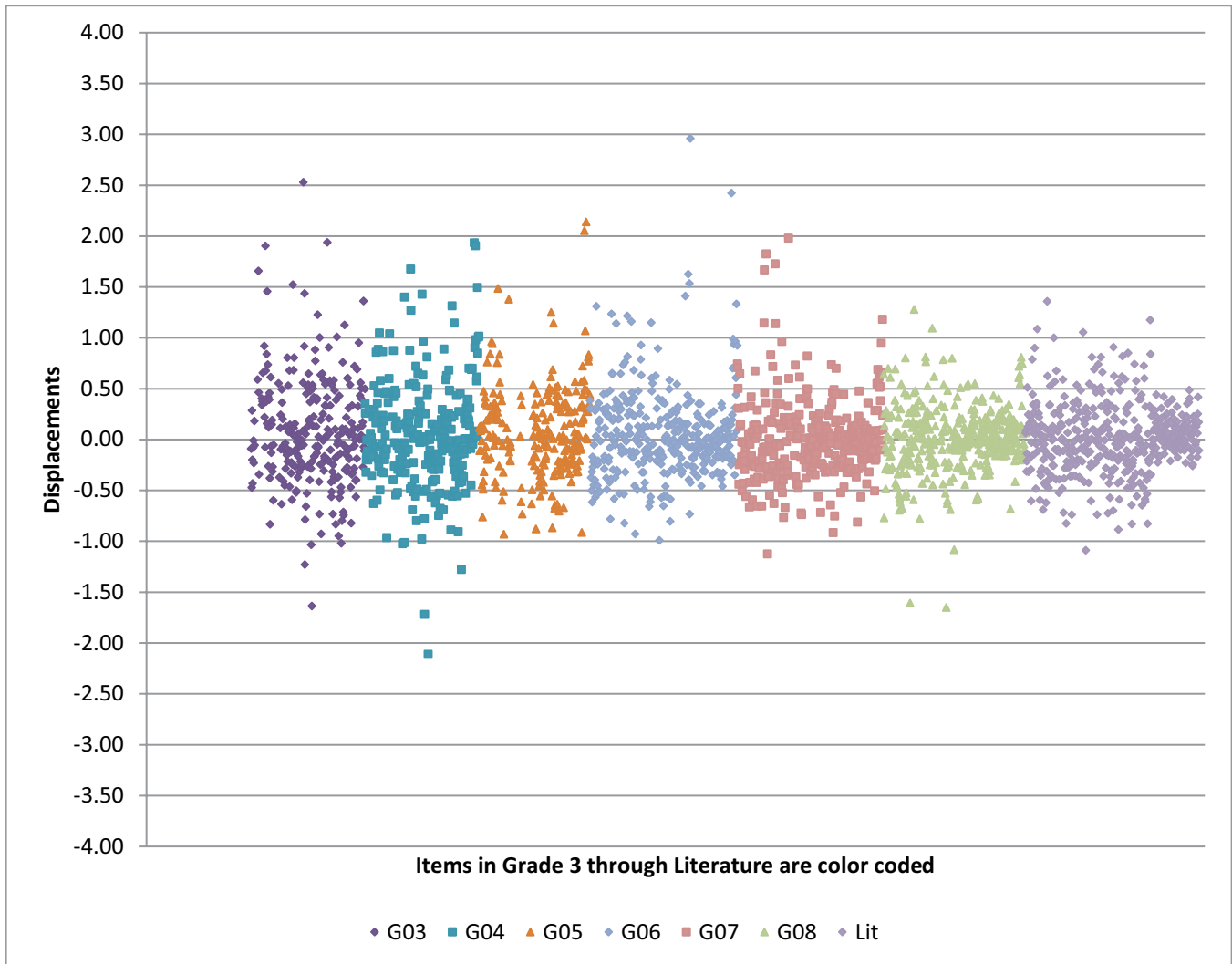


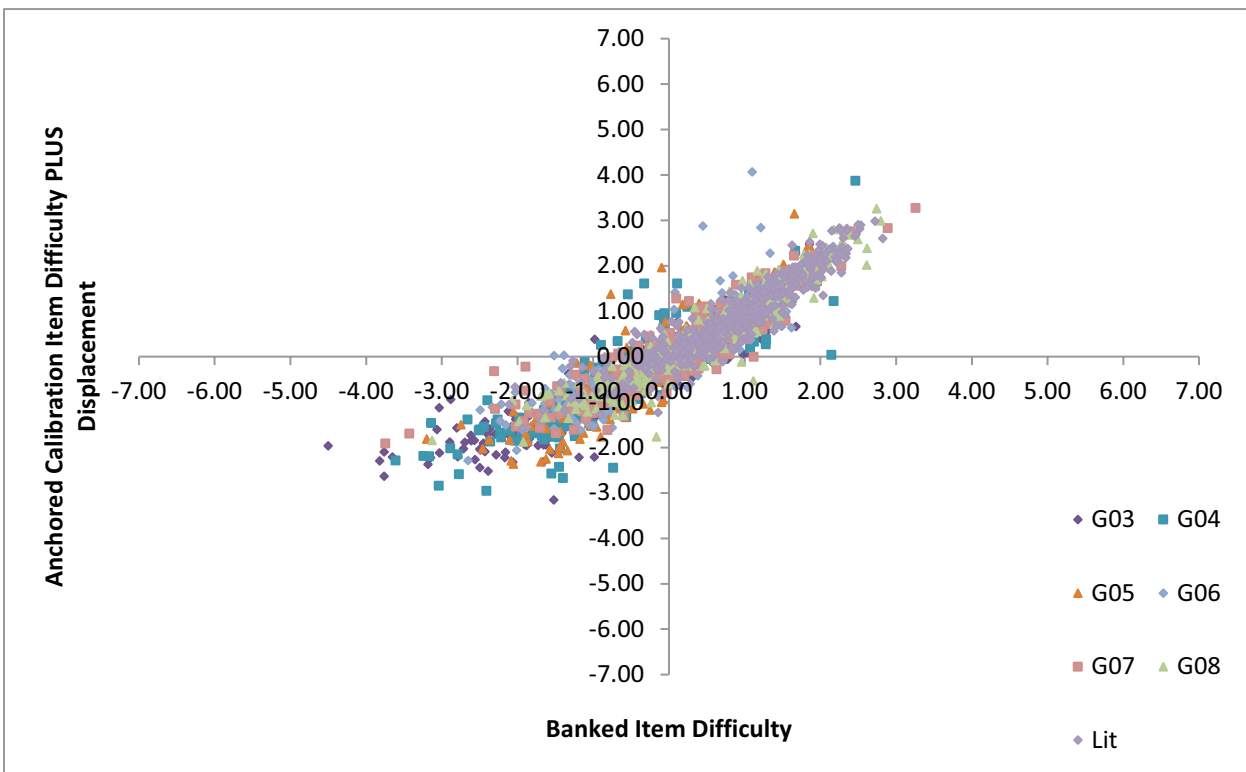
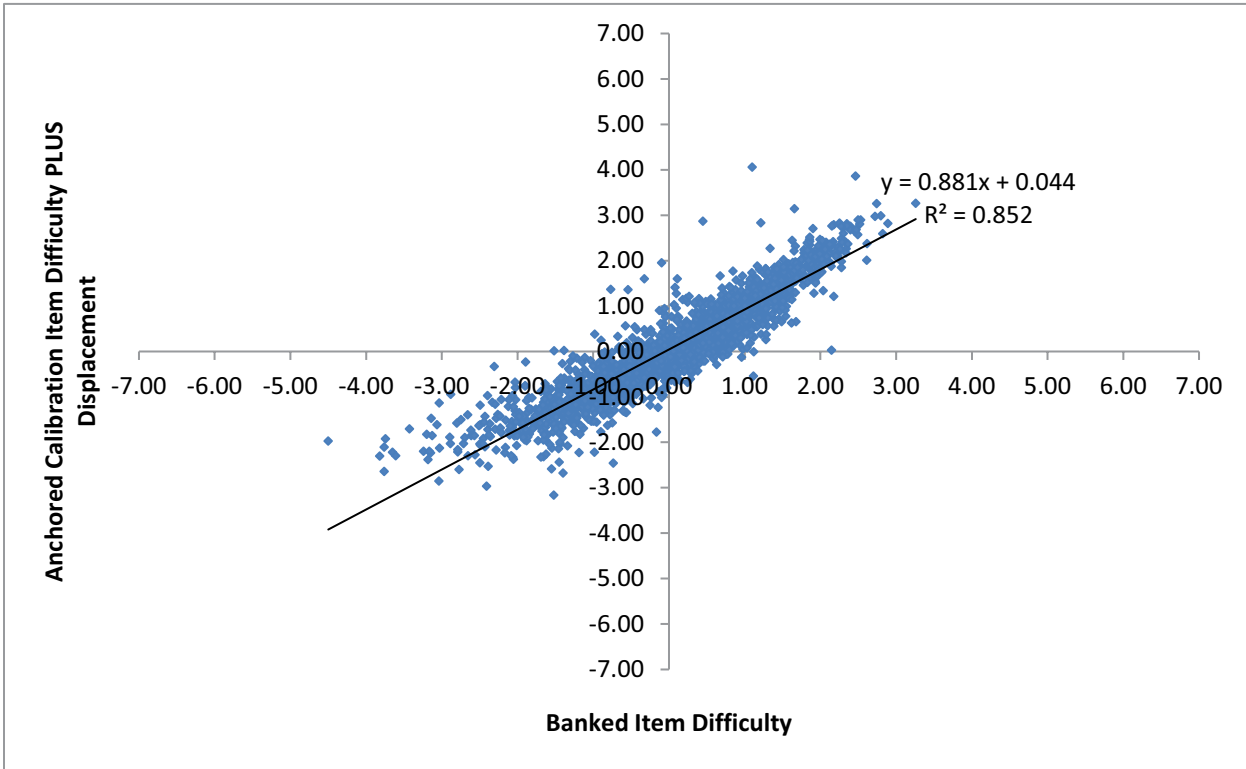
Table 18–16 summarizes the data in Figure 18–19. It contains item counts by grade/course and displacements in intervals of 0.1 logits. According to the WINSTEPS manual, in an anchored calibration, half of the displacements are expected to be negative and half positive. Displacements less than 0.5 in magnitude are considered small (unlikely to have much impact). Eighty-two percent of the items in the bank have a displacement less than 0.5 in magnitude (gray shaded in Table 18–16).

Table 18–16. Number of Reading Items by Grade/Course and Displacement Interval

Interval	G03	G04	G05	G06	G07	G08	LIT	Total
Disp. ≤ -1.0	4	5	0	0	1	3	1	14
-1.0 < Disp. ≤ -0.9	2	3	2	2	1	0	0	10
-0.9 < Disp. ≤ -0.8	3	1	2	2	1	0	4	13
-0.8 < Disp. ≤ -0.7	6	3	3	2	5	2	4	25
-0.7 < Disp. ≤ -0.6	2	5	6	4	6	8	8	39
-0.6 < Disp. ≤ -0.5	10	16	4	12	9	10	7	68
-0.5 < Disp. ≤ -0.4	11	10	12	12	12	10	17	84
-0.4 < Disp. ≤ -0.3	16	18	11	26	24	13	28	136
-0.3 < Disp. ≤ -0.2	23	21	23	27	41	32	33	200
-0.2 < Disp. ≤ -0.1	24	28	15	54	44	35	57	257
-0.1 < Disp. ≤ 0.0	34	38	29	51	48	63	65	328
0.0 < Disp. ≤ 0.1	21	24	26	42	51	58	76	298
0.1 < Disp. ≤ 0.2	24	24	18	38	36	43	50	233
0.2 < Disp. ≤ 0.3	9	23	17	26	17	30	34	156
0.3 < Disp. ≤ 0.4	14	9	19	30	13	14	32	131
0.4 < Disp. ≤ 0.5	15	12	17	12	13	10	14	93
0.5 < Disp. ≤ 0.6	16	8	9	3	8	8	11	63
0.6 < Disp. ≤ 0.7	11	7	2	8	8	7	7	50
0.7 < Disp. ≤ 0.8	4	2	4	4	5	5	4	28
0.8 < Disp. ≤ 0.9	4	8	4	2	2	3	5	28
0.9 < Disp. ≤ 1.0	4	3	2	5	2	0	3	19
1.0 < Disp.	12	13	7	12	7	2	4	57
TOTAL	269	281	232	374	354	356	464	2330

Figure 18–20 shows banked item difficulties plotted against the item difficulties plus displacement from the anchored grade level calibrations of all items using the operational data set. Again, a line of best fit is included in the upper plot.

Figure 18–20. Reading Banked Item Parameters vs. Anchored Grade Level Calibrations — All Items in Grade 3 and Above



An examination of the items with larger differences between banked values and operational estimates revealed that a number of these have low n -counts in the operational calibration. To investigate whether this had an impact on the stability of the item parameter estimates, anchored grade level calibrations of all items in grade 3 and above with larger n -counts were run. Figure 18–21 shows the displacements from these calibrations. Items are color-coded by grade/course.

Figure 18–21. Reading Anchored Grade Level Calibrations Displacements — All Items in Grade 3 and Above with $N > 100$

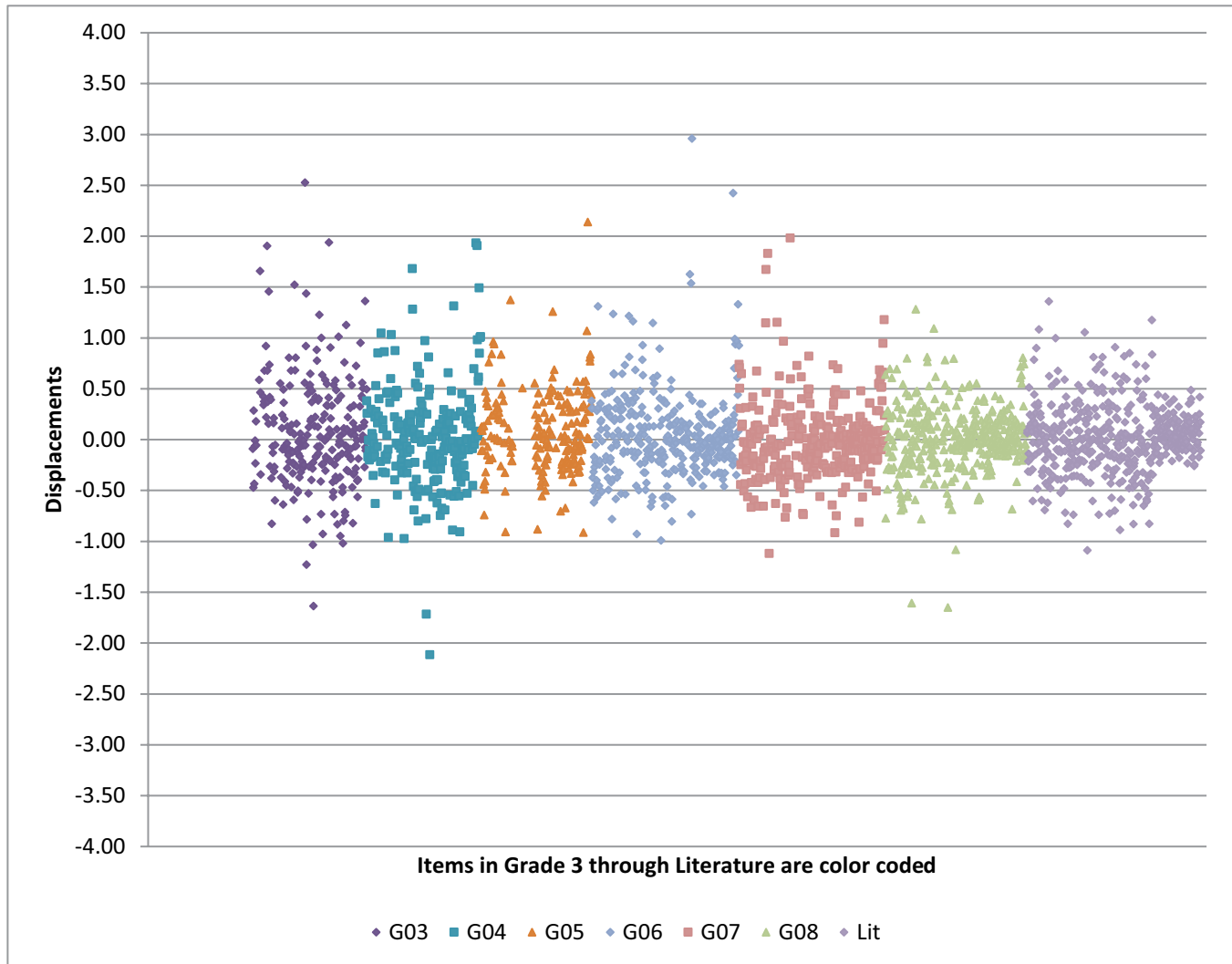


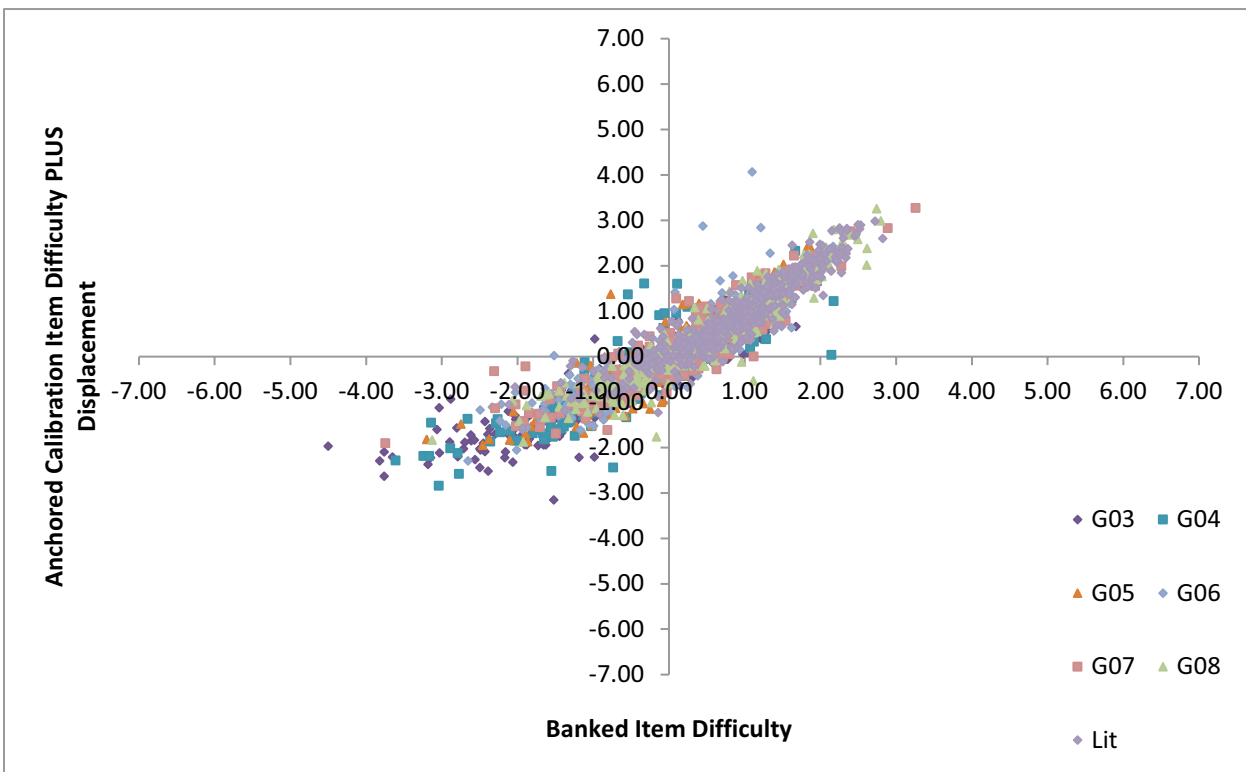
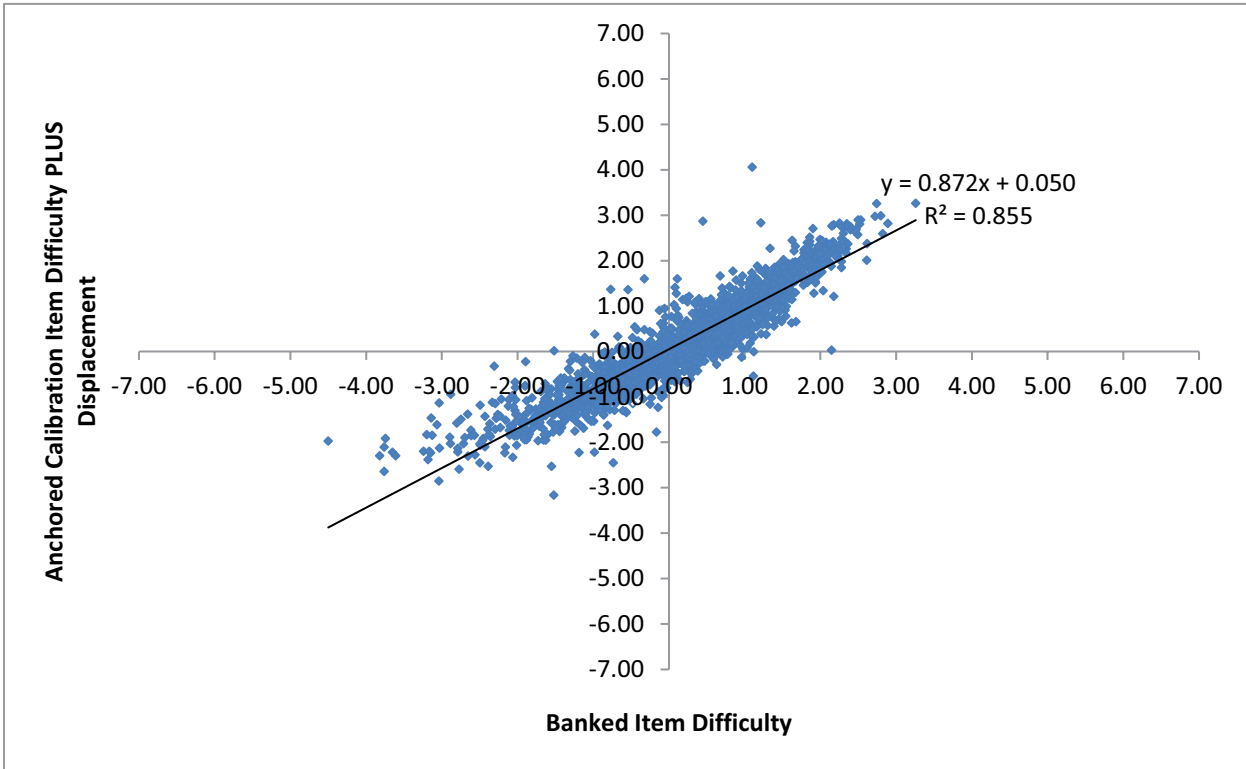
Table 18–17 summarizes the data in Figure 18–21. It contains item counts by grade/course and displacements in intervals of 0.1 logits. According to the WINSTEPS manual, in an anchored calibration, half of the displacements are expected to be negative and half positive. Displacements less than 0.5 in magnitude are considered small (unlikely to have much impact). Eighty-four percent of the items in the bank have a displacement less than 0.5 in magnitude (gray shaded in Table 18–17).

Table 18–17. Number of Reading Items by Grade/Course and Displacement Interval

Interval	G03	G04	G05	G06	G07	G08	LIT	Total
Disp. ≤ -1.0	4	2	0	0	1	3	1	11
-1.0 < Disp. ≤ -0.9	2	3	2	2	1	0	0	10
-0.9 < Disp. ≤ -0.8	3	1	1	1	1	0	4	11
-0.8 < Disp. ≤ -0.7	6	3	2	2	4	2	4	23
-0.7 < Disp. ≤ -0.6	1	5	1	4	6	8	8	33
-0.6 < Disp. ≤ -0.5	9	13	2	12	8	10	7	61
-0.5 < Disp. ≤ -0.4	10	7	8	12	10	10	17	74
-0.4 < Disp. ≤ -0.3	16	16	9	25	21	13	28	128
-0.3 < Disp. ≤ -0.2	22	19	21	23	39	32	33	189
-0.2 < Disp. ≤ -0.1	23	26	15	54	43	35	57	253
-0.1 < Disp. ≤ 0.0	33	31	28	48	47	63	65	315
0.0 < Disp. ≤ 0.1	19	24	21	43	48	56	76	287
0.1 < Disp. ≤ 0.2	21	20	17	37	33	43	50	221
0.2 < Disp. ≤ 0.3	10	21	15	24	15	30	34	149
0.3 < Disp. ≤ 0.4	14	7	16	28	12	14	32	123
0.4 < Disp. ≤ 0.5	14	10	15	12	13	10	14	88
0.5 < Disp. ≤ 0.6	13	5	8	2	7	8	11	54
0.6 < Disp. ≤ 0.7	7	4	2	8	9	7	7	44
0.7 < Disp. ≤ 0.8	4	1	2	3	4	5	4	23
0.8 < Disp. ≤ 0.9	3	5	4	2	1	3	5	23
0.9 < Disp. ≤ 1.0	4	2	2	5	2	0	3	18
1.0 < Disp.	12	10	4	10	6	2	4	48
TOTAL	250	235	195	357	331	354	464	2186

Figure 18–22 mirrors Figure 18–20, except the calibrations exclude items with fewer than 100 administrations. Again, a line of best fit is included in the upper plot.

Figure 18–22. Reading Banked Item Parameters vs. Anchored Grade Level Calibrations — All Items in Grade 3 and Above with N>100



For the two sets of anchored grade level calibrations described above, banked item parameters were compared to the newly calibrated values by calculating a robust Z statistic for each item pairing. If item difficulties from the operational calibration are close to the banked values, the correlation will be high and the additive constant near zero. Table 18–18 shows the number of items in each grade/course and the number and percent of items with absolute value of robust Z greater than 1.645 in the calibrations.

Table 18–18. Summary of Robust Z across Two Sets of Anchored Grade Level Calibrations in Reading

Grade/ Course	Cal 1: Number of Items	Cal 1: Number of Items with ABS(Z) > 1.645	Cal 1: Percent of Items with ABS(Z) > 1.645	Cal 2: Number of Items	Cal 2: Number of Items with ABS(Z) > 1.645	Cal 2: Percent of Items with ABS(Z) > 1.645
Kindergarten	0	0	N/A	0	0	N/A
Grade 1	0	0	N/A	0	0	N/A
Grade 2	0	0	N/A	0	0	N/A
Grade 3	269	74	28%	250	68	27%
Grade 4	281	70	25%	235	54	23%
Grade 5	232	42	18%	195	30	15%
Grade 6	374	54	14%	357	50	14%
Grade 7	354	52	15%	331	50	15%
Grade 8	356	47	13%	354	48	14%
Literature	464	57	12%	464	58	13%
Total	2330	396	17%	2186	358	16%
	Correlation = 0.923			Correlation = 0.925		
	Additive Constant = 0.034			Additive Constant = 0.029		

For the most part, whether high absolute displacement values or robust Z was used to identify items with operational estimates that differ from banked values, the same items were identified. For example, in calibration 1, all items with absolute displacement greater than 0.515 have an absolute value of robust Z greater than 1.645. In the displacement range of 0.513 to 0.515, some items have absolute value of robust Z greater than 1.645 while others do not. No items with absolute displacement less than 0.513 have absolute value of robust Z greater than 1.645.

SCIENCE

Figure 18–23 shows the displacements from the anchored grade level calibrations of operational data for the science item bank. Items are color-coded by grade/course.

Figure 18–23. Science Anchored Grade Level Calibrations Displacements – All Items in Grade 3 and Above

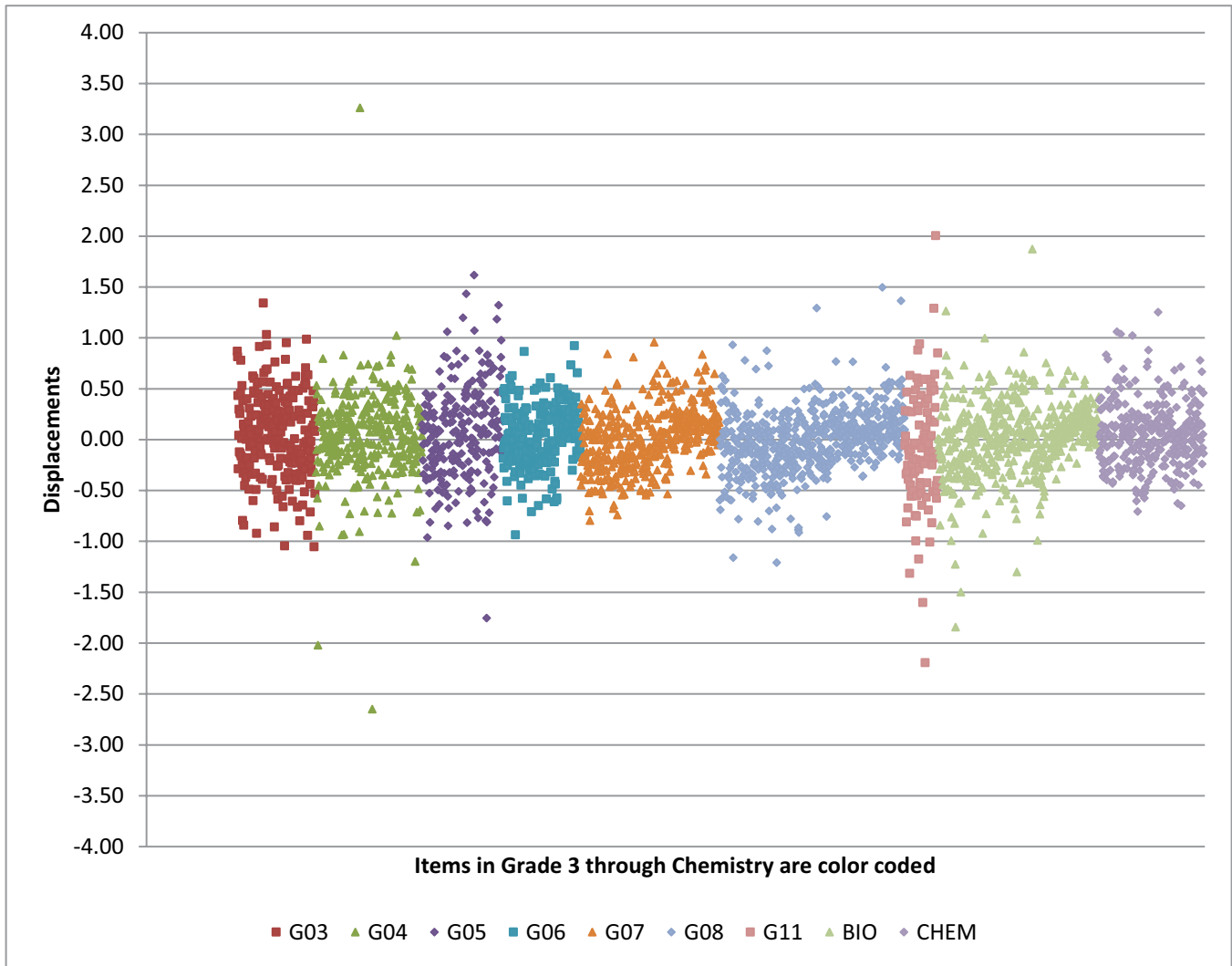


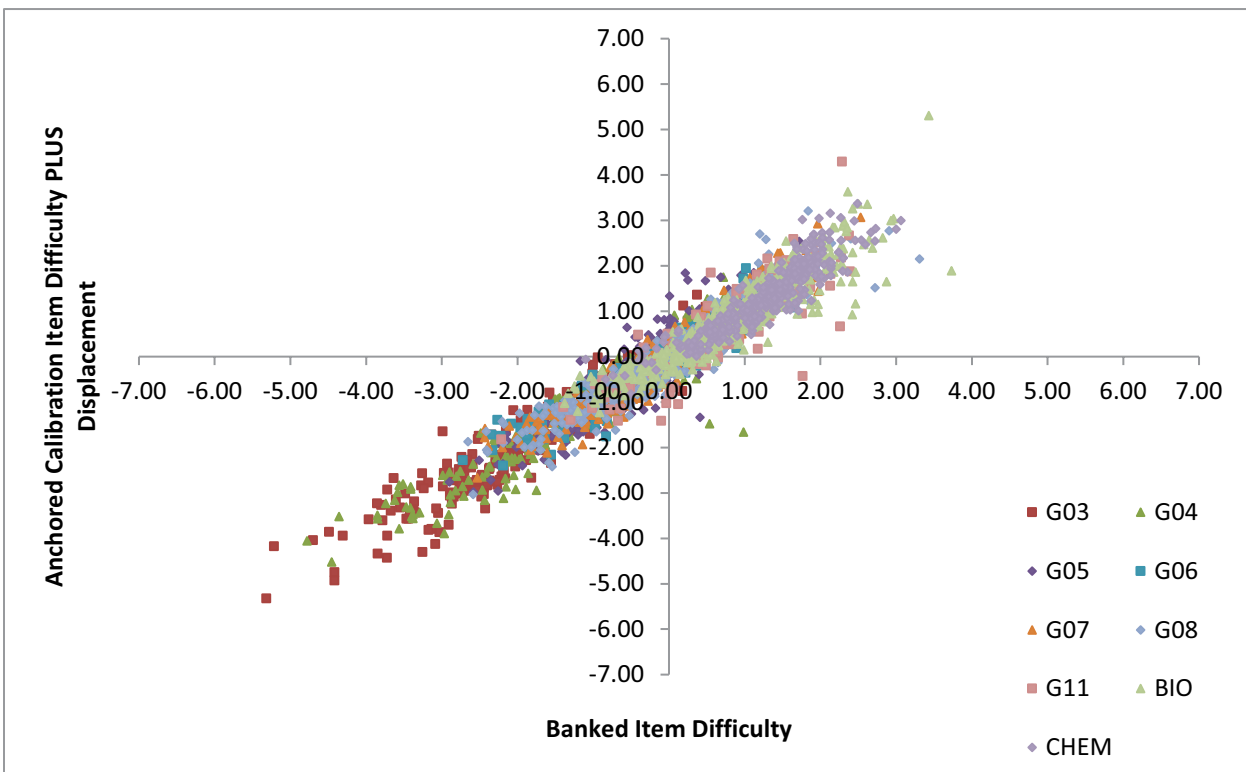
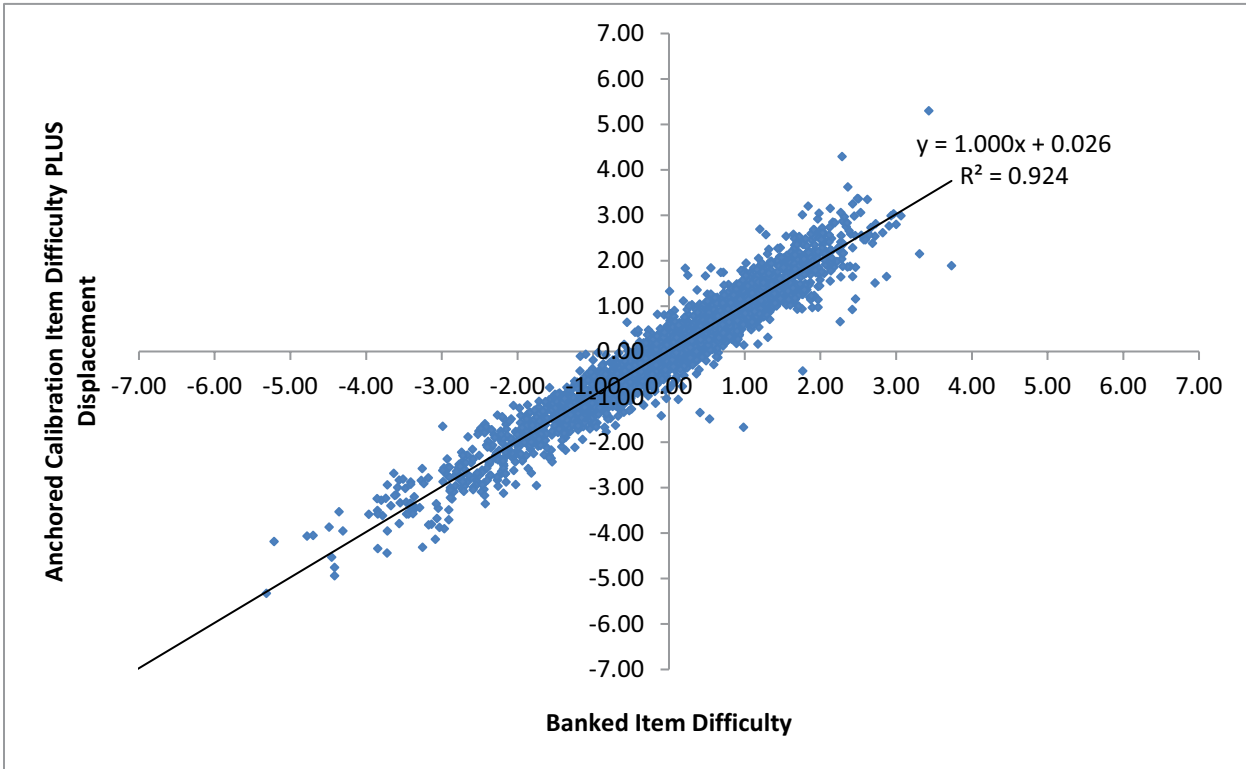
Table 18–19 summarizes the data in Figure 18–23. It contains item counts by grade/course and displacements in intervals of 0.1 logits. According to the WINSTEPS manual, in an anchored calibration, half of the displacements are expected to be negative and half positive. Displacements less than 0.5 in magnitude are considered small (unlikely to have much impact). Eighty-six percent of the items in the bank have a displacement less than 0.5 in magnitude (gray shaded in Table 18–19).

Table 18–19. Number of Science Items by Grade/Course and Displacement Interval

Interval	G03	G04	G05	G06	G07	G08	G11	BIO	CHEM	Total
Disp. ≤ -1.0	2	3	1	0	0	2	5	4	0	17
-1.0 < Disp. ≤ -0.9	2	3	1	1	0	1	1	3	0	12
-0.9 < Disp. ≤ -0.8	2	1	4	0	0	4	2	2	0	15
-0.8 < Disp. ≤ -0.7	3	5	4	1	3	4	2	4	1	27
-0.7 < Disp. ≤ -0.6	4	2	5	3	2	2	3	5	3	29
-0.6 < Disp. ≤ -0.5	6	4	8	4	12	13	10	10	4	71
-0.5 < Disp. ≤ -0.4	7	9	7	5	14	17	8	17	13	97
-0.4 < Disp. ≤ -0.3	19	15	22	14	32	29	5	33	18	187
-0.3 < Disp. ≤ -0.2	15	25	14	22	38	52	8	35	27	236
-0.2 < Disp. ≤ -0.1	25	31	22	29	47	70	9	46	32	311
-0.1 < Disp. ≤ 0.0	26	43	19	30	50	72	8	52	39	339
0.0 < Disp. ≤ 0.1	20	29	24	30	64	102	5	86	53	413
0.1 < Disp. ≤ 0.2	20	46	25	25	60	67	4	74	49	370
0.2 < Disp. ≤ 0.3	23	31	20	27	42	61	5	41	22	272
0.3 < Disp. ≤ 0.4	16	20	14	16	21	24	4	29	22	166
0.4 < Disp. ≤ 0.5	18	22	14	14	17	17	6	20	12	140
0.5 < Disp. ≤ 0.6	11	13	7	6	10	12	7	17	14	97
0.6 < Disp. ≤ 0.7	8	2	7	4	5	2	3	11	4	46
0.7 < Disp. ≤ 0.8	4	7	7	1	2	5	0	2	5	33
0.8 < Disp. ≤ 0.9	2	2	7	1	3	1	2	2	2	22
0.9 < Disp. ≤ 1.0	4	0	1	1	1	1	1	1	0	10
1.0 < Disp.	2	2	7	0	0	3	2	2	4	22
TOTAL	239	315	240	234	423	561	100	496	324	2932

Figure 18–24 shows banked item difficulties plotted against the item difficulties plus displacement from the anchored grade level calibrations of all items using the operational data set. Again, a line of best fit is included in the upper plot.

Figure 18–24. Science Banked Item Parameters vs. Anchored Grade Level Calibrations — All Items in Grade 3 and Above



An examination of the items with larger differences between banked values and operational estimates revealed that a number of these have low n -counts in the operational calibration. To investigate whether this had an impact on the stability of the item parameter estimates, anchored grade level calibrations of all items in grade 3 and above with larger n -counts were run. Figure 18–25 shows the displacements from these calibrations. Items are color-coded by grade/course.

Figure 18–25. Science Anchored Grade Level Calibrations Displacements – All Items in Grade 3 and Above with $N > 100$

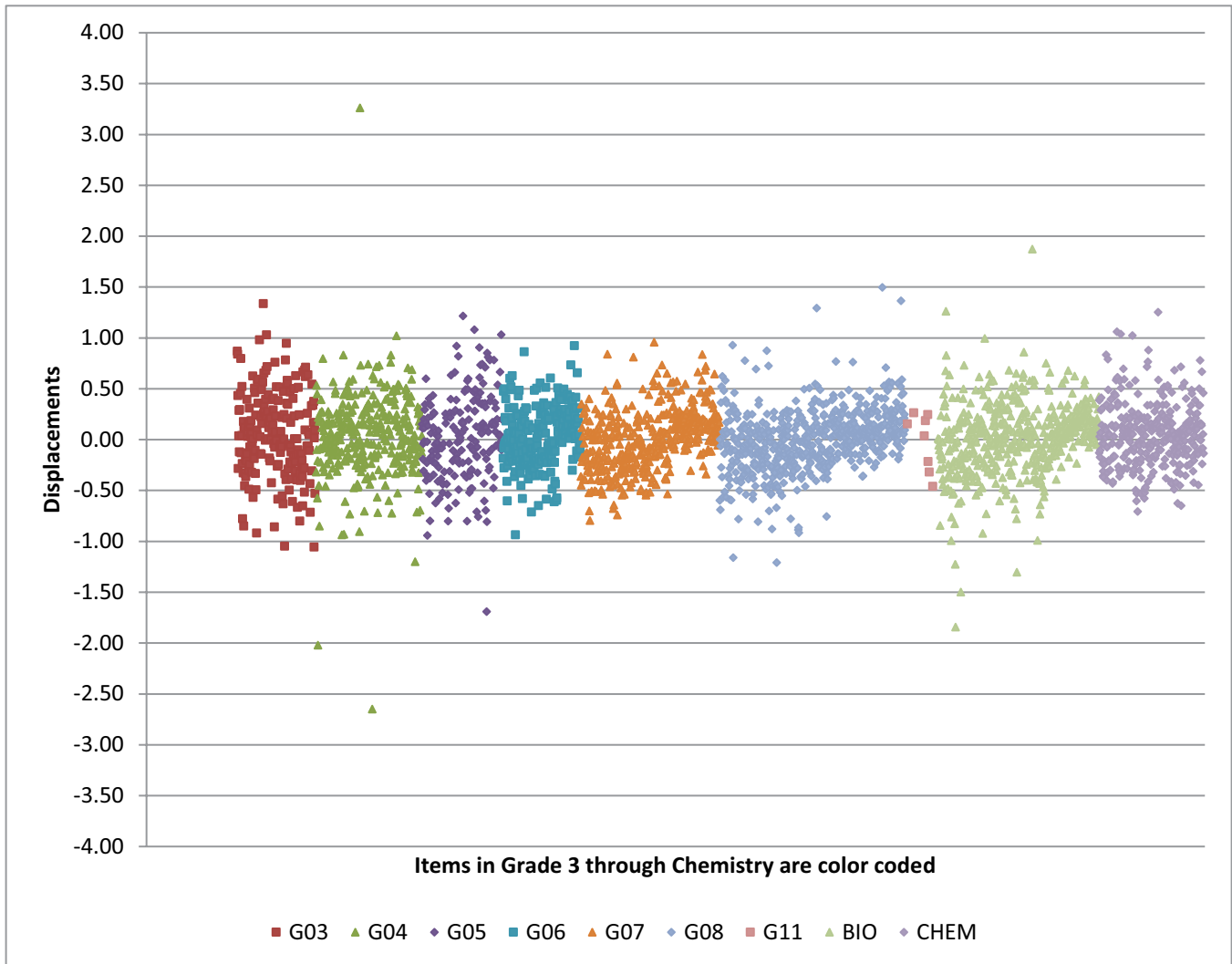


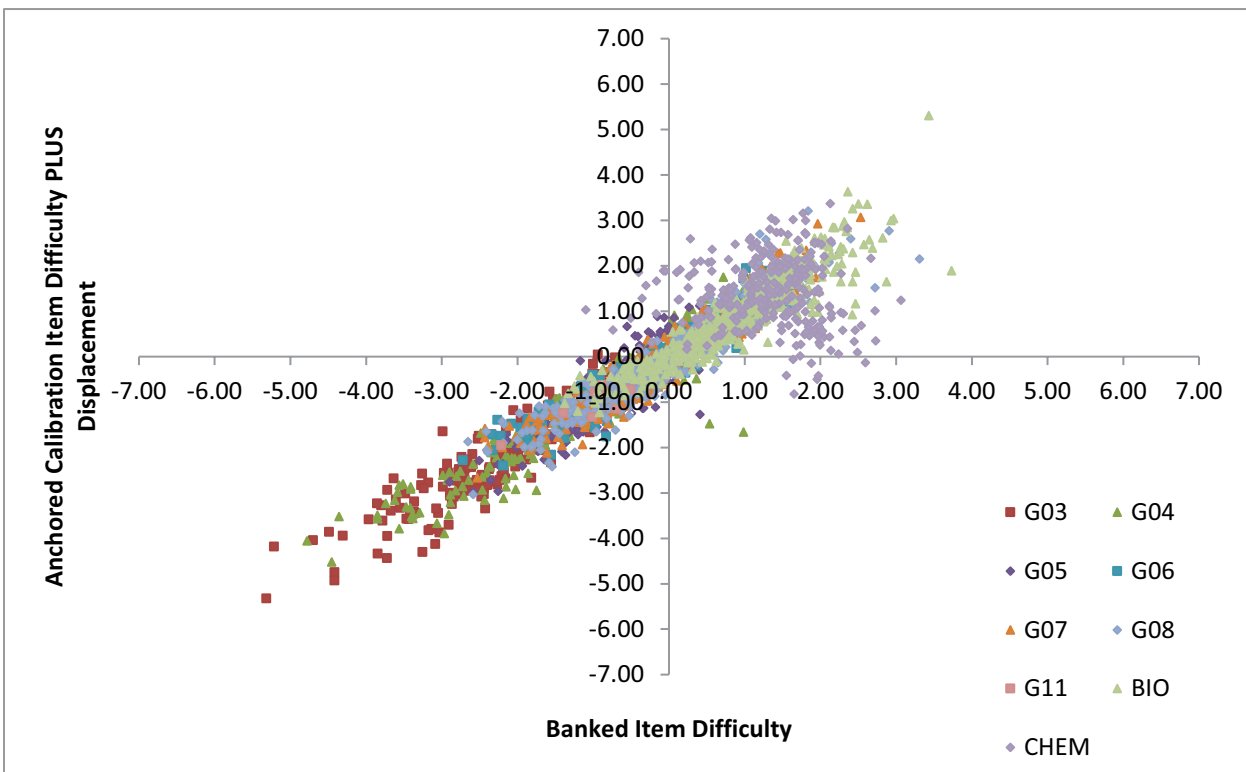
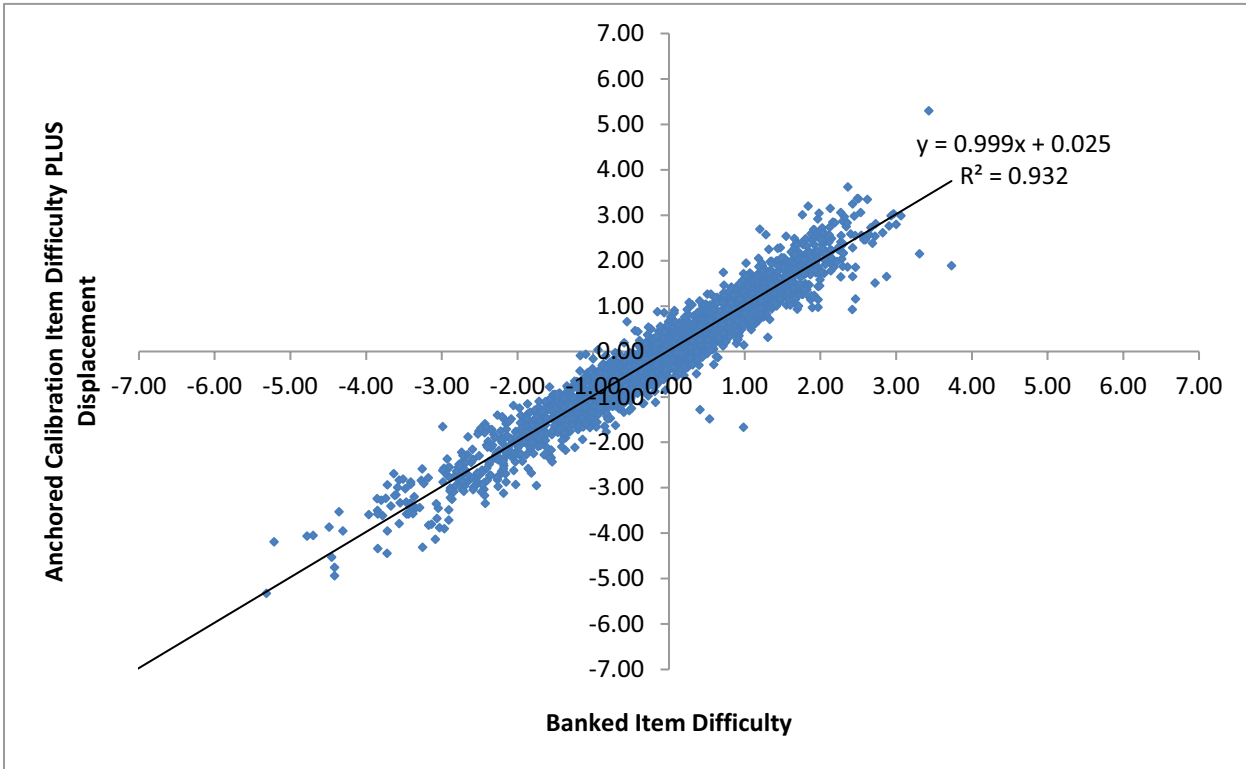
Table 18–20 summarizes the data in Figure 18–25. It contains item counts by grade/course and displacements in intervals of 0.1 logits. According to the WINSTEPS manual, in an anchored calibration, half of the displacements are expected to be negative and half positive. Displacements less than 0.5 in magnitude are considered small (unlikely to have much impact). Eighty-eight percent of the items in the bank have a displacement less than 0.5 in magnitude (gray shaded in Table 18–20).

Table 18–20. Number of Science Items by Grade/Course and Displacement Interval

Interval	G03	G04	G05	G06	G07	G08	G11	BIO	CHEM	Total
Disp. ≤ -1.0	2	3	1	0	0	2	0	4	0	12
-1.0 < Disp. ≤ -0.9	1	3	1	1	0	1	0	3	0	10
-0.9 < Disp. ≤ -0.8	3	1	2	0	0	4	0	2	0	12
-0.8 < Disp. ≤ -0.7	2	5	4	1	3	4	0	4	1	24
-0.7 < Disp. ≤ -0.6	4	2	5	3	2	2	0	5	3	26
-0.6 < Disp. ≤ -0.5	5	4	5	4	12	13	0	10	4	57
-0.5 < Disp. ≤ -0.4	7	9	10	5	14	17	1	17	13	93
-0.4 < Disp. ≤ -0.3	16	15	17	14	32	29	1	33	18	175
-0.3 < Disp. ≤ -0.2	15	25	11	22	38	52	1	35	27	226
-0.2 < Disp. ≤ -0.1	18	31	17	29	47	70	0	46	32	290
-0.1 < Disp. ≤ 0.0	15	43	23	30	50	72	0	52	39	324
0.0 < Disp. ≤ 0.1	23	29	16	30	64	102	1	86	53	404
0.1 < Disp. ≤ 0.2	14	46	25	25	60	67	2	74	49	362
0.2 < Disp. ≤ 0.3	17	31	16	27	42	61	2	41	22	259
0.3 < Disp. ≤ 0.4	12	20	15	16	21	24	0	29	22	159
0.4 < Disp. ≤ 0.5	9	21	10	14	17	17	0	20	12	120
0.5 < Disp. ≤ 0.6	12	13	5	6	10	12	0	17	14	89
0.6 < Disp. ≤ 0.7	8	2	4	4	5	2	0	11	4	40
0.7 < Disp. ≤ 0.8	5	7	5	1	2	5	0	2	5	32
0.8 < Disp. ≤ 0.9	2	2	3	1	3	1	0	2	2	16
0.9 < Disp. ≤ 1.0	2	0	2	1	1	1	0	1	0	8
1.0 < Disp.	2	2	3	0	0	3	0	2	4	16
TOTAL	194	314	200	234	423	561	8	496	324	2754

Figure 18–26 mirrors Figure 18–24, except the calibrations exclude items with fewer than 100 administrations. Again, a line of best fit is included in the upper plot.

Figure 18–26. Science Banked Item Parameters vs. Anchored Grade Level Calibrations — All Items in Grade 3 and Above with N>100



For the two sets of anchored grade level calibrations described above, banked item parameters were compared to the newly calibrated values by calculating a robust Z statistic for each item pairing. If item difficulties from the operational calibration are close to the banked values, the correlation will be high and the additive constant near zero. Table 18–21 shows the number of items in each grade/course and the number and percent of items with absolute value of robust Z greater than 1.645 in the calibrations.

Table 18–21. Summary of Robust Z across Two Sets of Anchored Grade Level Calibrations in Science

Grade/ Course	Cal 1: Number of Items	Cal 1: Number of Items with ABS(Z) > 1.645	Cal 1: Percent of Items with ABS(Z) > 1.645	Cal 2: Number of Items	Cal 2: Number of Items with ABS(Z) > 1.645	Cal 2: Percent of Items with ABS(Z) > 1.645
K–2 span	0	0	N/A	0	0	N/A
Grade 3	239	49	21%	194	47	24%
Grade 4	315	40	13%	314	48	15%
Grade 5	240	60	25%	200	44	22%
Grade 6	234	18	8%	234	19	8%
Grade 7	423	39	9%	423	45	11%
Grade 8	561	48	9%	561	58	10%
Grade 11	100	36	36%	8	1	13%
Biology	496	62	13%	496	65	13%
Chemistry	324	33	10%	324	37	11%
Total	2932	385	13%	2754	364	13%
	Correlation = 0.961			Correlation = 0.965		
	Additive Constant = 0.026			Additive Constant = 0.026		

For the most part, whether high absolute displacement values or robust Z was used to identify items with operational estimates that differ from banked values, the same items were identified. For example, in calibration 1, all items with absolute displacement greater than 0.538 have an absolute value of robust Z greater than 1.645. In the displacement range of 0.468 to 0.538, some items have absolute value of robust Z greater than 1.645 while others do not. No items with absolute displacement less than 0.468 have absolute value of robust Z greater than 1.645.

WRITING/ENGLISH COMPOSITION

Figure 18–27 shows the displacements from the anchored grade level calibrations of operational data for the writing item bank. Items are color-coded by grade/course.

Figure 18–27. Writing Anchored Grade Level Calibrations Displacements — All Items in Grade 3 and Above

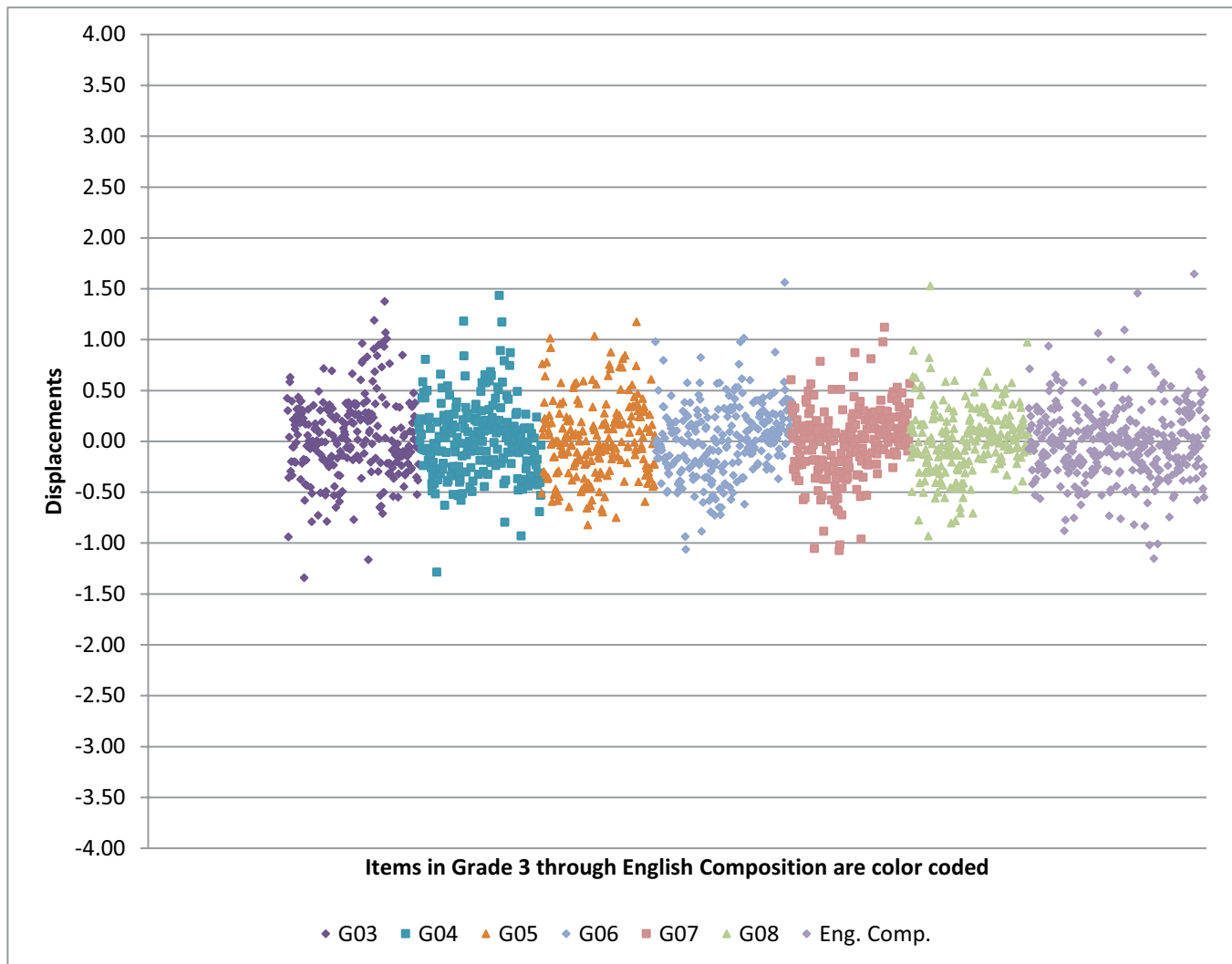


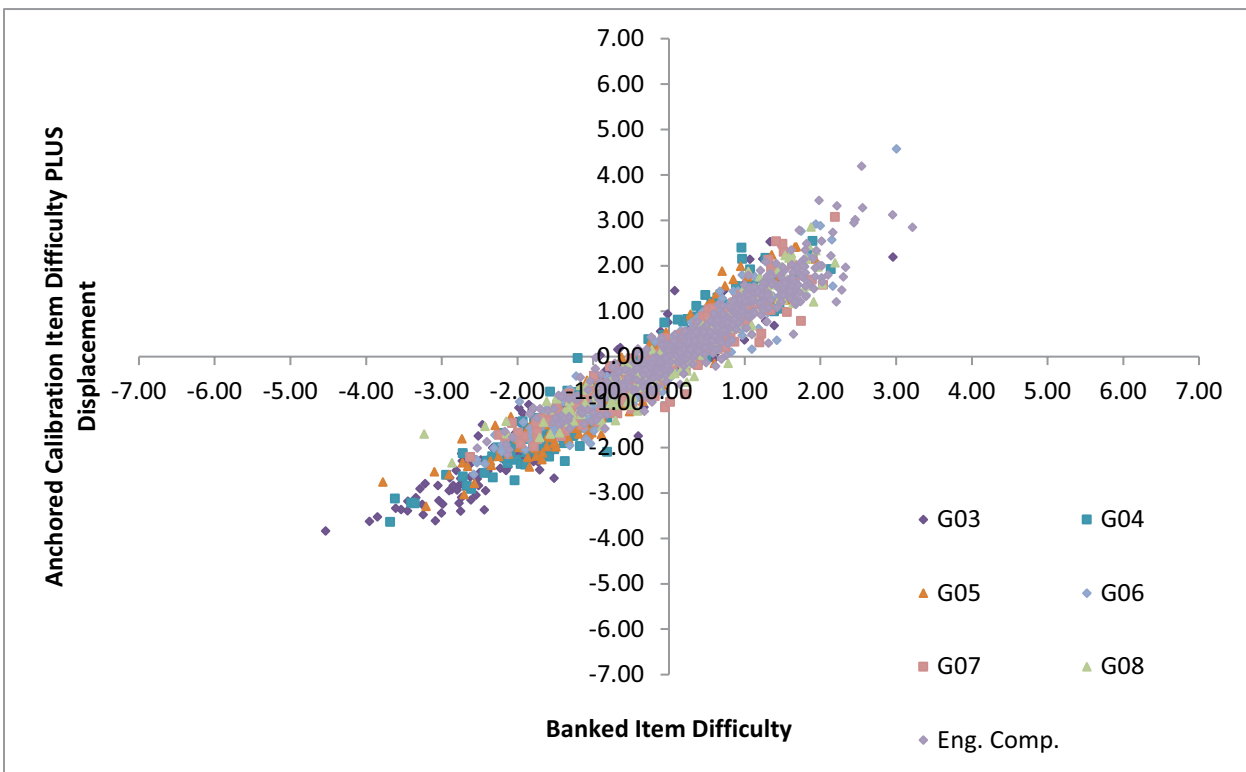
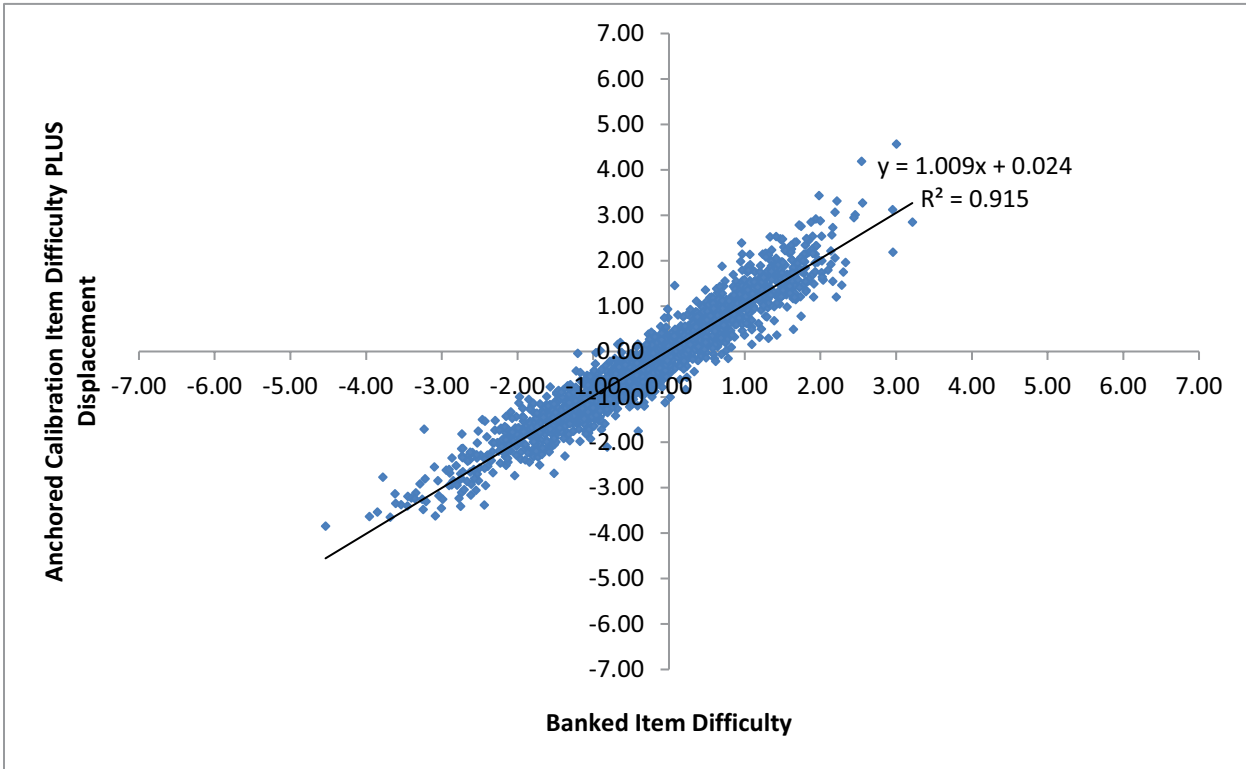
Table 18–22 summarizes the data in Figure 18–27. It contains item counts by grade/course and displacements in intervals of 0.1 logits. According to the WINSTEPS manual, in an anchored calibration, half of the displacements are expected to be negative and half positive. Displacements less than 0.5 in magnitude are considered small (unlikely to have much impact). Eighty-five percent of the items in the bank have a displacement less than 0.5 in magnitude (gray shaded in Table 18–22).

Table 18–22. Number of Writing Items by Grade/Course and Displacement Interval

Interval	G03	G04	G05	G06	G07	G08	COMP	Total
Disp. ≤ -1.0	2	1	0	1	3	0	3	10
-1.0 < Disp. ≤ -0.9	1	1	0	1	1	1	0	5
-0.9 < Disp. ≤ -0.8	0	0	1	1	1	1	3	7
-0.8 < Disp. ≤ -0.7	5	1	1	2	1	4	5	19
-0.7 < Disp. ≤ -0.6	3	2	5	5	3	1	2	21
-0.6 < Disp. ≤ -0.5	12	7	9	9	8	4	13	62
-0.5 < Disp. ≤ -0.4	8	18	12	12	5	14	15	84
-0.4 < Disp. ≤ -0.3	14	20	18	19	14	10	22	117
-0.3 < Disp. ≤ -0.2	22	18	13	21	20	16	46	156
-0.2 < Disp. ≤ -0.1	29	19	21	21	25	25	43	183
-0.1 < Disp. ≤ 0.0	32	34	29	32	22	36	63	248
0.0 < Disp. ≤ 0.1	29	27	21	32	39	37	67	252
0.1 < Disp. ≤ 0.2	20	28	26	35	33	30	52	224
0.2 < Disp. ≤ 0.3	23	23	18	24	29	16	40	173
0.3 < Disp. ≤ 0.4	30	9	14	20	13	15	35	136
0.4 < Disp. ≤ 0.5	6	10	5	15	10	6	14	66
0.5 < Disp. ≤ 0.6	3	10	9	10	5	9	17	63
0.6 < Disp. ≤ 0.7	5	6	4	2	2	3	6	28
0.7 < Disp. ≤ 0.8	5	2	7	2	1	1	5	23
0.8 < Disp. ≤ 0.9	3	4	3	2	2	2	1	17
0.9 < Disp. ≤ 1.0	5	0	1	2	1	1	1	11
1.0 < Disp.	4	3	3	2	1	1	4	18
TOTAL	261	243	220	270	239	233	457	1923

Figure 18–28 shows banked item difficulties plotted against the item difficulties plus displacement from the anchored grade level calibrations of all items using the operational data set. Again, a line of best fit is included in the upper plot.

Figure 18–28. Writing Banked Item Parameters vs. Anchored Grade Level Calibrations — All Items in Grade 3 and Above



An examination of the items with larger differences between banked values and operational estimates revealed that a number of these have low n -counts in the operational calibration. To investigate whether this had an impact on the stability of the item parameter estimates, anchored grade level calibrations of all items in grade 3 and above with larger n -counts were run. Figure 18–29 shows the displacements from these calibrations. Items are color-coded by grade/course.

Figure 18–29. Writing Anchored Grade Level Calibrations Displacements — All Items in Grade 3 and Above with $N > 100$

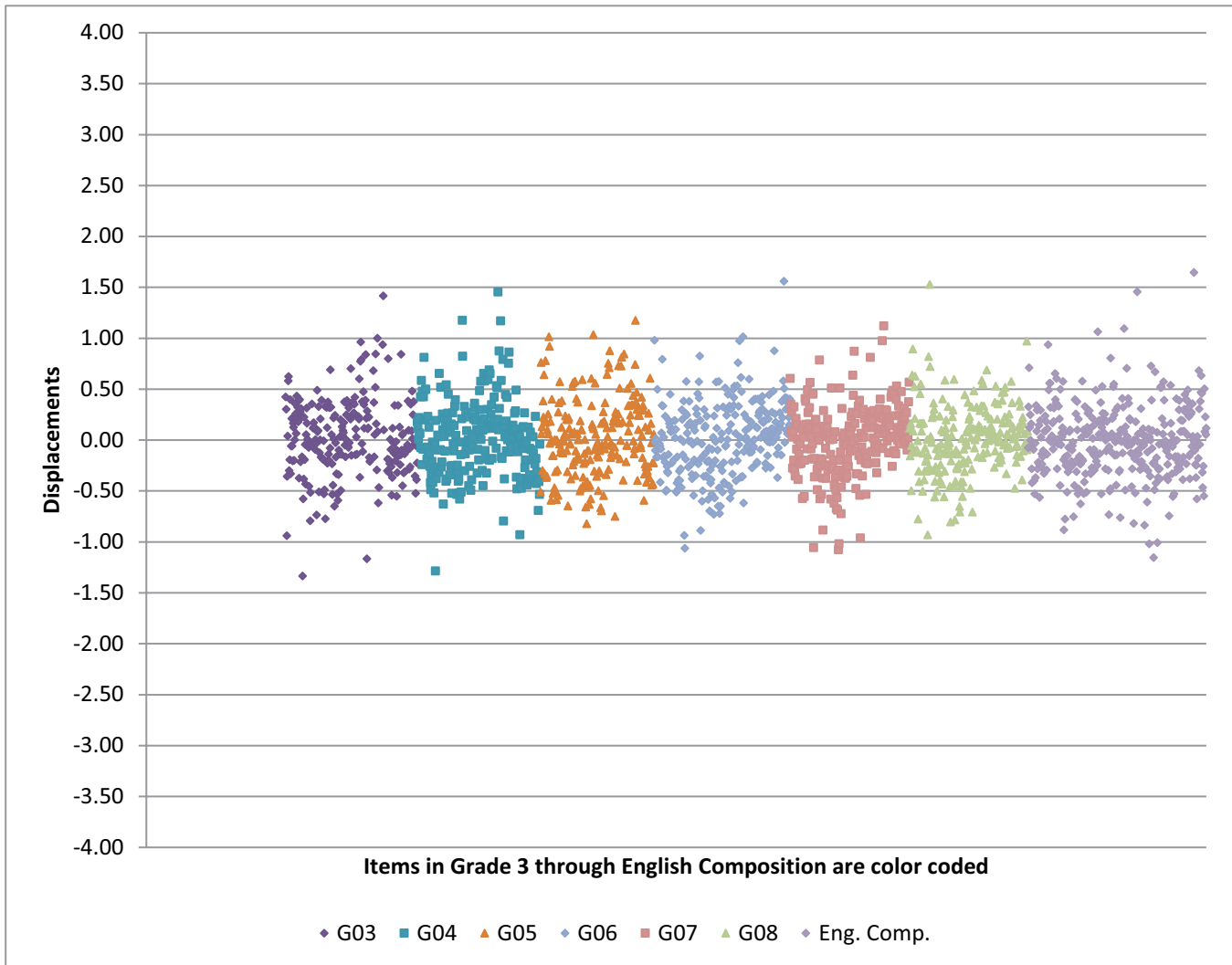


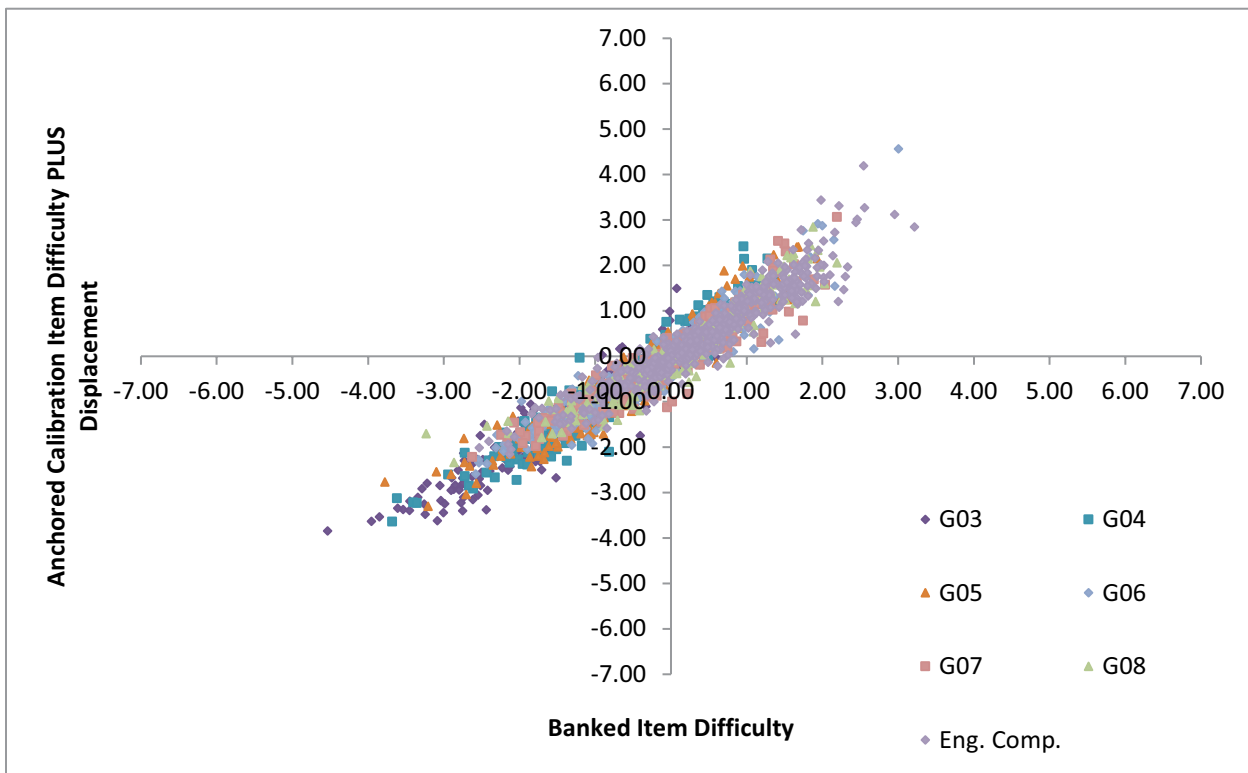
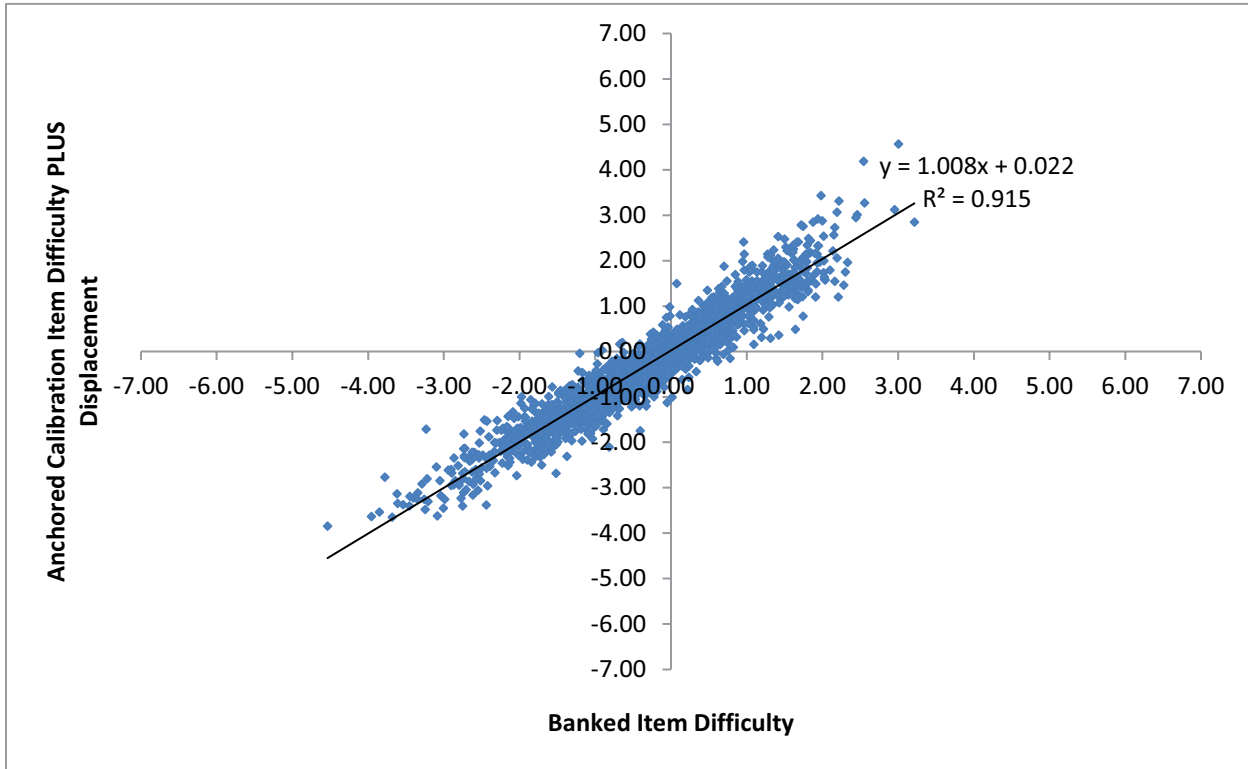
Table 18–23 summarizes the data in Figure 18–29. It contains item counts by grade/course and displacements in intervals of 0.1 logits. According to the WINSTEPS manual, in an anchored calibration, half of the displacements are expected to be negative and half positive. Displacements less than 0.5 in magnitude are considered small (unlikely to have much impact). Eighty-six percent of the items in the bank have a displacement less than 0.5 in magnitude (gray shaded in Table 18–23).

Table 18–23. Number of Writing Items by Grade/Course and Displacement Interval

Interval	G03	G04	G05	G06	G07	G08	COMP	Total
Disp. ≤ -1.0	2	1	0	1	3	0	3	10
-1.0 < Disp. ≤ -0.9	1	1	0	1	1	1	0	5
-0.9 < Disp. ≤ -0.8	0	0	1	1	1	1	3	7
-0.8 < Disp. ≤ -0.7	3	1	1	2	1	4	5	17
-0.7 < Disp. ≤ -0.6	2	2	5	5	3	1	2	20
-0.6 < Disp. ≤ -0.5	11	7	9	9	8	4	13	61
-0.5 < Disp. ≤ -0.4	7	15	12	12	5	14	15	80
-0.4 < Disp. ≤ -0.3	15	21	18	19	14	10	22	119
-0.3 < Disp. ≤ -0.2	15	14	13	21	20	16	46	145
-0.2 < Disp. ≤ -0.1	30	21	21	21	25	25	43	186
-0.1 < Disp. ≤ 0.0	31	33	29	32	22	36	63	246
0.0 < Disp. ≤ 0.1	25	25	21	32	39	37	67	246
0.1 < Disp. ≤ 0.2	18	30	26	35	33	30	52	224
0.2 < Disp. ≤ 0.3	22	21	18	24	29	16	40	170
0.3 < Disp. ≤ 0.4	31	8	14	20	13	15	35	136
0.4 < Disp. ≤ 0.5	6	10	5	15	10	6	14	66
0.5 < Disp. ≤ 0.6	2	10	9	10	5	9	17	62
0.6 < Disp. ≤ 0.7	4	5	4	2	2	3	6	26
0.7 < Disp. ≤ 0.8	3	2	7	2	1	1	5	21
0.8 < Disp. ≤ 0.9	4	4	3	2	2	2	1	18
0.9 < Disp. ≤ 1.0	2	0	1	2	1	1	1	8
1.0 < Disp.	2	3	3	2	1	1	4	16
TOTAL	236	234	220	270	239	233	457	1889

Figure 18–30 mirrors Figure 18–28, except the calibrations exclude items with fewer than 100 administrations. Again, a line of best fit is included in the upper plot.

Figure 18–30. Writing Banked Item Parameters vs. Anchored Grade Level Calibrations — All Items in Grade 3 and Above with $N > 100$



For the two sets of anchored grade level calibrations described above, banked item parameters were compared to the newly calibrated values by calculating a robust Z statistic for each item pairing. If item difficulties from the operational calibration are close to the banked values, the correlation will be high and the additive constant near zero. Table 18–24 shows the number of items in each grade/course and the number and percent of items with absolute value of robust Z greater than 1.645 in the calibrations.

Table 18–24. Summary of Robust Z across Two Sets of Anchored Grade Level Calibrations in Writing

Grade/ Course	Cal 1: Number of Items	Cal 1: Number of Items with ABS(Z) > 1.645	Cal 1: Percent of Items with ABS(Z) > 1.645	Cal 2: Number of Items	Cal 2: Number of Items with ABS(Z) > 1.645	Cal 2: Percent of Items with ABS(Z) > 1.645
Kindergarten	0	0	N/A	0	0	N/A
Grade 1	0	0	N/A	0	0	N/A
Grade 2	0	0	N/A	0	0	N/A
Grade 3	261	48	18%	236	36	15%
Grade 4	243	34	14%	234	33	14%
Grade 5	220	41	19%	220	43	20%
Grade 6	270	36	13%	270	37	14%
Grade 7	239	26	11%	239	27	11%
Grade 8	233	26	11%	233	28	12%
English Comp	457	54	12%	457	55	12%
Total	1923	265	14%	1889	259	14%
	Correlation = 0.956			Correlation = 0.956		
	Additive Constant = 0.022			Additive Constant = 0.020		

For the most part, whether high absolute displacement values or robust Z was used to identify items with operational estimates that differ from banked values, the same items were identified. For example, in calibration 1, all items with absolute displacement greater than 0.531 have an absolute value of robust Z greater than 1.645. In the displacement range of 0.497 to 0.531, some items have absolute value of robust Z greater than 1.645 while others do not. No items with absolute displacement less than 0.497 have absolute value of robust Z greater than 1.645.

For each of the content areas, it is evident from this series of plots that the item parameter estimates are reasonably stable for the items in grade 3 and above.

CHAPTER NINETEEN: REVISION OF BENCHMARK CUTS

As described in Chapter Fourteen, CDT scores are placed along a continuum from “Areas of Need” to “Strengths to Build On.” These are represented in the dynamic reporting suite with colors red, green, and blue. “Areas of Need” are depicted in the red range, while “Strengths to Build On” are depicted in the green and blue ranges. The center of the green range for grades 5 and above was established by panels of Pennsylvania educators during preliminary benchmarking activities (see Chapter Ten for details). The center of the green range for grades 2 through 4 was extrapolated from grades 5 and above prior to the launch of the CDT tests for students in grades 3 through 5 in spring of 2014.

The preliminary benchmarking activities took place prior to the first operational administration in each content area so that, once operational, immediate score reports would be available to students and teachers. Given that the preliminary benchmark cuts were set prior to the operational administration and based on field-test data, it was planned at that time to revisit the location of the cut scores after enough operational data had been collected. The preliminary benchmark cut points in the mathematics content area were analyzed and revised based on operational data following the 2010–2011 school year. The preliminary benchmark cut points in the reading, science, and writing content areas were analyzed and revised based on operational data following the 2011–2012 school year.

The introduction of CDT tests for students in grades 3 through 5 in spring 2014 required benchmark cuts for grades 2 through 4. For each content area, the benchmark cuts in place for the 2013–2014 school year in grades 5 and above were used to extrapolate cuts in grades 2 through 4.

Prior to the start of the 2015–2016 school year, the benchmark cut points in mathematics, reading, and writing were revised based on the revised Pennsylvania System of School Assessments (PSSA) tests and cut points established in spring 2015.

This chapter summarizes changes to the benchmark cuts.

FIRST REVISION OF BENCHMARK CUTS BASED ON OPERATIONAL DATA

In each content area, the benchmark cut points set during preliminary benchmarking activities were analyzed based on matched data sets – operational CDT with PSSA and Keystone Exams (Keystone). CDT benchmark cuts were not revised to exactly match PSSA and Keystone cuts or be predictive. However, CDT, PSSA, and Keystone are based on the same eligible content. As such, it is reasonable to expect that students who do well on CDT will do well on PSSA/Keystone and vice versa. In looking at CDT results matched to PSSA and Keystone results it was determined that many students who scored in the CDT red range scored Proficient or Advanced on PSSA or Keystone suggesting that CDT benchmark cuts were set too high. Therefore, CDT benchmark cuts were lowered to make CDT red/green/blue classifications more consistent with PSSA and Keystone results. See Chapter Nineteen of the 2010–2011 and 2011–2012 technical reports for details. Table 19-1 provides a summary of the first revisions to the benchmark cut points.

Table 19–1. Summary of First Revision to Benchmark Cuts

Content Area	Course /Grade	Benchmarking Logit Cut Point	First Revision to Logit Cut Point	Difference in Logit Cut Point	Difference in Scale Score
Mathematics	Grade 5	-0.292	-0.792	-0.500	-63
Mathematics	Grade 6	0.526	0.026	-0.500	-62
Mathematics	Grade 7	1.495	0.495	-1.000	-125
Mathematics	Grade 8	2.238	0.838	-1.400	-175
Mathematics	Algebra I	3.363	1.613	-1.750	-218
Mathematics	Geometry	3.614	1.864	-1.750	-219
Mathematics	Algebra II	4.117	2.367	-1.750	-219
Reading	Grade 5	1.529	0.529	-1.000	-143
Reading	Grade 6	2.015	1.015	-1.000	-142
Reading	Grade 7	2.299	1.299	-1.000	-143
Reading	Grade 8	2.500	1.500	-1.000	-143
Reading	Literature	2.657	1.657	-1.000	-143
Science	Grade 5	1.099	-0.451	-1.550	-206
Science	Grade 6	1.522	-0.028	-1.550	-206
Science	Grade 7	1.879	0.329	-1.550	-206
Science	Grade 8	2.189	0.639	-1.550	-206
Science	Biology	2.462	1.112	-1.350	-179
Science	Chemistry	2.706	1.356	-1.350	-179
Writing	Grade 5	0.731	-0.569	-1.300	-173
Writing	Grade 6	1.363	0.063	-1.300	-172
Writing	Grade 7	1.886	0.586	-1.300	-173
Writing	Grade 8	2.219	0.919	-1.300	-173
Writing	English Composition	2.281	0.981	-1.300	-173

EXTRAPOLATION OF BENCHMARK CUTS FOR GRADES 2 THROUGH 4

The introduction of CDT tests for students in grades 3 through 5 in spring 2014 required benchmark cuts for grades 2 through 4¹. For each content area, the benchmark cuts in place for the 2013–2014 school year in grades 5 and above were used to extrapolate cuts in grades 2 through 4. See Chapter Nineteen of the 2013–2014 technical report for details.

¹ It is not expected that students in grade 2 will use the CDT. However, teachers may want to use a grade 2 benchmark when looking at reports for students in grade 3, especially early in the school year.

REVISION OF BENCHMARK CUTS BASED ON CHANGES TO PSSA

In spring 2015, changes were made to PSSA test designs and cut points in mathematics and English language arts. In light of these changes, CDT benchmark cuts were analyzed again using matched data sets - operational CDT with PSSA and Keystone. The new PSSA cut points approved in July 2015 represented higher, more rigorous, standards. Therefore CDT benchmark cuts in mathematics, reading, and writing were raised to make CDT red/green/blue classifications more consistent with PSSA. See Chapter Nineteen of the 2015-2016 technical report for details. Table 19-2 provides a summary of the revisions to the benchmark cut points based on changes to PSSA.

Table 19–2. Summary of Second Revision to Benchmark Cuts

CDT	Course /Grade	2014-2015 Logit Cut Point	2015-2016 Logit Cut Point	Difference in Logit Cut Point	Difference in Scale Score
Math Grades 3-5	Grade 2	-2.828	-1.628	1.200	150
Math Grades 3-5	Grade 3	-2.083	-0.883	1.200	150
Math Grades 3-5	Grade 4	-1.380	-0.180	1.200	150
Math Grades 3-5	Grade 5	-0.792	0.208	1.000	125
Math Gr 6-8	Grade 6	0.026	0.726	0.700	87
Math Gr 6-8	Grade 7	0.495	1.195	0.700	88
Math Gr 6-8	Grade 8	0.838	1.513	0.675	84
Algebra I	Algebra I	1.613	1.613	0.000	0
Geometry	Geometry	1.864	1.864	0.000	0
Algebra II	Algebra II	2.367	2.367	0.000	0
Reading Grades 3-5	Grade 2	-1.136	-0.936	0.200	29
Reading Grades 3-5	Grade 3	-0.367	-0.167	0.200	29
Reading Grades 3-5	Grade 4	0.179	0.429	0.250	36
Reading Grades 3-5	Grade 5	0.529	0.879	0.350	50
Read/Lit Grades 6-HS	Grade 6	1.015	1.265	0.250	35
Read/Lit Grades 6-HS	Grade 7	1.299	1.499	0.200	29
Read/Lit Grades 6-HS	Grade 8	1.500	1.725	0.225	32
Read/Lit Grades 6-HS	Literature	1.657	1.882	0.225	32
Writing Grades 3-5	Grade 2	-2.989	-1.739	1.250	166
Writing Grades 3-5	Grade 3	-1.874	-0.624	1.250	166
Writing Grades 3-5	Grade 4	-1.084	-0.084	1.000	133
Writing Grades 3-5	Grade 5	-0.569	0.281	0.850	113
Writing/Eng Comp Gr 6-HS	Grade 6	0.063	0.563	0.500	66
Writing/Eng Comp Gr 6-HS	Grade 7	0.586	0.836	0.250	33
Writing/Eng Comp Gr 6-HS	Grade 8	0.919	0.919	0.000	0
Writing/Eng Comp Gr 6-HS	English Composition	0.981	0.981	0.000	0

BENCHMARK CUTS FOR ALL GRADES AND COURSES FOR THE 2016–2017 SCHOOL YEAR

Table 19–3 shows the benchmark cuts used for student reporting during the 2016–2017 school year in the logit metric for each content area. Also presented are the scale score ranges for each color on the CDT reports.

Table 19–3. Benchmark Cuts and Scale Score Ranges for the 2016–2017 School Year

CDT	Course/Grade	Logit Cut Point (Center of Green)	Red Scale Score Range	Green Scale Score Range	Blue Scale Score Range
Math Grades 3-5	Grade 2	-1.628	200 - 728	729 - 891	892 - 2000
Math Grades 3-5	Grade 3	-0.883	200 - 821	822 - 984	985 - 2000
Math Grades 3-5	Grade 4	-0.180	200 - 909	910 - 1072	1073 - 2000
Math Grades 3-5	Grade 5	0.208	200 - 957	958 - 1120	1121 - 2000
Math Gr 6-8	Grade 6	0.726	200 - 1022	1023 - 1185	1186 - 2000
Math Gr 6-8	Grade 7	1.195	200 - 1081	1082 - 1244	1245 - 2000
Math Gr 6-8	Grade 8	1.513	200 - 1120	1121 - 1283	1284 - 2000
Algebra I	Algebra I	1.613	400 - 1133	1134 - 1296	1297 - 2000
Geometry	Geometry	1.864	400 - 1164	1165 - 1327	1328 - 2000
Algebra II	Algebra II	2.367	400 - 1227	1228 - 1390	1391 - 2000
Reading Grades 3-5	Grade 2	-0.936	200 - 630	631 - 845	846 - 2000
Reading Grades 3-5	Grade 3	-0.167	200 - 740	741 - 955	956 - 2000
Reading Grades 3-5	Grade 4	0.429	200 - 825	826 - 1040	1041 - 2000
Reading Grades 3-5	Grade 5	0.879	200 - 889	890 - 1104	1105 - 2000
Read/Lit Grades 6-HS	Grade 6	1.265	200 - 944	945 - 1159	1160 - 2000
Read/Lit Grades 6-HS	Grade 7	1.499	200 - 978	979 - 1193	1194 - 2000
Read/Lit Grades 6-HS	Grade 8	1.725	200 - 1010	1011 - 1225	1226 - 2000
Read/Lit Grades 6-HS	Literature	1.882	200 - 1032	1033 - 1247	1248 - 2000
Science Grades 3-5	Grade 2	-1.723	200 - 634	635 - 807	808 - 2000
Science Grades 3-5	Grade 3	-1.282	200 - 693	694 - 866	867 - 2000
Science Grades 3-5	Grade 4	-0.855	200 - 750	751 - 923	924 - 2000
Science Grades 3-5	Grade 5	-0.451	200 - 803	804 - 976	977 - 2000
Science Gr 6-HS	Grade 6	-0.028	200 - 860	861 - 1033	1034 - 2000
Science Gr 6-HS	Grade 7	0.329	200 - 907	908 - 1080	1081 - 2000
Science Gr 6-HS	Grade 8	0.639	200 - 948	949 - 1121	1122 - 2000
Biology	Biology	1.112	400 - 1011	1012 - 1184	1185 - 2000
Chemistry	Chemistry	1.356	400 - 1044	1045 - 1217	1218 - 2000
Writing Grades 3-5	Grade 2	-1.739	200 - 631	632 - 804	805 - 2000
Writing Grades 3-5	Grade 3	-0.624	200 - 779	780 - 952	953 - 2000
Writing Grades 3-5	Grade 4	-0.084	200 - 851	852 - 1024	1025 - 2000
Writing Grades 3-5	Grade 5	0.281	200 - 899	900 - 1072	1073 - 2000
Writing/Eng Comp Gr 6-HS	Grade 6	0.563	200 - 937	938 - 1110	1111 - 2000
Writing/Eng Comp Gr 6-HS	Grade 7	0.836	200 - 973	974 - 1146	1147 - 2000
Writing/Eng Comp Gr 6-HS	Grade 8	0.919	200 - 984	985 - 1157	1158 - 2000
Writing/Eng Comp Gr 6-HS	English Composition	0.981	200 - 993	994 - 1166	1167 - 2000

APPENDIX A: GENERAL DEVELOPMENT AND FIELD TEST CYCLE FOR THE CLASSROOM DIAGNOSTIC TOOLS

Table A-1. General Development and Field Test Cycle for the Classroom Diagnostic Tools

	Mathematics	Reading/Literature	Science	Writing/English Composition
Summer/Fall 2009	Item Development and Internal Reviews			
Winter 2009/2010	Item Review by Pennsylvania Educators	Item Development and Internal Reviews	Item Development and Internal Reviews	
Spring 2010	Stand-alone Field Test	Item Development and Internal Reviews	Item Development and Internal Reviews	
Summer 2010	Data Review, Items Aligned to the Learning Progression Map, and Benchmarking	Item Review by Pennsylvania Educators	Item Review by Pennsylvania Educators	Item Development and Internal Reviews
Fall 2010	Operational Assessments Available	Stand-alone Field Test	Stand-alone Field Test	Item Development and Internal Reviews
Winter 2010/2011	Operational Assessments Available	Data Review, Items Aligned to the Learning Progression Map, and Benchmarking	Data Review, Items Aligned to the Learning Progression Map, and Benchmarking	Item Review by Pennsylvania Educators
Spring 2011	Operational Assessments Available	Operational Assessments Available	Operational Assessments Available	Stand-alone Field Test
Summer 2011				Data Review, Items Aligned to the Learning Progression Map, and Benchmarking
Fall 2011	Operational Assessments Available	Operational Assessments Available	Operational Assessments Available	Operational Assessments Available
Winter 2011/2012	Operational Assessments Available	Operational Assessments Available	Operational Assessments Available	Operational Assessments Available
Spring 2012	Operational Assessments Available	Operational Assessments Available	Operational Assessments Available	Operational Assessments Available
Summer 2012	Item Development and Internal Reviews of Items Aligned to Pennsylvania Core Standards Begins	Item Development and Internal Reviews of Items Aligned to Pennsylvania Core Standards Begins		
Fall 2012	Operational Assessments Available and Completion of Item Development and Internal Reviews of Items Aligned to Pennsylvania Core Standards	Operational Assessments Available and Completion of Item Development and Internal Reviews of Items Aligned to Pennsylvania Core Standards	Operational Assessments Available	Operational Assessments Available

Table A–1 (continued). General Development and Field Test Cycle for the Classroom Diagnostic Tools

	Mathematics	Reading/Literature	Science	Writing/English Composition
Winter 2012/2013	Operational Assessments Available and Item Review by Pennsylvania Educators for Items Aligned to Pennsylvania Core Standards	Operational Assessments Available and Item Review by Pennsylvania Educators for Items Aligned to Pennsylvania Core Standards	Operational Assessments Available	Operational Assessments Available
Spring 2013	Operational Assessments with Embedded Field Test Items Aligned to the Pennsylvania Core Standards Available and Item Development and Internal Reviews of Items for Lower Grades CDT	Operational Assessments with Embedded Field Test Items Aligned to the Pennsylvania Core Standards Available and Item Development and Internal Reviews of Items for Lower Grades CDT	Operational Assessments Available and Item Development and Internal Reviews of Items for Lower Grades CDT	Operational Assessments Available and Item Development and Internal Reviews of Items for Lower Grades CDT
Summer 2013	Data Review and Items Aligned to the Learning Progression Map for Items Aligned to the Pennsylvania Core Standards and Item Review by Pennsylvania Educators for Items for Lower Grades	Data Review and Items Aligned to the Learning Progression Map for Items Aligned to the Pennsylvania Core Standards and Item Review by Pennsylvania Educators for Items for Lower Grades	Item Review by Pennsylvania Educators for Items for Lower Grades	Item Review by Pennsylvania Educators for Items for Lower Grades
Fall 2013	Operational Assessments Aligned to PCS Including Embedded Field Test Items at Grade 6 Available and Stand-alone Field Test for Lower Grades	Operational Assessments Aligned to PCS Including Embedded Field Test Items at Grade 6 Available and Stand-alone Field Test for Lower Grades	Operational Assessments Aligned to PCS Including Embedded Field Test Items at Grade 6 Available and Stand-alone Field Test for Lower Grades	Operational Assessments Aligned to PCS Including Embedded Field Test Items at Grade 6 Available and Stand-alone Field Test for Lower Grades
Winter 2013/2014	Operational Assessments Aligned to PCS Available and Data Review and Items Aligned to the Learning Progression Map for Items for Lower Grades CDT	Operational Assessments Aligned to PCS Available and Data Review and Items Aligned to the Learning Progression Map for Items for Lower Grades CDT	Operational Assessments Aligned to PCS Available and Data Review and Items Aligned to the Learning Progression Map for Items for Lower Grades CDT	Operational Assessments Aligned to PCS Available and Data Review and Items Aligned to the Learning Progression Map for Items for Lower Grades CDT
Spring 2014	Operational Assessments, including Lower Grades, Available	Operational Assessments, including Lower Grades, Available	Operational Assessments, including Lower Grades, Available	Operational Assessments, including Lower Grades, Available
Winter 2014/2015	Item Development and Internal Reviews of Replenishment Items for Grades 6–HS CDT	Item Development and Internal Reviews of Replenishment Items for Grades 6–HS and EBSR items for all grade levels CDT	Item Development and Internal Reviews of Replenishment Items for Grades 6–HS CDT	Item Development and Internal Reviews of Replenishment Items for Grades 6–HS CDT
Spring 2015	Operational Assessments, including Lower Grades, Available	Operational Assessments, including Lower Grades, Available	Operational Assessments, including Lower Grades, Available	Operational Assessments, including Lower Grades, Available

	Mathematics	Reading/Literature	Science	Writing/English Composition
Spring 2016	Data Review of Items Aligned to the Learning Progression Map for Items Aligned to the Pennsylvania Core Standards and Item Review by Pennsylvania Educators and Operational Assessments, including Lower Grades, Available	Data Review of Items Aligned to the Learning Progression Map for Items Aligned to the Pennsylvania Core Standards and Item Review by Pennsylvania Educators and Operational Assessments, including Lower Grades, Available	Data Review of Items Aligned to the Learning Progression Map for Items Aligned to the Pennsylvania Core Standards and Item Review by Pennsylvania Educators and Operational Assessments, including Lower Grades, Available	Data Review of Items Aligned to the Learning Progression Map for Items Aligned to the Pennsylvania Core Standards and Item Review by Pennsylvania Educators and Operational Assessments, including Lower Grades, Available

APPENDIX B: FIELD TEST ITEM STATISTICS

Table B-1. Multiple-Choice Item Statistics

Table B-1. Multiple-Choice Item Statistics

Column Heading	Definition
Ref	Reference line number
ID	Item ID
FT Grade	Item grade or course alignment when field tested
PCS Grade ¹	Item grade or course when aligned to PA Core Standards
<i>N</i>	Number of students
PVal	Item mean score (P-Value)
P()	Proportion selecting given response (- = blank)
PtBis	Point biserial (item-total correlation)
PT()	Point biserial of given response
Meas	Rasch item difficulty measure estimate
MSE	Standard error of Rasch item difficulty measure estimate
Z-in	Z-standardized infit statistic
MS-in	Mean square infit statistic
Z-out	Z-standardized outfit statistic
MS-out	Mean square outfit statistic
M/F	Male/female DIF statistic
W/B	White/black DIF statistic

¹ Items in the content areas of mathematics, reading, and writing, were realigned to the Pennsylvania core standards prior to the start of the 2013-2014 school year.

Table B-1. Multiple-Choice Item Statistics

Table B-2. Mathematics Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M /F	W /B
1	600437	3	1	1282	.921	.921	.045	.013	.019	.003	.400	.400	-.276	-.193	-.166	-3.932	0.117	-1.2	0.9	-1.6	0.8	A+	B-
2	601973	3	1	1282	.818	.060	.818	.082	.036	.005	.439	-.233	.439	-.228	-.223	-2.648	0.086	0.9	1.0	0.6	1.1	A+	A-
3	601588	3	3	1925	.872	.872	.057	.042	.027	.003	.459	.459	-.269	-.280	-.184	-3.199	0.078	-1.6	0.9	-2.0	0.8	A+	B-
4	603742	3	1	1285	.850	.850	.090	.036	.016	.008	.338	.338	-.133	-.215	-.198	-2.989	0.090	2.2	1.1	4.5	1.6	A-	A+
5	600920	3	3	1285	.662	.183	.069	.074	.662	.013	.547	-.353	-.205	-.181	.547	-1.530	0.071	-1.7	0.9	-0.4	1.0	A+	A-
6	601977	3	3	1285	.788	.040	.083	.788	.078	.012	.483	-.227	-.256	.483	-.228	-2.439	0.080	-0.2	1.0	-0.3	1.0	A-	A+
7	601978	3	3	1282	.857	.040	.056	.857	.044	.003	.415	-.178	-.232	.415	-.260	-3.009	0.092	-0.1	1.0	-0.2	1.0	A+	A+
8	600863	3	2	1286	.686	.071	.065	.686	.177	.002	.504	-.250	-.223	.504	-.291	-1.765	0.072	0.3	1.0	0.4	1.0	A+	A-
9	601558	3	3	1286	.453	.080	.453	.134	.331	.003	.506	-.106	.506	-.162	-.346	-0.286	0.071	1.9	1.1	6.2	1.5	A+	B+
10	602676	3	3	1286	.641	.083	.214	.641	.060	.002	.489	-.236	-.268	.489	-.234	-1.474	0.070	1.2	1.0	1.0	1.1	A+	A-
11	600424	3	3	1286	.785	.084	.061	.785	.065	.004	.482	-.302	-.244	.482	-.192	-2.497	0.079	-1.9	0.9	-2.2	0.8	B+	A-
12	601559	3	3	1287	.649	.079	.066	.649	.202	.004	.517	-.112	-.177	.517	-.417	-1.605	0.070	0.9	1.0	0.8	1.0	A-	A+
13	601898	3	3	1287	.781	.781	.069	.136	.009	.005	.438	.438	-.182	-.355	-.040	-2.538	0.078	1.5	1.1	1.2	1.1	A+	A-
14	600864	3	2	1287	.772	.113	.057	.054	.772	.005	.536	-.318	-.237	-.267	.536	-2.462	0.077	-3.9	0.9	-3.9	0.7	A+	A-
15	600413	3	1	644	.792	.109	.028	.071	.792	.000	.441	-.278	-.226	-.214	.441	-2.535	0.110	0.2	1.0	0.6	1.1	A+	A-
16	600867	3	3	1283	.658	.658	.150	.066	.123	.003	.560	.560	-.280	-.196	-.346	-1.559	0.069	-1.6	1.0	-1.6	0.9	A+	A-
17	602677	3	3	1286	.547	.547	.180	.085	.182	.007	.539	.539	-.216	-.230	-.284	-0.901	0.067	0.4	1.0	1.1	1.1	A-	B-
18	600425	3	3	1286	.663	.081	.663	.149	.102	.005	.498	-.188	.498	-.292	-.244	-1.582	0.069	0.5	1.0	1.8	1.1	A+	A-
19	600423	3	1	1281	.881	.881	.045	.063	.006	.005	.412	.412	-.242	-.253	-.152	-3.262	0.096	-0.4	1.0	-0.8	0.9	A-	B+
20	601438	3	3	1280	.883	.049	.054	.883	.013	.002	.427	-.277	-.254	.427	-.153	-3.250	0.097	-0.9	0.9	-0.9	0.9	A+	A+
21	601976	3	3	639	.664	.105	.052	.180	.664	.000	.532	-.234	-.312	-.288	.532	-1.508	0.099	0.2	1.0	0.1	1.0	A-	A-
22	600868	3	3	639	.833	.022	.089	.833	.056	.000	.386	-.199	-.219	.386	-.229	-2.750	0.119	1.4	1.1	0.9	1.1	A+	A+
23	601900	3	1	1280	.896	.038	.896	.021	.045	.001	.399	-.224	.399	-.186	-.243	-3.411	0.101	-0.5	1.0	-1.1	0.9	B+	A+
24	600439	3	3	1281	.786	.003	.786	.050	.159	.002	.481	-.049	.481	-.237	-.374	-2.345	0.078	-0.4	1.0	-1.6	0.9	A-	A-
25	601216	3	3	641	.939	.037	.019	.939	.005	.000	.387	-.268	-.262	.387	-.090	-4.083	0.180	-1.2	0.9	-0.5	0.9	A+	A-
26	602675	3	1	1283	.894	.048	.894	.030	.020	.008	.407	-.220	.407	-.209	-.199	-3.429	0.103	-0.2	1.0	-1.3	0.8	B+	A-
27	600866	3	3	641	.903	.017	.044	.034	.903	.002	.432	-.206	-.224	-.278	.432	-3.488	0.149	-0.8	0.9	-1.9	0.7	A-	A-
28	601439	3	3	1283	.933	.018	.021	.933	.025	.003	.373	-.209	-.217	.373	-.176	-4.009	0.124	-1.1	0.9	-0.6	0.9	A+	A-
29	600431	3	1	1285	.834	.024	.083	.834	.051	.009	.469	-.241	-.301	.469	-.166	-2.828	0.087	-1.1	1.0	-1.3	0.9	A-	A-
30	601975	3	3	1283	.723	.098	.723	.067	.110	.002	.460	-.224	.460	-.315	-.188	-1.977	0.072	1.9	1.1	1.8	1.1	A+	A-

Table B–2 (continued). Mathematics Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M /F	W /B
31	600865	3	3	1280	.913	.027	.913	.046	.014	.001	.362	-.208	.362	-.227	-.162	-3.637	0.108	-0.2	1.0	-0.7	0.9	A-	B+
32	601897	3	3	1286	.799	.098	.089	.799	.011	.003	.438	-.233	-.293	.438	-.152	-2.613	0.081	0.8	1.0	0.2	1.0	A+	A-
33	601437	3	3	1280	.891	.066	.018	.020	.891	.005	.436	-.257	-.228	-.239	.436	-3.380	0.101	-2.1	0.9	0.0	1.0	A+	A+
34	600438	3	3	1283	.782	.782	.183	.007	.023	.005	.492	.492	-.441	-.097	-.115	-2.418	0.078	-0.9	1.0	-1.4	0.9	A-	A-
35	601587	3	3	1285	.544	.143	.135	.171	.544	.007	.475	-.246	-.283	-.103	.475	-0.770	0.068	2.5	1.1	3.5	1.2	A-	A+
36	600921	3	3	1282	.708	.022	.030	.708	.232	.009	.511	-.183	-.235	.511	-.359	-1.770	0.075	-0.3	1.0	-0.1	1.0	B+	B-
37	600872	3	1	1282	.906	.906	.027	.058	.008	.002	.328	.328	-.240	-.168	-.166	-3.615	0.107	0.1	1.0	2.7	1.4	B+	B-
38	601441	3	N/A	1282	.701	.120	.083	.701	.093	.003	.492	-.259	-.249	.492	-.240	-1.700	0.074	1.3	1.0	1.8	1.1	A+	A+
39	603743	3	2	1286	.924	.015	.924	.016	.044	.002	.382	-.161	.382	-.219	-.241	-4.042	0.116	-1.2	0.9	-0.7	0.9	B+	B-
40	604350	3	1	1283	.929	.019	.929	.023	.023	.006	.378	-.174	.378	-.221	-.207	-4.075	0.120	-1.5	0.9	-0.9	0.8	B+	A+
41	600870	3	3	639	.836	.077	.044	.836	.042	.002	.431	-.247	-.289	.431	-.168	-2.790	0.120	0.1	1.0	-0.1	1.0	A-	A+
42	604351	3	1	639	.917	.030	.917	.022	.028	.003	.344	-.190	.344	-.234	-.151	-3.777	0.157	-0.5	0.9	1.1	1.2	B+	A-
43	600922	3	3	641	.435	.086	.435	.236	.237	.006	.606	-.104	.606	-.246	-.369	0.052	0.103	-0.4	1.0	2.7	1.3	C-	A+
44	600441	3	3	1283	.917	.009	.029	.917	.041	.006	.345	-.089	-.176	.345	-.225	-3.743	0.114	0.7	1.1	0.6	1.1	A-	B-
45	600426	3	3	1283	.470	.108	.470	.246	.165	.010	.545	-.226	.545	-.236	-.216	-0.305	0.068	1.2	1.0	4.2	1.3	B-	A+
46	600869	3	3	1283	.794	.023	.794	.114	.067	.002	.424	-.184	.424	-.291	-.204	-2.505	0.079	1.1	1.1	1.5	1.1	A-	A+
47	600871	3	1	1285	.938	.035	.938	.013	.007	.008	.383	-.252	.383	-.202	-.148	-4.307	0.133	-1.1	0.9	-2.6	0.5	A+	A-
48	601980	3	2	1286	.831	.063	.831	.047	.054	.005	.407	-.225	.407	-.214	-.196	-2.809	0.084	0.6	1.0	0.7	1.1	A-	B-
49	600440	3	3	641	.861	.034	.861	.023	.078	.003	.354	-.156	.354	-.080	-.277	-2.978	0.130	1.8	1.2	2.2	1.4	A+	C-
50	601440	3	N/A	1285	.628	.205	.628	.079	.078	.010	.443	-.258	.443	-.227	-.116	-1.305	0.069	4.2	1.1	4.3	1.2	A+	A+
51	601905	3	K	1924	.952	.024	.008	.015	.952	.002	.293	-.138	-.175	-.186	.293	-4.502	0.116	0.3	1.0	0.7	1.1	A+	B-
52	601906	3	K	1282	.939	.009	.939	.016	.035	.002	.295	-.121	.295	-.152	-.216	-4.189	0.128	0.1	1.0	0.9	1.2	A+	A-
53	600923	3	K	1930	.749	.204	.749	.041	.004	.003	.405	-.325	.405	-.162	-.131	-2.214	0.061	4.2	1.1	2.5	1.1	A-	A-
54	600443	3	4	1286	.904	.002	.904	.002	.086	.006	.276	-.087	.276	-.100	-.221	-3.648	0.106	2.1	1.2	2.7	1.5	A-	A-
55	601442	3	K	1283	.973	.973	.016	.006	.002	.004	.247	.247	-.167	-.142	-.049	-5.264	0.189	-0.3	0.9	-0.7	0.8	A+	A-
56	600873	3	4	1283	.669	.669	.072	.017	.239	.004	.510	.510	-.191	-.090	-.405	-1.628	0.070	1.1	1.0	1.4	1.1	A+	A-
57	601443	3	K	1280	.850	.096	.021	.029	.850	.004	.332	-.167	-.174	-.227	.332	-2.910	0.089	3.1	1.2	4.5	1.5	A+	A-
58	600874	3	4	1280	.927	.009	.927	.046	.012	.006	.341	-.135	.341	-.257	-.123	-3.971	0.121	0.2	1.0	-0.6	0.9	B+	A-
59	601982	3	K	1283	.958	.013	.017	.007	.958	.006	.310	-.160	-.163	-.144	.310	-4.688	0.158	-0.2	1.0	-0.5	0.9	A+	A+
60	601981	3	K	641	.892	.006	.084	.013	.892	.005	.355	-.184	-.276	-.097	.355	-3.377	0.145	0.9	1.1	1.3	1.3	A+	A+
61	600442	3	4	1287	.987	.004	.987	.002	.002	.005	.205	-.111	.205	-.046	-.097	-6.641	0.323	-0.1	0.9	-2.1	0.4	A+	A-
62	600427	3	K	1286	.766	.766	.105	.090	.036	.003	.379	.379	-.264	-.177	-.153	-2.266	0.075	3.5	1.1	2.4	1.2	A+	A+
63	600875	3	4	1282	.909	.909	.037	.027	.024	.002	.496	.496	-.295	-.245	-.267	-3.714	0.110	-3.3	0.8	-4.0	0.5	A+	B-
64	600428	3	3	1282	.846	.846	.073	.021	.055	.005	.357	.357	-.213	-.154	-.182	-2.937	0.091	2.5	1.1	3.1	1.3	A+	A-
65	600876	3	4	1282	.889	.022	.036	.889	.050	.004	.409	-.219	-.232	.409	-.235	-3.392	0.101	-0.9	0.9	-1.3	0.8	A-	A-

Table B–2 (continued). Mathematics Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M /F	W /B
66	600924	3	3	1282	.830	.830	.047	.037	.083	.003	.397	.397	-.224	-.201	-.220	-2.730	0.086	1.3	1.1	0.6	1.1	A+	A+
67	601983	3	3	1283	.877	.877	.083	.023	.016	.001	.434	.434	-.354	-.167	-.162	-3.273	0.094	-1.7	0.9	-2.6	0.7	A+	A-
68	604353	3	3	644	.863	.056	.863	.036	.045	.000	.457	-.271	.457	-.234	-.246	-3.177	0.127	-1.4	0.9	-1.8	0.7	A+	A+
69	600444	3	4	1283	.964	.011	.016	.964	.004	.005	.349	-.200	-.217	.349	-.091	-4.881	0.170	-0.8	0.9	-3.0	0.4	A-	A-
70	601444	3	3	641	.881	.047	.881	.030	.036	.006	.373	-.172	.373	-.218	-.176	-3.236	0.140	0.9	1.1	1.8	1.3	A-	A-
71	601445	3	3	1283	.914	.015	.041	.022	.914	.009	.425	-.205	-.249	-.192	.425	-3.744	0.114	-1.2	0.9	-1.4	0.8	A-	A-
72	604352	3	3	1287	.682	.079	.159	.076	.682	.005	.509	-.287	-.249	-.229	.509	-1.826	0.071	0.1	1.0	0.7	1.0	A+	B-
73	601589	3	4	641	.964	.964	.006	.019	.008	.003	.270	.270	-.105	-.132	-.186	-4.842	0.235	0.2	1.0	0.2	1.0	A+	A-
74	601984	3	3	1280	.895	.035	.023	.045	.895	.002	.390	-.148	-.194	-.295	.390	-3.408	0.101	-1.1	0.9	1.4	1.2	A+	A-
75	601447	3	3	1282	.954	.008	.022	.954	.008	.009	.302	-.113	-.213	.302	-.099	-4.824	0.158	-0.3	1.0	-1.0	0.8	C+	A+
76	601570	3	3	1925	.757	.074	.757	.117	.049	.003	.522	-.194	.522	-.323	-.296	-2.203	0.063	-2.7	0.9	-1.3	0.9	A+	A-
77	601986	3	2	644	.938	.011	.938	.040	.008	.003	.261	-.076	.261	-.212	-.122	-4.257	0.177	0.3	1.0	0.2	1.0	A+	A+
78	600878	3	1	644	.880	.053	.880	.033	.034	.000	.348	-.257	.348	-.111	-.198	-3.365	0.133	0.5	1.0	1.0	1.2	B+	A-
79	600445	3	3	1281	.980	.980	.006	.000	.013	.002	.293	.293	-.141	.000	-.246	-5.492	0.216	-1.0	0.8	-3.5	0.2	A+	A+
80	601909	3	2	1280	.950	.007	.950	.026	.013	.004	.282	-.141	.282	-.167	-.146	-4.438	0.141	0.2	1.0	0.4	1.1	A+	A-
81	600446	3	3	1280	.921	.041	.921	.018	.016	.004	.393	-.257	.393	-.199	-.164	-3.824	0.115	-1.4	0.9	0.2	1.0	B+	A-
82	601908	3	2	1281	.913	.063	.016	.913	.006	.002	.371	-.290	-.178	.371	-.114	-3.678	0.109	-0.8	0.9	-0.3	1.0	A+	A-
83	600429	3	3	641	.793	.016	.119	.793	.072	.002	.507	-.192	-.363	.507	-.233	-2.316	0.113	-1.2	0.9	0.3	1.0	A+	C-
84	601446	3	3	1283	.711	.090	.083	.711	.108	.007	.545	-.254	-.179	.545	-.361	-1.773	0.072	-2.6	0.9	-0.6	1.0	A+	A+
85	601985	3	2	1287	.929	.009	.929	.012	.047	.002	.380	-.115	.380	-.187	-.292	-4.173	0.119	-1.9	0.9	-2.5	0.6	B+	A-
86	600877	3	1	1287	.938	.024	.938	.013	.022	.003	.351	-.227	.351	-.179	-.161	-4.369	0.127	-1.1	0.9	-1.2	0.8	A+	B-
87	604186	4	4	965	.442	.442	.167	.354	.037	.000	.449	.449	-.293	-.150	-.221	0.131	0.076	2.9	1.1	2.8	1.2	A-	A+
88	601958	4	3	962	.859	.013	.036	.859	.092	.001	.397	-.131	-.186	.397	-.301	-2.572	0.101	-0.7	1.0	-1.6	0.8	A+	A-
89	604488	4	3	962	.844	.844	.077	.054	.021	.004	.424	.424	-.257	-.252	-.146	-2.486	0.099	-0.9	0.9	-0.3	1.0	A+	A+
90	604492	4	3	964	.766	.041	.766	.099	.092	.003	.448	-.138	.448	-.259	-.267	-1.928	0.084	-1.1	1.0	-1.4	0.9	A-	B-
91	601962	4	4	964	.639	.173	.126	.639	.060	.002	.377	-.148	-.241	.377	-.175	-0.917	0.078	3.7	1.1	2.8	1.1	A-	A+
92	601987	4	4	963	.720	.044	.181	.720	.054	.002	.458	-.195	-.302	.458	-.204	-1.604	0.080	-0.8	1.0	-0.6	1.0	C-	A+
93	604187	4	4	966	.655	.154	.099	.088	.655	.003	.494	-.249	-.257	-.219	.494	-1.006	0.078	-0.5	1.0	-0.5	1.0	B-	A-
94	601638	4	4	965	.729	.056	.157	.729	.058	.001	.529	-.197	-.379	.529	-.218	-1.512	0.082	-3.2	0.9	-3.1	0.8	A+	B+
95	602968	4	3	1926	.822	.822	.111	.034	.032	.001	.408	.408	-.248	-.211	-.218	-2.250	0.066	-0.7	1.0	-0.2	1.0	A+	B-
96	601988	4	4	965	.911	.911	.029	.042	.018	.001	.391	.391	-.226	-.252	-.160	-3.156	0.122	-1.4	0.9	-1.6	0.7	A-	A+
97	602969	4	3	966	.611	.611	.198	.104	.088	.000	.485	.485	-.239	-.176	-.309	-0.735	0.077	1.3	1.0	1.1	1.1	A+	A+
98	604348	4	4	966	.582	.114	.191	.582	.113	.001	.454	-.301	-.229	.454	-.116	-0.576	0.076	0.9	1.0	1.4	1.1	A-	A+
99	604184	4	3	964	.809	.032	.060	.097	.809	.002	.471	-.169	-.277	-.291	.471	-2.059	0.092	-2.0	0.9	-3.2	0.7	A+	A+
100	604968	4	3	1445	.857	.041	.074	.857	.024	.004	.411	-.195	-.265	.411	-.198	-2.577	0.083	-1.0	1.0	-2.2	0.8	A-	A-

Table B–2 (continued). Mathematics Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M /F	W /B
101	602970	4	3	964	.845	.014	.099	.845	.041	.002	.410	-.124	-.305	.410	-.201	-2.379	0.099	-0.5	1.0	-1.2	0.9	A+	A+
102	604877	4	3	1445	.762	.015	.046	.762	.172	.005	.359	-.155	-.195	.359	-.220	-1.822	0.069	2.0	1.1	1.5	1.1	A-	A+
103	601963	4	4	964	.627	.185	.111	.627	.076	.002	.327	-.112	-.202	.327	-.181	-1.072	0.076	4.7	1.2	4.1	1.2	A+	A+
104	604878	4	3	964	.302	.066	.302	.269	.358	.005	.312	-.094	.312	-.167	-.083	0.781	0.082	4.0	1.2	7.0	1.7	A-	A+
105	602004	4	3	964	.439	.082	.453	.023	.439	.003	.505	-.314	-.253	-.206	.505	-0.026	0.075	-1.3	1.0	-0.7	1.0	A-	C-
106	601959	4	3	964	.416	.503	.048	.416	.030	.003	.489	-.374	-.172	.489	-.060	0.100	0.076	0.6	1.0	0.6	1.0	A+	A-
107	601960	4	3	963	.863	.011	.062	.863	.062	.001	.296	-.165	-.246	.296	-.101	-2.680	0.102	0.9	1.1	0.9	1.1	B+	A-
108	602005	4	3	963	.733	.733	.061	.070	.135	.001	.521	.521	-.233	-.338	-.257	-1.649	0.082	-3.5	0.9	-2.7	0.8	A-	A-
109	601640	4	4	963	.713	.074	.156	.713	.057	.000	.500	-.277	-.292	.500	-.205	-1.518	0.080	-2.3	0.9	-1.6	0.9	A+	A+
110	602001	4	4	962	.632	.039	.267	.632	.060	.002	.442	-.194	-.241	.442	-.286	-0.976	0.078	0.8	1.0	1.3	1.1	A+	B+
111	602006	4	3	1443	.675	.189	.031	.105	.675	.001	.440	-.120	-.230	-.386	.440	-1.274	0.064	0.2	1.0	0.5	1.0	A+	B-
112	601641	4	4	961	.512	.149	.278	.512	.058	.003	.411	-.351	-.117	.411	-.102	-0.378	0.075	4.0	1.1	3.8	1.2	A-	A-
113	602002	4	4	961	.605	.226	.605	.090	.071	.009	.495	-.221	.495	-.313	-.190	-0.909	0.076	-1.1	1.0	-1.3	0.9	A+	A-
114	601636	4	4	481	.578	.094	.578	.154	.173	.002	.435	-.165	.435	-.229	-.209	-0.828	0.104	1.1	1.1	1.0	1.1	A-	A+
115	604484	4	4	481	.628	.206	.628	.092	.073	.002	.502	-.230	.502	-.274	-.253	-1.097	0.106	-1.2	1.0	-1.4	0.9	B+	A-
116	601965	4	4	963	.758	.022	.119	.097	.758	.004	.401	-.193	-.291	-.146	.401	-1.863	0.084	0.7	1.0	0.4	1.0	A+	A+
117	604349	4	5	963	.722	.722	.166	.058	.051	.003	.486	.486	-.275	-.192	-.303	-1.619	0.080	-1.9	0.9	-2.1	0.9	A+	A-
118	601637	4	4	963	.709	.068	.116	.709	.104	.003	.520	-.218	-.258	.520	-.306	-1.544	0.079	-3.1	0.9	-3.1	0.8	A-	A+
119	604490	4	3	963	.910	.025	.033	.030	.910	.002	.350	-.106	-.230	-.232	.350	-3.248	0.120	-1.0	0.9	-1.2	0.8	A-	A-
120	604185	4	4	482	.764	.133	.764	.081	.021	.002	.456	-.256	.456	-.269	-.219	-1.868	0.119	-0.9	0.9	0.0	1.0	A-	
121	601961	4	4	966	.674	.227	.053	.046	.674	.001	.478	-.289	-.264	-.204	.478	-1.115	0.079	-0.1	1.0	-0.7	1.0	A+	A+
122	601639	4	4	964	.687	.042	.219	.687	.049	.004	.385	-.153	-.258	.385	-.167	-1.402	0.078	2.0	1.1	1.3	1.1	A-	B-
123	601991	4	5	963	.558	.558	.131	.149	.159	.004	.546	.546	-.200	-.268	-.281	-0.693	0.074	-3.3	0.9	-2.5	0.9	A-	A-
124	601964	4	4	963	.566	.051	.566	.358	.023	.002	.465	-.193	.465	-.325	-.192	-0.730	0.074	0.6	1.0	1.0	1.1	A+	C-
125	604967	4	3	963	.914	.914	.028	.034	.023	.001	.359	.359	-.228	-.189	-.185	-3.294	0.123	-1.2	0.9	-1.4	0.8	B+	B-
126	603609	4	3	963	.581	.060	.581	.320	.035	.004	.390	-.101	.390	-.294	-.144	-0.815	0.074	4.4	1.1	3.9	1.2	A-	A-
127	604189	4	3	964	.573	.024	.573	.274	.128	.002	.476	-.157	.476	-.294	-.239	-0.748	0.075	-1.8	1.0	-1.7	0.9	A-	A-
128	603744	4	3	482	.826	.826	.135	.019	.019	.002	.446	.446	-.334	-.198	-.189	-2.342	0.132	-1.2	0.9	-1.0	0.9	A+	
129	604493	4	3	1443	.634	.213	.074	.634	.079	.000	.433	-.260	-.235	.433	-.151	-1.015	0.063	1.2	1.0	1.3	1.1	B-	A+
130	602008	4	3	965	.636	.125	.636	.032	.205	.001	.485	-.237	.485	-.188	-.298	-0.950	0.077	0.2	1.0	-0.1	1.0	A+	A+
131	601999	4	4	966	.684	.112	.684	.054	.149	.001	.404	-.212	.404	-.148	-.241	-1.178	0.080	2.5	1.1	2.1	1.1	A-	B-
132	601992	4	4	962	.633	.633	.082	.251	.029	.005	.484	.484	-.198	-.324	-.194	-0.990	0.077	-0.7	1.0	-1.0	1.0	B-	A-
133	604188	4	3	964	.681	.030	.681	.111	.173	.005	.431	-.133	.431	-.299	-.195	-1.394	0.078	0.4	1.0	0.0	1.0	C-	A-
134	604494	4	3	961	.857	.014	.062	.857	.065	.002	.384	-.164	-.256	.384	-.215	-2.632	0.101	-0.7	1.0	-1.4	0.8	B-	A+
135	602007	4	3	482	.849	.095	.849	.029	.027	.000	.317	-.222	.317	-.173	-.121	-2.527	0.138	1.1	1.1	0.2	1.0	A+	

Table B–2 (continued). Mathematics Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M /F	W /B
136	602885	4	3	965	.755	.110	.755	.123	.011	.000	.309	-.163	.309	-.196	-.163	-1.687	0.084	4.2	1.2	4.1	1.3	A+	A+
137	602971	4	3	481	.796	.023	.121	.796	.058	.002	.395	-.033	-.355	.395	-.152	-2.154	0.124	0.0	1.0	-0.3	1.0	C-	A-
138	601993	4	3	1447	.748	.130	.748	.065	.057	.000	.427	-.243	.427	-.255	-.176	-1.566	0.069	1.3	1.1	0.9	1.1	A-	A-
139	602010	4	1	964	.906	.906	.062	.009	.020	.003	.363	.363	-.226	-.184	-.176	-3.188	0.118	-0.8	0.9	-1.3	0.8	A+	A-
140	602009	4	1	964	.966	.016	.011	.966	.006	.001	.243	-.103	-.186	.243	-.128	-4.388	0.183	-0.4	0.9	-0.3	0.9	A+	A-
141	604514	4	4	482	.907	.050	.021	.907	.021	.002	.311	-.189	-.167	.311	-.162	-3.198	0.168	0.2	1.0	-0.3	0.9	A-	
142	604190	4	4	962	.730	.093	.730	.060	.118	.000	.395	-.134	.395	-.171	-.298	-1.574	0.083	2.0	1.1	1.3	1.1	A+	A-
143	604191	4	4	961	.681	.074	.168	.073	.681	.005	.450	-.154	-.287	-.209	.450	-1.340	0.079	1.3	1.1	0.8	1.0	A+	A-
144	604495	4	4	963	.543	.057	.543	.173	.223	.003	.415	-.216	.415	-.172	-.212	-0.619	0.074	3.5	1.1	3.0	1.1	A+	A+
145	602887	4	5	964	.836	.130	.836	.020	.012	.002	.309	-.212	.309	-.148	-.171	-2.292	0.097	1.2	1.1	2.7	1.3	B+	A-
146	604969	4	4	481	.466	.046	.316	.466	.171	.002	.444	-.083	-.297	.444	-.162	-0.240	0.104	1.4	1.1	1.7	1.1	A-	B+
147	602000	4	3	962	.418	.136	.147	.418	.296	.003	.464	-.260	-.215	.464	-.127	0.235	0.078	2.1	1.1	2.2	1.1	A+	A+
148	602973	4	4	965	.775	.169	.775	.039	.016	.001	.474	-.330	.474	-.267	-.170	-1.834	0.087	-1.3	0.9	-1.4	0.9	A-	A+
149	604193	4	4	964	.829	.079	.053	.829	.034	.005	.434	-.210	-.251	.434	-.230	-2.421	0.094	-1.6	0.9	-1.7	0.8	A-	A-
150	601646	4	3	962	.882	.006	.882	.079	.031	.002	.332	-.146	.332	-.213	-.199	-2.827	0.109	0.3	1.0	0.0	1.0	A+	A-
151	604195	4	3	482	.849	.035	.849	.079	.035	.002	.478	-.176	.478	-.307	-.293	-2.546	0.139	-1.8	0.9	-2.8	0.6	A-	
152	604497	4	3	1448	.870	.870	.019	.022	.089	.000	.330	.330	-.174	-.192	-.207	-2.657	0.085	0.4	1.0	1.1	1.1	B+	A-
153	604498	4	3	964	.829	.020	.829	.078	.072	.002	.402	-.155	.402	-.229	-.252	-2.227	0.095	0.1	1.0	0.0	1.0	A+	A+
154	604192	4	4	962	.819	.021	.111	.819	.045	.004	.402	-.202	-.274	.402	-.170	-2.238	0.093	-1.0	1.0	-1.3	0.9	A+	A-
155	601647	4	3	964	.902	.048	.018	.902	.032	.001	.322	-.185	-.153	.322	-.198	-3.139	0.115	-0.6	1.0	-0.8	0.9	A-	B-
156	604485	4	4	962	.837	.049	.078	.837	.033	.003	.394	-.185	-.219	.394	-.227	-2.408	0.097	-0.2	1.0	-0.5	1.0	A+	A+
157	602012	4	4	961	.851	.051	.055	.851	.040	.003	.366	-.194	-.177	.366	-.203	-2.570	0.099	0.1	1.0	-0.2	1.0	A-	A+
158	601995	4	4	963	.781	.135	.781	.043	.042	.000	.410	-.215	.410	-.231	-.248	-2.003	0.086	-0.5	1.0	0.6	1.1	A+	B-
159	601994	4	4	481	.703	.135	.106	.052	.703	.004	.476	-.187	-.321	-.231	.476	-1.542	0.112	-1.0	1.0	-1.3	0.9	A-	A+
160	604879	4	4	1446	.767	.767	.069	.082	.078	.004	.391	.391	-.211	-.287	-.120	-1.898	0.069	0.5	1.0	-0.1	1.0	A+	A+
161	602015	4	3	482	.927	.039	.023	.008	.927	.002	.267	-.174	-.158	-.115	.267	-3.513	0.187	-0.1	1.0	0.3	1.1	A+	
162	601972	4	3	966	.904	.017	.904	.018	.061	.001	.437	-.180	.437	-.168	-.344	-3.030	0.118	-2.5	0.8	-2.5	0.6	A+	A+
163	604501	4	3	962	.661	.661	.149	.060	.127	.003	.571	.571	-.254	-.245	-.346	-1.156	0.079	-4.9	0.8	-4.5	0.8	A-	C-
164	602890	4	3	962	.945	.027	.945	.017	.008	.003	.351	-.280	.351	-.127	-.139	-3.829	0.152	-1.1	0.9	-2.7	0.5	A+	A-
165	601996	4	N/A	1445	.945	.009	.945	.034	.010	.003	.336	-.162	.336	-.218	-.160	-3.871	0.122	-1.1	0.9	-2.8	0.5	A+	A-
166	601997	4	N/A	963	.816	.135	.041	.816	.007	.001	.294	-.188	-.205	.294	-.095	-2.254	0.092	2.3	1.1	3.0	1.3	A-	A+
167	604970	4	3	961	.881	.035	.032	.881	.049	.002	.355	-.226	-.155	.355	-.194	-2.880	0.108	-0.8	0.9	0.5	1.1	A+	B-
168	602014	4	3	963	.792	.138	.031	.792	.036	.002	.343	-.199	-.151	.343	-.223	-2.100	0.088	1.7	1.1	1.8	1.2	A+	A-
169	604499	4	3	963	.820	.099	.019	.820	.061	.001	.438	-.229	-.192	.438	-.304	-2.287	0.093	-1.9	0.9	-1.8	0.8	B-	B-
170	602889	4	3	964	.797	.797	.034	.143	.024	.002	.445	.445	-.279	-.273	-.192	-1.959	0.090	-1.6	0.9	-0.9	0.9	B+	A-

Table B–2 (continued). Mathematics Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M /F	W /B
171	601998	4	N/A	962	.831	.004	.005	.158	.831	.002	.304	-.074	-.126	-.270	.304	-2.350	0.096	2.2	1.1	3.4	1.4	B+	A-
172	604486	4	3	481	.807	.067	.119	.008	.807	.000	.418	-.210	-.323	-.094	.418	-2.219	0.126	-0.9	0.9	-0.5	0.9	A+	A-
173	604956	5	4	1194	.628	.126	.142	.088	.628	.016	.598	-.349	-.240	-.236	.598	-0.587	0.069	-6.5	0.8	-5.5	0.8	A+	A-
174	604783	5	5	1189	.819	.819	.051	.041	.080	.008	.480	.480	-.212	-.217	-.296	-1.991	0.087	-2.3	0.9	-1.5	0.8	A-	B-
175	606159	5	2	1194	.757	.071	.757	.146	.023	.003	.427	-.139	.427	-.344	-.125	-1.334	0.075	-0.2	1.0	-0.5	1.0	A+	A-
176	601532	5	5	2383	.868	.868	.047	.048	.031	.006	.423	.423	-.217	-.240	-.204	-2.210	0.068	-2.0	0.9	-1.6	0.9	A+	A-
177	606160	5	4	1193	.796	.020	.068	.796	.114	.003	.453	-.226	-.237	.453	-.270	-1.490	0.080	-1.3	0.9	-1.4	0.9	A-	A-
178	604834	5	5	1192	.889	.014	.052	.889	.042	.003	.376	-.156	-.243	.376	-.213	-2.328	0.102	-0.3	1.0	-0.2	1.0	A+	B-
179	604865	5	4	1196	.830	.039	.085	.830	.042	.003	.476	-.176	-.340	.476	-.217	-1.714	0.087	-1.7	0.9	-2.3	0.8	A+	A+
180	604851	5	2	1191	.554	.140	.061	.554	.230	.015	.622	-.275	-.164	.622	-.355	-0.139	0.069	-6.4	0.8	-5.5	0.8	A-	A-
181	606169	5	4	1189	.485	.485	.188	.092	.229	.007	.570	.570	-.242	-.175	-.298	0.231	0.070	-3.0	0.9	-1.5	0.9	A+	A-
182	606168	5	4	1191	.474	.144	.474	.171	.201	.010	.404	-.193	.404	-.218	-.094	0.326	0.069	6.3	1.2	5.5	1.3	A-	A-
183	600850	5	5	1189	.495	.495	.158	.183	.146	.018	.611	.611	-.383	-.191	-.203	0.139	0.071	-5.0	0.9	-3.6	0.8	A+	A-
184	600851	5	5	1784	.529	.063	.215	.182	.529	.012	.639	-.198	-.392	-.237	.639	-0.022	0.057	-8.7	0.8	-5.9	0.8	A-	A-
185	601591	5	6	1786	.759	.165	.759	.040	.029	.008	.409	-.233	.409	-.215	-.196	-1.323	0.064	1.9	1.1	1.6	1.1	A+	A-
186	601537	5	5	1191	.503	.032	.191	.267	.503	.008	.575	-.174	-.340	-.248	.575	0.274	0.068	-5.1	0.9	-2.5	0.9	A-	A+
187	604837	5	4	1191	.348	.170	.228	.241	.348	.013	.403	-.177	-.184	-.061	.403	1.172	0.072	4.3	1.2	6.8	1.6	A-	B+
188	604788	5	4	1195	.936	.029	.936	.021	.012	.002	.346	-.193	.346	-.213	-.159	-2.973	0.127	-0.9	0.9	-2.8	0.6	A-	B-
189	604849	5	5	1195	.911	.027	.013	.047	.911	.002	.350	-.176	-.162	-.237	.350	-2.555	0.110	-0.9	0.9	-0.8	0.9	A+	A-
190	604838	5	4	1195	.604	.210	.604	.140	.044	.002	.548	-.433	.548	-.184	-.133	-0.164	0.068	-3.8	0.9	-3.5	0.9	A-	A+
191	601535	5	6	1195	.914	.914	.039	.017	.028	.003	.387	.387	-.233	-.198	-.188	-2.614	0.112	-1.7	0.9	-2.2	0.7	A-	A-
192	604850	5	5	1196	.673	.673	.120	.171	.036	.001	.476	.476	-.262	-.280	-.163	-0.556	0.071	-1.0	1.0	-0.4	1.0	A-	B-
193	601536	5	6	1196	.829	.829	.059	.039	.073	.001	.391	.391	-.172	-.166	-.277	-1.681	0.086	-0.1	1.0	1.1	1.1	A-	A+
194	604866	5	4	1790	.717	.063	.075	.139	.717	.007	.560	-.231	-.316	-.301	.560	-0.929	0.060	-6.1	0.8	-6.2	0.7	A+	A-
195	604786	5	N/A	1192	.790	.113	.790	.071	.023	.003	.430	-.328	.430	-.173	-.143	-1.357	0.081	0.1	1.0	0.6	1.0	B-	A-
196	606161	5	5	1193	.817	.057	.046	.075	.817	.004	.487	-.185	-.270	-.301	.487	-1.673	0.083	-2.7	0.9	-2.6	0.8	A+	B-
197	604854	5	4	1194	.580	.092	.203	.580	.121	.005	.482	-.159	-.285	.482	-.213	-0.280	0.067	0.4	1.0	0.2	1.0	A+	A-
198	606827	5	4	1194	.816	.037	.816	.080	.059	.009	.320	-.180	.320	-.147	-.154	-1.806	0.083	1.5	1.1	4.0	1.5	A+	A-
199	606274	5	4	1194	.768	.080	.768	.077	.064	.011	.495	-.180	.495	-.315	-.236	-1.446	0.077	-2.8	0.9	-3.1	0.8	A+	A-
200	604797	5	N/A	1194	.797	.096	.797	.071	.026	.010	.424	-.242	.424	-.200	-.192	-1.663	0.080	-0.5	1.0	0.0	1.0	A-	A-
201	604957	5	4	596	.760	.057	.059	.760	.112	.012	.490	-.162	-.179	.490	-.336	-1.396	0.108	-1.6	0.9	-1.1	0.9	A-	A+
202	606153	5	N/A	598	.798	.008	.018	.162	.798	.013	.468	-.106	-.176	-.379	.468	-1.681	0.114	-1.8	0.9	-1.8	0.8	A-	A-
203	606154	5	4	1196	.663	.100	.189	.663	.047	.001	.463	-.254	-.259	.463	-.195	-0.497	0.071	0.9	1.0	1.5	1.1	A-	A+
204	606826	5	4	598	.748	.179	.748	.040	.025	.008	.273	-.077	.273	-.209	-.217	-1.285	0.105	3.9	1.2	4.8	1.6	B+	B-
205	604836	5	4	1189	.546	.050	.546	.310	.084	.011	.470	-.155	.470	-.293	-.180	-0.136	0.070	3.0	1.1	5.7	1.3	A+	A+

Table B–2 (continued). Mathematics Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
206	601590	5	5	2382	.639	.639	.263	.076	.019	.004	.494	.494	-.309	-.264	-.181	-0.574	0.050	-0.9	1.0	-1.2	1.0	A-	A-
207	604953	5	4	1189	.625	.625	.110	.204	.046	.015	.537	.537	-.181	-.327	-.242	-0.623	0.072	-1.2	1.0	-1.2	0.9	A-	A-
208	604853	5	2	1189	.601	.029	.279	.601	.078	.012	.604	-.120	-.476	.604	-.154	-0.470	0.071	-5.3	0.8	-3.8	0.8	A-	B-
209	604784	5	5	1190	.861	.861	.031	.055	.043	.010	.453	.453	-.173	-.299	-.198	-2.371	0.097	-1.7	0.9	-1.4	0.8	A+	A-
210	604856	5	4	1194	.594	.131	.130	.134	.594	.012	.526	-.179	-.207	-.322	.526	-0.380	0.068	-1.7	1.0	-1.8	0.9	A+	A+
211	604958	5	4	1191	.729	.729	.066	.085	.108	.013	.541	.541	-.228	-.345	-.215	-1.196	0.075	-3.4	0.9	-2.4	0.8	B-	A-
212	600853	5	3	1791	.774	.117	.047	.061	.774	.001	.360	-.172	-.191	-.220	.360	-1.224	0.064	2.9	1.1	3.2	1.2	A-	A-
213	606163	5	2	1191	.657	.265	.041	.657	.034	.003	.340	-.204	-.241	.340	-.112	-0.699	0.071	6.0	1.2	5.9	1.4	A-	A-
214	604960	5	4	596	.698	.030	.180	.089	.698	.003	.429	-.160	-.239	-.238	.429	-0.954	0.101	1.0	1.1	0.6	1.1	A-	A-
215	604959	5	4	1190	.834	.834	.060	.055	.046	.006	.514	.514	-.264	-.282	-.250	-2.048	0.089	-3.2	0.8	-2.6	0.7	A-	A-
216	604857	5	3	1191	.623	.623	.200	.045	.121	.012	.275	.275	-.025	-.113	-.254	-0.424	0.070	9.4	1.3	9.2	1.5	A-	A-
217	604796	5	6	1195	.610	.039	.223	.610	.127	.001	.405	-.129	-.214	.405	-.240	-0.192	0.068	2.7	1.1	1.8	1.1	A-	A-
218	606162	5	2	596	.611	.029	.017	.339	.611	.005	.293	-.221	-.206	-.139	.293	-0.451	0.096	6.7	1.3	6.0	1.5	A-	A-
219	604841	5	4	598	.881	.022	.881	.020	.070	.007	.270	-.109	.270	-.169	-.144	-2.413	0.137	0.6	1.1	2.0	1.4	B+	A-
220	604868	5	5	1189	.747	.034	.747	.074	.135	.011	.436	-.206	.436	-.293	-.166	-1.412	0.077	0.2	1.0	1.7	1.1	A+	A-
221	601542	5	3	1193	.575	.064	.575	.279	.079	.003	.417	-.144	.417	-.271	-.160	-0.111	0.068	3.8	1.1	3.7	1.2	A-	A-
222	604869	5	4	1194	.812	.078	.090	.812	.018	.003	.444	-.284	-.256	.444	-.142	-1.735	0.081	-1.6	0.9	-2.9	0.8	B+	A-
223	604790	5	4	596	.857	.025	.017	.084	.857	.017	.392	-.218	-.202	-.179	.392	-2.259	0.133	-0.3	1.0	-0.3	0.9	A-	A-
224	604843	5	3	1191	.615	.615	.170	.123	.088	.004	.528	.528	-.282	-.283	-.173	-0.358	0.069	-2.0	0.9	-1.9	0.9	A+	A-
225	604961	5	4	1195	.811	.091	.811	.034	.063	.002	.396	-.261	.396	-.155	-.195	-1.496	0.082	0.2	1.0	-0.1	1.0	A-	A-
226	604858	5	2	1191	.499	.073	.120	.499	.303	.005	.427	-.230	-.246	.427	-.140	0.199	0.068	5.4	1.2	5.9	1.3	A+	A+
227	606275	5	8	1193	.816	.117	.055	.008	.816	.004	.366	-.212	-.245	-.131	.366	-1.662	0.083	0.3	1.0	0.3	1.0	A+	A-
228	604962	5	4	1192	.763	.053	.148	.036	.763	.000	.381	-.148	-.294	-.131	.381	-1.141	0.078	3.2	1.1	2.4	1.2	A+	A+
229	604859	5	2	1784	.461	.163	.252	.114	.461	.010	.458	-.258	-.124	-.198	.458	0.402	0.058	5.7	1.2	4.8	1.2	A+	A+
230	606155	5	4	1194	.499	.434	.054	.499	.013	.001	.354	-.263	-.152	.354	-.097	0.162	0.067	7.2	1.2	8.6	1.4	A-	A-
231	606276	5	8	598	.610	.052	.197	.610	.127	.013	.344	-.132	-.176	.344	-.161	-0.479	0.096	5.2	1.2	4.9	1.4	A-	A-
232	604842	5	3	1190	.760	.063	.029	.760	.141	.007	.463	-.205	-.187	.463	-.299	-1.429	0.079	-0.2	1.0	-0.4	1.0	A+	A+
233	604862	5	4	1194	.670	.092	.116	.112	.670	.010	.570	-.259	-.284	-.274	.570	-0.809	0.070	-5.2	0.9	-5.2	0.7	A+	B+
234	600852	5	4	1191	.720	.056	.050	.720	.162	.011	.463	-.195	-.171	.463	-.284	-1.127	0.074	0.6	1.0	-1.0	0.9	A+	B-
235	606278	5	3	1191	.632	.632	.069	.248	.040	.012	.511	.511	-.191	-.325	-.202	-0.477	0.070	-1.4	1.0	-0.9	1.0	A+	A-
236	606165	5	4	1785	.740	.075	.740	.151	.025	.010	.394	-.163	.394	-.233	-.187	-1.318	0.062	3.5	1.1	3.1	1.2	A-	A-
237	601538	5	4	1189	.416	.121	.188	.262	.416	.013	.506	-.193	-.106	-.298	.506	0.645	0.072	2.2	1.1	5.1	1.4	A-	A-
238	601539	5	4	1190	.827	.101	.827	.037	.022	.013	.446	-.274	.446	-.183	-.202	-2.039	0.090	-0.8	1.0	-0.2	1.0	A-	A-
239	604793	5	4	1191	.900	.900	.030	.019	.041	.009	.309	.309	-.184	-.135	-.138	-2.662	0.109	0.5	1.0	0.9	1.1	B+	A+
240	606156	5	4	1792	.635	.085	.067	.635	.211	.002	.398	-.206	-.197	.398	-.200	-0.333	0.057	4.4	1.1	3.8	1.2	A+	A-

Table B–2 (continued). Mathematics Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M /F	W /B
241	604872	5	3	1196	.729	.729	.161	.066	.041	.003	.489	.489	-.301	-.258	-.186	-0.922	0.075	-1.6	0.9	-1.6	0.9	A+	A-
242	604861	5	4	598	.679	.075	.147	.679	.097	.002	.394	-.147	-.258	.394	-.170	-0.833	0.099	2.1	1.1	1.6	1.1	A+	A+
243	606164	5	4	596	.894	.894	.027	.052	.024	.003	.450	.450	-.205	-.301	-.186	-2.548	0.143	-1.9	0.8	-2.8	0.5	A+	A-
244	606277	5	3	1190	.819	.819	.092	.019	.057	.013	.437	.437	-.271	-.148	-.205	-1.949	0.088	-0.2	1.0	1.6	1.2	A+	A-
245	604860	5	4	1193	.476	.086	.112	.319	.476	.008	.435	-.182	-.267	-.155	.435	0.432	0.068	3.6	1.1	4.3	1.2	A+	B-
246	606166	5	4	1189	.892	.892	.032	.043	.027	.007	.443	.443	-.220	-.265	-.190	-2.754	0.105	-2.3	0.9	-2.4	0.6	A+	A-
247	606157	5	4	1192	.750	.156	.040	.050	.750	.003	.422	-.274	-.198	-.184	.422	-1.055	0.077	-0.2	1.0	-0.6	1.0	A-	A+
248	604848	5	7	1790	.841	.024	.841	.080	.051	.003	.373	-.133	.373	-.261	-.177	-1.884	0.072	0.4	1.0	0.6	1.1	A+	A-
249	604966	5	3	598	.977	.005	.010	.977	.005	.003	.217	-.090	-.159	.217	-.155	-4.367	0.293	-0.4	0.9	-1.5	0.5	A+	A-
250	604965	5	3	1193	.916	.026	.916	.025	.030	.003	.359	-.210	.359	-.136	-.238	-2.742	0.112	-1.3	0.9	-1.7	0.7	A+	A-
251	606158	5	6	1189	.800	.054	.070	.067	.800	.009	.407	-.188	-.142	-.274	.407	-1.824	0.084	0.3	1.0	2.4	1.3	A+	A+
252	601540	5	6	1194	.666	.182	.666	.068	.080	.004	.500	-.257	.500	-.212	-.285	-0.766	0.070	-1.8	1.0	-2.0	0.9	A+	A+
253	606167	5	7	1190	.883	.039	.883	.040	.030	.008	.423	-.184	.423	-.242	-.215	-2.604	0.103	-0.9	0.9	-1.7	0.8	A+	B-
254	601592	5	6	596	.737	.114	.737	.082	.065	.002	.509	-.208	.509	-.303	-.307	-1.199	0.104	-2.3	0.9	-2.3	0.8	B+	A+
255	604964	5	3	1192	.953	.016	.953	.008	.022	.002	.275	-.198	.275	-.140	-.134	-3.436	0.147	-0.2	1.0	0.5	1.1	A+	A-
256	604794	5	6	1189	.853	.014	.100	.853	.024	.010	.359	-.104	-.254	.359	-.139	-2.302	0.093	0.0	1.0	1.7	1.2	A+	A+
257	606279	5	7	1196	.605	.605	.283	.062	.050	.000	.482	.482	-.304	-.272	-.151	-0.146	0.069	0.5	1.0	0.7	1.0	A-	A-
258	599668	6	6	611	.789	.084	.066	.789	.057	.005	.397	-.187	-.134	.397	-.295	-1.234	0.110	-0.3	1.0	-0.5	0.9	A+	A-
259	602174	6	6	1229	.513	.513	.197	.130	.144	.016	.467	.467	-.230	-.200	-.173	0.232	0.066	0.5	1.0	0.2	1.0	A+	A-
260	599670	6	6	1230	.795	.037	.795	.103	.040	.025	.417	-.246	.417	-.205	-.162	-1.499	0.084	0.0	1.0	0.5	1.0	A-	A+
261	599667	6	5	1230	.811	.046	.078	.063	.811	.003	.387	-.186	-.240	-.181	.387	-1.291	0.081	0.0	1.0	-0.1	1.0	A+	A-
262	599595	6	6	1228	.963	.015	.014	.963	.007	.002	.299	-.159	-.172	.299	-.136	-3.515	0.160	-0.8	0.9	-3.0	0.4	A+	A+
263	599591	6	6	1228	.913	.022	.913	.024	.030	.011	.360	-.164	.360	-.176	-.188	-2.598	0.114	-0.7	0.9	-1.3	0.8	A-	A-
264	599607	6	5	1228	.555	.555	.128	.245	.057	.015	.597	.597	-.163	-.415	-.184	0.167	0.067	-6.1	0.8	-5.0	0.8	A-	A+
265	599594	6	6	1228	.966	.005	.966	.016	.004	.009	.249	-.108	.249	-.137	-.115	-3.821	0.185	-0.4	0.9	-1.1	0.7	A+	A+
266	601812	6	6	1233	.592	.083	.142	.174	.592	.009	.411	-.188	-.187	-.189	.411	0.023	0.068	3.7	1.1	2.5	1.1	A+	A+
267	599644	6	6	1233	.542	.359	.040	.045	.542	.015	.449	-.229	-.260	-.204	.449	0.285	0.067	2.1	1.1	2.8	1.1	A+	A-
268	599598	6	6	1230	.780	.087	.039	.076	.780	.018	.545	-.322	-.204	-.270	.545	-1.311	0.081	-4.4	0.8	-4.4	0.6	A-	A+
269	599666	6	5	1230	.458	.458	.073	.224	.231	.014	.416	.416	-.069	-.340	-.068	0.751	0.069	5.5	1.2	5.0	1.3	A-	A+
270	599662	6	6	1230	.916	.046	.916	.009	.011	.018	.372	-.234	.372	-.168	-.146	-2.896	0.123	-0.7	0.9	-2.1	0.6	A+	A+
271	601794	6	6	1230	.816	.816	.055	.050	.060	.018	.471	.471	-.242	-.246	-.211	-1.632	0.086	-2.4	0.9	-2.3	0.8	A+	A+
272	599599	6	6	1230	.874	.066	.035	.024	.874	.001	.425	-.245	-.266	-.197	.425	-1.872	0.094	-2.6	0.9	-3.3	0.6	A+	A-
273	601795	6	6	1230	.828	.037	.067	.828	.063	.007	.413	-.193	-.206	.413	-.253	-1.461	0.085	-1.4	0.9	-1.3	0.9	A+	A+
274	599671	6	6	1230	.632	.259	.059	.632	.047	.002	.326	-.206	-.195	.326	-.093	-0.105	0.068	6.3	1.2	5.0	1.3	A+	A-
275	599663	6	6	1230	.968	.968	.007	.008	.014	.002	.245	.245	-.160	-.119	-.117	-3.627	0.175	-0.5	0.9	-1.5	0.6	B+	A-

Table B–2 (continued). Mathematics Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M /F	W /B
276	599615	6	6	1228	.793	.038	.066	.793	.103	.000	.327	-.219	-.238	.327	-.104	-1.324	0.078	1.9	1.1	2.1	1.2	A+	B+
277	599654	6	6	1228	.384	.043	.415	.158	.384	.000	.525	-.193	-.238	-.271	.525	1.064	0.068	-2.4	0.9	-1.8	0.9	A-	A-
278	599700	6	5	1231	.549	.549	.243	.070	.133	.005	.545	.545	-.286	-.197	-.276	0.119	0.066	-5.1	0.9	-4.3	0.8	A-	A-
279	601071	6	6	1231	.652	.069	.067	.652	.208	.003	.424	-.209	-.281	.424	-.182	-0.447	0.068	0.6	1.0	-0.6	1.0	A+	A-
280	601789	6	6	1231	.802	.802	.087	.037	.066	.008	.377	.377	-.208	-.175	-.199	-1.456	0.080	-0.6	1.0	-0.1	1.0	A-	A-
281	599655	6	6	1231	.836	.077	.836	.055	.028	.003	.429	-.338	.429	-.219	-.085	-1.686	0.084	-2.1	0.9	-3.1	0.7	A-	A-
282	601072	6	6	1231	.644	.113	.106	.644	.129	.007	.437	-.258	-.264	.437	-.111	-0.417	0.068	0.1	1.0	-1.0	1.0	B+	A+
283	599617	6	6	1231	.668	.032	.187	.668	.099	.015	.317	-.092	-.090	.317	-.253	-0.577	0.069	4.7	1.2	4.6	1.3	A+	B+
284	601790	6	6	1231	.375	.437	.054	.120	.375	.013	.462	-.205	-.229	-.158	.462	1.016	0.067	-0.2	1.0	-0.4	1.0	A-	B+
285	599701	6	5	1231	.590	.590	.197	.122	.085	.007	.465	.465	-.339	-.178	-.094	-0.118	0.066	-0.5	1.0	-1.3	0.9	A-	A-
286	601115	6	6	1227	.569	.305	.033	.569	.091	.002	.444	-.279	-.220	.444	-.172	-0.052	0.065	0.8	1.0	1.4	1.1	A+	A-
287	599672	6	6	615	.810	.011	.106	.810	.070	.003	.412	-.164	-.209	.412	-.290	-1.508	0.113	-0.8	1.0	-1.1	0.9	A-	A-
288	601753	6	6	1227	.306	.547	.069	.074	.306	.004	.422	-.123	-.250	-.239	.422	1.365	0.070	1.2	1.0	3.4	1.2	A-	B+
289	599723	6	5	615	.485	.485	.304	.135	.067	.010	.447	.447	-.206	-.198	-.181	0.372	0.092	1.0	1.0	1.0	1.1	A-	A-
290	599676	6	6	615	.889	.007	.023	.065	.889	.016	.359	-.144	-.167	-.211	.359	-2.398	0.146	-0.5	1.0	-0.4	0.9	A-	A+
291	599674	6	8	1223	.583	.121	.227	.583	.058	.011	.419	-.199	-.225	.419	-.168	-0.162	0.066	2.9	1.1	1.9	1.1	B+	A-
292	601751	6	N/A	1223	.804	.018	.034	.135	.804	.010	.437	-.082	-.224	-.330	.437	-1.536	0.080	-1.8	0.9	-1.8	0.8	A-	A-
293	599678	6	6	1223	.680	.091	.159	.062	.680	.008	.424	-.167	-.245	-.208	.424	-0.696	0.069	1.0	1.0	1.3	1.1	A+	A-
294	601754	6	6	612	.925	.925	.036	.021	.016	.002	.328	.328	-.223	-.182	-.118	-2.783	0.162	-0.6	0.9	-1.0	0.8	A-	B-
295	599680	6	4	1223	.865	.065	.044	.865	.023	.003	.461	-.310	-.244	.461	-.177	-2.021	0.090	-3.5	0.8	-3.3	0.6	A-	A-
296	602147	6	6	1223	.499	.110	.499	.258	.128	.005	.487	-.144	.487	-.298	-.185	0.307	0.066	0.1	1.0	0.1	1.0	A+	A-
297	599677	6	6	612	.719	.023	.211	.719	.041	.007	.471	-.233	-.390	.471	-.044	-0.935	0.102	-0.6	1.0	-1.4	0.9	A+	B+
298	601116	6	6	612	.508	.170	.508	.178	.131	.013	.435	-.293	.435	-.143	-.119	0.229	0.093	2.1	1.1	1.8	1.1	A+	A-
299	599673	6	6	1227	.709	.097	.112	.064	.709	.018	.584	-.190	-.386	-.264	.584	-0.889	0.071	-6.3	0.8	-5.5	0.7	B-	A+
300	599724	6	5	612	.807	.023	.101	.044	.807	.025	.324	-.203	-.044	-.260	.324	-1.666	0.118	1.4	1.1	2.3	1.4	A+	B-
301	602148	6	6	1222	.930	.010	.012	.044	.930	.003	.275	-.119	-.113	-.190	.275	-2.782	0.120	-0.5	1.0	0.9	1.2	A+	B-
302	599681	6	4	1222	.858	.052	.034	.039	.858	.016	.469	-.287	-.221	-.207	.469	-1.979	0.092	-3.3	0.8	-3.7	0.6	A+	C-
303	601752	6	N/A	1222	.665	.056	.665	.111	.165	.004	.499	-.024	.499	-.264	-.382	-0.509	0.068	-2.9	0.9	-2.4	0.9	C-	A+
304	599679	6	6	1222	.717	.038	.717	.104	.133	.008	.457	-.154	.457	-.271	-.245	-0.838	0.071	-1.3	1.0	-1.4	0.9	A-	A-
305	599675	6	8	611	.452	.219	.232	.452	.080	.016	.474	-.245	-.169	.474	-.174	0.534	0.094	0.6	1.0	1.4	1.1	A-	A-
306	601787	6	N/A	611	.570	.211	.570	.156	.046	.018	.484	-.279	.484	-.219	-.170	0.035	0.094	-0.2	1.0	-0.2	1.0	A-	A-
307	599669	6	6	1225	.617	.136	.617	.118	.115	.015	.430	-.181	.430	-.240	-.164	-0.286	0.067	1.6	1.1	0.5	1.0	A+	A+
308	602151	6	6	611	.761	.761	.066	.092	.075	.007	.407	.407	-.208	-.262	-.147	-1.049	0.106	-0.3	1.0	-0.4	1.0	A+	A-
309	599661	6	8	1225	.557	.189	.106	.137	.557	.011	.567	-.247	-.244	-.268	.567	0.048	0.065	-5.4	0.9	-5.0	0.8	A-	A-
310	599620	6	4	611	.759	.077	.057	.080	.759	.026	.539	-.277	-.232	-.249	.539	-1.137	0.109	-3.2	0.8	-1.3	0.9	B+	A-

Table B–2 (continued). Mathematics Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M /F	W /B
311	599656	6	8	611	.594	.111	.594	.234	.031	.030	.583	-.161	.583	-.391	-.189	-0.124	0.095	-3.3	0.9	-3.8	0.8	A+	A+
312	599621	6	4	1225	.845	.057	.038	.043	.845	.016	.464	-.302	-.196	-.219	.464	-1.859	0.089	-2.8	0.9	-3.5	0.6	B+	A-
313	601788	6	N/A	1225	.749	.019	.112	.099	.749	.021	.332	-.155	-.113	-.218	.332	-1.120	0.075	2.8	1.1	3.0	1.3	A+	A+
314	599601	6	8	1229	.560	.267	.560	.110	.059	.004	.505	-.364	.505	-.163	-.151	0.016	0.065	-2.2	0.9	-1.7	0.9	A+	A+
315	599641	6	6	1229	.683	.112	.125	.075	.683	.006	.402	-.200	-.206	-.187	.402	-0.664	0.069	1.8	1.1	0.7	1.0	A-	A-
316	599664	6	4	1229	.801	.033	.065	.094	.801	.007	.503	-.234	-.277	-.274	.503	-1.455	0.079	-3.9	0.8	-4.1	0.7	B+	A-
317	601791	6	N/A	1229	.515	.209	.515	.135	.133	.007	.529	-.342	.529	-.205	-.133	0.244	0.065	-3.3	0.9	-1.7	0.9	A-	B-
318	602153	6	6	614	.267	.235	.181	.285	.267	.033	.354	-.067	-.095	-.132	.354	1.522	0.103	1.8	1.1	4.0	1.4	A+	A-
319	599642	6	6	615	.581	.096	.581	.033	.289	.002	.378	-.187	.378	-.181	-.212	-0.031	0.094	3.7	1.2	2.9	1.2	A-	A-
320	599592	6	8	1226	.503	.065	.307	.503	.113	.012	.520	-.181	-.412	.520	-.041	0.356	0.066	-1.7	1.0	-1.6	0.9	A+	A+
321	599602	6	8	615	.558	.047	.558	.309	.083	.003	.529	-.149	.529	-.401	-.151	0.085	0.093	-2.3	0.9	-2.2	0.9	A-	A+
322	599596	6	4	1226	.879	.055	.879	.042	.019	.005	.415	-.235	.415	-.247	-.171	-2.108	0.095	-1.7	0.9	-3.2	0.6	A-	A-
323	601792	6	N/A	615	.932	.023	.932	.028	.008	.010	.275	-.145	.275	-.175	-.048	-2.960	0.179	-0.1	1.0	0.2	1.0	A+	A+
324	599665	6	4	615	.842	.039	.078	.842	.029	.011	.485	-.246	-.313	.485	-.169	-1.812	0.124	-2.4	0.8	-2.8	0.6	A+	A-
325	599608	6	6	611	.712	.070	.141	.712	.075	.002	.359	-.170	-.193	.359	-.191	-0.754	0.100	2.4	1.1	0.5	1.1	A-	B+
326	599597	6	4	1226	.848	.042	.052	.057	.848	.002	.430	-.242	-.245	-.214	.430	-1.747	0.085	-2.5	0.9	-3.0	0.7	A+	A+
327	601797	6	N/A	611	.841	.012	.121	.023	.841	.003	.345	-.096	-.253	-.175	.345	-1.688	0.121	0.1	1.0	0.9	1.1	B-	A-
328	602125	6	6	611	.611	.611	.106	.174	.092	.018	.550	.550	-.249	-.251	-.261	-0.229	0.095	-2.8	0.9	-2.6	0.8	A+	A-
329	602126	6	6	1226	.384	.218	.384	.324	.048	.026	.408	-.219	.408	-.102	-.160	0.896	0.066	2.0	1.1	3.8	1.2	A+	A-
330	599606	6	5	1228	.457	.457	.142	.303	.095	.003	.490	.490	-.105	-.347	-.142	0.590	0.065	-2.3	0.9	-1.6	0.9	A-	A-
331	601811	6	6	1228	.862	.059	.862	.037	.036	.007	.322	-.189	.322	-.125	-.176	-1.910	0.090	0.2	1.0	0.4	1.0	A+	A-
332	599590	6	6	2456	.818	.818	.156	.010	.011	.004	.355	.355	-.297	-.133	-.098	-1.523	0.058	0.3	1.0	-1.4	0.9	B-	A-
333	599643	6	6	1228	.512	.213	.235	.512	.032	.009	.298	-.058	-.182	.298	-.212	0.290	0.064	6.7	1.2	5.3	1.2	A-	A-
334	599593	6	8	1226	.483	.254	.100	.483	.160	.004	.504	-.323	-.068	.504	-.241	0.427	0.064	-2.7	0.9	-2.2	0.9	A+	A+
335	599609	6	6	1226	.651	.135	.651	.140	.060	.016	.430	-.211	.430	-.217	-.174	-0.483	0.067	0.0	1.0	0.2	1.0	A+	A-
336	601799	6	N/A	1226	.662	.662	.089	.080	.157	.012	.416	.416	-.273	-.128	-.192	-0.536	0.068	0.5	1.0	0.7	1.0	A-	A-
337	602175	6	6	615	.577	.085	.296	.577	.041	.002	.483	-.102	-.387	.483	-.154	-0.015	0.094	-0.5	1.0	0.3	1.0	A-	A+
338	602096	6	3	1227	.717	.060	.109	.717	.103	.011	.427	-.124	-.286	.427	-.200	-0.928	0.072	0.3	1.0	0.1	1.0	B-	A-
339	601730	6	3	1226	.665	.072	.223	.665	.038	.002	.465	-.276	-.284	.465	-.142	-0.492	0.068	-0.7	1.0	-0.9	1.0	A-	A+
340	602176	6	3	1233	.707	.035	.048	.707	.194	.016	.488	-.103	-.234	.488	-.333	-0.701	0.073	-0.9	1.0	-2.1	0.9	A-	A-
341	602104	6	N/A	611	.358	.403	.139	.093	.358	.007	.423	-.176	-.214	-.122	.423	1.148	0.096	0.8	1.0	2.5	1.2	B-	A-
342	601720	6	4	1228	.883	.883	.065	.033	.016	.003	.390	.390	-.239	-.234	-.148	-2.104	0.095	-1.7	0.9	-3.0	0.7	A+	A-
343	602127	6	3	1228	.655	.110	.057	.655	.169	.010	.396	-.246	-.184	.396	-.145	-0.465	0.067	1.2	1.0	0.5	1.0	A+	A-
344	602106	6	N/A	1228	.338	.091	.073	.486	.338	.012	.244	-.045	-.174	-.082	.244	1.210	0.068	6.4	1.2	8.4	1.5	A-	A+
345	602107	6	N/A	1233	.788	.048	.032	.126	.788	.007	.233	-.069	-.149	-.140	.233	-1.226	0.079	4.7	1.2	7.1	1.8	A+	A-

Table B–2 (continued). Mathematics Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
346	601721	6	4	1233	.884	.032	.884	.023	.050	.011	.421	-.207	.421	-.219	-.230	-2.203	0.101	-1.4	0.9	-2.2	0.7	A-	B-
347	602090	6	4	1229	.736	.079	.023	.736	.157	.006	.382	-.150	-.112	.382	-.279	-0.828	0.075	3.3	1.1	2.7	1.2	A-	B-
348	602091	6	4	1230	.594	.594	.023	.226	.158	.000	.413	.413	-.101	-.163	-.328	0.120	0.067	2.6	1.1	3.4	1.2	A-	A-
349	602083	6	4	1230	.685	.052	.092	.166	.685	.005	.436	-.166	-.220	-.258	.436	-0.430	0.071	0.2	1.0	0.6	1.0	A+	B-
350	602149	6	3	1230	.449	.215	.449	.264	.066	.006	.467	-.192	.467	-.238	-.167	0.904	0.068	0.8	1.0	4.2	1.2	A-	A+
351	602150	6	3	1231	.245	.039	.245	.176	.531	.009	.409	-.080	.409	-.123	-.200	1.896	0.076	-0.2	1.0	3.3	1.3	A-	A-
352	602092	6	4	1231	.744	.116	.005	.744	.132	.002	.398	-.189	-.075	.398	-.305	-1.007	0.073	0.4	1.0	0.4	1.0	A-	A-
353	602082	6	3	1231	.622	.053	.622	.154	.162	.010	.464	-.191	.464	-.258	-.201	-0.303	0.067	-0.9	1.0	-1.1	1.0	A-	A-
354	602094	6	4	1227	.688	.688	.212	.076	.022	.002	.457	.457	-.283	-.248	-.185	-0.711	0.069	-0.8	1.0	-0.4	1.0	A-	C-
355	602093	6	4	1230	.717	.153	.085	.717	.035	.011	.368	-.118	-.277	.368	-.179	-0.891	0.070	1.2	1.0	1.2	1.1	A-	A+
356	602097	6	3	612	.721	.093	.721	.155	.029	.002	.504	-.315	.504	-.316	-.110	-0.924	0.101	-2.7	0.9	-0.5	1.0	A-	A-
357	602098	6	3	1223	.700	.023	.154	.117	.700	.007	.479	-.179	-.325	-.208	.479	-0.807	0.070	-1.9	0.9	-2.0	0.9	A-	A-
358	602089	6	3	1222	.850	.042	.067	.850	.037	.004	.320	-.177	-.176	.320	-.149	-1.802	0.087	0.2	1.0	0.8	1.1	A+	A-
359	602099	6	3	1222	.750	.750	.145	.056	.043	.007	.387	.387	-.293	-.137	-.128	-1.039	0.074	0.6	1.0	0.1	1.0	A-	A+
360	601722	6	3	611	.777	.021	.082	.777	.120	.000	.363	-.187	-.288	.363	-.139	-1.125	0.107	0.3	1.0	0.7	1.1	A+	A+
361	602100	6	3	611	.727	.062	.727	.082	.105	.025	.418	-.265	.418	-.176	-.137	-0.899	0.104	0.3	1.0	0.6	1.1	A-	A-
362	601729	6	3	1229	.697	.111	.139	.697	.050	.004	.442	-.258	-.228	.442	-.180	-0.740	0.070	-0.7	1.0	-1.4	0.9	A-	A-
363	601728	6	3	614	.370	.199	.308	.370	.109	.015	.348	-.265	-.054	.348	-.060	0.941	0.095	3.6	1.2	4.0	1.3	A-	A-
364	602102	6	N/A	1229	.708	.056	.080	.143	.708	.013	.333	-.104	-.205	-.159	.333	-0.843	0.071	3.5	1.1	4.1	1.3	A+	A-
365	602103	6	N/A	615	.568	.062	.075	.294	.568	.002	.224	-.032	-.088	-.175	.224	0.035	0.093	8.8	1.4	7.9	1.6	A-	A+
366	601718	6	4	611	.856	.856	.108	.021	.012	.003	.374	.374	-.258	-.209	-.169	-1.829	0.125	-1.0	0.9	-0.5	0.9	B-	A-
367	601719	6	4	1226	.885	.055	.885	.020	.038	.002	.344	-.189	.344	-.152	-.216	-2.128	0.096	-0.6	1.0	-1.4	0.8	A-	A-
368	602105	6	N/A	1226	.448	.115	.083	.349	.448	.005	.355	.017	-.181	-.264	.355	0.601	0.064	4.6	1.1	4.7	1.2	A-	A-
369	602095	6	4	612	.722	.167	.025	.722	.077	.010	.376	-.160	-.182	.376	-.257	-0.976	0.102	1.8	1.1	1.9	1.2	A-	A-
370	602177	6	3	1230	.563	.070	.202	.155	.563	.011	.455	-.202	-.221	-.186	.455	0.154	0.069	2.5	1.1	1.8	1.1	A+	A-
371	601220	6	4	1229	.912	.041	.912	.021	.007	.020	.363	-.202	.363	-.193	-.121	-2.758	0.121	-0.6	1.0	-1.4	0.7	A+	B-
372	602101	6	3	614	.725	.147	.725	.073	.052	.003	.314	-.153	.314	-.188	-.144	-0.942	0.100	2.1	1.1	2.6	1.3	A-	A-
373	602088	6	3	1226	.874	.038	.068	.874	.020	.000	.373	-.194	-.282	.373	-.113	-2.028	0.091	-1.6	0.9	-2.6	0.7	A-	A-
374	601689	6	4	611	.784	.118	.075	.784	.020	.003	.431	-.269	-.267	.431	-.108	-1.331	0.108	-1.6	0.9	-0.2	1.0	A-	B-
375	601249	6	5	611	.849	.849	.084	.033	.016	.018	.394	.394	-.242	-.209	-.123	-1.889	0.128	-0.6	1.0	-0.6	0.9	A+	A+
376	601260	6	5	611	.728	.051	.095	.728	.124	.002	.407	-.177	-.149	.407	-.293	-0.806	0.101	0.7	1.0	-0.1	1.0	A+	A-
377	601716	6	4	1228	.953	.953	.009	.005	.015	.019	.315	.315	-.155	-.101	-.178	-3.693	0.175	-0.6	0.9	-2.9	0.4	A+	A-
378	601266	6	7	1228	.581	.023	.581	.077	.309	.010	.252	-.130	.252	-.298	-.028	-0.062	0.065	7.5	1.2	7.3	1.3	A-	A-
379	601258	6	5	1233	.778	.087	.778	.103	.026	.007	.447	-.187	.447	-.289	-.204	-1.145	0.078	-0.5	1.0	-1.5	0.9	A-	B-
380	601267	6	N/A	1233	.710	.192	.055	.710	.030	.013	.511	-.287	-.307	.511	-.177	-0.700	0.073	-2.4	0.9	-1.9	0.9	A-	A+

Table B–2 (continued). Mathematics Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M /F	W /B
381	601717	6	4	1233	.801	.025	.801	.029	.125	.020	.282	-.195	.282	-.221	-.067	-1.422	0.083	4.0	1.2	4.5	1.6	A+	A+
382	601239	6	4	1229	.945	.012	.008	.945	.030	.005	.235	-.099	-.134	.235	-.121	-3.130	0.138	0.4	1.0	0.8	1.2	A+	A+
383	601281	6	5	1229	.855	.054	.855	.027	.056	.008	.372	-.181	.372	-.180	-.202	-1.844	0.092	0.1	1.0	0.7	1.1	A-	A-
384	601268	6	N/A	1229	.732	.149	.050	.732	.058	.011	.465	-.258	-.215	.465	-.217	-0.830	0.076	-0.3	1.0	-1.3	0.9	A+	A+
385	602068	6	N/A	1230	.658	.158	.658	.072	.111	.002	.531	-.320	.531	-.305	-.177	-0.252	0.069	-3.9	0.9	-3.8	0.8	A+	B-
386	601241	6	4	1228	.501	.067	.326	.103	.501	.004	.462	-.229	-.242	-.186	.462	0.417	0.066	0.3	1.0	0.7	1.0	A+	A-
387	601283	6	5	1228	.725	.090	.725	.016	.168	.002	.449	-.228	.449	-.160	-.306	-0.856	0.072	-1.4	1.0	-1.0	0.9	A+	B-
388	601242	6	4	1231	.827	.074	.827	.019	.077	.003	.342	-.288	.342	-.190	-.085	-1.627	0.083	0.2	1.0	0.7	1.1	A+	A-
389	601276	6	5	1231	.865	.080	.033	.865	.019	.003	.320	-.194	-.156	.320	-.161	-1.982	0.091	0.2	1.0	-0.4	0.9	A-	A+
390	601228	6	N/A	615	.618	.050	.618	.104	.228	.000	.469	-.233	.469	-.273	-.224	-0.300	0.093	-0.9	1.0	-1.0	0.9	A+	B-
391	601221	6	5	1230	.800	.019	.103	.071	.800	.007	.409	-.179	-.248	-.215	.409	-1.436	0.078	-1.1	1.0	-1.1	0.9	A+	A+
392	601229	6	N/A	1227	.800	.800	.040	.063	.091	.007	.475	.475	-.221	-.330	-.199	-1.478	0.079	-2.8	0.9	-2.8	0.8	A-	A-
393	601243	6	4	615	.829	.829	.021	.109	.024	.016	.304	.304	-.163	-.195	-.062	-1.762	0.121	1.0	1.1	1.7	1.3	A-	A-
394	601223	6	5	1227	.680	.680	.129	.120	.055	.017	.495	.495	-.146	-.296	-.285	-0.721	0.070	-1.8	0.9	-1.7	0.9	A-	B-
395	601701	6	4	1227	.447	.447	.108	.105	.329	.011	.445	.445	-.202	-.210	-.173	0.566	0.066	1.4	1.0	1.2	1.1	A-	A-
396	601224	6	5	612	.724	.724	.172	.052	.051	.002	.363	.363	-.191	-.215	-.181	-0.941	0.101	2.1	1.1	0.9	1.1	A-	A-
397	601230	6	N/A	612	.814	.047	.814	.044	.072	.023	.485	-.161	.485	-.283	-.259	-1.709	0.120	-1.9	0.9	-1.3	0.8	A-	A+
398	601225	6	5	1226	.709	.709	.140	.103	.045	.003	.404	.404	-.206	-.264	-.141	-0.817	0.069	-0.4	1.0	-0.5	1.0	A-	A-
399	601259	6	5	1222	.751	.115	.032	.751	.097	.006	.339	-.204	-.161	.339	-.149	-1.044	0.074	2.1	1.1	2.2	1.2	A+	A-
400	601237	6	N/A	1222	.447	.360	.099	.447	.080	.014	.486	-.147	-.246	.486	-.293	0.638	0.066	0.2	1.0	1.0	1.0	A+	A+
401	601690	6	4	1222	.646	.195	.106	.646	.048	.006	.459	-.263	-.218	.459	-.191	-0.409	0.068	-0.6	1.0	-0.8	1.0	A+	A-
402	601235	6	N/A	611	.534	.534	.211	.134	.102	.020	.491	.491	-.204	-.246	-.203	0.085	0.094	-0.2	1.0	-0.7	1.0	A+	A+
403	601665	6	4	1225	.783	.783	.040	.039	.124	.014	.365	.365	-.154	-.202	-.185	-1.316	0.078	0.9	1.0	1.9	1.2	A+	A-
404	601695	6	N/A	1225	.441	.183	.242	.441	.114	.020	.474	-.242	-.198	.474	-.092	0.635	0.066	0.1	1.0	1.1	1.1	A-	A-
405	601668	6	4	1229	.821	.067	.821	.059	.053	.001	.368	-.190	.368	-.161	-.249	-1.576	0.081	-0.6	1.0	-0.2	1.0	A+	B-
406	602069	6	N/A	1229	.727	.136	.065	.068	.727	.003	.422	-.223	-.227	-.206	.422	-0.925	0.072	0.1	1.0	-1.2	0.9	A-	A-
407	601261	6	7	614	.518	.018	.422	.518	.033	.010	.391	-.170	-.268	.391	-.135	0.170	0.091	2.7	1.1	2.0	1.1	A+	A-
408	601265	6	7	1229	.578	.116	.137	.156	.578	.013	.486	-.210	-.252	-.188	.486	-0.104	0.066	-0.8	1.0	-1.0	1.0	A+	A+
409	601666	6	4	614	.749	.021	.104	.098	.749	.028	.454	-.207	-.222	-.235	.454	-1.223	0.107	-0.6	1.0	-1.7	0.8	A-	B-
410	601226	6	7	1226	.839	.839	.016	.122	.016	.007	.358	.358	-.150	-.264	-.128	-1.722	0.086	0.1	1.0	0.1	1.0	A-	A-
411	601248	6	5	1226	.879	.074	.007	.879	.032	.008	.357	-.244	-.139	.357	-.177	-2.132	0.096	-0.9	0.9	-0.5	0.9	A-	A-
412	601269	6	N/A	1226	.788	.043	.043	.111	.788	.015	.500	-.236	-.254	-.277	.500	-1.349	0.079	-3.6	0.9	-3.4	0.7	B-	A-
413	601270	6	N/A	611	.802	.074	.052	.802	.067	.005	.403	-.242	-.240	.403	-.154	-1.377	0.112	-0.2	1.0	-1.0	0.9	A-	A-
414	601227	6	7	611	.527	.527	.350	.066	.056	.002	.321	.321	-.142	-.174	-.193	0.263	0.092	5.3	1.2	4.2	1.3	A-	A-
415	601250	6	5	615	.852	.138	.007	.852	.003	.000	.326	-.283	-.144	.326	-.120	-1.786	0.120	-0.5	1.0	0.4	1.1	A+	A-

Table B–2 (continued). Mathematics Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M /F	W /B
416	601257	6	5	1228	.888	.011	.070	.019	.888	.011	.369	-.105	-.269	-.149	.369	-2.258	0.102	-0.9	0.9	-1.1	0.8	A+	A-
417	601714	6	4	1226	.875	.015	.875	.019	.073	.019	.284	-.150	.284	-.223	-.111	-2.186	0.098	0.1	1.0	1.5	1.2	A+	A-
418	601700	6	N/A	1231	.876	.041	.066	.016	.876	.001	.382	-.171	-.291	-.141	.382	-2.076	0.093	-1.7	0.9	-1.7	0.8	A-	B-
419	601664	6	N/A	614	.682	.218	.034	.682	.042	.023	.507	-.331	-.148	.507	-.220	-0.767	0.099	-1.6	0.9	-2.2	0.8	A-	A-
420	601694	6	7	1226	.665	.081	.208	.665	.034	.012	.427	-.177	-.272	.427	-.170	-0.552	0.068	-0.1	1.0	-0.3	1.0	A-	A+
421	601702	6	4	612	.583	.583	.114	.018	.273	.011	.343	.343	-.184	-.073	-.193	-0.167	0.094	4.6	1.2	4.6	1.3	A+	A+
422	600989	6	4	1231	.223	.223	.430	.202	.139	.007	.272	.272	-.032	.003	-.259	2.062	0.079	4.0	1.2	8.3	1.9	A-	A+
423	601031	6	6	1233	.820	.076	.062	.820	.020	.022	.474	-.231	-.275	.474	-.218	-1.605	0.087	-2.3	0.9	-2.5	0.7	B+	A-
424	600978	6	6	615	.813	.813	.115	.050	.021	.000	.400	.400	-.234	-.248	-.188	-1.477	0.113	-0.6	1.0	0.3	1.0	A-	A-
425	601024	6	4	611	.696	.070	.696	.174	.056	.005	.447	-.282	.447	-.176	-.259	-0.668	0.099	-0.6	1.0	0.1	1.0	A+	A+
426	600997	6	4	1228	.873	.053	.024	.046	.873	.003	.370	-.200	-.207	-.186	.370	-1.991	0.094	-0.8	1.0	-1.8	0.8	A+	B+
427	601036	6	6	1228	.582	.228	.086	.090	.582	.014	.494	-.199	-.223	-.272	.494	0.021	0.067	-0.7	1.0	-0.6	1.0	A+	A+
428	601005	6	4	1233	.165	.078	.650	.090	.165	.018	.219	-.238	.196	-.315	.219	2.748	0.089	3.8	1.2	9.9	3.9	A-	A+
429	601041	6	6	1230	.711	.711	.059	.139	.067	.024	.518	.518	-.197	-.290	-.241	-0.837	0.075	-2.7	0.9	-2.8	0.8	A+	A-
430	601012	6	4	1229	.710	.055	.098	.126	.710	.011	.510	-.180	-.292	-.258	.510	-0.676	0.074	-1.9	0.9	-1.9	0.9	A-	A+
431	601013	6	4	1228	.815	.815	.041	.074	.067	.003	.517	.517	-.255	-.309	-.264	-1.515	0.082	-4.2	0.8	-4.4	0.6	A-	A-
432	601033	6	6	1228	.937	.033	.937	.025	.003	.002	.230	-.126	.230	-.164	-.075	-2.939	0.125	0.2	1.0	2.7	1.7	B+	A+
433	601014	6	4	1231	.849	.034	.849	.083	.028	.006	.426	-.167	.426	-.308	-.183	-1.849	0.088	-2.0	0.9	-2.6	0.7	A-	A-
434	601000	6	6	1231	.711	.217	.047	.021	.711	.004	.293	-.166	-.146	-.170	.293	-0.794	0.070	3.9	1.1	5.3	1.4	A+	A+
435	601001	6	6	615	.961	.034	.961	.005	.000	.000	.206	-.168	.206	-.137	.000	-3.448	0.214	0.0	1.0	0.3	1.1	A+	A-
436	601017	6	4	1227	.741	.086	.065	.099	.741	.010	.527	-.247	-.232	-.304	.527	-1.071	0.073	-3.9	0.9	-3.9	0.7	B+	A-
437	601016	6	4	615	.715	.062	.104	.114	.715	.005	.454	-.241	-.207	-.253	.454	-0.875	0.100	-1.2	0.9	-1.1	0.9	C+	A-
438	600992	6	4	615	.581	.581	.145	.208	.062	.005	.453	.453	-.190	-.239	-.222	-0.116	0.092	-0.2	1.0	-0.1	1.0	A-	A-
439	601002	6	4	1227	.623	.097	.095	.623	.177	.009	.439	-.175	-.197	.439	-.248	-0.364	0.067	1.2	1.0	0.1	1.0	A-	A+
440	601039	6	6	1227	.797	.025	.135	.797	.021	.021	.419	-.176	-.252	.419	-.214	-1.543	0.081	-0.7	1.0	-0.7	0.9	A-	A-
441	601020	6	6	1223	.927	.927	.041	.016	.015	.002	.331	.331	-.247	-.171	-.119	-2.796	0.116	-1.1	0.9	-2.6	0.6	A+	A-
442	601003	6	4	1223	.872	.034	.872	.053	.038	.003	.325	-.162	.325	-.159	-.209	-2.095	0.092	-0.1	1.0	-1.1	0.9	A-	A-
443	600981	6	4	1223	.429	.180	.429	.134	.231	.026	.449	-.125	.449	-.175	-.218	0.633	0.067	2.1	1.1	3.0	1.1	B+	A+
444	601004	6	4	611	.358	.358	.077	.038	.524	.003	.333	.333	-.180	-.178	-.162	1.073	0.097	4.4	1.2	5.7	1.5	A-	A+
445	600984	6	6	611	.483	.455	.033	.028	.483	.002	.451	-.337	-.192	-.148	.451	0.398	0.093	1.2	1.1	1.4	1.1	A-	A-
446	600983	6	6	1222	.619	.037	.033	.619	.304	.007	.216	-.177	-.113	.216	-.087	-0.263	0.067	9.9	1.4	8.7	1.5	A-	A-
447	600985	6	6	1222	.795	.025	.016	.153	.795	.010	.371	-.159	-.177	-.240	.371	-1.381	0.079	0.9	1.0	-0.4	1.0	A-	A+
448	600982	6	6	611	.612	.038	.082	.259	.612	.010	.461	-.113	-.184	-.322	.461	-0.311	0.095	0.0	1.0	-0.1	1.0	B+	A+
449	601022	6	4	1222	.726	.042	.069	.154	.726	.010	.428	-.161	-.192	-.282	.428	-0.905	0.072	-0.8	1.0	-0.2	1.0	A-	A-
450	601023	6	4	1225	.847	.049	.058	.847	.040	.006	.384	-.147	-.243	.384	-.235	-1.793	0.087	-1.3	0.9	-1.8	0.8	A-	A-

Table B–2 (continued). Mathematics Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M /F	W /B
451	601018	6	6	1225	.522	.522	.286	.087	.088	.016	.496	.496	-.238	-.214	-.203	0.216	0.065	-1.3	1.0	-1.1	1.0	B+	A+
452	600986	6	6	1225	.764	.053	.764	.069	.087	.028	.487	-.244	.487	-.246	-.210	-1.259	0.077	-2.4	0.9	-2.7	0.8	A+	A-
453	600987	6	6	614	.754	.754	.138	.088	.015	.005	.495	.495	-.380	-.182	-.162	-1.130	0.104	-2.5	0.9	-2.5	0.8	A+	A-
454	601670	6	4	614	.899	.023	.029	.899	.041	.008	.406	-.187	-.194	.406	-.251	-2.456	0.147	-1.4	0.9	-1.7	0.7	A+	A-
455	601019	6	6	614	.394	.090	.132	.352	.394	.033	.393	-.148	-.146	-.150	.393	0.768	0.094	2.4	1.1	2.9	1.2	A+	A+
456	600979	6	6	1226	.874	.874	.062	.042	.020	.002	.358	.358	-.229	-.196	-.149	-2.017	0.093	-0.7	1.0	-1.8	0.8	A+	A-
457	600998	6	6	615	.738	.738	.179	.044	.037	.002	.279	.279	-.190	-.139	-.096	-0.947	0.103	3.9	1.2	2.2	1.3	A-	A-
458	600999	6	6	1226	.550	.038	.051	.350	.550	.011	.534	-.170	-.208	-.358	.534	0.114	0.066	-2.8	0.9	-2.8	0.9	A+	A+
459	601691	6	4	1226	.803	.044	.102	.803	.033	.018	.458	-.214	-.294	.458	-.168	-1.489	0.081	-2.0	0.9	-2.6	0.8	A+	A-
460	601034	6	6	611	.722	.722	.170	.034	.070	.003	.465	.465	-.328	-.204	-.156	-0.813	0.101	-1.3	0.9	-1.2	0.9	A+	A-
461	601028	6	6	611	.658	.110	.658	.113	.093	.026	.490	-.185	.490	-.327	-.154	-0.527	0.098	-1.2	1.0	-0.2	1.0	C+	A+
462	601035	6	6	615	.732	.732	.197	.054	.016	.002	.306	.306	-.186	-.199	-.112	-0.927	0.099	1.5	1.1	2.3	1.2	A+	A-
463	601029	6	6	615	.514	.047	.046	.361	.514	.033	.231	-.083	-.167	-.071	.231	0.144	0.091	7.1	1.3	5.4	1.3	A+	A+
464	601026	6	4	615	.842	.041	.041	.075	.842	.002	.410	-.135	-.245	-.281	.410	-1.712	0.118	-1.7	0.9	-1.1	0.9	A+	A-
465	601032	6	6	1229	.850	.054	.850	.054	.028	.016	.423	-.194	.423	-.218	-.236	-1.853	0.093	-1.5	0.9	-2.0	0.8	A-	A+
466	601030	6	6	1228	.675	.073	.675	.204	.039	.009	.427	-.199	.427	-.261	-.141	-0.500	0.070	0.9	1.0	0.2	1.0	A+	A+
467	601678	6	4	1229	.862	.030	.064	.862	.037	.007	.374	-.179	-.218	.374	-.171	-1.987	0.091	-1.0	0.9	-1.0	0.9	A-	A-
468	601044	6	6	1229	.736	.118	.093	.736	.037	.016	.476	-.224	-.276	.476	-.185	-0.883	0.076	-1.2	1.0	-1.3	0.9	A-	A+
469	601040	6	7	611	.583	.146	.583	.072	.196	.003	.574	-.345	.574	-.162	-.296	-0.129	0.093	-5.0	0.8	-4.4	0.7	A+	A-
470	602081	6	5	1223	.499	.142	.499	.132	.209	.020	.390	-.038	.390	-.134	-.285	0.275	0.066	5.1	1.2	5.5	1.3	A+	A-
471	602070	6	5	615	.911	.055	.911	.018	.015	.002	.357	-.281	.357	-.187	-.079	-2.513	0.150	-0.9	0.9	-0.4	0.9	A+	A-
472	601706	6	6	1228	.722	.096	.722	.101	.065	.016	.471	-.238	.471	-.187	-.253	-0.830	0.074	-1.3	1.0	-0.3	1.0	B+	A+
473	602071	6	N/A	1230	.876	.038	.876	.050	.020	.016	.464	-.215	.464	-.286	-.190	-2.248	0.101	-2.4	0.9	-3.8	0.5	A-	A-
474	601712	6	N/A	1228	.626	.626	.164	.161	.041	.008	.487	.487	-.223	-.278	-.181	-0.213	0.068	-1.7	1.0	-1.1	0.9	A-	A-
475	601256	6	7	1228	.727	.071	.099	.727	.093	.011	.493	-.234	-.311	.493	-.167	-0.839	0.073	-2.2	0.9	-2.3	0.8	A+	A+
476	601253	6	6	1230	.673	.673	.111	.082	.124	.009	.463	.463	-.185	-.150	-.318	-0.514	0.072	1.6	1.1	0.7	1.0	A+	A+
477	601244	6	7	1230	.559	.559	.122	.222	.078	.020	.504	.504	-.289	-.222	-.146	0.142	0.069	-0.8	1.0	-0.2	1.0	A+	A-
478	601254	6	6	1229	.773	.028	.773	.081	.107	.012	.514	-.165	.514	-.273	-.304	-1.138	0.080	-3.2	0.9	-3.9	0.7	A+	A-
479	601711	6	7	1228	.841	.073	.041	.045	.841	.001	.399	-.187	-.207	-.272	.399	-1.727	0.086	-1.3	0.9	-1.3	0.9	A+	A-
480	602063	6	5	1228	.218	.218	.172	.119	.482	.009	.265	.265	-.077	-.143	-.048	2.139	0.080	4.3	1.2	6.5	1.8	A+	A-
481	602066	6	5	1228	.627	.627	.271	.033	.064	.005	.427	.427	-.223	-.233	-.240	-0.274	0.068	1.4	1.0	0.7	1.0	A-	A-
482	602067	6	5	1231	.599	.189	.164	.599	.046	.003	.396	-.257	-.111	.396	-.241	-0.158	0.066	2.2	1.1	1.8	1.1	A+	A+
483	602064	6	5	1231	.652	.652	.033	.160	.152	.003	.372	.372	-.161	-.257	-.129	-0.448	0.068	2.2	1.1	2.2	1.1	A-	B-
484	601279	6	7	615	.642	.215	.029	.111	.642	.003	.588	-.371	-.155	-.312	.588	-0.437	0.094	-5.3	0.8	-4.5	0.7	A-	B-
485	602074	6	5	1227	.621	.017	.621	.342	.017	.003	.524	-.192	.524	-.428	-.157	-0.337	0.067	-2.7	0.9	-3.0	0.9	A-	A-

Table B–2 (continued). Mathematics Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M /F	W /B
486	602075	6	5	1227	.307	.176	.307	.279	.218	.020	.186	-.020	.186	-.036	-.105	1.337	0.070	9.8	1.4	9.9	1.7	A+	A+
487	601042	6	7	1223	.609	.290	.047	.609	.052	.001	.524	-.389	-.213	.524	-.148	-0.269	0.067	-3.5	0.9	-2.4	0.9	A-	A-
488	602077	6	5	1223	.492	.492	.133	.230	.138	.007	.523	.523	-.149	-.313	-.205	0.337	0.066	-2.3	0.9	-1.8	0.9	A+	B-
489	601299	6	7	1227	.494	.214	.215	.494	.067	.010	.603	-.317	-.290	.603	-.162	0.308	0.065	-7.5	0.8	-6.1	0.8	A+	B-
490	602079	6	5	611	.696	.118	.129	.054	.696	.003	.415	-.197	-.248	-.173	.415	-0.755	0.098	0.2	1.0	0.5	1.0	A+	A-
491	602080	6	5	611	.902	.902	.049	.018	.021	.010	.342	.342	-.182	-.193	-.178	-2.505	0.150	-0.9	0.9	-0.2	0.9	A+	B-
492	600993	6	7	611	.658	.172	.124	.658	.043	.003	.532	-.363	-.231	.532	-.171	-0.397	0.096	-3.1	0.9	-2.8	0.8	A+	B-
493	601696	6	5	611	.444	.106	.242	.444	.198	.010	.264	-.215	.047	.264	-.167	0.736	0.093	6.8	1.3	6.6	1.4	A+	A+
494	602084	6	5	611	.393	.393	.182	.358	.051	.016	.305	.305	-.279	.046	-.178	0.996	0.095	5.6	1.2	4.8	1.3	A-	A-
495	600996	6	7	1225	.560	.257	.122	.560	.051	.011	.506	-.234	-.308	.506	-.149	0.036	0.066	-2.6	0.9	-1.3	0.9	A-	B-
496	602085	6	5	1225	.756	.084	.098	.039	.756	.023	.436	-.138	-.312	-.148	.436	-1.171	0.076	-0.8	1.0	-0.8	0.9	C+	A+
497	601303	6	6	614	.660	.155	.660	.067	.114	.005	.429	-.192	.429	-.153	-.293	-0.565	0.096	0.2	1.0	-0.5	1.0	A+	A-
498	601715	6	N/A	614	.759	.759	.065	.106	.065	.005	.449	.449	-.166	-.260	-.253	-1.166	0.105	-1.4	0.9	-0.7	0.9	A+	A-
499	601290	6	7	1229	.705	.705	.214	.058	.020	.003	.404	.404	-.251	-.221	-.168	-0.783	0.070	1.5	1.1	-0.2	1.0	A+	B-
500	601285	6	6	1226	.612	.126	.076	.612	.185	.002	.479	-.344	-.137	.479	-.210	-0.193	0.066	-1.3	1.0	-0.5	1.0	A+	A-
501	601697	6	N/A	1226	.533	.381	.533	.043	.040	.003	.270	-.121	.270	-.163	-.202	0.223	0.065	9.9	1.3	8.4	1.4	B+	A+
502	601709	6	N/A	615	.234	.502	.153	.102	.234	.008	.288	-.042	-.163	-.102	.288	1.982	0.110	3.8	1.2	6.3	2.0	A-	A-
503	601294	6	7	615	.753	.063	.753	.132	.041	.011	.491	-.246	.491	-.259	-.240	-1.093	0.106	-2.2	0.9	-1.7	0.8	A+	A-
504	601304	6	6	615	.782	.039	.049	.119	.782	.011	.364	-.164	-.159	-.211	.364	-1.309	0.110	0.8	1.1	1.4	1.2	A+	A+
505	601296	6	7	1226	.695	.047	.127	.119	.695	.011	.534	-.188	-.256	-.335	.534	-0.706	0.070	-4.5	0.9	-4.0	0.8	A+	A-
506	601692	6	N/A	1226	.850	.088	.017	.044	.850	.001	.316	-.207	-.150	-.158	.316	-1.762	0.086	-0.3	1.0	2.7	1.3	A+	A+
507	601274	6	6	1226	.598	.133	.598	.158	.099	.012	.512	-.261	.512	-.234	-.209	-0.186	0.066	-3.2	0.9	-3.1	0.9	A+	A-
508	601708	6	7	1226	.668	.101	.121	.098	.668	.012	.453	-.162	-.245	-.240	.453	-0.570	0.068	-0.8	1.0	-1.6	0.9	A+	A+
509	601255	6	7	615	.210	.652	.210	.075	.057	.007	.129	.081	.129	-.246	-.093	1.898	0.108	3.4	1.2	6.9	1.9	A-	B+
510	601693	6	N/A	615	.837	.034	.837	.018	.083	.028	.354	-.229	.354	-.117	-.162	-1.873	0.125	0.1	1.0	-0.7	0.9	A-	B-
511	601705	6	5	1225	.550	.009	.550	.233	.205	.003	.348	-.068	.348	-.113	-.289	0.102	0.065	5.5	1.2	4.3	1.2	B-	B-
512	601277	6	7	1231	.651	.093	.145	.651	.105	.007	.527	-.293	-.232	.527	-.243	-0.454	0.068	-4.5	0.9	-4.0	0.8	A+	A-
513	602073	6	5	615	.781	.047	.070	.083	.781	.020	.430	-.263	-.191	-.176	.430	-1.380	0.110	-0.5	1.0	-0.7	0.9	A+	A+
514	601275	6	6	615	.389	.187	.389	.306	.081	.037	.455	-.140	.455	-.174	-.203	0.782	0.093	-0.6	1.0	-0.1	1.0	A-	A+
515	601301	6	N/A	1229	.884	.055	.024	.030	.884	.007	.381	-.212	-.159	-.205	.381	-2.163	0.101	-1.0	0.9	-0.3	1.0	A+	A+
516	601245	6	7	1230	.595	.095	.186	.595	.120	.004	.447	-.258	-.275	.447	-.099	0.102	0.068	1.2	1.0	1.3	1.1	A+	A+
517	599720	7	6	797	.565	.565	.274	.079	.033	.050	.449	.449	-.238	-.184	-.155	-0.129	0.085	1.6	1.1	1.0	1.1	A+	A+
518	599734	7	6	799	.611	.131	.099	.150	.611	.009	.471	-.173	-.164	-.310	.471	-0.034	0.082	-1.7	0.9	-1.1	0.9	A-	A+
519	602189	7	7	800	.640	.110	.078	.148	.640	.025	.507	-.175	-.266	-.238	.507	-0.363	0.084	-2.0	0.9	-1.9	0.9	B-	B-
520	599633	7	6	800	.848	.069	.848	.063	.018	.004	.372	-.085	.372	-.342	-.176	-1.589	0.110	-0.9	0.9	0.4	1.1	A+	A-

Table B–2 (continued). Mathematics Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M /F	W /B
521	599685	7	7	400	.840	.840	.083	.045	.033	.000	.417	.417	-.234	-.229	-.230	-1.510	0.146	-1.4	0.9	-1.8	0.7	B+	A-
522	599708	7	7	1592	.576	.162	.076	.168	.576	.018	.517	-.310	-.164	-.216	.517	0.058	0.060	-2.2	0.9	-3.2	0.9	A-	B+
523	599715	7	6	799	.593	.033	.307	.593	.045	.023	.314	-.159	-.136	.314	-.196	-0.054	0.082	6.0	1.2	3.9	1.3	A+	A+
524	599650	7	7	800	.566	.158	.566	.228	.046	.003	.395	-.200	.395	-.202	-.165	0.346	0.084	3.7	1.1	3.4	1.2	A-	A+
525	599630	7	7	800	.375	.375	.181	.270	.164	.010	.384	.384	-.113	-.208	-.107	1.117	0.084	3.2	1.1	3.5	1.2	A+	A+
526	599631	7	7	797	.502	.084	.153	.502	.220	.041	.497	-.172	-.277	.497	-.177	0.262	0.084	-0.7	1.0	0.3	1.0	A-	A-
527	599730	7	7	800	.758	.758	.128	.053	.054	.009	.458	.458	-.264	-.287	-.154	-1.030	0.092	-2.2	0.9	-1.9	0.8	B-	B-
528	599707	7	7	1600	.814	.056	.052	.068	.814	.010	.390	-.190	-.208	-.198	.390	-1.400	0.072	-0.7	1.0	-1.1	0.9	B+	A-
529	599719	7	6	800	.664	.071	.060	.664	.161	.044	.412	-.166	-.180	.412	-.184	-0.616	0.088	1.3	1.1	0.6	1.0	A-	B+
530	599721	7	6	800	.514	.514	.180	.156	.114	.036	.489	.489	-.201	-.205	-.181	0.196	0.080	-2.5	0.9	-2.8	0.9	A+	A-
531	599709	7	7	800	.573	.075	.245	.573	.066	.041	.553	-.174	-.362	.553	-.160	-0.133	0.082	-4.8	0.9	-4.3	0.8	A+	A+
532	599632	7	7	800	.471	.103	.193	.471	.170	.064	.458	-.190	-.163	.458	-.171	0.329	0.081	0.2	1.0	-0.2	1.0	A-	A+
533	599725	7	7	800	.820	.030	.108	.820	.040	.003	.464	-.202	-.342	.464	-.175	-1.319	0.103	-2.1	0.9	-3.1	0.6	A-	A-
534	599726	7	7	795	.684	.684	.102	.162	.047	.005	.491	.491	-.226	-.315	-.180	-0.399	0.091	-2.0	0.9	-2.1	0.8	A+	A+
535	599634	7	6	795	.538	.072	.538	.096	.292	.003	.491	-.291	.491	-.173	-.262	0.436	0.084	0.3	1.0	0.3	1.0	A-	A-
536	601120	7	7	795	.564	.174	.209	.564	.050	.004	.492	-.336	-.196	.492	-.163	0.288	0.085	-1.3	1.0	-0.4	1.0	A+	A-
537	599690	7	6	799	.801	.100	.801	.035	.059	.005	.515	-.309	.515	-.226	-.264	-1.204	0.097	-3.8	0.8	-4.1	0.6	A+	A+
538	601133	7	7	799	.383	.116	.383	.399	.093	.009	.417	-.176	.417	-.214	-.127	1.136	0.082	0.2	1.0	0.6	1.0	A-	A+
539	599683	7	6	799	.369	.179	.369	.115	.303	.034	.184	-.097	.184	-.233	.118	1.147	0.083	7.9	1.3	7.6	1.5	A+	A+
540	599691	7	6	400	.893	.015	.065	.023	.893	.005	.358	-.096	-.282	-.118	.358	-2.067	0.172	-0.5	0.9	-1.0	0.8	A+	
541	601134	7	7	798	.650	.650	.053	.266	.023	.009	.440	.440	-.197	-.278	-.215	-0.276	0.083	-1.0	1.0	-0.1	1.0	A+	A-
542	599733	7	6	400	.543	.040	.543	.230	.168	.020	.501	-.121	.501	-.196	-.284	0.197	0.112	-2.1	0.9	-2.2	0.9	B+	
543	599624	7	6	400	.335	.145	.178	.335	.315	.028	.363	-.109	-.229	.363	-.012	1.234	0.117	0.9	1.0	1.5	1.1	A+	
544	599710	7	6	398	.696	.108	.111	.696	.083	.003	.449	-.194	-.321	.449	-.156	-0.466	0.122	-1.0	0.9	-0.8	0.9	A+	A-
545	599625	7	6	398	.312	.312	.405	.194	.055	.035	.267	.267	-.078	-.023	-.126	1.536	0.122	3.4	1.2	4.3	1.5	B+	A+
546	599626	7	6	798	.556	.107	.246	.556	.054	.038	.474	-.172	-.259	.474	-.133	0.147	0.083	0.7	1.0	0.0	1.0	A+	A+
547	602161	7	7	798	.479	.234	.120	.479	.129	.038	.449	-.025	-.181	.449	-.345	0.566	0.082	1.7	1.1	1.3	1.1	A+	A+
548	599735	7	6	798	.538	.150	.538	.103	.167	.043	.499	-.078	.499	-.223	-.313	0.233	0.083	-1.0	1.0	-0.8	1.0	C-	B-
549	599736	7	6	400	.433	.160	.290	.433	.108	.010	.424	-.130	-.277	.424	-.103	0.856	0.116	1.4	1.1	1.6	1.1	A-	A-
550	599627	7	7	800	.751	.063	.080	.055	.751	.051	.527	-.201	-.257	-.245	.527	-1.196	0.097	-3.2	0.9	-3.2	0.7	C+	B+
551	599692	7	7	800	.324	.334	.164	.324	.146	.033	.122	.123	-.109	.122	-.113	1.329	0.085	9.6	1.4	9.1	1.7	A+	A+
552	599629	7	7	799	.820	.050	.084	.820	.029	.018	.454	-.241	-.261	.454	-.186	-1.544	0.103	-2.4	0.9	-2.5	0.7	A+	A-
553	599636	7	7	799	.348	.078	.388	.177	.348	.010	.440	-.176	-.193	-.149	.440	1.210	0.084	0.1	1.0	-0.1	1.0	A+	A+
554	599635	7	7	400	.408	.220	.408	.155	.190	.028	.300	-.107	.300	-.087	-.087	0.793	0.115	3.4	1.2	4.5	1.3	A-	A+
555	599628	7	7	400	.648	.648	.125	.095	.100	.033	.522	.522	-.246	-.277	-.140	-0.493	0.119	-2.3	0.9	-1.8	0.8	C+	A+

Table B–2 (continued). Mathematics Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
556	601783	7	7	400	.723	.050	.723	.105	.088	.035	.483	-.191	.483	-.246	-.187	-0.967	0.128	-1.2	0.9	-1.3	0.8	A-	A+
557	601809	7	7	799	.601	.081	.601	.134	.163	.021	.483	-.140	.483	-.231	-.255	-0.157	0.082	-1.4	1.0	-1.6	0.9	A-	A-
558	599713	7	6	400	.248	.125	.390	.173	.248	.065	.299	-.214	.057	-.052	.299	1.649	0.130	2.1	1.1	3.7	1.5	C-	A-
559	599714	7	6	799	.543	.103	.543	.274	.039	.041	.378	-.272	.378	-.090	-.123	0.093	0.082	3.9	1.1	2.6	1.1	A-	A-
560	599647	7	7	799	.621	.621	.192	.116	.054	.018	.582	.582	-.313	-.277	-.211	-0.180	0.083	-5.9	0.8	-5.2	0.7	A+	A-
561	599648	7	7	400	.358	.358	.500	.095	.048	.000	.415	.415	-.191	-.222	-.181	1.295	0.119	1.2	1.1	1.3	1.1	A+	A-
562	599717	7	6	802	.858	.011	.062	.057	.858	.011	.368	-.109	-.172	-.231	.368	-1.732	0.111	-0.5	1.0	-0.4	0.9	C-	A+
563	599716	7	6	400	.820	.048	.820	.080	.025	.028	.310	-.124	.310	-.166	-.161	-1.551	0.149	0.5	1.0	1.0	1.2	A-	A+
564	599729	7	7	803	.407	.247	.189	.407	.152	.005	.430	-.091	-.111	.430	-.339	1.031	0.081	0.4	1.0	2.6	1.1	A-	A-
565	599693	7	7	402	.463	.082	.463	.087	.341	.027	.523	-.189	.523	-.238	-.213	0.696	0.114	-1.5	0.9	-1.2	0.9	B+	A-
566	599687	7	7	803	.493	.149	.493	.193	.137	.027	.435	-.234	.435	-.157	-.126	0.531	0.081	0.5	1.0	-0.1	1.0	A-	A-
567	599718	7	6	803	.765	.765	.079	.077	.037	.042	.396	.396	-.192	-.234	-.146	-1.147	0.097	-0.9	1.0	-0.3	1.0	B+	A+
568	602155	7	7	398	.626	.143	.626	.085	.138	.008	.402	-.274	.402	-.255	-.037	-0.089	0.117	1.2	1.1	0.8	1.1	A-	B-
569	599682	7	6	795	.755	.064	.755	.128	.050	.003	.487	-.227	.487	-.282	-.264	-0.882	0.096	-2.4	0.9	-0.6	0.9	A-	A-
570	599732	7	7	797	.531	.067	.215	.151	.531	.038	.505	-.214	-.213	-.249	.505	0.114	0.083	-3.1	0.9	-3.1	0.8	A+	A+
571	599727	7	6	799	.875	.034	.030	.875	.035	.026	.353	-.211	-.146	.353	-.171	-2.084	0.125	-0.8	0.9	-1.9	0.7	A-	B-
572	599686	7	7	802	.458	.458	.247	.166	.100	.030	.423	.423	-.176	-.173	-.166	0.689	0.082	1.8	1.1	1.3	1.1	A+	A+
573	599722	7	6	800	.741	.048	.048	.160	.741	.004	.468	-.167	-.229	-.321	.468	-0.729	0.093	-0.9	1.0	-1.3	0.9	A+	A-
574	599684	7	7	799	.677	.096	.677	.109	.093	.025	.449	-.186	.449	-.230	-.219	-0.539	0.086	-0.5	1.0	-0.6	1.0	A+	A+
575	599712	7	7	800	.299	.123	.299	.460	.090	.029	.018	-.075	.018	.166	-.128	1.377	0.086	9.9	1.5	8.7	1.7	A-	A-
576	599711	7	7	798	.525	.248	.132	.525	.078	.018	.548	-.246	-.254	.548	-.191	0.392	0.081	-2.9	0.9	-2.9	0.9	A+	A+
577	602215	7	6	797	.694	.129	.082	.055	.694	.040	.541	-.343	-.220	-.202	.541	-0.825	0.090	-5.0	0.8	-4.7	0.7	A+	A+
578	602190	7	5	799	.542	.170	.542	.194	.080	.014	.568	-.330	.568	-.211	-.204	0.257	0.081	-5.3	0.8	-4.1	0.8	A-	A-
579	602193	7	3	799	.492	.190	.492	.073	.237	.009	.457	-.399	.457	-.100	-.082	0.565	0.080	-0.5	1.0	-0.4	1.0	A-	A-
580	602180	7	5	803	.390	.131	.390	.364	.098	.017	.557	-.086	.557	-.319	-.215	1.103	0.082	-4.1	0.9	-3.2	0.8	A-	A-
581	602139	7	5	800	.383	.100	.383	.309	.183	.026	.306	-.162	.306	-.080	-.101	1.026	0.084	5.5	1.2	5.4	1.4	A-	A+
582	602197	7	6	800	.628	.134	.628	.033	.189	.018	.446	-.250	.446	-.206	-.195	-0.282	0.084	0.4	1.0	-0.1	1.0	A-	A+
583	602140	7	6	797	.344	.344	.083	.427	.109	.038	.489	.489	-.190	-.187	-.178	1.171	0.086	0.1	1.0	-0.1	1.0	A+	A-
584	602211	7	6	800	.659	.060	.659	.098	.154	.030	.486	-.201	.486	-.287	-.182	-0.569	0.085	-2.9	0.9	-2.5	0.8	A+	A-
585	602166	7	6	800	.313	.143	.355	.313	.131	.059	.235	-.116	.037	.235	-.139	1.221	0.086	5.3	1.2	6.4	1.5	A-	A-
586	602216	7	7	800	.453	.065	.155	.321	.453	.006	.556	-.087	-.322	-.296	.556	0.982	0.085	-3.4	0.9	-2.6	0.8	A-	B-
587	602178	7	4	800	.440	.440	.084	.375	.098	.004	.385	.385	-.113	-.336	.026	1.059	0.085	5.2	1.2	5.1	1.4	A-	A+
588	602192	7	4	795	.584	.205	.117	.584	.078	.016	.470	-.353	-.143	.470	-.092	0.131	0.086	0.4	1.0	0.1	1.0	A+	A-
589	602219	7	7	795	.531	.067	.235	.159	.531	.009	.573	-.279	-.267	-.256	.573	0.464	0.085	-4.2	0.9	-2.6	0.9	A-	A-
590	602220	7	7	799	.652	.145	.106	.652	.080	.016	.514	-.308	-.260	.514	-.119	-0.303	0.084	-3.4	0.9	-2.8	0.8	A-	B-

Table B–2 (continued). Mathematics Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
591	602213	7	6	798	.297	.297	.335	.227	.104	.038	.396	.396	-.127	-.105	-.118	1.516	0.086	0.6	1.0	1.6	1.1	A+	A-
592	602198	7	7	798	.734	.051	.088	.734	.102	.025	.562	-.228	-.277	.562	-.268	-0.852	0.091	-4.2	0.8	-4.6	0.7	A+	A-
593	602194	7	7	798	.509	.150	.249	.509	.079	.013	.320	-.278	-.088	.320	-.022	0.485	0.081	5.7	1.2	4.1	1.2	A+	A-
594	602214	7	7	398	.523	.276	.523	.078	.085	.030	.420	-.228	.420	-.092	-.124	0.372	0.116	1.8	1.1	2.1	1.2	A+	A+
595	602199	7	7	398	.751	.053	.088	.751	.043	.065	.554	-.287	-.297	.554	-.182	-1.202	0.142	-2.5	0.8	-2.9	0.6	B-	A+
596	602195	7	7	800	.478	.273	.183	.478	.056	.011	.357	-.217	-.054	.357	-.178	0.549	0.080	3.7	1.1	3.4	1.2	A+	A+
597	602200	7	7	400	.510	.113	.158	.510	.205	.015	.343	-.133	-.172	.343	-.101	0.309	0.113	2.1	1.1	2.4	1.2	A-	A+
598	602179	7	7	400	.353	.200	.300	.353	.098	.050	.445	-.269	-.134	.445	.049	1.036	0.119	0.2	1.0	0.4	1.0	A+	A-
599	602217	7	7	799	.389	.389	.264	.190	.116	.040	.528	.528	-.142	-.237	-.200	0.997	0.084	-2.0	0.9	-1.4	0.9	B-	A+
600	602181	7	7	399	.494	.113	.256	.494	.065	.060	.611	-.250	-.366	.611	-.063	0.315	0.118	-4.4	0.8	-3.8	0.7	A-	A-
601	602201	7	7	399	.406	.206	.143	.188	.406	.058	.113	.091	-.004	-.144	.113	0.822	0.118	8.6	1.5	7.8	1.7	A-	A+
602	602164	7	5	400	.663	.020	.033	.285	.663	.000	.432	-.152	-.151	-.346	.432	-0.332	0.118	-0.3	1.0	-0.7	0.9	A-	A+
603	602228	7	7	400	.550	.178	.160	.550	.095	.018	.421	-.068	-.237	.421	-.267	0.217	0.115	1.5	1.1	1.1	1.1	A+	A-
604	602196	7	6	803	.659	.111	.659	.135	.088	.008	.515	-.346	.515	-.230	-.163	-0.298	0.083	-3.9	0.9	-3.6	0.8	A+	A-
605	602165	7	5	402	.468	.127	.291	.468	.087	.027	.456	-.238	-.195	.456	-.066	0.673	0.114	0.8	1.0	0.6	1.0	A-	A-
606	602231	7	7	402	.460	.187	.177	.460	.149	.027	.298	.092	-.245	.298	-.134	0.715	0.114	4.8	1.2	4.7	1.4	A-	A+
607	602182	7	6	402	.587	.065	.587	.110	.209	.030	.487	-.233	.487	-.203	-.196	0.025	0.116	-0.7	1.0	-1.2	0.9	C+	A+
608	602142	7	6	400	.415	.120	.415	.050	.405	.010	.560	-.327	.560	-.241	-.206	0.960	0.116	-2.5	0.9	-2.2	0.9	A-	B-
609	602144	7	7	800	.589	.120	.116	.165	.589	.010	.575	-.262	-.347	-.210	.575	-0.031	0.081	-5.7	0.8	-4.7	0.8	A-	A+
610	602141	7	7	799	.647	.138	.150	.647	.048	.004	.481	-.284	-.288	.481	-.049	-0.312	0.084	-2.1	0.9	-0.7	1.0	A-	A-
611	602143	7	7	798	.590	.123	.198	.590	.061	.028	.473	-.295	-.182	.473	-.174	0.008	0.083	-1.4	1.0	-0.5	1.0	A-	A-
612	601784	7	N/A	398	.744	.744	.058	.073	.063	.063	.545	.545	-.306	-.300	-.152	-1.128	0.140	-2.6	0.8	-2.2	0.7	A-	A-
613	601704	7	6	795	.847	.009	.025	.111	.847	.009	.395	-.108	-.177	-.285	.395	-1.686	0.111	-0.8	1.0	-1.0	0.8	B+	A-
614	601827	7	Ge	800	.529	.179	.114	.144	.529	.035	.491	-.217	-.174	-.213	.491	0.204	0.083	-0.6	1.0	-0.3	1.0	A+	A+
615	602202	7	Ge	795	.787	.126	.042	.045	.787	.000	.384	-.256	-.223	-.135	.384	-1.119	0.098	0.6	1.0	1.3	1.2	A+	A+
616	602236	7	Ge	800	.671	.671	.165	.105	.029	.030	.520	.520	-.255	-.286	-.200	-0.594	0.087	-2.7	0.9	-2.5	0.8	A+	A-
617	601761	7	8	800	.600	.600	.131	.101	.121	.046	.499	.499	-.233	-.236	-.162	-0.240	0.085	-1.3	1.0	0.0	1.0	A+	A-
618	602218	7	Ge	797	.606	.123	.168	.606	.068	.035	.359	-.158	-.145	.359	-.200	-0.294	0.084	3.0	1.1	2.7	1.2	A-	A-
619	601828	7	Ge	797	.297	.060	.129	.461	.297	.053	.388	-.122	-.068	-.174	.388	1.420	0.089	1.9	1.1	2.2	1.2	A+	A-
620	601762	7	8	797	.594	.078	.183	.594	.082	.064	.373	-.110	-.144	.373	-.210	-0.321	0.086	2.1	1.1	2.0	1.1	A-	A+
621	602221	7	Ge	802	.779	.060	.779	.107	.042	.011	.413	-.162	.413	-.229	-.225	-1.173	0.096	-0.9	1.0	-1.0	0.9	A+	A+
622	601786	7	Ge	802	.513	.172	.151	.137	.513	.027	.413	-.220	-.157	-.115	.413	0.351	0.081	0.5	1.0	-0.1	1.0	A+	A-
623	601765	7	6	802	.814	.814	.036	.050	.060	.040	.363	.363	-.121	-.240	-.162	-1.644	0.109	-0.4	1.0	-1.1	0.9	A+	A-
624	601766	7	6	800	.794	.013	.794	.065	.129	.000	.432	-.106	.432	-.343	-.234	-1.093	0.099	-0.9	1.0	-1.0	0.9	A-	B-
625	601822	7	Ge	800	.893	.893	.041	.043	.023	.001	.312	.312	-.128	-.196	-.197	-2.058	0.125	-0.3	1.0	0.2	1.0	A+	A-

Table B–2 (continued). Mathematics Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
626	602222	7	Ge	800	.706	.119	.054	.116	.706	.005	.431	-.157	-.270	-.244	.431	-0.502	0.090	0.4	1.0	1.5	1.1	A+	B-
627	601671	7	8	795	.501	.255	.501	.175	.057	.013	.391	-.137	.391	-.124	-.294	0.634	0.085	4.6	1.2	4.2	1.3	A-	A-
628	601815	7	N/A	798	.310	.310	.075	.361	.222	.033	.309	.309	-.183	-.134	-.009	1.451	0.085	3.2	1.1	3.5	1.2	A-	A-
629	602060	7	8	798	.399	.196	.295	.085	.399	.026	.407	-.208	-.071	-.193	.407	0.976	0.081	1.6	1.1	1.3	1.1	A+	A+
630	601684	7	6	798	.810	.104	.038	.810	.028	.021	.389	-.224	-.150	.389	-.160	-1.384	0.102	-0.4	1.0	0.0	1.0	A+	C-
631	602145	7	Ge	801	.621	.621	.075	.121	.152	.031	.506	.506	-.228	-.256	-.166	-0.217	0.083	-1.9	0.9	-0.7	1.0	A-	A-
632	601683	7	6	400	.630	.310	.033	.008	.630	.020	.345	-.224	-.090	-.153	.345	-0.254	0.115	1.6	1.1	2.0	1.2	A-	
633	602050	7	8	801	.562	.562	.065	.105	.210	.059	.473	.473	-.254	-.261	-.094	0.000	0.082	-0.3	1.0	-0.3	1.0	A-	A-
634	601674	7	6	398	.591	.091	.176	.116	.591	.028	.540	-.205	-.196	-.294	.540	0.024	0.117	-1.7	0.9	-1.6	0.9	A-	A-
635	601685	7	6	800	.795	.020	.043	.139	.795	.004	.214	-.099	-.034	-.164	.214	-1.238	0.095	2.8	1.2	4.9	1.6	A-	A+
636	601823	7	N/A	800	.801	.801	.099	.049	.016	.035	.517	.517	-.331	-.208	-.150	-1.486	0.103	-3.1	0.8	-3.6	0.6	A+	A+
637	601785	7	N/A	801	.832	.080	.832	.035	.036	.018	.456	-.258	.456	-.223	-.168	-1.554	0.106	-1.9	0.9	-2.0	0.7	A+	A-
638	602108	7	8	801	.463	.463	.112	.225	.160	.040	.500	.500	-.243	-.279	-.035	0.638	0.082	-0.4	1.0	-0.7	1.0	A-	A-
639	602109	7	8	800	.768	.059	.103	.058	.768	.014	.508	-.238	-.282	-.223	.508	-1.096	0.093	-3.2	0.9	-3.9	0.7	A+	B-
640	601824	7	N/A	400	.693	.185	.053	.068	.693	.003	.519	-.302	-.236	-.265	.519	-0.635	0.120	-3.0	0.9	-1.8	0.8	A-	A-
641	602110	7	8	400	.240	.240	.293	.233	.223	.013	.349	.349	-.197	-.279	.144	1.779	0.129	0.6	1.0	1.2	1.1	A+	B-
642	601710	7	6	799	.753	.120	.063	.753	.060	.004	.306	-.109	-.142	.306	-.217	-0.963	0.090	1.3	1.1	1.9	1.2	A-	A-
643	601825	7	N/A	399	.852	.038	.058	.852	.045	.008	.425	-.231	-.243	.425	-.191	-1.705	0.153	-1.4	0.9	-2.0	0.6	A-	A-
644	601767	7	6	399	.529	.053	.070	.336	.529	.013	.411	-.171	-.223	-.184	.411	0.316	0.114	1.3	1.1	1.2	1.1	A+	A+
645	601679	7	8	799	.764	.034	.168	.033	.764	.003	.404	-.199	-.265	-.181	.404	-0.968	0.091	-1.0	1.0	0.1	1.0	A-	A-
646	601768	7	6	799	.657	.031	.049	.657	.227	.036	.411	-.223	-.141	.411	-.221	-0.466	0.086	1.0	1.0	1.2	1.1	A-	A-
647	601833	7	N/A	799	.451	.081	.451	.303	.121	.044	.455	-.081	.455	-.219	-.215	0.641	0.082	1.1	1.0	1.5	1.1	A-	A+
648	601680	7	8	802	.698	.698	.075	.153	.067	.006	.385	.385	-.183	-.215	-.169	-0.537	0.086	0.5	1.0	1.5	1.1	A+	A-
649	601834	7	Ge	802	.334	.302	.197	.130	.334	.037	.427	-.136	-.119	-.169	.427	1.361	0.086	1.2	1.1	2.8	1.2	A+	B-
650	601688	7	6	402	.463	.463	.289	.102	.129	.017	.481	.481	-.082	-.342	-.260	0.714	0.114	-0.8	1.0	-1.3	0.9	A+	A-
651	601699	7	6	803	.553	.108	.553	.218	.079	.042	.446	-.232	.446	-.131	-.203	0.157	0.082	1.4	1.1	0.6	1.0	A-	A-
652	601703	7	8	803	.682	.682	.220	.054	.029	.015	.426	.426	-.244	-.189	-.175	-0.459	0.085	0.1	1.0	-0.2	1.0	A+	A-
653	601660	7	8	402	.711	.070	.087	.097	.711	.035	.546	-.134	-.265	-.327	.546	-0.721	0.127	-2.8	0.8	-2.1	0.8	A+	A-
654	601826	7	Ge	803	.736	.088	.051	.067	.736	.057	.457	-.151	-.185	-.243	.457	-1.021	0.096	-0.9	1.0	-0.8	0.9	B+	A+
655	601835	7	Ge	402	.455	.455	.182	.149	.154	.060	.485	.485	-.255	-.109	-.142	0.647	0.116	-0.5	1.0	-0.1	1.0	B+	A+
656	601677	7	8	399	.622	.025	.130	.198	.622	.025	.329	-.022	-.010	-.285	.329	-0.225	0.118	3.4	1.2	2.3	1.2	A+	B+
657	601687	7	6	802	.549	.077	.549	.165	.187	.022	.393	-.211	.393	-.212	-.111	0.229	0.081	2.2	1.1	3.1	1.2	A-	A-
658	601218	7	6	400	.645	.140	.040	.148	.645	.028	.511	-.243	-.203	-.247	.511	-0.336	0.120	-1.5	0.9	-0.9	0.9	A+	A+
659	602234	7	Ge	803	.269	.269	.088	.265	.347	.030	.215	.215	-.092	-.152	.079	1.783	0.090	5.8	1.3	6.4	1.6	A-	A+
660	602146	7	8	398	.636	.636	.043	.294	.028	.000	.285	.285	-.151	-.168	-.184	-0.116	0.117	3.7	1.2	2.7	1.3	A+	A+

Table B–2 (continued). Mathematics Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M /F	W /B
661	601287	7	6	400	.860	.860	.075	.028	.025	.013	.481	.481	-.316	-.211	-.159	-1.782	0.158	-1.7	0.8	-2.7	0.6	A+	
662	601772	7	4	795	.870	.029	.039	.870	.059	.003	.387	-.163	-.217	.387	-.261	-1.912	0.118	-1.0	0.9	-1.2	0.8	A-	A-
663	601273	7	6	800	.341	.341	.368	.145	.099	.048	.278	.278	.140	-.290	-.169	1.192	0.085	6.0	1.2	5.7	1.4	A+	B+
664	601278	7	7	402	.525	.045	.525	.197	.231	.003	.424	.000	.424	-.208	-.304	0.428	0.113	0.2	1.0	0.1	1.0	A-	A-
665	601067	7	6	799	.442	.063	.085	.388	.442	.023	.358	-.183	-.193	-.113	.358	0.752	0.082	4.8	1.2	5.2	1.3	A+	A-
666	601771	7	4	802	.531	.531	.168	.165	.092	.044	.534	.534	-.237	-.271	-.162	0.207	0.082	-3.3	0.9	-3.1	0.8	A+	A-
667	601271	7	6	798	.605	.605	.150	.130	.068	.046	.566	.566	-.301	-.245	-.186	-0.163	0.085	-3.8	0.9	-2.4	0.9	B+	B+
668	601355	7	7	400	.678	.678	.153	.113	.055	.003	.497	.497	-.278	-.269	-.204	-0.425	0.119	-2.4	0.9	-1.9	0.8	A+	A+
669	601769	7	4	800	.713	.220	.713	.025	.019	.024	.415	-.257	.415	-.191	-.174	-0.817	0.090	0.5	1.0	0.1	1.0	A+	A+
670	601305	7	7	797	.601	.113	.112	.144	.601	.030	.549	-.177	-.227	-.314	.549	-0.272	0.085	-3.8	0.9	-2.9	0.8	A-	A+
671	601284	7	8	797	.525	.033	.088	.525	.304	.051	.451	-.204	-.299	.451	-.137	0.093	0.084	1.7	1.1	1.0	1.1	A-	A-
672	601310	7	6	797	.783	.072	.107	.783	.018	.021	.406	-.212	-.224	.406	-.163	-1.424	0.099	-0.1	1.0	-0.4	1.0	A-	A-
673	601350	7	6	797	.705	.054	.119	.082	.705	.040	.492	-.233	-.259	-.214	.492	-0.958	0.092	-3.1	0.9	-2.6	0.8	B+	B+
674	601297	7	6	797	.724	.099	.122	.724	.049	.006	.536	-.296	-.315	.536	-.176	-0.861	0.089	-3.9	0.9	-4.1	0.7	A+	B-
675	601362	7	6	797	.464	.464	.154	.272	.070	.039	.464	.464	-.197	-.169	-.209	0.485	0.083	-0.3	1.0	-0.2	1.0	A+	A+
676	601319	7	7	797	.491	.073	.235	.491	.147	.055	.522	-.187	-.268	.522	-.169	0.293	0.083	-2.2	0.9	-2.4	0.9	A-	A+
677	601770	7	4	797	.591	.190	.156	.591	.021	.043	.551	-.307	-.249	.551	-.168	-0.218	0.084	-3.2	0.9	-2.5	0.9	A+	A-
678	601298	7	6	802	.594	.594	.180	.125	.087	.015	.535	.535	-.232	-.273	-.218	-0.051	0.082	-3.4	0.9	-3.0	0.8	A+	A-
679	601363	7	6	802	.294	.294	.243	.292	.137	.034	.306	.306	-.120	-.114	-.009	1.558	0.088	3.8	1.2	3.3	1.3	B-	A-
680	601320	7	7	802	.686	.037	.069	.686	.167	.041	.484	-.154	-.241	.484	-.274	-0.678	0.089	-1.7	0.9	-2.4	0.8	A+	A+
681	601321	7	7	795	.598	.218	.598	.126	.055	.004	.513	-.273	.513	-.261	-.220	0.142	0.087	-1.3	1.0	-0.6	1.0	A-	B-
682	601364	7	6	795	.601	.148	.107	.136	.601	.008	.562	-.222	-.258	-.315	.562	0.107	0.088	-2.2	0.9	-2.9	0.8	B+	A+
683	601351	7	6	795	.589	.374	.020	.018	.589	.000	.489	-.428	-.126	-.121	.489	0.207	0.087	0.1	1.0	-0.8	1.0	A-	A-
684	601316	7	6	795	.370	.313	.101	.213	.370	.004	.416	-.301	-.080	-.084	.416	1.411	0.088	2.9	1.1	3.6	1.3	A+	A-
685	601713	7	4	795	.767	.068	.128	.767	.029	.008	.461	-.261	-.303	.461	-.132	-1.010	0.096	-2.0	0.9	-1.8	0.8	A-	A+
686	601286	7	6	795	.864	.864	.055	.035	.043	.003	.430	.430	-.230	-.253	-.223	-1.817	0.114	-2.2	0.9	-2.1	0.7	A+	A+
687	601317	7	6	400	.473	.473	.108	.185	.223	.013	.431	.431	-.244	-.209	-.110	0.567	0.111	-0.7	1.0	-0.7	1.0	B+	
688	601356	7	6	798	.551	.551	.168	.214	.033	.034	.385	.385	-.291	-.058	-.177	0.152	0.081	2.5	1.1	1.4	1.1	A+	A+
689	601318	7	6	798	.717	.717	.125	.108	.036	.014	.521	.521	-.322	-.256	-.176	-0.684	0.088	-3.9	0.8	-3.8	0.7	A+	A-
690	601746	7	4	400	.913	.048	.010	.913	.020	.010	.371	-.192	-.127	.371	-.192	-2.385	0.193	-0.5	0.9	-1.4	0.7	A-	
691	601366	7	7	400	.380	.440	.380	.110	.040	.030	.229	.069	.229	-.247	-.156	0.985	0.114	4.4	1.2	5.4	1.4	B-	
692	601747	7	4	798	.703	.083	.140	.703	.043	.031	.343	-.146	-.189	.343	-.128	-0.689	0.088	1.8	1.1	1.5	1.1	A-	A+
693	601774	7	7	798	.456	.098	.456	.302	.109	.035	.406	-.149	.406	-.150	-.223	0.646	0.081	1.5	1.1	1.4	1.1	A-	A-
694	601352	7	6	798	.608	.078	.608	.179	.118	.018	.502	-.197	.502	-.293	-.164	-0.061	0.083	-1.2	1.0	-1.3	0.9	A+	A+
695	601781	7	8	798	.447	.447	.239	.143	.130	.040	.547	.547	-.197	-.213	-.226	0.731	0.082	-2.9	0.9	-2.4	0.9	A-	A-

Table B–2 (continued). Mathematics Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M /F	W /B
696	601748	7	4	398	.653	.653	.103	.091	.085	.068	.540	.540	-.290	-.178	-.227	-0.523	0.126	-1.8	0.9	-1.5	0.8	A-	B+
697	601749	7	4	400	.613	.128	.148	.613	.108	.005	.415	-.186	-.247	.415	-.151	-0.082	0.116	1.0	1.1	0.8	1.1	A+	A-
698	601750	7	4	800	.519	.204	.519	.150	.101	.026	.362	-.115	.362	-.121	-.202	0.293	0.081	4.4	1.2	3.0	1.2	A+	A-
699	601311	7	6	800	.830	.029	.055	.830	.055	.031	.500	-.182	-.304	.500	-.214	-1.719	0.109	-2.6	0.8	-3.7	0.6	A+	A+
700	601745	7	8	400	.613	.195	.613	.093	.085	.015	.490	-.151	.490	-.293	-.236	-0.101	0.117	-0.5	1.0	-0.2	1.0	A+	A-
701	601367	7	8	800	.658	.658	.121	.145	.066	.010	.419	.419	-.183	-.228	-.168	-0.402	0.084	0.3	1.0	0.7	1.1	A-	A-
702	601312	7	6	799	.760	.031	.095	.081	.760	.033	.500	-.196	-.253	-.249	.500	-1.160	0.095	-3.0	0.9	-2.7	0.7	A+	A+
703	601376	7	8	799	.770	.770	.046	.144	.033	.008	.407	.407	-.238	-.215	-.160	-1.085	0.092	-0.5	1.0	-1.3	0.9	A-	A-
704	601353	7	6	799	.339	.164	.263	.200	.339	.034	.409	-.132	-.196	-.054	.409	1.207	0.085	1.4	1.1	2.9	1.2	A+	A-
705	601686	7	4	799	.292	.119	.343	.292	.182	.065	.459	-.154	-.118	.459	-.118	1.426	0.088	-1.0	1.0	1.5	1.1	A-	A-
706	601313	7	6	399	.747	.075	.068	.747	.108	.003	.487	-.257	-.293	.487	-.199	-0.873	0.126	-1.9	0.9	-2.4	0.7	A+	A-
707	601354	7	6	399	.649	.113	.123	.110	.649	.005	.509	-.279	-.167	-.281	.509	-0.305	0.117	-2.1	0.9	-1.2	0.9	A-	A-
708	601314	7	6	799	.583	.174	.583	.184	.050	.009	.275	.042	.275	-.224	-.217	0.055	0.081	6.2	1.2	6.7	1.4	A+	A+
709	601322	7	8	399	.456	.173	.456	.186	.165	.020	.254	-.112	.254	-.215	.088	0.673	0.115	5.9	1.3	5.3	1.4	A-	A+
710	601307	7	6	802	.707	.032	.045	.187	.707	.029	.474	-.153	-.139	-.343	.474	-0.688	0.089	-1.8	0.9	-2.2	0.8	B+	A-
711	601323	7	8	400	.665	.158	.665	.115	.053	.010	.528	-.256	.528	-.305	-.197	-0.381	0.119	-2.4	0.9	-2.3	0.8	A-	A-
712	601324	7	8	802	.746	.050	.150	.746	.045	.010	.465	-.216	-.257	.465	-.220	-0.842	0.090	-2.0	0.9	-2.0	0.8	A-	A+
713	601291	7	7	802	.481	.119	.090	.481	.298	.013	.404	-.272	-.228	.404	-.079	0.609	0.081	3.0	1.1	2.7	1.1	A-	A+
714	601315	7	6	802	.692	.042	.692	.140	.102	.024	.530	-.184	.530	-.289	-.243	-0.568	0.087	-3.5	0.9	-3.0	0.8	A+	A+
715	601308	7	6	402	.796	.149	.032	.022	.796	.000	.410	-.334	-.103	-.189	.410	-1.120	0.134	-0.8	0.9	0.1	1.0	B+	A-
716	601306	7	8	402	.363	.363	.167	.336	.117	.017	.409	.409	-.285	-.116	-.019	1.260	0.118	1.5	1.1	1.5	1.1	C-	A+
717	601359	7	6	402	.406	.067	.406	.393	.065	.070	.472	-.146	.472	-.196	-.197	0.891	0.118	-0.1	1.0	0.2	1.0	B+	A+
718	601361	7	6	401	.511	.075	.511	.352	.050	.013	.411	-.147	.411	-.213	-.225	0.468	0.114	1.1	1.1	0.7	1.1	A-	A+
719	601282	7	8	401	.743	.125	.060	.743	.040	.032	.443	-.192	-.191	.443	-.210	-0.950	0.131	-0.1	1.0	-0.4	0.9	A-	A-
720	601309	7	6	401	.798	.100	.798	.030	.018	.055	.396	-.127	.396	-.244	-.153	-1.532	0.151	-0.2	1.0	0.8	1.2	A-	A-
721	601280	7	7	401	.464	.464	.125	.160	.192	.060	.423	.423	-.132	-.161	-.121	0.577	0.117	2.0	1.1	2.0	1.1	A-	A+
722	601365	7	7	799	.672	.083	.144	.672	.090	.011	.415	-.158	-.200	.415	-.209	-0.396	0.085	0.0	1.0	-0.3	1.0	B-	A-
723	601300	7	6	400	.720	.068	.143	.720	.050	.020	.533	-.202	-.313	.533	-.204	-0.748	0.126	-1.9	0.9	-2.1	0.8	B+	B+
724	601773	7	6	399	.679	.083	.095	.128	.679	.015	.558	-.227	-.253	-.280	.558	-0.511	0.121	-3.4	0.8	-3.0	0.7	A-	B-
725	601272	7	6	400	.280	.158	.300	.230	.280	.033	.399	-.137	-.040	-.186	.399	1.684	0.126	0.5	1.0	2.6	1.3	A-	B-
726	601357	7	8	800	.523	.523	.148	.280	.039	.011	.413	.413	-.230	-.167	-.171	0.218	0.079	0.5	1.0	1.2	1.1	A-	A-
727	601050	7	6	400	.785	.113	.038	.785	.063	.003	.478	-.297	-.189	.478	-.237	-1.211	0.132	-2.2	0.9	-2.4	0.7	A+	B+
728	601132	7	7	797	.655	.051	.198	.655	.054	.041	.535	-.193	-.343	.535	-.157	-0.626	0.088	-3.2	0.9	-2.9	0.8	A-	A-
729	601123	7	7	399	.579	.113	.188	.579	.085	.035	.586	-.260	-.286	.586	-.179	-0.030	0.117	-3.3	0.9	-3.0	0.8	A-	A-
730	601099	7	6	799	.615	.217	.615	.078	.064	.028	.385	-.111	.385	-.203	-.209	-0.137	0.083	2.4	1.1	1.5	1.1	A-	A+

Table B–2 (continued). Mathematics Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M /F	W /B
731	601124	7	7	797	.629	.036	.054	.266	.629	.015	.501	-.194	-.244	-.298	.501	-0.370	0.085	-1.2	1.0	-1.2	0.9	A+	C-
732	601379	7	6	795	.745	.115	.082	.057	.745	.003	.494	-.281	-.255	-.230	.494	-0.811	0.095	-2.5	0.9	-2.0	0.8	A+	A-
733	601079	7	6	797	.324	.217	.256	.173	.324	.030	.351	-.043	-.035	-.259	.351	1.325	0.089	4.7	1.2	5.5	1.5	A+	A+
734	601080	7	6	800	.251	.398	.251	.180	.131	.040	.161	.183	.161	-.150	-.204	1.648	0.091	4.7	1.2	5.9	1.6	A-	A-
735	601125	7	7	800	.468	.060	.168	.263	.468	.043	.496	-.216	-.255	-.149	.496	0.410	0.081	-2.0	0.9	-1.8	0.9	A-	A+
736	601049	7	7	800	.340	.089	.340	.393	.141	.038	.359	-.036	.359	-.113	-.216	1.107	0.084	1.7	1.1	2.0	1.1	A-	A-
737	601064	7	6	802	.417	.392	.070	.084	.417	.039	.490	-.181	-.190	-.241	.490	0.836	0.082	-1.1	1.0	-0.9	1.0	C-	A-
738	601108	7	6	802	.273	.426	.273	.137	.123	.040	.176	.132	.176	-.134	-.212	1.685	0.090	5.5	1.3	7.4	1.8	A+	B+
739	601077	7	6	795	.806	.060	.081	.806	.045	.008	.454	-.249	-.237	.454	-.208	-1.322	0.104	-1.0	1.0	-0.7	0.9	A+	B-
740	601111	7	7	795	.531	.043	.126	.299	.531	.001	.491	-.216	-.333	-.195	.491	0.553	0.087	2.1	1.1	2.9	1.2	A+	A-
741	601052	7	7	799	.473	.131	.262	.473	.126	.008	.525	-.278	-.211	.525	-.187	0.665	0.080	-3.9	0.9	-3.5	0.8	A+	A-
742	601112	7	7	400	.255	.255	.245	.170	.293	.038	.301	.301	-.181	-.144	.091	1.672	0.125	1.1	1.1	3.1	1.3	A+	
743	601045	7	6	798	.405	.285	.135	.405	.152	.024	.217	.040	-.149	.217	-.147	0.946	0.081	7.0	1.3	7.3	1.4	A-	A-
744	601043	7	6	400	.185	.185	.253	.415	.093	.055	.135	.135	.061	-.076	.002	2.118	0.138	2.4	1.2	3.7	1.6	A-	
745	601066	7	6	798	.585	.114	.140	.585	.107	.054	.566	-.246	-.282	.566	-.204	-0.101	0.083	-5.0	0.8	-4.3	0.8	A+	A-
746	601129	7	7	798	.568	.568	.155	.251	.023	.004	.579	.579	-.255	-.404	-.115	0.203	0.081	-5.4	0.8	-4.2	0.8	A-	B-
747	601113	7	7	799	.571	.178	.146	.571	.095	.010	.501	-.219	-.240	.501	-.213	0.179	0.081	-1.9	0.9	-1.8	0.9	A-	A-
748	601037	7	6	798	.862	.024	.862	.080	.030	.004	.323	-.168	.323	-.213	-.119	-1.726	0.111	-0.2	1.0	1.0	1.2	A+	A-
749	601046	7	7	798	.587	.158	.169	.587	.065	.021	.580	-.267	-.297	.580	-.177	0.043	0.082	-4.2	0.9	-3.8	0.8	A+	A-
750	601038	7	6	400	.663	.085	.663	.220	.033	.000	.439	-.254	.439	-.263	-.156	-0.336	0.119	0.2	1.0	0.8	1.1	A-	A+
751	601047	7	7	400	.163	.163	.470	.253	.098	.018	.316	.316	-.178	.143	-.197	2.598	0.149	0.4	1.0	2.2	1.4	B-	A+
752	601084	7	7	400	.405	.153	.278	.405	.153	.013	.389	-.214	-.131	.389	-.085	0.848	0.114	0.7	1.0	2.0	1.1	A-	A-
753	601109	7	N/A	799	.125	.125	.210	.269	.372	.024	.175	.175	-.092	-.057	.068	2.800	0.116	1.5	1.1	6.3	2.2	A-	A+
754	601118	7	6	799	.630	.080	.630	.141	.099	.050	.556	-.162	.556	-.222	-.300	-0.413	0.085	-3.6	0.9	-2.9	0.8	A+	B+
755	601085	7	7	799	.486	.131	.243	.100	.486	.040	.547	-.177	-.258	-.209	.547	0.404	0.081	-3.9	0.9	-3.0	0.9	A-	A-
756	601058	7	7	799	.479	.260	.105	.479	.149	.006	.498	-.371	-.079	.498	-.141	0.600	0.081	-1.9	0.9	-1.4	0.9	A+	A-
757	601101	7	6	399	.790	.083	.053	.790	.055	.020	.502	-.261	-.209	.502	-.258	-1.279	0.138	-1.8	0.9	-2.3	0.7	A+	A-
758	601081	7	7	400	.795	.030	.065	.108	.795	.003	.369	-.101	-.244	-.223	.369	-1.170	0.135	-0.3	1.0	-0.3	1.0	A+	A-
759	601075	7	6	802	.761	.060	.062	.112	.761	.005	.471	-.254	-.249	-.227	.471	-0.921	0.091	-2.5	0.9	-2.6	0.8	A+	A+
760	601060	7	7	802	.413	.084	.413	.278	.202	.024	.368	-.020	.368	-.207	-.126	0.954	0.082	3.8	1.1	4.9	1.3	A-	A-
761	601107	7	6	400	.835	.010	.835	.068	.063	.025	.338	-.061	.338	-.091	-.303	-1.666	0.153	0.1	1.0	-0.2	1.0	A+	B+
762	601065	7	7	802	.623	.147	.623	.104	.095	.031	.581	-.307	.581	-.239	-.215	-0.202	0.084	-5.2	0.8	-4.4	0.7	A+	A-
763	601059	7	7	400	.453	.210	.110	.453	.178	.050	.442	-.287	-.118	.442	-.096	0.633	0.117	1.4	1.1	1.4	1.1	B-	A-
764	601076	7	6	803	.768	.044	.093	.768	.075	.020	.456	-.182	-.312	.456	-.159	-1.051	0.094	-1.8	0.9	-1.6	0.8	A+	A-
765	601082	7	7	803	.543	.075	.294	.543	.061	.027	.379	-.246	-.089	.379	-.223	0.253	0.081	3.9	1.1	3.4	1.2	A-	A+

Table B–2 (continued). Mathematics Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M /F	W /B
766	601057	7	6	401	.726	.010	.192	.072	.726	.000	.359	-.086	-.283	-.156	.359	-0.665	0.123	0.3	1.0	2.4	1.3	C+	A+
767	601083	7	7	401	.641	.047	.641	.279	.022	.010	.474	-.279	.474	-.289	-.173	-0.206	0.117	-0.7	1.0	0.0	1.0	A-	A-
768	601131	7	7	401	.289	.150	.187	.344	.289	.030	.339	-.204	-.242	.110	.339	1.645	0.125	2.7	1.2	2.5	1.3	A-	A+
769	601054	7	7	400	.315	.133	.253	.315	.288	.013	.329	-.044	-.250	.329	-.041	1.339	0.120	1.3	1.1	2.5	1.2	A-	A-
770	601117	7	6	400	.195	.195	.163	.385	.238	.020	.208	.208	-.133	-.151	.124	2.121	0.135	1.4	1.1	3.0	1.5	A+	
771	601130	7	7	400	.528	.243	.528	.190	.040	.000	.532	-.346	.532	-.222	-.155	0.389	0.114	-1.9	0.9	-1.7	0.9	A+	B-
772	601051	7	6	799	.228	.434	.228	.143	.156	.039	.134	.156	.134	-.182	-.087	2.015	0.094	5.4	1.3	8.1	1.9	A-	A-
773	601110	7	7	802	.395	.395	.176	.186	.224	.019	.477	.477	-.126	-.364	-.044	1.009	0.082	-1.7	0.9	0.0	1.0	B+	A+
774	601086	7	7	803	.481	.481	.166	.249	.102	.003	.542	.542	-.240	-.320	-.137	0.654	0.080	-4.6	0.9	-4.3	0.8	C-	A-
775	599651	8	N/A	319	.426	.433	.078	.426	.060	.003	.421	-.292	-.137	.421	-.123	0.832	0.127	0.5	1.0	0.8	1.1	B+	A+
776	599610	8	7	160	.594	.131	.594	.100	.175	.000	.246	-.234	.246	-.108	-.024	-0.094	0.170	1.0	1.1	1.6	1.1	B+	
777	599698	8	6	158	.481	.057	.481	.291	.158	.013	.122	-.095	.122	-.004	-.100	0.287	0.171	3.4	1.2	3.1	1.2	A-	
778	599640	8	N/A	314	.350	.102	.280	.258	.350	.010	.373	-.059	-.155	-.168	.373	0.984	0.130	0.5	1.0	0.8	1.1	A+	
779	599613	8	6	318	.431	.113	.431	.157	.296	.003	.340	-.252	.340	-.229	.001	0.592	0.125	0.4	1.0	0.6	1.0	A-	A+
780	599583	8	8	639	.798	.064	.060	.798	.074	.005	.391	-.270	-.165	.391	-.187	-1.386	0.107	-1.5	0.9	-1.6	0.8	B+	A+
781	599645	8	7	160	.400	.069	.288	.400	.244	.000	.323	.136	-.255	.323	-.180	0.791	0.172	0.2	1.0	0.4	1.0	A-	
782	599611	8	6	314	.637	.137	.637	.140	.076	.010	.407	-.163	.407	-.199	-.168	-0.439	0.128	-0.3	1.0	-1.0	0.9	A+	
783	599612	8	6	313	.371	.371	.310	.198	.109	.013	.434	.434	-.146	-.173	-.165	0.747	0.128	-1.6	0.9	-1.4	0.9	A+	
784	599581	8	8	633	.713	.713	.120	.025	.136	.006	.453	.453	-.199	-.174	-.301	-0.700	0.096	-3.7	0.9	-1.8	0.9	B+	A+
785	599638	8	N/A	318	.550	.160	.157	.129	.550	.003	.456	-.245	-.194	-.180	.456	0.005	0.124	-1.3	0.9	-0.9	0.9	B-	A-
786	599600	8	8	316	.525	.095	.060	.288	.525	.032	.337	-.110	-.126	-.160	.337	-0.027	0.126	1.6	1.1	1.6	1.1	A+	A+
787	599696	8	6	316	.541	.032	.136	.272	.541	.019	.508	-.119	-.272	-.261	.508	-0.078	0.125	-2.8	0.9	-2.6	0.8	A-	A-
788	599704	8	N/A	316	.532	.142	.532	.161	.139	.025	.443	-.219	.443	-.195	-.120	-0.041	0.125	-1.4	0.9	-1.4	0.9	A-	A+
789	599603	8	8	315	.648	.191	.105	.648	.048	.010	.424	-.209	-.199	.424	-.175	-0.299	0.129	-1.2	0.9	-1.6	0.9	A+	A+
790	599705	8	N/A	315	.460	.184	.152	.187	.460	.016	.200	.035	-.124	-.129	.200	0.604	0.124	2.3	1.1	2.3	1.2	A+	A-
791	599616	8	6	318	.381	.236	.381	.167	.208	.009	.350	-.073	.350	-.077	-.251	1.206	0.128	0.9	1.1	2.8	1.2	A-	A+
792	599706	8	N/A	318	.692	.063	.082	.164	.692	.000	.334	-.158	-.175	-.183	.334	-0.343	0.132	0.4	1.0	0.1	1.0	A+	B-
793	599604	8	8	318	.742	.742	.098	.047	.104	.009	.515	.515	-.253	-.252	-.255	-0.666	0.140	-2.5	0.8	-1.9	0.8	A+	A-
794	599688	8	8	318	.692	.054	.692	.091	.164	.000	.377	-.026	.377	-.176	-.318	-0.514	0.133	-1.5	0.9	-1.2	0.9	A+	A-
795	599728	8	N/A	318	.456	.110	.239	.189	.456	.006	.485	-.153	-.237	-.224	.485	0.681	0.126	-1.1	1.0	-0.5	1.0	A-	B-
796	599689	8	8	319	.674	.260	.674	.047	.019	.000	.446	-.336	.446	-.210	-.129	-0.438	0.132	-1.7	0.9	-0.2	1.0	A+	A-
797	599622	8	6	319	.508	.144	.176	.508	.163	.009	.413	-.185	-.248	.413	-.098	0.401	0.126	1.6	1.1	0.2	1.0	A-	A-
798	599694	8	7	319	.630	.630	.125	.166	.069	.009	.534	.534	-.273	-.310	-.200	-0.413	0.125	-3.5	0.8	-3.4	0.8	B+	A-
799	599623	8	6	319	.536	.132	.536	.245	.082	.006	.285	-.163	.285	-.119	-.135	0.046	0.121	1.6	1.1	2.7	1.2	A-	A+
800	599652	8	N/A	319	.376	.216	.260	.138	.376	.009	.298	.082	-.285	-.143	.298	0.804	0.124	1.0	1.1	0.6	1.0	A-	A+

Table B–2 (continued). Mathematics Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
801	599699	8	6	318	.849	.047	.019	.085	.849	.000	.338	-.073	-.139	-.312	.338	-1.617	0.161	-0.8	0.9	-0.6	0.9	A-	A-
802	599653	8	7	158	.253	.253	.177	.209	.361	.000	.372	.372	-.248	-.278	.096	1.464	0.193	-0.4	1.0	-0.6	0.9	A-	
803	599605	8	7	318	.582	.582	.195	.151	.069	.003	.247	.247	-.022	-.226	-.120	-0.097	0.121	1.6	1.1	2.2	1.1	A+	A+
804	599695	8	7	158	.563	.133	.234	.563	.051	.019	.401	-.197	-.232	.401	-.088	-0.101	0.173	-0.8	1.0	-0.8	0.9	A+	
805	599660	8	7	318	.519	.088	.230	.519	.129	.035	.465	-.219	-.188	.465	-.261	0.103	0.121	-2.9	0.9	-2.7	0.9	A-	A+
806	599584	8	7	317	.685	.148	.685	.114	.051	.003	.345	-.169	.345	-.192	-.166	-0.590	0.128	-0.5	1.0	-0.4	1.0	A+	B+
807	599658	8	6	317	.205	.205	.379	.208	.183	.025	.413	.413	.011	-.093	-.224	1.839	0.149	-1.0	0.9	-0.4	0.9	A-	A-
808	599614	8	6	160	.525	.119	.525	.219	.106	.031	.476	-.154	.476	-.293	-.134	0.144	0.171	-2.1	0.9	-2.0	0.9	A-	
809	599649	8	7	157	.452	.089	.420	.452	.032	.006	.232	-.126	-.119	.232	-.090	0.489	0.174	1.9	1.1	3.6	1.4	A-	
810	599659	8	N/A	317	.511	.297	.511	.104	.069	.019	.455	-.103	.455	-.235	-.281	0.237	0.123	-1.3	0.9	-1.2	0.9	A-	A-
811	601114	8	7	317	.495	.495	.120	.148	.211	.025	.463	.463	-.168	-.187	-.157	0.302	0.124	-1.3	0.9	-1.3	0.9	A+	A-
812	599702	8	N/A	319	.571	.028	.304	.571	.085	.013	.380	-.113	-.175	.380	-.234	-0.013	0.123	0.3	1.0	0.3	1.0	A-	A-
813	599586	8	7	160	.606	.125	.606	.150	.088	.031	.435	-.071	.435	-.228	-.171	-0.211	0.180	0.3	1.0	-0.6	0.9	A+	
814	601119	8	7	160	.638	.081	.088	.638	.150	.044	.558	-.150	-.245	.558	-.266	-0.432	0.185	-2.0	0.9	-2.0	0.8	B+	
815	599731	8	N/A	160	.719	.719	.094	.125	.019	.044	.526	.526	-.302	-.220	-.093	-0.913	0.200	-1.9	0.8	2.1	1.4	A+	
816	599587	8	7	319	.658	.053	.658	.147	.113	.028	.438	-.160	.438	-.191	-.189	-0.507	0.130	-0.9	1.0	-0.8	0.9	A-	A+
817	599703	8	N/A	159	.629	.031	.076	.629	.264	.000	.345	-.176	-.245	.345	-.161	-0.284	0.175	-0.2	1.0	-0.3	1.0	A-	
818	601122	8	7	159	.472	.063	.182	.472	.264	.019	.164	-.202	-.101	.164	.042	0.422	0.172	3.4	1.2	2.9	1.3	A+	
819	599589	8	6	317	.243	.079	.243	.309	.360	.010	.323	-.096	.323	-.192	-.001	1.669	0.141	0.4	1.0	1.7	1.2	A-	
820	599588	8	6	159	.201	.208	.277	.302	.201	.013	.200	-.129	.043	-.055	.200	1.898	0.211	1.0	1.1	1.5	1.3	A+	
821	601121	8	7	319	.699	.085	.088	.699	.119	.009	.407	-.184	-.148	.407	-.232	-0.658	0.132	-0.9	1.0	-1.2	0.9	A-	A-
822	599639	8	N/A	158	.411	.127	.203	.234	.411	.025	.414	-.106	-.127	-.177	.414	0.741	0.179	0.1	1.0	-0.1	1.0	A-	
823	599582	8	8	632	.737	.022	.051	.737	.179	.011	.406	-.153	-.169	.406	-.279	-0.987	0.099	-1.3	0.9	-1.1	0.9	A+	B-
824	599697	8	6	315	.283	.235	.295	.283	.184	.003	.365	-.254	.066	.365	-.201	1.557	0.136	-0.1	1.0	-0.2	1.0	A-	A+
825	599619	8	6	318	.324	.076	.324	.481	.107	.013	.290	-.063	.290	-.135	-.137	1.362	0.134	1.9	1.1	2.4	1.3	A+	A-
826	599585	8	7	317	.391	.391	.240	.202	.145	.022	.344	.344	.011	-.190	-.156	0.824	0.126	0.8	1.0	0.5	1.0	C+	A-
827	599637	8	N/A	313	.559	.559	.137	.109	.179	.016	.383	.383	-.207	-.185	-.100	-0.176	0.125	-0.9	1.0	-1.1	0.9	B+	
828	601801	8	5	158	.354	.165	.228	.228	.354	.025	.391	.001	-.219	-.130	.391	1.035	0.184	0.3	1.0	0.4	1.0	A+	
829	601725	8	5	318	.635	.072	.110	.176	.635	.006	.415	-.174	-.218	-.205	.415	-0.056	0.128	-0.2	1.0	-0.5	1.0	B-	A-
830	601744	8	N/A	160	.444	.094	.175	.269	.444	.019	.448	-.226	-.112	-.190	.448	0.625	0.175	-0.3	1.0	-0.6	0.9	C-	
831	601804	8	N/A	319	.382	.382	.376	.169	.069	.003	.250	.250	.008	-.262	-.111	0.783	0.124	1.8	1.1	1.2	1.1	A-	A+
832	602158	8	5	315	.457	.108	.457	.210	.210	.016	.402	-.176	.402	-.186	-.116	0.616	0.124	-1.0	1.0	-1.1	0.9	A-	A+
833	601759	8	N/A	314	.624	.194	.624	.089	.070	.022	.472	-.200	.472	-.211	-.205	-0.416	0.128	-2.2	0.9	-2.0	0.8	A+	
834	601778	8	5	313	.358	.121	.367	.358	.137	.016	.224	-.078	-.086	.224	-.051	0.816	0.129	2.5	1.1	3.0	1.2	A-	
835	601779	8	5	318	.682	.091	.682	.195	.028	.003	.463	-.161	.463	-.336	-.182	-0.678	0.132	-1.3	0.9	-1.6	0.8	A-	B-

Table B–2 (continued). Mathematics Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M /F	W /B
836	601741	8	N/A	318	.377	.245	.377	.176	.198	.003	.336	-.039	.336	-.212	-.150	0.863	0.127	1.8	1.1	1.8	1.2	A+	A-
837	601742	8	N/A	316	.541	.111	.541	.241	.098	.010	.433	-.056	.433	-.236	-.279	-0.050	0.124	-0.9	1.0	-1.3	0.9	A+	B-
838	602111	8	N/A	315	.337	.295	.194	.337	.171	.003	.157	-.012	-.086	.157	-.069	1.256	0.130	4.0	1.2	4.0	1.4	A-	A+
839	602114	8	6	318	.396	.082	.459	.396	.057	.006	.424	-.081	-.359	.424	-.019	0.980	0.128	-0.4	1.0	-0.4	1.0	A+	B-
840	601780	8	5	318	.418	.066	.387	.120	.418	.009	.394	-.226	-.152	-.164	.394	0.877	0.127	1.7	1.1	1.3	1.1	B-	A-
841	602054	8	6	319	.357	.260	.245	.357	.125	.013	.354	-.163	-.106	.354	-.130	0.889	0.126	0.3	1.0	0.1	1.0	A-	A+
842	602055	8	5	158	.298	.215	.310	.152	.298	.025	.440	-.193	-.157	-.102	.440	1.167	0.185	-1.2	0.9	-0.6	0.9	A-	
843	601726	8	N/A	318	.264	.267	.138	.296	.264	.035	.345	-.176	-.137	-.038	.345	1.385	0.136	-0.1	1.0	-0.2	1.0	B-	A-
844	602116	8	5	317	.716	.133	.057	.716	.069	.025	.417	-.258	-.137	.417	-.122	-0.842	0.135	-1.2	0.9	-1.1	0.9	B+	A+
845	601739	8	N/A	160	.300	.231	.325	.131	.300	.013	.445	-.200	-.112	-.164	.445	1.269	0.184	-1.1	0.9	-0.8	0.9	A-	
846	601734	8	N/A	317	.489	.123	.252	.489	.104	.032	.337	-.140	.007	.337	-.217	0.319	0.124	2.0	1.1	1.5	1.1	A+	A-
847	601735	8	N/A	160	.575	.575	.225	.150	.044	.006	.482	.482	-.242	-.222	-.199	0.017	0.175	-1.1	0.9	-1.1	0.9	A+	
848	601667	8	N/A	319	.583	.176	.583	.129	.091	.022	.400	-.088	.400	-.277	-.129	-0.101	0.124	-0.1	1.0	-0.4	1.0	A-	A-
849	601669	8	N/A	317	.644	.644	.076	.167	.104	.010	.478	.478	-.258	-.204	-.210	-0.381	0.127	-2.3	0.9	-2.1	0.8	A+	
850	601737	8	N/A	317	.353	.379	.145	.114	.353	.010	.391	-.192	-.193	-.026	.391	1.042	0.128	-0.3	1.0	0.2	1.0	A-	
851	601738	8	N/A	158	.449	.342	.146	.449	.044	.019	.406	-.104	-.223	.406	-.170	0.562	0.177	0.1	1.0	0.4	1.0	A+	
852	601740	8	N/A	313	.377	.102	.336	.163	.377	.022	.240	-.066	.001	-.179	.240	0.690	0.128	2.9	1.2	3.1	1.2	A-	
853	602118	8	6	319	.414	.075	.414	.414	.097	.000	.366	.016	-.309	.366	-.109	0.907	0.128	1.2	1.1	1.7	1.1	A+	B-
854	601733	8	N/A	157	.287	.255	.268	.153	.287	.038	.464	-.122	-.138	-.087	.464	1.293	0.192	-1.3	0.9	-0.7	0.9	A+	
855	602117	8	5	157	.325	.293	.325	.255	.089	.038	.201	.188	.201	-.137	-.195	1.078	0.186	2.4	1.2	2.2	1.3	A+	
856	601802	8	5	319	.777	.063	.060	.100	.777	.000	.415	-.203	-.228	-.232	.415	-1.071	0.146	-0.9	0.9	-1.6	0.8	B-	A-
857	601723	8	5	314	.248	.248	.258	.319	.150	.026	.344	.344	.047	-.175	-.129	1.554	0.143	0.5	1.0	0.7	1.1	A+	
858	601736	8	N/A	319	.351	.241	.226	.172	.351	.009	.349	-.161	-.101	-.112	.349	1.067	0.127	0.6	1.0	1.4	1.1	A+	A-
859	601782	8	N/A	158	.399	.127	.184	.399	.279	.013	.228	-.155	-.083	.228	-.070	0.673	0.174	1.5	1.1	1.3	1.1	A-	
860	602115	8	5	318	.220	.088	.346	.220	.343	.003	.165	-.266	-.119	.165	.138	1.710	0.143	1.4	1.1	2.3	1.3	A-	A+
861	601724	8	5	316	.418	.418	.279	.149	.136	.019	.514	.514	-.194	-.178	-.210	0.547	0.126	-2.6	0.9	-2.3	0.9	A-	A+
862	602113	8	6	318	.286	.261	.274	.170	.286	.009	.382	-.203	-.070	-.102	.382	1.733	0.136	-0.4	1.0	0.7	1.1	A-	A-
863	601743	8	N/A	317	.495	.129	.495	.230	.107	.038	.408	-.082	.408	-.129	-.194	0.274	0.124	0.2	1.0	0.0	1.0	A+	A-
864	601263	8	6	315	.781	.114	.781	.057	.029	.019	.409	-.212	.409	-.224	-.145	-1.146	0.150	-1.9	0.9	-2.4	0.7	B+	A+
865	602058	8	6	314	.908	.908	.026	.026	.019	.022	.358	.358	-.179	-.116	-.145	-2.624	0.226	-0.3	0.9	-1.2	0.7	B+	
866	602086	8	7	314	.385	.108	.172	.385	.319	.016	.327	-.076	-.188	.327	-.095	0.787	0.128	1.7	1.1	1.9	1.2	A-	
867	601328	8	6	318	.676	.110	.057	.676	.154	.003	.396	-.170	-.256	.396	-.186	-0.643	0.131	-0.3	1.0	-0.5	1.0	A-	A-
868	602129	8	6	318	.638	.239	.050	.066	.638	.006	.430	-.198	-.298	-.197	.430	-0.454	0.128	-0.9	1.0	-0.4	1.0	A+	A+
869	602209	8	7	315	.286	.168	.349	.286	.181	.016	.134	-.068	-.049	.134	.028	1.297	0.135	2.7	1.2	5.0	1.6	A+	A-
870	602203	8	6	315	.552	.552	.067	.302	.048	.032	.371	.371	-.149	-.159	-.149	-0.096	0.126	0.4	1.0	-0.1	1.0	A-	A-

Table B–2 (continued). Mathematics Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
871	602210	8	7	315	.784	.048	.092	.784	.057	.019	.348	-.144	-.249	.348	-.065	-1.168	0.151	-0.2	1.0	-0.2	1.0	A-	A+
872	601264	8	6	319	.884	.884	.085	.022	.009	.000	.306	.306	-.272	-.057	-.147	-1.822	0.185	-0.6	0.9	-0.1	1.0	A+	A-
873	602206	8	6	318	.934	.934	.019	.031	.016	.000	.224	.224	-.181	-.127	-.072	-2.597	0.233	-0.1	1.0	0.0	1.0	B+	A-
874	602135	8	7	318	.371	.116	.208	.371	.299	.006	.247	-.128	-.207	.247	.012	1.116	0.130	3.1	1.2	3.6	1.3	A-	A-
875	602207	8	6	321	.925	.925	.028	.044	.003	.000	.337	.337	-.241	-.223	-.058	-2.617	0.222	-0.7	0.9	-2.0	0.5	B+	
876	602119	8	7	158	.203	.184	.354	.260	.203	.000	.344	.007	-.127	-.183	.344	1.784	0.207	-0.2	1.0	-0.5	0.9	A-	
877	602120	8	7	318	.428	.154	.208	.201	.428	.009	.264	-.082	-.092	-.129	.264	0.600	0.121	1.6	1.1	1.5	1.1	B+	A-
878	601325	8	8	158	.519	.108	.120	.247	.519	.006	.452	-.248	-.198	-.201	.452	0.132	0.170	-1.8	0.9	-1.8	0.9	A+	
879	602121	8	7	317	.316	.316	.385	.158	.136	.006	.345	.345	-.124	-.132	-.135	1.188	0.130	0.3	1.0	0.6	1.0	A-	A-
880	601327	8	8	317	.344	.110	.199	.344	.325	.022	.356	-.140	-.040	.356	-.188	1.012	0.128	0.2	1.0	0.3	1.0	B-	B-
881	601330	8	8	157	.325	.108	.325	.446	.089	.032	.096	-.009	.096	.082	-.060	1.099	0.186	3.8	1.3	3.4	1.4	A-	
882	601756	8	8	160	.494	.050	.494	.250	.206	.000	.080	-.042	.080	-.132	.065	0.421	0.173	4.4	1.3	3.5	1.4	A-	
883	602076	8	7	319	.674	.113	.674	.132	.069	.013	.364	-.163	.364	-.181	-.135	-0.538	0.130	-0.1	1.0	0.2	1.0	B-	A+
884	602062	8	7	160	.613	.094	.144	.613	.106	.044	.450	-.126	-.174	.450	-.188	-0.296	0.183	-0.1	1.0	-0.6	0.9	A+	
885	601732	8	8	159	.308	.189	.308	.258	.226	.019	.332	-.157	.332	-.160	.001	1.228	0.185	0.5	1.0	0.5	1.1	B+	
886	601217	8	8	317	.555	.054	.555	.117	.262	.013	.480	-.188	.480	-.088	-.328	0.047	0.123	-1.9	0.9	-1.9	0.9	A+	
887	601219	8	6	158	.779	.082	.082	.779	.044	.013	.432	-.118	-.236	.432	-.261	-1.177	0.208	-0.9	0.9	-0.9	0.8	A+	
888	602057	8	6	158	.823	.823	.019	.044	.108	.006	.153	.153	-.105	-.121	.017	-1.464	0.222	1.0	1.1	2.5	1.7	A+	
889	602078	8	7	158	.639	.057	.639	.203	.095	.006	.591	-.209	.591	-.314	-.289	-0.342	0.180	-3.5	0.8	-2.8	0.7	A+	
890	601222	8	6	314	.334	.089	.334	.092	.475	.010	.365	-.194	.365	-.102	-.147	1.069	0.132	0.3	1.0	0.6	1.1	A-	
891	602056	8	7	317	.454	.227	.199	.454	.085	.035	.397	-.114	-.119	.397	-.233	0.483	0.124	0.2	1.0	0.0	1.0	B-	
892	602059	8	7	157	.675	.675	.204	.083	.032	.006	.412	.412	-.235	-.217	-.133	-0.606	0.184	-0.7	1.0	-0.6	0.9	A+	
893	602133	8	7	321	.567	.567	.137	.190	.103	.003	.379	.379	-.223	-.193	-.120	-0.014	0.125	0.7	1.0	1.1	1.1	A+	
894	602128	8	6	317	.713	.085	.713	.066	.120	.016	.468	-.219	.468	-.221	-.230	-0.945	0.136	-1.4	0.9	-2.0	0.8	B+	A-
895	602205	8	6	319	.944	.006	.944	.044	.003	.003	.212	-.102	.212	-.196	-.090	-2.743	0.257	-0.2	1.0	-0.3	0.9	A-	B-
896	602208	8	7	318	.437	.230	.214	.437	.116	.003	.286	.016	-.199	.286	-.192	0.561	0.125	3.4	1.2	3.1	1.2	A-	A-
897	601326	8	8	318	.550	.214	.123	.550	.110	.003	.394	-.251	-.141	.394	-.151	0.049	0.120	-1.1	1.0	-1.4	0.9	A+	B-
898	601338	8	6	317	.716	.044	.079	.716	.142	.019	.496	-.134	-.306	.496	-.259	-0.973	0.137	-2.2	0.9	-2.2	0.8	B+	A-
899	601371	8	6	318	.465	.465	.242	.195	.091	.006	.422	.422	-.139	-.265	-.146	0.628	0.125	-0.2	1.0	0.2	1.0	A+	A+
900	602136	8	8	319	.555	.072	.166	.198	.555	.009	.321	-.137	-.215	-.110	.321	-0.049	0.122	1.2	1.1	1.1	1.1	A-	A+
901	601755	8	8	317	.432	.054	.237	.432	.243	.035	.215	-.182	-.209	.215	.166	0.590	0.125	4.2	1.2	3.5	1.2	A-	A+
902	601372	8	6	321	.408	.122	.231	.224	.408	.016	.443	-.024	-.243	-.216	.443	0.765	0.127	-1.3	0.9	-0.6	1.0	A+	
903	602204	8	6	315	.759	.051	.051	.118	.759	.022	.384	-.169	-.269	-.139	.384	-1.013	0.146	-0.2	1.0	0.4	1.1	A+	A-
904	602131	8	7	319	.511	.072	.119	.511	.292	.006	.287	-.177	-.151	.287	-.094	0.169	0.121	1.7	1.1	1.6	1.1	A-	B+
905	602061	8	7	317	.360	.123	.268	.240	.360	.010	.383	-.126	-.119	-.152	.383	1.009	0.127	0.1	1.0	0.0	1.0	A-	A-

Table B–2 (continued). Mathematics Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M /F	W /B
906	602087	8	7	317	.584	.584	.136	.123	.142	.016	.477	.477	-.212	-.262	-.160	-0.249	0.126	-1.6	0.9	-1.4	0.9	A+	A+
907	602212	8	7	319	.332	.370	.332	.219	.078	.000	.282	-.145	.282	-.106	-.072	1.445	0.131	2.2	1.1	2.3	1.2	A+	A-
908	601329	8	6	315	.702	.702	.098	.089	.070	.041	.488	.488	-.277	-.164	-.131	-0.940	0.139	-1.5	0.9	-1.2	0.9	B+	A-
909	601757	8	4	158	.810	.051	.101	.810	.038	.000	.451	-.345	-.271	.451	-.102	-1.353	0.215	-1.1	0.9	-1.2	0.7	B+	
910	601073	8	6	315	.664	.105	.664	.191	.038	.003	.355	-.233	.355	-.147	-.158	-0.368	0.129	-0.5	1.0	-0.1	1.0	A+	A+
911	601288	8	7	160	.244	.125	.544	.244	.069	.019	.042	-.141	.179	.042	-.141	1.591	0.196	2.1	1.2	2.9	1.4	A-	
912	601247	8	6	317	.580	.092	.580	.196	.117	.016	.387	-.113	.387	-.254	-.116	-0.233	0.125	-0.2	1.0	-0.8	0.9	A+	B+
913	601763	8	6	313	.534	.272	.093	.534	.080	.022	.550	-.264	-.192	.550	-.265	-0.075	0.124	-3.7	0.9	-3.4	0.8	B+	
914	602072	8	4	317	.656	.047	.066	.224	.656	.006	.431	-.208	-.233	-.223	.431	-0.450	0.128	-0.9	1.0	-1.2	0.9	A-	B+
915	601707	8	4	319	.596	.596	.113	.085	.201	.006	.496	.496	-.228	-.252	-.238	0.093	0.127	-2.9	0.9	-2.3	0.8	A-	A+
916	601332	8	6	317	.293	.215	.186	.290	.293	.016	.303	-.094	-.069	-.110	.303	1.352	0.134	1.0	1.1	1.5	1.1	A-	
917	601675	8	6	319	.589	.144	.141	.119	.589	.006	.509	-.296	-.271	-.160	.509	-0.013	0.127	-3.0	0.9	-1.9	0.8	A+	A+
918	601340	8	6	157	.420	.420	.293	.198	.083	.006	.456	.456	-.114	-.315	-.172	0.637	0.176	-2.2	0.9	-2.0	0.8	A-	
919	601344	8	6	321	.530	.246	.065	.159	.530	.000	.372	-.170	-.234	-.149	.372	0.184	0.124	1.0	1.1	0.9	1.1	C+	
920	601341	8	6	314	.354	.354	.293	.213	.127	.013	.404	.404	-.089	-.246	-.088	0.959	0.130	-0.1	1.0	-0.1	1.0	A+	
921	602132	8	4	314	.510	.121	.510	.277	.073	.019	.422	-.169	.422	-.166	-.173	0.169	0.124	-0.2	1.0	-0.9	0.9	A+	
922	601349	8	6	313	.201	.304	.201	.208	.259	.029	.142	.161	.142	-.180	-.067	1.715	0.152	2.0	1.2	2.1	1.3	A+	
923	601289	8	6	317	.562	.139	.186	.562	.098	.016	.415	-.100	-.285	.415	-.156	-0.132	0.125	-0.7	1.0	-0.8	1.0	B+	A-
924	602123	8	4	317	.227	.092	.249	.416	.227	.016	.194	.047	.044	-.201	.194	1.646	0.146	1.7	1.1	2.9	1.4	A-	A-
925	601233	8	6	318	.315	.315	.418	.192	.072	.003	.311	.311	.027	-.232	-.235	1.201	0.133	0.7	1.0	1.7	1.2	A-	A+
926	602124	8	4	318	.616	.154	.138	.616	.082	.009	.503	-.217	-.287	.503	-.223	-0.354	0.127	-2.5	0.9	-2.6	0.8	A-	B+
927	601295	8	6	316	.636	.076	.636	.203	.079	.006	.435	-.124	.435	-.270	-.208	-0.512	0.128	-0.9	1.0	-0.8	0.9	A+	A-
928	602137	8	4	315	.454	.073	.194	.244	.454	.035	.413	-.212	-.118	-.127	.413	0.387	0.125	-1.1	1.0	-0.8	1.0	A-	A-
929	602134	8	4	315	.524	.121	.524	.241	.089	.025	.351	-.060	.351	-.241	-.093	0.268	0.125	0.4	1.0	0.1	1.0	A+	A+
930	601342	8	6	318	.538	.132	.138	.186	.538	.006	.387	-.133	-.120	-.258	.387	0.440	0.124	-0.5	1.0	0.0	1.0	A+	A+
931	601074	8	6	319	.756	.756	.075	.091	.075	.003	.543	.543	-.263	-.322	-.255	-0.795	0.142	-3.8	0.8	-3.2	0.6	B+	A-
932	601343	8	6	319	.589	.589	.132	.066	.213	.000	.472	.472	-.328	-.238	-.153	0.141	0.126	-1.9	0.9	-1.5	0.9	A-	A+
933	601760	8	6	319	.542	.129	.542	.223	.100	.006	.445	-.110	.445	-.288	-.180	0.370	0.125	-1.5	0.9	-1.7	0.9	B+	A+
934	601240	8	6	319	.533	.144	.147	.172	.533	.003	.394	-.158	-.163	-.211	.394	0.295	0.126	0.7	1.0	0.2	1.0	A+	A+
935	600988	8	6	321	.321	.321	.305	.209	.162	.003	.423	.423	-.173	-.221	-.073	1.243	0.132	-1.6	0.9	-0.7	0.9	C+	
936	602053	8	4	321	.673	.673	.125	.069	.131	.003	.475	.475	-.223	-.208	-.283	-0.561	0.131	-1.9	0.9	-2.1	0.8	A+	
937	601676	8	6	321	.511	.206	.511	.162	.115	.006	.431	-.160	.431	-.194	-.233	0.265	0.124	-1.1	1.0	-0.6	1.0	A+	
938	602122	8	4	319	.317	.251	.317	.198	.232	.003	.207	-.206	.207	.084	-.093	1.118	0.129	2.4	1.1	1.5	1.1	B+	A+
939	601292	8	6	319	.796	.044	.796	.063	.097	.000	.434	-.203	.434	-.237	-.255	-1.322	0.146	-1.4	0.9	-2.2	0.7	B+	A+
940	601731	8	6	158	.329	.152	.260	.260	.329	.000	.374	-.069	-.132	-.213	.374	1.050	0.180	-0.2	1.0	0.4	1.0	B+	

Table B–2 (continued). Mathematics Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M /F	W /B
941	601302	8	6	158	.557	.158	.184	.557	.101	.000	.324	-.128	-.235	.324	-.078	-0.020	0.170	0.1	1.0	-0.3	1.0	A-	
942	601251	8	6	318	.616	.167	.116	.098	.616	.003	.439	-.205	-.232	-.214	.439	-0.260	0.122	-2.5	0.9	-2.2	0.9	A+	A-
943	601336	8	6	318	.632	.050	.632	.223	.088	.006	.466	-.132	.466	-.300	-.244	-0.346	0.123	-2.9	0.9	-2.8	0.8	B+	A-
944	602130	8	4	158	.348	.348	.386	.184	.076	.006	.267	.267	-.108	-.137	-.069	0.938	0.178	0.8	1.1	0.8	1.1	B+	
945	601358	8	6	318	.456	.160	.456	.242	.116	.025	.337	-.195	.337	-.150	-.077	0.426	0.121	0.1	1.0	0.2	1.0	A+	A+
946	601337	8	6	160	.506	.244	.506	.181	.063	.006	.083	.011	.083	-.030	-.112	0.295	0.168	3.7	1.2	4.1	1.3	A+	
947	601339	8	6	317	.388	.256	.170	.180	.388	.006	.323	-.056	-.156	-.127	.323	0.824	0.124	0.3	1.0	0.9	1.1	A+	A+
948	601662	8	4	317	.492	.092	.492	.334	.082	.000	.289	-.054	.289	-.170	-.178	0.339	0.120	1.9	1.1	1.5	1.1	B-	A-
949	601252	8	6	160	.463	.125	.306	.463	.094	.013	.378	-.199	-.144	.378	-.152	0.471	0.169	-0.4	1.0	-0.4	1.0	A-	
950	601331	8	7	317	.290	.290	.325	.271	.095	.019	.309	.309	-.018	-.164	-.122	1.310	0.133	0.9	1.1	1.1	1.1	A+	A-
951	601661	8	4	160	.363	.194	.300	.363	.106	.038	.244	-.128	-.025	.244	-.081	0.905	0.177	1.3	1.1	1.5	1.1	B-	
952	601293	8	6	317	.508	.224	.107	.508	.158	.003	.343	-.073	-.171	.343	-.218	0.288	0.122	1.3	1.1	0.7	1.1	A+	A-
953	601262	8	7	157	.758	.083	.758	.089	.064	.006	.444	-.051	.444	-.391	-.204	-1.084	0.200	-1.2	0.9	-0.9	0.8	A+	
954	602138	8	6	317	.577	.107	.136	.158	.577	.022	.488	-.260	-.236	-.090	.488	-0.088	0.125	-2.1	0.9	-1.4	0.9	A+	A+
955	601333	8	7	317	.316	.202	.271	.186	.316	.025	.452	-.098	-.185	-.140	.452	1.214	0.132	-1.8	0.9	-1.1	0.9	A+	A-
956	602051	8	4	160	.581	.125	.194	.581	.094	.006	.225	-.056	-.028	.225	-.245	-0.016	0.175	2.1	1.1	2.0	1.2	A-	
957	601727	8	6	319	.583	.075	.176	.166	.583	.000	.372	-.043	-.221	-.236	.372	-0.037	0.123	-0.4	1.0	0.4	1.0	A+	A+
958	601246	8	6	319	.263	.263	.351	.188	.176	.022	.426	.426	-.075	-.214	-.095	1.529	0.137	-1.0	0.9	-0.4	1.0	A+	A+
959	601334	8	7	319	.665	.665	.063	.053	.194	.025	.358	.358	-.199	-.254	-.069	-0.529	0.130	0.5	1.0	0.8	1.1	A-	A-
960	601347	8	6	159	.208	.138	.579	.208	.069	.006	-.065	-.171	.344	-.065	-.313	1.863	0.208	2.9	1.4	3.2	1.7	A-	
961	601672	8	6	159	.528	.528	.138	.120	.214	.000	.448	.448	-.142	-.220	-.252	0.192	0.170	-1.5	0.9	-1.4	0.9	A-	
962	601698	8	4	317	.186	.120	.186	.360	.319	.016	.263	-.247	.263	.045	-.037	2.058	0.155	0.4	1.0	2.3	1.4	A-	
963	601673	8	6	317	.663	.663	.117	.117	.088	.016	.445	.445	-.253	-.204	-.116	-0.499	0.129	-1.3	0.9	-1.3	0.9	A+	
964	601335	8	6	159	.736	.057	.736	.113	.076	.019	.443	-.226	.443	-.244	-.164	-0.930	0.195	-1.1	0.9	-1.0	0.8	A+	
965	601758	8	6	158	.715	.063	.715	.082	.127	.013	.431	-.291	.431	-.262	-.136	-0.796	0.193	-1.0	0.9	-0.9	0.8	A+	
966	601238	8	6	158	.646	.646	.139	.152	.063	.000	.352	.352	-.239	-.178	-.089	-0.370	0.181	0.0	1.0	4.1	1.7	A+	
967	601345	8	6	158	.234	.120	.285	.354	.234	.006	.546	-.063	-.226	-.176	.546	1.774	0.204	-1.9	0.8	-2.4	0.6	A+	
968	601360	8	6	157	.580	.580	.178	.159	.070	.013	.420	.420	-.204	-.246	.024	-0.123	0.175	-1.0	0.9	0.4	1.0	A+	
969	601764	8	6	318	.689	.689	.072	.116	.116	.006	.496	.496	-.208	-.334	-.220	-0.354	0.132	-2.2	0.9	-2.4	0.8	A-	A+
970	602052	8	4	318	.569	.569	.173	.110	.148	.000	.518	.518	-.269	-.309	-.164	0.131	0.125	-2.6	0.9	-2.1	0.8	B+	B+
971	602065	8	4	157	.191	.548	.217	.191	.038	.006	.264	-.151	-.052	.264	.042	1.953	0.217	0.5	1.1	1.1	1.2	A-	
972	601346	8	6	315	.568	.054	.149	.200	.568	.029	.599	-.198	-.273	-.280	.599	-0.179	0.126	-3.7	0.8	-3.4	0.8	A+	B-
973	600980	8	6	318	.481	.104	.481	.305	.110	.000	.359	-.146	.359	-.186	-.157	0.569	0.125	1.5	1.1	1.2	1.1	A+	A-
974	601776	8	6	316	.468	.193	.468	.184	.139	.016	.492	-.193	.492	-.229	-.161	0.293	0.124	-2.6	0.9	-1.4	0.9	A-	A-
975	601232	8	7	158	.437	.437	.260	.158	.101	.044	.444	.444	-.161	-.263	-.160	0.414	0.174	-1.3	0.9	-1.3	0.9	A+	

Table B–2 (continued). Mathematics Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
976	601348	8	6	317	.215	.215	.170	.372	.224	.019	.163	.163	-.081	.061	-.079	1.843	0.148	2.3	1.2	2.9	1.4	A+	
977	601777	8	6	315	.549	.549	.152	.130	.143	.025	.427	.427	-.214	-.181	-.116	-0.064	0.125	-1.5	0.9	-0.7	1.0	A+	A+
978	601384	8	6	317	.628	.139	.628	.136	.098	.000	.441	-.309	.441	-.175	-.157	-0.296	0.124	-2.4	0.9	-1.2	0.9	A+	A+
979	601231	8	7	319	.489	.097	.223	.172	.489	.019	.468	-.108	-.159	-.319	.468	0.244	0.122	-2.3	0.9	-1.8	0.9	B+	A-
980	601663	8	4	159	.321	.201	.321	.220	.233	.025	.169	.022	.169	-.043	-.122	1.142	0.183	2.2	1.2	2.5	1.3	A+	
981	601234	8	6	315	.340	.178	.156	.289	.340	.038	.316	-.168	-.111	-.006	.316	0.964	0.131	0.6	1.0	0.2	1.0	A-	A+
982	601775	8	6	317	.338	.167	.123	.357	.338	.016	.359	-.205	-.151	-.047	.359	0.982	0.130	-0.2	1.0	-0.1	1.0	A-	A+
983	601069	8	8	313	.435	.115	.150	.284	.435	.016	.505	-.202	-.240	-.165	.505	0.418	0.125	-2.6	0.9	-2.0	0.9	A+	
984	601097	8	N/A	159	.610	.069	.270	.050	.610	.000	.568	-.275	-.352	-.233	.568	-0.193	0.174	-3.7	0.8	-2.9	0.7	A-	
985	601090	8	6	160	.288	.069	.131	.475	.288	.038	.381	-.108	-.264	-.051	.381	1.303	0.187	-0.4	1.0	0.1	1.0	A-	
986	601100	8	7	160	.588	.206	.094	.094	.588	.019	.491	-.238	-.128	-.268	.491	-0.084	0.177	-1.6	0.9	-1.3	0.9	A+	
987	600990	8	6	315	.413	.140	.216	.413	.203	.029	.329	-.154	-.178	.329	.015	0.603	0.126	1.0	1.1	1.6	1.1	B-	A+
988	601006	8	7	313	.150	.185	.150	.556	.080	.029	-.022	-.125	-.022	.190	-.013	2.136	0.169	2.2	1.3	4.1	1.9	A+	
989	601009	8	7	317	.120	.120	.328	.401	.145	.006	.023	.023	-.024	.028	-.005	2.551	0.184	1.3	1.2	2.6	1.7	A+	A-
990	601093	8	6	317	.205	.205	.148	.230	.401	.016	.292	.292	-.243	-.189	.140	1.792	0.150	1.0	1.1	1.2	1.2	A-	A-
991	601096	8	8	317	.555	.060	.180	.189	.555	.016	.468	-.208	-.194	-.225	.468	-0.107	0.125	-1.7	0.9	-2.0	0.9	A+	A-
992	601087	8	8	316	.475	.104	.475	.310	.092	.019	.253	-.092	.253	-.044	-.161	0.264	0.125	3.2	1.2	2.0	1.1	A-	A+
993	601055	8	6	316	.377	.101	.247	.260	.377	.016	.396	-.261	-.071	-.132	.396	0.753	0.128	0.1	1.0	0.4	1.0	A-	B-
994	601025	8	7	316	.453	.098	.203	.453	.234	.013	.301	-.215	-.084	.301	-.093	0.371	0.125	1.5	1.1	0.9	1.1	A+	A-
995	601007	8	7	315	.479	.118	.181	.479	.210	.013	.251	-.183	-.069	.251	-.040	0.308	0.124	3.0	1.1	2.8	1.2	A+	A+
996	601106	8	8	318	.440	.101	.176	.440	.283	.000	.365	-.175	-.252	.365	-.073	0.924	0.125	1.1	1.1	1.2	1.1	A-	A-
997	600991	8	6	318	.582	.204	.160	.054	.582	.000	.446	-.213	-.247	-.193	.446	0.230	0.125	-1.0	1.0	-1.3	0.9	A-	B-
998	601068	8	7	318	.252	.132	.550	.252	.060	.006	.189	-.169	.008	.189	-.097	1.951	0.141	1.7	1.1	2.6	1.3	A+	A+
999	601062	8	7	319	.314	.050	.314	.072	.564	.000	.208	-.171	.208	-.222	-.004	1.550	0.133	2.7	1.2	2.7	1.3	C+	A+
1000	601021	8	6	319	.451	.125	.238	.182	.451	.003	.150	-.170	.052	-.116	.150	0.814	0.125	4.4	1.2	3.6	1.3	B+	A+
1001	601008	8	6	319	.683	.025	.683	.207	.085	.000	.382	-.087	.382	-.297	-.157	-0.491	0.133	-0.2	1.0	-0.7	0.9	A-	A+
1002	601094	8	7	319	.304	.147	.304	.376	.163	.009	.296	-.238	.296	-.130	.048	1.494	0.137	2.3	1.2	2.8	1.3	A-	A-
1003	600994	8	6	321	.816	.140	.816	.022	.022	.000	.395	-.295	.395	-.142	-.206	-1.462	0.155	-0.4	1.0	-1.1	0.8	A+	
1004	601104	8	7	158	.323	.190	.323	.342	.146	.000	.177	-.175	.177	-.024	-.007	1.082	0.180	1.5	1.1	1.7	1.2	A+	
1005	601105	8	8	318	.657	.657	.248	.047	.038	.009	.342	.342	-.245	-.148	-.068	-0.475	0.126	-0.4	1.0	-0.4	1.0	A-	A-
1006	601056	8	6	318	.223	.107	.223	.230	.418	.022	.038	-.127	.038	-.126	.164	1.655	0.143	2.6	1.2	3.3	1.4	A-	A+
1007	600995	8	6	158	.532	.070	.152	.532	.196	.051	.236	-.061	-.108	.236	-.152	-0.063	0.175	1.5	1.1	1.2	1.1	A-	
1008	601128	8	8	317	.464	.079	.215	.230	.464	.013	.417	-.065	-.087	-.287	.417	0.454	0.121	-1.3	1.0	-1.4	0.9	B-	B+
1009	602112	8	N/A	160	.338	.125	.231	.288	.338	.019	.258	-.051	-.142	-.045	.258	1.068	0.179	1.1	1.1	1.1	1.1	A-	
1010	601681	8	N/A	317	.498	.306	.079	.498	.085	.032	.406	-.177	-.117	.406	-.155	0.247	0.122	-0.7	1.0	-0.7	1.0	A-	A+

Table B–2 (continued). Mathematics Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
1011	601098	8	6	157	.408	.204	.268	.408	.115	.006	.343	-.055	-.193	.343	-.145	0.701	0.177	0.7	1.1	0.7	1.1	A-	
1012	601095	8	8	317	.678	.678	.110	.107	.085	.019	.341	.341	-.040	-.206	-.182	-0.606	0.132	0.1	1.0	0.4	1.0	A-	A+
1013	601682	8	N/A	157	.516	.121	.191	.127	.516	.045	.440	-.172	-.247	-.006	.440	0.097	0.177	-0.7	1.0	-0.7	0.9	A-	
1014	601807	8	N/A	319	.884	.022	.031	.884	.056	.006	.352	-.201	-.172	.352	-.172	-2.006	0.185	-0.6	0.9	-0.6	0.9	C+	A+
1015	601027	8	8	319	.608	.608	.188	.122	.063	.019	.500	.500	-.253	-.202	-.188	-0.215	0.125	-2.4	0.9	-2.5	0.8	A-	B-
1016	601806	8	N/A	160	.525	.106	.525	.175	.150	.044	.356	-.264	.356	.023	-.117	0.156	0.177	1.4	1.1	1.0	1.1	A+	
1017	601063	8	8	160	.613	.613	.163	.094	.088	.044	.446	.446	-.126	-.146	-.230	-0.296	0.183	-0.4	1.0	-0.1	1.0	A-	
1018	601088	8	N/A	317	.672	.672	.047	.028	.249	.003	.523	.523	-.218	-.204	-.352	-0.507	0.128	-3.3	0.8	-2.3	0.8	A-	
1019	601061	8	7	159	.233	.233	.170	.359	.226	.013	.233	.233	-.138	.057	-.123	1.686	0.201	0.8	1.1	1.6	1.3	A+	
1020	601010	8	8	159	.654	.151	.069	.113	.654	.013	.583	-.274	-.196	-.339	.583	-0.447	0.180	-3.2	0.8	-2.8	0.7	A-	
1021	601015	8	7	317	.476	.177	.180	.139	.476	.028	.477	-.209	-.179	-.167	.477	0.385	0.124	-1.9	0.9	-1.9	0.9	A-	
1022	601011	8	8	317	.457	.107	.230	.457	.177	.028	.410	-.121	-.095	.410	-.247	0.477	0.124	-0.2	1.0	-0.2	1.0	A-	
1023	601053	8	8	158	.228	.253	.228	.342	.158	.019	.210	.043	.210	-.179	.046	1.795	0.207	1.4	1.2	2.4	1.5	B-	
1024	601070	8	7	158	.310	.367	.184	.310	.095	.044	.127	.136	-.102	.127	-.111	1.257	0.190	3.2	1.3	4.0	1.6	A-	
1025	601102	8	7	319	.749	.069	.091	.749	.063	.028	.423	-.243	-.188	.423	-.099	-1.044	0.143	-0.6	1.0	-1.0	0.9	A+	A-
1026	601127	8	8	160	.475	.100	.113	.300	.475	.013	.404	-.237	-.146	-.159	.404	0.413	0.169	-0.7	1.0	-1.0	0.9	B-	
1027	601092	8	6	313	.326	.185	.326	.310	.157	.022	.391	-.053	.391	-.173	-.139	0.965	0.132	-0.4	1.0	0.2	1.0	B-	
1028	601091	8	6	317	.716	.047	.716	.164	.063	.010	.470	-.183	.470	-.327	-.159	-0.790	0.133	-2.4	0.9	-2.0	0.8	B+	A-
1029	601126	8	N/A	315	.083	.054	.768	.073	.083	.022	-.153	-.088	.343	-.156	-.153	2.985	0.213	1.6	1.3	3.9	2.4	A-	A+
1030	601089	8	6	158	.279	.139	.481	.057	.279	.044	.191	-.209	.095	-.032	.191	1.443	0.196	2.3	1.2	2.8	1.5	A-	
1031	601103	8	7	321	.277	.146	.277	.371	.199	.006	.170	-.177	.170	.020	-.050	1.490	0.138	2.7	1.2	3.6	1.5	A-	
1032	600842	11	7	718	.403	.403	.074	.096	.426	.001	.315	.315	-.195	-.246	-.062	1.254	0.081	-0.1	1.0	0.1	1.0	A-	A-
1033	600646	11	7	714	.775	.775	.130	.050	.039	.006	.335	.335	-.200	-.144	-.121	-0.672	0.094	-1.6	0.9	-1.9	0.9	A-	
1034	601630	11	7	719	.655	.022	.655	.056	.266	.001	.372	-.124	.372	-.189	-.257	0.005	0.084	-1.2	1.0	-1.8	0.9	A+	B-
1035	600826	11	7	717	.728	.014	.036	.728	.220	.001	.333	-.098	-.158	.333	-.257	-0.384	0.089	-0.5	1.0	-0.2	1.0	A-	
1036	602260	11	7	717	.459	.159	.459	.195	.187	.000	.255	-.031	.255	-.172	-.121	0.951	0.081	3.4	1.1	3.1	1.1	C-	
1037	602644	11	7	719	.349	.330	.195	.349	.120	.007	.126	.090	-.175	.126	-.084	1.450	0.084	5.4	1.2	6.3	1.3	A+	A+
1038	604162	11	7	715	.435	.435	.106	.066	.392	.001	.290	.290	-.214	-.264	-.020	1.179	0.081	2.6	1.1	2.5	1.1	C-	A-
1039	601556	11	8	717	.374	.314	.190	.374	.121	.001	.341	-.103	-.199	.341	-.111	1.361	0.084	0.6	1.0	1.6	1.1	A-	
1040	601524	11	7	717	.520	.520	.272	.127	.078	.003	.445	.445	-.201	-.251	-.174	0.659	0.081	-3.2	0.9	-3.0	0.9	B-	
1041	601502	11	8	717	.713	.202	.713	.050	.034	.001	.449	-.348	.449	-.159	-.156	-0.297	0.088	-2.5	0.9	-2.6	0.8	A+	
1042	601455	11	8	717	.593	.593	.144	.163	.093	.007	.518	.518	-.309	-.225	-.197	0.301	0.082	-5.9	0.8	-5.1	0.8	A-	
1043	601458	11	8	719	.752	.013	.752	.141	.089	.006	.412	-.133	.412	-.272	-.216	-0.540	0.092	-2.2	0.9	-3.0	0.8	A+	A-
1044	601557	11	8	719	.577	.129	.234	.057	.577	.003	.455	-.209	-.294	-.113	.455	0.380	0.081	-4.9	0.9	-4.5	0.8	A+	A+
1045	600825	11	7	719	.604	.043	.604	.291	.061	.001	.364	-.111	.364	-.286	-.106	0.258	0.082	-1.7	1.0	-1.9	0.9	A-	A-

Table B–2 (continued). Mathematics Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M /F	W /B
1046	601503	11	8	719	.665	.131	.665	.131	.061	.013	.429	-.211	.429	-.191	-.169	-0.082	0.085	-2.1	0.9	-2.2	0.9	A-	A+
1047	604829	11	7	715	.859	.859	.042	.046	.053	.000	.380	.380	-.188	-.212	-.223	-1.175	0.112	-1.4	0.9	-2.6	0.7	A-	A-
1048	601523	11	8	715	.720	.720	.084	.164	.028	.004	.475	.475	-.263	-.301	-.173	-0.231	0.089	-3.5	0.9	-3.8	0.8	A+	A-
1049	600548	11	8	715	.333	.076	.137	.333	.445	.010	.176	-.119	-.236	.176	.056	1.665	0.085	3.8	1.1	4.0	1.2	A+	A+
1050	600836	11	8	718	.740	.070	.740	.086	.095	.010	.357	-.178	.357	-.216	-.143	-0.414	0.091	-1.2	1.0	-2.2	0.9	A-	A-
1051	604515	11	7	718	.717	.050	.105	.121	.717	.007	.403	.000	-.269	-.257	.403	-0.276	0.088	-2.1	0.9	-1.9	0.9	A-	B-
1052	602658	11	8	718	.447	.107	.306	.447	.125	.014	.302	-.165	-.139	.302	-.044	1.014	0.080	0.7	1.0	0.9	1.0	A+	A-
1053	602659	11	8	714	.415	.242	.269	.415	.062	.013	.261	-.103	-.121	.261	-.045	1.090	0.081	1.6	1.0	1.5	1.1	A-	
1054	600843	11	7	714	.740	.029	.740	.063	.167	.001	.383	-.159	.383	-.168	-.260	-0.447	0.089	-2.7	0.9	-3.6	0.8	A-	
1055	601629	11	8	714	.266	.177	.325	.266	.217	.015	.215	-.093	-.124	.215	.056	1.850	0.090	1.4	1.1	1.7	1.1	A+	
1056	602261	11	7	962	.288	.090	.288	.190	.429	.002	.281	-.023	.281	-.208	-.071	2.299	0.077	2.1	1.1	2.9	1.2	C-	A-
1057	604176	11	7	482	.255	.635	.255	.042	.069	.000	.420	-.284	.420	-.065	-.132	2.453	0.113	-1.1	0.9	-0.9	0.9	C-	
1058	604516	11	7	480	.473	.213	.473	.190	.110	.015	.338	-.197	.338	-.180	-.026	1.435	0.099	0.9	1.0	0.3	1.0	B-	A-
1059	600837	11	7	483	.443	.110	.099	.348	.443	.000	.488	-.120	-.224	-.290	.488	1.689	0.100	-3.3	0.9	-2.0	0.9	A-	A-
1060	602661	11	4	532	.790	.790	.043	.111	.055	.002	.396	.396	-.126	-.277	-.211	-0.441	0.113	-1.5	0.9	-2.3	0.8	A-	
1061	604163	11	8	531	.836	.030	.068	.066	.836	.000	.399	-.226	-.271	-.165	.399	-0.741	0.123	-1.8	0.9	-2.8	0.7	B+	
1062	604799	11	Ge	532	.227	.278	.120	.367	.227	.008	.381	.008	-.193	-.191	.381	2.527	0.112	-0.4	1.0	-0.2	1.0	A-	
1063	600651	11	7	532	.603	.258	.603	.062	.075	.002	.433	-.221	.433	-.219	-.220	0.574	0.095	-3.2	0.9	-2.9	0.9	A-	A-
1064	604180	11	6	533	.289	.113	.289	.467	.122	.009	.373	-.174	.373	-.111	-.167	2.171	0.104	-0.6	1.0	0.8	1.1	A-	A-
1065	601544	11	4	533	.675	.038	.026	.675	.259	.002	.460	-.207	-.162	.460	-.333	0.251	0.099	-2.6	0.9	-2.5	0.8	C-	
1066	600749	11	7	533	.411	.411	.306	.201	.079	.004	.527	.527	-.230	-.221	-.231	1.520	0.095	-5.2	0.8	-4.7	0.8	A-	
1067	600844	11	6	533	.257	.158	.257	.317	.250	.019	.241	-.060	.241	-.174	.028	2.319	0.107	1.8	1.1	3.2	1.3	A-	
1068	604798	11	4	533	.863	.863	.032	.075	.030	.000	.356	.356	-.177	-.220	-.196	-0.985	0.131	-1.0	0.9	-2.4	0.7	A+	
1069	602258	11	Ge	533	.462	.462	.096	.387	.047	.009	.403	.403	-.271	-.210	-.060	1.268	0.095	-0.9	1.0	-0.8	1.0	A-	
1070	602647	11	7	532	.376	.126	.244	.241	.376	.013	.407	-.152	-.166	-.171	.407	1.657	0.098	-1.1	1.0	-1.1	0.9	A+	
1071	600845	11	6	532	.329	.098	.284	.329	.276	.013	.219	-.151	-.064	.219	-.047	1.907	0.101	3.2	1.1	3.6	1.2	A-	
1072	604801	11	Ge	532	.481	.085	.481	.235	.149	.006	.262	-.161	.262	-.159	-.139	1.029	0.096	0.2	1.0	0.0	1.0	A+	
1073	602263	11	7	531	.663	.196	.663	.098	.032	.011	.304	-.138	.304	-.202	-.078	0.301	0.100	0.8	1.0	0.2	1.0	A-	
1074	600846	11	6	531	.420	.138	.420	.316	.090	.036	.375	-.238	.375	-.108	-.098	1.421	0.096	-0.5	1.0	-0.3	1.0	A+	
1075	604517	11	8	533	.499	.499	.266	.206	.024	.004	.444	.444	-.289	-.166	-.151	1.132	0.094	-3.7	0.9	-3.3	0.9	A-	A+
1076	600712	11	7	533	.413	.069	.308	.413	.205	.006	.164	-.098	.054	.164	-.190	1.538	0.096	5.2	1.2	4.3	1.2	A+	B-
1077	604165	11	8	532	.652	.152	.652	.160	.026	.009	.246	-.196	.246	-.062	-.111	0.308	0.098	1.2	1.1	1.9	1.1	A+	A-
1078	600828	11	7	532	.630	.032	.179	.630	.156	.004	.278	-.069	-.208	.278	-.095	0.443	0.096	1.4	1.1	1.1	1.1	A+	A-
1079	604177	11	8	481	.599	.119	.195	.599	.077	.010	.189	-.098	-.192	.189	.066	0.747	0.100	2.3	1.1	4.0	1.2	A+	
1080	601545	11	4	481	.738	.738	.081	.146	.035	.000	.343	.343	-.166	-.238	-.116	0.064	0.109	-0.9	1.0	-0.9	0.9	A-	

Table B–2 (continued). Mathematics Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
1081	602646	11	7	482	.448	.268	.448	.237	.035	.012	.142	-.059	.142	-.077	-.031	1.419	0.099	6.0	1.2	5.3	1.3	A-	
1082	601525	11	6	482	.320	.309	.214	.320	.156	.002	.241	-.182	-.085	.241	.020	2.080	0.106	2.5	1.1	2.2	1.1	B-	
1083	602262	11	7	480	.567	.223	.567	.135	.046	.029	.097	.031	.097	-.057	-.100	0.944	0.101	6.9	1.2	7.6	1.5	A-	A+
1084	600827	11	7	480	.429	.429	.231	.315	.017	.008	.465	.465	-.088	-.359	-.172	1.657	0.100	-3.2	0.9	-2.4	0.9	A+	A-
1085	604949	11	8	483	.329	.420	.128	.329	.104	.019	.369	-.294	-.071	.369	.008	2.226	0.107	0.4	1.0	0.5	1.0	A-	A-
1086	605040	11	7	483	.590	.031	.259	.590	.120	.000	.338	-.106	-.149	.338	-.254	0.985	0.100	0.8	1.0	0.8	1.1	B+	A-
1087	601547	11	Ge	481	.568	.220	.568	.141	.062	.008	.268	-.045	.268	-.197	-.168	0.920	0.099	1.9	1.1	1.0	1.1	A+	
1088	604164	11	8	481	.453	.223	.262	.453	.048	.015	.268	-.133	-.127	.268	-.049	1.446	0.100	2.0	1.1	1.3	1.1	A-	
1089	601543	11	4	481	.778	.058	.013	.778	.152	.000	.326	-.187	-.058	.326	-.237	-0.159	0.115	-1.3	0.9	-0.2	1.0	C-	
1090	604178	11	8	532	.853	.853	.066	.055	.024	.002	.363	.363	-.145	-.254	-.209	-0.928	0.128	-1.2	0.9	-2.3	0.7	A-	
1091	600785	11	Ge	531	.290	.073	.290	.401	.234	.002	.182	-.212	.182	-.055	.010	2.159	0.103	2.6	1.1	3.6	1.3	A-	
1092	604522	11	8	533	.743	.032	.143	.743	.083	.000	.423	-.143	-.286	.423	-.217	-0.099	0.105	-2.3	0.9	-2.9	0.8	A+	A-
1093	602650	11	8	533	.433	.058	.176	.327	.433	.006	.528	-.115	-.310	-.240	.528	1.406	0.095	-4.5	0.9	-3.5	0.9	A+	
1094	601550	11	7	532	.620	.030	.620	.032	.314	.004	.216	-.173	.216	-.185	-.085	0.486	0.096	3.1	1.1	2.3	1.1	A+	A-
1095	604170	11	8	532	.596	.079	.164	.596	.154	.008	.502	-.208	-.189	.502	-.305	0.598	0.095	-4.3	0.9	-4.1	0.8	A-	A-
1096	601549	11	7	533	.762	.762	.098	.064	.071	.006	.454	.454	-.284	-.229	-.190	-0.243	0.109	-2.9	0.9	-3.0	0.7	A+	A-
1097	602268	11	8	531	.567	.567	.260	.083	.083	.008	.489	.489	-.284	-.245	-.151	0.791	0.095	-3.2	0.9	-2.7	0.9	A-	
1098	601528	11	Ge	533	.330	.161	.330	.250	.250	.009	.197	.029	.197	-.152	-.074	1.914	0.100	3.6	1.2	2.9	1.2	A-	
1099	602266	11	Ge	533	.589	.071	.180	.589	.146	.013	.465	-.161	-.197	.465	-.305	0.641	0.096	-2.6	0.9	-2.7	0.9	A+	
1100	604803	11	7	533	.478	.227	.203	.478	.086	.006	.501	-.208	-.312	.501	-.111	1.195	0.094	-3.8	0.9	-3.2	0.9	A-	
1101	604831	11	Ge	533	.353	.109	.158	.368	.353	.013	.310	-.075	-.236	-.058	.310	1.792	0.098	1.7	1.1	0.9	1.1	A-	
1102	600803	11	Ge	532	.380	.290	.241	.380	.085	.006	.362	-.249	-.026	.362	-.163	1.662	0.097	0.8	1.0	0.9	1.1	A+	
1103	601954	11	Ge	532	.355	.105	.397	.355	.141	.002	.263	-.134	-.074	.263	-.128	1.792	0.099	2.3	1.1	3.6	1.2	A+	
1104	604518	11	Ge	532	.509	.017	.118	.509	.344	.011	.141	-.104	-.171	.141	.020	1.024	0.095	7.7	1.3	5.6	1.3	A-	
1105	601548	11	7	532	.696	.696	.105	.139	.056	.004	.457	.457	-.217	-.254	-.235	0.113	0.101	-3.4	0.9	-3.2	0.8	A+	
1106	604158	11	Ge	531	.840	.030	.040	.840	.090	.000	.395	-.220	-.139	.395	-.280	-0.772	0.124	-1.8	0.9	-3.0	0.7	A-	
1107	602666	11	7	531	.733	.733	.151	.072	.043	.002	.485	.485	-.315	-.288	-.141	-0.053	0.105	-3.7	0.8	-3.8	0.7	A-	
1108	600688	11	Ge	531	.271	.104	.428	.271	.185	.013	.304	-.081	-.154	.304	-.066	2.246	0.105	-0.4	1.0	0.3	1.0	A-	
1109	600829	11	Ge	531	.782	.089	.782	.109	.019	.002	.320	-.171	.320	-.249	-.055	-0.357	0.112	-0.5	1.0	-1.1	0.9	A+	
1110	604519	11	Ge	531	.567	.234	.567	.147	.032	.021	.278	-.124	.278	-.157	-.082	0.746	0.096	2.1	1.1	1.6	1.1	A-	
1111	600838	11	Ge	533	.475	.263	.161	.475	.084	.017	.350	-.141	-.149	.350	-.173	1.208	0.095	0.8	1.0	0.0	1.0	A-	A-
1112	600833	11	Ge	533	.814	.066	.045	.066	.814	.009	.365	-.225	-.213	-.154	.365	-0.624	0.119	-1.3	0.9	-1.6	0.8	B-	A-
1113	604179	11	8	533	.672	.111	.071	.145	.672	.002	.417	-.200	-.185	-.254	.417	0.287	0.099	-1.8	0.9	-2.2	0.9	A+	A-
1114	604159	11	Ge	533	.752	.028	.086	.752	.126	.008	.281	-.107	-.240	.281	-.097	-0.195	0.108	-0.1	1.0	0.9	1.1	A+	A+
1115	604520	11	Ge	533	.533	.291	.533	.096	.066	.015	.287	-.036	.287	-.250	-.164	0.932	0.095	2.8	1.1	2.6	1.1	A-	A+

Table B–2 (continued). Mathematics Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
1116	602648	11	Ge	532	.632	.632	.102	.218	.045	.004	.543	.543	-.185	-.411	-.177	0.430	0.097	-6.2	0.8	-5.1	0.7	A-	C-
1117	604830	11	Ge	532	.624	.038	.199	.624	.124	.015	.222	-.130	-.066	.222	-.149	0.432	0.097	2.7	1.1	2.2	1.1	B-	B-
1118	601527	11	Ge	532	.743	.058	.081	.743	.107	.011	.373	-.134	-.200	.373	-.214	-0.197	0.107	-1.0	1.0	-1.2	0.9	A+	B-
1119	600834	11	Ge	532	.541	.290	.083	.541	.087	.000	.320	-.102	-.222	.320	-.185	0.873	0.094	1.3	1.0	1.3	1.1	A-	A-
1120	602267	11	8	532	.607	.607	.239	.073	.075	.006	.303	.303	-.150	-.226	-.077	0.543	0.096	1.0	1.0	0.4	1.0	B+	A+
1121	602649	11	Ge	481	.638	.119	.127	.638	.110	.006	.223	.000	-.175	.223	-.161	0.564	0.101	1.6	1.1	2.2	1.1	A+	
1122	601632	11	Ge	481	.572	.083	.572	.158	.187	.000	.408	-.158	.408	-.239	-.182	0.904	0.098	-2.2	0.9	-1.4	0.9	A-	
1123	600848	11	8	481	.289	.210	.405	.089	.289	.006	.395	-.166	-.229	.006	.395	2.259	0.108	-1.0	1.0	-0.1	1.0	B-	
1124	600849	11	N/A	482	.228	.430	.272	.228	.066	.004	.340	-.077	-.197	.340	-.064	2.620	0.117	0.3	1.0	0.4	1.0	A-	
1125	604521	11	8	482	.772	.029	.060	.772	.139	.000	.365	-.101	-.155	.365	-.287	-0.164	0.114	-1.4	0.9	-2.1	0.8	A-	
1126	601504	11	Ge	482	.473	.102	.288	.135	.473	.002	.471	-.133	-.283	-.201	.471	1.325	0.098	-3.3	0.9	-3.2	0.9	A-	
1127	604168	11	8	480	.752	.031	.060	.752	.152	.004	.359	-.141	-.172	.359	-.237	0.069	0.112	-1.1	0.9	-1.4	0.9	A-	A-
1128	601529	11	8	480	.773	.040	.058	.127	.773	.002	.303	-.087	-.132	-.233	.303	-0.052	0.115	-0.9	1.0	1.0	1.1	A+	B-
1129	601505	11	Ge	480	.506	.094	.506	.290	.106	.004	.456	-.175	.456	-.208	-.263	1.304	0.099	-4.0	0.9	-3.1	0.9	A+	A-
1130	601530	11	8	483	.406	.087	.236	.248	.406	.023	.462	-.139	-.255	-.147	.462	1.824	0.102	-1.3	1.0	-1.3	0.9	A+	B-
1131	600815	11	Ge	483	.625	.091	.139	.625	.128	.017	.435	-.210	-.246	.435	-.144	0.760	0.103	-1.6	0.9	-1.4	0.9	A+	A+
1132	604169	11	8	483	.747	.116	.747	.091	.035	.010	.387	-.221	.387	-.214	-.138	0.109	0.113	-1.2	0.9	-1.5	0.8	A-	A-
1133	601631	11	Ge	481	.518	.100	.518	.106	.270	.006	.416	-.112	.416	-.146	-.274	1.163	0.099	-2.2	0.9	-1.7	0.9	A-	
1134	600847	11	8	481	.526	.133	.526	.262	.056	.023	.364	-.112	.364	-.197	-.150	1.090	0.100	-1.0	1.0	-0.3	1.0	A+	
1135	602669	11	A1	717	.194	.292	.163	.340	.194	.011	.216	.008	-.137	-.071	.216	2.400	0.101	1.3	1.1	2.7	1.3	A-	
1136	601551	11	A1	715	.455	.455	.175	.179	.180	.011	.401	.401	-.265	-.160	-.089	1.068	0.081	-1.4	1.0	-1.7	0.9	A+	A+
1137	601552	11	A1	718	.216	.078	.297	.400	.216	.010	.153	.000	-.118	-.001	.153	2.240	0.095	1.6	1.1	3.2	1.3	A-	A+
1138	602668	11	N/A	714	.224	.279	.224	.270	.209	.018	.140	-.106	.140	-.042	.059	2.089	0.095	2.6	1.1	3.2	1.2	A+	
1139	604832	11	A2	481	.472	.260	.156	.472	.112	.000	.327	-.118	-.197	.327	-.126	1.363	0.098	0.5	1.0	0.2	1.0	A-	
1140	602653	11	6	481	.815	.052	.037	.815	.096	.000	.407	-.186	-.152	.407	-.299	-0.427	0.122	-1.7	0.9	-2.8	0.7	A+	
1141	604950	11	A1	482	.506	.243	.203	.506	.039	.008	.422	-.225	-.215	.422	-.132	1.158	0.098	-2.1	0.9	-2.0	0.9	A-	
1142	602269	11	6	482	.486	.486	.208	.212	.085	.010	.439	.439	-.186	-.245	-.148	1.250	0.098	-2.8	0.9	-2.7	0.9	A+	
1143	602270	11	6	480	.675	.071	.675	.217	.027	.010	.378	-.103	.378	-.267	-.157	0.471	0.104	-1.5	0.9	-0.4	1.0	A-	A+
1144	604524	11	A2	483	.621	.162	.621	.184	.025	.008	.433	-.266	.433	-.193	-.156	0.811	0.102	-2.3	0.9	-1.9	0.9	A-	A-
1145	602657	11	6	481	.568	.052	.220	.568	.146	.015	.255	-.106	-.091	.255	-.141	0.908	0.100	2.7	1.1	1.7	1.1	A-	
1146	604171	11	A2	481	.405	.137	.152	.405	.297	.008	.424	-.110	-.219	.424	-.179	1.691	0.101	-1.5	1.0	-1.2	0.9	B-	
1147	602259	11	6	717	.580	.580	.153	.204	.059	.004	.422	.422	-.194	-.274	-.120	0.367	0.082	-2.8	0.9	-2.5	0.9	A-	
1148	604952	11	7	718	.586	.159	.586	.163	.081	.011	.499	-.188	.499	-.290	-.176	0.375	0.081	-5.5	0.9	-5.3	0.8	A+	B-
1149	601554	11	6	714	.468	.157	.186	.468	.185	.004	.284	-.056	-.177	.284	-.128	0.858	0.080	0.7	1.0	0.1	1.0	A-	
1150	604806	11	7	714	.727	.035	.163	.727	.070	.006	.381	-.088	-.306	.381	-.114	-0.390	0.089	-2.5	0.9	-2.8	0.8	A-	

Table B–2 (continued). Mathematics Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M /F	W /B
1151	600839	11	6	715	.836	.056	.039	.066	.836	.003	.332	-.203	-.152	-.174	.332	-1.000	0.107	-0.9	0.9	-1.0	0.9	A-	A-
1152	601461	11	6	718	.673	.673	.146	.082	.089	.010	.387	.387	-.218	-.119	-.181	-0.049	0.085	-1.4	1.0	-1.6	0.9	A+	A-
1153	604804	11	6	719	.125	.388	.136	.331	.125	.020	.028	.035	-.138	.102	.028	2.913	0.118	1.8	1.2	4.7	1.7	A-	A+
1154	602274	11	7	715	.197	.050	.197	.697	.053	.003	.287	-.098	.287	-.186	-.015	2.484	0.099	-0.3	1.0	1.9	1.2	B-	A-
1155	601507	11	6	717	.782	.024	.782	.134	.059	.001	.348	-.145	.348	-.209	-.211	-0.717	0.096	-1.1	0.9	-1.0	0.9	A+	
1156	604805	11	6	717	.565	.565	.163	.156	.113	.003	.314	.314	-.195	-.215	-.028	0.442	0.081	1.3	1.0	1.1	1.1	A+	
1157	600822	11	6	719	.545	.118	.235	.545	.099	.003	.393	-.233	-.197	.393	-.108	0.528	0.080	-2.0	1.0	-2.1	0.9	B-	A+
1158	604160	11	A2	719	.239	.239	.271	.104	.378	.007	.238	.238	-.019	-.231	-.031	2.051	0.093	1.0	1.1	1.8	1.1	A-	A+
1159	604181	11	6	719	.143	.435	.210	.143	.199	.013	.052	.048	-.022	.052	-.053	2.746	0.111	1.7	1.1	4.6	1.6	A-	A-
1160	602654	11	A2	715	.376	.376	.115	.123	.382	.004	.400	.400	-.193	-.220	-.119	1.458	0.083	-2.0	0.9	-1.4	0.9	B-	A-
1161	600823	11	6	715	.685	.043	.685	.208	.063	.000	.369	-.217	.369	-.230	-.138	-0.022	0.086	-0.8	1.0	-1.2	0.9	B+	A-
1162	601955	11	6	715	.439	.201	.090	.439	.264	.006	.313	-.065	-.246	.313	-.110	1.154	0.081	1.5	1.0	1.3	1.1	A+	A+
1163	600824	11	6	718	.625	.164	.127	.625	.081	.003	.307	-.106	-.179	.307	-.179	0.218	0.082	0.1	1.0	0.6	1.0	A+	A-
1164	601463	11	6	718	.652	.652	.152	.148	.046	.003	.378	.378	-.225	-.157	-.202	0.088	0.083	-1.5	1.0	-1.5	0.9	A+	A-
1165	602655	11	A2	718	.220	.178	.220	.542	.057	.003	.314	.095	.314	-.321	-.018	2.230	0.095	-0.5	1.0	-0.2	1.0	A-	A-
1166	601506	11	6	714	.633	.633	.165	.136	.060	.006	.403	.403	-.140	-.232	-.209	0.098	0.082	-4.4	0.9	-3.3	0.9	A+	
1167	601555	11	6	714	.325	.325	.444	.130	.083	.018	.244	.244	.076	-.224	-.151	1.524	0.085	2.1	1.1	1.7	1.1	A+	
1168	604808	11	7	714	.457	.118	.284	.457	.125	.017	.316	-.134	-.081	.316	-.147	0.884	0.080	0.1	1.0	0.4	1.0	A-	
1169	604174	11	A2	481	.102	.761	.102	.112	.025	.000	.080	.124	.080	-.176	-.139	3.713	0.159	1.4	1.2	2.8	1.5	A-	
1170	600835	11	A2	481	.805	.031	.062	.100	.805	.002	.383	-.158	-.200	-.254	.383	-0.367	0.121	-1.7	0.9	-2.4	0.8	A+	
1171	600840	11	A2	482	.315	.058	.529	.315	.095	.002	.234	-.192	-.189	.234	.109	2.104	0.106	2.2	1.1	1.8	1.1	A-	
1172	604175	11	A2	482	.280	.125	.280	.098	.496	.002	.309	-.081	.309	-.125	-.145	2.304	0.110	0.8	1.0	1.4	1.1	A-	
1173	604951	11	A2	480	.181	.148	.096	.575	.181	.000	.147	-.263	-.173	.178	.147	3.105	0.127	2.5	1.2	2.8	1.3	A-	A+
1174	600841	11	A2	480	.485	.015	.038	.454	.485	.008	.329	-.062	-.056	-.289	.329	1.391	0.099	0.4	1.0	1.5	1.1	A+	A+
1175	602656	11	A2	480	.367	.175	.367	.310	.142	.006	.331	-.129	.331	-.306	.092	1.965	0.103	1.2	1.1	0.7	1.0	A-	B+
1176	602271	11	A2	483	.364	.385	.364	.184	.050	.017	.304	-.122	.304	-.153	-.092	2.042	0.104	2.3	1.1	1.8	1.1	A-	A-
1177	604833	11	A2	483	.354	.095	.360	.354	.186	.004	.330	-.105	-.214	.330	-.059	2.123	0.105	1.0	1.0	1.4	1.1	A+	A-
1178	601508	11	A2	483	.286	.166	.379	.286	.170	.000	.238	-.266	-.130	.238	.145	2.517	0.111	2.4	1.1	2.8	1.2	A-	A+
1179	604527	11	A2	481	.370	.027	.366	.370	.235	.002	.371	-.176	-.224	.371	-.090	1.879	0.103	0.0	1.0	0.0	1.0	A-	
1180	604526	11	A2	481	.179	.139	.179	.044	.634	.004	.383	-.107	.383	-.063	-.183	3.056	0.130	0.0	1.0	0.7	1.1	B-	
1181	600930	A1	A1	717	.569	.087	.569	.243	.088	.014	.403	-.184	.403	-.234	-.113	0.396	0.082	-0.3	1.0	-0.7	1.0	A-	
1182	600929	A1	A1	1433	.356	.161	.316	.356	.117	.050	.252	-.049	-.028	.252	-.084	1.308	0.059	2.4	1.1	2.9	1.1	A+	A+
1183	600933	A1	A1	2870	.504	.076	.266	.125	.504	.029	.390	-.185	-.079	-.225	.390	0.670	0.041	-3.1	1.0	-3.2	0.9	A+	A+
1184	600937	A1	A1	1436	.218	.329	.218	.169	.219	.066	.218	.057	.218	-.065	-.042	2.005	0.068	0.9	1.0	1.5	1.1	A-	A-
1185	600935	A1	A1	2868	.398	.398	.154	.257	.144	.047	.484	.484	-.195	-.151	-.141	1.105	0.042	-7.4	0.9	-6.5	0.9	A+	A+

Table B–2 (continued). Mathematics Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
1186	600942	A1	A1	1432	.207	.207	.235	.298	.185	.075	.279	.279	-.019	-.066	-.066	2.103	0.070	0.7	1.0	1.5	1.1	A-	A-
1187	600944	A1	A1	2867	.509	.128	.148	.190	.509	.026	.415	-.092	-.188	-.206	.415	0.655	0.040	-6.0	0.9	-5.2	0.9	A-	A-
1188	600951	A1	A1	1434	.335	.335	.132	.236	.285	.013	.344	.344	-.109	-.137	-.113	1.418	0.059	-2.5	0.9	-1.9	0.9	A-	A-
1189	600965	A1	A1	1432	.262	.262	.256	.241	.214	.027	.169	.169	-.022	-.028	-.066	1.878	0.064	2.4	1.1	2.8	1.1	A-	A+
1190	600949	A1	A1	1432	.511	.511	.108	.124	.245	.013	.461	.461	-.193	-.241	-.146	0.685	0.056	-6.4	0.9	-5.9	0.9	A+	B-
1191	600950	A1	A1	1433	.311	.311	.381	.170	.125	.013	.187	.187	.095	-.162	-.138	1.747	0.061	4.3	1.1	4.5	1.2	A-	B-
1192	600927	A1	A1	717	.658	.151	.658	.116	.070	.006	.352	-.178	.352	-.124	-.221	-0.019	0.085	-0.1	1.0	-0.7	1.0	C+	
1193	600955	A1	A1	1434	.667	.069	.667	.131	.089	.045	.503	-.172	.503	-.231	-.199	-0.150	0.063	-4.2	0.9	-3.9	0.8	A-	A-
1194	600934	A1	A1	1434	.416	.195	.416	.243	.094	.053	.255	.034	.255	-.112	-.105	1.099	0.059	5.7	1.1	5.2	1.2	A+	A-
1195	600956	A1	A1	1433	.470	.470	.239	.132	.140	.019	.400	.400	-.104	-.195	-.162	0.939	0.057	-2.6	1.0	-2.6	0.9	A-	B-
1196	600940	A1	A1	1433	.352	.107	.352	.279	.218	.043	.397	-.048	.397	-.178	-.122	1.448	0.060	-1.9	1.0	-1.6	1.0	A+	B+
1197	600945	A1	A1	1432	.341	.142	.341	.180	.316	.022	.441	-.204	.441	-.068	-.150	1.470	0.060	-4.0	0.9	-3.3	0.9	A-	A+
1198	600963	A1	A1	1432	.244	.136	.348	.207	.244	.065	.193	-.017	.125	-.151	.193	1.914	0.066	2.8	1.1	3.6	1.2	A-	A+
1199	600975	A1	A1	1429	.402	.250	.402	.190	.107	.051	.244	.007	.244	-.116	-.058	1.086	0.058	4.5	1.1	4.1	1.1	A-	A+
1200	600952	A1	A1	1429	.471	.066	.216	.471	.200	.047	.435	-.142	-.168	.435	-.155	0.771	0.057	-5.0	0.9	-4.6	0.9	A-	A-
1201	600976	A1	A1	715	.297	.164	.297	.393	.133	.014	.228	-.049	.228	-.053	-.130	1.730	0.086	1.3	1.1	1.9	1.1	A-	
1202	600936	A1	A1	714	.475	.475	.132	.167	.205	.022	.461	.461	-.137	-.217	-.172	0.790	0.080	-4.7	0.9	-3.8	0.9	B+	A+
1203	600941	A1	A1	717	.179	.488	.085	.179	.230	.018	-.015	.080	-.168	-.015	.088	2.350	0.102	3.0	1.2	5.5	1.5	A-	A+
1204	600946	A1	A1	1434	.436	.126	.436	.281	.116	.041	.338	-.081	.338	-.174	-.126	0.932	0.057	-0.8	1.0	-0.7	1.0	A+	A-
1205	600954	A1	A1	717	.273	.511	.116	.273	.095	.006	.277	-.029	-.189	.277	-.140	1.878	0.088	0.2	1.0	1.1	1.1	A-	A+
1206	600964	A1	A1	1433	.268	.069	.208	.428	.268	.027	.261	-.111	-.147	.039	.261	1.837	0.063	1.4	1.0	1.2	1.1	A+	A-
1207	600928	A1	A1	1429	.400	.400	.351	.106	.126	.017	.414	.414	-.232	-.132	-.082	1.177	0.057	-3.5	0.9	-3.4	0.9	A+	A+
1208	600926	A1	A1	2866	.588	.171	.102	.588	.121	.017	.376	-.266	-.175	.376	-.005	0.342	0.041	-2.3	1.0	-2.8	1.0	B-	A-
1209	600953	A1	A1	715	.365	.101	.365	.152	.304	.078	.387	-.069	.387	-.008	-.197	1.241	0.084	-1.3	1.0	-1.2	1.0	A+	
1210	600966	A1	A1	1433	.350	.131	.350	.280	.214	.027	.139	-.078	.139	-.110	.078	1.509	0.060	5.8	1.1	5.7	1.2	A+	A-
1211	601837	A1	A1	717	.658	.658	.121	.117	.080	.024	.535	.535	-.197	-.247	-.236	-0.014	0.085	-5.5	0.8	-5.2	0.8	A+	A-
1212	602184	A1	A1	1432	.756	.756	.186	.026	.024	.008	.312	.312	-.188	-.152	-.116	-0.547	0.065	-1.0	1.0	0.5	1.0	A+	A-
1213	602171	A1	A1	1434	.514	.514	.248	.105	.097	.036	.393	.393	-.163	-.173	-.130	0.672	0.058	-1.5	1.0	-1.9	1.0	A+	A-
1214	601841	A1	A1	1434	.759	.048	.087	.070	.759	.036	.458	-.192	-.227	-.219	.458	-0.681	0.069	-3.2	0.9	-4.5	0.7	A-	A-
1215	602241	A1	A1	1433	.626	.114	.091	.159	.626	.009	.477	-.200	-.154	-.290	.477	0.224	0.059	-6.5	0.9	-5.9	0.8	A+	A-
1216	601793	A1	A1	1433	.572	.043	.572	.066	.313	.006	.419	-.105	.419	-.151	-.310	0.502	0.057	-4.1	0.9	-4.3	0.9	B-	A+
1217	602159	A1	A1	1433	.239	.239	.309	.214	.227	.012	.146	.146	.050	-.149	-.039	1.981	0.065	3.0	1.1	3.4	1.2	A-	A+
1218	601144	A1	A1	1434	.445	.213	.445	.141	.188	.013	.387	-.067	.387	-.257	-.133	1.058	0.058	-0.9	1.0	-0.8	1.0	A-	A+
1219	601370	A1	A1	1434	.551	.100	.130	.551	.170	.049	.409	-.105	-.174	.409	-.167	0.377	0.058	-2.8	1.0	-2.4	0.9	A+	A+
1220	600931	A1	A1	1429	.326	.154	.197	.285	.326	.038	.283	.030	-.007	-.225	.283	1.503	0.060	1.2	1.0	1.2	1.0	A+	A+

Table B–2 (continued). Mathematics Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
1221	601410	A1	A1	1433	.500	.112	.223	.500	.128	.038	.396	-.128	-.140	.396	-.136	0.650	0.057	-2.7	1.0	-2.0	1.0	A+	A+
1222	600939	A1	A1	1436	.229	.172	.282	.277	.229	.040	.228	-.019	.012	-.073	.228	1.974	0.066	0.7	1.0	1.2	1.1	A-	B+
1223	602247	A1	A1	1436	.352	.217	.237	.352	.158	.036	.171	.007	-.024	.171	-.063	1.298	0.059	4.0	1.1	4.0	1.1	A-	A+
1224	601168	A1	A1	1433	.668	.116	.126	.668	.064	.026	.446	-.167	-.199	.446	-.171	-0.130	0.060	-3.5	0.9	-4.0	0.9	A+	A-
1225	601858	A1	A1	1436	.719	.070	.719	.091	.066	.054	.480	-.149	.480	-.212	-.207	-0.610	0.066	-3.3	0.9	-4.3	0.8	B+	A-
1226	601412	A1	A1	1433	.373	.155	.202	.219	.373	.050	.364	-.013	-.198	-.076	.364	1.222	0.058	-1.6	1.0	-1.9	1.0	A+	A-
1227	601831	A1	A1	1436	.297	.082	.219	.297	.351	.052	.162	-.060	-.110	.162	.109	1.557	0.062	3.4	1.1	3.6	1.1	A-	A+
1228	602229	A1	A1	1433	.211	.211	.272	.306	.165	.047	.174	.174	.017	-.018	-.079	2.129	0.068	1.6	1.1	2.3	1.1	A-	A+
1229	601387	A1	A1	1433	.386	.451	.386	.085	.039	.039	.356	-.111	.356	-.196	-.106	1.184	0.058	-2.6	1.0	-1.8	1.0	A+	A+
1230	601855	A1	A1	1436	.467	.467	.092	.295	.093	.052	.461	.461	-.148	-.172	-.168	0.707	0.057	-5.7	0.9	-5.4	0.9	A-	A-
1231	601864	A1	A1	1436	.210	.210	.347	.233	.144	.067	.126	.126	.092	-.031	-.048	2.054	0.069	2.4	1.1	3.6	1.2	A+	A+
1232	601181	A1	A1	1435	.676	.676	.064	.130	.102	.028	.507	.507	-.178	-.205	-.240	-0.280	0.062	-4.9	0.9	-5.1	0.8	A+	B-
1233	601810	A1	A1	1435	.221	.221	.145	.501	.081	.052	.243	.243	-.172	.131	-.159	2.026	0.068	0.9	1.0	2.6	1.1	A+	A+
1234	601411	A1	A1	1435	.558	.181	.114	.558	.112	.036	.380	-.123	-.109	.380	-.192	0.298	0.058	-1.1	1.0	-1.5	1.0	A+	A-
1235	601856	A1	A1	1435	.399	.399	.165	.167	.208	.063	.302	.302	-.164	-.090	.031	0.998	0.059	1.6	1.0	1.8	1.1	A+	A+
1236	602169	A1	A1	1435	.516	.516	.268	.105	.052	.061	.458	.458	-.150	-.181	-.176	0.430	0.059	-5.0	0.9	-4.4	0.9	A+	A+
1237	601414	A1	A1	1435	.422	.422	.205	.213	.105	.056	.402	.402	-.142	-.080	-.117	0.908	0.059	-2.6	1.0	-2.2	0.9	A+	A+
1238	601832	A1	A1	1435	.240	.235	.215	.240	.240	.070	.228	.005	-.137	.228	.059	1.863	0.067	2.4	1.1	2.5	1.1	A+	A+
1239	602255	A1	A1	1435	.265	.105	.265	.381	.192	.056	.311	-.047	.311	-.060	-.061	1.742	0.065	0.6	1.0	1.0	1.0	A+	A+
1240	602232	A1	A1	1435	.408	.096	.408	.285	.137	.075	.320	-.069	.320	-.098	-.058	0.929	0.059	2.3	1.1	1.5	1.0	A+	A+
1241	601861	A1	A1	1435	.262	.088	.140	.452	.262	.059	.330	-.086	-.193	.022	.330	1.752	0.065	0.3	1.0	1.2	1.1	A-	A-
1242	601417	A1	A1	1432	.644	.141	.644	.122	.064	.029	.394	-.169	.394	-.196	-.116	-0.089	0.061	-2.7	0.9	-1.4	0.9	B+	A-
1243	602235	A1	A1	1432	.409	.115	.409	.309	.136	.031	.344	-.105	.344	-.092	-.149	1.060	0.058	0.5	1.0	0.8	1.0	A-	A-
1244	601182	A1	A1	1432	.380	.147	.204	.212	.380	.057	.341	-.014	-.114	-.166	.341	1.133	0.060	-0.2	1.0	-0.8	1.0	A+	A+
1245	601420	A1	A1	1432	.360	.134	.167	.279	.360	.059	.383	-.004	-.192	-.124	.383	1.230	0.060	-1.5	1.0	-1.5	1.0	A+	A-
1246	602162	A1	A1	1432	.437	.183	.173	.437	.136	.072	.391	-.105	-.151	.391	-.121	0.808	0.059	-2.1	1.0	-1.9	1.0	A-	A-
1247	600957	A1	A1	1432	.292	.143	.262	.222	.292	.082	.350	-.079	-.072	-.116	.350	1.553	0.063	-0.5	1.0	-0.3	1.0	A+	A-
1248	602183	A1	A1	1434	.301	.301	.224	.206	.250	.020	.312	.312	-.077	-.168	-.052	1.586	0.061	-1.9	1.0	-1.5	1.0	A+	A+
1249	602256	A1	A1	1434	.213	.213	.273	.215	.271	.027	.319	.319	-.074	-.108	-.046	2.083	0.068	-1.5	1.0	-1.2	0.9	A-	A-
1250	602156	A1	A1	1434	.350	.156	.253	.350	.206	.036	.099	.066	-.058	.099	-.036	1.292	0.059	5.4	1.1	4.7	1.2	A+	A+
1251	602239	A1	A1	1434	.258	.114	.258	.227	.386	.016	.083	-.112	.083	-.139	.158	1.823	0.064	3.6	1.1	4.2	1.2	B-	A+
1252	600961	A1	A1	1434	.291	.234	.250	.291	.195	.029	.247	-.134	-.018	.247	-.054	1.609	0.062	0.2	1.0	-0.1	1.0	A-	A+
1253	601857	A1	A1	1434	.221	.181	.376	.171	.221	.051	.249	-.034	.027	-.151	.249	1.980	0.067	0.2	1.0	1.7	1.1	A-	A+
1254	602240	A1	A1	1434	.409	.170	.199	.219	.409	.004	.369	-.197	-.096	-.153	.369	1.095	0.057	-3.7	0.9	-3.4	0.9	A+	A-
1255	602157	A1	A1	1434	.236	.149	.446	.151	.236	.017	.055	-.083	.057	-.006	.055	1.968	0.065	3.8	1.1	3.6	1.2	A-	A+

Table B–2 (continued). Mathematics Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
1256	601421	A1	A1	1434	.423	.190	.186	.423	.185	.017	.301	-.071	-.164	.301	-.088	1.006	0.057	-2.8	1.0	-2.1	1.0	A-	A-
1257	602244	A1	A1	1434	.635	.635	.121	.110	.125	.010	.491	.491	-.207	-.231	-.223	0.048	0.058	-5.6	0.9	-5.7	0.8	A-	C-
1258	601185	A1	A1	1434	.214	.214	.226	.469	.081	.011	.188	.188	-.028	-.019	-.111	2.121	0.067	0.6	1.0	0.4	1.0	A-	A+
1259	602163	A1	A1	1434	.238	.186	.315	.245	.238	.017	.210	-.029	.037	-.141	.210	1.959	0.065	0.4	1.0	0.4	1.0	A-	A+
1260	602238	A1	A1	1434	.414	.141	.414	.217	.201	.027	.314	-.054	.314	-.153	-.064	1.023	0.057	-1.3	1.0	-0.6	1.0	A+	A+
1261	602254	A1	A1	1434	.426	.172	.219	.426	.167	.017	.200	-.043	-.068	.200	-.041	0.991	0.057	3.1	1.1	2.6	1.1	A+	A+
1262	602257	A1	A1	1434	.312	.306	.312	.249	.115	.017	.232	.022	.232	-.129	-.091	1.539	0.060	0.8	1.0	0.6	1.0	A-	A+
1263	601424	A1	A1	1434	.345	.151	.163	.317	.345	.026	.375	-.109	-.224	-.019	.375	1.364	0.059	-3.0	0.9	-3.1	0.9	A-	A-
1264	600968	A1	A1	1432	.233	.313	.269	.161	.233	.024	.167	.101	-.118	-.093	.167	2.063	0.066	1.7	1.1	3.2	1.2	A+	A+
1265	601846	A1	A1	1432	.423	.145	.423	.253	.171	.008	.365	-.046	.365	-.300	-.073	1.097	0.057	-3.8	0.9	-3.1	0.9	A-	A+
1266	601374	A1	A1	1432	.333	.244	.333	.187	.214	.022	.260	-.053	.260	-.086	-.076	1.503	0.060	1.3	1.0	2.1	1.1	A-	A+
1267	601395	A1	A1	1432	.545	.545	.103	.129	.211	.012	.309	.309	-.156	-.167	-.061	0.527	0.057	0.3	1.0	-0.5	1.0	A-	A-
1268	601186	A1	A1	1432	.322	.149	.322	.400	.108	.021	.245	-.069	.245	-.059	-.073	1.566	0.060	1.9	1.1	2.2	1.1	A+	A+
1269	601137	A1	A1	1433	.646	.112	.086	.142	.646	.014	.455	-.252	-.161	-.194	.455	0.110	0.060	-5.2	0.9	-4.9	0.8	A+	A-
1270	601381	A1	A1	1433	.299	.230	.299	.180	.271	.020	.111	-.027	.111	-.131	.062	1.798	0.062	5.8	1.2	5.6	1.2	A-	A+
1271	600972	A1	A1	1433	.300	.125	.292	.264	.300	.019	.323	-.100	-.080	-.118	.323	1.793	0.062	-0.7	1.0	-0.9	1.0	A+	A+
1272	602252	A1	A1	1433	.392	.365	.098	.121	.392	.024	.481	-.110	-.172	-.272	.481	1.314	0.058	-5.5	0.9	-5.1	0.9	A-	A-
1273	601382	A1	A1	1434	.554	.554	.224	.085	.114	.024	.267	.267	-.121	-.114	-.064	0.515	0.058	3.9	1.1	3.4	1.1	A-	A+
1274	601375	A1	A1	1434	.280	.266	.197	.216	.280	.040	.237	-.039	-.041	-.105	.237	1.862	0.064	3.0	1.1	3.4	1.2	A+	A-
1275	602185	A1	A1	1434	.381	.256	.175	.176	.381	.012	.458	-.195	-.132	-.188	.458	1.376	0.059	-4.8	0.9	-3.4	0.9	A+	A-
1276	601400	A1	A1	1434	.602	.602	.149	.149	.070	.031	.398	.398	-.158	-.156	-.169	0.252	0.059	-1.4	1.0	-1.4	1.0	A+	A-
1277	601847	A1	A1	1434	.452	.452	.280	.151	.084	.032	.447	.447	-.099	-.244	-.171	0.985	0.058	-3.7	0.9	-2.4	0.9	A-	A-
1278	601796	A1	A1	1434	.267	.096	.267	.395	.199	.043	.294	-.102	.294	-.081	-.019	1.938	0.065	1.5	1.1	2.7	1.1	A+	A-
1279	602172	A1	A1	1436	.593	.593	.095	.174	.123	.015	.353	.353	-.208	-.139	-.110	0.273	0.058	0.7	1.0	0.6	1.0	A+	B-
1280	601842	A1	A1	1436	.395	.478	.395	.087	.024	.016	.387	-.112	.387	-.290	-.146	1.226	0.059	-0.5	1.0	0.6	1.0	A-	A+
1281	601403	A1	A1	1436	.516	.516	.171	.231	.064	.017	.365	.365	-.131	-.194	-.111	0.638	0.058	-0.8	1.0	-1.5	1.0	A+	A+
1282	600943	A1	A1	1436	.349	.183	.328	.349	.118	.022	.179	.043	-.031	.179	-.194	1.437	0.060	5.6	1.1	6.0	1.2	A-	A+
1283	601147	A1	A1	1436	.361	.163	.219	.236	.361	.021	.281	.026	-.073	-.201	.281	1.380	0.060	2.7	1.1	2.6	1.1	A-	A+
1284	601383	A1	A1	1436	.330	.453	.087	.330	.111	.020	.171	-.007	-.074	.171	-.086	1.539	0.061	6.7	1.2	6.7	1.3	A-	A-
1285	601141	A1	A1	1436	.655	.093	.655	.131	.076	.046	.559	-.222	.559	-.282	-.194	-0.156	0.062	-7.6	0.8	-7.1	0.7	A+	A-
1286	602186	A1	A1	1436	.733	.113	.056	.072	.733	.027	.531	-.243	-.213	-.264	.531	-0.526	0.066	-5.9	0.8	-6.3	0.7	A+	A-
1287	601798	A1	A1	1436	.305	.305	.265	.277	.100	.053	.368	.368	-.115	-.056	-.115	1.617	0.062	0.1	1.0	0.8	1.0	A+	A-
1288	601377	A1	A1	1436	.375	.155	.287	.375	.134	.048	.156	-.009	-.029	.156	-.063	1.242	0.060	7.5	1.2	8.2	1.3	A+	A-
1289	601848	A1	A1	1436	.323	.323	.217	.225	.183	.053	.399	.399	-.152	-.150	-.045	1.513	0.062	-1.6	1.0	-0.4	1.0	A-	A-
1290	600947	A1	A1	1434	.215	.215	.163	.224	.351	.048	.182	.182	-.071	-.102	.068	2.220	0.068	2.7	1.1	3.4	1.2	A+	A+

Table B–2 (continued). Mathematics Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M /F	W /B
1291	601385	A1	A1	1434	.515	.515	.204	.158	.107	.016	.383	.383	-.130	-.209	-.135	0.703	0.058	-0.6	1.0	-0.4	1.0	A+	A+
1292	601849	A1	A1	1434	.563	.074	.563	.174	.137	.052	.464	-.137	.464	-.266	-.119	0.370	0.059	-4.3	0.9	-4.1	0.9	A-	A-
1293	602173	A1	A1	1434	.519	.064	.283	.114	.519	.020	.470	-.170	-.169	-.271	.470	0.672	0.058	-3.5	0.9	-3.3	0.9	A+	A+
1294	601378	A1	A1	1434	.182	.038	.182	.628	.114	.037	.124	-.007	.124	.037	-.027	2.486	0.072	3.0	1.1	6.0	1.5	A-	A+
1295	601157	A1	A1	1434	.467	.467	.181	.206	.096	.050	.514	.514	-.209	-.138	-.200	0.851	0.058	-6.6	0.9	-6.1	0.9	A-	B-
1296	601142	A1	A1	1434	.666	.666	.090	.096	.117	.032	.540	.540	-.222	-.289	-.201	-0.109	0.062	-6.7	0.8	-6.7	0.8	A+	A-
1297	602187	A1	A1	1434	.648	.058	.648	.156	.096	.043	.529	-.140	.529	-.305	-.188	-0.047	0.062	-5.5	0.9	-5.6	0.8	A+	A-
1298	601407	A1	A1	1434	.592	.155	.090	.592	.117	.046	.347	-.052	-.189	.347	-.134	0.238	0.060	2.0	1.1	0.8	1.0	A+	A-
1299	601820	A1	A1	1433	.733	.040	.054	.141	.733	.033	.439	-.107	-.217	-.250	.439	-0.474	0.067	-2.8	0.9	-3.4	0.8	A-	A-
1300	601388	A1	A1	1433	.320	.320	.240	.248	.161	.031	.224	.224	-.059	-.042	-.072	1.640	0.061	3.0	1.1	3.5	1.1	A+	A-
1301	601843	A1	A1	1433	.518	.040	.193	.218	.518	.032	.489	-.140	-.118	-.308	.489	0.675	0.058	-5.6	0.9	-4.6	0.9	B-	A+
1302	601850	A1	A1	1433	.246	.214	.281	.236	.246	.024	.086	.042	.046	-.084	.086	2.077	0.065	4.9	1.2	5.6	1.3	A-	A+
1303	600958	A1	A1	1433	.385	.144	.154	.286	.385	.031	.118	-.043	-.037	.037	.118	1.316	0.058	9.0	1.2	9.1	1.3	A+	A+
1304	601169	A1	A1	1433	.373	.373	.241	.222	.136	.029	.321	.321	-.054	-.159	-.066	1.390	0.059	0.5	1.0	0.6	1.0	A+	A-
1305	601413	A1	A1	1433	.214	.214	.472	.137	.144	.034	.270	.270	.022	-.109	-.103	2.260	0.068	0.3	1.0	2.5	1.1	A+	A-
1306	601145	A1	A1	1433	.736	.736	.112	.080	.036	.036	.578	.578	-.282	-.287	-.198	-0.493	0.067	-6.5	0.8	-7.5	0.7	A+	A+
1307	602225	A1	A1	1433	.168	.168	.405	.215	.140	.073	.211	.211	.232	-.224	-.113	2.526	0.074	0.8	1.0	3.1	1.2	A-	B+
1308	601183	A1	A1	1432	.261	.163	.297	.230	.261	.050	.195	-.043	.074	-.093	.195	1.851	0.064	2.9	1.1	3.9	1.2	A-	A+
1309	601844	A1	A1	1432	.607	.122	.607	.164	.078	.030	.502	-.192	.502	-.219	-.162	0.178	0.059	-5.3	0.9	-5.2	0.9	A-	A-
1310	602242	A1	A1	1432	.363	.233	.201	.363	.151	.052	.301	.087	-.145	.301	-.157	1.283	0.059	1.6	1.0	1.9	1.1	A-	A+
1311	601390	A1	A1	1432	.330	.330	.215	.195	.207	.052	.315	.315	-.059	-.120	-.012	1.454	0.060	0.4	1.0	0.3	1.0	A+	B+
1312	601415	A1	A1	1432	.433	.095	.233	.202	.433	.037	.307	-.085	-.076	-.092	.307	0.981	0.058	0.2	1.0	-0.5	1.0	A+	A-
1313	601851	A1	A1	1432	.325	.325	.208	.219	.205	.043	.274	.274	-.043	-.142	.015	1.499	0.060	1.5	1.0	1.4	1.1	A+	A-
1314	601821	A1	A1	1432	.467	.087	.159	.211	.467	.078	.457	-.090	-.169	-.150	.457	0.709	0.058	-5.1	0.9	-4.9	0.9	A+	A+
1315	600962	A1	A1	1432	.383	.137	.307	.383	.107	.066	.069	.094	.082	.069	-.098	1.151	0.059	9.9	1.2	9.9	1.3	A-	A+
1316	601146	A1	A1	1432	.520	.074	.159	.520	.172	.076	.400	-.151	-.185	.400	-.040	0.452	0.059	-2.2	1.0	-2.1	1.0	A+	A+
1317	601391	A1	A1	1429	.304	.231	.253	.304	.183	.029	.277	.022	-.105	.277	-.119	1.634	0.061	2.2	1.1	2.0	1.1	A+	A+
1318	601865	A1	A1	1429	.348	.222	.325	.348	.081	.025	.194	-.007	-.058	.194	-.081	1.414	0.059	4.8	1.1	4.7	1.2	A+	A+
1319	600969	A1	A1	1429	.268	.127	.268	.356	.202	.048	.143	.057	.143	-.055	.015	1.796	0.064	4.7	1.2	4.9	1.2	A-	A+
1320	601153	A1	A1	1429	.529	.529	.132	.116	.205	.018	.437	.437	-.178	-.221	-.122	0.580	0.057	-6.3	0.9	-5.5	0.9	A+	A-
1321	602227	A1	A1	714	.343	.343	.161	.223	.228	.045	.274	.274	-.069	-.067	-.010	1.367	0.085	1.6	1.1	1.8	1.1	A-	
1322	601845	A1	A1	1429	.640	.112	.640	.169	.047	.032	.481	-.220	.481	-.224	-.081	0.008	0.060	-5.2	0.9	-5.0	0.8	A-	B-
1323	601852	A1	A1	1429	.377	.267	.164	.165	.377	.027	.372	-.043	-.187	-.127	.372	1.271	0.058	-2.9	0.9	-2.1	0.9	A-	A-
1324	601184	A1	A1	1429	.547	.060	.547	.316	.032	.046	.369	-.114	.369	-.178	-.135	0.413	0.058	-2.5	1.0	-2.5	0.9	A-	A+
1325	601389	A1	A1	714	.338	.153	.276	.338	.142	.092	.203	-.043	-.032	.203	.070	1.282	0.086	3.9	1.1	3.5	1.2	A-	

Table B–2 (continued). Mathematics Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M /F	W /B
1326	602243	A1	A1	1429	.314	.314	.185	.199	.231	.071	.407	.407	-.032	-.130	-.096	1.501	0.061	-2.6	0.9	-2.1	0.9	A+	A+
1327	601174	A1	A1	715	.674	.122	.674	.063	.136	.006	.320	-.178	.320	-.191	-.118	-0.030	0.084	-1.0	1.0	-0.7	1.0	A+	
1328	601393	A1	A1	1429	.349	.134	.222	.349	.276	.019	.202	-.105	-.106	.202	.013	1.423	0.059	4.2	1.1	4.1	1.1	A+	A+
1329	601860	A1	A1	715	.182	.102	.182	.271	.438	.007	.193	-.131	.193	-.212	.135	2.457	0.101	0.6	1.0	1.4	1.1	B-	
1330	602233	A1	A1	1429	.792	.053	.069	.792	.067	.020	.410	-.214	-.194	.410	-.149	-0.820	0.070	-2.3	0.9	-4.3	0.8	A+	A-
1331	601853	A1	A1	1429	.299	.276	.254	.299	.130	.042	.300	-.022	-.045	.300	-.192	1.637	0.061	0.8	1.0	1.1	1.0	A-	A+
1332	601862	A1	A1	1429	.515	.071	.113	.515	.294	.006	.348	-.161	-.135	.348	-.171	0.677	0.056	-1.7	1.0	-1.9	1.0	B-	A+
1333	601867	A1	A1	1429	.457	.457	.289	.145	.074	.036	.459	.459	-.139	-.189	-.171	0.879	0.057	-5.6	0.9	-4.9	0.9	A+	A-
1334	601392	A1	A1	715	.407	.132	.119	.407	.325	.018	.303	-.141	-.104	.303	-.055	1.181	0.081	1.3	1.0	1.0	1.0	A-	
1335	602248	A1	A1	715	.539	.154	.104	.539	.179	.025	.442	-.166	-.215	.442	-.120	0.559	0.080	-3.4	0.9	-3.1	0.9	A+	
1336	601422	A1	A1	715	.382	.087	.192	.304	.382	.036	.367	-.084	-.118	-.108	.367	1.258	0.082	-0.8	1.0	-1.1	1.0	A-	
1337	602152	A1	A1	1429	.361	.169	.259	.361	.178	.033	.116	.030	-.035	.116	-.042	1.328	0.059	7.3	1.2	7.4	1.2	A-	A-
1338	601416	A1	A1	1431	.247	.140	.201	.358	.247	.054	.287	-.080	-.091	.017	.287	1.905	0.065	0.4	1.0	1.2	1.1	A+	A+
1339	602230	A1	A1	715	.509	.509	.084	.260	.088	.059	.571	.571	-.171	-.256	-.171	0.604	0.081	-7.8	0.8	-7.0	0.8	A+	
1340	601418	A1	A1	1429	.476	.191	.476	.172	.113	.048	.419	-.043	.419	-.171	-.195	0.755	0.057	-3.2	1.0	-3.0	0.9	A+	A+
1341	602249	A1	A1	1429	.359	.359	.195	.272	.136	.039	.382	.382	-.134	-.096	-.124	1.330	0.059	-2.2	1.0	-1.7	1.0	A+	A+
1342	601396	A1	A1	1431	.331	.152	.331	.335	.128	.055	.162	-.045	.162	-.041	.057	1.440	0.060	5.3	1.1	5.8	1.2	A+	A+
1343	601866	A1	A1	715	.513	.183	.513	.148	.077	.078	.416	-.103	.416	-.125	-.193	0.518	0.082	-2.2	1.0	-2.2	0.9	A+	
1344	602250	A1	A1	714	.466	.466	.212	.240	.074	.008	.341	.341	-.134	-.189	-.121	0.856	0.080	-2.0	1.0	-2.1	0.9	A-	A-
1345	601178	A1	A1	1430	.218	.618	.094	.066	.218	.004	.132	.089	-.184	-.149	.132	2.137	0.067	2.8	1.1	3.5	1.2	A+	A+
1346	600938	A1	A1	714	.416	.185	.164	.416	.212	.024	.378	-.187	-.143	.378	-.068	1.057	0.081	-0.9	1.0	-1.2	1.0	A-	A-
1347	601404	A1	A1	1434	.290	.259	.222	.204	.290	.025	.278	-.077	-.090	-.061	.278	1.708	0.062	0.5	1.0	1.3	1.1	A+	A-
1348	601401	A1	A1	717	.349	.349	.307	.172	.160	.013	.272	.272	-.119	-.101	-.070	1.377	0.083	0.3	1.0	1.3	1.1	A-	A+
1349	601369	A1	A1	717	.513	.513	.172	.179	.134	.003	.383	.383	-.113	-.193	-.205	0.636	0.079	-3.2	0.9	-3.0	0.9	A-	A+
1350	602170	A1	A1	717	.251	.134	.165	.441	.251	.010	.229	-.095	-.123	-.031	.229	1.899	0.091	1.0	1.1	1.1	1.1	A-	A-
1351	601800	A1	A1	717	.357	.357	.133	.336	.163	.011	.283	.283	-.214	-.078	-.042	1.331	0.082	0.7	1.0	0.3	1.0	A+	A+
1352	601808	A1	A1	1434	.327	.130	.327	.211	.315	.017	.290	-.123	.290	-.128	-.033	1.525	0.060	0.2	1.0	1.0	1.0	A-	A-
1353	600959	A1	A1	717	.324	.324	.121	.276	.251	.028	.376	.376	-.188	-.095	-.087	1.458	0.084	-1.3	1.0	-1.4	0.9	A+	A-
1354	601399	A1	A1	717	.346	.346	.177	.247	.191	.039	.335	.335	-.097	-.144	-.058	1.319	0.083	-0.3	1.0	-0.4	1.0	A+	A+
1355	601814	A1	A1	717	.441	.159	.441	.240	.124	.036	.354	-.101	.354	-.153	-.106	0.870	0.080	-0.6	1.0	-0.7	1.0	A+	A-
1356	601143	A1	A1	1434	.289	.289	.324	.188	.146	.053	.320	.320	-.033	-.160	-.052	1.642	0.062	0.4	1.0	0.1	1.0	A+	A+
1357	601402	A1	A1	1434	.517	.517	.140	.251	.066	.026	.359	.359	-.175	-.130	-.138	0.596	0.057	-1.5	1.0	-1.7	1.0	A+	A-
1358	600967	A1	A1	1434	.310	.262	.167	.227	.310	.034	.278	.035	-.141	-.147	.278	1.569	0.061	1.0	1.0	1.7	1.1	A-	A+
1359	602223	A1	A1	1434	.361	.203	.222	.361	.153	.061	.297	-.058	-.102	.297	-.059	1.252	0.059	1.6	1.0	2.4	1.1	A-	A-
1360	601816	A1	A1	717	.791	.082	.080	.791	.042	.006	.369	-.189	-.169	.369	-.230	-0.709	0.096	-1.6	0.9	-2.3	0.8	A-	C-

Table B–2 (continued). Mathematics Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
1361	601817	A1	A1	1433	.580	.169	.105	.121	.580	.026	.350	-.161	-.121	-.121	.350	0.331	0.057	-0.5	1.0	-0.7	1.0	A-	A+
1362	602245	A1	A1	1433	.816	.059	.816	.064	.058	.004	.312	-.117	.312	-.159	-.193	-0.888	0.071	-0.9	1.0	-1.8	0.9	A-	B-
1363	600970	A1	A1	717	.276	.294	.198	.227	.276	.004	.385	-.099	-.093	-.209	.385	1.864	0.088	-2.1	0.9	-1.7	0.9	A+	A-
1364	601839	A1	A1	1433	.735	.078	.072	.735	.098	.017	.374	-.058	-.201	.374	-.217	-0.432	0.064	-1.9	0.9	-1.9	0.9	A-	A-
1365	601405	A1	A1	717	.464	.464	.180	.198	.142	.015	.477	.477	-.227	-.151	-.223	0.910	0.080	-5.2	0.9	-5.0	0.9	A-	A-
1366	601373	A1	A1	717	.110	.110	.367	.206	.310	.007	.077	.077	.079	-.161	.033	3.099	0.123	1.4	1.1	2.7	1.4	A-	A-
1367	602168	A1	A1	717	.400	.145	.400	.173	.259	.022	.138	-.006	.138	-.141	.049	1.203	0.081	5.7	1.2	5.2	1.2	A+	A+
1368	601160	A1	A1	1433	.366	.276	.366	.184	.158	.016	.272	-.024	.272	-.167	-.054	1.347	0.058	2.3	1.1	2.1	1.1	A+	A+
1369	601406	A1	A1	717	.286	.286	.174	.223	.276	.040	.160	.160	-.020	-.086	.054	1.746	0.088	3.5	1.1	3.8	1.2	A+	B+
1370	601829	A1	A1	1433	.244	.183	.244	.288	.260	.025	.161	-.001	.161	-.059	-.026	1.978	0.065	2.8	1.1	4.3	1.2	A+	A-
1371	601803	A1	A1	717	.368	.140	.269	.368	.158	.066	.193	-.055	.015	.193	-.061	1.261	0.084	4.3	1.1	4.3	1.2	A+	A-
1372	601818	A1	A1	717	.234	.120	.264	.318	.234	.064	.252	-.051	-.051	-.018	.252	2.005	0.094	1.0	1.1	1.6	1.1	A-	A+
1373	601154	A1	A1	717	.499	.499	.173	.170	.095	.063	.476	.476	-.156	-.164	-.201	0.631	0.082	-4.3	0.9	-3.8	0.9	B+	B-
1374	602224	A1	A1	1433	.433	.062	.103	.433	.355	.047	.241	-.114	-.147	.241	.008	0.957	0.057	4.4	1.1	4.3	1.1	A-	A-
1375	601819	A1	A1	1433	.315	.315	.184	.341	.102	.059	.305	.305	-.098	-.039	-.091	1.516	0.061	0.5	1.0	1.0	1.0	A+	A-
1376	601408	A1	A1	716	.437	.437	.143	.193	.217	.011	.408	.408	-.160	-.188	-.157	0.992	0.079	-4.6	0.9	-3.9	0.9	A+	A+
1377	601386	A1	A1	716	.584	.109	.144	.584	.163	.000	.439	-.200	-.237	.439	-.191	0.362	0.079	-4.4	0.9	-4.0	0.9	A+	A-
1378	601863	A1	A1	716	.349	.068	.133	.349	.441	.008	.263	-.054	-.178	.263	-.070	1.407	0.082	-0.1	1.0	0.5	1.0	A+	A-
1379	601838	A1	A1	716	.732	.048	.127	.732	.074	.020	.478	-.153	-.294	.478	-.159	-0.447	0.090	-3.0	0.9	-3.5	0.8	B+	A-
1380	601840	A1	A1	716	.620	.189	.073	.620	.091	.028	.403	-.123	-.114	.403	-.220	0.114	0.082	-1.7	1.0	-1.9	0.9	A-	A-
1381	601830	A1	A1	716	.247	.314	.205	.186	.247	.048	.242	-.079	-.047	.037	.242	1.880	0.091	0.7	1.0	1.2	1.1	A-	B+
1382	602246	A1	A1	716	.318	.226	.233	.318	.173	.049	.172	.004	-.051	.172	.011	1.486	0.085	3.0	1.1	3.7	1.2	A-	A+
1383	601409	A1	A1	716	.439	.102	.254	.439	.149	.056	.235	-.051	-.048	.235	-.048	0.885	0.081	3.4	1.1	3.0	1.1	A+	A-
1384	602226	A1	A1	716	.235	.144	.225	.335	.235	.062	.228	-.006	-.047	-.026	.228	1.931	0.093	0.8	1.0	1.8	1.1	A-	A-
1385	602167	A1	A1	714	.233	.289	.212	.249	.233	.018	.244	-.021	-.104	-.072	.244	2.026	0.093	0.7	1.0	1.7	1.1	A+	C+
1386	601423	A1	A1	714	.314	.478	.314	.142	.060	.007	.291	-.081	.291	-.183	-.111	1.588	0.085	0.4	1.0	0.6	1.0	A+	A-
1387	602188	A1	A1	714	.395	.084	.395	.360	.153	.008	.273	-.040	.273	-.176	-.096	1.182	0.081	1.5	1.0	1.9	1.1	A+	A-
1388	600971	A1	A1	1433	.419	.156	.251	.419	.156	.018	.271	-.113	-.050	.271	-.119	1.089	0.057	2.2	1.0	2.6	1.1	A+	A+
1389	601180	A1	A1	1431	.674	.069	.079	.137	.674	.041	.440	-.137	-.174	-.249	.440	-0.250	0.062	-3.9	0.9	-4.7	0.8	A+	A-
1390	601854	A1	A1	714	.214	.199	.294	.231	.214	.062	.311	-.023	.004	-.133	.311	2.074	0.096	0.1	1.0	-0.1	1.0	A+	A-
1391	602253	A1	A1	714	.328	.377	.328	.200	.083	.013	.237	.063	.237	-.196	-.150	1.510	0.084	2.2	1.1	2.0	1.1	A-	A+
1392	601419	A1	A1	714	.265	.265	.209	.217	.280	.029	.171	.171	-.088	-.049	.063	1.816	0.090	2.4	1.1	3.1	1.2	A-	B+
1393	602251	A1	A1	1431	.323	.341	.323	.150	.144	.042	.278	-.045	.278	-.067	-.152	1.461	0.060	0.9	1.0	1.3	1.0	A-	A-
1394	602237	A1	A1	714	.620	.128	.105	.074	.620	.073	.472	-.240	-.190	-.133	.472	-0.073	0.086	-3.7	0.9	-3.8	0.8	B+	C-
1395	601394	A1	A1	714	.452	.210	.452	.210	.104	.024	.392	-.174	.392	-.128	-.120	0.885	0.080	-1.5	1.0	-1.6	1.0	A+	A-

Table B–2 (continued). Mathematics Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
1396	600973	A1	A1	715	.241	.208	.250	.241	.255	.046	.246	.088	-.146	.246	-.038	1.997	0.093	1.1	1.1	1.4	1.1	A-	
1397	601397	A1	A1	1431	.157	.274	.142	.390	.157	.037	.141	-.019	-.118	.090	.141	2.511	0.076	1.8	1.1	3.1	1.2	A-	A+
1398	601368	A1	A1	1431	.203	.099	.203	.317	.340	.040	.171	-.183	.171	-.103	.120	2.154	0.069	1.9	1.1	3.1	1.2	A-	A+
1399	601136	A1	A1	717	.395	.174	.227	.395	.193	.011	.353	-.111	-.183	.353	-.095	1.152	0.081	-0.3	1.0	-0.6	1.0	A+	A-
1400	601836	A1	A1	717	.590	.063	.085	.590	.257	.006	.344	-.174	-.229	.344	-.127	0.282	0.080	-1.7	1.0	-1.7	0.9	A-	A-
1401	602160	A1	A1	1434	.579	.579	.091	.098	.207	.026	.411	.411	-.200	-.171	-.139	0.317	0.057	-3.2	0.9	-3.4	0.9	A+	A-
1402	601813	A1	A1	1431	.475	.224	.103	.475	.194	.005	.306	-.217	-.191	.306	-.001	0.817	0.056	0.4	1.0	0.2	1.0	A+	A-
1403	601805	A1	A1	1431	.181	.181	.375	.236	.150	.058	.175	.175	.007	-.010	-.074	2.281	0.072	1.4	1.1	2.8	1.2	A+	A+
1404	600932	A1	A1	1433	.369	.369	.244	.262	.110	.015	.423	.423	-.174	-.141	-.133	1.316	0.058	-4.8	0.9	-3.8	0.9	A-	A+
1405	601398	A1	A1	1431	.551	.112	.551	.139	.183	.015	.335	-.181	.335	-.183	-.080	0.444	0.056	-1.8	1.0	-1.4	1.0	A+	A-
1406	602154	A1	A1	1431	.595	.105	.100	.595	.169	.031	.363	-.099	-.187	.363	-.144	0.195	0.058	-1.1	1.0	-0.8	1.0	A-	A+
1407	601380	A1	A1	1431	.382	.382	.250	.187	.153	.027	.314	.314	-.098	-.155	-.057	1.190	0.058	-0.3	1.0	-0.4	1.0	A-	A+
1408	601135	A1	A1	1433	.637	.038	.137	.178	.637	.011	.465	-.136	-.161	-.309	.465	0.107	0.058	-6.1	0.9	-5.1	0.9	A-	A-
1409	601138	A1	A1	1433	.645	.060	.203	.645	.054	.038	.506	-.130	-.282	.506	-.186	-0.048	0.060	-5.1	0.9	-5.4	0.8	A-	A-
1410	601139	A1	A1	1433	.504	.133	.134	.504	.215	.014	.388	-.197	-.146	.388	-.121	0.798	0.057	-3.3	0.9	-2.3	0.9	A-	A+
1411	601140	A1	A1	1430	.713	.126	.713	.111	.036	.015	.405	-.200	.405	-.209	-.145	-0.332	0.062	-3.2	0.9	-3.4	0.9	A-	B-
1412	601152	A1	A1	1436	.297	.198	.306	.297	.143	.057	.084	.003	.059	.084	-.015	1.545	0.062	6.2	1.2	5.8	1.2	A-	A+
1413	601158	A1	A1	1436	.364	.253	.220	.364	.132	.032	.402	-.158	-.132	.402	-.046	1.250	0.059	-2.3	1.0	-2.0	0.9	A-	B-
1414	601167	A1	A1	1432	.180	.180	.270	.226	.276	.050	.264	.264	-.133	-.094	.078	2.360	0.074	0.5	1.0	2.0	1.1	A-	A+
1415	601159	A1	A1	1432	.490	.068	.268	.490	.116	.058	.387	-.125	-.120	.387	-.173	0.584	0.058	-1.0	1.0	-1.6	1.0	A-	A-
1416	601162	A1	A1	1434	.483	.184	.181	.483	.119	.034	.349	-.080	-.123	.349	-.135	0.663	0.057	-1.5	1.0	-1.1	1.0	A-	A-
1417	601173	A1	A1	1434	.330	.204	.202	.220	.330	.043	-.030	-.090	.053	.127	-.030	1.373	0.060	9.4	1.2	9.4	1.3	A+	A+
1418	601171	A1	A1	1432	.480	.119	.182	.480	.205	.015	.314	-.123	-.127	.314	-.123	0.817	0.057	0.1	1.0	0.0	1.0	A-	A-
1419	601179	A1	A1	1432	.269	.066	.133	.269	.515	.017	.097	-.019	-.119	.097	.046	1.859	0.063	4.1	1.1	5.1	1.2	A-	A-
1420	601151	A1	A1	1436	.218	.057	.218	.585	.095	.045	.010	-.109	.010	.237	-.144	2.159	0.069	7.0	1.3	9.1	1.6	A+	B+
1421	601163	A1	A1	1434	.386	.149	.192	.222	.386	.052	.305	-.141	-.001	-.096	.305	1.249	0.059	3.5	1.1	2.9	1.1	A-	A-
1422	601165	A1	A1	1433	.283	.223	.119	.357	.283	.017	.307	.059	-.168	-.160	.307	1.876	0.062	-0.1	1.0	1.1	1.1	A-	A-
1423	601166	A1	A1	1432	.571	.049	.571	.244	.069	.066	.461	-.140	.461	-.156	-.199	0.229	0.059	-4.0	0.9	-4.0	0.9	A-	A-
1424	601172	A1	A1	1429	.451	.451	.078	.291	.099	.081	.470	.470	-.167	-.129	-.160	0.776	0.058	-5.6	0.9	-5.3	0.9	A+	A-
1425	601177	A1	A1	715	.702	.034	.702	.151	.036	.077	.332	-.103	.332	-.124	-.095	-0.499	0.095	0.3	1.0	0.0	1.0	A+	
1426	601150	A1	A1	1431	.384	.180	.162	.231	.384	.043	.459	-.100	-.180	-.160	.459	1.147	0.058	-5.0	0.9	-4.5	0.9	A-	A-
1427	600960	A1	A1	1431	.248	.430	.220	.248	.066	.036	.229	.034	-.084	.229	-.147	1.879	0.065	1.6	1.1	3.0	1.1	A-	A-
1428	600974	A1	A1	717	.365	.179	.292	.146	.365	.018	.269	-.074	-.030	-.213	.269	1.275	0.082	0.7	1.0	0.6	1.0	A-	A+
1429	601156	A1	A1	717	.530	.039	.239	.183	.530	.010	.406	-.034	-.183	-.264	.406	0.539	0.079	-3.8	0.9	-3.3	0.9	A+	A-
1430	600977	A1	A1	1434	.658	.110	.097	.112	.658	.024	.430	-.151	-.234	-.179	.430	-0.069	0.060	-3.8	0.9	-4.1	0.9	A+	A+

Table B–2 (continued). Mathematics Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
1431	601161	A1	A1	1434	.402	.263	.402	.249	.067	.019	.295	-.039	.295	-.188	-.097	1.142	0.057	1.5	1.0	2.0	1.1	A-	A+
1432	601170	A1	A1	1433	.341	.519	.341	.078	.043	.020	.323	-.071	.323	-.186	-.144	1.465	0.059	-0.2	1.0	0.2	1.0	A-	A+
1433	601149	A1	A1	717	.138	.138	.343	.315	.144	.060	.214	.214	.083	-.034	-.120	2.731	0.113	0.3	1.0	2.1	1.2	A-	A+
1434	601176	A1	A1	717	.600	.082	.600	.191	.070	.057	.407	-.156	.407	-.171	-.135	0.154	0.084	-1.6	1.0	-1.8	0.9	B+	A-
1435	601148	A1	A1	1433	.265	.125	.392	.265	.193	.027	-.006	-.081	.162	-.006	-.054	1.835	0.063	6.4	1.2	6.3	1.3	A-	B+
1436	600948	A1	A1	1429	.232	.107	.190	.232	.442	.029	.151	-.067	-.081	.151	.062	2.043	0.066	3.3	1.1	4.6	1.2	A+	A-
1437	604671	Ge	Ge	2127	.592	.035	.592	.162	.134	.027	.376	-.155	.376	-.233	-.236	0.413	0.051	-5.6	0.9	-5.3	0.9	A+	A-
1438	604400	Ge	Ge	1065	.678	.052	.678	.128	.074	.069	.475	-.123	.475	-.209	-.213	-0.069	0.075	-3.0	0.9	-3.3	0.8	A+	A-
1439	604389	Ge	Ge	1063	.410	.114	.209	.209	.410	.058	.493	-.169	-.164	-.167	.493	1.398	0.069	-4.2	0.9	-3.5	0.9	A-	A-
1440	604418	Ge	Ge	532	.397	.243	.160	.397	.100	.102	.283	-.009	-.130	.283	-.119	1.304	0.099	2.7	1.1	2.7	1.1	A-	
1441	604707	Ge	Ge	1064	.468	.168	.180	.174	.468	.010	.253	-.108	-.057	-.122	.253	1.175	0.066	3.5	1.1	3.0	1.1	A+	B+
1442	604378	Ge	Ge	1065	.573	.027	.099	.285	.573	.016	.515	-.130	-.258	-.300	.515	0.711	0.068	-6.0	0.9	-5.6	0.8	A+	A+
1443	604392	Ge	Ge	1067	.504	.166	.172	.145	.504	.013	.374	-.178	-.149	-.128	.374	1.055	0.065	-1.9	1.0	-2.0	1.0	A-	A+
1444	604395	Ge	Ge	1064	.603	.057	.085	.603	.217	.038	.419	-.092	-.244	.419	-.140	0.460	0.069	-1.7	1.0	-0.9	1.0	B-	A+
1445	604763	Ge	Ge	532	.265	.107	.265	.359	.214	.055	.307	-.069	.307	-.170	.138	2.122	0.105	0.3	1.0	1.4	1.1	A-	
1446	604474	Ge	Ge	1065	.621	.051	.621	.102	.154	.072	.512	-.168	.512	-.225	-.206	0.265	0.072	-4.6	0.9	-4.7	0.8	A-	A+
1447	604600	Ge	Ge	1064	.199	.192	.243	.356	.199	.010	.344	-.018	-.188	-.082	.344	2.751	0.082	-1.3	0.9	-1.8	0.9	A+	A-
1448	604361	Ge	Ge	530	.213	.449	.211	.117	.213	.009	.429	-.149	-.126	-.100	.429	2.524	0.115	-1.5	0.9	-0.4	1.0	A-	A-
1449	604360	Ge	Ge	1064	.346	.346	.190	.196	.248	.021	.322	.322	-.085	-.202	-.046	1.765	0.070	1.7	1.1	2.1	1.1	A+	A+
1450	604354	Ge	Ge	1070	.249	.139	.234	.320	.249	.005	.252	-.095	-.120	-.108	.252	2.257	0.075	-0.1	1.0	0.6	1.0	A-	A+
1451	604453	Ge	Ge	1065	.684	.058	.684	.091	.064	.055	.352	-.137	.352	-.219	-.253	-0.294	0.080	-2.9	0.9	-3.5	0.8	A+	A+
1452	604718	Ge	Ge	1064	.834	.049	.834	.051	.032	.035	.390	-.148	.390	-.202	-.085	-1.016	0.094	-0.7	1.0	-1.0	0.9	A-	A-
1453	605047	Ge	Ge	1064	.410	.087	.382	.410	.107	.015	.324	-.184	-.106	.324	-.112	1.447	0.067	0.3	1.0	1.1	1.0	A+	A-
1454	604658	Ge	Ge	2128	.304	.372	.304	.219	.072	.034	.234	.053	.234	-.134	-.127	2.006	0.051	4.8	1.1	5.6	1.2	A+	A-
1455	604371	Ge	Ge	1064	.118	.091	.329	.434	.118	.028	.106	-.048	-.028	.063	.106	3.308	0.100	1.5	1.1	4.3	1.5	A-	A-
1456	604417	Ge	Ge	1064	.627	.071	.138	.136	.627	.028	.497	-.158	-.252	-.187	.497	0.374	0.069	-4.4	0.9	-3.9	0.9	A-	A-
1457	604742	Ge	Ge	1065	.465	.465	.303	.155	.055	.022	.331	.331	-.190	-.089	-.083	1.209	0.067	1.8	1.0	1.8	1.1	A+	A+
1458	604358	Ge	Ge	1065	.585	.165	.154	.585	.080	.016	.436	-.220	-.268	.436	-.053	0.644	0.068	-2.9	0.9	-2.9	0.9	A+	A-
1459	604758	Ge	Ge	1064	.681	.039	.681	.167	.071	.043	.396	-.197	.396	-.135	-.115	0.031	0.073	-0.3	1.0	0.1	1.0	A+	A-
1460	604740	Ge	Ge	1064	.403	.137	.102	.403	.334	.024	.358	.014	.000	.358	-.315	1.458	0.067	-0.4	1.0	-0.2	1.0	A+	A-
1461	604437	Ge	Ge	1065	.319	.511	.319	.108	.046	.016	.377	-.182	.377	-.126	-.107	1.956	0.071	-1.7	1.0	-1.3	0.9	A-	A-
1462	604729	Ge	Ge	1065	.612	.612	.116	.203	.052	.018	.362	.362	-.235	-.110	-.158	0.498	0.069	0.0	1.0	0.4	1.0	A+	A+
1463	604659	Ge	Ge	1598	.287	.287	.213	.272	.188	.040	.263	.263	-.161	-.016	-.033	2.087	0.060	2.8	1.1	4.6	1.2	A-	A+
1464	604405	Ge	Ge	1065	.590	.590	.132	.124	.135	.020	.436	.436	-.169	-.212	-.185	0.605	0.068	-2.7	0.9	-2.3	0.9	A+	A+
1465	604693	Ge	Ge	1065	.421	.421	.227	.247	.085	.020	.405	.405	-.060	-.215	-.219	1.425	0.068	-2.7	0.9	-2.1	0.9	A-	A-

Table B–2 (continued). Mathematics Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
1466	604438	Ge	Ge	1065	.361	.318	.216	.361	.081	.024	.291	-.040	-.213	.291	-.028	1.721	0.070	0.8	1.0	2.2	1.1	A-	A-
1467	604764	Ge	Ge	1065	.580	.031	.170	.580	.195	.024	.409	-.083	-.268	.409	-.164	0.637	0.068	-2.1	1.0	-2.1	0.9	C-	B-
1468	604393	Ge	Ge	1064	.472	.060	.331	.472	.044	.038	.234	-.067	-.129	.234	-.124	0.932	0.069	2.0	1.0	1.3	1.0	A+	A+
1469	604753	Ge	Ge	1065	.255	.082	.281	.347	.255	.037	.347	-.051	-.162	-.070	.347	2.293	0.076	-0.2	1.0	0.5	1.0	A+	A+
1470	604397	Ge	Ge	1067	.533	.080	.371	.533	.012	.004	.437	-.165	-.325	.437	-.139	0.965	0.067	-4.2	0.9	-3.7	0.9	A+	A-
1471	604375	Ge	Ge	1067	.150	.088	.150	.250	.504	.008	.148	-.024	.148	-.070	-.028	3.153	0.091	1.4	1.1	4.7	1.5	A+	A+
1472	604751	Ge	Ge	1067	.492	.058	.167	.271	.492	.012	.285	-.178	-.105	-.115	.285	1.141	0.067	2.1	1.1	1.8	1.1	A-	A-
1473	604708	Ge	Ge	1067	.209	.130	.229	.414	.209	.018	.187	.024	-.181	.037	.187	2.673	0.081	2.7	1.1	5.5	1.5	A-	A+
1474	604755	Ge	Ge	1067	.458	.082	.458	.330	.113	.017	.316	-.146	.316	-.160	-.067	1.289	0.067	1.8	1.0	1.6	1.1	A+	A+
1475	605048	Ge	Ge	1067	.369	.187	.331	.369	.105	.008	.316	-.211	-.078	.316	-.076	1.755	0.069	0.5	1.0	0.4	1.0	A+	A+
1476	604423	Ge	Ge	1067	.685	.685	.090	.187	.031	.007	.292	.292	-.130	-.171	-.114	0.195	0.071	1.8	1.1	1.2	1.1	A+	A+
1477	604427	Ge	Ge	1067	.794	.094	.047	.794	.057	.008	.500	-.297	-.237	.500	-.222	-0.480	0.082	-3.8	0.8	-4.7	0.7	A-	A-
1478	604641	Ge	Ge	1067	.370	.135	.377	.370	.090	.028	.199	-.106	-.013	.199	-.069	1.707	0.069	5.5	1.2	5.0	1.2	A-	A+
1479	604765	Ge	Ge	1067	.521	.085	.521	.344	.040	.009	.493	-.097	.493	-.384	-.107	1.010	0.067	-6.7	0.9	-6.0	0.8	A-	A-
1480	604408	Ge	Ge	1064	.396	.396	.181	.337	.073	.012	.423	.423	-.200	-.186	-.102	1.625	0.068	-3.0	0.9	-3.1	0.9	A+	A-
1481	604709	Ge	Ge	1064	.270	.446	.270	.214	.038	.033	.154	-.074	.154	.011	-.093	2.253	0.074	3.6	1.1	4.0	1.2	A-	A+
1482	604448	Ge	Ge	1064	.316	.470	.141	.060	.316	.013	.393	-.086	-.248	-.148	.393	2.029	0.071	-2.8	0.9	-1.7	0.9	A+	A+
1483	604442	Ge	Ge	1064	.533	.039	.187	.533	.207	.035	.415	-.151	-.123	.415	-.256	0.896	0.068	-3.2	0.9	-3.0	0.9	A-	B+
1484	604367	Ge	Ge	1064	.343	.157	.284	.186	.343	.030	.556	-.235	-.161	-.197	.556	1.847	0.070	-6.6	0.8	-5.1	0.8	A-	A-
1485	604730	Ge	Ge	1064	.574	.132	.167	.574	.086	.041	.391	-.103	-.218	.391	-.150	0.671	0.069	-1.6	1.0	-0.8	1.0	A+	A-
1486	604409	Ge	Ge	1064	.511	.079	.198	.193	.511	.019	.357	-.078	-.080	-.249	.357	1.046	0.067	0.8	1.0	1.4	1.1	A-	A-
1487	604464	Ge	Ge	1063	.596	.596	.191	.151	.053	.009	.389	.389	-.180	-.197	-.170	0.649	0.068	-2.3	1.0	-2.3	0.9	C+	A+
1488	604589	Ge	Ge	1063	.228	.228	.192	.477	.064	.040	.421	.421	-.279	-.022	-.119	2.470	0.078	-2.6	0.9	-1.9	0.9	A+	A+
1489	604646	Ge	Ge	1063	.121	.100	.121	.412	.326	.041	.002	.089	.002	-.072	.081	3.317	0.098	2.8	1.2	4.8	1.6	A-	A-
1490	604428	Ge	Ge	1063	.412	.412	.224	.215	.128	.021	.328	.328	-.149	-.112	-.082	1.502	0.067	1.2	1.0	1.6	1.1	A+	B+
1491	605049	Ge	Ge	1063	.687	.085	.097	.687	.095	.037	.480	-.216	-.245	.480	-.202	0.080	0.073	-3.7	0.9	-4.2	0.8	A+	A+
1492	604766	Ge	Ge	1063	.178	.104	.321	.363	.178	.034	.264	-.134	-.072	.004	.264	2.832	0.085	0.7	1.0	1.5	1.1	A+	A-
1493	604601	Ge	Ge	1063	.294	.280	.240	.294	.143	.043	.148	-.025	-.102	.148	.060	2.064	0.073	4.5	1.2	4.3	1.2	A+	A+
1494	604390	Ge	Ge	1063	.214	.214	.204	.379	.142	.061	.213	.213	-.032	-.037	-.064	2.518	0.080	1.6	1.1	4.3	1.3	A-	A-
1495	604762	Ge	Ge	1063	.570	.081	.176	.570	.135	.039	.387	-.094	-.141	.387	-.232	0.689	0.068	-0.6	1.0	-1.0	1.0	A-	A-
1496	604752	Ge	Ge	1063	.342	.205	.307	.342	.091	.055	.178	.047	-.101	.178	-.062	1.779	0.070	5.6	1.2	4.4	1.2	A-	A+
1497	605887	Ge	Ge	1065	.499	.058	.108	.499	.316	.019	.265	-.097	-.117	.265	-.128	1.056	0.067	4.0	1.1	4.0	1.1	A-	A-
1498	605050	Ge	Ge	1065	.578	.234	.092	.578	.068	.029	.397	-.191	-.160	.397	-.192	0.632	0.068	-0.9	1.0	-0.8	1.0	A+	A-
1499	604767	Ge	Ge	1065	.523	.112	.523	.239	.112	.014	.344	-.226	-.344	-.123	-.104	0.956	0.067	1.2	1.0	1.4	1.1	A-	C-
1500	604672	Ge	Ge	533	.636	.165	.124	.066	.636	.009	.470	-.185	-.347	-.143	.470	0.431	0.097	-3.1	0.9	-3.1	0.8	A+	

Table B–2 (continued). Mathematics Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
1501	604412	Ge	Ge	1065	.424	.245	.424	.247	.064	.021	.346	-.217	.346	-.014	-.215	1.412	0.068	1.8	1.1	0.8	1.0	A-	A+
1502	604471	Ge	Ge	1065	.645	.070	.167	.090	.645	.027	.469	-.145	-.249	-.267	.469	0.291	0.071	-4.6	0.9	-4.2	0.8	A+	A-
1503	604402	Ge	Ge	1065	.324	.158	.324	.317	.180	.021	.373	-.122	.373	-.188	-.053	1.932	0.071	0.3	1.0	1.6	1.1	A-	A-
1504	604602	Ge	Ge	1065	.120	.266	.272	.314	.120	.028	.230	.031	-.121	-.014	.230	3.377	0.100	0.6	1.0	3.2	1.4	A-	A-
1505	604757	Ge	Ge	533	.584	.081	.229	.584	.088	.019	.339	-.099	-.158	.339	-.164	0.668	0.095	0.0	1.0	-0.4	1.0	A-	
1506	604425	Ge	Ge	1065	.803	.803	.060	.057	.069	.011	.447	.447	-.206	-.226	-.230	-0.584	0.083	-2.6	0.9	-3.8	0.7	A+	A-
1507	604710	Ge	Ge	1065	.622	.133	.111	.096	.622	.039	.402	-.137	-.204	-.176	.402	0.379	0.070	-1.2	1.0	-1.3	0.9	A-	A+
1508	604451	Ge	Ge	1065	.404	.227	.404	.211	.111	.047	.459	-.187	.459	-.150	-.156	1.447	0.069	-2.6	0.9	-1.5	1.0	A-	A+
1509	604653	Ge	Ge	1065	.341	.189	.341	.307	.108	.055	.139	-.017	.139	-.050	-.002	1.757	0.071	8.1	1.3	7.0	1.3	A-	A+
1510	604466	Ge	Ge	1063	.456	.209	.241	.456	.048	.046	.373	-.127	-.138	.373	-.120	1.202	0.068	0.2	1.0	0.6	1.0	A+	A+
1511	605882	Ge	Ge	1063	.587	.143	.587	.150	.079	.041	.521	-.209	.521	-.252	-.162	0.563	0.069	-5.4	0.9	-5.1	0.8	A-	A+
1512	604720	Ge	Ge	1063	.353	.165	.353	.181	.249	.053	.190	.021	.190	-.198	.066	1.709	0.071	6.8	1.2	6.3	1.3	A-	A+
1513	605903	Ge	Ge	1063	.457	.120	.277	.457	.085	.062	.341	-.126	-.079	.341	-.149	1.148	0.069	2.6	1.1	2.0	1.1	A-	A-
1514	604439	Ge	Ge	1063	.433	.062	.106	.377	.433	.022	.501	-.162	-.237	-.215	.501	1.379	0.068	-4.8	0.9	-4.2	0.9	A+	A-
1515	604479	Ge	Ge	1063	.535	.136	.150	.130	.535	.050	.458	-.157	-.167	-.189	.458	0.789	0.069	-2.7	0.9	-2.6	0.9	A+	A-
1516	604695	Ge	Ge	1063	.612	.224	.078	.612	.052	.034	.426	-.208	-.203	.426	-.141	0.446	0.070	-2.1	1.0	-2.0	0.9	A-	A-
1517	604379	Ge	Ge	1063	.509	.037	.213	.205	.509	.037	.343	-.135	-.208	-.075	.343	0.958	0.068	0.6	1.0	1.0	1.0	A-	B-
1518	604426	Ge	Ge	1063	.612	.051	.115	.154	.612	.068	.541	-.155	-.241	-.272	.541	0.317	0.072	-5.8	0.8	-5.7	0.8	A+	B-
1519	604435	Ge	Ge	1063	.350	.202	.350	.202	.175	.071	.420	-.028	.420	-.199	-.138	1.678	0.071	-0.7	1.0	0.2	1.0	A+	A-
1520	604655	Ge	Ge	531	.371	.245	.313	.371	.049	.023	.095	.014	.006	.095	-.146	1.690	0.097	6.0	1.2	5.0	1.3	A+	
1521	604581	Ge	Ge	1064	.562	.064	.149	.562	.191	.034	.396	-.169	-.197	.396	-.119	0.732	0.068	-0.6	1.0	-0.4	1.0	A+	A-
1522	604440	Ge	Ge	1064	.601	.070	.107	.160	.601	.014	.406	-.254	-.219	-.200	.406	0.432	0.071	-4.8	0.9	-4.3	0.8	A+	A-
1523	604399	Ge	Ge	1064	.315	.124	.407	.315	.095	.059	.361	-.165	-.142	.361	-.023	1.900	0.072	-0.6	1.0	0.7	1.0	B-	A-
1524	604667	Ge	Ge	1064	.615	.057	.126	.615	.149	.053	.366	-.080	-.231	.366	-.127	0.383	0.071	-0.7	1.0	-0.8	1.0	A-	A+
1525	604748	Ge	Ge	1064	.295	.441	.160	.295	.051	.054	.243	-.037	-.092	.243	-.086	2.023	0.073	3.4	1.1	4.3	1.2	A-	A+
1526	604769	Ge	Ge	1064	.172	.170	.172	.322	.278	.057	-.019	.060	-.019	-.065	.148	2.843	0.087	5.6	1.3	7.4	1.7	A-	C+
1527	604715	Ge	Ge	1064	.591	.116	.591	.157	.084	.053	.485	-.145	.485	-.247	-.175	0.520	0.070	-5.0	0.9	-4.0	0.9	A+	A+
1528	605883	Ge	Ge	1064	.326	.054	.097	.479	.326	.044	.162	-.114	-.154	.094	.162	1.882	0.071	6.4	1.2	5.3	1.2	A-	A+
1529	604663	Ge	Ge	1064	.527	.527	.160	.214	.056	.043	.498	.498	-.124	-.270	-.181	0.870	0.068	-5.8	0.9	-5.7	0.8	B+	A+
1530	604603	Ge	Ge	1064	.139	.139	.196	.454	.134	.076	.140	.140	-.021	.099	-.092	3.079	0.094	2.0	1.1	4.8	1.5	A-	A+
1531	604382	Ge	Ge	1064	.364	.364	.390	.120	.066	.060	.426	.426	-.018	-.293	-.155	1.649	0.070	-1.7	1.0	-1.3	1.0	A+	A+
1532	604359	Ge	Ge	1065	.369	.085	.369	.397	.109	.040	.386	-.047	.386	-.211	-.100	1.641	0.070	0.2	1.0	0.1	1.0	A-	A-
1533	606225	Ge	Ge	1065	.455	.048	.224	.455	.248	.025	.246	-.112	-.175	.246	-.002	1.236	0.067	6.0	1.2	4.8	1.2	A-	A-
1534	604386	Ge	Ge	1065	.670	.670	.174	.092	.049	.015	.470	.470	-.272	-.193	-.181	0.208	0.071	-3.2	0.9	-3.3	0.8	A+	A-
1535	604716	Ge	Ge	1065	.571	.052	.085	.270	.571	.023	.356	-.099	-.179	-.169	.356	0.694	0.068	-0.3	1.0	0.3	1.0	A+	A+

Table B–2 (continued). Mathematics Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M /F	W /B
1536	604665	Ge	Ge	1065	.512	.154	.204	.512	.101	.029	.470	-.172	-.229	.470	-.156	0.958	0.067	-3.2	0.9	-3.3	0.9	A-	A-
1537	604669	Ge	Ge	1065	.493	.100	.493	.294	.068	.046	.376	-.061	.376	-.177	-.187	0.999	0.068	0.2	1.0	0.9	1.0	B-	A-
1538	604694	Ge	Ge	1065	.327	.327	.311	.226	.074	.062	.391	.391	.015	-.230	-.181	1.808	0.072	-0.2	1.0	-0.3	1.0	A+	B+
1539	604483	Ge	Ge	1065	.222	.222	.108	.159	.398	.066	.366	.366	-.160	-.119	-.084	2.333	0.080	-2.0	0.9	-1.2	0.9	A-	A-
1540	604713	Ge	Ge	533	.540	.051	.540	.231	.111	.068	.505	-.142	.505	-.271	-.174	0.723	0.098	-3.1	0.9	-2.7	0.9	A+	A+
1541	605884	Ge	Ge	1065	.335	.158	.335	.289	.111	.059	.230	-.026	.230	-.094	-.143	1.644	0.072	3.1	1.1	2.2	1.1	A-	A-
1542	604443	Ge	Ge	1065	.445	.445	.193	.185	.097	.081	.414	.414	-.164	-.142	-.124	1.137	0.069	-0.8	1.0	-1.0	1.0	A+	A+
1543	604460	Ge	Ge	1064	.221	.177	.197	.348	.221	.057	.267	.018	-.094	-.091	.267	2.417	0.080	1.8	1.1	2.5	1.2	A+	A+
1544	604712	Ge	Ge	1064	.440	.419	.440	.055	.082	.005	.493	-.269	.493	-.173	-.234	1.330	0.067	-5.6	0.9	-5.0	0.9	A+	A-
1545	604746	Ge	Ge	1064	.411	.089	.249	.411	.203	.048	.498	-.185	-.140	.498	-.220	1.375	0.068	-5.0	0.9	-4.5	0.9	A-	A+
1546	604363	Ge	Ge	1064	.280	.155	.324	.175	.280	.066	.379	-.105	-.073	-.137	.379	2.031	0.074	-1.0	1.0	-0.1	1.0	A-	A+
1547	604727	Ge	Ge	1064	.562	.168	.142	.102	.562	.026	.438	-.193	-.133	-.225	.438	0.700	0.067	-3.6	0.9	-3.3	0.9	A+	A-
1548	604768	Ge	Ge	1064	.355	.065	.438	.355	.120	.022	.307	-.143	-.131	.307	-.056	1.716	0.069	1.6	1.1	2.1	1.1	A-	A-
1549	604388	Ge	Ge	1064	.608	.079	.608	.181	.100	.032	.399	-.157	.399	-.249	-.079	0.454	0.069	-1.1	1.0	-1.6	0.9	A-	A+
1550	604413	Ge	Ge	532	.438	.167	.438	.103	.231	.060	.346	-.105	.346	-.267	.001	1.207	0.097	1.0	1.0	0.4	1.0	A+	A-
1551	604454	Ge	Ge	1064	.428	.039	.428	.360	.134	.040	.375	-.104	.375	-.203	-.124	1.309	0.068	-0.5	1.0	0.7	1.0	A-	A+
1552	604731	Ge	Ge	1064	.290	.466	.290	.137	.050	.056	.144	.107	.144	-.145	-.125	2.006	0.074	6.1	1.2	5.8	1.3	A+	A-
1553	604714	Ge	Ge	1064	.255	.102	.255	.314	.251	.078	.280	-.132	.280	.009	-.076	2.168	0.077	1.9	1.1	2.7	1.2	A-	A+
1554	604364	Ge	Ge	532	.256	.196	.395	.256	.139	.015	.289	.027	-.186	.289	-.108	2.281	0.107	1.4	1.1	1.1	1.1	A+	
1555	604743	Ge	Ge	532	.692	.692	.194	.056	.049	.009	.371	.371	-.240	-.104	-.163	0.115	0.100	-1.0	1.0	0.0	1.0	A+	
1556	604455	Ge	Ge	1065	.566	.049	.207	.566	.166	.012	.463	-.063	-.235	.463	-.260	0.723	0.067	-4.9	0.9	-4.4	0.9	A-	B-
1557	604728	Ge	Ge	1065	.804	.059	.056	.804	.044	.037	.430	-.199	-.196	.430	-.169	-0.757	0.087	-2.1	0.9	-3.4	0.7	B+	B-
1558	605898	Ge	Ge	1064	.531	.090	.200	.138	.531	.040	.408	-.139	-.138	-.156	.408	0.818	0.067	-1.8	1.0	-1.8	1.0	A+	
1559	604698	Ge	Ge	532	.442	.256	.239	.442	.058	.006	.372	-.195	-.136	.372	-.128	1.329	0.094	0.1	1.0	0.1	1.0	A-	
1560	604741	Ge	Ge	532	.269	.269	.241	.325	.141	.024	.423	.423	-.017	-.187	-.188	2.194	0.106	-1.4	0.9	-1.3	0.9	A-	
1561	604745	Ge	Ge	1065	.425	.061	.105	.368	.425	.040	.436	-.146	-.107	-.205	.436	1.320	0.068	-2.0	1.0	-1.9	0.9	A-	A-
1562	604436	Ge	Ge	532	.579	.064	.203	.579	.139	.015	.427	-.183	-.202	.427	-.182	0.660	0.095	-2.7	0.9	-2.1	0.9	A+	
1563	604381	Ge	Ge	532	.363	.363	.387	.188	.045	.017	.316	.316	-.016	-.202	-.191	1.695	0.098	0.7	1.0	0.9	1.1	A+	
1564	604385	Ge	Ge	1064	.599	.190	.599	.126	.056	.030	.468	-.194	.468	-.192	-.172	0.520	0.068	-3.8	0.9	-3.6	0.9	A-	
1565	604431	Ge	Ge	1065	.409	.312	.409	.161	.081	.038	.354	-.103	.354	-.169	-.053	1.406	0.068	1.4	1.0	1.4	1.1	A-	A+
1566	604369	Ge	Ge	1065	.572	.034	.126	.572	.246	.023	.354	-.128	-.119	.354	-.205	0.664	0.067	0.1	1.0	0.2	1.0	A+	A-
1567	605899	Ge	Ge	1065	.259	.200	.301	.259	.196	.044	.169	.027	-.031	.169	-.069	2.192	0.076	4.7	1.2	4.9	1.3	A-	A+
1568	604702	Ge	Ge	1065	.527	.527	.243	.138	.048	.044	.436	.436	-.184	-.186	-.095	0.820	0.067	-2.1	1.0	-2.5	0.9	A+	A-
1569	605886	Ge	Ge	1065	.556	.067	.140	.556	.208	.030	.441	-.191	-.245	.441	-.148	0.720	0.067	-4.5	0.9	-3.9	0.9	A+	A-
1570	604469	Ge	Ge	532	.145	.145	.199	.421	.158	.077	.375	.375	.061	-.098	-.127	2.995	0.132	-1.0	0.9	0.0	1.0	A+	

Table B–2 (continued). Mathematics Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
1571	604419	Ge	Ge	1065	.255	.278	.268	.151	.255	.049	.145	.021	-.074	.022	.145	2.218	0.076	5.0	1.2	6.1	1.4	A+	A+
1572	605885	Ge	Ge	532	.487	.197	.487	.100	.122	.094	.398	-.043	.398	-.195	-.184	0.874	0.098	-0.3	1.0	-0.9	1.0	A-	
1573	604394	Ge	Ge	1065	.318	.177	.214	.238	.318	.054	.421	-.186	-.135	-.090	.421	1.834	0.072	-2.1	0.9	-2.0	0.9	A+	A+
1574	604457	Ge	Ge	1065	.549	.147	.187	.549	.106	.010	.382	-.069	-.255	.382	-.190	0.833	0.066	-1.8	1.0	-1.7	0.9	A-	A+
1575	604377	Ge	Ge	1065	.290	.167	.290	.390	.133	.020	.219	-.001	.219	-.160	-.043	2.040	0.072	2.5	1.1	2.7	1.1	A-	A+
1576	604747	Ge	Ge	533	.328	.328	.257	.263	.135	.017	.376	.376	-.073	-.152	-.202	1.856	0.100	-1.3	0.9	-1.2	0.9	A-	A-
1577	604456	Ge	Ge	533	.557	.353	.557	.030	.056	.004	.422	-.310	.422	-.148	-.137	0.786	0.094	-2.3	0.9	-1.2	1.0	A+	A+
1578	604734	Ge	Ge	1065	.501	.501	.214	.077	.204	.005	.164	.164	-.091	-.103	-.026	1.077	0.066	8.3	1.2	7.0	1.2	A-	B+
1579	604420	Ge	Ge	1065	.439	.439	.325	.093	.132	.011	.273	.273	-.125	-.108	-.093	1.350	0.067	4.0	1.1	3.7	1.1	A-	A-
1580	604387	Ge	Ge	1065	.473	.473	.226	.212	.076	.012	.467	.467	-.201	-.241	-.148	1.186	0.066	-4.6	0.9	-4.1	0.9	A+	A-
1581	604403	Ge	Ge	1065	.403	.101	.329	.403	.130	.038	.412	-.086	-.208	.412	-.138	1.463	0.068	-1.4	1.0	-1.6	1.0	A-	A-
1582	605900	Ge	Ge	533	.351	.167	.268	.351	.191	.023	.229	-.105	-.074	.229	-.022	1.726	0.098	3.6	1.2	4.0	1.2	A-	B-
1583	604406	Ge	Ge	533	.460	.460	.068	.295	.161	.017	.316	.316	-.153	-.098	-.125	1.207	0.094	1.0	1.0	1.2	1.1	A-	A+
1584	604462	Ge	Ge	533	.533	.141	.148	.533	.150	.028	.460	-.077	-.264	.460	-.189	0.828	0.095	-2.3	0.9	-2.4	0.9	A-	C-
1585	604756	Ge	Ge	533	.619	.060	.101	.619	.191	.028	.431	-.074	-.174	.431	-.233	0.408	0.097	-1.5	1.0	-1.8	0.9	B-	A+
1586	604749	Ge	Ge	1065	.488	.027	.410	.056	.488	.018	.504	-.076	-.357	-.154	.504	1.104	0.067	-6.8	0.9	-5.7	0.8	A+	A-
1587	604370	Ge	Ge	533	.433	.103	.433	.240	.178	.045	.421	-.158	.421	-.143	-.093	1.265	0.096	-0.8	1.0	-0.5	1.0	A+	A-
1588	604365	Ge	Ge	1065	.320	.169	.111	.335	.320	.065	.362	-.055	-.105	-.070	.362	1.796	0.071	0.5	1.0	0.8	1.0	A+	A-
1589	604754	Ge	Ge	1065	.208	.208	.238	.327	.181	.047	.309	.309	-.022	-.100	-.076	2.564	0.081	0.8	1.0	1.1	1.1	A-	A-
1590	604421	Ge	Ge	1065	.681	.072	.057	.681	.155	.035	.418	-.135	-.198	.418	-.195	0.084	0.072	-2.3	0.9	-1.8	0.9	A+	A-
1591	604356	Ge	Ge	1065	.482	.482	.212	.178	.056	.071	.449	.449	-.141	-.159	-.159	0.986	0.068	-2.1	1.0	-2.0	0.9	A+	A+
1592	604546	Ge	Ge	533	.342	.197	.268	.342	.109	.084	.316	-.115	-.034	.316	-.045	1.639	0.101	2.2	1.1	2.1	1.1	A-	A+
1593	605901	Ge	Ge	1065	.405	.047	.405	.397	.100	.052	.381	-.122	.381	-.171	-.072	1.424	0.069	0.4	1.0	0.3	1.0	A-	A+
1594	604590	Ge	Ge	1065	.506	.125	.506	.212	.077	.080	.339	-.131	.339	-.081	-.098	0.833	0.069	3.1	1.1	1.4	1.1	A-	A-
1595	604482	Ge	Ge	1062	.420	.051	.143	.308	.420	.024	.293	-.075	-.183	-.140	.293	1.248	0.069	1.1	1.0	0.8	1.0	A-	A-
1596	604380	Ge	Ge	1062	.702	.073	.702	.172	.051	.002	.385	-.140	.385	-.291	-.108	0.063	0.071	-2.7	0.9	-1.9	0.9	A+	A+
1597	604366	Ge	Ge	1062	.299	.299	.282	.261	.118	.041	.307	.307	-.129	-.114	.013	1.980	0.073	1.9	1.1	2.2	1.1	A+	A+
1598	604410	Ge	Ge	1062	.545	.107	.545	.271	.063	.013	.143	-.012	.143	-.060	-.154	0.804	0.067	8.0	1.2	7.6	1.3	A+	A-
1599	604432	Ge	Ge	532	.404	.355	.177	.404	.047	.017	.396	-.216	-.179	.396	-.033	1.535	0.096	-1.2	1.0	-0.2	1.0	A-	
1600	606220	Ge	Ge	532	.453	.098	.333	.453	.092	.024	.226	-.091	-.091	.226	-.070	1.283	0.095	4.0	1.1	4.0	1.2	A-	
1601	604750	Ge	Ge	1062	.706	.026	.706	.170	.084	.014	.432	-.113	.432	-.269	-.192	-0.005	0.073	-3.2	0.9	-3.9	0.8	A+	A-
1602	604661	Ge	Ge	1064	.550	.043	.139	.550	.246	.022	.367	-.109	-.182	.367	-.173	0.800	0.067	-1.0	1.0	-1.1	1.0	A-	
1603	604422	Ge	Ge	532	.305	.526	.085	.068	.305	.017	.421	-.163	-.157	-.148	.421	2.059	0.102	-0.9	1.0	-1.0	0.9	A+	
1604	604429	Ge	Ge	1062	.606	.606	.151	.095	.120	.029	.517	.517	-.196	-.256	-.180	0.479	0.069	-5.7	0.9	-4.8	0.8	A+	A-
1605	604759	Ge	Ge	532	.624	.624	.092	.154	.098	.032	.468	.468	-.208	-.247	-.094	0.435	0.098	-2.7	0.9	-1.7	0.9	A+	

Table B–2 (continued). Mathematics Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
1606	604401	Ge	Ge	532	.374	.141	.337	.374	.096	.053	.361	-.110	-.107	.361	-.098	1.617	0.098	0.7	1.0	1.6	1.1	A+	
1607	604475	Ge	Ge	1062	.489	.148	.275	.489	.057	.031	.383	-.151	-.158	.383	-.097	1.037	0.067	0.6	1.0	1.4	1.1	A-	B-
1608	604591	Ge	Ge	1062	.187	.187	.191	.412	.174	.036	.380	.380	-.054	-.180	-.039	2.702	0.085	-1.0	1.0	-0.1	1.0	A-	A-
1609	604673	Ge	Ge	1062	.557	.199	.099	.557	.103	.042	.427	-.105	-.166	.427	-.230	0.665	0.068	-2.0	1.0	-1.7	0.9	A-	A-
1610	604433	Ge	Ge	1062	.501	.104	.501	.243	.114	.039	.459	-.157	.459	-.215	-.158	0.949	0.068	-3.2	0.9	-2.6	0.9	A+	A+
1611	604407	Ge	Ge	532	.214	.214	.425	.258	.047	.056	.112	.112	.180	-.125	-.102	2.531	0.114	3.7	1.3	4.3	1.4	A+	
1612	605902	Ge	Ge	532	.696	.062	.073	.696	.107	.062	.497	-.138	-.177	.497	-.283	-0.094	0.108	-2.8	0.9	-2.8	0.8	A+	
1613	604447	Ge	Ge	532	.382	.382	.214	.188	.139	.077	.422	.422	-.062	-.124	-.182	1.511	0.099	-0.4	1.0	-0.7	1.0	A+	
1614	606221	Ge	Ge	1062	.332	.246	.332	.195	.184	.044	.238	.006	.238	-.032	-.162	1.791	0.071	4.6	1.2	4.7	1.2	B-	A-
1615	604470	Ge	Ge	1064	.333	.333	.174	.285	.162	.047	.378	.378	-.151	-.143	-.035	1.789	0.070	-0.4	1.0	-0.8	1.0	A+	
1616	605041	Ge	Ge	532	.293	.293	.265	.271	.090	.081	.441	.441	-.162	-.095	-.093	1.988	0.105	-1.2	1.0	-1.3	0.9	B+	
1617	604670	Ge	Ge	1062	.138	.121	.196	.497	.138	.049	.028	.032	-.101	.102	.028	3.122	0.095	4.3	1.3	6.6	1.8	A+	A-
1618	604461	Ge	Ge	530	.381	.162	.406	.381	.047	.004	.124	-.094	-.005	.124	-.077	1.563	0.097	6.7	1.3	6.0	1.4	A-	A+
1619	604373	Ge	Ge	530	.300	.070	.266	.351	.300	.013	.381	-.161	-.247	-.050	.381	1.965	0.103	-1.0	1.0	-0.9	0.9	A+	B-
1620	605043	Ge	Ge	1065	.242	.206	.272	.270	.242	.009	.296	-.046	-.077	-.133	.296	2.363	0.077	1.8	1.1	1.1	1.1	B-	A+
1621	604676	Ge	Ge	530	.291	.243	.336	.291	.106	.025	.204	-.100	-.034	.204	-.058	1.996	0.104	2.9	1.2	4.1	1.3	A-	A-
1622	604633	Ge	Ge	1065	.250	.094	.308	.307	.250	.041	.412	-.093	-.151	-.115	.412	2.254	0.077	-1.7	0.9	-0.7	1.0	A+	A+
1623	606223	Ge	Ge	1062	.477	.127	.165	.477	.215	.016	.471	-.151	-.164	.471	-.230	1.095	0.066	-5.2	0.9	-5.1	0.9	A-	A-
1624	604674	Ge	Ge	530	.383	.383	.115	.266	.221	.015	.440	.440	-.098	-.196	-.171	1.533	0.098	-1.5	0.9	-1.4	0.9	A+	B-
1625	604449	Ge	Ge	1065	.575	.575	.052	.254	.110	.010	.460	.460	-.151	-.314	-.120	0.664	0.067	-4.1	0.9	-3.6	0.9	A+	A+
1626	606222	Ge	Ge	1065	.637	.056	.637	.146	.141	.021	.406	-.086	.406	-.190	-.223	0.322	0.069	-1.8	1.0	-1.9	0.9	A-	A+
1627	604477	Ge	Ge	1065	.677	.025	.075	.677	.201	.022	.481	-.140	-.232	.481	-.259	0.102	0.071	-3.9	0.9	-2.9	0.9	A-	A-
1628	606224	Ge	Ge	1065	.701	.033	.149	.701	.098	.019	.446	-.098	-.273	.446	-.184	-0.020	0.073	-2.7	0.9	-2.7	0.9	A-	A-
1629	604444	Ge	Ge	1065	.458	.102	.162	.232	.458	.046	.454	-.110	-.101	-.239	.454	1.128	0.068	-2.4	0.9	-1.8	0.9	A-	A-
1630	604459	Ge	Ge	1065	.482	.110	.482	.255	.121	.033	.481	-.147	.481	-.250	-.122	1.044	0.067	-3.5	0.9	-3.4	0.9	A+	A-
1631	604677	Ge	Ge	1065	.305	.305	.290	.218	.139	.048	.381	.381	-.119	-.113	-.073	1.907	0.073	0.2	1.0	-0.1	1.0	A+	A+
1632	605042	Ge	Ge	1062	.458	.102	.210	.458	.170	.061	.279	-.031	-.094	.279	-.041	1.081	0.068	4.9	1.1	4.5	1.1	A-	A+
1633	604411	Ge	Ge	1065	.362	.168	.198	.362	.237	.036	.266	-.067	-.157	.266	.007	1.631	0.070	4.4	1.1	4.7	1.2	A-	A+
1634	604398	Ge	Ge	1065	.514	.107	.514	.192	.144	.044	.487	-.094	.487	-.205	-.233	0.855	0.068	-4.1	0.9	-4.0	0.9	A+	A+
1635	604434	Ge	Ge	530	.262	.204	.270	.194	.262	.070	.452	-.135	-.097	-.095	.452	2.082	0.109	-1.4	0.9	-1.1	0.9	A+	A+
1636	604476	Ge	Ge	530	.294	.164	.251	.211	.294	.079	.505	-.154	-.130	-.128	.505	1.865	0.105	-2.9	0.9	-2.6	0.8	B-	A-
1637	604579	Ge	Ge	530	.557	.076	.557	.202	.083	.083	.420	-.085	.420	-.192	-.160	0.471	0.099	-1.1	1.0	-0.8	1.0	A+	A+
1638	604592	Ge	Ge	530	.277	.277	.343	.181	.108	.091	.216	.216	.043	-.106	-.054	1.935	0.107	3.5	1.2	3.4	1.3	A-	A+
1639	604593	Ge	Ge	1065	.614	.108	.614	.146	.068	.065	.407	-.126	.407	-.181	-.176	0.270	0.071	-1.5	1.0	-1.0	1.0	A+	A-
1640	604445	Ge	Ge	535	.566	.170	.566	.165	.088	.011	.323	-.216	.323	-.230	.025	0.739	0.094	0.1	1.0	1.5	1.1	A+	A-

Table B–2 (continued). Mathematics Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M /F	W /B
1641	604362	Ge	Ge	535	.267	.224	.344	.155	.267	.009	.203	.025	-.251	.056	.203	2.238	0.105	1.9	1.1	2.6	1.2	A-	A+
1642	605044	Ge	Ge	535	.191	.191	.581	.194	.030	.004	.294	.294	.096	-.326	-.171	2.748	0.117	0.5	1.0	0.1	1.0	A+	A-
1643	604683	Ge	Ge	535	.411	.127	.183	.273	.411	.006	.407	-.154	-.057	-.282	.407	1.489	0.095	-1.6	0.9	-1.3	0.9	A+	B-
1644	604580	Ge	Ge	1070	.612	.148	.612	.127	.102	.011	.332	-.186	.332	-.173	-.073	0.567	0.067	0.2	1.0	0.9	1.0	A+	A-
1645	604415	Ge	Ge	1070	.426	.207	.426	.159	.198	.010	.265	-.090	.265	-.129	-.090	1.438	0.066	3.6	1.1	3.5	1.1	A-	A+
1646	604383	Ge	Ge	535	.862	.019	.026	.862	.088	.006	.305	-.107	-.172	.305	-.191	-1.031	0.132	-0.3	1.0	0.2	1.0	A+	B-
1647	604414	Ge	Ge	535	.639	.639	.043	.194	.118	.006	.546	.546	-.214	-.339	-.225	0.402	0.097	-5.4	0.8	-5.0	0.7	A-	A-
1648	604596	Ge	Ge	1070	.877	.019	.877	.058	.040	.007	.324	-.167	.324	-.154	-.195	-1.125	0.098	-0.9	0.9	-1.2	0.9	B+	A-
1649	604721	Ge	Ge	535	.497	.213	.497	.230	.037	.022	.342	-.138	.342	-.180	-.072	1.037	0.094	1.1	1.0	0.7	1.0	A+	B-
1650	604430	Ge	Ge	535	.421	.060	.322	.187	.421	.011	.403	-.073	-.188	-.186	.403	1.428	0.095	-0.6	1.0	-0.4	1.0	A-	A+
1651	604441	Ge	Ge	1070	.336	.161	.272	.214	.336	.018	.401	-.168	-.034	-.223	.401	1.865	0.069	-1.7	1.0	-0.9	1.0	A-	B-
1652	604682	Ge	Ge	1070	.209	.209	.269	.333	.149	.040	.183	.183	-.033	-.055	-.010	2.567	0.080	2.3	1.1	3.8	1.3	A-	A-
1653	604472	Ge	Ge	535	.254	.254	.234	.335	.151	.026	.205	.205	-.034	-.127	.062	2.288	0.107	2.7	1.2	3.3	1.3	A-	A+
1654	604696	Ge	Ge	535	.594	.594	.150	.187	.039	.030	.270	.270	-.111	-.103	-.081	0.542	0.097	3.3	1.1	2.9	1.2	A-	A-
1655	604458	Ge	Ge	535	.230	.379	.122	.234	.230	.036	.378	-.016	-.077	-.198	.378	2.422	0.110	-0.4	1.0	0.2	1.0	A+	A+
1656	604639	Ge	Ge	1070	.244	.127	.244	.220	.358	.051	.214	-.025	.214	-.048	-.035	2.324	0.076	2.7	1.1	3.9	1.2	A-	A-
1657	604478	Ge	Ge	1070	.694	.064	.694	.153	.064	.025	.446	-.229	.446	-.212	-.170	0.089	0.072	-2.8	0.9	-3.1	0.9	A+	A-
1658	604699	Ge	Ge	1070	.286	.286	.193	.353	.131	.037	.445	.445	-.153	-.106	-.152	2.100	0.073	-2.8	0.9	-2.3	0.9	A-	A-
1659	604384	Ge	Ge	1070	.394	.165	.394	.316	.098	.027	.338	.002	.338	-.178	-.180	1.556	0.067	0.7	1.0	0.9	1.0	A-	A-
1660	604468	Ge	Ge	1070	.551	.066	.146	.551	.201	.036	.460	-.157	-.207	.460	-.212	0.783	0.067	-4.0	0.9	-4.0	0.9	B+	A-
1661	604372	Ge	Ge	1070	.343	.326	.208	.343	.090	.033	.276	-.052	-.152	.276	-.055	1.800	0.069	2.3	1.1	2.9	1.1	A+	A+
1662	604368	Ge	Ge	1067	.274	.160	.274	.393	.136	.038	.113	-.015	.113	-.020	-.016	2.134	0.073	5.0	1.2	4.7	1.2	A-	A-
1663	604761	Ge	Ge	535	.445	.355	.142	.445	.056	.002	.419	-.119	-.311	.419	-.188	1.401	0.092	-2.0	0.9	-2.1	0.9	A-	A+
1664	604737	Ge	Ge	535	.536	.054	.082	.325	.536	.002	.490	-.219	-.190	-.303	.490	0.984	0.092	-5.3	0.9	-5.0	0.8	A+	A-
1665	604640	Ge	Ge	535	.251	.608	.251	.069	.065	.008	.204	-.102	.204	-.087	-.056	2.371	0.105	1.5	1.1	2.1	1.2	A-	A+
1666	604717	Ge	Ge	1067	.642	.100	.642	.207	.023	.028	.468	-.183	.468	-.247	-.149	0.360	0.069	-3.9	0.9	-3.8	0.9	A+	A-
1667	604733	Ge	Ge	1067	.473	.099	.307	.473	.095	.026	.258	-.092	-.104	.258	-.137	1.156	0.066	2.7	1.1	3.7	1.1	A-	A-
1668	604599	Ge	Ge	535	.843	.032	.086	.843	.039	.000	.337	-.169	-.202	.337	-.187	-0.704	0.123	-0.8	0.9	-1.7	0.8	B+	B-
1669	604719	Ge	Ge	535	.544	.054	.150	.544	.230	.022	.318	-.136	-.159	.318	-.103	0.902	0.093	1.1	1.0	0.9	1.0	A-	A+
1670	604374	Ge	Ge	1067	.310	.370	.147	.310	.157	.016	.249	-.104	-.182	.249	.069	1.977	0.070	2.2	1.1	2.2	1.1	A-	A+
1671	605046	Ge	Ge	1067	.509	.200	.105	.177	.509	.009	.462	-.240	-.160	-.189	.462	1.045	0.065	-6.2	0.9	-5.5	0.9	A+	A-
1672	604463	Ge	Ge	535	.626	.051	.107	.626	.196	.021	.293	-.153	-.032	.293	-.168	0.517	0.096	1.1	1.0	1.4	1.1	B+	A+
1673	604736	Ge	Ge	535	.365	.105	.351	.365	.153	.026	.417	-.127	-.172	.417	-.111	1.742	0.096	-2.2	0.9	-1.2	1.0	A-	A+
1674	604701	Ge	Ge	535	.161	.198	.286	.312	.161	.043	.172	-.014	.008	-.025	.172	2.941	0.123	0.9	1.1	1.8	1.2	A-	A-
1675	604355	Ge	Ge	535	.587	.587	.135	.204	.049	.026	.308	.308	-.157	-.076	-.142	0.695	0.095	1.2	1.0	1.6	1.1	A+	B-

Table B–2 (continued). Mathematics Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
1676	604416	Ge	Ge	1067	.609	.241	.609	.091	.037	.023	.354	-.148	.354	-.201	-.133	0.542	0.067	-0.6	1.0	-1.3	1.0	B-	A-
1677	604738	Ge	Ge	1067	.352	.075	.330	.187	.352	.056	.276	-.119	.025	-.112	.276	1.692	0.069	2.6	1.1	2.6	1.1	A+	A-
1678	605045	Ge	Ge	535	.256	.256	.258	.280	.155	.051	.290	.290	-.002	-.130	-.056	2.267	0.105	0.3	1.0	1.2	1.1	A+	A+
1679	604668	Ge	Ge	535	.402	.232	.200	.120	.402	.047	.426	-.058	-.225	-.141	.426	1.509	0.095	-2.0	0.9	-1.7	0.9	A-	A-
1680	604662	Ge	Ge	1067	.350	.157	.350	.126	.191	.057	.318	-.127	.318	-.141	-.060	1.420	0.072	-1.3	1.0	-1.0	1.0	A+	A+
1681	604679	Ge	Ge	1067	.147	.518	.183	.120	.147	.032	.037	.069	.006	-.076	.037	3.013	0.090	2.7	1.2	4.5	1.4	A+	A-
1682	604473	Ge	Ge	1067	.320	.481	.098	.320	.041	.060	.374	-.042	-.187	.374	-.141	1.852	0.070	-1.1	1.0	-0.4	1.0	A+	B+
1683	604739	Ge	Ge	1067	.366	.080	.366	.369	.128	.057	.364	-.071	.364	-.081	-.146	1.619	0.069	-0.4	1.0	0.5	1.0	A-	A-
1684	604691	Ge	Ge	532	.656	.656	.167	.109	.060	.008	.254	.254	-.105	-.184	-.032	0.306	0.097	0.9	1.0	1.1	1.1	A-	
1685	604376	Ge	Ge	532	.368	.056	.368	.391	.124	.004	.143	-.038	.143	-.082	-.145	1.517	0.097	2.4	1.1	2.2	1.1	A-	
1686	604404	Ge	Ge	532	.115	.479	.280	.120	.115	.006	.273	-.024	-.023	-.168	.273	3.314	0.141	-0.4	1.0	0.4	1.1	C-	
1687	604357	Ge	Ge	532	.451	.271	.451	.175	.070	.034	.317	-.186	.317	-.042	-.011	1.203	0.094	1.1	1.0	1.0	1.0	A-	
1688	604547	Ge	Ge	532	.466	.139	.235	.466	.117	.043	.274	-.115	-.077	.274	-.094	1.129	0.097	4.5	1.2	3.9	1.2	A-	
1689	604548	Ge	Ge	1064	.479	.069	.253	.479	.137	.062	.419	-.118	-.152	.419	-.154	1.051	0.068	-0.7	1.0	-0.8	1.0	A-	A-
1690	604604	Ge	Ge	1065	.310	.082	.287	.286	.310	.035	.399	-.133	-.046	-.218	.399	1.966	0.072	-1.2	1.0	-1.0	1.0	A+	A+
1691	604605	Ge	Ge	1064	.102	.321	.217	.312	.102	.047	.118	.003	-.112	.087	.118	3.482	0.106	1.6	1.1	3.3	1.4	A-	A+
1692	604732	Ge	Ge	1065	.153	.508	.120	.135	.153	.084	.164	.023	-.088	.063	.164	2.893	0.091	2.4	1.1	3.8	1.4	A-	A+
1693	604735	Ge	Ge	533	.550	.550	.175	.084	.184	.008	.396	.396	-.110	-.181	-.232	0.810	0.094	-1.8	1.0	-1.4	0.9	C-	A-
1694	603086	A2	A2	963	.146	.648	.056	.099	.146	.051	.166	.109	-.118	-.142	.166	3.205	0.098	2.2	1.1	4.1	1.5	A+	
1695	603043	A2	A2	962	.577	.078	.162	.577	.152	.031	.351	-.087	-.194	.351	-.167	0.815	0.072	-0.4	1.0	-0.1	1.0	A-	A+
1696	603000	A2	A2	480	.483	.204	.483	.131	.163	.019	.443	-.152	.443	-.205	-.200	1.293	0.100	-2.5	0.9	-2.3	0.9	A-	
1697	603018	A2	A2	964	.729	.729	.117	.085	.041	.028	.466	.466	-.232	-.208	-.148	0.058	0.080	-3.2	0.9	-3.6	0.7	A+	A-
1698	603098	A2	A2	960	.281	.230	.314	.158	.281	.017	.379	-.145	-.233	.037	.379	2.370	0.077	-0.5	1.0	-0.2	1.0	A-	
1699	603042	A2	A2	960	.718	.034	.138	.718	.085	.025	.325	-.123	-.156	.325	-.186	0.111	0.078	-0.2	1.0	-0.8	0.9	A+	A+
1700	603094	A2	A2	960	.804	.041	.804	.078	.044	.033	.392	-.120	.392	-.249	-.151	-0.562	0.092	-1.0	0.9	-1.9	0.8	A+	A-
1701	603038	A2	A2	1440	.553	.553	.282	.083	.065	.017	.432	.432	-.217	-.195	-.173	0.998	0.058	-4.0	0.9	-2.7	0.9	A-	A+
1702	603047	A2	A2	1444	.433	.085	.240	.433	.234	.008	.473	-.150	-.297	.473	-.124	1.595	0.059	-4.5	0.9	-3.8	0.9	A-	A+
1703	603051	A2	A2	964	.492	.492	.048	.174	.270	.017	.428	.428	.021	-.216	-.277	1.247	0.071	-2.1	1.0	-1.4	0.9	A+	A-
1704	603064	A2	A2	960	.312	.045	.312	.115	.502	.027	.458	-.097	.458	-.135	-.264	2.157	0.076	-2.0	0.9	-0.7	1.0	A-	A+
1705	603083	A2	A2	960	.208	.279	.349	.208	.109	.054	.075	.102	-.047	.075	-.091	2.763	0.087	5.6	1.3	7.0	1.6	A-	A+
1706	603050	A2	A2	960	.597	.069	.597	.159	.141	.034	.447	-.161	.447	-.253	-.202	0.698	0.073	-4.8	0.9	-3.7	0.8	B+	A-
1707	603067	A2	A2	963	.486	.130	.486	.159	.206	.020	.382	-.193	.382	-.146	-.122	1.346	0.071	0.9	1.0	0.3	1.0	A+	A-
1708	603095	A2	A2	963	.869	.040	.070	.020	.869	.002	.300	-.118	-.224	-.125	.300	-0.884	0.101	-0.6	1.0	-1.8	0.8	A-	C-
1709	603084	A2	A2	963	.121	.121	.425	.119	.292	.044	.350	.350	-.104	-.053	-.053	3.700	0.110	-0.2	1.0	0.4	1.0	A-	A-
1710	603112	A2	A2	962	.826	.060	.039	.826	.054	.021	.347	-.192	-.140	.347	-.126	-0.666	0.094	-1.2	0.9	-1.9	0.8	A+	

Table B–2 (continued). Mathematics Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
1711	603065	A2	A2	1440	.485	.163	.173	.485	.133	.047	.443	-.230	-.118	.443	-.137	1.261	0.059	-2.9	0.9	-2.5	0.9	A+	B-
1712	603074	A2	A2	962	.614	.035	.163	.614	.161	.026	.511	-.124	-.254	.511	-.262	0.648	0.073	-5.3	0.9	-4.5	0.8	A+	
1713	603085	A2	A2	962	.367	.075	.232	.367	.258	.069	.425	-.133	-.142	.425	-.140	1.815	0.075	-2.1	0.9	-1.8	0.9	A-	
1714	603075	A2	A2	962	.342	.209	.229	.174	.342	.047	.494	-.189	-.127	-.135	.494	1.906	0.075	-4.4	0.9	-3.6	0.8	A-	A-
1715	603070	A2	A2	1442	.514	.514	.233	.132	.092	.029	.495	.495	-.165	-.257	-.197	1.123	0.058	-6.3	0.9	-5.2	0.8	A-	A-
1716	603071	A2	A2	963	.437	.437	.130	.372	.043	.019	.518	.518	-.202	-.276	-.141	1.478	0.071	-5.9	0.9	-5.6	0.8	A-	
1717	603127	A2	A2	481	.187	.187	.349	.312	.096	.056	.364	.364	.125	-.267	-.130	2.833	0.126	-0.2	1.0	-0.5	0.9	A+	
1718	603087	A2	A2	962	.442	.152	.442	.174	.167	.066	.355	-.192	.355	-.139	-.053	1.383	0.072	0.6	1.0	0.0	1.0	A-	A+
1719	603088	A2	A2	482	.504	.147	.504	.201	.141	.006	.317	-.135	.317	-.172	-.107	1.171	0.099	0.6	1.0	1.2	1.1	B+	
1720	603120	A2	A2	963	.677	.064	.118	.108	.677	.032	.423	-.133	-.185	-.192	.423	0.392	0.076	-2.2	0.9	-2.9	0.8	A+	A-
1721	603063	A2	A2	963	.493	.133	.195	.493	.157	.022	.431	-.198	-.225	.431	-.099	1.360	0.071	-2.9	0.9	-2.9	0.9	A+	A+
1722	603116	A2	A2	963	.357	.357	.163	.191	.232	.057	.443	.443	-.186	-.110	-.098	1.954	0.075	-1.2	1.0	-1.5	0.9	A+	B-
1723	603096	A2	A2	963	.247	.178	.247	.216	.262	.098	.265	.031	.265	-.162	.030	2.533	0.084	3.5	1.2	3.8	1.3	A+	A-
1724	603082	A2	A2	964	.441	.132	.193	.441	.206	.028	.435	-.130	-.148	.435	-.200	1.550	0.072	-2.6	0.9	-2.2	0.9	A-	A+
1725	603041	A2	A2	964	.260	.146	.132	.435	.260	.027	.485	-.186	-.027	-.209	.485	2.553	0.081	-2.1	0.9	-2.0	0.9	A+	B-
1726	603117	A2	A2	964	.404	.164	.182	.176	.404	.075	.508	-.067	-.221	-.194	.508	1.630	0.074	-5.6	0.9	-4.6	0.8	A+	A-
1727	603052	A2	A2	961	.497	.056	.084	.341	.497	.021	.377	-.111	-.136	-.203	.377	1.270	0.071	1.0	1.0	0.0	1.0	A+	A-
1728	603099	A2	A2	961	.798	.050	.798	.084	.027	.041	.453	-.176	.453	-.227	-.140	-0.527	0.092	-2.6	0.9	-3.5	0.7	B+	A-
1729	603039	A2	A2	961	.339	.189	.247	.339	.161	.064	.183	.023	-.003	.183	-.073	1.978	0.076	8.3	1.3	7.6	1.4	A-	A-
1730	603101	A2	A2	964	.445	.445	.213	.163	.162	.018	.453	.453	-.133	-.217	-.177	1.583	0.071	-2.2	0.9	-2.5	0.9	A+	A+
1731	603019	A2	A2	958	.545	.153	.157	.132	.545	.014	.433	-.081	-.246	-.242	.433	1.081	0.071	-3.4	0.9	-2.3	0.9	A-	A-
1732	603053	A2	A2	964	.258	.258	.404	.060	.268	.010	.447	.447	-.330	-.138	.028	2.616	0.081	-1.4	0.9	-0.7	1.0	A-	A-
1733	603020	A2	A2	964	.590	.590	.125	.137	.114	.034	.481	.481	-.227	-.232	-.092	0.824	0.072	-4.7	0.9	-2.0	0.9	A+	A-
1734	603048	A2	A2	964	.341	.341	.110	.090	.396	.062	.460	.460	-.214	-.173	-.085	2.015	0.076	-1.2	1.0	-0.6	1.0	A-	A-
1735	603072	A2	A2	484	.337	.337	.362	.128	.161	.012	.521	.521	-.174	-.189	-.243	2.156	0.106	-3.2	0.9	-2.4	0.9	A-	A-
1736	603045	A2	A2	484	.632	.632	.207	.087	.068	.006	.466	.466	-.260	-.205	-.225	0.705	0.102	-3.9	0.9	-3.1	0.8	A+	A+
1737	603111	A2	A2	484	.205	.205	.322	.236	.198	.039	.370	.370	-.122	-.096	-.100	2.921	0.125	0.0	1.0	0.7	1.1	A+	A-
1738	603066	A2	A2	966	.288	.288	.068	.152	.465	.027	.595	.595	-.121	-.076	-.350	2.349	0.078	-6.3	0.8	-6.3	0.7	A-	A+
1739	603073	A2	A2	966	.461	.083	.306	.461	.116	.034	.399	-.112	-.194	.399	-.108	1.440	0.071	-0.4	1.0	-0.7	1.0	A-	A-
1740	603049	A2	A2	484	.322	.322	.252	.165	.192	.068	.567	.567	-.100	-.212	-.243	2.100	0.109	-3.9	0.8	-3.6	0.8	A-	A+
1741	603100	A2	A2	964	.566	.087	.566	.080	.247	.020	.423	-.138	.423	-.218	-.189	0.959	0.070	-3.1	0.9	-3.1	0.9	A-	
1742	603076	A2	A2	964	.331	.163	.156	.331	.301	.050	.319	-.043	-.042	.319	-.157	2.033	0.074	1.4	1.0	1.5	1.1	A+	
1743	603089	A2	A2	964	.197	.102	.547	.113	.197	.042	.504	-.143	-.154	-.117	.504	2.874	0.087	-3.4	0.8	-3.0	0.8	A-	
1744	603097	A2	A2	964	.577	.106	.577	.122	.148	.047	.412	-.188	.412	-.127	-.158	0.831	0.071	-2.6	0.9	-2.5	0.9	A-	
1745	603046	A2	A2	482	.535	.095	.129	.170	.535	.071	.457	-.118	-.211	-.215	.457	0.927	0.101	-3.9	0.9	-2.9	0.8	B+	

Table B–2 (continued). Mathematics Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M /F	W /B
1746	602999	A2	A2	962	.194	.278	.329	.149	.194	.051	.482	-.128	-.079	-.197	.482	2.888	0.089	-2.3	0.9	-1.8	0.9	A+	
1747	603118	A2	A2	962	.283	.283	.246	.246	.197	.028	.374	.374	-.143	-.087	-.112	2.339	0.078	0.5	1.0	0.3	1.0	A+	
1748	603077	A2	A2	482	.145	.259	.299	.257	.145	.039	.298	-.069	-.092	-.012	.298	3.308	0.138	0.0	1.0	0.1	1.0	A-	
1749	603121	A2	A2	482	.355	.079	.154	.369	.355	.044	.448	-.081	-.146	-.186	.448	1.933	0.104	-1.8	0.9	-1.4	0.9	A-	
1750	603102	A2	A2	482	.483	.483	.230	.168	.058	.060	.436	.436	-.057	-.291	-.076	1.260	0.101	-1.6	1.0	-1.7	0.9	A+	
1751	603103	A2	A2	480	.506	.027	.135	.323	.506	.008	.418	-.049	-.189	-.272	.418	1.214	0.099	-1.8	0.9	-1.6	0.9	A+	
1752	603023	A2	A2	960	.376	.194	.376	.201	.185	.044	.356	-.097	.356	-.175	-.115	1.807	0.074	1.7	1.1	1.8	1.1	A+	A-
1753	603119	A2	A2	960	.185	.241	.317	.224	.185	.033	.315	-.030	-.032	-.174	.315	3.036	0.092	1.8	1.1	2.9	1.3	A-	A+
1754	603104	A2	A2	960	.459	.124	.223	.190	.459	.004	.502	-.268	-.166	-.217	.502	1.492	0.071	-4.7	0.9	-3.7	0.9	A+	A-
1755	603040	A2	A2	958	.656	.113	.656	.075	.149	.007	.435	-.144	.435	-.193	-.290	0.554	0.073	-3.5	0.9	-2.3	0.9	A-	A-
1756	603105	A2	A2	958	.255	.255	.341	.281	.105	.018	.469	.469	-.109	-.246	-.080	2.579	0.081	-2.0	0.9	-1.8	0.9	A+	A-
1757	603024	A2	A2	958	.264	.264	.298	.258	.157	.024	.423	.423	-.128	-.167	-.098	2.505	0.080	-1.2	1.0	0.1	1.0	A+	A+
1758	603062	A2	A2	958	.224	.399	.261	.224	.090	.026	.379	-.155	-.121	.379	-.032	2.752	0.084	0.0	1.0	0.0	1.0	A+	A+
1759	604700	A2	A2	961	.533	.533	.071	.306	.055	.035	.325	.325	-.167	-.086	-.138	1.057	0.072	2.4	1.1	4.3	1.2	A-	B-
1760	603013	A2	A2	966	.619	.063	.619	.227	.082	.009	.421	-.147	.421	-.254	-.163	0.751	0.071	-3.9	0.9	-1.9	0.9	B-	A-
1761	604570	A2	A2	482	.531	.531	.077	.214	.137	.042	.396	.396	-.161	-.157	-.087	1.074	0.100	-0.7	1.0	0.7	1.0	A-	
1762	604625	A2	A2	958	.573	.573	.161	.184	.072	.010	.449	.449	-.243	-.203	-.177	0.950	0.071	-3.1	0.9	-2.1	0.9	A-	A+
1763	604530	A2	A2	962	.393	.393	.226	.197	.157	.028	.476	.476	-.170	-.183	-.147	1.727	0.072	-3.6	0.9	-3.0	0.9	B+	A-
1764	604686	A2	A2	478	.333	.153	.297	.333	.151	.067	.332	-.074	-.116	.332	-.052	1.992	0.106	1.3	1.1	1.8	1.1	A-	
1765	603037	A2	A2	964	.510	.189	.104	.183	.510	.015	.457	-.147	-.203	-.222	.457	1.276	0.071	-4.0	0.9	-3.3	0.9	A-	C+
1766	604572	A2	A2	484	.628	.155	.628	.099	.054	.064	.384	-.191	.384	-.126	-.133	0.511	0.107	-0.6	1.0	0.5	1.0	A-	A+
1767	604537	A2	A2	964	.569	.165	.569	.163	.046	.058	.414	-.168	.414	-.147	-.137	0.852	0.073	-1.1	1.0	0.5	1.0	A+	B-
1768	604685	A2	A2	480	.500	.119	.150	.500	.223	.008	.320	-.186	-.217	.320	-.043	1.323	0.100	3.2	1.1	2.2	1.1	A-	A+
1769	604539	A2	A2	958	.310	.411	.310	.190	.071	.018	.387	-.134	.387	-.195	-.078	2.240	0.076	0.5	1.0	0.8	1.0	C-	A+
1770	604540	A2	A2	963	.299	.299	.290	.233	.102	.077	.464	.464	-.086	-.168	-.116	2.238	0.079	-2.2	0.9	-1.1	0.9	A+	A-
1771	604703	A2	A2	480	.904	.904	.046	.031	.017	.002	.257	.257	-.143	-.154	-.132	-1.193	0.160	-0.3	1.0	0.3	1.0	A+	A-
1772	604629	A2	A2	964	.403	.403	.152	.240	.142	.064	.485	.485	-.153	-.191	-.121	1.658	0.074	-4.3	0.9	-3.5	0.9	A+	A-
1773	603003	A2	A2	484	.349	.176	.271	.349	.182	.023	.439	-.121	-.208	.439	-.114	2.057	0.105	-0.8	1.0	0.6	1.0	A+	A+
1774	604550	A2	A2	961	.459	.074	.204	.459	.240	.023	.316	-.121	-.111	.316	-.125	1.452	0.071	3.1	1.1	2.7	1.1	A+	A-
1775	604544	A2	A2	482	.324	.143	.440	.324	.050	.044	.398	-.071	-.191	.398	-.108	2.059	0.105	-0.9	1.0	-1.0	0.9	B-	
1776	604627	A2	A2	963	.342	.291	.177	.181	.342	.010	.293	-.039	-.207	-.092	.293	2.099	0.075	2.7	1.1	2.8	1.1	A-	A+
1777	604626	A2	A2	964	.217	.483	.112	.174	.217	.014	.390	-.181	-.193	-.006	.390	2.792	0.086	-0.6	1.0	0.2	1.0	A+	A-
1778	604552	A2	A2	964	.525	.139	.144	.525	.175	.017	.335	.041	-.242	.335	-.211	1.085	0.071	1.4	1.0	0.2	1.0	A+	A-
1779	604619	A2	A2	964	.231	.084	.231	.230	.441	.014	.281	-.129	.281	-.147	-.017	2.696	0.084	2.0	1.1	3.4	1.3	A-	A+
1780	604578	A2	A2	964	.327	.074	.327	.381	.186	.033	.461	-.119	.461	-.220	-.161	2.063	0.077	-2.6	0.9	-1.7	0.9	A-	A-

Table B–2 (continued). Mathematics Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M /F	W /B
1781	604654	A2	A2	964	.191	.238	.306	.246	.191	.020	.236	.005	.001	-.189	.236	2.986	0.091	2.4	1.1	3.3	1.3	A+	A-
1782	604607	A2	A2	960	.731	.098	.056	.107	.731	.007	.354	-.081	-.195	-.243	.354	0.080	0.078	-1.7	0.9	0.1	1.0	A+	A-
1783	604568	A2	A2	960	.579	.579	.084	.164	.129	.044	.524	.524	-.194	-.274	-.184	0.763	0.073	-6.3	0.8	-4.5	0.8	A+	A-
1784	603004	A2	A2	960	.243	.243	.333	.257	.117	.050	.418	.418	-.063	-.196	-.111	2.539	0.083	-1.4	0.9	-0.1	1.0	A+	A+
1785	604660	A2	A2	964	.402	.183	.402	.243	.130	.044	.457	-.249	.457	-.143	-.120	1.637	0.074	-2.9	0.9	-2.5	0.9	A+	A+
1786	604582	A2	A2	963	.345	.345	.137	.347	.159	.013	.448	.448	-.171	-.165	-.173	2.083	0.075	-2.5	0.9	-2.4	0.9	A-	A-
1787	604621	A2	A2	963	.680	.080	.680	.102	.132	.006	.255	-.048	.255	-.140	-.157	0.404	0.075	1.6	1.1	2.1	1.1	A+	A-
1788	604614	A2	A2	963	.407	.327	.407	.145	.108	.013	.379	-.180	.379	-.173	-.096	1.753	0.073	-0.1	1.0	-0.8	1.0	B-	A-
1789	604556	A2	A2	963	.514	.151	.257	.514	.058	.021	.402	-.128	-.236	.402	-.096	1.208	0.071	-2.1	1.0	-0.5	1.0	A+	A-
1790	603005	A2	A2	963	.118	.561	.118	.137	.152	.032	.175	.056	.175	-.077	-.132	3.720	0.110	2.5	1.2	4.8	1.8	A-	A+
1791	604609	A2	A2	963	.638	.638	.189	.128	.034	.011	.486	.486	-.258	-.253	-.162	0.609	0.073	-5.4	0.9	-4.5	0.8	A+	B-
1792	604656	A2	A2	962	.364	.126	.248	.364	.227	.035	.174	.036	-.133	.174	-.024	1.889	0.075	6.4	1.2	7.0	1.4	A+	
1793	604664	A2	A2	962	.539	.169	.096	.539	.183	.014	.415	-.180	-.171	.415	-.183	1.072	0.071	-2.6	0.9	-2.5	0.9	A-	
1794	603001	A2	A2	962	.381	.105	.282	.381	.204	.029	.382	-.151	-.240	.382	-.008	1.815	0.074	-0.2	1.0	0.1	1.0	A-	
1795	603010	A2	A2	962	.202	.202	.195	.293	.241	.069	.387	.387	-.129	.006	-.140	2.843	0.089	-0.6	1.0	0.1	1.0	A-	
1796	604657	A2	A2	962	.296	.246	.286	.296	.124	.048	.190	-.126	-.048	.190	.074	2.147	0.078	4.7	1.2	4.4	1.3	A+	A-
1797	603011	A2	A2	962	.277	.277	.188	.260	.207	.069	.244	.244	-.059	-.058	-.047	2.213	0.079	2.7	1.1	3.7	1.2	A-	A-
1798	604558	A2	A2	962	.278	.411	.147	.278	.129	.036	.081	.096	-.146	.081	.026	2.286	0.079	7.0	1.3	7.2	1.5	A+	A+
1799	604632	A2	A2	962	.356	.113	.229	.232	.356	.071	.428	-.128	-.116	-.161	.428	1.768	0.075	-2.4	0.9	-1.4	0.9	A+	A+
1800	604610	A2	A2	962	.730	.053	.730	.129	.063	.025	.469	-.139	.469	-.296	-.171	-0.046	0.080	-3.2	0.9	-3.4	0.8	A+	B-
1801	604622	A2	A2	962	.629	.049	.159	.629	.107	.056	.358	-.121	-.087	.358	-.200	0.408	0.075	0.4	1.0	0.9	1.1	A+	B-
1802	604666	A2	A2	962	.519	.113	.519	.075	.250	.044	.380	-.188	.380	-.137	-.096	1.019	0.072	-0.2	1.0	-0.3	1.0	A+	A+
1803	604615	A2	A2	962	.214	.162	.329	.232	.214	.063	.361	-.119	-.056	-.055	.361	2.645	0.086	-0.4	1.0	-0.1	1.0	A-	A+
1804	604553	A2	A2	963	.393	.172	.283	.142	.393	.010	.423	-.136	-.180	-.175	.423	1.708	0.072	-2.3	0.9	-2.3	0.9	A+	
1805	603014	A2	A2	963	.415	.271	.171	.415	.095	.048	.422	-.214	-.168	.422	-.063	1.513	0.072	-1.7	1.0	-1.7	0.9	A+	
1806	603002	A2	A2	963	.422	.157	.160	.234	.422	.028	.480	-.145	-.171	-.212	.480	1.531	0.071	-4.7	0.9	-4.4	0.9	A+	
1807	604616	A2	A2	963	.603	.603	.200	.105	.062	.029	.447	.447	-.190	-.216	-.174	0.650	0.072	-3.5	0.9	-2.3	0.9	A-	
1808	604623	A2	A2	963	.903	.035	.903	.038	.014	.009	.267	-.112	.267	-.168	-.113	-1.377	0.117	-0.1	1.0	-1.2	0.8	A+	
1809	604678	A2	A2	963	.202	.224	.185	.375	.202	.015	.295	-.144	-.169	.047	.295	2.807	0.087	0.7	1.0	1.8	1.1	A+	
1810	604576	A2	A2	963	.419	.419	.182	.217	.164	.019	.417	.417	-.200	-.192	-.066	1.566	0.071	-2.6	0.9	-2.1	0.9	A-	
1811	604706	A2	A2	963	.388	.117	.430	.388	.046	.019	.257	-.201	-.047	.257	-.073	1.711	0.072	4.1	1.1	3.9	1.2	A-	
1812	604635	A2	A2	963	.216	.216	.090	.586	.087	.021	.307	.307	-.127	-.070	-.125	2.693	0.085	1.2	1.1	1.7	1.1	A-	
1813	603015	A2	A2	963	.559	.088	.559	.166	.118	.069	.248	-.026	.248	-.143	-.066	0.734	0.073	2.9	1.1	1.8	1.1	A+	
1814	604577	A2	A2	962	.208	.306	.192	.271	.208	.023	.348	-.086	-.136	-.091	.348	2.818	0.087	0.2	1.0	0.1	1.0	A+	A+
1815	603016	A2	A2	962	.398	.208	.398	.243	.107	.044	.444	-.170	.444	-.162	-.131	1.658	0.073	-2.5	0.9	-2.2	0.9	A+	A-

Table B–2 (continued). Mathematics Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M /F	W /B
1816	603031	A2	A2	962	.212	.084	.366	.290	.212	.048	.370	-.072	-.116	-.079	.370	2.754	0.087	-0.3	1.0	1.7	1.1	A+	A-
1817	604681	A2	A2	962	.377	.377	.287	.138	.172	.026	.358	.358	-.002	-.187	-.199	1.807	0.073	1.4	1.0	1.5	1.1	A+	C+
1818	604650	A2	A2	962	.259	.264	.291	.259	.152	.034	.290	-.174	.004	.290	-.039	2.457	0.081	2.4	1.1	3.2	1.2	A-	A+
1819	603025	A2	A2	962	.569	.194	.569	.130	.071	.036	.428	-.121	.428	-.241	-.163	0.847	0.072	-2.1	1.0	-1.2	1.0	A+	A-
1820	604624	A2	A2	962	.728	.097	.061	.728	.052	.062	.433	-.229	-.205	.433	-.128	-0.156	0.084	-2.5	0.9	-2.5	0.8	A+	A-
1821	604569	A2	A2	963	.263	.283	.346	.263	.076	.033	.185	.137	-.150	.185	-.112	2.557	0.081	5.2	1.2	6.2	1.4	A-	A+
1822	603026	A2	A2	963	.378	.188	.378	.277	.110	.047	.356	.021	.356	-.206	-.122	1.868	0.074	1.5	1.1	1.6	1.1	A+	A-
1823	604697	A2	A2	963	.479	.118	.479	.267	.094	.043	.393	-.119	.393	-.188	-.084	1.367	0.072	-0.1	1.0	0.0	1.0	A-	A-
1824	604704	A2	A2	480	.585	.129	.142	.585	.106	.038	.367	-.144	-.143	.367	-.116	0.813	0.102	0.4	1.0	1.1	1.1	A-	A-
1825	603032	A2	A2	963	.409	.142	.296	.409	.088	.064	.323	-.053	-.185	.323	-.044	1.668	0.073	2.7	1.1	1.9	1.1	A+	A+
1826	604532	A2	A2	963	.354	.229	.354	.128	.239	.051	.430	-.111	.430	-.166	-.117	1.988	0.075	-0.7	1.0	-0.1	1.0	A+	A-
1827	603027	A2	A2	964	.767	.049	.767	.089	.056	.039	.433	-.153	.433	-.215	-.199	-0.259	0.087	-2.4	0.9	-3.2	0.7	A-	A-
1828	604705	A2	A2	964	.183	.108	.183	.253	.395	.061	.246	-.129	.246	-.119	.086	3.060	0.093	2.6	1.2	3.5	1.3	A+	A+
1829	603033	A2	A2	964	.143	.139	.380	.254	.143	.084	.363	-.005	-.089	-.033	.363	3.375	0.102	0.1	1.0	1.5	1.2	A+	B+
1830	604651	A2	A2	964	.299	.155	.230	.227	.299	.089	.472	-.099	-.142	-.137	.472	2.191	0.079	-2.5	0.9	-2.1	0.9	A+	A-
1831	603017	A2	A2	483	.313	.139	.313	.375	.073	.101	.339	-.082	.339	-.041	-.114	2.155	0.111	1.6	1.1	1.3	1.1	A+	A+
1832	604574	A2	A2	964	.313	.143	.313	.241	.226	.077	.366	-.009	.366	-.190	-.050	2.124	0.078	1.6	1.1	1.6	1.1	A+	A-
1833	603021	A2	A2	961	.408	.408	.267	.164	.115	.046	.468	.468	-.228	-.171	-.051	1.649	0.073	-3.5	0.9	-2.6	0.9	A-	A-
1834	604652	A2	A2	961	.353	.330	.154	.353	.132	.031	.320	-.059	-.177	.320	-.047	1.973	0.075	3.5	1.1	3.3	1.2	A-	A-
1835	604575	A2	A2	961	.309	.179	.182	.284	.309	.046	.511	-.093	-.173	-.174	.511	2.190	0.077	-3.3	0.9	-2.7	0.9	A-	A-
1836	604543	A2	A2	481	.171	.171	.270	.299	.214	.046	.342	.342	-.090	-.054	-.033	3.087	0.134	0.8	1.1	3.3	1.5	A-	
1837	604541	A2	A2	961	.306	.306	.351	.179	.125	.040	.375	.375	-.163	-.112	-.044	2.208	0.078	1.0	1.0	1.7	1.1	A-	A-
1838	604636	A2	A2	961	.372	.166	.372	.300	.116	.048	.369	-.154	.369	-.111	-.095	1.843	0.074	0.5	1.0	1.2	1.1	B-	B+
1839	603006	A2	A2	480	.410	.215	.410	.244	.092	.040	.270	-.081	.270	-.185	-.002	1.703	0.103	3.8	1.2	3.0	1.2	A+	B+
1840	604613	A2	A2	964	.491	.160	.491	.269	.064	.017	.445	-.175	.445	-.269	-.109	1.362	0.071	-2.6	0.9	-2.7	0.9	A-	A+
1841	603079	A2	A2	964	.338	.138	.152	.351	.338	.022	.385	-.110	-.153	-.144	.385	2.121	0.075	-0.1	1.0	0.3	1.0	A-	A+
1842	603022	A2	A2	480	.367	.367	.206	.206	.185	.035	.334	.334	-.126	-.126	-.100	1.932	0.105	1.8	1.1	1.6	1.1	A-	A-
1843	604637	A2	A2	480	.544	.158	.196	.544	.092	.010	.339	-.206	-.144	.339	-.079	1.118	0.100	1.1	1.0	0.5	1.0	A-	B+
1844	603078	A2	A2	958	.570	.206	.570	.133	.066	.026	.417	-.080	.417	-.261	-.208	0.928	0.071	-1.8	1.0	-1.0	1.0	A+	A-
1845	604566	A2	A2	480	.263	.204	.277	.242	.263	.015	.434	-.108	-.120	-.147	.434	2.577	0.114	-1.0	0.9	-0.3	1.0	A-	A-
1846	604680	A2	A2	480	.288	.292	.327	.288	.054	.040	.228	-.033	-.041	.228	-.063	2.380	0.112	3.4	1.2	4.1	1.3	A-	A+
1847	604587	A2	A2	480	.735	.083	.060	.079	.735	.042	.456	-.161	-.221	-.143	.456	-0.019	0.116	-1.8	0.9	-1.8	0.8	A-	A-
1848	604611	A2	A2	480	.567	.102	.067	.223	.567	.042	.507	-.157	-.197	-.217	.507	0.916	0.102	-3.7	0.9	-2.8	0.8	B+	A-
1849	604551	A2	A2	964	.387	.198	.167	.213	.387	.035	.405	-.027	-.172	-.193	.405	1.835	0.073	0.2	1.0	0.5	1.0	A+	A+
1850	604542	A2	A2	480	.381	.167	.252	.381	.133	.067	.364	.011	-.156	.364	-.108	1.795	0.105	2.0	1.1	1.7	1.1	A+	A-

Table B–2 (continued). Mathematics Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
1851	603012	A2	A2	964	.081	.084	.252	.518	.081	.065	.132	-.095	.044	.008	.132	4.181	0.129	2.0	1.2	4.6	1.9	A+	A+
1852	603090	A2	A2	966	.311	.241	.212	.311	.213	.023	.061	.089	-.090	.061	-.024	2.227	0.076	8.6	1.3	8.7	1.5	A-	A+
1853	604647	A2	A2	966	.595	.089	.595	.173	.108	.035	.415	-.119	.415	-.211	-.158	0.782	0.072	-2.5	0.9	-2.4	0.9	A+	A-
1854	604573	A2	A2	966	.505	.109	.505	.252	.123	.011	.419	-.091	.419	-.232	-.181	1.288	0.070	-3.2	0.9	-2.9	0.9	A+	A+
1855	604642	A2	A2	966	.122	.144	.533	.163	.122	.038	.213	-.058	.095	-.160	.213	3.587	0.106	1.6	1.1	3.4	1.4	A+	A+
1856	604649	A2	A2	966	.149	.206	.246	.343	.149	.056	.214	.021	-.019	-.083	.214	3.280	0.098	1.8	1.1	4.4	1.5	A-	A+
1857	604564	A2	A2	966	.275	.166	.322	.275	.178	.059	.398	-.140	-.175	.398	-.005	2.342	0.079	-0.5	1.0	0.3	1.0	A-	A+
1858	604726	A2	A2	962	.388	.072	.388	.220	.274	.046	.309	-.127	.309	-.090	-.074	1.776	0.073	3.6	1.1	2.7	1.1	A-	A-
1859	604538	A2	A2	966	.386	.156	.386	.266	.134	.058	.245	.005	.245	-.169	-.006	1.733	0.073	5.3	1.2	4.3	1.2	A-	A-
1860	604562	A2	A2	966	.380	.270	.182	.380	.111	.057	.378	-.146	-.182	.378	-.002	1.771	0.073	0.4	1.0	0.6	1.0	A-	B-
1861	604638	A2	A2	962	.523	.116	.523	.223	.101	.037	.475	-.136	.475	-.200	-.226	1.126	0.071	-4.0	0.9	-3.4	0.9	A+	A-
1862	604588	A2	A2	484	.310	.310	.229	.324	.085	.052	.394	.394	-.072	-.117	-.157	2.222	0.110	0.9	1.0	1.1	1.1	A-	A-
1863	604648	A2	A2	482	.535	.535	.176	.212	.066	.010	.319	.319	-.157	-.098	-.192	1.126	0.097	0.1	1.0	-0.5	1.0	A-	
1864	604585	A2	A2	964	.599	.071	.156	.165	.599	.010	.412	-.180	-.207	-.187	.412	0.833	0.070	-4.3	0.9	-3.4	0.9	A-	
1865	603009	A2	A2	964	.232	.232	.319	.164	.247	.038	.377	.377	-.164	-.029	-.099	2.630	0.082	-1.2	1.0	-0.4	1.0	A+	
1866	604531	A2	A2	964	.481	.221	.165	.481	.087	.046	.389	-.171	-.122	.389	-.131	1.292	0.070	-2.1	1.0	-1.8	0.9	A-	
1867	603034	A2	A2	482	.195	.017	.104	.195	.678	.006	.460	-.062	-.192	.460	-.225	2.928	0.123	-1.3	0.9	-1.1	0.9	C-	
1868	603035	A2	A2	964	.367	.367	.178	.248	.155	.052	.228	.228	-.160	.034	-.054	1.829	0.073	4.9	1.1	4.7	1.2	A-	
1869	603109	A2	A2	482	.504	.033	.504	.371	.066	.025	.260	-.073	.260	-.071	-.168	1.235	0.098	2.7	1.1	2.5	1.1	A+	
1870	603008	A2	A2	482	.353	.255	.139	.353	.183	.071	.208	.057	-.139	.208	-.093	1.832	0.104	3.2	1.1	4.0	1.2	A+	
1871	604675	A2	A2	482	.322	.322	.145	.216	.268	.050	.397	.397	-.099	-.010	-.213	2.066	0.106	-0.6	1.0	-0.7	1.0	A+	
1872	604565	A2	A2	482	.357	.189	.357	.249	.133	.073	.254	-.127	.254	-.024	-.049	1.806	0.104	2.7	1.1	2.1	1.1	A-	
1873	604563	A2	A2	482	.226	.226	.266	.247	.191	.071	.283	.283	-.068	-.087	-.052	2.549	0.117	0.7	1.0	1.7	1.2	A-	
1874	604545	A2	A2	964	.595	.074	.119	.176	.595	.035	.302	-.098	-.184	-.067	.302	0.762	0.071	1.0	1.0	1.4	1.1	A+	
1875	604643	A2	A2	964	.571	.056	.154	.167	.571	.053	.442	-.131	-.219	-.166	.442	0.827	0.072	-4.0	0.9	-2.7	0.9	A+	
1876	604594	A2	A2	960	.543	.275	.064	.079	.543	.040	.305	-.153	-.100	-.124	.305	1.007	0.071	2.0	1.1	2.1	1.1	A-	A-
1877	604630	A2	A2	960	.378	.438	.076	.100	.378	.008	.431	-.272	-.132	-.109	.431	1.878	0.072	-2.8	0.9	-2.6	0.9	A+	A+
1878	604533	A2	A2	962	.194	.194	.211	.370	.175	.050	.337	.337	-.139	-.050	-.075	2.893	0.089	0.5	1.0	1.9	1.2	A+	
1879	604725	A2	A2	482	.467	.278	.467	.145	.093	.017	.366	-.105	.366	-.231	-.090	1.446	0.099	-0.1	1.0	-0.5	1.0	A+	
1880	603028	A2	A2	962	.639	.133	.072	.144	.639	.013	.448	-.201	-.166	-.242	.448	0.597	0.072	-5.1	0.9	-4.0	0.8	A+	
1881	604559	A2	A2	962	.405	.096	.273	.405	.156	.070	.224	-.073	-.112	.224	.002	1.583	0.073	6.8	1.2	5.7	1.2	A-	
1882	604595	A2	A2	962	.296	.148	.319	.225	.296	.013	.268	-.028	-.029	-.193	.268	2.296	0.077	3.5	1.1	3.3	1.2	A+	
1883	604645	A2	A2	962	.519	.157	.103	.519	.203	.019	.390	-.177	-.225	.390	-.071	1.168	0.070	-1.2	1.0	-0.6	1.0	A+	
1884	603036	A2	A2	962	.429	.144	.109	.296	.429	.022	.357	-.082	-.153	-.163	.357	1.579	0.071	0.5	1.0	0.5	1.0	A-	
1885	604534	A2	A2	962	.338	.165	.148	.297	.338	.052	.296	-.090	-.121	-.084	.296	1.963	0.075	2.4	1.1	2.5	1.1	A-	

Table B–2 (continued). Mathematics Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M /F	W /B
1886	604571	A2	A2	962	.686	.099	.067	.686	.120	.029	.352	-.145	-.109	.352	-.168	0.287	0.076	-0.6	1.0	1.1	1.1	A+	
1887	604586	A2	A2	482	.440	.274	.176	.440	.081	.029	.290	-.025	-.118	.290	-.154	1.543	0.100	2.6	1.1	1.9	1.1	A+	
1888	604631	A2	A2	962	.350	.350	.209	.255	.123	.063	.493	.493	-.239	-.147	-.078	1.889	0.075	-3.7	0.9	-3.3	0.9	A-	
1889	604606	A2	A2	962	.313	.155	.206	.274	.313	.052	.439	-.124	-.119	-.157	.439	2.124	0.077	-1.7	0.9	-1.1	1.0	A-	
1890	604644	A2	A2	482	.328	.307	.328	.191	.066	.108	.414	-.041	.414	-.145	-.146	1.958	0.108	-0.6	1.0	-0.2	1.0	A+	
1891	604560	A2	A2	480	.392	.392	.219	.169	.200	.021	.313	.313	-.133	-.156	-.073	1.729	0.102	2.2	1.1	1.8	1.1	A+	
1892	604583	A2	A2	960	.224	.224	.384	.167	.183	.042	.325	.325	-.008	-.126	-.172	2.723	0.086	2.1	1.1	2.7	1.2	A+	A+
1893	604535	A2	A2	480	.215	.083	.331	.350	.215	.021	.344	-.119	-.172	-.045	.344	2.769	0.123	0.6	1.0	0.8	1.1	A-	
1894	604684	A2	A2	960	.380	.103	.380	.245	.247	.025	.403	-.107	.403	-.220	-.100	1.837	0.074	0.6	1.0	0.4	1.0	A-	B-
1895	604722	A2	A2	480	.458	.067	.244	.215	.458	.017	.458	-.143	-.173	-.234	.458	1.422	0.100	-2.8	0.9	-2.3	0.9	A+	
1896	603007	A2	A2	960	.287	.287	.380	.241	.070	.023	.334	.334	-.192	-.090	.014	2.369	0.079	1.8	1.1	2.7	1.2	A+	A-
1897	603110	A2	A2	480	.500	.500	.183	.185	.100	.031	.451	.451	-.264	-.175	-.111	1.177	0.100	-3.6	0.9	-2.6	0.9	A-	
1898	603029	A2	A2	480	.160	.235	.294	.260	.160	.050	.483	-.109	-.126	-.083	.483	3.188	0.139	-1.2	0.9	-0.1	1.0	A-	
1899	604597	A2	A2	480	.154	.075	.342	.388	.154	.042	.404	-.119	-.097	-.074	.404	3.248	0.141	0.1	1.0	1.2	1.2	A-	
1900	604608	A2	A2	960	.367	.367	.232	.205	.164	.032	.447	.447	-.174	-.267	-.026	1.893	0.074	-1.6	1.0	-1.5	0.9	A+	A-
1901	603030	A2	A2	960	.298	.092	.298	.369	.199	.043	.420	-.112	.420	-.148	-.163	2.241	0.078	-0.3	1.0	0.3	1.0	A+	A+
1902	604557	A2	A2	960	.453	.453	.201	.181	.100	.065	.488	.488	-.240	-.212	-.105	1.357	0.073	-4.3	0.9	-3.6	0.9	A+	A-
1903	604584	A2	A2	480	.408	.096	.367	.408	.090	.040	.336	-.109	-.160	.336	-.140	1.707	0.104	2.0	1.1	2.2	1.1	A-	A-
1904	604618	A2	A2	958	.314	.216	.156	.314	.291	.023	.274	-.108	-.097	.274	-.074	2.208	0.076	3.6	1.1	3.7	1.2	A+	A+
1905	604555	A2	A2	958	.810	.810	.087	.041	.056	.006	.418	.418	-.269	-.168	-.200	-0.367	0.087	-2.6	0.9	-3.4	0.7	A+	A-
1906	604554	A2	A2	480	.744	.744	.127	.090	.035	.004	.437	.437	-.258	-.250	-.161	0.082	0.112	-2.1	0.9	-2.7	0.7	A+	A-
1907	604724	A2	A2	480	.410	.410	.148	.202	.213	.027	.309	.309	-.084	-.159	-.121	1.725	0.103	2.5	1.1	2.3	1.1	A+	A+
1908	604561	A2	A2	480	.815	.040	.815	.079	.056	.010	.369	-.217	.369	-.203	-.144	-0.419	0.126	-1.0	0.9	-1.9	0.7	A+	A-
1909	604617	A2	A2	480	.619	.142	.619	.094	.127	.019	.354	-.103	.354	-.142	-.220	0.705	0.103	0.5	1.0	1.5	1.1	A+	A-
1910	603091	A2	A2	958	.311	.096	.311	.336	.208	.049	.400	-.080	.400	-.155	-.121	2.174	0.077	0.2	1.0	0.8	1.0	A+	A-
1911	604598	A2	A2	480	.204	.190	.235	.304	.204	.067	.470	-.120	-.251	.011	.470	2.889	0.126	-1.0	0.9	-0.6	0.9	A-	A-
1912	604612	A2	A2	480	.581	.581	.169	.117	.088	.046	.469	.469	-.243	-.180	-.145	0.817	0.104	-1.5	0.9	-2.0	0.9	A-	A-
1913	604549	A2	A2	958	.202	.138	.243	.353	.202	.065	.333	-.074	-.085	-.062	.333	2.850	0.088	0.9	1.0	1.9	1.2	A+	B-
1914	604628	A2	A2	478	.157	.391	.157	.218	.209	.025	.105	-.009	.105	-.037	-.015	3.214	0.134	2.2	1.2	3.0	1.4	A+	
1915	604567	A2	A2	478	.339	.084	.339	.375	.140	.063	.246	-.159	.246	-.023	-.063	1.962	0.106	3.1	1.1	2.9	1.2	A-	
1916	604620	A2	A2	478	.425	.195	.193	.119	.425	.069	.480	-.203	-.156	-.130	.480	1.502	0.102	-2.6	0.9	-2.2	0.9	A+	
1917	604634	A2	A2	480	.654	.060	.654	.117	.152	.017	.377	-.138	.377	-.181	-.186	0.470	0.104	-1.7	0.9	-0.1	1.0	B-	
1918	603106	A2	A2	963	.505	.085	.081	.262	.505	.068	.374	-.168	-.175	-.070	.374	1.165	0.073	1.0	1.0	1.6	1.1	A-	A+
1919	603057	A2	A2	482	.270	.145	.270	.303	.228	.054	.187	-.032	.187	-.009	-.010	2.395	0.112	3.5	1.2	3.8	1.3	A-	
1920	603055	A2	A2	960	.485	.071	.217	.184	.485	.043	.423	-.156	-.120	-.248	.423	1.255	0.072	-1.4	1.0	-1.3	1.0	A-	A-

Table B–2 (continued). Mathematics Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M /F	W /B
1921	603126	A2	A2	482	.494	.106	.494	.293	.091	.017	.302	-.096	.302	-.116	-.197	1.307	0.099	1.5	1.1	1.2	1.1	B-	
1922	603056	A2	A2	964	.193	.246	.421	.193	.103	.037	.045	.008	.044	.045	-.009	2.896	0.088	5.2	1.3	6.2	1.5	A+	
1923	603115	A2	A2	964	.465	.065	.164	.284	.465	.022	.390	-.126	-.066	-.268	.390	1.369	0.072	-1.6	1.0	-1.3	1.0	A-	B-
1924	603124	A2	A2	960	.345	.345	.283	.210	.146	.016	.379	.379	-.188	-.094	-.120	2.003	0.074	-0.1	1.0	-0.5	1.0	A+	A-
1925	603080	A2	A2	960	.428	.083	.114	.352	.428	.023	.237	-.141	-.148	-.027	.237	1.561	0.072	4.1	1.1	5.0	1.2	A+	A-
1926	603128	A2	A2	964	.493	.103	.266	.493	.099	.041	.236	-.048	-.147	.236	-.027	1.176	0.072	6.7	1.2	7.0	1.3	A-	A+
1927	605889	A2	A2	962	.168	.600	.168	.061	.137	.033	.236	-.017	.236	-.076	-.070	3.180	0.094	2.4	1.1	1.6	1.2	B-	
1928	603122	A2	A2	962	.297	.150	.297	.305	.216	.032	.402	-.082	.402	-.138	-.154	2.262	0.078	-0.6	1.0	0.1	1.0	A-	
1929	604690	A2	A2	481	.302	.351	.302	.225	.100	.023	.265	-.022	.265	-.105	-.143	2.168	0.107	1.6	1.1	2.2	1.2	B-	
1930	605890	A2	A2	481	.212	.040	.195	.212	.489	.064	.121	-.096	-.126	.121	.121	2.631	0.121	3.3	1.2	3.8	1.4	A+	
1931	605891	A2	A2	962	.264	.450	.264	.087	.165	.033	.351	-.142	.351	-.090	-.083	2.425	0.080	2.0	1.1	2.4	1.1	A-	A+
1932	604692	A2	A2	962	.458	.112	.215	.458	.177	.037	.380	-.096	-.162	.380	-.154	1.383	0.071	-0.6	1.0	-0.2	1.0	A+	A+
1933	605904	A2	A2	963	.243	.243	.084	.572	.073	.028	.390	.390	-.143	-.156	-.071	2.689	0.083	0.4	1.0	1.2	1.1	A-	A-
1934	603123	A2	A2	964	.744	.032	.120	.744	.062	.042	.477	-.137	-.249	.477	-.187	-0.107	0.084	-3.4	0.9	-3.7	0.7	A+	A-
1935	605905	A2	A2	964	.449	.216	.449	.219	.069	.048	.303	-.128	.303	-.017	-.118	1.474	0.072	4.6	1.1	4.6	1.2	A-	A-
1936	603060	A2	A2	961	.801	.030	.098	.801	.034	.036	.428	-.177	-.198	.428	-.145	-0.525	0.092	-2.2	0.9	-2.6	0.7	B-	C-
1937	604687	A2	A2	961	.386	.073	.386	.376	.126	.040	.302	-.184	.302	-.030	-.086	1.779	0.073	4.3	1.1	4.6	1.2	A-	A+
1938	604688	A2	A2	964	.524	.137	.185	.116	.524	.038	.370	.020	-.169	-.224	.370	1.143	0.072	2.0	1.1	2.4	1.1	A+	C-
1939	603061	A2	A2	964	.546	.089	.156	.182	.546	.028	.449	-.152	-.189	-.194	.449	1.064	0.071	-1.7	1.0	-1.6	0.9	A-	B-
1940	604689	A2	A2	484	.736	.035	.736	.116	.099	.015	.336	-.115	.336	-.189	-.145	0.116	0.111	-0.3	1.0	-0.2	1.0	A-	B-
1941	604723	A2	A2	966	.598	.101	.598	.220	.036	.045	.182	-.090	.182	-.020	-.066	0.726	0.072	5.2	1.1	8.4	1.5	A+	A+
1942	603092	A2	A2	484	.843	.033	.843	.050	.035	.039	.389	-.119	.389	-.195	-.164	-0.867	0.146	-0.9	0.9	-1.6	0.7	A+	C-
1943	603093	A2	A2	960	.643	.075	.116	.643	.156	.010	.331	-.126	-.174	.331	-.161	0.609	0.072	-0.5	1.0	0.2	1.0	A-	
1944	603113	A2	A2	964	.553	.082	.553	.209	.119	.037	.463	-.151	.463	-.216	-.168	0.968	0.071	-4.6	0.9	-3.9	0.9	A-	
1945	603107	A2	A2	960	.325	.020	.293	.341	.325	.022	.391	-.067	-.219	-.106	.391	2.139	0.076	1.2	1.0	0.4	1.0	A-	A-
1946	603068	A2	A2	480	.581	.073	.154	.581	.144	.048	.258	-.049	-.166	.258	-.045	0.732	0.103	2.9	1.1	3.2	1.3	A-	
1947	603054	A2	A2	480	.331	.331	.113	.302	.185	.069	.482	.482	-.134	-.204	-.149	1.942	0.108	-2.3	0.9	-2.0	0.9	A-	
1948	603069	A2	A2	958	.228	.152	.204	.366	.228	.050	.351	-.078	-.086	-.106	.351	2.700	0.085	1.0	1.0	1.3	1.1	A-	A+
1949	603108	A2	A2	958	.161	.120	.311	.161	.372	.037	-.043	.079	-.096	-.043	.111	3.226	0.095	6.1	1.4	8.4	2.0	A-	A-
1950	657875	6	6	162	.463	.179	.204	.154	.463	.000	.000	.004	-.061	.064	.000	-0.073	0.177	6.4	1.5	5.5	1.7	A+	
1951	657876	6	6	298	.245	.101	.245	.138	.517	.000	-.096	-.149	-.096	-.172	.290	1.338	0.144	4.5	1.3	6.9	2.2	B-	
1952	657877	6	6	304	.181	.049	.181	.359	.411	.000	.044	-.041	.044	-.036	.019	1.711	0.158	2.0	1.2	5.1	2.2	A-	
1953	657878	6	6	306	.049	.049	.098	.775	.078	.000	-.137	-.137	-.318	.380	-.129	3.389	0.273	0.7	1.1	5.2	4.8	A-	
1954	657879	6	6	172	.442	.081	.215	.262	.442	.000	.422	-.210	-.218	-.142	.422	0.012	0.169	-0.7	1.0	-0.4	1.0	B+	
1955	657880	6	6	169	.278	.077	.278	.414	.231	.000	.243	-.008	.243	-.354	.160	0.950	0.187	0.8	1.1	2.3	1.4	A-	

Table B–2 (continued). Mathematics Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
1956	657881	6	6	326	.442	.138	.163	.258	.442	.000	.167	.025	-.170	-.066	.167	0.231	0.123	4.7	1.2	4.9	1.4	A+	
1957	657882	6	6	152	.283	.276	.105	.336	.283	.000	.070	.055	-.120	-.041	.070	0.908	0.195	2.6	1.2	3.7	1.7	A+	
1958	657883	6	6	167	.659	.659	.156	.072	.114	.000	.447	.447	-.353	-.086	-.194	-1.078	0.184	-0.2	1.0	-0.5	0.9	A-	
1959	657884	6	6	169	.325	.172	.361	.142	.325	.000	.322	-.032	-.142	-.202	.322	0.592	0.182	1.0	1.1	1.1	1.2	A-	
1960	657885	6	6	286	.217	.364	.294	.126	.217	.000	.158	-.126	-.192	.250	.158	1.485	0.153	1.0	1.1	4.9	2.0	A+	A+
1961	657886	6	6	182	.176	.401	.176	.236	.187	.000	.046	-.072	.046	-.079	.132	1.608	0.206	1.3	1.2	4.4	2.3	A-	
1962	657887	6	6	182	.418	.236	.154	.418	.192	.000	.131	-.062	-.079	.131	-.026	0.150	0.168	4.4	1.3	4.5	1.6	A+	
1963	657888	6	6	295	.176	.176	.278	.407	.139	.000	.160	.160	-.040	-.165	.108	1.687	0.162	0.5	1.1	4.3	2.1	B-	
1964	657899	6	6	284	.873	.873	.035	.053	.039	.000	.368	.368	-.340	-.119	-.171	-2.453	0.194	-0.3	1.0	0.1	1.0	C+	
1965	657936	6	6	181	.204	.204	.343	.249	.204	.000	.306	-.191	-.039	-.065	.306	1.392	0.198	-0.1	1.0	0.4	1.1	A-	
1966	657937	6	6	183	.404	.208	.404	.219	.169	.000	.292	-.021	.292	-.273	-.059	0.202	0.168	1.5	1.1	2.8	1.3	A-	
1967	657938	6	6	177	.492	.107	.141	.260	.492	.000	.513	-.196	-.183	-.302	.513	-0.038	0.168	-1.8	0.9	-2.0	0.8	A+	
1968	657939	6	6	165	.655	.061	.206	.655	.079	.000	.490	-.231	-.266	.490	-.262	-1.017	0.183	-1.0	0.9	-1.4	0.8	B-	
1969	657940	6	6	318	.478	.031	.399	.478	.091	.000	.385	-.068	-.292	.385	-.130	0.071	0.124	0.1	1.0	0.0	1.0	A-	
1970	657941	6	6	300	.510	.263	.143	.510	.083	.000	.416	-.205	-.214	.416	-.156	-0.169	0.128	-0.5	1.0	-0.3	1.0	A+	
1971	657942	6	6	307	.254	.254	.248	.186	.313	.000	.260	.260	-.141	.005	-.118	1.081	0.142	0.3	1.0	5.3	1.9	A-	
1972	657943	6	6	287	.718	.038	.098	.718	.146	.000	.262	-.185	-.109	.262	-.142	-1.224	0.144	1.9	1.1	1.4	1.2	A+	
1973	657944	6	6	276	.605	.094	.605	.199	.101	.000	.264	-.080	.264	-.146	-.157	-0.568	0.135	1.8	1.1	1.5	1.1	A-	
1974	657945	6	6	178	.332	.320	.332	.264	.084	.000	.218	-.043	.218	-.113	-.119	0.527	0.174	1.8	1.1	2.0	1.3	B-	
1975	657946	6	6	177	.401	.401	.322	.203	.073	.000	.098	.098	.014	-.008	-.196	0.358	0.169	4.4	1.3	3.7	1.5	A+	
1976	657947	6	6	176	.426	.426	.284	.216	.074	.000	.304	.304	-.158	-.220	.042	0.091	0.171	1.7	1.1	2.5	1.3	A+	
1977	657948	6	6	152	.355	.217	.224	.355	.204	.000	.245	-.150	-.346	.245	.220	0.276	0.188	1.7	1.1	2.8	1.5	A+	
1978	657949	6	6	166	.139	.139	.217	.530	.115	.000	-.089	-.089	.049	.151	-.204	1.908	0.240	1.7	1.3	5.2	3.5	A+	
1979	657950	6	6	161	.441	.180	.273	.441	.106	.000	.210	-.097	-.189	.210	.057	0.054	0.176	2.8	1.2	3.5	1.4	A-	
1980	657976	6	6	306	.556	.232	.095	.556	.118	.000	.351	-.069	-.245	.351	-.229	-0.347	0.129	1.2	1.1	2.2	1.2	A+	
1981	657977	6	6	180	.450	.161	.450	.261	.128	.000	.353	.008	.353	-.325	-.107	0.047	0.166	0.6	1.0	1.3	1.1	A-	
1982	657978	6	6	159	.226	.082	.484	.208	.226	.000	.391	-.111	-.291	.030	.391	1.177	0.204	-0.8	0.9	-0.8	0.8	A+	
1983	657979	6	6	174	.132	.132	.132	.207	.529	.000	.312	.312	-.063	-.206	-.002	2.034	0.235	-0.5	0.9	-0.2	0.9	A+	
1984	657980	6	6	319	.495	.097	.138	.495	.270	.000	.346	-.094	-.169	.346	-.195	-0.185	0.125	1.3	1.1	1.6	1.1	A+	
1985	657981	6	6	310	.319	.136	.329	.216	.319	.000	.376	-.191	-.100	-.153	.376	0.759	0.135	-0.5	1.0	1.9	1.2	A-	
1986	657982	6	6	340	.382	.382	.391	.153	.074	.000	.384	.384	-.217	-.203	-.030	0.595	0.123	-0.2	1.0	1.4	1.1	A+	
1987	657983	6	6	182	.330	.028	.489	.330	.154	.000	.289	-.150	-.129	.289	-.130	0.624	0.172	1.0	1.1	1.3	1.2	A-	
1988	657984	6	6	177	.429	.102	.322	.147	.429	.000	.392	-.142	-.234	-.117	.392	0.200	0.167	-0.1	1.0	-0.3	1.0	A+	
1989	657985	6	6	317	.350	.271	.186	.192	.350	.000	.335	.000	-.238	-.171	.335	0.550	0.129	0.1	1.0	2.8	1.3	B+	
1990	657986	6	6	312	.401	.157	.282	.401	.160	.000	.214	-.207	-.076	.214	.012	0.394	0.127	3.0	1.2	4.0	1.4	A+	

Table B–2 (continued). Mathematics Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M /F	W /B
1991	657987	6	6	302	.358	.070	.113	.460	.358	.000	.260	-.150	-.221	-.033	.260	0.513	0.133	2.0	1.1	3.8	1.4	A+	
1992	657988	6	6	180	.122	.122	.233	.206	.439	.000	.215	.215	-.138	-.144	.093	1.917	0.240	-0.3	1.0	2.1	1.8	A+	
1993	657989	6	6	154	.188	.175	.474	.162	.188	.000	.342	-.228	.010	-.140	.342	1.510	0.221	-0.4	0.9	0.0	1.0	A-	
1994	657990	6	6	154	.494	.494	.130	.162	.214	.000	.365	.365	-.173	-.137	-.179	-0.243	0.178	0.1	1.0	0.1	1.0	A+	
1995	657991	6	6	307	.407	.195	.248	.407	.150	.000	.271	-.144	-.052	.271	-.151	0.360	0.127	1.5	1.1	3.2	1.3	A+	
1996	657992	6	6	155	.477	.477	.348	.084	.090	.000	.341	.341	-.090	-.321	-.134	-0.266	0.181	0.9	1.1	3.1	1.4	A-	
1997	657993	6	6	288	.663	.663	.146	.115	.076	.000	.430	.430	-.201	-.289	-.152	-0.863	0.138	-0.4	1.0	-0.8	0.9	A-	
1998	657994	6	6	314	.455	.210	.172	.455	.162	.000	.350	-.083	-.196	.350	-.181	0.230	0.126	0.8	1.0	1.6	1.1	A-	
1999	657995	6	6	326	.896	.028	.896	.068	.009	.000	.386	-.107	.386	-.325	-.197	-2.689	0.194	-0.8	0.9	-1.2	0.7	A+	
2000	657996	6	6	311	.621	.174	.621	.100	.106	.000	.349	-.180	.349	-.221	-.114	-0.777	0.130	1.1	1.1	0.4	1.0	A-	B-
2001	657997	6	6	290	.521	.300	.114	.066	.521	.000	.450	-.153	-.213	-.351	.450	-0.338	0.133	-0.5	1.0	-0.6	1.0	A+	
2002	657998	6	6	295	.268	.563	.102	.268	.068	.000	.056	.249	-.351	.056	-.167	1.111	0.142	3.4	1.2	5.5	1.9	A-	
2003	657999	6	6	291	.409	.175	.409	.282	.134	.000	.261	.122	.261	-.149	-.316	0.270	0.131	2.4	1.1	2.8	1.3	B-	
2004	658000	6	6	301	.535	.535	.269	.136	.060	.000	.417	.417	-.290	-.187	-.064	-0.398	0.129	-0.5	1.0	0.3	1.0	A-	
2005	658051	6	6	305	.315	.338	.315	.193	.154	.000	.062	-.114	.062	-.047	.121	0.786	0.135	4.2	1.3	6.8	1.9	A-	
2006	658052	6	6	281	.644	.164	.644	.146	.046	.000	.345	-.292	.345	-.113	-.081	-1.035	0.140	1.6	1.1	1.2	1.1	A+	
2007	658053	6	6	303	.419	.178	.419	.185	.218	.000	.069	.016	.069	-.153	.046	0.281	0.128	6.0	1.3	7.3	1.7	A-	
2008	658056	6	6	300	.553	.133	.553	.243	.070	.000	.433	-.124	.433	-.324	-.133	-0.342	0.129	-1.0	1.0	0.5	1.0	A-	
2009	658057	6	6	185	.730	.038	.103	.130	.730	.000	.556	-.268	-.329	-.285	.556	-1.576	0.185	-1.9	0.8	-2.2	0.7	A+	
2010	658058	6	6	167	.287	.216	.353	.144	.287	.000	.300	-.186	-.073	-.068	.300	1.065	0.189	0.3	1.0	5.5	2.3	A+	
2011	658059	6	6	301	.621	.621	.140	.176	.063	.000	.430	.430	-.304	-.106	-.258	-0.611	0.131	-0.9	1.0	-0.7	0.9	A+	
2012	658061	6	6	291	.608	.096	.608	.131	.165	.000	.430	-.152	.430	-.238	-.228	-0.700	0.135	-0.2	1.0	-0.5	1.0	A-	
2013	658062	6	7	174	.207	.362	.293	.138	.207	.000	.407	-.219	-.008	-.163	.407	1.434	0.202	-1.3	0.9	1.2	1.3	A+	
2014	658064	6	6	184	.788	.054	.788	.103	.054	.000	.342	-.232	.342	-.251	-.046	-1.802	0.199	0.4	1.0	0.2	1.0	B+	
2015	658065	6	6	318	.682	.082	.129	.107	.682	.000	.497	-.179	-.297	-.268	.497	-1.037	0.134	-1.7	0.9	-1.9	0.8	B+	
2016	658066	6	6	306	.229	.360	.206	.206	.229	.000	.414	-.063	-.267	-.089	.414	1.429	0.146	-1.5	0.9	-1.2	0.8	A+	
2017	658067	6	6	167	.329	.365	.174	.329	.132	.000	.368	-.107	-.303	.368	-.019	0.662	0.180	-0.4	1.0	0.8	1.1	A-	
2018	658068	6	6	286	.465	.224	.189	.122	.465	.000	.395	-.173	-.213	-.127	.395	0.074	0.132	-0.1	1.0	0.4	1.0	A-	
2019	658069	6	6	298	.440	.440	.208	.302	.050	.000	.189	.189	-.074	-.060	-.165	0.315	0.129	4.1	1.2	4.5	1.4	A-	
2020	658071	6	6	324	.460	.111	.460	.244	.185	.000	.263	-.181	.263	-.177	.005	0.085	0.123	2.7	1.1	4.0	1.3	A+	
2021	658119	6	6	169	.462	.462	.231	.201	.107	.000	.362	.362	-.260	-.163	-.019	-0.054	0.174	1.0	1.1	1.9	1.2	A+	
2022	658135	6	6	174	.529	.161	.529	.126	.184	.000	.391	-.266	.391	-.185	-.092	-0.408	0.170	0.3	1.0	1.2	1.1	A-	
2023	658164	6	6	184	.620	.620	.152	.130	.098	.000	.311	.311	-.184	-.109	-.162	-0.718	0.170	1.5	1.1	1.5	1.2	B+	
2024	658176	6	6	168	.417	.089	.250	.244	.417	.000	.300	-.198	-.201	-.011	.300	0.163	0.176	1.3	1.1	3.1	1.4	B+	
2025	658225	6	6	292	.394	.171	.240	.195	.394	.000	.375	-.100	-.116	-.242	.375	0.424	0.133	-0.3	1.0	2.1	1.2	A+	

Table B–2 (continued). Mathematics Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
2026	658252	6	6	307	.280	.147	.189	.384	.280	.000	.164	-.087	.040	-.120	.164	1.068	0.138	1.9	1.1	4.9	1.7	B-	
2027	658263	6	6	321	.421	.268	.168	.421	.143	.000	.264	-.175	-.100	.264	-.044	0.356	0.125	2.8	1.1	2.6	1.2	A-	
2028	658277	6	6	167	.281	.281	.222	.281	.216	.000	.079	.079	-.157	.052	.016	0.880	0.186	2.2	1.2	5.0	2.1	A+	
2029	658298	6	6	172	.233	.233	.204	.413	.151	.000	.279	.279	-.105	-.058	-.130	1.118	0.198	-0.2	1.0	4.2	2.2	A+	
2030	658299	6	6	278	.619	.119	.619	.119	.144	.000	.478	-.254	.478	-.179	-.263	-0.865	0.139	-0.8	1.0	-1.3	0.9	A-	
2031	658309	6	6	315	.311	.311	.321	.333	.035	.000	.384	.384	-.232	-.104	-.112	0.871	0.132	-0.9	1.0	-0.5	0.9	A-	
2032	658313	6	6	307	.251	.352	.238	.160	.251	.000	.368	-.158	.001	-.230	.368	1.239	0.143	-0.8	1.0	0.1	1.0	A-	
2033	658329	6	6	288	.559	.243	.139	.559	.059	.000	.427	-.104	-.341	.427	-.208	-0.308	0.133	0.0	1.0	-0.6	1.0	A-	
2034	658380	6	6	156	.321	.295	.167	.321	.218	.000	.320	-.111	-.258	.320	-.007	0.633	0.190	0.7	1.1	1.8	1.3	A-	
2035	658381	6	6	309	.327	.282	.301	.327	.091	.000	.285	-.005	-.182	.285	-.168	0.737	0.132	1.3	1.1	1.3	1.1	A-	
2036	658392	6	7	294	.422	.248	.174	.422	.157	.000	.383	-.056	-.158	.383	-.290	0.130	0.132	0.5	1.0	1.5	1.1	A-	
2037	658395	6	6	286	.654	.654	.122	.147	.077	.000	.369	.369	-.164	-.281	-.083	-0.971	0.140	0.9	1.1	1.5	1.1	A-	
2038	658411	6	6	179	.553	.235	.553	.145	.067	.000	.016	-.119	.016	.118	.005	-0.503	0.169	6.2	1.5	6.0	1.7	A+	
2039	658430	6	6	179	.363	.156	.363	.363	.117	.000	.225	-.205	.225	-.093	.035	0.475	0.171	2.2	1.2	2.1	1.3	A-	
2040	658466	6	6	311	.788	.080	.788	.090	.042	.000	.393	-.158	.393	-.216	-.279	-1.785	0.152	-0.3	1.0	0.0	1.0	A+	
2041	658467	6	6	314	.481	.131	.481	.319	.070	.000	.260	-.228	.260	-.013	-.184	-0.067	0.126	2.9	1.1	4.1	1.3	A-	
2042	658523	6	6	306	.814	.065	.814	.039	.082	.000	.385	-.163	.385	-.090	-.336	-1.937	0.161	0.0	1.0	-0.8	0.9	A-	
2043	658557	6	6	167	.557	.186	.557	.150	.108	.000	.420	-.315	.420	-.119	-.140	-0.475	0.175	0.1	1.0	0.4	1.0	A+	
2044	658571	6	6	317	.530	.142	.088	.240	.530	.000	.364	-.211	-.358	-.016	.364	-0.315	0.125	1.0	1.1	0.6	1.0	A+	
2045	658572	6	6	166	.398	.169	.319	.398	.115	.000	.378	-.073	-.141	.378	-.290	0.154	0.175	0.1	1.0	0.4	1.0	A+	
2046	658574	6	6	159	.635	.635	.094	.069	.201	.000	.546	.546	-.290	-.299	-.255	-0.960	0.187	-1.6	0.9	-1.7	0.8	A-	
2047	658575	6	6	312	.869	.869	.055	.032	.045	.000	.412	.412	-.295	-.215	-.167	-2.460	0.182	-0.5	0.9	-1.7	0.7	A+	B-
2048	658586	6	6	283	.357	.357	.297	.166	.180	.000	.397	.397	-.154	-.118	-.199	0.681	0.136	-0.9	1.0	0.1	1.0	A-	
2049	658587	6	6	321	.564	.100	.212	.125	.564	.000	.546	-.165	-.272	-.334	.546	-0.409	0.126	-3.0	0.9	-2.6	0.8	A+	
2050	659340	6	6	313	.425	.329	.115	.425	.131	.000	.363	-.184	-.213	.363	-.075	0.222	0.128	1.0	1.1	1.3	1.1	B-	
2051	659341	6	6	298	.681	.060	.681	.235	.024	.000	.283	-.276	.283	-.110	-.129	-0.976	0.139	2.1	1.2	2.3	1.2	A-	
2052	659342	6	6	195	.436	.226	.190	.436	.149	.000	.245	-.103	-.028	.245	-.190	0.354	0.161	2.7	1.2	2.9	1.3	A+	
2053	659344	6	6	307	.599	.599	.042	.124	.235	.000	.492	.492	-.218	-.294	-.237	-0.611	0.130	-1.6	0.9	-2.0	0.9	A-	
2054	659345	6	6	320	.678	.100	.678	.113	.109	.000	.172	-.089	.172	-.111	-.059	-1.074	0.133	3.9	1.3	3.5	1.4	A-	
2055	659346	6	7	170	.177	.241	.177	.406	.177	.000	.346	-.031	-.166	-.113	.346	1.570	0.216	-0.4	1.0	0.2	1.0	A-	
2056	659347	6	6	193	.358	.078	.358	.497	.067	.000	-.068	-.056	-.068	.147	-.103	0.393	0.166	5.9	1.5	7.2	2.2	A-	
2057	659348	6	6	291	.557	.103	.165	.557	.175	.000	.428	-.228	-.210	.428	-.172	-0.373	0.130	-1.2	0.9	-0.7	1.0	A-	
2058	659349	6	6	298	.732	.091	.111	.732	.067	.000	.412	-.163	-.274	.412	-.199	-1.205	0.145	0.0	1.0	-0.8	0.9	A-	A+
2059	659381	6	6	177	.367	.311	.243	.367	.079	.000	.177	.092	-.296	.177	-.002	0.400	0.173	3.5	1.3	2.6	1.3	B-	
2060	659383	6	6	270	.107	.415	.156	.107	.322	.000	-.106	.059	-.172	-.106	.141	2.392	0.204	1.2	1.2	6.6	4.2	A-	

Table B–2 (continued). Mathematics Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
2061	659385	6	6	181	.370	.238	.370	.238	.155	.000	.001	-.033	.001	.023	.011	0.506	0.168	4.6	1.3	5.3	1.7	A+	
2062	659386	6	6	158	.051	.222	.209	.519	.051	.000	.045	-.348	-.051	.311	.045	3.255	0.372	0.1	1.0	3.3	3.8	A-	
2063	659387	6	6	307	.332	.147	.332	.355	.166	.000	.220	-.232	.220	.048	-.119	0.684	0.134	2.7	1.2	4.3	1.5	A-	
2064	659389	6	6	279	.416	.172	.212	.201	.416	.000	.370	-.090	-.123	-.246	.370	0.330	0.135	-0.2	1.0	2.2	1.2	A-	
2065	660528	6	6	189	.497	.497	.323	.122	.058	.000	.531	.531	-.162	-.390	-.266	-0.299	0.165	-2.2	0.9	-0.6	0.9	A+	
2066	660529	6	6	173	.809	.041	.110	.809	.041	.000	.332	-.181	-.202	.332	-.160	-2.067	0.212	0.4	1.1	-0.2	0.9	A+	
2067	660530	6	6	172	.180	.238	.279	.302	.180	.000	.171	.083	-.220	-.005	.171	1.606	0.213	0.7	1.1	3.1	2.1	A-	
2068	660531	6	6	321	.277	.576	.277	.081	.065	.000	.010	.187	.010	-.290	-.072	1.077	0.134	3.6	1.2	6.5	1.9	A+	
2069	660562	6	6	184	.250	.250	.179	.342	.228	.000	-.034	-.034	-.013	.169	-.144	1.098	0.184	3.4	1.3	4.8	2.0	A+	
2070	660563	6	6	167	.413	.275	.198	.413	.114	.000	.249	-.124	-.095	.249	-.093	0.164	0.173	2.4	1.2	1.8	1.2	A-	
2071	662164	6	6	172	.256	.297	.256	.331	.116	.000	.229	.210	.229	-.279	-.201	1.066	0.192	1.3	1.1	2.4	1.5	A+	
2072	662165	6	6	304	.543	.171	.095	.191	.543	.000	.488	-.154	-.248	-.286	.488	-0.265	0.128	-1.8	0.9	-1.8	0.9	A+	
2073	662166	6	6	186	.538	.118	.296	.048	.538	.000	.445	-.290	-.188	-.199	.445	-0.385	0.167	0.1	1.0	-0.3	1.0	A+	
2074	662167	6	6	283	.657	.081	.230	.657	.032	.000	.377	-.149	-.291	.377	-.093	-0.992	0.140	0.5	1.0	0.6	1.1	B+	
2075	662168	6	7	169	.391	.231	.172	.391	.207	.000	.319	-.043	-.203	.319	-.150	0.341	0.176	1.3	1.1	1.5	1.2	A-	
2076	662169	6	6	159	.509	.509	.220	.170	.101	.000	.303	.303	.086	-.246	-.315	-0.198	0.177	2.1	1.2	1.1	1.1	A+	
2077	662170	6	6	189	.217	.217	.286	.138	.360	.000	-.017	-.017	.039	-.056	.018	1.445	0.190	2.3	1.2	7.1	3.5	B-	
2078	662171	6	6	162	.241	.432	.241	.117	.210	.000	.214	-.190	.214	-.019	.020	1.171	0.199	0.7	1.1	3.5	1.9	B-	
2079	662172	6	6	141	.326	.121	.199	.355	.326	.000	.194	-.191	-.008	-.054	.194	0.630	0.198	1.6	1.1	4.7	2.0	A-	
2080	662173	6	6	169	.254	.254	.178	.509	.059	.000	.115	.115	-.118	.038	-.104	0.934	0.192	2.0	1.2	4.5	2.0	A+	
2081	662175	6	6	167	.521	.114	.204	.521	.162	.000	.454	-.043	-.180	.454	-.383	-0.402	0.177	-0.2	1.0	0.8	1.1	A+	
2082	662176	6	6	172	.552	.052	.145	.552	.250	.000	.243	-.008	-.083	.243	-.207	-0.518	0.175	3.2	1.3	3.2	1.4	A+	
2083	662204	6	6	165	.424	.424	.182	.182	.212	.000	.125	.125	-.086	-.131	.054	0.269	0.174	3.8	1.3	4.9	1.7	A-	
2084	662205	6	6	267	.794	.015	.142	.049	.794	.000	.419	-.250	-.271	-.207	.419	-1.724	0.167	-0.5	1.0	-0.5	0.9	B+	
2085	662207	6	6	297	.306	.199	.306	.391	.104	.000	.008	-.250	.008	.184	.021	0.912	0.137	5.3	1.3	6.5	2.0	A-	
2086	662208	6	6	303	.861	.020	.861	.050	.069	.000	.410	-.147	.410	-.320	-.205	-2.298	0.181	-0.7	0.9	-0.8	0.8	B-	
2087	662209	6	6	171	.515	.129	.281	.515	.076	.000	.443	-.275	-.184	.443	-.175	-0.311	0.170	-0.8	1.0	-0.3	1.0	B-	
2088	662210	6	6	282	.553	.167	.177	.553	.103	.000	.510	-.279	-.189	.510	-.255	-0.308	0.133	-2.8	0.9	-1.7	0.9	A-	
2089	662211	6	6	198	.288	.222	.253	.237	.288	.000	.332	-.177	-.173	-.004	.332	0.819	0.171	-0.4	1.0	2.1	1.3	A+	
2090	662212	6	6	300	.443	.283	.203	.443	.070	.000	.349	-.074	-.170	.349	-.280	0.200	0.130	1.3	1.1	1.6	1.1	A-	
2091	662214	6	6	167	.569	.084	.287	.569	.060	.000	.402	-.264	-.256	.402	-.043	-0.523	0.175	0.1	1.0	0.0	1.0	B+	
2092	662215	6	6	174	.793	.086	.109	.012	.793	.000	.345	-.205	-.212	-.152	.345	-1.977	0.210	1.1	1.1	-0.1	1.0	A+	
2093	662216	6	6	182	.901	.039	.901	.033	.028	.000	.389	-.269	.389	-.067	-.321	-2.792	0.270	-0.3	0.9	-0.3	0.9	A+	
2094	662241	6	6	166	.127	.187	.530	.157	.127	.000	.249	-.001	-.005	-.220	.249	2.064	0.245	0.1	1.0	-0.2	0.9	A+	A-
2095	662242	6	6	178	.848	.848	.039	.023	.090	.000	.546	.546	-.240	-.174	-.432	-2.425	0.229	-1.7	0.8	-2.1	0.5	A+	

Table B–2 (continued). Mathematics Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
2096	662243	6	6	161	.311	.385	.311	.155	.149	.000	.005	.191	.005	-.259	-.004	0.827	0.187	4.3	1.4	4.5	1.9	A+	
2097	662244	6	6	157	.459	.159	.459	.147	.236	.000	.032	-.187	.032	-.023	.143	0.013	0.179	5.7	1.5	5.6	1.7	A-	
2098	662245	6	6	159	.711	.088	.088	.711	.113	.000	.412	-.242	-.186	.412	-.208	-1.306	0.194	0.0	1.0	-0.3	0.9	B-	
2099	662246	6	6	278	.543	.194	.543	.184	.079	.000	.333	-.089	.333	-.161	-.254	-0.302	0.134	1.3	1.1	1.3	1.1	A+	
2100	662247	6	6	173	.642	.064	.156	.642	.139	.000	.244	-.004	-.071	.244	-.260	-0.882	0.180	2.8	1.3	2.1	1.3	B-	
2101	662248	6	6	304	.500	.112	.500	.362	.026	.000	.156	-.321	.156	.097	-.147	-0.201	0.128	5.4	1.3	4.8	1.4	A+	
2102	662249	6	6	291	.491	.491	.151	.217	.141	.000	.485	.485	-.320	-.176	-.160	-0.137	0.131	-2.1	0.9	-0.8	0.9	A+	
2103	662250	6	6	295	.515	.125	.264	.095	.515	.000	.537	-.038	-.390	-.285	.537	-0.227	0.130	-3.2	0.9	-2.6	0.8	A+	
2104	662251	6	6	194	.371	.371	.150	.345	.134	.000	.315	.315	-.214	.047	-.289	0.377	0.166	1.3	1.1	1.6	1.2	A+	
2105	662252	6	6	290	.348	.166	.348	.255	.231	.000	.099	.033	-.099	-.069	-.070	0.748	0.136	4.6	1.3	6.6	1.8	A-	
2106	657795	7	7	653	.294	.294	.279	.340	.087	.000	.291	.291	-.138	-.105	-.074	1.227	0.094	1.2	1.1	3.6	1.3	B-	
2107	657797	7	7	661	.239	.239	.362	.235	.165	.000	-.069	-.069	.130	-.116	.044	1.526	0.099	7.4	1.4	9.9	2.6	A-	
2108	657798	7	7	715	.259	.340	.298	.259	.104	.000	.059	-.020	-.023	.059	-.019	1.458	0.092	5.2	1.2	9.9	2.4	A+	
2109	657799	7	7	690	.457	.151	.457	.259	.133	.000	.165	-.126	.165	.039	-.159	0.423	0.085	7.0	1.2	8.6	1.5	A+	A-
2110	657801	7	7	758	.416	.410	.416	.119	.055	.000	.237	-.057	.237	-.203	-.101	0.612	0.082	4.3	1.1	7.6	1.5	A+	
2111	657804	7	7	706	.140	.568	.140	.255	.037	.000	-.183	.259	-.183	-.117	-.073	2.391	0.114	3.4	1.3	9.9	4.7	A-	A+
2112	657805	7	7	661	.581	.581	.272	.077	.070	.000	.471	.471	-.226	-.260	-.247	-0.249	0.088	-1.7	0.9	-1.7	0.9	A+	A+
2113	657807	7	7	699	.385	.385	.270	.157	.187	.000	.148	.148	-.080	-.200	.093	0.719	0.086	7.1	1.3	8.8	1.6	A-	
2114	657808	7	7	723	.261	.170	.375	.261	.194	.000	.039	.057	-.044	.039	-.043	1.468	0.092	5.7	1.3	9.9	2.2	A+	A+
2115	657809	7	7	696	.316	.122	.300	.262	.316	.000	.144	-.030	-.065	-.062	.144	1.058	0.090	5.7	1.2	8.1	1.8	A+	
2116	657810	7	7	665	.134	.071	.108	.687	.134	.000	.219	-.244	-.248	.140	.219	2.394	0.120	-0.4	1.0	4.2	1.8	A+	B+
2117	657811	7	7	720	.631	.044	.631	.118	.207	.000	.384	-.183	.384	-.262	-.155	-0.497	0.087	1.4	1.1	1.2	1.1	A-	A-
2118	657815	7	7	709	.484	.210	.205	.484	.102	.000	.336	-.215	-.129	.336	-.093	0.312	0.084	2.1	1.1	3.3	1.2	A-	A-
2119	657816	7	7	718	.362	.373	.362	.127	.138	.000	.087	.113	.087	-.260	-.029	0.814	0.086	8.4	1.3	9.9	1.9	A-	
2120	657819	7	7	705	.184	.562	.200	.184	.054	.000	-.030	.205	-.125	-.030	-.176	1.988	0.104	4.0	1.3	9.9	3.0	A+	
2121	657820	7	7	749	.768	.039	.081	.112	.768	.000	.494	-.254	-.316	-.232	.494	-1.354	0.098	-1.3	0.9	-1.6	0.9	B+	B-
2122	657821	7	7	675	.453	.287	.169	.453	.090	.000	.365	-.130	-.229	.365	-.129	0.405	0.086	0.1	1.0	4.3	1.3	A-	A-
2123	657822	7	7	687	.272	.080	.234	.413	.272	.000	.265	-.180	-.189	.021	.265	1.299	0.093	1.0	1.0	4.1	1.4	A-	A+
2124	657823	7	7	701	.411	.181	.243	.411	.166	.000	.224	-.050	-.127	.224	-.097	0.603	0.085	5.0	1.2	6.0	1.4	A-	A-
2125	657824	7	7	694	.343	.130	.287	.241	.343	.000	.151	-.109	-.045	-.034	.151	0.897	0.089	7.0	1.3	6.7	1.6	A+	
2126	657825	7	7	712	.291	.143	.275	.291	.291	.000	.261	-.088	-.063	-.131	.261	1.212	0.090	2.0	1.1	3.7	1.3	A-	
2127	657826	7	7	708	.482	.041	.482	.356	.122	.000	.207	-.251	.207	-.091	-.030	0.255	0.084	6.4	1.2	6.7	1.4	A+	
2128	657827	7	7	706	.465	.062	.465	.217	.256	.000	.334	-.188	.334	-.264	-.029	0.329	0.084	2.0	1.1	4.4	1.3	A-	A-
2129	657828	7	7	693	.222	.228	.432	.222	.118	.000	.024	-.006	-.079	.024	.099	1.711	0.099	4.6	1.3	9.4	2.4	A+	
2130	657829	7	7	724	.699	.113	.699	.087	.101	.000	.300	-.222	.300	-.104	-.126	-0.942	0.092	4.2	1.2	2.5	1.2	A+	

Table B–2 (continued). Mathematics Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
2131	657830	7	7	713	.467	.140	.467	.286	.107	.000	.235	-.177	.235	-.082	-.061	0.330	0.084	5.8	1.2	7.5	1.5	A+	A+
2132	657831	7	7	721	.609	.108	.609	.207	.076	.000	.341	-.296	.341	-.086	-.149	-0.456	0.086	2.4	1.1	3.0	1.2	A-	
2133	657832	7	7	646	.098	.173	.060	.098	.669	.000	-.095	-.135	-.298	-.095	.319	2.893	0.138	1.5	1.2	8.2	3.6	C-	
2134	657833	7	7	710	.549	.549	.190	.130	.131	.000	.475	.475	-.253	-.267	-.141	-0.077	0.085	-1.9	0.9	-1.8	0.9	A-	A-
2135	657834	7	7	707	.359	.023	.311	.307	.359	.000	.493	-.210	-.282	-.162	.493	0.970	0.087	-4.2	0.9	-0.6	1.0	A-	A-
2136	657835	7	7	684	.624	.091	.624	.173	.113	.000	.353	-.199	.353	-.226	-.090	-0.421	0.089	2.4	1.1	1.8	1.1	A+	A-
2137	657836	7	7	686	.523	.156	.523	.184	.137	.000	.273	-.109	.273	-.188	-.071	0.086	0.085	4.2	1.1	5.2	1.3	A+	
2138	657837	7	7	672	.274	.429	.167	.131	.274	.000	.430	-.134	-.145	-.213	.430	1.334	0.094	-2.9	0.9	0.3	1.0	A-	B-
2139	657838	7	7	683	.583	.231	.129	.583	.057	.000	.573	-.348	-.313	.573	-.133	-0.222	0.087	-5.2	0.8	-4.9	0.8	A-	A+
2140	657839	7	6	691	.489	.151	.182	.489	.178	.000	.231	-.114	-.069	.231	-.126	0.178	0.085	5.4	1.2	6.8	1.4	A+	
2141	657840	7	7	722	.562	.223	.562	.137	.078	.000	.289	.006	.289	-.260	-.210	-0.148	0.084	3.9	1.1	4.1	1.2	A+	A-
2142	657841	7	7	734	.375	.375	.180	.199	.247	.000	.276	.276	-.161	-.235	.052	0.754	0.084	3.0	1.1	5.6	1.4	A+	
2143	657842	7	7	738	.472	.472	.305	.113	.111	.000	.093	.093	.016	-.162	-.007	0.353	0.082	9.9	1.4	9.5	1.5	A-	A+
2144	657843	7	7	741	.619	.619	.174	.144	.062	.000	.235	.235	-.056	-.136	-.187	-0.435	0.086	6.0	1.3	6.0	1.4	A+	
2145	657844	7	7	722	.231	.298	.380	.231	.091	.000	-.004	-.024	.090	-.004	-.109	1.610	0.095	5.2	1.3	9.9	3.1	A+	
2146	657845	7	7	724	.192	.160	.413	.235	.192	.000	.169	-.075	-.011	-.079	.169	1.915	0.101	1.7	1.1	5.0	1.7	A-	B-
2147	657846	7	7	722	.247	.114	.314	.326	.247	.000	.097	-.110	.015	-.030	.097	1.505	0.093	4.3	1.2	7.7	1.9	A+	
2148	657847	7	7	671	.560	.064	.560	.288	.088	.000	.451	-.163	.451	-.257	-.239	-0.182	0.089	0.1	1.0	0.2	1.0	A-	
2149	657848	7	7	682	.485	.249	.202	.485	.063	.000	.422	-.202	-.260	.422	-.080	0.298	0.085	-1.2	1.0	1.3	1.1	A-	
2150	657849	7	7	676	.681	.118	.681	.120	.081	.000	.344	-.118	.344	-.178	-.236	-0.769	0.093	2.3	1.1	2.0	1.2	A+	
2151	657889	7	7	667	.411	.210	.411	.271	.108	.000	.299	-.056	.299	-.095	-.264	0.618	0.088	2.8	1.1	4.9	1.3	A-	
2152	657890	7	7	722	.622	.127	.105	.145	.622	.000	.521	-.255	-.346	-.174	.521	-0.496	0.087	-2.7	0.9	-2.4	0.9	A-	
2153	657891	7	7	674	.407	.407	.151	.349	.094	.000	.172	.172	-.104	.073	-.281	0.612	0.087	5.6	1.2	9.9	1.7	A-	
2154	657892	7	7	696	.263	.263	.430	.158	.149	.000	.176	.176	-.077	-.008	-.102	1.434	0.093	2.5	1.1	6.8	1.8	A+	A-
2155	657893	7	7	665	.265	.241	.168	.326	.265	.000	.349	.037	-.245	-.167	.349	1.402	0.096	-0.6	1.0	2.1	1.2	A+	A+
2156	658825	7	7	691	.177	.177	.201	.439	.184	.000	.161	.161	-.144	.061	-.088	2.007	0.106	1.7	1.1	3.9	1.6	A-	A-
2157	658828	7	7	687	.176	.176	.236	.435	.153	.000	.161	.161	-.037	-.006	-.119	2.081	0.107	0.7	1.0	8.1	2.5	A+	
2158	658830	7	7	653	.891	.020	.072	.017	.891	.000	.264	-.067	-.170	-.225	.264	-2.341	0.136	0.7	1.1	1.2	1.2	A-	
2159	660526	7	7	673	.213	.400	.224	.163	.213	.000	.276	-.135	-.069	-.048	.276	1.782	0.101	-0.3	1.0	4.8	1.7	A-	
2160	660527	7	7	734	.279	.326	.279	.151	.244	.000	.033	-.169	.033	.010	.142	1.342	0.090	6.6	1.3	9.9	2.2	A+	A+
2161	660777	7	7	716	.334	.334	.201	.406	.059	.000	.091	.091	-.289	.179	-.063	1.070	0.086	6.8	1.3	7.9	1.7	A-	
2162	660778	7	7	704	.553	.263	.046	.139	.553	.000	.415	-.238	-.227	-.158	.415	-0.050	0.085	0.0	1.0	0.3	1.0	A+	
2163	661063	7	7	682	.911	.028	.911	.048	.013	.000	.414	-.164	.414	-.322	-.194	-2.882	0.147	-0.8	0.9	-1.1	0.8	B+	
2164	661064	7	7	686	.251	.216	.348	.185	.251	.000	.202	-.010	-.062	-.138	.202	1.478	0.096	2.8	1.1	5.7	1.7	A+	A-
2165	661065	7	7	691	.180	.172	.460	.188	.180	.000	.073	-.138	.123	-.095	.073	2.023	0.106	2.6	1.2	7.1	2.3	A+	A-

Table B–2 (continued). Mathematics Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
2166	662340	7	7	740	.401	.127	.354	.401	.118	.000	.266	-.216	-.030	.266	-.138	0.625	0.083	3.1	1.1	8.4	1.6	A-	A+
2167	662341	7	7	726	.657	.657	.125	.091	.127	.000	.484	.484	-.280	-.243	-.202	-0.662	0.089	-1.4	0.9	-1.2	0.9	A+	B-
2168	662342	7	7	749	.486	.164	.166	.486	.184	.000	.328	-.246	-.293	.328	.094	0.284	0.081	2.0	1.1	4.4	1.2	A-	A-
2169	662343	7	7	668	.537	.192	.537	.142	.129	.000	.401	-.228	.401	-.194	-.128	-0.024	0.087	0.4	1.0	1.2	1.1	A-	
2170	662344	7	7	679	.356	.138	.356	.331	.174	.000	.084	.098	.084	-.021	-.169	0.860	0.089	8.8	1.4	8.5	1.7	A+	
2171	662346	7	7	713	.498	.498	.220	.184	.098	.000	.440	.440	-.160	-.218	-.233	0.154	0.084	-1.4	1.0	1.2	1.1	A+	
2172	662347	7	7	679	.390	.390	.253	.199	.158	.000	.169	.169	-.208	-.120	.154	0.746	0.088	6.9	1.3	8.0	1.6	A+	A+
2173	662348	7	7	708	.735	.047	.735	.110	.109	.000	.376	-.097	.376	-.243	-.222	-1.109	0.095	1.0	1.1	0.4	1.0	A+	
2174	662349	7	7	702	.739	.148	.073	.739	.040	.000	.447	-.237	-.251	.447	-.239	-1.194	0.097	-0.2	1.0	-1.2	0.9	A+	A-
2175	662350	7	7	655	.415	.415	.194	.308	.082	.000	.363	.363	-.191	-.191	-.055	0.594	0.088	0.6	1.0	2.3	1.1	A-	A+
2176	662352	7	7	730	.785	.785	.080	.099	.037	.000	.464	.464	-.269	-.257	-.219	-1.418	0.100	-1.4	0.9	-2.2	0.8	A+	A+
2177	662353	7	7	666	.476	.476	.165	.237	.122	.000	.436	.436	-.199	-.222	-.151	0.285	0.086	-1.5	1.0	0.5	1.0	A+	
2178	662354	7	7	691	.511	.245	.511	.152	.093	.000	.325	-.209	.325	-.153	-.061	0.053	0.086	3.4	1.1	4.8	1.3	A-	
2179	657850	8	8	160	.288	.144	.275	.288	.294	.000	.092	-.053	-.141	.092	.088	1.179	0.188	2.7	1.2	2.4	1.5	A+	
2180	657851	8	8	200	.345	.205	.265	.345	.185	.000	.146	-.104	-.074	.146	.013	0.760	0.164	3.4	1.2	2.9	1.4	A-	
2181	657852	8	8	215	.251	.335	.247	.167	.251	.000	.210	-.044	-.122	-.048	.210	1.484	0.173	1.2	1.1	4.7	2.1	A-	A-
2182	657853	8	8	185	.357	.270	.189	.357	.184	.000	.109	.011	-.058	.109	-.087	0.586	0.171	4.4	1.3	5.2	1.9	B+	B-
2183	657854	8	8	213	.310	.225	.263	.310	.202	.000	.245	-.155	.005	.245	-.126	1.066	0.164	1.9	1.1	2.8	1.4	A-	
2184	657855	8	8	148	.257	.257	.230	.291	.223	.000	.104	.104	-.168	.008	.052	1.268	0.202	2.3	1.2	2.3	1.6	A+	
2185	657856	8	8	142	.204	.078	.254	.204	.465	.000	.267	-.244	-.206	.267	.095	1.592	0.220	-0.3	1.0	0.6	1.1	A+	
2186	657857	8	8	196	.097	.097	.316	.194	.393	.000	.010	.010	.044	-.030	-.024	2.738	0.254	0.9	1.2	3.2	2.5	A-	
2187	657858	8	8	200	.200	.035	.080	.200	.685	.000	.235	.053	-.133	.235	-.146	1.753	0.192	0.1	1.0	4.2	2.3	B-	
2188	657859	8	8	196	.235	.158	.235	.372	.235	.000	.108	-.028	.108	.097	-.195	1.371	0.185	2.0	1.2	5.3	2.6	A+	
2189	657860	8	8	159	.365	.126	.365	.138	.371	.000	.319	-.174	.319	-.027	-.179	0.720	0.184	0.4	1.0	2.9	1.5	A+	
2190	657861	8	8	203	.365	.232	.365	.335	.069	.000	.191	-.015	.191	-.106	-.140	0.731	0.161	2.9	1.2	3.9	1.5	A-	
2191	657862	8	8	176	.205	.415	.205	.108	.273	.000	-.060	.074	-.060	-.159	.083	1.565	0.204	2.9	1.4	5.4	2.8	B-	
2192	657863	8	8	193	.176	.197	.404	.176	.223	.000	-.110	.012	-.047	-.110	.144	1.745	0.203	2.7	1.4	5.2	2.8	A-	
2193	657864	8	8	201	.199	.159	.199	.448	.194	.000	-.108	.022	-.108	.065	.007	1.675	0.193	3.7	1.4	5.9	2.8	A+	
2194	657865	8	8	197	.223	.066	.152	.558	.223	.000	.099	-.223	-.150	.137	.099	1.622	0.186	2.0	1.2	3.6	1.9	A-	
2195	657866	8	8	184	.495	.125	.332	.495	.049	.000	.294	-.155	-.097	.294	-.234	-0.044	0.165	2.2	1.1	2.3	1.2	A+	
2196	657867	8	8	202	.515	.515	.183	.158	.144	.000	.342	.342	-.154	-.300	-.005	-0.283	0.159	1.4	1.1	1.6	1.2	A+	
2197	657868	8	8	142	.183	.183	.197	.423	.197	.000	.173	.173	-.243	.133	-.089	1.900	0.229	0.4	1.1	1.3	1.3	A-	
2198	657869	8	8	154	.221	.279	.201	.299	.221	.000	.188	-.007	-.150	-.032	.188	1.504	0.208	0.6	1.1	2.6	1.6	A-	
2199	657870	8	8	154	.318	.299	.266	.117	.318	.000	.177	-.043	-.053	-.122	.177	1.039	0.188	1.4	1.1	3.5	1.6	B-	
2200	657871	8	8	181	.541	.149	.541	.243	.066	.000	.317	-.154	.317	-.251	.018	-0.270	0.171	2.3	1.2	2.5	1.3	A-	

Table B–2 (continued). Mathematics Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
2201	657872	8	8	204	.270	.343	.270	.186	.201	.000	.127	-.088	.127	-.138	.098	1.202	0.172	2.7	1.2	3.7	1.8	B-	
2202	657873	8	8	204	.172	.172	.289	.427	.113	.000	.102	.102	.025	.037	-.215	1.820	0.197	1.4	1.2	3.0	1.9	A+	A-
2203	657874	8	8	147	.333	.048	.333	.442	.177	.000	.307	.025	.307	-.146	-.204	0.903	0.192	0.6	1.1	1.7	1.3	A+	
2204	657894	8	8	141	.461	.170	.461	.213	.156	.000	.184	-.026	.184	-.189	-.012	0.266	0.184	2.6	1.2	2.1	1.2	A+	
2205	657895	8	8	188	.293	.293	.330	.133	.245	.000	.329	.329	-.096	-.336	.022	1.082	0.177	0.4	1.0	1.3	1.2	A+	
2206	657896	8	8	196	.260	.219	.245	.260	.276	.000	.213	-.014	-.193	.213	-.010	1.383	0.176	0.6	1.1	4.9	2.1	A+	
2207	657897	8	8	190	.347	.211	.347	.190	.253	.000	.098	.009	.098	-.092	-.033	0.773	0.169	4.0	1.3	6.0	2.1	A+	
2208	657898	8	8	209	.215	.215	.263	.163	.359	.000	.164	.164	-.004	-.143	-.027	1.456	0.183	0.9	1.1	6.2	3.1	A+	
2209	657900	8	8	202	.455	.203	.455	.238	.104	.000	.237	.077	.237	-.266	-.117	0.214	0.157	3.1	1.2	2.4	1.3	A+	
2210	657901	8	8	159	.377	.377	.428	.151	.044	.000	.347	.347	-.174	-.088	-.246	0.573	0.181	0.7	1.1	0.8	1.1	A+	
2211	657902	8	8	140	.536	.107	.236	.536	.121	.000	.359	-.155	-.175	.359	-.173	-0.188	0.189	0.9	1.1	0.5	1.1	A+	
2212	657903	8	8	182	.610	.192	.610	.148	.050	.000	.451	-.267	.451	-.212	-.181	-0.526	0.171	-0.5	1.0	-0.8	0.9	A+	
2213	657904	8	8	186	.247	.226	.183	.344	.247	.000	.177	-.077	-.128	.011	.177	1.306	0.185	1.8	1.2	2.3	1.4	A-	
2214	657905	8	8	209	.191	.191	.325	.292	.191	.000	.031	.031	-.009	-.031	.016	1.718	0.190	2.0	1.2	4.5	2.3	A-	
2215	657906	8	8	145	.372	.310	.372	.207	.110	.000	.144	.068	.144	-.082	-.216	0.536	0.190	2.8	1.2	4.5	1.7	A-	
2216	657907	8	8	134	.276	.299	.276	.276	.149	.000	.184	-.129	.184	.013	-.082	1.124	0.210	1.0	1.1	3.4	1.9	A+	
2217	657908	8	8	133	.218	.150	.399	.233	.218	.000	.245	-.058	-.167	.004	.245	1.489	0.225	0.3	1.0	1.3	1.3	A+	
2218	657909	8	8	123	.407	.073	.301	.220	.407	.000	.271	-.341	-.021	-.084	.271	0.468	0.199	0.9	1.1	1.3	1.2	A-	
2219	657910	8	8	137	.256	.256	.329	.270	.146	.000	-.034	-.034	-.110	-.024	.220	1.257	0.213	3.0	1.3	5.8	2.9	A+	
2220	657911	8	8	160	.456	.119	.206	.456	.219	.000	.161	-.172	.018	.161	-.077	0.024	0.176	3.4	1.2	3.7	1.4	A-	
2221	657912	8	8	167	.389	.132	.264	.389	.216	.000	.232	-.118	-.159	.232	-.008	0.549	0.175	2.1	1.1	2.3	1.3	A+	
2222	657913	8	8	206	.660	.660	.087	.136	.117	.000	.203	.203	-.131	-.113	-.064	-0.967	0.166	3.3	1.3	2.8	1.4	A+	
2223	657914	8	8	130	.315	.315	.246	.146	.292	.000	.424	.424	-.122	-.266	-.111	0.945	0.209	-0.8	0.9	0.2	1.0	A+	
2224	657915	8	8	151	.238	.265	.272	.225	.238	.000	.315	-.134	-.183	.015	.315	1.308	0.205	-0.3	1.0	1.0	1.2	A+	
2225	657916	8	8	146	.288	.288	.288	.274	.151	.000	.051	-.053	.051	-.101	.129	1.029	0.198	2.9	1.3	4.0	1.9	A-	
2226	657917	8	8	143	.378	.112	.420	.378	.091	.000	.222	-.149	-.040	.222	-.143	0.696	0.190	2.0	1.2	2.8	1.5	B+	
2227	657918	8	8	183	.312	.230	.257	.202	.312	.000	.264	.021	-.153	-.160	.264	0.862	0.175	1.2	1.1	3.0	1.5	A+	
2228	657919	8	8	153	.248	.248	.386	.301	.065	.000	.012	.012	-.015	-.090	.175	1.260	0.202	2.2	1.2	6.7	3.3	A-	
2229	657920	8	8	146	.288	.418	.288	.116	.178	.000	-.061	.104	-.061	-.143	.059	1.117	0.195	3.2	1.3	4.4	1.8	A+	
2230	657921	8	8	135	.415	.415	.363	.141	.082	.000	.357	.357	-.145	-.222	-.105	0.479	0.195	0.8	1.1	0.7	1.1	C+	
2231	657922	8	8	144	.243	.417	.194	.146	.243	.000	.248	.054	-.171	-.186	.248	1.354	0.208	0.1	1.0	2.5	1.6	B-	
2232	657923	8	8	190	.642	.063	.200	.642	.095	.000	.414	-.176	-.226	.414	-.222	-0.681	0.173	0.8	1.1	0.0	1.0	A-	
2233	657924	8	8	139	.648	.086	.648	.216	.050	.000	.426	-.036	.426	-.327	-.270	-0.758	0.199	-0.1	1.0	-0.4	1.0	A-	
2234	657951	8	8	139	.525	.194	.525	.201	.079	.000	.348	-.233	.348	-.186	-.026	-0.126	0.193	1.4	1.1	1.6	1.2	B-	
2235	657952	8	8	151	.517	.185	.185	.517	.113	.000	.339	-.016	-.281	.339	-.171	-0.067	0.183	1.5	1.1	1.4	1.2	A-	

Table B–2 (continued). Mathematics Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M /F	W /B
2236	657953	8	8	182	.291	.269	.291	.319	.121	.000	-.039	.182	-.039	-.120	-.022	1.001	0.178	4.4	1.4	5.4	2.1	A+	
2237	657954	8	8	149	.490	.161	.490	.269	.081	.000	.310	-.180	.310	-.126	-.122	-0.047	0.186	2.1	1.2	2.0	1.3	A+	
2238	657955	8	8	201	.468	.239	.468	.169	.124	.000	.110	-.058	.110	-.077	-.004	-0.028	0.159	5.4	1.4	4.7	1.5	A-	
2239	657956	8	8	205	.220	.293	.220	.249	.239	.000	-.134	-.097	-.134	.054	.179	1.612	0.183	3.8	1.4	7.2	3.3	A-	
2240	657957	8	8	188	.484	.229	.484	.229	.059	.000	.262	-.006	.262	-.259	-.083	0.167	0.160	1.9	1.1	1.8	1.2	A-	
2241	657958	8	8	214	.463	.084	.463	.215	.238	.000	.167	-.004	.167	-.055	-.139	0.187	0.152	3.6	1.2	5.1	1.5	A-	
2242	657959	8	8	145	.393	.166	.131	.310	.393	.000	.280	-.116	-.179	-.072	.280	0.514	0.188	1.6	1.1	1.3	1.2	A-	A+
2243	657960	8	8	157	.459	.166	.191	.459	.185	.000	.316	-.348	-.157	.316	.086	0.246	0.175	0.8	1.1	0.6	1.1	B+	
2244	657961	8	8	137	.292	.168	.292	.409	.131	.000	.165	.020	.165	-.012	-.226	1.211	0.204	2.0	1.2	2.7	1.6	A-	
2245	657962	8	8	198	.313	.232	.197	.313	.258	.000	.121	-.042	-.026	.121	-.065	1.079	0.169	3.3	1.3	4.3	1.7	B-	
2246	657963	8	8	130	.454	.092	.108	.454	.346	.000	.235	-.162	-.244	.235	.012	0.192	0.198	2.5	1.2	2.3	1.3	A+	
2247	657964	8	8	131	.389	.084	.389	.305	.221	.000	.212	-.061	.212	-.176	-.012	0.525	0.202	2.5	1.2	4.0	1.7	B-	
2248	657965	8	8	159	.365	.270	.239	.365	.126	.000	.111	.276	-.176	.111	-.304	0.671	0.180	3.3	1.2	3.9	1.6	B+	
2249	657966	8	8	153	.340	.340	.203	.288	.170	.000	.274	.274	-.228	-.038	-.056	0.790	0.188	1.2	1.1	1.0	1.1	A+	
2250	657967	8	8	167	.611	.611	.174	.144	.072	.000	.493	.493	-.357	-.211	-.121	-0.628	0.177	-1.4	0.9	-1.3	0.9	A+	
2251	657968	8	8	147	.293	.204	.293	.299	.204	.000	.138	.183	.138	-.262	-.041	1.073	0.196	2.0	1.2	2.4	1.5	A+	
2252	657969	8	8	138	.449	.123	.449	.225	.203	.000	.266	-.030	.266	-.167	-.132	0.407	0.186	1.1	1.1	2.0	1.2	A-	
2253	657970	8	8	153	.438	.275	.157	.438	.131	.000	.243	-.230	-.187	.243	.149	0.391	0.179	1.9	1.1	2.6	1.3	A-	
2254	657971	8	8	189	.497	.169	.497	.249	.085	.000	.207	-.127	.207	-.108	-.034	0.034	0.161	3.3	1.2	2.9	1.3	A-	
2255	657972	8	8	145	.324	.235	.324	.324	.117	.000	.016	-.025	-.016	.016	.033	0.725	0.192	3.8	1.3	3.5	1.6	B+	
2256	657973	8	8	140	.400	.371	.400	.150	.079	.000	.211	.047	.211	-.240	-.148	0.461	0.191	2.9	1.2	1.9	1.3	A+	
2257	657974	8	8	210	.281	.557	.281	.114	.048	.000	.411	-.130	.411	-.277	-.151	1.058	0.167	-0.6	1.0	-0.9	0.9	A+	
2258	657975	8	8	217	.286	.286	.055	.203	.456	.000	.229	.229	-.219	.028	-.130	1.149	0.163	1.3	1.1	2.4	1.4	A+	A-
2259	658001	8	8	145	.283	.283	.207	.166	.345	.000	.176	.176	-.302	-.096	.165	1.314	0.200	1.3	1.1	3.6	1.8	A+	
2260	658002	8	8	139	.237	.245	.216	.302	.237	.000	.323	.123	-.253	-.187	.323	1.522	0.213	-0.2	1.0	-0.1	1.0	A+	
2261	658003	8	8	154	.240	.318	.292	.149	.240	.000	.196	.095	-.154	-.163	.196	1.352	0.205	1.3	1.1	2.0	1.5	B+	
2262	658004	8	8	153	.203	.307	.248	.242	.203	.000	.052	.085	-.019	-.121	.052	1.800	0.213	1.6	1.2	2.9	1.8	A-	
2263	658005	8	8	196	.194	.138	.194	.225	.444	.000	-.042	-.105	-.042	-.269	.332	1.809	0.196	2.9	1.4	6.2	3.5	A+	
2264	658006	8	8	210	.514	.110	.210	.514	.167	.000	.356	-.170	-.314	.356	.009	-0.125	0.154	0.8	1.1	1.1	1.1	A-	
2265	658007	8	8	185	.405	.222	.178	.195	.405	.000	.417	-.183	-.327	-.009	.417	0.365	0.165	-1.1	0.9	0.1	1.0	A-	
2266	658008	8	8	197	.269	.178	.198	.355	.269	.000	.346	-.089	-.344	.037	.346	1.124	0.175	-0.3	1.0	1.3	1.2	A-	
2267	658009	8	8	195	.456	.200	.456	.226	.118	.000	.380	-.268	.380	-.188	-.010	0.243	0.161	0.6	1.0	1.2	1.1	A-	
2268	658010	8	8	167	.431	.431	.240	.174	.156	.000	.449	.449	-.290	-.193	-.070	0.305	0.175	-0.7	1.0	0.0	1.0	A-	
2269	658011	8	8	125	.688	.688	.160	.120	.032	.000	.351	.351	-.297	-.093	-.134	-0.901	0.217	0.9	1.1	0.7	1.1	A+	
2270	658012	8	8	147	.483	.252	.191	.483	.075	.000	.017	-.066	.022	.017	.042	0.108	0.185	5.6	1.5	5.8	1.8	A+	

Table B–2 (continued). Mathematics Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
2271	658013	8	8	159	.396	.101	.333	.170	.396	.000	.355	-.180	-.198	-.070	.355	0.640	0.180	-0.2	1.0	3.5	1.5	A-	
2272	658014	8	8	138	.645	.044	.645	.094	.217	.000	.388	-.263	.388	-.282	-.120	-0.677	0.197	0.2	1.0	-0.3	1.0	A+	
2273	658015	8	8	198	.131	.263	.475	.131	.131	.000	-.005	-.024	.135	-.164	-.005	2.098	0.220	1.1	1.2	3.8	2.5	B+	
2274	658016	8	8	195	.385	.139	.364	.385	.113	.000	.300	-.222	-.146	.300	.002	0.541	0.167	1.9	1.1	2.8	1.4	A-	
2275	658017	8	8	138	.297	.297	.174	.333	.196	.000	.233	.233	-.329	.062	-.028	1.057	0.202	0.7	1.1	3.4	1.8	A+	
2276	658018	8	8	149	.362	.175	.362	.309	.154	.000	.046	-.103	.046	-.036	.093	0.766	0.187	3.5	1.3	5.9	2.1	A-	
2277	658019	8	8	161	.236	.205	.236	.447	.112	.000	.111	.028	.111	-.033	-.133	1.397	0.200	1.9	1.2	2.6	1.6	A+	
2278	658020	8	8	203	.177	.187	.330	.305	.177	.000	.169	-.172	-.133	.142	.169	1.780	0.195	0.7	1.1	3.4	2.0	A-	A-
2279	658021	8	8	141	.418	.128	.312	.418	.142	.000	.107	-.093	-.044	.107	-.004	0.381	0.190	3.7	1.3	6.2	2.1	A+	
2280	658022	8	8	151	.470	.133	.232	.470	.166	.000	.117	.070	-.041	.117	-.175	0.093	0.181	4.1	1.3	4.0	1.5	B+	
2281	658023	8	8	144	.326	.340	.250	.326	.083	.000	.257	.139	-.391	.257	-.062	0.937	0.196	1.5	1.1	1.5	1.3	A+	
2282	658024	8	8	147	.170	.122	.415	.170	.293	.000	-.133	-.336	.168	-.133	.170	1.801	0.234	2.5	1.4	4.5	2.9	A-	
2283	658025	8	8	214	.332	.262	.243	.164	.332	.000	.299	-.012	-.219	-.112	.299	0.857	0.159	0.4	1.0	2.3	1.3	A-	
2284	658026	8	8	137	.131	.131	.336	.402	.131	.000	.152	.143	-.128	-.080	.152	2.194	0.263	0.3	1.0	2.0	1.8	A-	
2285	658027	8	8	219	.215	.343	.324	.119	.215	.000	-.012	-.001	.081	-.101	-.012	1.548	0.179	3.1	1.3	5.1	2.5	A+	
2286	658028	8	8	188	.261	.356	.261	.218	.165	.000	-.051	.276	-.051	-.139	-.141	1.089	0.178	3.2	1.3	5.4	2.1	A-	
2287	658029	8	8	143	.154	.441	.154	.252	.154	.000	.099	.239	.099	-.276	-.095	2.068	0.244	0.8	1.1	2.2	1.7	A+	
2288	658030	8	8	146	.349	.123	.274	.253	.349	.000	.289	-.140	-.088	-.120	.289	0.892	0.190	1.2	1.1	0.7	1.1	A+	
2289	658031	8	8	194	.299	.139	.294	.268	.299	.000	.141	.126	-.133	-.108	.141	1.000	0.172	3.0	1.3	2.8	1.4	A+	
2290	658032	8	8	150	.193	.193	.353	.353	.100	.000	.141	.141	-.016	-.082	-.030	1.757	0.221	0.8	1.1	3.4	2.1	A+	
2291	658033	8	8	211	.152	.251	.341	.256	.152	.000	.005	.259	-.202	-.042	.005	2.211	0.203	1.3	1.2	4.6	2.6	A+	
2292	658034	8	8	117	.222	.120	.513	.145	.222	.000	.045	-.165	.000	.099	.045	1.517	0.239	1.7	1.2	3.2	2.0	A-	
2293	658035	8	8	152	.375	.079	.336	.375	.211	.000	.168	-.024	-.182	.168	.027	0.758	0.185	2.9	1.2	3.7	1.6	B-	
2294	658036	8	8	152	.296	.197	.217	.290	.296	.000	.177	.010	-.095	-.101	.177	1.223	0.196	1.9	1.2	4.0	2.0	A+	
2295	658037	8	8	219	.292	.393	.192	.292	.123	.000	-.023	.070	-.085	-.023	.029	1.052	0.163	4.6	1.4	6.4	2.2	A-	
2296	658038	8	8	197	.376	.376	.244	.234	.147	.000	.306	.306	-.088	-.190	-.086	0.596	0.163	1.4	1.1	1.6	1.2	A+	
2297	658039	8	8	154	.546	.546	.221	.130	.104	.000	.271	.271	-.155	-.110	-.110	-0.323	0.181	2.1	1.2	1.9	1.2	A+	
2298	658040	8	8	137	.423	.423	.263	.248	.066	.000	.257	.257	-.137	-.151	-.006	0.336	0.194	2.6	1.2	1.6	1.2	A-	
2299	658041	8	8	172	.209	.209	.361	.273	.157	.000	.188	.188	-.012	-.153	-.008	1.659	0.202	1.0	1.1	2.0	1.5	B-	
2300	658042	8	8	201	.299	.299	.224	.309	.169	.000	.479	.479	-.149	-.134	-.254	1.043	0.171	-1.7	0.9	-1.0	0.9	A+	
2301	658043	8	8	147	.259	.211	.286	.259	.245	.000	-.098	-.024	.129	-.098	-.014	1.263	0.200	2.6	1.3	6.9	3.0	A-	
2302	658044	8	8	143	.035	.035	.161	.357	.448	.000	-.080	-.080	.146	-.049	-.031	3.651	0.465	0.4	1.1	2.2	3.1	A+	
2303	658045	8	8	158	.114	.108	.462	.317	.114	.000	.212	-.126	-.061	.005	.212	2.484	0.264	-0.4	0.9	3.5	3.1	A-	
2304	658046	8	8	199	.241	.266	.286	.241	.206	.000	.131	-.075	-.010	.131	-.046	1.427	0.179	1.3	1.1	5.8	2.5	A-	
2305	658047	8	8	204	.490	.265	.490	.113	.132	.000	.310	-.094	.310	-.201	-.148	-0.171	0.158	2.1	1.1	2.3	1.2	A-	

Table B–2 (continued). Mathematics Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
2306	658048	8	8	196	.270	.480	.148	.270	.102	.000	.339	-.149	-.147	.339	-.080	1.192	0.176	0.1	1.0	0.7	1.1	A-	
2307	658049	8	8	146	.507	.130	.507	.253	.110	.000	.338	.056	.338	-.377	-.077	0.175	0.181	0.4	1.0	0.3	1.0	A+	
2308	658050	8	8	159	.572	.572	.214	.126	.088	.000	.379	.379	-.265	-.157	-.095	-0.400	0.181	0.8	1.1	1.3	1.1	A-	
2309	662217	8	8	207	.440	.440	.203	.271	.087	.000	.307	.307	-.205	-.227	.109	0.372	0.154	1.2	1.1	1.3	1.1	A-	A+
2310	662218	8	8	136	.434	.118	.434	.338	.110	.000	.042	.149	.042	-.150	.006	0.308	0.195	5.3	1.5	5.1	1.9	B-	
2311	662221	8	8	194	.505	.113	.505	.304	.077	.000	.120	.180	.120	-.194	-.104	-0.114	0.159	4.9	1.3	4.3	1.5	A+	
2312	662222	8	8	184	.429	.332	.429	.179	.060	.000	.005	.115	.005	-.138	-.013	0.354	0.164	5.9	1.4	6.4	1.9	A-	
2313	662223	8	8	227	.238	.256	.410	.238	.097	.000	.069	-.082	.060	.069	-.079	1.424	0.170	3.0	1.3	5.2	2.3	A-	
2314	662224	8	8	134	.299	.149	.246	.306	.299	.000	.340	-.042	-.301	-.024	.340	1.063	0.205	-0.7	0.9	2.9	1.6	A+	
2315	662225	8	8	215	.219	.112	.219	.181	.488	.000	.155	-.294	-.155	-.028	.078	1.485	0.178	1.1	1.1	4.8	2.2	A-	
2316	662453	8	8	154	.409	.409	.130	.292	.169	.000	.297	.297	-.131	-.223	.000	0.473	0.182	1.2	1.1	2.6	1.4	A+	
2317	662454	8	8	209	.407	.297	.177	.407	.120	.000	.225	-.038	-.297	.225	.062	0.465	0.156	2.6	1.2	3.7	1.5	A+	
2318	662455	8	8	216	.662	.056	.028	.255	.662	.000	.379	-.263	-.256	-.177	.379	-0.766	0.163	0.9	1.1	0.8	1.1	A-	
2319	662456	8	8	203	.301	.301	.237	.360	.103	.000	.245	.245	-.204	.040	-.147	0.936	0.167	1.7	1.1	0.9	1.1	A-	
2320	662457	8	8	230	.587	.091	.191	.587	.130	.000	.264	-.241	-.120	.264	-.040	-0.425	0.149	2.6	1.2	1.8	1.2	A-	
2321	662458	8	8	209	.632	.110	.177	.081	.632	.000	.414	-.091	-.239	-.292	.414	-0.654	0.161	-0.1	1.0	0.6	1.1	A+	
2322	662459	8	8	210	.262	.310	.262	.281	.148	.000	-.073	.004	-.073	.022	.058	1.187	0.170	4.1	1.4	6.6	2.5	B-	
2323	662460	8	8	138	.261	.261	.225	.319	.196	.000	.194	.194	-.172	.092	-.142	1.118	0.209	1.1	1.1	2.2	1.5	A+	
2324	662461	8	8	212	.198	.198	.198	.377	.226	.000	.303	.303	-.205	-.040	-.048	1.562	0.185	-0.2	1.0	1.5	1.3	A-	A-
2325	662462	8	8	230	.522	.074	.239	.522	.165	.000	.351	-.132	-.122	.351	-.239	-0.266	0.147	1.0	1.1	1.8	1.2	A+	
2326	662463	8	8	156	.539	.096	.263	.103	.539	.000	.491	-.035	-.435	-.142	.491	-0.293	0.181	-1.1	0.9	-0.9	0.9	A+	
2327	662464	8	8	186	.237	.237	.409	.220	.134	.000	.275	.275	.109	-.179	-.281	1.360	0.187	0.3	1.0	2.8	1.6	A-	
2328	662465	8	8	224	.571	.054	.571	.317	.058	.000	.296	-.007	.296	-.256	-.112	-0.500	0.151	2.0	1.1	1.8	1.2	A+	
2329	662466	8	8	145	.614	.110	.186	.614	.090	.000	.466	-.190	-.262	.466	-.229	-0.656	0.194	-0.3	1.0	-0.2	1.0	A-	
2330	662467	8	8	213	.455	.127	.455	.282	.136	.000	.306	-.221	.306	-.142	-.044	0.191	0.155	2.2	1.1	2.5	1.3	A+	
2331	662468	8	8	214	.500	.500	.094	.294	.112	.000	.453	.453	-.104	-.273	-.228	-0.137	0.153	-0.9	1.0	0.1	1.0	A+	
2332	662469	8	8	190	.400	.168	.142	.290	.400	.000	.385	-.323	-.155	-.030	.385	0.380	0.163	-0.3	1.0	0.7	1.1	C+	
2333	662470	8	8	220	.455	.155	.205	.186	.455	.000	.404	-.176	-.191	-.155	.404	0.178	0.152	-0.1	1.0	1.4	1.1	A+	
2334	662778	8	8	206	.243	.194	.408	.243	.155	.000	-.045	.018	.129	-.045	-.141	1.342	0.178	3.9	1.4	5.9	2.3	A+	
2335	662779	8	8	188	.489	.154	.245	.489	.112	.000	.142	-.161	.016	.142	-.062	-0.117	0.163	4.2	1.3	4.5	1.5	A-	
2336	672176	K	K	431	.882	.882	.012	.053	.051	.002	.442	.442	-.084	-.306	-.263	-4.194	0.163	-0.3	1.0	-0.2	0.9	C+	B-
2337	670543	K	K	431	.979	.014	.002	.979	.005	.000	.260	-.232	-.024	.260	-.131	-6.252	0.347	-0.1	1.0	-1.2	0.5	A-	A-
2338	678374	K	K	431	.796	.037	.796	.032	.121	.014	.640	-.274	.640	-.247	-.412	-3.393	0.135	-3.3	0.8	-3.1	0.6	A+	A-
2339	675631	K	K	431	.740	.039	.123	.081	.740	.016	.433	-.246	-.193	-.209	.433	-2.988	0.126	1.1	1.1	0.5	1.1	A+	A+
2340	671375	K	K	439	.909	.909	.030	.009	.052	.000	.278	.278	-.120	-.071	-.238	-4.909	0.177	0.4	1.0	0.8	1.2	B-	

Table B–2 (continued). Mathematics Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
2341	678375	K	K	439	.852	.041	.016	.852	.087	.005	.354	-.287	-.215	.354	-.147	-4.263	0.147	0.3	1.0	1.0	1.2	A+	
2342	675341	K	K	439	.902	.057	.025	.902	.016	.000	.438	-.224	-.274	.438	-.283	-4.817	0.172	-0.9	0.9	0.5	1.1	A+	
2343	675346	K	K	439	.845	.055	.041	.055	.845	.005	.428	-.315	-.137	-.198	.428	-4.199	0.145	-0.3	1.0	-0.7	0.9	A+	
2344	672175	K	K	433	.582	.037	.053	.582	.326	.002	.254	-.057	-.070	.254	-.205	-2.017	0.113	6.3	1.3	6.1	1.5	A+	A+
2345	675633	K	K	433	.850	.850	.028	.032	.081	.009	.582	.582	-.284	-.267	-.366	-3.840	0.149	-2.3	0.8	-2.4	0.6	A+	A-
2346	675630	K	K	433	.755	.755	.053	.115	.067	.009	.618	.618	-.211	-.371	-.341	-3.074	0.127	-2.9	0.8	-3.1	0.7	A+	B-
2347	670541	K	K	433	.871	.065	.037	.871	.007	.021	.391	-.202	-.232	.391	-.139	-4.050	0.157	0.2	1.0	-0.5	0.9	A+	A-
2348	671947	K	K	435	.671	.018	.671	.143	.163	.005	.546	-.156	.546	-.195	-.435	-2.485	0.115	-2.0	0.9	-1.9	0.8	A+	C-
2349	675050	K	K	435	.681	.074	.092	.149	.680	.005	.347	-.228	-.183	-.122	.347	-2.538	0.116	2.4	1.1	2.3	1.2	A-	A-
2350	675632	K	K	435	.563	.317	.563	.060	.055	.005	.270	-.063	.270	-.218	-.165	-1.896	0.110	4.9	1.2	4.6	1.3	A-	A+
2351	671368	K	K	435	.933	.014	.933	.023	.021	.009	.519	-.180	.519	-.285	-.306	-4.787	0.203	-1.5	0.8	-2.2	0.5	A+	A-
2352	678370	K	K	435	.575	.228	.575	.154	.032	.011	.400	-.271	.400	-.086	-.164	-1.957	0.110	1.8	1.1	2.1	1.2	A+	A+
2353	675342	K	K	430	.637	.035	.047	.637	.277	.005	.465	-.150	-.061	.465	-.406	-2.844	0.111	-0.7	1.0	-1.3	0.9	A-	
2354	678371	K	K	430	.754	.209	.028	.753	.009	.000	.444	-.352	-.256	.444	-.060	-3.521	0.123	-0.4	1.0	-1.1	0.9	A+	
2355	671371	K	K	430	.630	.028	.230	.630	.107	.005	.248	-.065	-.267	.248	.014	-2.807	0.111	4.2	1.2	3.6	1.3	A-	
2356	675628	K	K	430	.519	.309	.065	.098	.519	.009	.279	-.104	-.171	-.135	.279	-2.238	0.108	3.7	1.2	5.1	1.3	A-	
2357	675049	K	K	448	.875	.875	.022	.096	.007	.000	.339	.339	-.175	-.246	-.170	-3.764	0.154	0.4	1.0	0.4	1.1	A-	A-
2358	677742	K	K	448	.922	.042	.922	.020	.013	.002	.332	-.268	.332	-.103	-.139	-4.362	0.187	-0.1	1.0	-0.5	0.9	B-	A-
2359	675343	K	K	448	.971	.009	.971	.011	.007	.002	.307	-.190	.307	-.126	-.193	-5.499	0.291	-0.2	0.9	-1.5	0.5	A+	B-
2360	677743	K	K	433	.656	.118	.079	.656	.143	.005	.515	-.189	-.213	.515	-.328	-2.376	0.116	-0.5	1.0	-0.4	1.0	B-	B-
2361	675052	K	K	433	.337	.162	.337	.268	.229	.005	.324	-.141	.324	-.117	-.106	-0.611	0.117	1.7	1.1	4.2	1.5	A-	A-
2362	678372	K	K	433	.972	.009	.016	.972	.002	.000	.319	-.228	-.253	.319	.027	-5.876	0.304	-0.4	0.9	-0.6	0.7	B+	A-
2363	675053	K	K	433	.552	.268	.037	.552	.132	.012	.233	-.149	-.094	.233	-.050	-1.794	0.112	6.4	1.3	6.3	1.5	B+	B+
2364	671951	K	K	431	.882	.053	.053	.882	.009	.002	.310	-.117	-.233	.310	-.174	-4.531	0.163	0.6	1.1	1.9	1.5	A-	A+
2365	670540	K	K	431	.933	.012	.035	.933	.016	.005	.375	-.216	-.232	.375	-.158	-5.256	0.205	-0.4	0.9	-0.5	0.8	A-	A+
2366	677892	K	K	431	.773	.773	.021	.081	.118	.007	.561	.561	-.187	-.446	-.243	-3.566	0.129	-2.0	0.9	-1.3	0.8	A-	A-
2367	678373	K	K	431	.926	.926	.023	.016	.030	.005	.437	.437	-.267	-.219	-.216	-5.134	0.197	-0.9	0.9	-0.7	0.8	B+	A-
2368	672182	K	K	436	.963	.018	.009	.009	.963	.000	.350	-.194	-.206	-.212	.350	-5.552	0.267	-0.3	0.9	-1.6	0.4	A+	A-
2369	675347	K	K	436	.727	.032	.009	.227	.727	.005	.446	-.187	-.099	-.361	.446	-2.789	0.125	1.3	1.1	-0.4	1.0	A+	C-
2370	670537	K	K	436	.837	.018	.837	.011	.117	.016	.596	-.259	.596	-.116	-.459	-3.646	0.146	-2.3	0.8	-2.8	0.5	A+	B-
2371	675629	K	K	436	.782	.782	.080	.078	.050	.009	.568	.568	-.291	-.242	-.338	-3.185	0.133	-1.6	0.9	-1.8	0.7	B+	A-
2372	675184	K	K	438	.895	.034	.034	.895	.037	.000	.476	-.183	-.280	.476	-.330	-4.187	0.170	-0.9	0.9	-1.3	0.7	B+	
2373	671380	K	K	438	.922	.922	.014	.007	.057	.000	.409	.409	-.146	-.246	-.311	-4.578	0.192	-0.6	0.9	-0.8	0.8	A-	
2374	675183	K	K	438	.690	.098	.689	.180	.032	.000	.480	-.319	.480	-.262	-.149	-2.498	0.118	-0.1	1.0	-1.0	0.9	A+	
2375	671942	K	K	438	.881	.023	.050	.881	.046	.000	.463	-.286	-.210	.463	-.293	-4.021	0.162	-0.8	0.9	-0.9	0.8	A+	

Table B–2 (continued). Mathematics Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
2376	675186	K	K	438	.710	.096	.084	.710	.107	.002	.473	-.317	-.301	.473	-.116	-2.626	0.120	0.2	1.0	-0.5	0.9	A+	
2377	675344	K	K	424	.922	.035	.019	.019	.922	.005	.237	-.148	-.133	-.100	.237	-5.043	0.194	0.8	1.1	1.0	1.3	A+	
2378	677746	K	K	424	.425	.285	.425	.009	.278	.002	.389	-.279	.389	-.073	-.117	-1.546	0.113	1.4	1.1	2.7	1.2	A-	
2379	675185	K	K	424	.910	.910	.019	.028	.042	.000	.427	.427	-.157	-.250	-.293	-4.865	0.183	-0.5	0.9	-1.3	0.7	A+	
2380	671944	K	K	424	.868	.019	.868	.017	.094	.002	.531	-.232	.531	-.153	-.415	-4.348	0.157	-1.5	0.9	-1.6	0.7	A+	
2381	670534	K	K	424	.887	.028	.009	.068	.887	.007	.406	-.287	-.038	-.234	.406	-4.559	0.167	-0.4	1.0	1.5	1.3	A+	
2382	675345	K	K	433	.979	.979	.002	.009	.007	.002	.288	.288	-.147	-.243	-.137	-6.360	0.348	-0.2	0.9	-0.8	0.6	A-	
2383	670535	K	K	433	.903	.055	.903	.018	.023	.000	.442	-.329	.442	-.177	-.213	-4.520	0.179	-0.3	1.0	-0.7	0.8	A-	
2384	671370	K	K	433	.898	.035	.898	.018	.044	.005	.467	-.207	.467	-.201	-.304	-4.457	0.176	-0.7	0.9	-0.8	0.8	A+	
2385	671376	K	K	433	.917	.917	.014	.018	.048	.002	.425	.425	-.130	-.249	-.285	-4.724	0.190	-0.5	0.9	-0.9	0.7	A+	
2386	677747	K	K	433	.492	.492	.074	.111	.319	.005	.454	.454	-.296	.029	-.310	-1.550	0.112	0.6	1.0	1.9	1.2	A+	
2387	677738	K	K	439	.975	.975	.016	.005	.002	.002	.276	.276	-.230	-.094	-.133	-5.900	0.312	-0.1	1.0	-1.5	0.4	B+	
2388	670539	K	K	439	.948	.014	.948	.025	.011	.002	.253	-.074	.253	-.239	-.087	-5.088	0.223	0.2	1.0	-0.6	0.8	A-	
2389	672185	K	K	439	.954	.954	.018	.018	.009	.000	.309	.309	-.262	-.194	-.036	-5.246	0.237	-0.2	1.0	-1.1	0.6	A-	
2390	675627	K	K	439	.576	.576	.410	.005	.007	.002	.358	.358	-.310	-.137	-.091	-2.057	0.109	2.3	1.1	1.6	1.1	A-	
2391	672179	K	K	428	.689	.051	.689	.098	.157	.005	.428	-.166	.428	-.125	-.343	-3.014	0.117	0.5	1.0	-0.4	1.0	A-	
2392	671379	K	K	428	.610	.610	.044	.287	.056	.002	.514	.514	-.207	-.362	-.191	-2.570	0.112	-1.6	0.9	-0.9	0.9	A+	
2393	670536	K	K	428	.949	.009	.016	.019	.949	.007	.442	-.180	-.262	-.281	.442	-5.537	0.230	-1.0	0.8	-2.0	0.4	A+	
2394	675051	K	K	428	.935	.935	.016	.026	.021	.002	.456	.456	-.185	-.217	-.335	-5.251	0.207	-1.1	0.8	-1.6	0.6	A+	
2395	671950	K	K	428	.937	.014	.019	.937	.026	.005	.418	-.159	-.251	.418	-.231	-5.294	0.211	-0.8	0.9	-0.8	0.7	A+	
2396	671712	1	1	431	.819	.819	.046	.014	.121	.000	.530	.530	-.210	-.179	-.426	-3.582	0.140	-1.3	0.9	-1.8	0.7	A+	A-
2397	671692	1	1	431	.893	.046	.032	.893	.026	.002	.501	-.311	-.245	.501	-.244	-4.333	0.170	-1.2	0.9	-2.0	0.6	A+	A+
2398	675391	1	1	431	.777	.777	.093	.100	.026	.005	.506	.506	-.416	-.209	-.128	-3.251	0.131	-0.6	1.0	-0.9	0.9	A-	A+
2399	670464	1	1	431	.722	.176	.051	.722	.037	.014	.241	-.122	.007	.241	-.207	-2.863	0.123	5.1	1.3	4.9	1.6	B+	A-
2400	673094	1	1	431	.743	.742	.093	.044	.109	.012	.497	.497	-.178	-.253	-.282	-3.003	0.126	-0.2	1.0	-0.5	0.9	A+	A-
2401	675155	1	1	431	.863	.021	.863	.035	.072	.009	.414	-.234	.414	-.130	-.249	-3.992	0.155	-0.2	1.0	0.4	1.1	A+	A-
2402	671693	1	1	439	.925	.925	.009	.039	.025	.002	.406	.406	-.228	-.240	-.246	-5.147	0.192	-0.6	0.9	-1.4	0.6	B-	
2403	675156	1	1	439	.836	.023	.836	.123	.018	.000	.436	-.133	.436	-.374	-.141	-4.117	0.142	-0.3	1.0	-0.3	1.0	A+	
2404	670466	1	1	439	.961	.011	.014	.961	.011	.002	.314	-.159	-.200	.314	-.154	-5.919	0.256	-0.2	1.0	-1.4	0.5	A-	
2405	675054	1	1	439	.834	.073	.834	.068	.021	.005	.384	-.188	.384	-.264	-.114	-4.097	0.141	0.3	1.0	0.5	1.1	A+	
2406	671713	1	1	439	.681	.681	.018	.241	.057	.002	.417	.417	-.094	-.332	-.176	-3.022	0.117	1.5	1.1	1.6	1.2	B-	
2407	675160	1	1	439	.743	.743	.089	.034	.132	.002	.657	.657	-.182	-.276	-.549	-3.409	0.123	-4.3	0.8	-4.0	0.6	A-	
2408	673093	1	1	433	.670	.104	.670	.143	.079	.005	.535	-.277	.535	-.265	-.255	-2.523	0.118	-1.0	1.0	-1.0	0.9	A-	A+
2409	670462	1	1	433	.721	.065	.721	.048	.164	.002	.578	-.191	.578	-.160	-.479	-2.841	0.123	-2.0	0.9	-2.0	0.8	B+	A-
2410	675389	1	1	433	.878	.030	.046	.878	.044	.002	.467	-.355	-.157	.467	-.266	-4.125	0.160	-0.9	0.9	0.1	1.0	A+	A+

Table B–2 (continued). Mathematics Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M /F	W /B
2411	671711	1	1	433	.908	.037	.908	.018	.032	.005	.514	-.268	.514	-.261	-.307	-4.497	0.179	-1.5	0.8	-2.3	0.5	A-	B-
2412	675154	1	1	433	.395	.150	.217	.224	.395	.014	.438	-.259	-.113	-.139	.438	-0.984	0.115	0.9	1.0	1.6	1.2	A-	A+
2413	671691	1	1	433	.698	.185	.697	.039	.065	.014	.445	-.153	.445	-.184	-.356	-2.693	0.120	1.1	1.1	1.2	1.1	B+	A-
2414	671718	1	1	435	.931	.005	.034	.030	.931	.000	.298	-.129	-.171	-.208	.298	-4.746	0.201	0.3	1.1	0.0	1.0	A+	A-
2415	675062	1	1	435	.832	.832	.071	.053	.044	.000	.529	.529	-.339	-.279	-.236	-3.583	0.141	-1.6	0.9	-2.1	0.7	A+	A-
2416	671178	1	1	435	.395	.483	.076	.395	.046	.000	.399	-.220	-.192	.399	-.164	-1.016	0.112	0.3	1.0	2.8	1.2	A+	A+
2417	675395	1	1	435	.738	.738	.083	.057	.117	.005	.326	.326	-.136	-.237	-.109	-2.889	0.122	2.2	1.1	2.4	1.3	A+	A-
2418	675381	1	1	435	.782	.080	.782	.108	.025	.005	.530	-.262	.530	-.378	-.110	-3.187	0.129	-1.6	0.9	-2.1	0.8	A+	A+
2419	675059	1	1	435	.839	.032	.839	.023	.103	.002	.400	-.184	.400	-.226	-.238	-3.644	0.143	0.0	1.0	-0.4	0.9	A-	B-
2420	671702	1	1	430	.807	.044	.807	.009	.137	.002	.428	-.288	.428	-.268	-.229	-3.897	0.133	-0.6	1.0	0.4	1.0	A+	
2421	675384	1	1	430	.772	.772	.086	.037	.102	.002	.548	.548	-.201	-.286	-.385	-3.645	0.126	-2.3	0.9	-2.2	0.8	A+	
2422	670456	1	1	430	.928	.928	.033	.019	.019	.002	.313	.313	-.248	-.098	-.172	-5.192	0.196	-0.1	1.0	-0.5	0.8	A+	
2423	676745	1	1	430	.893	.021	.893	.053	.030	.002	.496	-.100	.496	-.360	-.318	-4.704	0.166	-1.3	0.9	-2.2	0.6	A+	
2424	671661	1	1	430	.802	.065	.802	.079	.005	.526	-.298	-.224	.526	-.297	-.3862	0.132	-1.8	0.9	-1.5	0.8	A+		
2425	671658	1	1	430	.772	.772	.114	.079	.028	.007	.389	.389	-.309	-.174	-.072	-3.645	0.126	0.3	1.0	0.1	1.0	A+	
2426	675070	1	1	430	.798	.019	.798	.051	.126	.007	.510	-.176	.510	-.275	-.331	-3.827	0.131	-1.6	0.9	-1.1	0.9	A+	
2427	671698	1	1	448	.942	.002	.942	.049	.000	.137	-.006	-.110	.137	-.105	-.4717	0.213	0.8	1.1	1.2	1.4	A-	A-	
2428	675390	1	1	448	.344	.344	.170	.328	.156	.002	.240	.240	-.308	.059	-.060	-0.610	0.110	2.8	1.1	4.0	1.4	A-	A+
2429	673088	1	1	448	.491	.107	.491	.355	.491	.000	.149	-.119	-.162	-.008	.149	-1.362	0.105	7.0	1.3	6.7	1.5	A-	A-
2430	671703	1	1	448	.871	.045	.871	.027	.000	.371	-.176	-.240	.371	-.198	-.3718	0.152	0.1	1.0	-0.3	0.9	B+	A-	
2431	676747	1	1	448	.877	.047	.877	.047	.025	.004	.546	-.261	.546	-.354	-.261	-3.788	0.155	-2.0	0.8	-2.2	0.6	A+	A-
2432	670458	1	1	448	.891	.891	.054	.029	.025	.002	.418	.418	-.219	-.285	-.185	-3.939	0.163	-0.7	0.9	-0.5	0.9	A-	A-
2433	675151	1	1	448	.900	.013	.900	.040	.004	.004	.409	-.241	-.225	.409	-.238	-4.049	0.168	-0.8	0.9	0.1	1.0	A+	A-
2434	675386	1	1	448	.978	.000	.978	.004	.978	.009	.250	.000	-.210	-.092	.250	-5.782	0.328	-0.1	1.0	-0.4	0.8	A-	A-
2435	670459	1	1	433	.896	.055	.896	.025	.896	.000	.325	-.008	-.328	-.305	.325	-4.291	0.172	0.2	1.0	3.2	2.0	A+	A-
2436	673091	1	1	433	.915	.028	.915	.028	.000	.508	-.272	-.324	.508	-.256	-.4547	0.186	-1.3	0.8	-1.9	0.5	A+	A-	
2437	675382	1	1	433	.748	.171	.748	.058	.023	.000	.388	-.193	.388	-.300	-.173	-2.959	0.126	1.6	1.1	2.8	1.4	A-	B-
2438	671709	1	1	433	.970	.012	.970	.009	.002	.415	-.245	-.222	.415	-.206	-.5787	0.293	-0.8	0.8	-2.3	0.2	A+	A-	
2439	675387	1	1	433	.845	.081	.845	.039	.030	.005	.511	-.323	.511	-.247	-.215	-3.734	0.148	-1.0	0.9	-1.6	0.7	A-	B-
2440	676766	1	1	433	.621	.231	.621	.079	.007	.600	-.413	-.201	.600	-.198	-.2177	0.114	-3.0	0.9	-2.5	0.8	A-	A+	
2441	671659	1	1	433	.704	.072	.704	.145	.069	.009	.581	-.327	.581	-.312	-.209	-2.671	0.121	-2.2	0.9	-2.7	0.8	A-	A+
2442	675152	1	1	433	.852	.042	.852	.014	.083	.009	.575	-.361	.575	-.226	-.318	-3.801	0.151	-1.9	0.8	-2.6	0.6	A-	A-
2443	670460	1	1	431	.673	.049	.673	.021	.255	.002	.591	-.169	.591	-.187	-.475	-2.919	0.117	-2.8	0.9	-2.4	0.8	B-	A+
2444	676767	1	1	431	.378	.100	.378	.211	.306	.005	.382	-.139	.382	-.075	-.229	-1.285	0.116	0.8	1.0	3.4	1.4	A-	A+
2445	673092	1	1	431	.910	.053	.910	.016	.002	.391	-.212	-.199	.391	-.244	-.4885	0.181	-0.2	1.0	-1.2	0.7	A+	A+	

Table B–2 (continued). Mathematics Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
2446	671710	1	1	431	.933	.042	.933	.016	.007	.002	.344	-.169	.344	-.348	-.020	-5.256	0.205	-0.4	0.9	0.5	1.1	A-	A+
2447	675388	1	1	431	.717	.023	.717	.030	.225	.005	.533	-.212	.533	-.168	-.409	-3.190	0.122	-1.4	0.9	-0.2	1.0	A-	A-
2448	675153	1	1	431	.733	.067	.733	.097	.093	.009	.536	-.222	.536	-.218	-.369	-3.295	0.123	-1.4	0.9	-2.1	0.8	A-	A+
2449	671660	1	1	431	.963	.016	.963	.002	.014	.005	.316	-.175	.316	-.076	-.214	-5.955	0.266	-0.2	0.9	-0.6	0.7	A+	A-
2450	670451	1	4	436	.835	.039	.835	.046	.078	.002	.503	-.213	.503	-.326	-.274	-3.625	0.145	-0.8	0.9	-1.0	0.8	A-	A+
2451	671720	1	1	436	.876	.018	.876	.076	.076	.002	.526	-.167	-.236	.526	-.416	-4.043	0.161	-1.2	0.9	-2.0	0.6	A-	A-
2452	675061	1	1	436	.745	.071	.745	.083	.099	.002	.583	-.106	.583	-.370	-.405	-2.916	0.127	-1.9	0.9	-1.9	0.8	A-	B-
2453	671180	1	1	436	.764	.037	.764	.154	.000	.511	-.133	-.128	.511	-.458	-3.047	0.130	-0.3	1.0	-1.1	0.8	A-	A+	
2454	676743	1	1	436	.796	.796	.032	.085	.085	.002	.621	.621	-.129	-.357	-.445	-3.292	0.135	-2.8	0.8	-2.6	0.6	B+	A+
2455	675383	1	1	436	.878	.076	.016	.878	.025	.005	.266	-.159	-.091	.266	-.159	-4.069	0.162	1.5	1.2	1.7	1.5	A+	A-
2456	671699	1	1	436	.927	.018	.011	.034	.927	.009	.444	-.285	-.216	-.208	.444	-4.731	0.198	-0.9	0.9	-1.2	0.6	A-	A-
2457	671694	1	1	438	.897	.055	.027	.016	.897	.005	.373	-.269	-.177	-.174	.373	-4.216	0.172	0.3	1.0	-0.9	0.8	A+	
2458	671714	1	1	438	.685	.219	.068	.685	.025	.002	.409	-.355	-.068	.409	-.126	-2.470	0.118	1.7	1.1	1.1	1.1	A-	
2459	675392	1	1	438	.438	.041	.027	.438	.486	.007	.299	-.171	-.225	.299	-.127	-1.104	0.112	5.0	1.3	4.9	1.4	A+	
2460	675157	1	1	438	.888	.018	.888	.025	.068	.000	.388	-.208	.388	-.224	-.236	-4.102	0.166	0.2	1.0	-0.7	0.8	A-	
2461	670467	1	1	438	.929	.027	.007	.929	.034	.002	.450	-.221	-.179	.450	-.346	-4.693	0.200	-0.8	0.9	-1.8	0.5	A+	
2462	675055	1	1	438	.941	.011	.941	.005	.041	.002	.440	-.227	.440	-.114	-.356	-4.908	0.215	-0.9	0.9	-0.7	0.7	A-	
2463	675057	1	1	424	.953	.033	.005	.953	.007	.002	.426	-.373	-.130	.426	-.142	-5.644	0.240	-0.6	0.9	-1.6	0.5	A+	
2464	671176	1	1	424	.743	.743	.068	.087	.101	.000	.294	.294	-.174	-.188	-.105	-3.328	0.125	2.9	1.2	1.9	1.2	A-	
2465	671715	1	1	424	.901	.028	.019	.901	.050	.002	.426	-.121	-.108	.426	-.392	-4.735	0.176	-0.6	0.9	-0.3	0.9	A-	
2466	675393	1	1	424	.934	.005	.031	.024	.934	.007	.375	-.088	-.323	-.125	.375	-5.245	0.208	-0.4	0.9	-0.2	0.9	A-	
2467	671695	1	1	424	.658	.151	.127	.059	.658	.005	.342	-.196	-.204	-.042	.342	-2.805	0.116	2.9	1.2	2.8	1.2	A+	
2468	675158	1	1	424	.925	.007	.019	.925	.042	.007	.399	-.155	-.141	.399	-.290	-5.081	0.197	-0.3	1.0	-0.9	0.7	A+	
2469	671696	1	1	433	.744	.192	.051	.744	.012	.002	.382	-.245	-.190	.382	-.198	-3.032	0.127	2.3	1.2	1.2	1.1	A-	
2470	675058	1	1	433	.940	.025	.940	.028	.007	.000	.360	-.196	.360	-.234	-.196	-5.137	0.218	-0.1	1.0	0.8	1.3	A+	
2471	671716	1	1	433	.711	.711	.085	.118	.081	.005	.590	.590	-.207	-.329	-.328	-2.815	0.123	-2.2	0.9	-2.0	0.8	B+	
2472	675394	1	1	433	.898	.051	.898	.025	.021	.005	.480	-.318	.480	-.206	-.201	-4.457	0.176	-0.9	0.9	-1.4	0.7	A+	
2473	671177	1	1	433	.831	.028	.072	.062	.831	.007	.457	-.224	-.145	-.347	.457	-3.726	0.145	0.1	1.0	0.0	1.0	A+	
2474	675159	1	1	433	.915	.023	.915	.005	.048	.009	.497	-.295	.497	-.056	-.343	-4.688	0.188	-1.0	0.9	-2.1	0.5	A+	
2475	670452	1	1	439	.877	.027	.877	.018	.077	.000	.380	-.180	.380	-.262	-.226	-4.055	0.155	-0.4	1.0	1.1	1.2	A+	
2476	673087	1	1	439	.918	.918	.023	.009	.050	.000	.275	.275	-.120	-.157	-.195	-4.563	0.183	0.3	1.0	-0.1	1.0	A-	
2477	676744	1	1	439	.745	.144	.745	.080	.030	.002	.349	-.125	.349	-.200	-.312	-3.005	0.121	1.2	1.1	2.2	1.3	B+	
2478	671700	1	1	439	.950	.009	.016	.950	.021	.005	.396	-.109	-.248	.396	-.219	-5.138	0.227	-0.7	0.9	-2.0	0.4	A+	
2479	675385	1	1	439	.731	.731	.034	.048	.180	.007	.413	.413	-.225	-.218	-.217	-2.919	0.119	0.2	1.0	0.6	1.1	A-	
2480	671181	1	1	439	.761	.157	.016	.057	.761	.009	.387	-.234	-.129	-.191	.387	-3.108	0.123	0.4	1.0	0.0	1.0	B+	

Table B–2 (continued). Mathematics Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M /F	W /B
2481	671697	1	1	439	.688	.688	.198	.068	.034	.011	.420	.420	-.180	-.285	-.158	-2.661	0.114	0.3	1.0	-0.1	1.0	B-	
2482	671179	1	1	428	.811	.026	.811	.089	.075	.000	.272	-.228	.272	-.145	-.111	-3.833	0.136	2.1	1.2	1.2	1.2	A-	
2483	671719	1	1	428	.888	.075	.888	.019	.014	.005	.386	-.307	.386	-.135	-.213	-4.571	0.166	-0.2	1.0	0.4	1.1	A-	
2484	675396	1	1	428	.879	.028	.040	.879	.047	.007	.511	-.251	-.289	.511	-.263	-4.464	0.161	-1.6	0.8	-0.9	0.8	A+	
2485	675060	1	1	428	.608	.093	.236	.607	.056	.007	.271	-.187	-.096	.271	-.115	-2.557	0.112	4.5	1.2	3.8	1.3	A-	
2486	679235	2	2	431	.587	.587	.202	.074	.137	.000	.434	.434	-.145	-.144	-.344	-2.053	0.115	1.9	1.1	2.0	1.2	A+	B-
2487	676750	2	2	431	.622	.049	.622	.107	.223	.000	.467	-.123	.467	-.371	-.205	-2.253	0.116	1.0	1.1	0.8	1.1	B-	A-
2488	675332	2	2	431	.729	.151	.074	.729	.039	.007	.414	-.226	-.205	.414	-.183	-2.909	0.124	1.7	1.1	0.2	1.0	A-	A+
2489	677765	2	2	431	.722	.060	.090	.123	.722	.005	.269	-.213	-.076	-.109	.269	-2.863	0.123	4.5	1.3	4.9	1.7	A-	A-
2490	675009	2	2	431	.682	.682	.121	.132	.053	.012	.605	.605	-.308	-.364	-.178	-2.613	0.120	-2.7	0.9	-2.9	0.7	A+	A-
2491	677946	2	2	431	.777	.777	.042	.060	.111	.009	.650	.650	-.261	-.309	-.410	-3.251	0.131	-3.6	0.8	-3.6	0.6	A-	A-
2492	677943	2	2	431	.759	.021	.056	.759	.153	.012	.558	-.257	-.233	.558	-.345	-3.117	0.128	-1.6	0.9	-1.0	0.9	A+	A-
2493	678163	2	2	431	.399	.081	.401	.109	.399	.009	.421	-.230	-.171	-.125	.421	-0.992	0.117	1.9	1.1	3.1	1.3	A-	A+
2494	675023	2	2	431	.578	.121	.155	.578	.135	.012	.437	-.131	-.225	.437	-.205	-2.001	0.114	2.1	1.1	1.2	1.1	A-	B+
2495	677771	2	2	431	.773	.179	.016	.773	.019	.014	.616	-.496	-.134	.616	-.236	-3.217	0.131	-2.8	0.8	-2.9	0.7	A+	A-
2496	676738	2	2	439	.683	.162	.100	.055	.683	.000	.470	-.154	-.311	-.303	.470	-3.036	0.117	0.1	1.0	0.6	1.1	A-	
2497	676994	2	2	439	.649	.121	.093	.132	.649	.005	.628	-.364	-.213	-.321	.628	-2.835	0.114	-4.1	0.8	-3.2	0.8	A-	
2498	675333	2	2	439	.663	.219	.062	.057	.663	.000	.522	-.382	-.193	-.182	.522	-2.914	0.115	-1.1	0.9	-1.6	0.9	A+	
2499	675010	2	2	439	.718	.075	.043	.718	.159	.005	.468	-.276	-.211	.468	-.239	-3.246	0.120	0.0	1.0	-1.1	0.9	B+	
2500	676995	2	2	439	.964	.002	.014	.964	.021	.000	.227	-.111	-.118	.227	-.167	-5.987	0.263	0.2	1.0	0.3	1.1	A-	
2501	673180	2	2	439	.419	.077	.465	.036	.419	.002	.459	-.153	-.265	-.256	.459	-1.573	0.113	-0.2	1.0	1.2	1.1	A+	
2502	679240	2	2	439	.613	.048	.613	.123	.210	.007	.551	-.136	.551	-.111	-.474	-2.629	0.113	-1.8	0.9	-1.0	0.9	B-	
2503	680213	2	2	439	.533	.137	.533	.153	.169	.009	.394	-.054	.394	-.233	-.248	-2.193	0.111	2.5	1.1	2.3	1.2	A+	
2504	677944	2	2	439	.948	.948	.009	.011	.030	.002	.408	.408	-.161	-.179	-.327	-5.575	0.224	-0.7	0.9	-1.9	0.4	B-	
2505	675074	2	2	439	.702	.089	.043	.702	.164	.002	.413	-.222	-.167	.413	-.245	-3.146	0.118	1.2	1.1	1.1	1.1	A-	
2506	677099	2	2	433	.878	.065	.037	.021	.878	.000	.248	-.171	-.085	-.162	.248	-4.125	0.160	1.3	1.1	2.9	1.8	A+	B-
2507	675335	2	2	433	.633	.189	.633	.058	.115	.005	.480	-.264	.480	-.228	-.209	-2.305	0.116	0.4	1.0	-0.3	1.0	B-	A+
2508	676749	2	2	433	.801	.095	.801	.035	.069	.000	.357	-.220	.357	-.108	-.230	-3.418	0.136	1.5	1.1	1.4	1.2	A-	A+
2509	677002	2	2	433	.908	.025	.908	.030	.037	.000	.356	-.184	.356	-.133	-.273	-4.497	0.179	-0.2	1.0	0.5	1.1	A+	A-
2510	679234	2	2	433	.665	.187	.051	.665	.095	.002	.554	-.384	-.209	.554	-.208	-2.495	0.118	-1.4	0.9	-2.1	0.8	C-	A+
2511	677945	2	2	433	.642	.109	.125	.120	.642	.005	.438	-.179	-.246	-.200	.438	-2.359	0.116	1.4	1.1	0.7	1.1	A-	A+
2512	677103	2	2	433	.822	.025	.065	.081	.822	.007	.405	-.251	-.198	-.220	.405	-3.589	0.140	0.6	1.0	1.7	1.3	A-	A+
2513	675022	2	2	433	.788	.788	.060	.088	.051	.014	.501	.501	-.219	-.283	-.231	-3.310	0.133	-0.6	1.0	-1.2	0.8	A+	A+
2514	678162	2	2	433	.829	.072	.829	.065	.025	.009	.578	-.374	.578	-.306	-.202	-3.649	0.142	-2.3	0.8	-2.2	0.7	A-	B-
2515	677772	2	2	433	.497	.139	.497	.111	.242	.012	.481	-.027	.481	-.286	-.286	-1.548	0.112	0.2	1.0	0.8	1.1	A-	A-

Table B–2 (continued). Mathematics Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
2516	677948	2	2	435	.800	.069	.800	.039	.092	.000	.563	-.328	.563	-.211	-.349	-3.323	0.133	-2.1	0.9	-2.6	0.7	A+	A-
2517	676740	2	2	435	.784	.078	.025	.113	.784	.000	.465	-.338	-.243	-.197	.465	-3.203	0.129	-0.5	1.0	-0.8	0.9	A+	A+
2518	675072	2	2	435	.926	.926	.039	.009	.018	.007	.430	.430	-.255	-.271	-.125	-4.668	0.195	-0.7	0.9	-1.9	0.5	A-	A+
2519	676754	2	2	435	.655	.145	.655	.078	.115	.007	.422	-.196	.422	-.241	-.155	-2.393	0.114	0.8	1.0	0.3	1.0	A-	A-
2520	675015	2	2	435	.832	.832	.025	.074	.062	.007	.426	.426	-.237	-.146	-.275	-3.583	0.141	-0.2	1.0	-0.7	0.9	B-	A+
2521	679236	2	2	435	.469	.163	.246	.469	.113	.009	.351	-.234	-.102	.351	-.070	-1.406	0.109	2.5	1.1	2.6	1.2	A-	A-
2522	675018	2	2	435	.623	.184	.623	.124	.055	.014	.433	-.256	.433	-.131	-.192	-2.215	0.112	0.9	1.0	0.7	1.1	B-	A-
2523	678160	2	2	435	.812	.041	.811	.101	.034	.011	.403	-.107	.403	-.207	-.271	-3.412	0.135	0.2	1.0	0.6	1.1	B-	B-
2524	675013	2	2	435	.871	.871	.078	.011	.028	.011	.287	.287	-.136	-.156	-.113	-3.953	0.155	0.8	1.1	0.8	1.1	A-	A+
2525	677107	2	2	430	.337	.337	.056	.505	.098	.005	.406	.406	-.079	-.231	-.182	-1.304	0.114	-1.1	1.0	0.4	1.0	A-	
2526	673579	2	2	430	.891	.026	.044	.891	.040	.000	.382	-.267	-.253	.382	-.127	-4.676	0.165	-0.4	1.0	-0.7	0.9	A-	
2527	680216	2	2	430	.954	.016	.012	.953	.019	.000	.345	-.235	-.276	.345	-.098	-5.703	0.238	-0.4	0.9	-0.7	0.7	B-	
2528	675012	2	2	430	.802	.802	.058	.056	.081	.002	.384	.384	-.309	-.071	-.220	-3.862	0.132	0.1	1.0	0.9	1.1	A+	
2529	676125	2	2	430	.707	.072	.707	.184	.033	.005	.248	-.268	.248	-.010	-.186	-3.234	0.117	3.2	1.2	4.0	1.4	B+	
2530	675008	2	2	430	.786	.121	.786	.049	.040	.005	.478	-.341	.478	-.201	-.184	-3.743	0.129	-1.1	0.9	-1.4	0.8	A+	
2531	677947	2	2	430	.561	.351	.560	.040	.042	.007	.514	-.387	.514	-.119	-.188	-2.447	0.108	-2.9	0.9	-2.2	0.9	B-	
2532	678362	2	2	430	.665	.665	.056	.109	.158	.012	.510	.510	-.286	-.165	-.309	-2.995	0.113	-1.8	0.9	-1.7	0.9	A-	
2533	673585	2	2	430	.588	.112	.074	.216	.588	.009	.279	-.192	-.185	-.057	.279	-2.589	0.109	3.7	1.2	3.7	1.3	A-	
2534	679232	2	2	448	.942	.016	.942	.002	.040	.000	.475	-.331	.475	-.150	-.320	-4.717	0.213	-1.2	0.8	-2.1	0.5	A-	A-
2535	678363	2	2	448	.835	.071	.835	.038	.051	.004	.318	-.131	.318	-.105	-.281	-3.382	0.139	0.9	1.1	0.2	1.0	A-	A-
2536	676043	2	2	448	.507	.217	.063	.212	.507	.002	.300	-.166	-.107	-.134	.300	-1.440	0.105	3.0	1.1	3.9	1.3	A+	A-
2537	676998	2	2	448	.518	.518	.038	.074	.368	.002	.501	.501	-.192	-.246	-.309	-1.495	0.105	-2.6	0.9	-2.3	0.9	A-	A-
2538	675014	2	2	448	.594	.042	.279	.083	.594	.002	.307	-.142	-.196	-.108	.307	-1.875	0.107	2.8	1.1	2.5	1.2	A+	A+
2539	680217	2	2	448	.880	.056	.879	.042	.020	.002	.522	-.383	.522	-.188	-.284	-3.812	0.157	-1.7	0.8	-2.2	0.6	A+	A+
2540	675331	2	2	448	.518	.114	.261	.518	.103	.004	.404	-.264	-.091	.404	-.221	-1.495	0.105	0.6	1.0	0.6	1.0	A+	B+
2541	673575	2	2	448	.614	.123	.614	.165	.094	.004	.540	-.199	.540	-.240	-.334	-1.979	0.108	-2.9	0.9	-2.4	0.8	A-	A-
2542	673586	2	2	448	.607	.103	.203	.607	.080	.007	.434	-.142	-.185	.434	-.306	-1.944	0.107	-0.1	1.0	0.5	1.0	A+	A-
2543	677104	2	2	433	.748	.044	.039	.169	.748	.000	.407	-.374	-.128	-.202	.407	-2.959	0.126	1.4	1.1	1.5	1.2	B+	A-
2544	676044	2	2	433	.529	.529	.145	.164	.159	.002	.501	.501	-.083	-.266	-.317	-1.670	0.111	-0.6	1.0	-0.2	1.0	A+	C-
2545	675064	2	2	433	.905	.025	.905	.035	.023	.012	.437	-.164	.437	-.240	-.232	-4.414	0.179	-0.6	0.9	-0.8	0.8	A+	A-
2546	680845	2	2	433	.587	.210	.099	.587	.097	.007	.497	-.308	-.220	.497	-.129	-1.984	0.113	-0.3	1.0	-0.6	1.0	A-	A+
2547	678164	2	2	433	.734	.053	.734	.150	.055	.007	.488	-.235	.488	-.295	-.184	-2.865	0.124	-0.2	1.0	0.6	1.1	A+	A+
2548	680218	2	2	433	.517	.238	.127	.109	.517	.009	.412	-.153	-.205	-.185	.412	-1.608	0.111	1.6	1.1	3.0	1.2	A+	A-
2549	680231	2	2	433	.813	.813	.085	.062	.025	.014	.361	.361	-.321	-.086	-.081	-3.446	0.139	1.5	1.1	1.1	1.2	A+	A+
2550	679233	2	2	433	.954	.016	.014	.954	.005	.012	.405	-.208	-.222	.405	-.145	-5.297	0.242	-0.6	0.9	-1.8	0.4	A+	A-

Table B–2 (continued). Mathematics Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
2551	677000	2	2	431	.963	.007	.026	.963	.002	.002	.299	-.151	-.254	.299	-.042	-5.955	0.266	0.0	1.0	-1.2	0.5	A+	A-
2552	675065	2	2	431	.336	.555	.067	.037	.336	.005	.404	-.223	-.201	-.131	.404	-1.038	0.119	-1.0	0.9	3.8	1.5	A-	A-
2553	677102	2	2	431	.673	.014	.042	.673	.271	.000	.322	-.200	-.087	.322	-.248	-2.919	0.117	3.7	1.2	3.1	1.3	A+	A-
2554	675334	2	2	431	.643	.643	.100	.174	.081	.002	.515	.515	-.215	-.190	-.378	-2.742	0.115	-0.8	1.0	-0.3	1.0	A-	A-
2555	678155	2	2	431	.515	.209	.121	.515	.151	.005	.407	-.234	-.247	.407	-.053	-2.039	0.112	2.2	1.1	2.6	1.2	C+	A+
2556	680220	2	2	431	.710	.051	.023	.710	.211	.005	.588	-.160	-.060	.588	-.524	-3.146	0.121	-2.7	0.9	-1.8	0.8	A-	A+
2557	677767	2	2	431	.940	.028	.940	.007	.012	.014	.390	-.282	.390	-.151	-.149	-5.388	0.215	-0.6	0.9	-1.3	0.6	B-	A+
2558	677105	2	2	431	.724	.142	.081	.724	.044	.009	.539	-.414	-.184	.539	-.187	-3.234	0.122	-1.5	0.9	-1.4	0.9	A-	A-
2559	677108	2	2	431	.729	.102	.729	.123	.039	.007	.437	-.126	.437	-.336	-.186	-3.264	0.123	0.7	1.0	1.9	1.2	A-	A-
2560	675068	2	2	436	.796	.025	.103	.796	.073	.002	.459	-.198	-.300	.459	-.225	-3.292	0.135	0.4	1.0	-0.3	0.9	A+	A-
2561	676759	2	2	436	.789	.055	.124	.789	.032	.000	.403	-.282	-.204	.403	-.187	-3.238	0.134	1.4	1.1	1.4	1.2	A+	A+
2562	675025	2	2	436	.927	.927	.028	.034	.011	.000	.360	.360	-.301	-.147	-.168	-4.731	0.198	-0.1	1.0	-0.3	0.9	A-	A+
2563	679239	2	2	436	.826	.064	.826	.039	.064	.007	.454	-.272	.454	-.197	-.253	-3.543	0.142	0.2	1.0	-0.5	0.9	B-	A+
2564	676046	2	2	436	.431	.321	.431	.147	.094	.007	.452	-.220	.452	-.077	-.279	-1.046	0.115	-0.2	1.0	3.2	1.3	B-	A-
2565	673181	2	2	436	.512	.511	.073	.200	.202	.014	.520	.520	-.201	-.061	-.416	-1.500	0.114	-0.7	1.0	1.2	1.1	A+	A-
2566	673577	2	2	436	.940	.940	.021	.011	.018	.009	.391	.391	-.218	-.159	-.209	-4.985	0.215	-0.6	0.9	-0.7	0.7	A-	A+
2567	680210	2	2	436	.706	.126	.067	.085	.706	.016	.442	-.212	-.271	-.180	.442	-2.652	0.122	1.7	1.1	0.5	1.1	A-	B+
2568	678360	2	2	436	.252	.681	.048	.252	.009	.009	.349	-.173	-.203	.349	-.115	0.093	0.131	1.1	1.1	2.4	1.4	C-	A-
2569	675066	2	2	438	.970	.970	.005	.007	.016	.002	.365	.365	-.097	-.199	-.258	-5.707	0.293	-0.5	0.9	-1.7	0.4	A+	
2570	680214	2	2	438	.505	.167	.219	.505	.105	.005	.458	-.209	-.178	.458	-.229	-1.462	0.111	0.3	1.0	1.1	1.1	A+	
2571	676996	2	2	438	.911	.041	.911	.023	.025	.000	.351	-.262	.351	-.062	-.248	-4.403	0.182	0.2	1.0	-0.4	0.9	B+	
2572	675069	2	2	438	.804	.030	.804	.030	.135	.002	.615	-.177	.615	-.216	-.519	-3.286	0.135	-2.7	0.8	-3.2	0.6	A+	
2573	675020	2	2	438	.863	.863	.064	.023	.048	.002	.499	.499	-.387	-.201	-.217	-3.822	0.154	-1.0	0.9	-1.8	0.7	A-	
2574	673188	2	2	438	.484	.231	.110	.484	.169	.007	.309	-.058	-.162	.309	-.194	-1.351	0.111	4.5	1.2	4.8	1.4	A-	
2575	676757	2	2	438	.498	.196	.114	.187	.498	.005	.372	-.149	-.178	-.173	.372	-1.425	0.111	2.7	1.1	3.8	1.3	B-	
2576	673587	2	2	438	.895	.027	.895	.041	.034	.002	.466	-.194	.466	-.231	-.349	-4.187	0.170	-0.7	0.9	-1.4	0.7	A-	
2577	678158	2	2	438	.457	.251	.457	.123	.162	.007	.407	-.225	.407	-.025	-.257	-1.203	0.111	1.9	1.1	2.4	1.2	C-	
2578	678359	2	2	424	.818	.040	.083	.057	.818	.002	.415	-.182	-.301	-.183	.415	-3.887	0.140	0.3	1.0	-0.2	1.0	A+	
2579	675067	2	2	424	.606	.139	.014	.606	.241	.000	.449	-.181	-.135	.449	-.329	-2.515	0.114	0.3	1.0	0.9	1.1	A-	
2580	679241	2	2	424	.764	.031	.047	.764	.158	.000	.564	-.255	-.283	.564	-.371	-3.473	0.129	-2.0	0.9	-2.4	0.7	A-	
2581	675021	2	2	424	.715	.189	.715	.052	.040	.005	.463	-.231	.463	-.298	-.194	-3.145	0.122	0.2	1.0	-0.5	1.0	B-	
2582	675026	2	2	424	.807	.057	.042	.807	.090	.005	.535	-.246	-.368	.535	-.230	-3.790	0.137	-1.4	0.9	-1.7	0.8	A+	
2583	678156	2	2	424	.795	.101	.795	.066	.033	.005	.591	-.433	.591	-.192	-.256	-3.698	0.134	-2.4	0.8	-2.6	0.7	A-	
2584	676045	2	2	424	.811	.811	.059	.094	.028	.007	.496	.496	-.278	-.295	-.172	-3.828	0.138	-0.8	0.9	-0.7	0.9	A-	
2585	673189	2	2	424	.693	.097	.693	.142	.064	.005	.394	-.175	.394	-.166	-.236	-3.014	0.119	1.5	1.1	0.9	1.1	A-	

Table B–2 (continued). Mathematics Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
2586	676758	2	2	424	.637	.050	.637	.083	.224	.007	.462	-.254	.462	-.199	-.233	-2.685	0.115	0.1	1.0	0.8	1.1	A-	
2587	676739	2	2	433	.961	.021	.961	.009	.009	.000	.318	-.224	.318	-.074	-.238	-5.645	0.261	-0.1	1.0	-0.5	0.8	A-	
2588	679238	2	2	433	.591	.122	.233	.591	.046	.007	.508	-.325	-.210	.508	-.165	-2.095	0.114	-0.3	1.0	0.1	1.0	A-	
2589	677100	2	2	433	.734	.734	.115	.088	.055	.007	.430	.430	-.227	-.237	-.163	-2.969	0.126	1.4	1.1	0.4	1.0	A-	
2590	673111	2	2	433	.815	.815	.104	.062	.016	.002	.499	.499	-.296	-.304	-.176	-3.583	0.141	-0.4	1.0	-1.1	0.8	A-	
2591	678157	2	2	433	.781	.099	.781	.058	.058	.005	.428	-.174	.428	-.292	-.183	-3.302	0.133	1.1	1.1	0.5	1.1	B+	
2592	675006	2	2	433	.679	.025	.058	.679	.231	.007	.640	-.089	-.067	.640	-.609	-2.609	0.119	-3.6	0.8	-2.4	0.8	A+	
2593	675071	2	2	433	.963	.023	.963	.005	.005	.005	.370	-.234	.370	-.128	-.176	-5.715	0.269	-0.6	0.9	-0.8	0.6	A+	
2594	676748	2	2	433	.423	.111	.356	.106	.423	.005	.332	-.245	-.066	-.135	.332	-1.171	0.113	3.4	1.2	5.3	1.6	A-	
2595	680846	2	2	433	.637	.109	.637	.141	.106	.007	.391	-.146	.391	-.238	-.156	-2.360	0.116	3.0	1.2	2.9	1.3	A-	
2596	675011	2	2	439	.633	.075	.633	.155	.132	.005	.480	-.223	.480	-.262	-.209	-2.357	0.111	-1.0	1.0	-0.9	0.9	A+	
2597	676736	2	2	439	.128	.014	.128	.036	.820	.002	.217	-.040	.217	.037	-.175	0.838	0.165	1.6	1.2	3.4	2.0	A+	
2598	675007	2	2	439	.663	.198	.087	.048	.663	.005	.424	-.214	-.194	-.240	.424	-2.519	0.113	0.4	1.0	-0.2	1.0	B+	
2599	673110	2	2	439	.590	.057	.282	.590	.068	.002	.493	-.219	-.230	.493	-.319	-2.128	0.109	-1.1	1.0	-0.9	0.9	A-	
2600	677106	2	2	439	.640	.171	.640	.089	.096	.005	.456	-.235	.456	-.123	-.276	-2.394	0.111	-0.4	1.0	-0.6	1.0	B+	
2601	676735	2	2	439	.841	.068	.052	.841	.030	.009	.517	-.335	-.186	.517	-.231	-3.707	0.141	-1.9	0.9	-1.9	0.7	A+	
2602	675073	2	2	439	.790	.073	.066	.790	.059	.011	.441	-.109	-.262	.441	-.288	-3.312	0.128	-0.7	1.0	0.4	1.1	A-	
2603	680211	2	2	439	.401	.226	.146	.401	.214	.014	.406	-.222	-.082	.406	-.142	-1.148	0.111	0.1	1.0	1.5	1.1	A+	
2604	680215	2	2	439	.588	.185	.588	.182	.034	.011	.396	-.187	.396	-.222	-.105	-2.116	0.109	1.4	1.1	0.5	1.0	A-	
2605	676756	2	2	428	.631	.028	.631	.079	.259	.002	.351	-.001	.351	-.100	-.330	-2.684	0.113	2.6	1.1	3.3	1.3	A-	
2606	675024	2	2	428	.430	.180	.430	.063	.325	.002	.344	-.182	.344	-.158	-.131	-1.637	0.111	2.4	1.1	3.3	1.3	A+	
2607	678161	2	2	428	.234	.301	.262	.201	.234	.002	.318	-.047	-.164	-.084	.318	-0.483	0.129	0.4	1.0	2.1	1.3	A-	
2608	678159	2	2	428	.439	.283	.439	.241	.035	.002	.397	-.143	.397	-.192	-.236	-1.686	0.110	1.0	1.0	2.1	1.2	B-	
2609	677101	2	2	428	.960	.009	.005	.021	.960	.005	.247	-.125	-.156	-.092	.247	-5.834	0.258	0.1	1.0	-0.3	0.8	A+	
2610	678361	2	2	428	.680	.098	.112	.680	.105	.005	.468	-.121	-.252	.468	-.294	-2.959	0.116	-0.3	1.0	-0.3	1.0	A+	
2611	675019	2	2	428	.907	.907	.030	.030	.026	.007	.520	.520	-.296	-.252	-.268	-4.808	0.179	-1.6	0.8	-2.2	0.5	A+	
2612	676999	2	2	428	.752	.752	.035	.051	.154	.007	.535	.535	-.249	-.319	-.287	-3.408	0.125	-1.7	0.9	-2.2	0.8	A-	
2613	677775	2	2	428	.916	.014	.035	.916	.028	.007	.462	-.198	-.265	.462	-.254	-4.941	0.187	-1.0	0.9	-1.7	0.6	A+	
2614	679237	2	2	428	.862	.030	.044	.862	.054	.009	.578	-.306	-.317	.578	-.307	-4.291	0.153	-2.4	0.8	-2.4	0.6	A+	
2615	675017	2	2	428	.460	.203	.110	.213	.460	.014	.468	-.200	-.095	-.263	.468	-1.795	0.110	-1.4	0.9	-0.2	1.0	B-	
2616	661925	3	3	474	.650	.110	.103	.650	.135	.002	.384	-.200	-.206	.384	-.164	-1.584	0.106	0.9	1.0	0.8	1.1	A+	A+
2617	661167	3	3	474	.416	.411	.053	.416	.118	.002	.374	-.258	-.052	.374	-.131	-0.399	0.104	1.7	1.1	1.2	1.1	A-	A-
2618	679468	3	3	474	.517	.517	.177	.198	.108	.000	.426	.426	-.125	-.233	-.233	-0.907	0.102	0.2	1.0	0.6	1.0	A-	A-
2619	679740	3	3	474	.430	.122	.430	.234	.213	.000	.394	-.155	.394	-.081	-.268	-0.474	0.103	1.1	1.0	1.1	1.1	A-	A-
2620	679545	3	3	474	.662	.086	.084	.165	.662	.002	.320	-.147	-.116	-.198	.320	-1.652	0.107	2.3	1.1	1.8	1.2	A-	A+

Table B–2 (continued). Mathematics Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M /F	W /B
2621	661169	3	3	474	.076	.253	.078	.589	.076	.004	.146	-.103	-.114	.091	.146	2.158	0.182	0.4	1.1	2.6	1.8	A-	A+
2622	679590	3	3	474	.574	.574	.051	.205	.165	.006	.610	.610	-.146	-.296	-.385	-1.191	0.103	-5.2	0.8	-4.7	0.7	A-	A-
2623	683672	3	3	474	.179	.304	.179	.443	.070	.004	.151	-.180	.151	.117	-.095	1.040	0.130	2.8	1.2	4.6	1.8	A-	A+
2624	683678	3	3	474	.850	.011	.850	.036	.097	.006	.434	-.135	.434	-.247	-.271	-2.902	0.138	-1.2	0.9	-1.9	0.7	A+	A-
2625	679735	3	3	474	.502	.093	.293	.502	.105	.006	.414	-.223	-.155	.414	-.194	-0.833	0.102	0.7	1.0	0.5	1.0	A-	A+
2626	661926	3	3	474	.449	.378	.133	.030	.449	.011	.393	-.353	.056	-.135	.393	-0.570	0.103	1.2	1.1	0.9	1.1	A+	C+
2627	679469	3	3	474	.418	.418	.133	.253	.181	.015	.343	.343	-.064	-.096	-.203	-0.410	0.104	2.3	1.1	1.6	1.1	A+	A-
2628	683937	3	3	474	.614	.614	.154	.074	.137	.021	.374	.374	-.202	-.146	-.110	-1.396	0.104	1.4	1.1	1.1	1.1	A-	A-
2629	683805	3	3	474	.340	.340	.129	.205	.306	.021	.485	.485	-.068	-.202	-.197	0.003	0.108	-2.0	0.9	-1.1	0.9	A-	A-
2630	679741	3	3	474	.639	.053	.200	.639	.084	.023	.539	-.217	-.335	.539	-.144	-1.528	0.106	-3.0	0.9	-2.7	0.8	A+	A+
2631	677709	3	3	474	.846	.055	.846	.025	.051	.023	.391	-.194	.391	-.170	-.155	-2.864	0.136	-0.6	1.0	-1.2	0.8	A+	A-
2632	662161	3	3	474	.508	.167	.124	.508	.175	.025	.510	-.160	-.219	.510	-.223	-0.865	0.102	-2.1	0.9	-1.9	0.9	A-	A-
2633	683933	3	3	474	.717	.046	.080	.131	.717	.025	.486	-.188	-.271	-.195	.486	-1.962	0.112	-1.8	0.9	-1.7	0.8	A+	B-
2634	661171	3	3	474	.546	.076	.546	.270	.084	.023	.590	-.303	.590	-.296	-.165	-1.054	0.103	-4.6	0.8	-4.0	0.8	A-	A-
2635	684152	3	3	474	.511	.089	.162	.213	.511	.025	.297	-.166	-.170	-.002	.297	-0.875	0.102	4.0	1.2	4.2	1.3	B+	A-
2636	661927	3	3	470	.368	.106	.489	.036	.368	.000	.483	-.237	-.297	-.060	.483	-0.238	0.106	-2.0	0.9	-1.3	0.9	B+	
2637	679394	3	3	470	.202	.043	.423	.202	.328	.004	-.043	-.042	-.104	-.043	.176	0.776	0.126	5.1	1.4	7.1	2.2	A+	
2638	679591	3	3	470	.757	.189	.023	.757	.030	.000	.568	-.503	-.177	.568	-.116	-2.304	0.118	-3.4	0.8	-3.2	0.7	A-	
2639	683679	3	3	470	.883	.049	.883	.038	.030	.000	.220	-.144	.220	-.145	-.070	-3.327	0.152	0.8	1.1	1.9	1.4	A-	
2640	679388	3	3	470	.515	.515	.260	.085	.140	.000	.417	.417	-.251	-.139	-.172	-0.983	0.103	0.6	1.0	-0.1	1.0	A+	
2641	683938	3	3	469	.682	.079	.085	.149	.682	.004	.554	-.290	-.245	-.304	.554	-1.851	0.109	-3.1	0.9	-2.9	0.8	A+	
2642	679544	3	3	469	.320	.294	.217	.320	.164	.004	.373	-.073	-.215	.373	-.125	0.028	0.110	0.6	1.0	1.0	1.1	B-	
2643	679739	3	3	469	.137	.548	.136	.209	.104	.002	-.058	.122	-.058	-.021	-.099	1.336	0.145	3.3	1.3	7.8	3.1	B-	
2644	683804	3	3	469	.399	.068	.458	.075	.399	.000	.503	-.373	-.290	-.028	.503	-0.396	0.105	-2.3	0.9	-1.9	0.9	A-	
2645	679540	3	3	469	.832	.060	.832	.070	.038	.000	.302	-.173	.302	-.110	-.229	-2.841	0.133	0.7	1.1	0.8	1.1	B+	
2646	661869	3	3	469	.793	.793	.038	.130	.036	.002	.362	.362	-.188	-.195	-.222	-2.546	0.124	0.2	1.0	0.3	1.0	A+	
2647	662160	3	3	469	.375	.068	.375	.171	.380	.006	.432	.030	.432	-.196	-.277	-0.274	0.106	-0.6	1.0	0.1	1.0	A-	
2648	661924	3	3	469	.836	.836	.043	.070	.047	.004	.394	.394	-.093	-.329	-.175	-2.877	0.134	-0.4	1.0	-1.2	0.8	A+	
2649	661170	3	3	469	.092	.648	.128	.092	.128	.004	.292	-.206	.013	.292	.048	1.854	0.171	-0.7	0.9	2.6	1.7	A-	
2650	661161	3	3	469	.923	.019	.038	.923	.015	.004	.284	-.164	-.115	.284	-.204	-3.842	0.181	-0.2	1.0	0.2	1.0	A+	
2651	683671	3	3	469	.574	.360	.023	.034	.574	.009	.494	-.435	-.114	-.053	.494	-1.275	0.104	-1.5	0.9	-2.1	0.9	A+	
2652	661861	3	3	469	.755	.177	.755	.043	.019	.006	.561	-.444	.561	-.205	-.161	-2.285	0.117	-3.0	0.8	-3.4	0.7	A+	
2653	683932	3	3	469	.761	.062	.761	.085	.083	.009	.503	-.283	.503	-.221	-.277	-2.327	0.118	-1.9	0.9	-2.4	0.8	C-	
2654	677710	3	3	469	.693	.126	.693	.087	.087	.006	.532	-.232	.532	-.302	-.265	-1.911	0.110	-2.6	0.9	-2.5	0.8	A-	
2655	679742	3	3	469	.674	.085	.179	.674	.055	.006	.382	-.217	-.208	.382	-.131	-1.803	0.109	0.9	1.0	0.6	1.1	A-	

Table B–2 (continued). Mathematics Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
2656	683680	3	3	464	.703	.129	.063	.703	.106	.000	.497	-.235	-.142	.497	-.371	-1.945	0.112	-1.6	0.9	-2.0	0.8	A-	
2657	679393	3	3	464	.295	.179	.295	.241	.282	.002	.353	-.145	.353	-.086	-.158	0.221	0.114	1.2	1.1	1.4	1.1	A+	
2658	661929	3	3	464	.612	.142	.612	.099	.147	.000	.450	-.150	.450	-.270	-.244	-1.446	0.106	-0.4	1.0	-1.0	0.9	A-	
2659	679738	3	3	464	.793	.030	.039	.793	.136	.002	.390	-.172	-.240	.390	-.240	-2.530	0.125	0.3	1.0	-0.7	0.9	C-	
2660	677711	3	3	464	.869	.056	.869	.060	.013	.002	.477	-.327	.477	-.270	-.170	-3.169	0.147	-1.6	0.9	-1.8	0.7	A-	
2661	661922	3	3	464	.825	.825	.071	.019	.084	.000	.411	.411	-.133	.012	-.445	-2.779	0.133	-0.7	1.0	1.9	1.3	A+	
2662	661868	3	3	464	.851	.851	.030	.084	.032	.002	.344	.344	-.207	-.187	-.186	-3.003	0.141	0.3	1.0	-0.7	0.9	A+	
2663	661870	3	3	464	.819	.136	.819	.030	.011	.004	.444	-.389	.444	-.106	-.087	-2.727	0.131	-1.0	0.9	-1.0	0.8	A-	
2664	679541	3	3	464	.877	.877	.084	.011	.022	.006	.389	.389	-.256	-.078	-.225	-3.259	0.151	-0.8	0.9	-0.3	0.9	B+	
2665	661168	3	3	464	.231	.123	.231	.101	.534	.011	.413	-.145	.413	-.067	-.170	0.641	0.123	-1.8	0.9	1.6	1.2	A-	
2666	683666	3	3	463	.492	.181	.248	.069	.492	.009	.354	-.191	-.110	-.140	.354	-0.837	0.104	2.6	1.1	2.8	1.2	A+	
2667	679387	3	3	463	.659	.052	.659	.048	.233	.009	.346	-.298	.346	-.221	-.073	-1.697	0.109	2.2	1.1	0.8	1.1	A+	
2668	683797	3	3	936	.861	.074	.041	.861	.017	.007	.418	-.244	-.229	.418	-.172	-3.094	0.102	-1.2	0.9	-0.8	0.9	A+	A+
2669	683939	3	3	463	.767	.069	.767	.099	.054	.011	.453	-.198	.453	-.254	-.198	-2.347	0.121	-0.8	1.0	-1.0	0.9	A+	
2670	683670	3	3	463	.270	.270	.443	.175	.102	.011	.420	.420	-.120	-.124	-.193	0.378	0.117	-1.2	0.9	1.5	1.2	B-	
2671	661162	3	3	936	.763	.032	.159	.763	.041	.005	.555	-.183	-.464	.555	-.116	-2.313	0.085	-3.7	0.9	-3.9	0.7	A+	B+
2672	683803	3	3	463	.441	.255	.441	.134	.156	.015	.309	-.100	.309	-.219	-.037	-0.575	0.105	3.7	1.2	3.6	1.3	A+	
2673	679592	3	3	463	.685	.102	.073	.121	.685	.019	.485	-.283	-.177	-.219	.485	-1.842	0.111	-1.3	0.9	-0.3	1.0	B+	
2674	661865	3	3	463	.806	.054	.093	.806	.032	.015	.452	-.248	-.218	.452	-.218	-2.624	0.128	-1.1	0.9	0.9	1.1	C+	
2675	679543	3	3	463	.434	.093	.153	.434	.302	.017	.392	-.259	-.219	.392	-.042	-0.541	0.105	0.8	1.0	1.5	1.1	B-	
2676	661770	3	3	464	.640	.099	.099	.162	.640	.000	.434	-.179	-.137	-.309	.434	-1.484	0.108	0.2	1.0	0.0	1.0	A+	
2677	679588	3	3	464	.597	.159	.597	.147	.097	.000	.359	-.219	.359	-.179	-.112	-1.255	0.106	2.4	1.1	2.2	1.2	A-	
2678	661857	3	3	464	.345	.082	.297	.274	.345	.002	.312	-.081	-.144	-.137	.312	0.070	0.111	3.1	1.2	2.9	1.3	A-	
2679	679744	3	3	464	.627	.627	.248	.034	.091	.000	.386	.386	-.198	-.274	-.179	-1.414	0.107	1.5	1.1	1.2	1.1	A+	
2680	683941	3	3	464	.565	.287	.069	.080	.565	.000	.492	-.368	-.161	-.135	.492	-1.088	0.105	-1.1	1.0	-0.8	0.9	B-	
2681	679477	3	3	464	.431	.336	.431	.147	.084	.002	.391	-.141	.391	-.226	-.162	-0.400	0.106	1.6	1.1	1.9	1.1	A-	
2682	683935	3	3	464	.528	.528	.166	.207	.093	.006	.477	.477	-.258	-.134	-.259	-0.900	0.105	-0.6	1.0	-1.0	0.9	B+	
2683	683808	3	4	464	.153	.431	.054	.353	.153	.009	.297	-.263	-.169	.164	.297	1.428	0.144	0.4	1.0	1.9	1.4	A+	
2684	679475	3	3	464	.632	.631	.097	.166	.097	.009	.489	.489	-.267	-.205	-.216	-1.437	0.107	-1.2	1.0	-1.0	0.9	A-	
2685	661859	3	3	464	.679	.679	.088	.069	.155	.009	.360	.360	-.270	-.166	-.088	-1.698	0.110	1.7	1.1	1.0	1.1	A-	
2686	680004	3	3	464	.644	.140	.078	.644	.129	.009	.523	-.348	-.223	.523	-.156	-1.507	0.108	-2.1	0.9	-2.4	0.8	A+	
2687	683677	3	3	464	.519	.084	.519	.280	.108	.009	.472	-.144	.472	-.245	-.221	-0.856	0.105	-0.4	1.0	-0.9	0.9	A-	
2688	679391	3	3	464	.095	.222	.235	.435	.095	.013	.134	-.225	-.207	.337	.134	2.101	0.175	1.4	1.2	3.4	2.1	A+	
2689	677713	3	3	464	.373	.095	.119	.373	.397	.017	.231	-.144	-.109	.231	-.016	-0.087	0.109	5.1	1.3	5.1	1.4	A+	
2690	679539	3	3	464	.825	.086	.825	.041	.034	.013	.461	-.301	.461	-.244	-.112	-2.660	0.132	-1.4	0.9	-1.9	0.7	A-	

Table B–2 (continued). Mathematics Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
2691	683794	3	3	464	.884	.032	.884	.050	.019	.015	.381	-.201	.381	-.239	-.100	-3.201	0.154	-0.6	0.9	-1.4	0.7	A+	
2692	679805	3	3	464	.776	.030	.157	.776	.017	.019	.573	-.178	-.443	.573	-.162	-2.293	0.121	-3.4	0.8	-3.4	0.6	A-	
2693	683684	3	3	464	.716	.078	.157	.716	.032	.017	.580	-.314	-.333	.580	-.177	-1.910	0.113	-3.7	0.8	-3.2	0.7	A+	
2694	678951	3	3	464	.679	.269	.015	.022	.679	.015	.461	-.295	-.176	-.267	.461	-1.698	0.110	-0.7	1.0	0.6	1.1	A-	
2695	680005	3	3	464	.707	.707	.093	.114	.071	.015	.545	.545	-.193	-.236	-.362	-1.859	0.113	-3.0	0.9	-1.9	0.8	B-	
2696	684220	3	4	458	.550	.057	.550	.066	.328	.000	.299	-.284	.299	-.252	-.044	-1.111	0.106	4.3	1.2	3.8	1.3	A+	
2697	681716	3	3	458	.579	.107	.579	.253	.061	.000	.236	-.175	.236	-.042	-.184	-1.258	0.107	5.5	1.3	5.6	1.4	A+	
2698	679736	3	3	458	.445	.358	.114	.445	.079	.004	.426	-.176	-.292	.426	-.118	-0.576	0.106	0.5	1.0	1.1	1.1	A+	
2699	679997	3	3	458	.526	.120	.526	.179	.170	.004	.477	-.222	.477	-.110	-.310	-0.988	0.106	-0.6	1.0	-0.3	1.0	A-	
2700	679650	3	3	458	.417	.328	.417	.148	.103	.004	.270	.008	.270	-.289	-.093	-0.429	0.107	4.4	1.2	4.7	1.4	A-	
2701	683798	3	3	458	.625	.098	.624	.118	.155	.004	.488	-.277	.488	-.312	-.117	-1.501	0.109	-0.7	1.0	-1.6	0.9	A-	
2702	683689	3	3	458	.598	.063	.142	.598	.188	.009	.524	-.240	-.183	.524	-.310	-1.361	0.107	-1.9	0.9	-1.4	0.9	A+	
2703	661932	3	3	458	.649	.648	.098	.162	.085	.007	.497	.497	-.205	-.288	-.193	-1.632	0.110	-1.0	1.0	-1.1	0.9	A+	
2704	684206	3	3	458	.563	.192	.194	.563	.037	.013	.457	-.180	-.273	.457	-.144	-1.179	0.106	0.1	1.0	0.0	1.0	A-	
2705	682589	3	3	458	.572	.052	.068	.572	.301	.007	.385	-.198	-.079	.385	-.240	-1.224	0.106	2.0	1.1	1.7	1.1	A-	
2706	661854	3	3	458	.771	.151	.050	.771	.020	.009	.628	-.454	-.241	.628	-.193	-2.380	0.123	-3.8	0.8	-3.7	0.6	A+	
2707	677715	3	3	458	.382	.441	.382	.059	.107	.011	.169	.084	.169	-.123	-.230	-0.245	0.108	5.8	1.3	6.6	1.6	A+	
2708	678948	3	3	458	.915	.020	.013	.915	.041	.011	.484	-.187	-.201	.484	-.318	-3.751	0.178	-1.4	0.8	-2.4	0.5	A+	
2709	684154	3	3	458	.535	.153	.124	.172	.535	.015	.525	-.342	-.194	-.118	.525	-1.033	0.106	-1.9	0.9	-1.7	0.9	A+	
2710	679999	3	3	458	.849	.044	.849	.050	.037	.020	.518	-.159	.518	-.338	-.248	-3.005	0.142	-2.0	0.8	-2.4	0.6	A+	
2711	678956	3	3	458	.590	.186	.122	.590	.083	.020	.528	-.101	-.325	.528	-.291	-1.315	0.107	-1.9	0.9	-1.8	0.9	A+	
2712	661866	3	3	458	.819	.046	.819	.057	.063	.015	.396	-.280	.396	-.185	-.102	-2.740	0.133	0.1	1.0	-0.1	1.0	A-	
2713	661762	3	3	458	.666	.092	.090	.666	.135	.017	.615	-.230	-.265	.615	-.341	-1.730	0.111	-4.1	0.8	-3.8	0.7	A-	
2714	683683	3	2	458	.836	.050	.048	.046	.836	.020	.507	-.258	-.257	-.220	.507	-2.887	0.138	-1.7	0.9	-2.2	0.7	A+	
2715	661164	3	3	458	.760	.033	.068	.120	.760	.020	.450	-.140	-.186	-.285	.450	-2.305	0.121	-0.4	1.0	0.3	1.0	A+	
2716	679743	3	3	474	.553	.553	.042	.241	.165	.000	.375	.375	-.168	-.195	-.187	-1.165	0.101	1.0	1.0	1.1	1.1	A-	
2717	679392	3	3	474	.937	.015	.937	.019	.030	.000	.282	-.154	.282	-.117	-.202	-4.007	0.196	0.1	1.0	-1.3	0.7	B-	
2718	683801	3	3	474	.298	.207	.230	.297	.264	.002	.360	-.267	-.185	.360	.058	0.125	0.110	0.1	1.0	0.5	1.0	A-	
2719	683793	3	3	474	.538	.538	.217	.165	.078	.002	.295	.295	.016	-.254	-.216	-1.093	0.101	3.1	1.1	2.8	1.2	A+	
2720	683942	3	3	474	.848	.848	.146	.002	.004	.000	.345	.345	-.325	-.069	-.090	-2.933	0.136	-0.3	1.0	-0.6	0.9	A+	
2721	684201	3	3	474	.557	.194	.148	.557	.101	.000	.522	-.332	-.162	.522	-.235	-1.185	0.101	-3.2	0.9	-2.8	0.8	A-	
2722	677714	3	3	474	.644	.643	.076	.118	.162	.000	.256	.256	-.129	-.011	-.230	-1.619	0.105	3.3	1.1	2.5	1.2	A+	
2723	679646	3	3	474	.226	.494	.186	.093	.226	.002	.439	-.396	-.023	.096	.439	0.567	0.119	-1.5	0.9	-1.1	0.9	B-	
2724	683690	3	3	474	.631	.631	.099	.190	.078	.002	.625	.625	-.150	-.463	-.263	-1.553	0.104	-5.9	0.8	-4.5	0.7	A-	
2725	661849	3	3	474	.500	.500	.080	.027	.386	.006	.473	.473	-.136	-.072	-.358	-0.909	0.101	-1.7	0.9	-1.9	0.9	A+	

Table B–2 (continued). Mathematics Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
2726	680003	3	3	474	.298	.082	.297	.046	.568	.006	.246	-.202	.246	-.200	-.003	0.125	0.110	2.6	1.1	2.7	1.2	A-	
2727	683685	3	3	474	.578	.044	.209	.578	.162	.006	.408	-.211	-.312	.408	-.047	-1.289	0.102	0.0	1.0	0.8	1.1	A-	
2728	679589	3	3	474	.272	.344	.209	.272	.165	.011	.155	.050	-.140	.155	-.064	0.273	0.112	3.4	1.2	4.9	1.5	A-	
2729	678950	3	3	474	.654	.654	.036	.215	.084	.011	.442	.442	-.267	-.216	-.209	-1.674	0.105	-1.0	1.0	-1.1	0.9	B-	
2730	683682	3	3	474	.753	.753	.049	.101	.082	.015	.549	.549	-.173	-.273	-.379	-2.239	0.115	-3.3	0.8	-3.0	0.7	A+	
2731	661769	3	3	474	.352	.082	.074	.352	.477	.015	.217	-.151	-.213	.217	.014	-0.175	0.105	3.7	1.2	4.1	1.3	C+	
2732	682587	3	3	474	.760	.095	.759	.080	.051	.015	.454	-.223	.454	-.207	-.270	-2.279	0.116	-1.4	0.9	-1.7	0.8	A-	
2733	683676	3	3	474	.684	.089	.684	.110	.105	.013	.453	-.220	.453	-.178	-.276	-1.833	0.108	-1.2	1.0	-1.5	0.9	A+	
2734	679476	3	3	474	.527	.200	.527	.198	.059	.015	.391	-.287	.391	-.129	-.078	-1.042	0.101	0.7	1.0	-0.2	1.0	A-	
2735	679474	3	3	947	.911	.011	.032	.911	.037	.010	.416	-.146	-.232	.416	-.277	-3.639	0.120	-1.5	0.9	-2.7	0.6	A-	A-
2736	678376	3	3	458	.428	.428	.122	.242	.205	.002	.312	.312	-.158	-.167	-.065	-0.169	0.108	3.5	1.2	4.7	1.4	A-	
2737	661165	3	3	458	.908	.908	.070	.015	.007	.000	.218	.218	-.152	-.093	-.156	-3.368	0.173	0.5	1.1	3.1	2.0	B+	
2738	684215	3	3	458	.710	.129	.090	.070	.710	.002	.500	-.402	-.225	-.102	.500	-1.691	0.115	-1.2	0.9	-1.2	0.9	A+	
2739	683693	3	3	458	.747	.114	.028	.111	.747	.000	.455	-.302	-.127	-.258	.455	-1.926	0.120	-0.3	1.0	-1.2	0.9	A+	
2740	683692	3	3	458	.579	.074	.179	.579	.166	.002	.456	-.164	-.331	.456	-.158	-0.957	0.107	0.6	1.0	0.4	1.0	A-	
2741	681717	3	3	458	.369	.336	.153	.369	.140	.002	.361	-.048	-.218	.361	-.205	0.152	0.110	2.5	1.1	2.6	1.2	A+	
2742	679653	3	3	458	.714	.181	.076	.026	.714	.002	.558	-.398	-.282	-.139	.558	-1.718	0.116	-2.6	0.9	-2.1	0.8	A+	
2743	678377	3	3	458	.686	.229	.015	.686	.068	.002	.547	-.499	-.122	.547	-.106	-1.548	0.113	-2.2	0.9	-2.0	0.8	A-	
2744	662158	3	3	458	.314	.207	.314	.282	.190	.007	.319	-.113	.319	-.175	-.035	0.467	0.114	2.1	1.1	4.5	1.5	A-	
2745	679471	3	3	458	.397	.072	.301	.397	.225	.004	.446	-.203	-.121	.446	-.246	-0.005	0.109	0.9	1.0	0.8	1.1	B-	
2746	683667	3	3	458	.483	.070	.483	.153	.290	.004	.376	-.331	.376	-.240	-.021	-0.456	0.107	2.7	1.1	1.6	1.1	A+	
2747	661852	3	3	458	.662	.094	.662	.105	.133	.007	.597	-.382	.597	-.283	-.211	-1.409	0.111	-3.7	0.8	-2.3	0.8	B-	
2748	684157	3	3	458	.400	.400	.310	.129	.153	.009	.190	.190	-.116	-.075	-.007	-0.016	0.109	6.8	1.3	6.3	1.6	A+	
2749	683695	3	3	458	.463	.463	.046	.463	.020	.009	.518	-.336	-.297	.518	-.132	-0.353	0.107	-1.6	0.9	-1.2	0.9	A+	
2750	679648	3	3	458	.579	.579	.120	.079	.212	.011	.584	.584	-.152	-.299	-.362	-0.957	0.107	-3.5	0.9	-2.9	0.8	A+	
2751	679395	3	3	458	.448	.162	.127	.249	.448	.015	.565	-.443	-.168	-.110	.565	-0.273	0.107	-3.2	0.9	-2.5	0.8	A+	
2752	661764	3	3	458	.699	.699	.124	.096	.066	.015	.447	.447	-.281	-.184	-.177	-1.625	0.114	0.3	1.0	-0.7	0.9	A+	
2753	681710	3	3	458	.793	.103	.055	.035	.793	.015	.520	-.353	-.284	-.169	.520	-2.245	0.127	-2.0	0.9	-1.6	0.8	A-	
2754	680001	3	3	458	.659	.041	.659	.105	.183	.011	.435	-.232	.435	-.238	-.194	-1.397	0.111	0.6	1.0	1.4	1.1	A+	
2755	678954	3	3	458	.873	.055	.031	.873	.026	.015	.379	-.216	-.241	.379	-.125	-2.951	0.152	0.2	1.0	-1.2	0.8	A-	
2756	677712	3	3	460	.513	.070	.280	.513	.137	.000	.354	-.088	-.182	.354	-.212	-0.993	0.104	2.4	1.1	1.6	1.1	A+	
2757	683800	3	3	460	.367	.224	.174	.367	.233	.002	.396	-.061	-.180	.396	-.226	-0.253	0.108	0.6	1.0	1.1	1.1	A-	
2758	679473	3	3	460	.550	.124	.165	.550	.161	.000	.544	-.242	-.181	.544	-.337	-1.178	0.104	-2.9	0.9	-3.1	0.8	A-	
2759	683792	3	3	460	.344	.274	.343	.143	.239	.000	.025	-.048	.025	.025	.002	-0.124	0.109	8.4	1.4	7.6	1.7	B-	
2760	684153	3	3	460	.311	.148	.370	.311	.167	.004	.152	-.060	-.061	.152	-.051	0.058	0.112	4.9	1.3	5.5	1.6	A-	

Table B–2 (continued). Mathematics Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M /F	W /B
2761	679654	3	3	460	.313	.313	.120	.461	.107	.000	.320	.320	-.115	-.070	-.246	0.046	0.111	1.5	1.1	2.5	1.2	A-	
2762	679470	3	3	460	.520	.272	.096	.520	.113	.000	.454	-.228	-.197	.454	-.212	-1.026	0.104	-0.3	1.0	0.4	1.0	A-	
2763	662159	3	3	460	.361	.491	.096	.361	.052	.000	.418	-.271	-.133	.418	-.118	-0.219	0.108	-0.2	1.0	0.8	1.1	A+	
2764	661851	3	3	460	.657	.657	.246	.063	.035	.000	.460	.460	-.381	-.121	-.137	-1.730	0.109	-0.8	1.0	-0.9	0.9	A-	
2765	684158	3	3	460	.504	.226	.174	.096	.504	.000	.440	-.168	-.231	-.211	.440	-0.950	0.104	0.1	1.0	0.2	1.0	A+	
2766	681714	3	3	460	.496	.496	.067	.141	.296	.000	.405	.405	-.143	-.168	-.237	-0.907	0.104	1.0	1.0	0.6	1.0	A-	
2767	683686	3	3	460	.478	.133	.478	.089	.298	.002	.447	-.033	.447	-.127	-.379	-0.820	0.104	-0.2	1.0	-0.4	1.0	A+	
2768	679651	3	3	460	.509	.228	.509	.150	.107	.007	.444	-.277	.444	-.205	-.073	-0.972	0.104	-0.1	1.0	0.4	1.0	A+	
2769	680002	3	3	460	.596	.187	.111	.596	.100	.007	.522	-.352	-.170	.522	-.185	-1.409	0.106	-2.2	0.9	-1.3	0.9	A-	
2770	679647	3	3	460	.707	.122	.085	.080	.707	.007	.559	-.240	-.260	-.346	.559	-2.012	0.113	-3.3	0.8	-2.8	0.8	A+	
2771	679396	3	3	460	.291	.176	.052	.291	.470	.011	.223	-.242	-.043	.223	.025	0.172	0.114	3.0	1.2	4.3	1.5	A-	
2772	661863	3	3	460	.657	.109	.657	.080	.139	.015	.613	-.191	.613	-.204	-.465	-1.730	0.109	-4.8	0.8	-3.8	0.7	A+	
2773	683687	3	3	460	.750	.104	.750	.030	.102	.013	.508	-.262	.508	-.228	-.280	-2.277	0.118	-2.1	0.9	-1.9	0.8	A+	
2774	681709	3	3	460	.774	.107	.052	.774	.052	.015	.531	-.357	-.253	.531	-.162	-2.435	0.122	-2.7	0.8	-2.5	0.7	A+	
2775	678955	3	3	460	.767	.074	.767	.037	.107	.015	.529	-.134	.529	-.161	-.449	-2.391	0.121	-2.7	0.8	-2.1	0.8	A-	
2776	679800	3	3	473	.478	.478	.087	.030	.404	.002	.242	.242	-.166	.014	-.158	-0.717	0.104	5.9	1.3	5.1	1.4	A-	A+
2777	661862	3	3	473	.679	.023	.076	.679	.222	.000	.498	-.132	-.083	.498	-.459	-1.784	0.110	-1.1	0.9	-1.0	0.9	A+	A-
2778	679807	3	3	936	.834	.075	.834	.046	.033	.012	.457	-.271	.457	-.234	-.177	-2.835	0.095	-1.7	0.9	-2.0	0.8	A-	A+
2779	679389	3	3	473	.355	.347	.355	.063	.233	.002	.246	-.091	.246	-.143	-.084	-0.068	0.108	4.6	1.2	4.8	1.4	A+	A-
2780	679802	3	3	473	.493	.072	.129	.493	.304	.002	.386	-.163	-.197	.386	-.186	-0.793	0.104	1.7	1.1	1.9	1.1	A-	A+
2781	662157	3	3	473	.820	.049	.078	.053	.820	.000	.401	-.212	-.256	-.178	.401	-2.730	0.131	0.0	1.0	-0.5	0.9	B+	A-
2782	683688	3	3	473	.918	.019	.044	.918	.015	.004	.324	-.085	-.307	.324	-.046	-3.756	0.176	-0.3	1.0	-0.6	0.8	C-	A-
2783	679803	3	3	473	.651	.125	.651	.104	.112	.008	.549	-.220	.549	-.171	-.383	-1.628	0.108	-2.4	0.9	-2.0	0.8	A-	A+
2784	679998	3	3	936	.540	.245	.118	.540	.092	.006	.492	-.267	-.209	.492	-.192	-1.071	0.073	-2.1	0.9	-1.9	0.9	A+	A+
2785	683795	3	3	473	.670	.670	.235	.025	.057	.013	.511	.511	-.330	-.211	-.190	-1.735	0.110	-1.4	0.9	-1.0	0.9	A-	A-
2786	661760	3	3	473	.630	.630	.078	.066	.207	.019	.418	.418	-.270	-.198	-.125	-1.512	0.107	1.1	1.1	0.6	1.1	A+	B+
2787	683806	3	3	473	.503	.068	.281	.503	.127	.021	.518	-.235	-.208	.518	-.225	-0.847	0.104	-1.9	0.9	-1.9	0.9	B-	A-
2788	683790	3	3	473	.924	.924	.027	.023	.004	.021	.322	.322	-.130	-.153	-.085	-3.853	0.182	-0.3	1.0	-0.1	1.0	A-	A+
2789	683934	3	3	473	.848	.030	.057	.044	.848	.021	.462	-.143	-.240	-.246	.462	-2.965	0.139	-1.1	0.9	-1.8	0.7	A-	A-
2790	679586	3	3	473	.660	.156	.660	.074	.089	.021	.631	-.357	.631	-.236	-.253	-1.676	0.109	-4.7	0.8	-4.0	0.7	A+	A-
2791	678953	3	3	473	.738	.133	.738	.066	.042	.021	.495	-.348	.495	-.125	-.165	-2.142	0.116	-1.2	0.9	-1.5	0.8	A+	C-
2792	679645	3	3	473	.290	.351	.290	.307	.032	.021	.404	-.195	.404	-.083	-.094	0.312	0.114	-0.6	1.0	1.0	1.1	B-	A-
2793	661864	3	3	462	.509	.067	.509	.193	.232	.000	.410	-.246	.410	-.283	-.076	-0.634	0.105	1.2	1.1	2.0	1.1	A-	
2794	661166	3	3	462	.587	.058	.281	.587	.074	.000	.526	-.158	-.369	.526	-.215	-1.033	0.106	-2.2	0.9	-1.3	0.9	A-	
2795	683681	3	3	462	.870	.032	.017	.080	.870	.000	.293	-.067	-.123	-.260	.293	-2.897	0.148	0.3	1.0	1.2	1.3	C+	

Table B–2 (continued). Mathematics Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
2796	683674	3	3	462	.178	.121	.177	.262	.439	.000	.194	-.038	.194	.278	-.371	1.379	0.138	2.6	1.2	4.0	1.8	A-	
2797	679737	3	3	462	.868	.061	.868	.041	.028	.002	.421	-.266	.421	-.239	-.189	-2.876	0.147	-1.0	0.9	-1.3	0.8	A+	
2798	683669	3	3	462	.723	.097	.045	.723	.134	.000	.454	-.239	-.176	.454	-.281	-1.787	0.115	-0.7	1.0	-0.6	0.9	A-	
2799	678949	3	3	462	.926	.926	.017	.052	.002	.002	.260	.260	-.123	-.214	-.075	-3.603	0.187	0.1	1.0	-0.4	0.9	B+	
2800	679593	3	3	462	.775	.097	.061	.775	.067	.000	.442	-.275	-.223	.442	-.199	-2.121	0.122	-0.7	1.0	-1.0	0.9	A+	
2801	679542	3	3	462	.768	.050	.768	.074	.106	.002	.523	-.231	.523	-.221	-.363	-2.077	0.121	-2.2	0.9	-1.9	0.8	A-	
2802	679584	3	3	462	.422	.422	.472	.035	.071	.000	.396	.396	-.301	-.120	-.090	-0.188	0.107	0.7	1.0	1.9	1.1	A-	
2803	661931	3	3	462	.390	.180	.390	.156	.271	.004	.305	-.171	.305	-.016	-.158	-0.015	0.108	3.1	1.2	3.5	1.3	A-	
2804	683940	3	3	462	.844	.013	.117	.019	.844	.006	.358	-.184	-.253	-.100	.358	-2.653	0.138	0.0	1.0	0.4	1.1	B+	
2805	661867	3	3	462	.825	.104	.024	.037	.825	.011	.441	-.252	-.227	-.215	.441	-2.489	0.132	-0.8	0.9	-1.1	0.8	A+	
2806	661921	3	3	462	.794	.794	.050	.076	.067	.013	.445	.445	-.093	-.291	-.248	-2.258	0.125	-0.9	0.9	-0.8	0.9	A+	
2807	661761	3	3	462	.645	.082	.645	.052	.212	.009	.333	-.229	.333	-.214	-.078	-1.342	0.108	2.7	1.1	0.8	1.1	A-	
2808	679799	3	3	462	.286	.584	.052	.286	.067	.011	.286	-.067	-.210	.286	-.114	0.586	0.117	1.5	1.1	4.4	1.5	A+	
2809	679806	3	3	462	.745	.063	.745	.076	.104	.013	.549	-.219	.549	-.216	-.360	-1.921	0.117	-2.8	0.9	-2.5	0.8	A+	
2810	683802	3	3	462	.411	.130	.130	.310	.411	.019	.538	-.172	-.282	-.199	.538	-0.131	0.107	-2.8	0.9	-1.7	0.9	A-	
2811	683796	3	3	462	.786	.069	.104	.026	.786	.015	.446	-.200	-.290	-.159	.446	-2.196	0.124	-1.1	0.9	0.0	1.0	B+	
2812	661163	3	3	462	.571	.110	.238	.065	.571	.015	.458	-.111	-.335	-.125	.458	-0.955	0.106	-0.5	1.0	0.2	1.0	A-	
2813	683668	3	3	463	.492	.391	.039	.078	.492	.000	.394	-.286	-.231	-.049	.394	-0.803	0.105	1.7	1.1	2.3	1.2	A+	A-
2814	661858	3	3	463	.240	.048	.512	.199	.240	.002	.376	-.151	-.228	-.036	.376	0.610	0.121	0.0	1.0	0.3	1.0	A+	A+
2815	683791	3	3	463	.965	.026	.002	.006	.965	.000	.157	-.126	-.011	-.100	.157	-4.837	0.265	0.3	1.0	0.9	1.4	A-	B-
2816	683807	3	3	463	.708	.086	.045	.708	.160	.000	.472	-.201	-.185	.472	-.327	-1.977	0.115	-0.3	1.0	-0.7	0.9	A-	A-
2817	661856	3	3	463	.454	.266	.454	.179	.102	.000	.444	-.319	.444	-.102	-.136	-0.603	0.106	0.0	1.0	0.8	1.1	A-	A-
2818	683694	3	3	463	.786	.089	.069	.786	.056	.000	.420	-.199	-.325	.420	-.144	-2.495	0.126	0.4	1.0	-0.6	0.9	A+	A-
2819	683799	3	3	463	.492	.492	.151	.171	.184	.002	.339	.339	-.105	-.062	-.264	-0.803	0.105	3.1	1.1	3.6	1.3	A-	A+
2820	679547	3	3	463	.711	.201	.035	.050	.711	.004	.630	-.533	-.208	-.109	.630	-1.990	0.115	-4.1	0.8	-3.8	0.7	A-	A+
2821	661768	3	3	463	.499	.080	.104	.499	.311	.006	.379	-.173	-.266	.379	-.109	-0.836	0.105	2.0	1.1	2.5	1.2	A-	A-
2822	679585	3	3	463	.747	.035	.028	.747	.184	.006	.500	-.234	-.138	.500	-.354	-2.224	0.120	-1.1	0.9	-1.5	0.8	A-	B-
2823	679804	3	3	463	.752	.158	.063	.022	.752	.006	.533	-.403	-.164	-.199	.533	-2.253	0.120	-1.8	0.9	-1.8	0.8	A+	B-
2824	679801	3	3	463	.721	.721	.093	.119	.056	.011	.500	.500	-.250	-.187	-.305	-2.057	0.116	-1.1	0.9	-0.8	0.9	A-	A-
2825	679390	3	3	463	.909	.024	.013	.909	.043	.011	.298	-.101	-.035	.298	-.233	-3.692	0.174	0.0	1.0	1.1	1.3	A-	A+
2826	679548	3	3	463	.691	.216	.032	.052	.691	.009	.608	-.501	-.161	-.124	.608	-1.873	0.113	-3.6	0.8	-3.3	0.7	A-	A-
2827	661771	3	3	463	.555	.099	.166	.166	.555	.013	.422	-.279	-.114	-.178	.422	-1.125	0.106	1.4	1.1	1.2	1.1	A-	A+
2828	678952	3	3	463	.814	.814	.082	.035	.056	.013	.507	.507	-.288	-.306	-.186	-2.711	0.132	-1.5	0.9	-1.6	0.8	A-	A-
2829	683675	3	3	463	.415	.244	.263	.415	.058	.019	.334	-.187	-.137	.334	-.009	-0.401	0.106	2.8	1.1	2.5	1.2	A+	A+
2830	681712	3	3	463	.762	.762	.084	.076	.058	.019	.548	.548	-.210	-.300	-.312	-2.326	0.122	-2.0	0.9	-2.6	0.7	A+	A-

Table B–2 (continued). Mathematics Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M /F	W /B
2831	679587	3	3	463	.797	.013	.147	.797	.022	.022	.611	-.084	-.542	.611	-.137	-2.576	0.128	-3.3	0.8	-3.5	0.6	A-	A+
2832	679549	3	3	463	.210	.076	.076	.210	.620	.019	.153	-.284	-.206	.153	.184	0.822	0.126	3.1	1.2	5.4	2.0	A+	A+
2833	680006	3	3	463	.696	.695	.190	.054	.060	.000	.397	.397	-.176	-.235	-.254	-1.908	0.110	-0.2	1.0	-0.2	1.0	A+	A+
2834	661933	3	3	463	.566	.052	.160	.566	.222	.000	.431	-.187	-.238	.431	-.204	-1.236	0.103	-0.3	1.0	-0.8	1.0	A-	A-
2835	678378	3	3	463	.676	.238	.676	.032	.054	.000	.328	-.170	.328	-.195	-.207	-1.801	0.108	1.5	1.1	1.2	1.1	A+	A+
2836	678957	3	3	463	.754	.114	.754	.078	.052	.002	.505	-.269	.505	-.257	-.278	-2.252	0.116	-2.3	0.9	-2.7	0.7	A+	A-
2837	679472	3	3	463	.626	.626	.022	.037	.315	.000	.507	.507	-.192	-.217	-.380	-1.539	0.105	-2.5	0.9	-2.2	0.9	A+	B-
2838	683673	3	3	463	.164	.222	.164	.130	.482	.002	.248	.011	.248	.133	-.282	1.048	0.135	0.6	1.1	2.6	1.4	B-	A-
2839	681718	3	3	463	.657	.067	.086	.657	.186	.004	.420	-.230	-.165	.420	-.222	-1.697	0.107	-0.4	1.0	-0.7	0.9	A+	A-
2840	680000	3	3	463	.888	.028	.888	.041	.039	.004	.389	-.132	.389	-.238	-.230	-3.327	0.154	-1.0	0.9	-1.5	0.7	A+	A-
2841	679798	3	3	463	.909	.043	.015	.909	.028	.004	.197	-.064	-.134	.197	-.108	-3.587	0.169	0.5	1.1	0.9	1.2	C+	A+
2842	679649	3	3	463	.389	.287	.389	.210	.106	.009	.302	-.089	.302	-.117	-.138	-0.360	0.105	2.6	1.1	2.3	1.2	A-	A-
2843	683691	3	3	463	.356	.356	.190	.322	.125	.006	.208	.208	-.132	.006	-.108	-0.191	0.107	4.3	1.2	4.4	1.3	A+	A-
2844	683789	3	3	463	.598	.093	.175	.123	.598	.011	.520	-.236	-.216	-.252	.520	-1.397	0.104	-2.9	0.9	-2.2	0.9	A+	A+
2845	661853	3	3	463	.382	.045	.184	.374	.382	.015	.268	-.142	-.083	-.093	.268	-0.327	0.106	3.7	1.2	3.2	1.2	A-	A+
2846	682588	3	3	463	.600	.600	.160	.073	.153	.013	.469	.469	-.223	-.159	-.235	-1.408	0.104	-1.5	0.9	-1.4	0.9	A+	A+
2847	661763	3	3	463	.436	.233	.436	.222	.089	.019	.469	-.275	.469	-.151	-.086	-0.600	0.104	-1.5	0.9	-1.4	0.9	A+	A-
2848	679652	3	3	463	.594	.594	.054	.244	.089	.019	.548	.548	-.170	-.342	-.190	-1.375	0.104	-3.6	0.9	-3.5	0.8	A-	A-
2849	661172	3	3	463	.672	.672	.022	.225	.063	.019	.464	.464	-.128	-.270	-.245	-1.777	0.108	-1.4	0.9	-1.8	0.9	A-	A+
2850	684155	3	3	463	.335	.121	.289	.335	.235	.019	.392	-.188	-.126	.392	-.092	-0.075	0.109	-0.2	1.0	1.2	1.1	A+	A-
2851	682415	4	4	515	.581	.091	.581	.208	.120	.000	.457	-.164	.457	-.332	-.134	-1.285	0.099	-0.8	1.0	-1.5	0.9	A-	
2852	661635	4	4	515	.588	.146	.085	.181	.588	.000	.366	-.180	-.178	-.174	.366	-1.324	0.099	1.6	1.1	1.7	1.1	A+	
2853	678097	4	4	515	.845	.052	.037	.066	.845	.000	.405	-.180	-.214	-.268	.405	-2.897	0.129	-0.9	0.9	-1.8	0.7	A+	
2854	678030	4	4	515	.237	.068	.237	.161	.534	.000	.176	-.095	.176	.007	-.107	0.555	0.114	2.6	1.2	5.6	1.7	A-	
2855	661389	4	4	515	.876	.050	.016	.054	.876	.004	.416	-.222	-.152	-.313	.416	-3.186	0.140	-1.2	0.9	-2.2	0.6	A+	
2856	677932	4	4	515	.610	.184	.087	.610	.117	.002	.422	-.198	-.345	.422	-.099	-1.433	0.100	-0.1	1.0	0.2	1.0	A+	
2857	661697	4	4	515	.575	.128	.134	.575	.163	.000	.368	-.125	-.140	.368	-.250	-1.256	0.099	1.6	1.1	1.2	1.1	A+	
2858	682428	4	4	515	.606	.097	.606	.231	.064	.002	.411	-.254	.411	-.150	-.235	-1.413	0.099	0.2	1.0	1.2	1.1	B+	
2859	661147	4	4	515	.590	.250	.087	.590	.070	.002	.445	-.288	-.139	.445	-.194	-1.334	0.099	-0.6	1.0	-0.7	1.0	A-	
2860	683963	4	4	1512	.767	.063	.113	.053	.767	.003	.419	-.178	-.242	-.231	.419	-2.308	0.066	-1.6	1.0	-1.6	0.9	A+	A-
2861	661644	4	4	515	.406	.406	.307	.080	.206	.002	.344	.344	-.161	-.198	-.089	-0.414	0.100	2.2	1.1	2.1	1.1	A-	
2862	681013	4	4	515	.761	.068	.761	.080	.087	.004	.432	-.098	.432	-.266	-.284	-2.284	0.112	-1.1	0.9	-1.3	0.9	A+	
2863	661639	4	4	515	.652	.231	.074	.652	.039	.004	.484	-.233	-.320	.484	-.214	-1.655	0.102	-2.0	0.9	-0.6	1.0	A+	
2864	683651	4	4	1012	.203	.280	.219	.292	.203	.007	.255	-.077	-.004	-.121	.255	0.828	0.087	1.3	1.1	5.4	1.5	A-	
2865	678028	4	4	515	.303	.324	.303	.070	.297	.006	.119	-.104	.119	.004	.007	0.143	0.106	5.5	1.3	6.8	1.6	A-	

Table B–2 (continued). Mathematics Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
2866	661679	4	4	515	.528	.212	.528	.130	.122	.008	.594	-.273	.594	-.249	-.285	-1.025	0.098	-5.2	0.8	-4.5	0.8	A-	
2867	677698	4	4	515	.786	.786	.047	.045	.115	.008	.359	.359	-.087	-.169	-.265	-2.452	0.116	-0.2	1.0	-0.3	1.0	A-	
2868	661383	4	4	515	.276	.272	.398	.276	.041	.014	.389	-.104	-.170	.389	-.179	0.306	0.109	-0.2	1.0	1.0	1.1	A-	
2869	682617	4	4	515	.687	.111	.687	.155	.035	.012	.494	-.278	.494	-.278	-.176	-1.845	0.104	-2.0	0.9	-2.4	0.8	A-	
2870	683944	4	4	515	.687	.037	.204	.060	.687	.012	.574	-.200	-.465	-.135	.574	-1.845	0.104	-4.2	0.8	-3.7	0.7	A+	
2871	682443	4	4	512	.354	.256	.129	.258	.354	.004	.323	-.121	-.288	-.020	.323	0.663	0.105	2.2	1.1	5.3	1.5	A-	A+
2872	682292	4	4	512	.965	.002	.012	.021	.965	.000	.261	-.091	-.209	-.149	.261	-4.154	0.251	-0.2	1.0	0.6	1.2	A-	A-
2873	682391	4	4	512	.807	.021	.111	.059	.807	.002	.449	-.270	-.253	-.236	.449	-1.960	0.125	-0.2	1.0	-0.7	0.9	A-	A-
2874	677700	4	4	512	.549	.172	.549	.150	.127	.002	.403	-.164	.403	-.083	-.311	-0.378	0.101	2.2	1.1	2.1	1.2	A+	A+
2875	682848	4	4	512	.775	.031	.127	.063	.775	.004	.454	-.244	-.265	-.199	.454	-1.723	0.119	-0.2	1.0	-0.4	1.0	A-	A+
2876	661158	4	4	512	.791	.053	.139	.791	.016	.002	.569	-.254	-.464	.569	-.097	-1.838	0.122	-2.4	0.8	-2.9	0.7	A-	A-
2877	683980	4	4	512	.381	.092	.342	.381	.186	.000	.420	-.291	-.247	.420	-.007	0.510	0.104	0.3	1.0	1.9	1.2	A+	A+
2878	661388	4	4	512	.418	.418	.066	.084	.430	.002	.433	.433	-.219	-.372	-.103	0.309	0.102	0.8	1.0	1.5	1.1	A-	A+
2879	678022	4	4	512	.848	.848	.055	.041	.055	.002	.529	.529	-.290	-.208	-.343	-2.316	0.136	-2.0	0.8	-2.2	0.7	A+	A-
2880	682844	4	4	512	.500	.289	.139	.500	.064	.008	.320	-.149	-.169	.320	-.095	-0.123	0.101	5.3	1.2	4.3	1.3	A+	A-
2881	677027	4	4	512	.449	.236	.117	.449	.189	.008	.500	-.267	-.270	.500	-.091	0.143	0.101	-1.6	0.9	-0.6	1.0	A-	A+
2882	676954	4	4	512	.549	.549	.146	.076	.221	.008	.469	.469	-.309	-.203	-.138	-0.378	0.101	0.3	1.0	1.0	1.1	A+	A-
2883	682441	4	4	512	.586	.586	.107	.240	.057	.010	.449	.449	-.212	-.284	-.087	-0.576	0.102	0.8	1.0	1.5	1.1	A-	A+
2884	677507	4	4	512	.260	.301	.230	.195	.260	.014	.307	.063	-.167	-.200	.307	1.233	0.114	2.7	1.2	3.3	1.4	A-	A-
2885	678104	4	4	512	.682	.682	.023	.123	.160	.012	.469	.469	-.146	-.255	-.268	-1.113	0.108	0.2	1.0	-0.1	1.0	A-	B-
2886	661672	4	4	512	.531	.201	.209	.047	.531	.012	.485	-.317	-.145	-.197	.485	-0.286	0.101	-0.3	1.0	-0.2	1.0	B+	A+
2887	676950	4	4	512	.938	.938	.031	.014	.006	.012	.332	.332	-.217	-.202	-.057	-3.484	0.195	0.0	1.0	-1.2	0.7	A-	A-
2888	661669	4	4	512	.318	.137	.318	.447	.080	.018	.351	.004	.351	-.222	-.137	0.867	0.108	1.3	1.1	4.8	1.5	A-	B+
2889	678101	4	4	512	.738	.047	.145	.738	.055	.016	.505	-.108	-.330	.505	-.269	-1.466	0.114	-1.0	0.9	-1.1	0.9	A-	B-
2890	682449	4	4	512	.856	.049	.045	.037	.855	.014	.504	-.338	-.227	-.216	.504	-2.391	0.139	-1.5	0.9	-1.4	0.8	A+	A-
2891	682457	4	4	507	.420	.327	.193	.420	.059	.000	.382	-.195	-.164	.382	-.138	-0.043	0.103	2.6	1.1	2.8	1.2	A+	A+
2892	661643	4	4	507	.533	.296	.533	.144	.028	.000	.338	-.411	.338	.054	.001	-0.638	0.102	4.2	1.2	3.2	1.2	A-	A+
2893	682851	4	4	507	.864	.073	.864	.047	.016	.000	.337	-.206	.337	-.221	-.120	-2.786	0.140	0.4	1.0	0.4	1.1	A+	B-
2894	678106	4	4	507	.779	.108	.779	.043	.067	.002	.409	-.199	.409	-.192	-.258	-2.080	0.119	0.5	1.0	0.5	1.1	A-	A+
2895	677696	4	4	507	.888	.077	.006	.028	.888	.002	.458	-.348	-.166	-.236	.458	-3.039	0.151	-1.2	0.9	-2.2	0.6	A+	A-
2896	683967	4	4	507	.773	.047	.114	.065	.773	.000	.489	-.240	-.322	-.208	.489	-2.038	0.118	-1.0	0.9	-1.9	0.8	A-	A-
2897	661703	4	4	507	.789	.073	.071	.067	.789	.000	.558	-.255	-.344	-.292	.558	-2.152	0.120	-2.9	0.8	-1.6	0.8	A+	A+
2898	677941	4	4	507	.888	.012	.077	.888	.020	.004	.349	-.155	-.208	.349	-.231	-3.039	0.151	-0.3	1.0	1.1	1.2	A+	B-
2899	661636	4	4	507	.657	.657	.077	.187	.077	.002	.432	.432	-.231	-.197	-.232	-1.311	0.106	1.0	1.1	0.2	1.0	A-	A+
2900	677029	4	4	507	.566	.160	.140	.566	.132	.002	.495	-.141	-.253	.495	-.298	-0.815	0.102	-0.6	1.0	-0.6	1.0	A-	B-

Table B–2 (continued). Mathematics Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M /F	W /B
2901	677023	4	4	507	.286	.008	.286	.107	.596	.004	.408	-.079	.408	-.219	-.210	0.735	0.112	0.1	1.0	2.0	1.2	A-	A+
2902	677465	4	4	507	.324	.440	.124	.323	.108	.004	.218	.048	-.234	.218	-.127	0.503	0.109	5.5	1.3	6.1	1.7	B+	A+
2903	682288	4	4	507	.533	.146	.533	.162	.156	.004	.280	-.013	.280	-.116	-.233	-0.638	0.102	5.9	1.3	5.1	1.4	A-	A+
2904	683972	4	4	507	.371	.195	.221	.205	.371	.008	.473	-.079	-.266	-.191	.473	0.229	0.105	-1.3	0.9	0.3	1.0	A-	A-
2905	677939	4	4	1015	.969	.011	.968	.001	.008	.012	.218	-.117	.218	-.073	-.076	-4.617	0.185	-0.2	1.0	-0.6	0.8	A+	A-
2906	678100	4	4	507	.391	.280	.142	.179	.391	.008	.520	-.083	-.296	-.270	.520	0.119	0.104	-2.1	0.9	-1.5	0.9	B-	A-
2907	661638	4	4	507	.663	.089	.108	.132	.663	.008	.523	-.194	-.339	-.218	.523	-1.345	0.106	-1.4	0.9	-1.7	0.9	A-	A-
2908	661149	4	4	507	.809	.061	.809	.108	.012	.010	.409	-.238	.409	-.227	-.146	-2.301	0.124	0.0	1.0	0.7	1.1	A-	A+
2909	683975	4	4	507	.795	.795	.099	.049	.049	.008	.470	.470	-.290	-.244	-.174	-2.196	0.122	-1.1	0.9	-0.7	0.9	A-	A-
2910	661677	4	4	507	.669	.669	.065	.219	.039	.008	.593	.593	-.298	-.386	-.172	-1.379	0.107	-3.5	0.8	-3.1	0.8	A+	A+
2911	661700	4	4	509	.918	.028	.031	.024	.917	.000	.144	-.149	-.079	-.011	.144	-3.588	0.167	0.7	1.1	1.3	1.3	A-	
2912	682439	4	4	509	.976	.010	.976	.000	.014	.000	.090	-.046	.090	.000	-.079	-4.971	0.296	0.2	1.0	0.3	1.1	A-	
2913	682850	4	4	509	.817	.029	.817	.128	.026	.000	.292	-.228	.292	-.160	-.132	-2.583	0.122	0.5	1.0	0.9	1.1	A-	
2914	682289	4	4	509	.356	.261	.214	.163	.356	.006	.314	-.058	-.175	-.137	.314	-0.081	0.103	2.2	1.1	2.0	1.1	A+	
2915	677936	4	4	509	.540	.269	.100	.540	.088	.002	.428	-.195	-.206	.428	-.210	-1.010	0.098	-0.2	1.0	-0.8	1.0	A-	
2916	681011	4	4	509	.646	.100	.151	.100	.646	.002	.475	-.212	-.258	-.234	.475	-1.542	0.101	-2.0	0.9	-1.6	0.9	A-	
2917	677940	4	4	509	.808	.045	.807	.094	.049	.004	.353	-.180	.353	-.216	-.160	-2.510	0.120	-0.3	1.0	-0.3	1.0	A+	
2918	677510	4	4	509	.595	.063	.238	.595	.100	.004	.430	-.237	-.246	.430	-.132	-1.282	0.099	-0.5	1.0	0.3	1.0	A+	
2919	677022	4	4	509	.434	.118	.098	.434	.344	.006	.477	-.051	-.266	.477	-.274	-0.488	0.099	-1.4	1.0	-0.9	1.0	A+	
2920	661704	4	4	509	.474	.473	.196	.189	.136	.006	.433	.433	-.275	-.147	-.118	-0.683	0.098	-0.5	1.0	-0.5	1.0	A+	
2921	661379	4	4	509	.371	.151	.230	.371	.244	.004	.306	-.247	-.227	.306	.103	-0.165	0.102	3.0	1.1	3.0	1.2	A-	
2922	661150	4	4	509	.843	.843	.061	.065	.024	.008	.447	.447	-.228	-.250	-.218	-2.787	0.129	-1.5	0.9	-2.1	0.7	A+	
2923	678099	4	4	509	.358	.143	.108	.358	.381	.010	.352	-.285	-.142	.352	-.020	-0.092	0.103	1.6	1.1	1.5	1.1	A-	
2924	682304	4	4	509	.383	.477	.383	.081	.049	.010	.436	-.284	.436	-.130	-.091	-0.227	0.101	-0.3	1.0	0.2	1.0	A-	
2925	677026	4	4	509	.682	.151	.682	.090	.063	.014	.514	-.284	.514	-.249	-.203	-1.731	0.103	-2.9	0.9	-2.7	0.8	A+	
2926	681003	4	4	509	.745	.086	.124	.745	.028	.018	.354	-.198	-.166	.354	-.129	-2.092	0.110	0.3	1.0	1.0	1.1	A-	
2927	661676	4	4	509	.550	.161	.100	.550	.173	.016	.451	-.202	-.225	.451	-.169	-1.058	0.098	-0.9	1.0	-1.1	0.9	A+	
2928	661642	4	4	509	.707	.057	.707	.083	.138	.016	.418	-.189	.418	-.153	-.249	-1.873	0.106	-0.9	1.0	-0.3	1.0	A+	
2929	661645	4	4	509	.611	.230	.611	.073	.069	.018	.431	-.270	.431	-.202	-.099	-1.361	0.100	-0.6	1.0	-1.1	0.9	A+	
2930	678105	4	4	513	.450	.450	.277	.138	.133	.002	.376	.376	-.194	-.091	-.209	-0.190	0.100	1.9	1.1	2.6	1.2	A+	A-
2931	677937	4	4	513	.714	.058	.135	.090	.713	.004	.541	-.198	-.328	-.288	.541	-1.589	0.109	-2.6	0.9	-1.8	0.8	A+	B+
2932	677702	4	4	513	.499	.082	.127	.499	.292	.000	.420	-.103	-.321	.420	-.166	-0.438	0.099	1.0	1.0	0.2	1.0	A-	A+
2933	663176	4	4	513	.483	.483	.242	.193	.078	.004	.328	.328	-.156	-.119	-.148	-0.359	0.100	3.8	1.2	3.5	1.2	A+	A-
2934	661634	4	4	513	.415	.339	.090	.154	.415	.002	.442	-.134	-.185	-.266	.442	-0.008	0.101	0.2	1.0	0.2	1.0	A+	A+
2935	661855	4	4	513	.671	.671	.076	.105	.146	.002	.626	.626	-.187	-.314	-.403	-1.339	0.105	-5.1	0.8	-3.2	0.8	A+	B-

Table B–2 (continued). Mathematics Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M /F	W /B
2936	677513	4	4	513	.271	.212	.261	.271	.250	.006	.361	.049	-.383	.361	-.015	0.808	0.111	0.5	1.0	2.1	1.2	A-	A-
2937	682614	4	4	513	.222	.411	.187	.222	.177	.002	.402	-.243	-.139	.402	.023	1.135	0.118	-1.2	0.9	1.4	1.2	A-	A-
2938	661152	4	4	513	.626	.263	.626	.082	.029	.000	.414	-.272	.414	-.138	-.254	-1.093	0.102	1.0	1.0	1.2	1.1	B-	C-
2939	683961	4	4	513	.704	.704	.070	.127	.094	.006	.389	.389	-.195	-.308	-.045	-1.530	0.108	0.9	1.0	1.5	1.1	A-	B+
2940	678025	4	4	513	.710	.088	.080	.710	.115	.008	.555	-.247	-.210	.555	-.355	-1.565	0.108	-2.8	0.9	-2.9	0.7	A+	A-
2941	683965	4	4	513	.883	.072	.883	.031	.010	.004	.473	-.333	.473	-.249	-.145	-2.914	0.148	-1.4	0.9	-2.4	0.6	A+	C-
2942	677697	4	4	513	.544	.214	.544	.144	.094	.004	.299	-.123	.299	-.146	-.133	-0.666	0.100	4.4	1.2	3.5	1.2	A+	B+
2943	677934	4	4	513	.538	.538	.168	.203	.080	.012	.402	.402	-.341	-.117	-.054	-0.636	0.100	1.7	1.1	0.9	1.1	A+	A-
2944	677938	4	4	513	.778	.076	.778	.023	.119	.004	.408	-.181	.408	-.116	-.296	-2.006	0.117	-0.1	1.0	0.0	1.0	A-	B+
2945	661675	4	4	513	.743	.115	.078	.743	.058	.006	.461	-.151	-.348	.461	-.214	-1.771	0.112	-0.9	1.0	-0.4	1.0	A+	A-
2946	676947	4	4	513	.836	.023	.066	.836	.070	.004	.375	-.280	-.160	.375	-.189	-2.458	0.130	-0.1	1.0	0.6	1.1	A+	B-
2947	661646	4	4	513	.694	.694	.117	.144	.037	.008	.492	.492	-.282	-.218	-.259	-1.473	0.107	-1.3	0.9	-1.3	0.9	A+	B-
2948	682623	4	4	513	.402	.279	.402	.105	.207	.008	.302	.028	.302	-.194	-.225	0.063	0.101	3.8	1.2	4.3	1.3	A-	A+
2949	682431	4	4	513	.296	.296	.121	.495	.078	.010	.188	.188	-.322	.155	-.176	0.652	0.108	4.3	1.2	6.0	1.7	A+	A+
2950	683950	4	4	508	.303	.490	.303	.144	.063	.000	.386	-.301	.386	-.025	-.074	0.320	0.108	0.6	1.0	1.2	1.1	A-	
2951	661701	4	4	508	.528	.528	.081	.161	.228	.002	.471	.471	-.036	-.197	-.350	-0.865	0.100	-0.6	1.0	-0.1	1.0	A+	
2952	683978	4	4	508	.329	.236	.163	.272	.329	.000	.277	-.061	-.253	-.023	.277	0.173	0.106	3.8	1.2	4.5	1.4	A+	
2953	682287	4	4	508	.472	.189	.185	.472	.154	.000	.485	-.228	-.234	.485	-.173	-0.586	0.100	-1.1	1.0	-0.9	1.0	B+	
2954	677701	4	4	508	.114	.114	.091	.636	.159	.000	.182	.182	-.200	.214	-.282	1.778	0.149	0.9	1.1	3.0	1.7	A+	
2955	661156	4	4	508	.813	.055	.813	.045	.085	.002	.480	-.165	.480	-.185	-.379	-2.529	0.123	-1.7	0.9	-2.3	0.7	A+	
2956	682845	4	4	508	.506	.506	.112	.093	.287	.002	.365	.365	-.130	-.312	-.101	-0.755	0.100	2.4	1.1	2.1	1.1	A+	
2957	661387	4	4	508	.671	.087	.671	.081	.156	.006	.511	-.232	.511	-.302	-.226	-1.618	0.105	-1.9	0.9	-2.4	0.8	A-	
2958	682392	4	4	508	.593	.264	.114	.026	.593	.004	.478	-.218	-.331	-.148	.478	-1.196	0.101	-0.9	1.0	-0.6	1.0	A+	
2959	661694	4	4	508	.467	.203	.177	.144	.467	.010	.450	-.209	-.213	-.121	.450	-0.556	0.100	0.0	1.0	0.1	1.0	A+	
2960	677505	4	4	508	.358	.100	.112	.358	.419	.010	.224	-.167	-.249	.224	.078	0.009	0.104	4.7	1.2	5.0	1.4	A-	
2961	677025	4	4	508	.695	.195	.073	.695	.030	.008	.575	-.382	-.249	.575	-.199	-1.752	0.107	-3.6	0.8	-3.4	0.7	A-	
2962	681002	4	4	508	.799	.799	.055	.045	.093	.008	.440	.440	-.225	-.138	-.280	-2.425	0.121	-0.9	0.9	-1.5	0.8	B-	
2963	681010	4	4	508	.400	.366	.126	.098	.400	.010	.476	-.176	-.197	-.228	.476	-0.212	0.102	-1.2	1.0	0.3	1.0	A+	
2964	677509	4	4	508	.793	.014	.144	.793	.035	.014	.458	-.160	-.331	.458	-.174	-2.382	0.119	-1.2	0.9	-1.6	0.8	A-	
2965	682284	4	4	508	.445	.126	.343	.445	.073	.014	.492	-.103	-.314	.492	-.164	-0.446	0.100	-1.7	0.9	-0.7	1.0	A-	
2966	661680	4	4	508	.321	.213	.354	.321	.096	.016	.232	-.106	.064	.232	-.257	0.217	0.106	4.2	1.2	4.4	1.4	A+	
2967	682413	4	4	508	.811	.053	.043	.811	.075	.018	.442	-.184	-.244	.442	-.235	-2.514	0.123	-1.1	0.9	-1.5	0.8	A-	
2968	661382	4	4	508	.335	.213	.118	.335	.319	.016	.283	-.324	-.137	.283	.135	0.139	0.105	3.5	1.2	3.0	1.3	A+	
2969	677474	4	4	507	.556	.136	.235	.556	.071	.002	.266	-.177	-.117	.266	-.076	-1.173	0.100	4.9	1.2	3.1	1.2	A-	
2970	682440	4	4	507	.708	.103	.079	.708	.110	.000	.426	-.225	-.235	.426	-.197	-1.984	0.107	-0.4	1.0	-0.5	1.0	A-	

Table B–2 (continued). Mathematics Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
2971	661154	4	4	1004	.843	.843	.032	.060	.063	.003	.427	.427	-.162	-.184	-.325	-2.891	0.093	-1.7	0.9	-2.1	0.8	A+	
2972	682450	4	4	1004	.914	.038	.032	.914	.016	.000	.336	-.271	-.164	.336	-.108	-3.663	0.118	-0.6	1.0	-1.9	0.7	A+	
2973	682849	4	4	507	.227	.649	.091	.227	.034	.000	.390	-.225	-.141	.390	-.085	0.647	0.118	-0.3	1.0	2.1	1.3	A+	
2974	682389	4	4	1004	.933	.013	.040	.933	.008	.006	.318	-.152	-.190	.318	-.142	-3.957	0.131	-0.8	0.9	1.3	1.3	B+	
2975	677935	4	4	507	.491	.183	.249	.071	.491	.006	.510	-.265	-.226	-.191	.510	-0.846	0.099	-2.2	0.9	-1.8	0.9	A-	
2976	683539	4	4	507	.740	.081	.071	.740	.107	.002	.427	-.194	-.255	.427	-.210	-2.174	0.111	-0.5	1.0	-1.2	0.9	A+	
2977	661159	4	4	1004	.617	.617	.069	.078	.235	.002	.527	.527	-.186	-.312	-.286	-1.459	0.072	-3.9	0.9	-3.4	0.8	A-	
2978	676946	4	4	507	.452	.063	.087	.389	.452	.010	.512	-.136	-.219	-.315	.512	-0.648	0.100	-2.1	0.9	-1.4	0.9	B-	
2979	677514	4	4	507	.180	.400	.247	.179	.166	.008	.136	-.004	-.102	.136	.021	1.010	0.128	3.0	1.3	4.6	1.8	A-	
2980	676953	4	4	507	.359	.114	.209	.310	.359	.008	.298	-.008	-.157	-.132	.298	-0.162	0.104	2.9	1.1	3.4	1.3	A-	
2981	661673	4	4	507	.716	.069	.716	.075	.132	.008	.554	-.225	.554	-.204	-.363	-2.030	0.108	-3.3	0.8	-3.2	0.7	A-	
2982	677468	4	4	507	.819	.024	.128	.024	.819	.006	.313	-.077	-.221	-.141	.313	-2.718	0.124	0.6	1.0	0.3	1.0	A-	
2983	683974	4	4	507	.702	.189	.069	.702	.034	.006	.456	-.174	-.326	.456	-.247	-1.950	0.107	-1.4	0.9	1.0	1.1	B+	
2984	682847	4	4	507	.661	.179	.091	.661	.063	.006	.510	-.258	-.305	.510	-.170	-1.717	0.104	-2.2	0.9	-2.4	0.8	A-	
2985	676949	4	4	507	.566	.566	.083	.071	.274	.006	.376	.376	-.189	-.172	-.172	-1.223	0.100	2.0	1.1	1.1	1.1	A-	
2986	678027	4	4	507	.706	.138	.105	.706	.045	.006	.530	-.285	-.339	.530	-.124	-1.973	0.107	-2.7	0.9	-2.6	0.8	A-	
2987	682442	4	4	507	.225	.243	.225	.335	.187	.010	.142	-.046	.142	.092	-.175	0.661	0.119	4.1	1.3	5.3	1.7	A-	
2988	682394	4	4	507	.525	.525	.071	.045	.353	.006	.544	.544	-.324	-.247	-.259	-1.015	0.099	-3.1	0.9	-0.5	1.0	A+	
2989	682846	4	6	491	.654	.090	.132	.124	.654	.000	.396	-.044	-.310	-.214	.396	-1.160	0.105	0.8	1.0	0.7	1.1	A-	A+
2990	682305	4	4	491	.729	.055	.079	.729	.136	.000	.386	-.172	-.231	.386	-.203	-1.591	0.111	0.4	1.0	0.3	1.0	A-	A-
2991	683968	4	4	491	.611	.022	.088	.277	.611	.002	.444	-.187	-.076	-.371	.444	-0.933	0.103	-0.1	1.0	-0.4	1.0	A-	A-
2992	681004	4	4	491	.515	.130	.244	.515	.108	.002	.447	-.209	-.120	.447	-.322	-0.445	0.101	0.1	1.0	0.3	1.0	B+	A-
2993	677467	4	4	491	.583	.238	.582	.081	.096	.002	.440	-.265	.440	-.232	-.139	-0.786	0.102	0.2	1.0	-0.5	1.0	A+	A+
2994	661155	4	4	491	.855	.049	.055	.041	.855	.000	.346	-.302	-.095	-.177	.346	-2.509	0.137	-0.4	1.0	1.5	1.3	A-	B-
2995	661699	4	4	989	.382	.173	.288	.382	.156	.001	.251	-.090	-.217	.251	.026	0.223	0.074	7.3	1.3	7.6	1.5	A-	A-
2996	661633	4	4	491	.426	.155	.189	.226	.426	.004	.562	-.218	-.236	-.236	.562	0.012	0.103	-3.5	0.9	-2.7	0.8	B+	B+
2997	682283	4	4	491	.733	.733	.071	.096	.094	.006	.439	.439	-.228	-.246	-.194	-1.616	0.112	-0.7	1.0	-0.7	0.9	A-	B-
2998	661695	4	4	491	.444	.143	.444	.165	.236	.012	.367	-.167	.367	-.180	-.098	-0.083	0.102	2.2	1.1	1.7	1.1	B-	A+
2999	661641	4	4	491	.187	.348	.145	.187	.310	.010	.234	.027	-.008	.234	-.184	1.478	0.128	2.0	1.2	3.2	1.5	A+	A+
3000	677506	4	4	491	.593	.057	.593	.293	.045	.012	.374	-.169	.374	-.207	-.151	-0.838	0.103	1.9	1.1	2.8	1.2	A+	A-
3001	682301	4	4	491	.454	.265	.454	.128	.141	.012	.328	-.041	.328	-.281	-.092	-0.135	0.102	3.2	1.1	3.4	1.2	A+	A+
3002	682285	4	4	491	.566	.084	.566	.191	.141	.018	.536	-.293	.536	-.215	-.206	-0.702	0.102	-2.7	0.9	-1.9	0.9	A+	A-
3003	682286	4	4	989	.707	.707	.069	.048	.161	.016	.472	.472	-.194	-.198	-.272	-1.524	0.078	-0.8	1.0	-1.5	0.9	A-	A-
3004	677024	4	4	491	.674	.037	.210	.065	.674	.014	.552	-.215	-.381	-.160	.552	-1.272	0.106	-3.2	0.9	-2.7	0.8	A+	A-
3005	677469	4	4	491	.758	.110	.045	.073	.758	.014	.185	-.099	-.100	-.016	.185	-1.769	0.115	3.1	1.2	4.9	1.7	A+	A-

Table B–2 (continued). Mathematics Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
3006	661681	4	4	491	.552	.552	.128	.145	.159	.016	.607	.607	-.255	-.221	-.317	-0.630	0.102	-4.9	0.8	-4.4	0.8	C-	A+
3007	683949	4	4	491	.462	.122	.462	.253	.147	.016	.475	-.195	.475	-.245	-.122	-0.176	0.102	-0.6	1.0	-0.4	1.0	A-	A+
3008	661381	4	4	491	.330	.251	.206	.193	.330	.020	.421	-.161	-.093	-.162	.421	0.531	0.108	0.0	1.0	0.8	1.1	A-	A+
3009	683543	4	4	496	.845	.040	.845	.058	.054	.002	.487	-.218	.487	-.287	-.267	-2.631	0.137	-1.2	0.9	-0.8	0.9	A-	
3010	682427	4	4	496	.811	.081	.087	.810	.022	.000	.470	-.291	-.316	.470	-.108	-2.334	0.128	-0.5	1.0	-1.4	0.8	B-	
3011	661670	4	4	496	.496	.147	.496	.117	.240	.000	.480	-.112	.480	-.189	-.327	-0.412	0.105	-0.1	1.0	0.5	1.0	A-	
3012	678102	4	4	496	.710	.073	.710	.165	.052	.000	.474	-.159	.474	-.314	-.257	-1.623	0.113	0.2	1.0	-0.8	0.9	B-	
3013	682396	4	4	496	.879	.014	.095	.879	.010	.002	.532	-.160	-.487	.532	-.134	-2.978	0.150	-1.9	0.8	-2.2	0.6	A-	
3014	661157	4	4	496	.825	.109	.030	.036	.825	.000	.571	-.510	-.162	-.162	.571	-2.451	0.131	-2.6	0.8	-1.7	0.8	A-	
3015	682454	4	4	496	.645	.117	.117	.121	.645	.000	.493	-.225	-.306	-.201	.493	-1.236	0.108	-0.3	1.0	-0.1	1.0	A-	
3016	677471	4	4	496	.766	.048	.085	.101	.766	.000	.350	-.147	-.241	-.164	.350	-1.999	0.119	2.2	1.1	1.0	1.1	A+	
3017	682420	4	4	496	.641	.224	.641	.079	.056	.000	.456	-.232	.456	-.234	-.257	-1.213	0.108	1.0	1.0	0.3	1.0	A-	
3018	676948	4	4	496	.752	.034	.147	.067	.752	.000	.389	-.275	-.199	-.191	.389	-1.901	0.117	1.5	1.1	1.3	1.2	C+	
3019	677021	4	4	496	.581	.248	.581	.147	.024	.000	.354	-.326	.354	-.051	-.101	-0.873	0.105	4.1	1.2	4.2	1.3	A-	
3020	683945	4	4	496	.770	.040	.770	.165	.024	.000	.512	-.203	.512	-.406	-.161	-2.028	0.120	-1.0	0.9	-1.9	0.8	A-	
3021	682619	4	4	496	.976	.976	.012	.006	.006	.000	.144	.144	-.059	-.073	-.130	-4.884	0.300	0.3	1.1	0.5	1.2	A+	
3022	661153	4	4	496	.843	.022	.843	.091	.042	.002	.551	-.147	.551	-.442	-.242	-2.612	0.136	-2.2	0.8	-2.2	0.7	B+	
3023	677694	4	4	496	.359	.302	.359	.276	.058	.004	.344	-.302	.344	-.008	-.081	0.362	0.110	3.1	1.2	4.2	1.4	B-	
3024	677512	4	4	496	.575	.190	.097	.575	.133	.006	.403	-.166	-.261	.403	-.153	-0.840	0.105	2.4	1.1	1.8	1.1	A+	
3025	677508	4	4	496	.417	.252	.135	.192	.417	.004	.444	-.003	-.159	-.405	.444	0.021	0.107	1.3	1.1	1.3	1.1	A-	
3026	676951	4	4	496	.639	.024	.639	.198	.131	.008	.451	-.030	.451	-.374	-.153	-1.201	0.108	1.3	1.1	1.4	1.1	A+	
3027	661671	4	4	496	.821	.022	.028	.821	.123	.006	.431	-.141	-.207	.431	-.308	-2.417	0.130	-0.1	1.0	1.2	1.2	A+	
3028	682290	4	4	496	.932	.931	.036	.016	.008	.008	.213	.213	-.075	-.158	-.109	-3.701	0.188	0.8	1.1	0.5	1.1	A+	
3029	676952	4	4	497	.837	.008	.006	.147	.837	.002	.368	-.090	.009	-.366	.368	-2.819	0.130	-0.4	1.0	-0.9	0.9	B+	
3030	661380	4	4	985	.354	.142	.175	.354	.328	.001	.257	-.229	-.258	.257	.118	-0.115	0.075	6.6	1.2	5.8	1.3	A+	A+
3031	682620	4	4	497	.787	.058	.787	.119	.036	.000	.441	-.274	.441	-.304	-.097	-2.435	0.119	-1.0	0.9	-1.3	0.8	A-	
3032	682455	4	4	497	.419	.419	.280	.123	.175	.004	.385	.385	-.218	-.121	-.135	-0.439	0.102	1.1	1.0	1.5	1.1	A+	
3033	682451	4	4	985	.192	.752	.192	.040	.016	.000	.332	-.149	.332	-.230	-.170	0.949	0.091	0.5	1.0	3.6	1.4	A-	A-
3034	677693	4	4	497	.264	.312	.231	.193	.264	.000	.287	-.212	-.020	-.050	.287	0.434	0.114	2.3	1.1	2.8	1.3	B-	
3035	682458	4	4	497	.425	.189	.101	.425	.276	.010	.331	-.113	-.114	.331	-.145	-0.470	0.101	2.5	1.1	2.5	1.2	A-	
3036	682456	4	4	497	.608	.338	.012	.032	.608	.010	.388	-.263	-.142	-.177	.388	-1.391	0.102	1.2	1.1	0.1	1.0	B-	
3037	682618	4	4	497	.952	.010	.012	.012	.952	.014	.353	-.111	-.146	-.190	.353	-4.300	0.215	-0.7	0.9	-2.1	0.5	A+	
3038	683948	4	4	497	.751	.074	.751	.123	.038	.014	.417	-.226	.417	-.211	-.132	-2.194	0.113	-0.4	1.0	-0.7	0.9	A+	
3039	677028	4	4	497	.543	.149	.163	.543	.131	.014	.566	-.289	-.218	.566	-.214	-1.065	0.100	-4.0	0.9	-3.7	0.8	A+	
3040	681001	4	4	497	.638	.638	.145	.066	.137	.014	.524	.524	-.177	-.206	-.328	-1.548	0.103	-2.8	0.9	-0.7	1.0	A+	

Table B–2 (continued). Mathematics Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M /F	W /B
3041	677470	4	4	497	.799	.046	.799	.097	.040	.018	.553	-.221	.553	-.391	-.149	-2.521	0.121	-3.1	0.8	-3.3	0.6	A+	
3042	677030	4	4	497	.543	.163	.543	.109	.165	.020	.303	.035	.303	-.164	-.222	-1.065	0.100	3.9	1.2	4.3	1.3	A-	
3043	681000	4	4	497	.660	.169	.660	.089	.066	.016	.473	-.276	.473	-.193	-.160	-1.667	0.104	-1.3	0.9	-1.4	0.9	A+	
3044	677695	4	4	498	.797	.054	.797	.098	.048	.002	.469	-.284	.469	-.273	-.178	-2.214	0.125	-0.4	1.0	-1.4	0.8	A-	A+
3045	682621	4	4	498	.781	.022	.116	.781	.080	.000	.501	-.179	-.293	.501	-.320	-2.093	0.122	-1.1	0.9	-1.1	0.9	A-	A-
3046	661637	4	4	498	.709	.127	.046	.118	.709	.000	.558	-.304	-.221	-.328	.558	-1.605	0.112	-2.1	0.9	-2.1	0.8	A+	A-
3047	677472	4	4	498	.783	.052	.106	.058	.783	.000	.352	-.256	-.116	-.224	.352	-2.108	0.122	1.6	1.1	1.3	1.2	B+	A-
3048	678021	4	4	498	.219	.337	.333	.104	.219	.006	.292	-.120	-.025	-.141	.292	1.234	0.122	1.9	1.1	3.8	1.6	A+	A+
3049	661702	4	4	498	.637	.088	.637	.183	.086	.006	.523	-.258	.523	-.359	-.101	-1.176	0.107	-1.0	1.0	-1.1	0.9	A+	A-
3050	682429	4	4	498	.337	.122	.060	.470	.337	.010	.493	-.311	-.206	-.126	.493	0.460	0.109	-1.3	0.9	-0.6	1.0	A-	B-
3051	661148	4	4	498	.602	.287	.602	.056	.044	.010	.255	.000	.255	-.243	-.233	-0.985	0.105	6.3	1.3	7.2	1.7	A-	A-
3052	683979	4	4	498	.619	.618	.052	.088	.233	.008	.356	.356	-.175	-.245	-.112	-1.074	0.106	3.7	1.2	2.7	1.2	A-	B+
3053	681012	4	4	498	.793	.028	.052	.118	.793	.008	.547	-.211	-.324	-.301	.547	-2.183	0.124	-2.2	0.9	-2.4	0.7	A-	A-
3054	678098	4	4	498	.655	.086	.116	.133	.655	.010	.579	-.260	-.296	-.260	.579	-1.280	0.108	-2.6	0.9	-2.3	0.8	A+	A+
3055	682397	4	4	498	.416	.076	.416	.028	.464	.016	.319	-.294	.319	-.118	-.073	0.019	0.105	4.6	1.2	4.4	1.4	A+	A-
3056	682393	4	4	498	.372	.410	.112	.090	.371	.016	.581	-.289	-.201	-.162	.581	0.264	0.107	-4.1	0.8	-2.1	0.8	A-	A+
3057	661384	4	4	498	.643	.076	.219	.643	.050	.012	.478	-.294	-.217	.478	-.181	-1.210	0.107	0.3	1.0	-0.1	1.0	A+	A+
3058	661640	4	4	498	.263	.199	.145	.382	.263	.012	.334	-.111	-.111	-.086	.334	0.923	0.116	1.1	1.1	3.3	1.4	A+	A-
3059	661678	4	4	498	.739	.030	.739	.074	.145	.012	.531	-.130	.531	-.284	-.327	-1.799	0.115	-1.3	0.9	-2.3	0.7	A-	A-
3060	682616	4	4	498	.349	.165	.255	.219	.349	.012	.378	-.112	-.105	-.173	.378	0.390	0.108	1.7	1.1	2.5	1.2	A-	A+
3061	683943	4	4	498	.747	.060	.094	.086	.747	.012	.607	-.279	-.314	-.301	.607	-1.853	0.116	-3.6	0.8	-3.1	0.7	A+	A-
3062	682622	4	4	502	.530	.319	.054	.530	.098	.000	.201	-.032	-.174	.201	-.156	-0.910	0.100	6.9	1.3	5.9	1.4	A-	
3063	661386	4	4	502	.861	.042	.044	.052	.861	.002	.437	-.296	-.224	-.199	.437	-2.959	0.138	-1.1	0.9	-2.2	0.7	A-	
3064	683966	4	4	502	.683	.042	.683	.195	.078	.002	.386	-.102	.386	-.302	-.135	-1.715	0.106	1.1	1.1	0.4	1.0	A+	
3065	677699	4	4	502	.566	.171	.183	.076	.566	.004	.360	-.237	-.110	-.162	.360	-1.091	0.101	2.4	1.1	1.7	1.1	B+	
3066	678026	4	4	502	.793	.112	.034	.793	.054	.008	.287	-.083	-.131	.287	-.246	-2.404	0.120	1.6	1.1	0.8	1.1	A-	
3067	682291	4	4	502	.618	.161	.108	.112	.618	.002	.475	-.240	-.299	-.150	.475	-1.358	0.102	-1.0	1.0	-0.5	1.0	A-	
3068	663179	4	4	502	.632	.631	.193	.078	.096	.002	.419	.419	-.209	-.214	-.202	-1.432	0.103	0.5	1.0	-0.3	1.0	A+	
3069	661390	4	4	502	.610	.026	.080	.279	.610	.006	.527	-.069	-.206	-.393	.527	-1.317	0.102	-2.5	0.9	-2.5	0.8	A+	
3070	661160	4	4	502	.641	.229	.641	.066	.050	.014	.380	-.202	.380	-.173	-.145	-1.485	0.103	1.5	1.1	0.4	1.0	B-	
3071	683981	4	4	502	.379	.378	.341	.189	.082	.010	.492	.492	-.208	-.240	-.095	-0.139	0.103	-1.4	0.9	-1.9	0.9	A+	
3072	682615	4	4	502	.442	.361	.080	.442	.110	.008	.502	-.318	-.203	.502	-.078	-0.469	0.101	-2.2	0.9	-1.5	0.9	A-	
3073	678023	4	4	502	.863	.034	.044	.040	.863	.020	.486	-.212	-.262	-.240	.486	-2.979	0.139	-1.5	0.9	-3.0	0.6	B+	
3074	683650	4	4	502	.173	.476	.209	.173	.125	.016	.101	-.187	.200	.101	-.005	1.168	0.129	2.6	1.2	6.3	2.2	A-	
3075	678024	4	4	502	.675	.030	.229	.042	.675	.024	.654	-.176	-.459	-.253	.654	-1.670	0.105	-6.0	0.8	-5.3	0.6	C+	

Table B–2 (continued). Mathematics Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
3076	682400	4	4	502	.596	.149	.165	.596	.072	.018	.457	-.305	-.132	.457	-.154	-1.244	0.101	-0.3	1.0	-1.0	0.9	B-	
3077	682453	4	4	502	.351	.163	.351	.239	.225	.022	.288	.002	.288	-.152	-.106	0.012	0.104	2.8	1.1	3.2	1.3	A+	
3078	677511	4	4	502	.390	.311	.137	.141	.390	.020	.370	-.116	.038	-.322	.370	-0.202	0.102	1.6	1.1	2.1	1.1	B-	
3079	661674	4	4	502	.614	.050	.046	.269	.614	.022	.633	-.208	-.292	-.387	.633	-1.337	0.102	-5.7	0.8	-4.8	0.7	A+	
3080	682452	4	4	502	.211	.259	.327	.181	.211	.022	.121	.080	-.164	.059	.121	0.874	0.120	4.0	1.3	5.1	1.8	A-	
3081	661667	4	4	502	.387	.386	.305	.120	.161	.028	.392	.392	-.125	-.128	-.148	-0.181	0.103	0.8	1.0	1.4	1.1	A+	
3082	677466	4	4	488	.709	.107	.131	.709	.053	.000	.556	-.316	-.335	.556	-.185	-2.007	0.110	-3.4	0.8	-3.2	0.7	A+	
3083	677473	4	4	488	.830	.830	.043	.035	.092	.000	.517	.517	-.225	-.177	-.401	-2.828	0.129	-2.7	0.8	-2.7	0.6	A+	
3084	661151	4	4	488	.807	.066	.059	.068	.807	.000	.496	-.284	-.291	-.226	.496	-2.652	0.124	-2.5	0.8	-2.1	0.7	A+	
3085	661698	4	4	488	.750	.750	.150	.041	.059	.000	.484	.484	-.361	-.117	-.245	-2.257	0.114	-1.9	0.9	-2.1	0.8	A-	
3086	683969	4	4	488	.299	.348	.186	.162	.299	.004	.373	-.055	-.183	-.196	.373	0.194	0.113	1.7	1.1	1.4	1.1	A+	
3087	676945	4	4	488	.471	.131	.148	.248	.471	.002	.538	-.226	-.306	-.189	.538	-0.753	0.102	-2.7	0.9	-2.2	0.9	B-	
3088	661696	4	4	488	.297	.234	.297	.309	.156	.004	.302	-.153	.302	-.133	-.018	0.206	0.113	2.6	1.2	5.0	1.5	A+	
3089	682299	4	4	488	.416	.336	.102	.416	.137	.008	.512	-.288	-.138	.512	-.197	-0.466	0.104	-1.6	0.9	-1.5	0.9	A-	
3090	682300	4	4	488	.807	.807	.133	.031	.023	.006	.255	.255	-.173	-.091	-.134	-2.652	0.124	1.7	1.1	1.0	1.1	B+	
3091	678029	4	4	488	.381	.320	.186	.381	.111	.002	.498	-.207	-.256	.498	-.137	-0.279	0.106	-1.1	1.0	-0.5	1.0	A-	
3092	683652	4	3	488	.621	.066	.156	.621	.145	.012	.543	-.213	-.221	.543	-.354	-1.519	0.104	-3.1	0.9	-1.2	0.9	B+	
3093	683653	4	4	488	.660	.129	.660	.117	.080	.014	.446	-.182	.446	-.232	-.255	-1.728	0.106	-0.7	1.0	0.6	1.1	A-	
3094	678103	4	4	488	.285	.307	.111	.281	.285	.016	.419	-.095	-.179	-.186	.419	0.283	0.114	-0.4	1.0	2.6	1.3	A+	
3095	661668	4	4	488	.639	.080	.166	.639	.096	.018	.318	-.120	-.282	.318	-.014	-1.617	0.105	3.0	1.1	1.9	1.2	A+	
3096	677933	4	4	488	.650	.650	.117	.137	.072	.025	.509	.509	-.279	-.232	-.213	-1.673	0.105	-2.2	0.9	-1.9	0.8	A+	
3097	681005	4	4	488	.687	.686	.139	.059	.094	.020	.520	.520	-.297	-.239	-.232	-1.877	0.108	-2.7	0.9	-1.5	0.9	A+	
3098	682297	4	4	488	.592	.592	.152	.150	.086	.020	.345	.345	-.211	-.198	-.044	-1.370	0.103	2.7	1.1	3.5	1.3	B+	
3099	661111	5	5	464	.735	.097	.735	.101	.067	.000	.427	-.255	.427	-.204	-.206	-1.770	0.115	-1.1	0.9	-1.8	0.8	A+	A+
3100	661112	5	5	473	.393	.252	.393	.182	.173	.000	.262	-.006	.262	-.199	-.129	-0.044	0.103	2.2	1.1	3.0	1.2	A-	
3101	661655	5	5	507	.533	.318	.533	.108	.041	.000	.309	-.177	.309	-.136	-.148	-0.714	0.098	2.0	1.1	1.4	1.1	A+	A-
3102	661657	5	5	485	.617	.616	.190	.136	.058	.000	.407	.407	-.271	-.117	-.223	-1.129	0.102	-1.0	1.0	-1.4	0.9	A+	
3103	661659	5	5	515	.550	.173	.550	.194	.083	.000	.283	-.169	.283	-.085	-.157	-0.778	0.098	2.8	1.1	2.9	1.2	A-	A+
3104	661661	5	5	476	.290	.059	.290	.221	.431	.000	.114	-.061	.114	.046	-.114	0.445	0.110	3.6	1.2	6.5	1.6	A+	
3105	661662	5	5	469	.369	.160	.288	.183	.369	.000	.380	-.149	-.135	-.175	.380	0.027	0.105	-0.6	1.0	0.7	1.0	A+	
3106	661663	5	5	454	.692	.099	.167	.692	.042	.000	.300	-.128	-.173	.300	-.177	-1.484	0.110	1.1	1.1	0.2	1.0	A+	
3107	661964	5	5	459	.649	.649	.192	.113	.046	.000	.391	.391	-.189	-.225	-.194	-1.318	0.107	-0.8	1.0	-0.3	1.0	A-	
3108	661965	5	5	490	.286	.380	.286	.184	.151	.000	.118	-.060	.118	-.039	-.025	0.514	0.108	3.8	1.2	4.9	1.5	A+	
3109	661683	5	5	490	.496	.141	.496	.210	.153	.000	.095	-.076	.095	-.062	.012	-0.529	0.100	7.6	1.3	6.5	1.4	A-	A+
3110	661684	5	5	454	.355	.313	.183	.150	.355	.000	.187	-.085	-.044	-.093	.187	0.128	0.108	4.3	1.2	3.7	1.3	A+	

Table B–2 (continued). Mathematics Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M /F	W /B
3111	661686	5	5	491	.261	.216	.261	.214	.310	.000	.138	.104	.138	-.070	-.161	0.580	0.111	2.7	1.2	4.3	1.4	B+	
3112	661688	5	5	476	.473	.103	.208	.473	.216	.000	.398	-.090	-.172	.398	-.248	-0.482	0.101	-1.1	1.0	-0.7	1.0	A+	
3113	661691	5	5	480	.360	.360	.125	.288	.227	.000	.250	.250	-.156	-.056	-.102	0.118	0.103	1.7	1.1	2.9	1.2	A+	
3114	661218	5	5	494	.431	.431	.239	.132	.198	.000	.335	.335	-.149	-.152	-.128	-0.226	0.100	1.4	1.1	1.3	1.1	A-	
3115	661211	5	5	506	.300	.300	.243	.255	.202	.000	.197	.197	-.018	-.127	-.068	0.298	0.105	2.2	1.1	3.6	1.3	A+	
3116	661214	5	5	481	.329	.208	.258	.328	.206	.000	.150	-.266	-.050	.150	.147	0.301	0.106	3.6	1.2	6.0	1.5	A+	A+
3117	661215	5	5	482	.403	.151	.299	.402	.147	.000	.440	-.195	-.234	.440	-.110	-0.031	0.102	-2.1	0.9	-1.3	0.9	A+	
3118	661648	5	5	464	.386	.142	.284	.188	.386	.000	.292	-.171	-.098	-.098	.292	-0.024	0.104	1.2	1.1	2.4	1.2	B+	
3119	661650	5	5	450	.556	.038	.342	.064	.556	.000	.303	-.143	-.156	-.202	.303	-0.835	0.104	1.6	1.1	1.4	1.1	A-	
3120	661682	5	5	506	.306	.306	.397	.123	.174	.000	.339	.339	-.299	-.138	.094	0.335	0.105	-0.1	1.0	1.8	1.1	B+	A+
3121	661685	5	5	489	.452	.235	.452	.182	.131	.000	.318	-.127	.318	-.161	-.126	-0.420	0.100	1.1	1.0	1.9	1.1	B-	
3122	661687	5	5	472	.318	.083	.566	.318	.034	.000	.281	-.172	-.122	.281	-.126	0.319	0.107	1.2	1.1	1.4	1.1	A+	
3123	661689	5	5	490	.486	.188	.180	.486	.147	.000	.300	-.187	-.196	.300	-.005	-0.527	0.099	2.0	1.1	2.0	1.1	A+	A-
3124	661690	5	5	489	.462	.194	.196	.462	.147	.000	.338	-.142	-.204	.338	-.087	-0.454	0.099	0.7	1.0	1.4	1.1	A+	A-
3125	661692	5	5	439	.574	.574	.257	.109	.059	.000	.459	.459	-.271	-.201	-.193	-0.907	0.106	-2.1	0.9	-2.2	0.9	C-	
3126	661693	5	5	451	.295	.080	.424	.202	.295	.000	.289	-.166	.126	-.372	.289	0.427	0.112	0.9	1.0	1.0	1.1	A+	
3127	661664	5	5	464	.472	.216	.162	.151	.472	.000	.424	-.106	-.267	-.195	.424	-0.394	0.103	-0.9	1.0	-0.4	1.0	A-	A-
3128	661113	5	5	474	.477	.162	.283	.477	.078	.000	.323	-.249	-.146	.323	-.013	-0.467	0.101	1.3	1.1	1.9	1.1	B-	
3129	661114	5	5	459	.490	.166	.490	.166	.179	.000	.197	-.166	.197	-.097	-.002	-0.569	0.102	4.3	1.2	4.7	1.3	A+	
3130	661115	5	5	451	.384	.162	.251	.384	.204	.000	.152	-.080	-.110	.152	.008	-0.054	0.105	3.8	1.2	5.3	1.4	A+	
3131	661116	5	5	447	.387	.273	.179	.161	.387	.000	.552	-.079	-.359	-.262	.552	-0.088	0.107	-5.0	0.8	-4.0	0.8	B-	
3132	661117	5	5	469	.544	.158	.209	.544	.090	.000	.431	-.146	-.354	.431	-.062	-0.806	0.102	-1.4	1.0	-0.8	1.0	A-	
3133	661118	5	5	472	.587	.108	.239	.066	.587	.000	.490	-.237	-.270	-.212	.490	-0.888	0.102	-3.3	0.9	-3.4	0.8	A-	A-
3134	661119	5	5	471	.845	.028	.051	.845	.076	.000	.433	-.133	-.259	.433	-.294	-2.639	0.135	-1.7	0.9	-2.7	0.7	B-	B-
3135	661120	5	5	443	.246	.246	.187	.153	.413	.000	.298	.298	.077	-.292	-.109	0.831	0.119	0.3	1.0	1.3	1.1	A+	
3136	661216	5	5	461	.451	.202	.200	.451	.148	.000	.450	-.221	-.215	.450	-.139	-0.299	0.103	-2.1	0.9	-1.8	0.9	A+	
3137	661649	5	5	494	.822	.073	.822	.079	.026	.000	.365	-.287	.365	-.108	-.225	-2.412	0.127	-1.0	0.9	0.8	1.1	C+	A-
3138	661213	5	5	451	.687	.133	.153	.687	.027	.000	.384	-.248	-.198	.384	-.140	-1.435	0.111	-0.1	1.0	-1.3	0.9	B+	A-
3139	661966	5	5	457	.632	.096	.166	.105	.632	.000	.506	-.213	-.283	-.246	.506	-1.244	0.106	-3.4	0.9	-3.1	0.8	A+	
3140	675131	5	5	449	.314	.339	.314	.252	.096	.000	.037	.154	.037	-.134	-.109	0.412	0.110	5.3	1.3	6.6	1.6	A+	
3141	675133	5	5	524	.693	.111	.693	.105	.092	.000	.225	-.039	.225	-.219	-.084	-1.547	0.104	3.1	1.2	2.9	1.3	A-	B+
3142	675134	5	5	481	.223	.353	.262	.222	.162	.000	.217	-.214	.022	.217	.006	0.879	0.118	0.8	1.1	3.3	1.4	A-	
3143	675135	5	5	465	.348	.146	.348	.312	.194	.000	.188	-.084	.188	-.065	-.075	0.125	0.107	3.8	1.2	5.2	1.4	A+	
3144	675136	5	5	494	.360	.360	.148	.413	.079	.000	.333	.333	-.110	-.208	-.070	0.139	0.103	0.4	1.0	1.7	1.1	A-	
3145	675137	5	5	460	.576	.267	.135	.576	.022	.000	.462	-.315	-.195	.462	-.152	-0.955	0.104	-2.0	0.9	-2.3	0.9	A-	

Table B–2 (continued). Mathematics Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M /F	W /B
3146	675138	5	5	472	.403	.087	.424	.403	.087	.000	.318	-.092	-.190	.318	-.129	-0.125	0.103	1.3	1.1	1.5	1.1	A-	
3147	675139	5	5	481	.782	.782	.098	.058	.062	.000	.350	.350	-.304	-.176	-.054	-2.126	0.119	-0.2	1.0	-0.4	1.0	B+	
3148	675140	5	5	505	.604	.139	.162	.604	.095	.000	.380	-.175	-.200	.380	-.176	-1.097	0.099	-0.6	1.0	-0.8	1.0	A-	
3149	675141	5	5	510	.267	.267	.194	.441	.098	.000	.135	.135	-.025	-.058	-.072	0.565	0.108	3.0	1.2	4.5	1.4	A-	A-
3150	675142	5	5	455	.420	.141	.180	.259	.420	.000	.348	-.193	-.196	-.067	.348	-0.234	0.104	0.1	1.0	0.1	1.0	A+	
3151	675143	5	5	474	.331	.266	.274	.331	.129	.000	.315	-.118	-.163	.315	-.070	0.286	0.107	0.7	1.0	2.3	1.2	A-	B-
3152	675144	5	5	453	.225	.060	.419	.296	.225	.000	.284	-.162	-.097	-.071	.284	0.818	0.120	-0.1	1.0	1.2	1.1	A+	
3153	675145	5	5	496	.688	.159	.688	.125	.028	.000	.365	-.276	.365	-.162	-.087	-1.487	0.105	-0.7	1.0	-0.8	0.9	A-	A-
3154	675146	5	5	465	.407	.222	.129	.243	.406	.000	.212	-.047	-.186	-.051	.212	-0.050	0.103	2.9	1.1	4.4	1.3	A+	
3155	675147	5	5	448	.750	.103	.118	.029	.750	.000	.430	-.320	-.200	-.146	.430	-1.839	0.118	-1.6	0.9	-1.9	0.8	B+	
3156	675148	5	5	489	.380	.176	.176	.268	.380	.000	.452	-.294	-.237	-.039	.452	-0.014	0.102	-2.5	0.9	-1.0	0.9	A+	A-
3157	675149	5	5	476	.639	.250	.076	.639	.036	.000	.351	-.152	-.273	.351	-.165	-1.205	0.104	0.0	1.0	0.6	1.0	A+	A-
3158	675370	5	5	468	.427	.212	.212	.427	.150	.000	.453	-.136	-.137	.453	-.315	-0.191	0.103	-2.7	0.9	-0.6	1.0	A-	
3159	675371	5	5	471	.756	.091	.110	.756	.042	.000	.465	-.286	-.238	.465	-.213	-1.843	0.117	-2.0	0.9	-2.2	0.8	A+	A+
3160	675372	5	5	461	.636	.226	.113	.636	.026	.000	.455	-.325	-.147	.455	-.230	-1.205	0.106	-2.2	0.9	-2.3	0.9	A+	A-
3161	675373	5	5	432	.630	.081	.178	.111	.630	.000	.431	-.177	-.245	-.210	.431	-1.191	0.109	-1.5	0.9	-1.7	0.9	A-	
3162	675374	5	5	456	.362	.362	.175	.274	.189	.000	.225	.225	-.147	-.064	-.060	0.107	0.106	2.0	1.1	4.0	1.3	B-	A-
3163	675375	5	5	476	.342	.137	.456	.342	.065	.000	.284	-.261	-.009	.284	-.165	0.261	0.105	1.2	1.1	1.7	1.1	A-	
3164	675376	5	5	496	.333	.294	.218	.333	.155	.000	.236	.039	-.238	.236	-.084	0.246	0.104	2.0	1.1	4.3	1.3	A-	A+
3165	675377	5	5	462	.491	.212	.177	.491	.119	.000	.418	-.195	-.189	.418	-.175	-0.564	0.101	-1.9	0.9	-1.5	0.9	A+	
3166	675378	5	5	444	.651	.651	.216	.083	.050	.000	.356	.356	-.198	-.218	-.129	-1.382	0.109	0.6	1.0	-0.4	1.0	A+	
3167	675379	5	5	482	.425	.114	.301	.425	.160	.000	.164	-.133	-.155	.164	.089	-0.267	0.100	4.5	1.2	5.2	1.3	A+	
3168	675772	5	5	469	.589	.162	.126	.124	.588	.000	.365	-.194	-.142	-.186	.365	-1.011	0.103	0.1	1.0	0.1	1.0	A+	
3169	675773	5	5	497	.376	.165	.203	.256	.376	.000	.382	-.127	-.320	-.021	.382	0.025	0.101	-1.0	1.0	-0.2	1.0	A+	
3170	675774	5	5	464	.834	.026	.056	.834	.084	.000	.435	-.178	-.233	.435	-.289	-2.391	0.133	-1.9	0.9	-2.0	0.7	B+	
3171	675775	5	5	468	.769	.034	.135	.769	.062	.000	.511	-.155	-.337	.511	-.300	-2.062	0.119	-2.8	0.8	-3.6	0.7	C+	
3172	675776	5	5	482	.301	.346	.301	.247	.106	.000	.168	-.026	.168	-.048	-.143	0.426	0.108	3.1	1.2	4.1	1.4	A-	
3173	675777	5	5	459	.534	.096	.220	.150	.534	.000	.383	-.206	-.196	-.137	.383	-0.764	0.103	-0.2	1.0	-0.1	1.0	A+	A-
3174	675778	5	5	475	.236	.168	.522	.236	.074	.000	.200	-.226	.046	.200	-.090	0.732	0.115	0.6	1.0	3.3	1.4	A-	A-
3175	675779	5	5	498	.125	.556	.187	.124	.133	.000	.084	.132	-.279	.084	.046	1.764	0.143	1.1	1.1	4.7	2.0	B-	
3176	675780	5	5	501	.369	.024	.248	.359	.369	.000	.172	-.139	-.164	.019	.172	0.032	0.101	4.1	1.2	4.1	1.3	A-	A-
3177	675781	5	5	487	.454	.359	.136	.454	.051	.000	.282	-.245	.031	.282	-.152	-0.438	0.100	2.7	1.1	2.5	1.1	A+	A+
3178	675782	5	5	470	.470	.074	.245	.211	.470	.000	.421	-.094	-.250	-.191	.421	-0.352	0.101	-1.7	0.9	-1.4	0.9	A-	
3179	675783	5	5	454	.449	.068	.216	.267	.449	.000	.316	-.213	-.164	-.081	.316	-0.372	0.105	1.9	1.1	2.6	1.2	A-	
3180	675784	5	5	464	.724	.060	.067	.149	.724	.000	.473	-.212	-.312	-.234	.473	-1.725	0.113	-2.5	0.9	-1.9	0.8	A+	

Table B–2 (continued). Mathematics Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
3181	675785	5	5	487	.575	.076	.236	.113	.575	.000	.362	-.164	-.086	-.314	.362	-0.901	0.100	0.3	1.0	0.3	1.0	A+	A+
3182	675786	5	5	469	.469	.183	.469	.235	.113	.000	.193	-.145	.193	-.006	-.120	-0.448	0.101	3.9	1.1	4.7	1.2	B+	
3183	675787	5	5	509	.613	.104	.230	.613	.053	.000	.381	-.244	-.223	.381	-.078	-1.068	0.099	-0.7	1.0	-1.0	0.9	A-	
3184	675789	5	5	483	.460	.112	.255	.174	.460	.000	.351	-.148	-.174	-.139	.351	-0.320	0.100	0.1	1.0	0.6	1.0	A+	A-
3185	675790	5	5	417	.796	.029	.796	.094	.082	.000	.216	-.005	.216	-.244	-.055	-2.101	0.130	1.1	1.1	1.3	1.2	A+	
3186	675791	5	5	427	.536	.164	.077	.222	.536	.000	.348	-.108	-.168	-.213	.348	-0.768	0.106	0.4	1.0	0.8	1.0	A-	
3187	676020	5	5	481	.686	.168	.686	.096	.050	.000	.389	-.190	.389	-.268	-.139	-1.602	0.108	-0.5	1.0	-0.3	1.0	A+	A+
3188	676022	5	5	446	.231	.182	.231	.305	.283	.000	.225	-.101	.225	.042	-.167	0.825	0.120	0.3	1.0	3.1	1.4	A+	
3189	676023	5	5	461	.462	.193	.462	.152	.193	.000	.389	-.149	.389	-.178	-.180	-0.377	0.102	-0.8	1.0	-0.3	1.0	A+	B-
3190	676024	5	5	494	.472	.095	.089	.472	.344	.000	.344	-.295	-.142	.344	-.094	-0.404	0.099	0.5	1.0	0.9	1.0	A-	A-
3191	676025	5	5	509	.631	.114	.065	.191	.631	.000	.498	-.342	-.271	-.166	.498	-1.284	0.100	-3.4	0.9	-3.6	0.8	A-	
3192	676026	5	5	463	.475	.147	.248	.475	.130	.000	.382	-.271	-.141	-.382	-.100	-0.459	0.102	0.0	1.0	-0.2	1.0	A-	
3193	676027	5	5	467	.872	.060	.047	.872	.021	.000	.363	-.237	-.206	.363	-.149	-2.846	0.146	-0.9	0.9	-1.2	0.8	A-	A-
3194	676028	5	5	465	.475	.254	.138	.133	.475	.000	.346	-.239	-.106	-.095	.346	-0.548	0.102	0.6	1.0	1.2	1.1	A+	
3195	676029	5	5	463	.197	.197	.436	.205	.162	.000	.184	.184	.116	-.236	-.096	0.930	0.124	1.0	1.1	2.3	1.3	A+	B-
3196	676030	5	5	464	.261	.166	.179	.394	.261	.000	.407	-.135	-.100	-.185	.407	0.655	0.114	-1.9	0.9	-0.1	1.0	A-	A-
3197	676031	5	5	484	.382	.306	.382	.217	.095	.000	.238	.049	.238	-.211	-.176	0.033	0.103	2.6	1.1	4.0	1.3	A+	A-
3198	676032	5	5	454	.601	.081	.132	.601	.185	.000	.229	-.178	-.197	.229	.008	-1.038	0.105	2.9	1.1	3.6	1.2	A+	
3199	676033	5	5	469	.252	.367	.252	.213	.168	.000	.096	-.026	.096	-.063	-.009	0.737	0.115	3.0	1.2	6.0	1.7	A-	A+
3200	676034	5	5	483	.354	.354	.331	.153	.161	.000	-.002	-.002	-.064	.047	.039	0.145	0.104	7.6	1.4	8.3	1.7	A+	
3201	676036	5	5	474	.485	.070	.146	.485	.300	.000	.293	-.104	-.127	.293	-.164	-0.522	0.101	2.4	1.1	2.6	1.1	A-	A+
3202	676037	5	5	471	.478	.200	.478	.166	.157	.000	.190	-.026	.190	-.167	-.063	-0.499	0.101	4.5	1.2	4.6	1.3	A+	
3203	676038	5	5	481	.393	.148	.114	.345	.393	.000	.472	-.126	-.165	-.281	.472	-0.117	0.103	-2.7	0.9	-1.7	0.9	A-	B+
3204	676039	5	5	491	.468	.136	.468	.200	.196	.000	.348	-.108	.348	-.310	-.032	-0.420	0.100	0.9	1.0	2.9	1.2	B-	A+
3205	676040	5	5	443	.659	.077	.659	.190	.074	.000	.372	-.125	.372	-.274	-.137	-1.434	0.109	0.0	1.0	-0.8	0.9	A+	A+
3206	676041	5	5	427	.621	.066	.126	.187	.621	.000	.425	-.264	-.249	-.149	.425	-1.236	0.110	-1.4	0.9	-0.6	1.0	A+	
3207	676439	5	5	464	.502	.183	.192	.123	.502	.000	.459	-.302	-.106	-.217	.459	-0.597	0.102	-2.5	0.9	-2.0	0.9	A-	
3208	676440	5	5	456	.559	.107	.559	.149	.184	.000	.417	-.185	.417	-.354	-.060	-0.851	0.104	-0.8	1.0	-0.8	1.0	A-	A+
3209	676441	5	5	479	.752	.752	.148	.054	.046	.000	.419	.419	-.377	-.206	-.003	-1.852	0.114	-1.4	0.9	-2.1	0.8	A+	A+
3210	676442	5	5	491	.745	.094	.116	.745	.045	.000	.491	-.341	-.262	.491	-.147	-1.804	0.112	-2.9	0.9	-2.9	0.8	B+	A+
3211	676443	5	5	492	.362	.258	.146	.234	.362	.000	.448	-.112	-.193	-.232	.448	0.074	0.102	-2.7	0.9	-1.6	0.9	A-	
3212	676444	5	5	480	.388	.388	.129	.327	.156	.000	.373	.373	-.240	-.118	-.127	-0.051	0.103	-0.3	1.0	0.7	1.0	A-	
3213	676445	5	5	486	.704	.115	.704	.138	.043	.000	.429	-.245	.429	-.287	-.092	-1.644	0.108	-1.6	0.9	-1.7	0.9	A+	A+
3214	676446	5	5	495	.497	.083	.281	.497	.139	.000	.302	-.234	-.086	.302	-.138	-0.536	0.099	1.7	1.1	2.0	1.1	A-	A-
3215	676447	5	5	468	.410	.141	.173	.276	.410	.000	.378	-.226	-.184	-.084	.378	-0.144	0.103	-0.2	1.0	0.4	1.0	A-	

Table B–2 (continued). Mathematics Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
3216	676448	5	5	489	.436	.264	.436	.133	.168	.000	.297	-.177	.297	-.072	-.120	-0.252	0.101	2.2	1.1	2.4	1.1	A-	
3217	676721	5	5	438	.432	.263	.164	.142	.432	.000	.490	-.130	-.287	-.227	.490	-0.261	0.106	-3.3	0.9	-2.4	0.9	A-	
3218	676722	5	5	481	.557	.225	.557	.173	.046	.000	.275	-.175	.275	-.139	-.052	-0.847	0.101	2.6	1.1	2.1	1.1	A-	
3219	676723	5	5	491	.752	.098	.049	.102	.752	.000	.419	-.236	-.132	-.274	.419	-1.915	0.113	-1.4	0.9	-2.1	0.8	A-	
3220	676724	5	5	486	.763	.049	.072	.763	.115	.000	.535	-.230	-.222	.535	-.376	-1.942	0.115	-3.5	0.8	-3.9	0.7	A-	A-
3221	676725	5	5	441	.624	.063	.283	.624	.029	.000	.382	-.310	-.190	.382	-.142	-1.191	0.107	-0.3	1.0	-0.8	1.0	A+	
3222	676726	5	5	497	.374	.511	.374	.070	.044	.000	.225	-.022	.225	-.245	-.170	0.018	0.101	2.3	1.1	3.7	1.2	A-	
3223	676727	5	5	496	.484	.196	.194	.127	.484	.000	.463	-.239	-.185	-.191	.463	-0.514	0.099	-2.6	0.9	-1.8	0.9	A+	
3224	676728	5	5	455	.798	.798	.035	.143	.024	.000	.370	.370	-.136	-.243	-.250	-2.157	0.125	-0.8	0.9	-1.4	0.8	B+	
3225	676729	5	5	481	.430	.383	.116	.071	.430	.000	.452	-.350	-.106	-.078	.452	-0.259	0.101	-2.2	0.9	-1.5	0.9	A+	
3226	676730	5	5	500	.592	.316	.592	.064	.028	.000	.338	-.258	.338	-.083	-.156	-1.127	0.100	0.9	1.0	0.3	1.0	A+	
3227	679636	5	5	463	.829	.015	.829	.030	.125	.000	.374	-.158	.374	-.211	-.257	-2.416	0.132	-0.9	0.9	-1.1	0.8	A+	
3228	679639	5	5	497	.588	.187	.145	.588	.080	.000	.364	-.203	-.159	.364	-.161	-1.041	0.100	0.0	1.0	-0.4	1.0	A+	A+
3229	681009	5	5	480	.433	.135	.210	.221	.433	.000	.371	-.252	-.187	-.051	.371	-0.233	0.101	-0.4	1.0	0.6	1.0	A+	
3230	681277	5	5	466	.612	.612	.084	.152	.152	.000	.165	.165	-.210	-.061	-.002	-1.156	0.104	4.3	1.2	3.8	1.2	A+	
3231	681278	5	5	464	.856	.078	.017	.050	.856	.000	.379	-.299	-.105	-.181	.379	-2.675	0.139	-1.1	0.9	-1.6	0.8	A+	
3232	681279	5	5	472	.663	.663	.030	.040	.267	.000	.325	.325	-.168	-.170	-.207	-1.409	0.106	0.5	1.0	0.1	1.0	A+	
3233	681280	5	5	458	.651	.651	.210	.090	.050	.000	.434	.434	-.241	-.240	-.184	-1.377	0.107	-1.6	0.9	-1.5	0.9	A+	A-
3234	681281	5	5	454	.606	.141	.606	.154	.099	.000	.246	-.243	.246	-.047	-.063	-1.116	0.104	2.4	1.1	2.3	1.1	A-	
3235	681282	5	5	481	.424	.173	.214	.424	.189	.000	.245	-.159	-.112	.245	-.038	-0.206	0.101	3.1	1.1	3.8	1.2	A+	B-
3236	681283	5	5	487	.366	.287	.164	.366	.183	.000	.393	-.344	-.045	.393	-.043	0.106	0.103	-1.1	1.0	0.8	1.1	B-	
3237	681284	5	4	464	.448	.205	.448	.248	.099	.000	.167	-.060	.167	-.017	-.172	-0.348	0.103	5.1	1.2	6.0	1.4	A-	
3238	681285	5	5	449	.209	.339	.209	.205	.247	.000	-.117	.244	-.117	-.202	.032	0.967	0.124	4.2	1.3	7.9	2.2	A-	
3239	681286	5	5	484	.643	.186	.643	.120	.052	.000	.396	-.260	.396	-.166	-.158	-1.209	0.103	-0.9	1.0	-1.7	0.9	A+	
3240	681585	5	5	469	.405	.136	.405	.175	.284	.000	.337	-.028	.337	-.202	-.176	-0.161	0.103	0.1	1.0	2.0	1.1	A-	A+
3241	681586	5	5	484	.700	.700	.161	.070	.068	.000	.447	.447	-.301	-.127	-.244	-1.541	0.107	-2.3	0.9	-2.3	0.8	A-	
3242	681587	5	5	478	.462	.165	.184	.462	.188	.000	.226	-.102	-.164	.226	-.029	-0.402	0.100	3.3	1.1	3.8	1.2	A-	A+
3243	681588	5	5	468	.874	.062	.036	.028	.874	.000	.422	-.324	-.199	-.151	.422	-2.869	0.147	-1.5	0.9	-2.3	0.7	A+	A-
3244	681589	5	5	484	.822	.822	.074	.050	.054	.000	.458	.458	-.253	-.287	-.205	-2.398	0.127	-2.1	0.9	-3.1	0.7	A-	
3245	681590	5	5	442	.208	.063	.208	.448	.281	.000	.017	-.051	.017	.117	-.117	0.987	0.125	3.0	1.2	6.0	1.9	A-	A-
3246	681591	5	5	500	.444	.218	.208	.444	.130	.000	.180	-.109	-.047	.180	-.076	-0.436	0.098	4.4	1.2	5.1	1.3	B+	A-
3247	681592	5	5	448	.645	.138	.645	.096	.121	.000	.335	-.238	.335	-.120	-.131	-1.292	0.107	0.2	1.0	-0.4	1.0	A+	
3248	681593	5	5	476	.603	.603	.187	.095	.116	.000	.480	.480	-.326	-.181	-.171	-1.122	0.103	-2.8	0.9	-3.0	0.8	A-	
3249	681594	5	5	504	.460	.226	.133	.181	.460	.000	.416	-.229	-.119	-.186	.416	-0.452	0.098	-1.9	0.9	-0.9	1.0	A-	
3250	681779	5	5	459	.211	.216	.427	.146	.211	.000	.332	-.275	.030	-.106	.332	0.925	0.122	-0.7	1.0	0.2	1.0	A+	A+

Table B–2 (continued). Mathematics Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M /F	W /B
3251	681780	5	5	469	.576	.017	.576	.083	.324	.000	.485	-.068	.485	-.202	-.374	-1.006	0.103	-2.6	0.9	-2.2	0.9	A+	
3252	681781	5	5	442	.412	.412	.165	.222	.201	.000	.298	.298	-.101	-.212	-.052	-0.138	0.106	1.4	1.1	2.1	1.1	A+	
3253	681782	5	5	483	.354	.354	.240	.240	.166	.000	.132	.132	-.044	-.030	-.085	0.139	0.103	3.5	1.2	5.3	1.4	A+	
3254	681783	5	5	488	.418	.301	.418	.133	.148	.000	.269	-.106	.269	-.082	-.158	-0.166	0.099	1.3	1.1	2.9	1.2	A+	
3255	681784	5	5	470	.670	.094	.115	.121	.670	.000	.500	-.163	-.340	-.242	.500	-1.375	0.107	-3.3	0.9	-2.4	0.8	A+	
3256	681785	5	5	475	.413	.297	.200	.413	.091	.000	.334	-.184	-.139	.334	-.087	-0.177	0.103	0.8	1.0	2.4	1.2	A+	A-
3257	681786	5	5	492	.482	.268	.175	.482	.075	.000	.454	-.254	-.200	.454	-.145	-0.539	0.099	-2.3	0.9	-2.3	0.9	A-	
3258	681787	5	5	493	.884	.053	.043	.884	.020	.000	.325	-.198	-.239	.325	-.082	-2.990	0.148	-0.5	0.9	-1.3	0.8	B+	A-
3259	681788	5	5	453	.188	.223	.188	.302	.287	.000	.156	-.028	.156	.015	-.125	1.104	0.128	0.9	1.1	4.7	1.7	A+	
3260	681920	5	5	477	.717	.069	.088	.717	.126	.000	.274	-.132	-.159	.274	-.135	-1.673	0.111	2.0	1.1	1.1	1.1	A+	
3261	681921	5	5	482	.849	.849	.062	.048	.041	.000	.301	.301	-.240	-.201	-.036	-2.656	0.135	-0.4	1.0	0.0	1.0	B+	A-
3262	681922	5	5	480	.750	.019	.056	.175	.750	.000	.347	-.164	-.175	-.230	.347	-1.862	0.114	0.0	1.0	-0.8	0.9	A-	
3263	681923	5	5	464	.382	.153	.381	.302	.164	.000	.256	-.012	.256	-.139	-.152	-0.053	0.105	2.3	1.1	3.3	1.2	B-	B-
3264	681924	5	5	450	.356	.169	.364	.356	.111	.000	.251	-.147	.002	.251	-.210	0.128	0.107	2.3	1.1	2.9	1.2	A-	
3265	681925	5	5	491	.338	.193	.277	.338	.191	.000	.206	-.069	-.090	.206	-.076	0.238	0.103	2.9	1.1	2.7	1.2	A+	A+
3266	681926	5	5	463	.350	.350	.350	.190	.110	.000	.236	.236	-.094	-.104	-.087	0.179	0.106	1.8	1.1	3.4	1.2	A-	
3267	681927	5	5	456	.344	.232	.333	.344	.090	.000	.043	-.038	.034	.043	-.071	0.164	0.107	5.8	1.3	6.3	1.5	A+	A-
3268	681928	5	5	512	.326	.326	.381	.219	.074	.000	.389	.389	-.128	-.148	-.226	0.338	0.103	-1.2	1.0	1.0	1.1	A-	A-
3269	681929	5	5	442	.867	.025	.041	.867	.068	.000	.295	-.179	-.128	.295	-.188	-2.700	0.147	-0.3	1.0	-0.6	0.9	A+	A+
3270	682000	5	5	479	.589	.159	.589	.067	.186	.000	.307	-.082	.307	-.210	-.177	-1.030	0.101	1.4	1.1	1.1	1.1	A-	
3271	682001	5	5	495	.424	.424	.317	.176	.083	.000	.279	.279	-.130	-.144	-.083	-0.277	0.100	1.9	1.1	2.3	1.1	A+	
3272	682002	5	5	470	.328	.204	.296	.172	.328	.000	.361	.024	-.297	-.116	.361	0.286	0.107	-0.2	1.0	0.7	1.1	A+	A+
3273	682003	5	5	478	.646	.146	.646	.153	.054	.000	.318	-.161	.318	-.145	-.189	-1.303	0.104	0.7	1.0	0.9	1.1	A+	A+
3274	682004	5	5	476	.435	.116	.305	.145	.435	.000	.329	-.034	-.327	-.005	.329	-0.176	0.102	1.6	1.1	1.7	1.1	A+	
3275	682005	5	5	475	.722	.097	.097	.722	.084	.000	.319	-.261	-.119	.319	-.110	-1.837	0.111	0.7	1.0	-0.2	1.0	A+	
3276	682006	5	5	484	.446	.118	.446	.275	.161	.000	.302	-.208	.302	-.117	-.085	-0.305	0.101	1.9	1.1	2.7	1.2	B-	A+
3277	682007	5	5	468	.464	.156	.126	.254	.464	.000	.348	-.204	-.303	.002	.348	-0.370	0.102	0.6	1.0	0.7	1.0	A+	
3278	682008	5	5	462	.662	.662	.104	.039	.195	.000	.219	.219	-.012	-.132	-.187	-1.468	0.107	2.3	1.1	3.4	1.3	A+	
3279	682009	5	5	502	.841	.058	.841	.066	.036	.000	.416	-.274	.416	-.259	-.130	-2.589	0.130	-1.4	0.9	-2.3	0.7	A+	A+
3280	682028	5	5	479	.593	.301	.593	.071	.035	.000	.246	-.029	.246	-.253	-.232	-1.062	0.102	2.9	1.1	3.3	1.2	A-	A-
3281	682029	5	5	504	.772	.772	.107	.079	.042	.000	.470	.470	-.256	-.255	-.247	-2.040	0.114	-2.4	0.9	-2.6	0.8	A+	
3282	682032	5	5	471	.539	.074	.539	.291	.096	.000	.450	-.193	.450	-.235	-.229	-0.788	0.102	-1.8	0.9	-1.9	0.9	A+	A+
3283	682035	5	5	483	.335	.335	.277	.248	.139	.000	.132	.132	-.098	.027	-.087	0.138	0.104	3.3	1.2	5.5	1.4	A+	A-
3284	682180	5	5	487	.811	.045	.105	.811	.039	.000	.523	-.241	-.374	.523	-.207	-2.310	0.124	-3.1	0.8	-3.4	0.7	C-	
3285	682181	5	5	459	.612	.612	.211	.133	.044	.000	.436	.436	-.188	-.303	-.162	-1.145	0.105	-1.6	0.9	-1.6	0.9	A-	

Table B–2 (continued). Mathematics Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
3286	682182	5	5	463	.551	.551	.261	.112	.076	.000	.372	.372	-.269	-.220	.010	-0.813	0.101	-0.5	1.0	-0.9	1.0	A-	
3287	682183	5	5	493	.700	.700	.225	.063	.012	.000	.401	.401	-.336	-.173	-.012	-1.517	0.107	-0.7	1.0	-1.2	0.9	A-	A-
3288	682184	5	5	451	.608	.093	.608	.169	.131	.000	.374	-.089	.374	-.237	-.202	-1.079	0.106	0.0	1.0	0.5	1.0	A+	
3289	682185	5	5	434	.279	.279	.320	.115	.286	.000	.286	.286	-.025	-.134	-.163	0.581	0.116	0.7	1.0	1.6	1.2	A-	B-
3290	682186	5	5	489	.777	.106	.777	.086	.031	.000	.418	-.255	.418	-.248	-.151	-2.057	0.117	-1.6	0.9	-1.8	0.8	A+	A+
3291	682187	5	5	481	.568	.568	.214	.156	.062	.000	.420	.420	-.208	-.266	-.109	-0.928	0.101	-1.4	1.0	-2.0	0.9	A+	A-
3292	682188	5	5	494	.591	.158	.178	.591	.073	.000	.317	-.200	-.126	.317	-.134	-1.070	0.100	1.0	1.0	0.9	1.1	A-	A-
3293	682189	5	5	509	.529	.108	.528	.238	.126	.000	.341	-.216	.341	-.157	-.110	-0.783	0.097	0.6	1.0	1.0	1.1	A+	
3294	683533	5	5	464	.782	.782	.099	.080	.039	.000	.418	.418	-.251	-.251	-.153	-2.028	0.121	-1.6	0.9	-1.6	0.8	A-	A-
3295	683535	5	5	460	.472	.472	.196	.102	.230	.000	.386	.386	-.260	-.205	-.065	-0.413	0.103	-0.4	1.0	-0.3	1.0	A-	
3296	683574	5	5	529	.212	.212	.221	.295	.272	.000	.078	.078	-.113	-.033	.068	0.978	0.114	2.6	1.2	5.9	1.7	A-	
3297	683575	5	5	439	.617	.617	.214	.089	.080	.000	.361	.361	-.253	-.164	-.092	-1.139	0.108	0.2	1.0	0.1	1.0	A-	
3298	683576	5	5	440	.264	.377	.193	.166	.264	.000	.422	-.101	-.293	-.058	.422	0.593	0.116	-2.1	0.9	-1.5	0.9	A+	
3299	683577	5	5	466	.092	.303	.513	.092	.092	.000	.148	-.125	.130	-.175	.148	1.978	0.167	0.0	1.0	2.7	1.6	A-	
3300	684043	5	5	490	.508	.508	.229	.186	.078	.000	.384	.384	-.218	-.175	-.121	-0.555	0.099	-0.2	1.0	0.2	1.0	A-	
3301	684044	5	5	446	.718	.220	.031	.717	.031	.000	.512	-.395	-.183	.512	-.200	-1.585	0.114	-3.4	0.8	-3.4	0.7	A-	A-
3302	684045	5	5	469	.872	.049	.055	.023	.872	.000	.455	-.229	-.290	-.239	.455	-2.795	0.146	-1.8	0.8	-3.0	0.6	A+	B-
3303	684046	5	5	476	.828	.074	.069	.029	.828	.000	.469	-.313	-.288	-.132	.469	-2.404	0.131	-2.0	0.9	-2.6	0.7	A+	C-
3304	684048	5	5	477	.426	.254	.195	.426	.126	.000	.505	-.284	-.197	.505	-.145	-0.302	0.102	-3.6	0.9	-2.6	0.9	B-	
3305	684050	5	5	457	.414	.414	.138	.158	.291	.000	.396	.396	-.104	-.270	-.134	-0.075	0.104	-1.4	0.9	0.5	1.0	A-	B+
3306	684052	5	5	483	.323	.340	.323	.232	.106	.000	.152	.060	.152	-.208	-.039	0.314	0.106	3.8	1.2	4.5	1.4	A+	
3307	684054	5	5	449	.450	.450	.216	.249	.085	.000	.208	.208	-.239	.030	-.065	-0.434	0.104	3.9	1.2	3.5	1.2	A-	
3308	684055	5	5	467	.617	.056	.289	.039	.617	.000	.318	-.282	-.140	-.139	.318	-1.140	0.104	0.9	1.0	1.1	1.1	A+	
3309	684057	5	5	481	.642	.048	.116	.642	.193	.000	.378	-.150	-.103	.378	-.295	-1.400	0.104	-0.4	1.0	0.0	1.0	A+	
3310	684061	5	5	495	.566	.093	.210	.131	.566	.000	.401	-.166	-.115	-.308	.401	-0.882	0.100	-0.5	1.0	-0.9	1.0	A+	
3311	684063	5	5	481	.405	.264	.405	.119	.212	.000	.568	-.296	.568	-.209	-.198	-0.137	0.101	-6.0	0.8	-4.7	0.8	B-	A-
3312	684064	5	5	501	.731	.086	.731	.122	.062	.000	.366	-.193	.366	-.147	-.251	-1.774	0.109	-0.4	1.0	-0.7	0.9	A+	
3313	684065	5	5	451	.597	.182	.204	.596	.018	.000	.368	-.211	-.208	.368	-.117	-1.031	0.105	0.0	1.0	-0.5	1.0	A+	
3314	684075	5	5	457	.411	.411	.276	.195	.118	.000	.255	.255	-.096	-.169	-.049	-0.232	0.104	2.3	1.1	5.5	1.4	A+	
3315	684076	5	5	492	.126	.455	.319	.100	.126	.000	.176	-.037	.018	-.162	.176	1.614	0.143	0.0	1.0	3.5	1.7	A+	
3316	684077	5	5	452	.385	.385	.146	.272	.197	.000	.191	.191	-.224	.050	-.091	-0.041	0.106	3.8	1.2	4.4	1.3	A-	
3317	684078	5	5	473	.359	.359	.326	.209	.106	.000	.351	.351	.009	-.256	-.222	0.121	0.105	0.4	1.0	0.6	1.0	A-	A-
3318	684079	5	5	552	.265	.266	.409	.264	.060	.000	.204	-.110	-.047	.204	-.076	0.612	0.104	1.9	1.1	4.1	1.4	A-	A+
3319	684081	5	5	460	.363	.222	.363	.274	.141	.000	.079	-.034	.079	-.007	-.059	0.073	0.106	5.7	1.3	6.2	1.5	A-	
3320	715929	6	6	2185	.398	.492	.052	.398	.059	.000	.348	-.179	-.210	.348	-.145	0.350	0.049	1.4	1.0	6.3	1.2	A-	A-

Table B–2 (continued). Mathematics Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M /F	W /B
3321	715930	6	6	2379	.866	.066	.866	.045	.023	.000	.333	-.177	.333	-.173	-.227	-2.434	0.065	0.0	1.0	-0.1	1.0	A+	A+
3322	715931	6	6	2149	.529	.153	.179	.139	.529	.000	.446	-.266	-.194	-.153	.446	-0.324	0.049	-2.1	1.0	0.0	1.0	A-	A+
3323	715932	6	6	2193	.730	.179	.031	.730	.060	.000	.342	-.217	-.183	.342	-.156	-1.401	0.054	2.8	1.1	2.5	1.1	A+	A-
3324	715933	6	6	2205	.532	.348	.084	.532	.037	.000	.413	-.250	-.232	.413	-.122	-0.320	0.048	-0.6	1.0	1.2	1.0	A+	A-
3325	715934	6	6	2167	.444	.155	.152	.249	.444	.000	.456	-.184	-.236	-.175	.456	0.092	0.048	-4.0	0.9	0.9	1.0	A+	A+
3326	715935	6	6	2199	.680	.095	.093	.680	.133	.000	.517	-.300	-.276	.517	-.216	-1.064	0.051	-5.7	0.9	-6.1	0.8	A-	A+
3327	715936	6	6	2132	.294	.055	.113	.539	.294	.000	.122	-.168	-.050	-.003	.122	0.948	0.052	9.3	1.2	9.9	1.7	A+	A+
3328	715937	6	6	2248	.764	.087	.764	.090	.059	.000	.382	-.187	.382	-.201	-.221	-1.592	0.055	-0.3	1.0	-0.3	1.0	A+	A-
3329	715938	6	6	2288	.377	.189	.285	.377	.149	.000	-.005	.021	-.039	-.005	.034	0.485	0.048	9.9	1.4	9.9	1.8	A+	A-
3330	715939	6	6	2196	.362	.150	.149	.362	.339	.000	.069	-.119	-.018	.069	.034	0.552	0.049	9.9	1.3	9.9	1.9	A-	A+
3331	715940	6	6	2203	.391	.391	.178	.318	.113	.000	.210	.210	-.174	.015	-.135	0.392	0.048	9.9	1.2	9.3	1.3	A+	A+
3332	715941	6	6	2202	.417	.225	.142	.216	.417	.000	.423	-.160	-.179	-.192	.423	0.273	0.048	-2.1	1.0	2.2	1.1	A-	A+
3333	715942	6	6	2183	.225	.123	.419	.225	.233	.000	.063	-.127	-.060	.063	.107	1.385	0.056	7.7	1.2	9.9	2.3	A-	A+
3334	715943	6	6	2266	.281	.465	.188	.281	.067	.000	.163	.030	-.128	.163	-.153	0.997	0.051	6.4	1.2	9.9	1.8	A-	A-
3335	715944	6	6	2303	.204	.496	.165	.204	.134	.000	.068	.126	-.188	.068	-.061	1.502	0.056	6.1	1.2	9.9	2.4	A-	A+
3336	715945	6	6	2251	.265	.270	.206	.259	.265	.000	.271	-.053	-.111	-.116	.271	1.113	0.052	1.9	1.1	9.8	1.6	A-	A-
3337	715946	6	6	2174	.338	.338	.195	.402	.066	.000	.388	.388	-.063	-.240	-.164	0.701	0.050	-1.4	1.0	4.4	1.2	A+	A+
3338	715947	6	6	2271	.452	.279	.452	.140	.129	.000	.419	-.193	.419	-.255	-.100	0.071	0.047	-1.5	1.0	2.1	1.1	A+	A-
3339	715948	6	6	2293	.429	.147	.233	.191	.429	.000	.367	-.166	-.187	-.112	.367	0.185	0.047	1.8	1.0	4.9	1.2	A+	A+
3340	715949	6	6	2228	.199	.199	.086	.343	.371	.000	.256	.256	-.083	-.213	.046	1.569	0.058	1.3	1.0	9.2	1.7	A+	A-
3341	715950	6	6	2190	.358	.358	.279	.293	.071	.000	.328	.328	-.214	-.055	-.140	0.569	0.049	1.5	1.0	7.4	1.3	A+	A+
3342	715951	6	6	2332	.477	.126	.477	.160	.237	.000	.379	-.208	.379	-.200	-.111	0.004	0.046	1.1	1.0	5.0	1.2	A+	A+
3343	715952	6	6	2156	.364	.226	.307	.364	.103	.000	.075	-.050	-.047	.075	.021	0.546	0.050	9.9	1.4	9.9	1.8	A-	A-
3344	715953	6	6	2257	.551	.181	.175	.551	.093	.000	.393	-.206	-.164	.393	-.185	-0.382	0.047	0.8	1.0	2.1	1.1	A-	A-
3345	715954	6	6	2270	.751	.033	.751	.114	.102	.000	.264	-.169	.264	-.100	-.172	-1.532	0.054	5.2	1.2	6.5	1.4	A+	A-
3346	715955	6	6	2224	.416	.495	.037	.053	.415	.000	.454	-.288	-.222	-.170	.454	0.334	0.048	-4.0	0.9	2.8	1.1	A-	C-
3347	715956	6	6	2254	.481	.104	.481	.265	.150	.000	.309	-.124	.309	-.087	-.219	-0.050	0.047	6.2	1.1	5.6	1.2	A-	A-
3348	715957	6	6	2221	.269	.183	.269	.168	.380	.000	.178	-.087	.178	-.105	-.012	1.072	0.053	5.6	1.1	9.9	2.0	A-	A+
3349	715958	6	6	2193	.588	.169	.588	.137	.106	.000	.373	-.185	.373	-.124	-.233	-0.636	0.049	2.5	1.1	3.7	1.1	A+	A-
3350	715959	6	6	2217	.453	.159	.199	.453	.189	.000	.300	-.146	-.136	.300	-.106	0.062	0.048	5.8	1.1	8.3	1.3	A+	A+
3351	715960	6	6	2156	.623	.039	.217	.121	.623	.000	.353	-.126	-.151	-.260	.353	-0.749	0.050	3.0	1.1	3.0	1.1	A+	A-
3352	715961	6	6	2198	.618	.137	.129	.116	.618	.000	.400	-.182	-.228	-.173	.400	-0.709	0.049	1.0	1.0	0.1	1.0	A+	A-
3353	715962	6	6	2184	.447	.196	.234	.447	.122	.000	.189	-.073	-.096	.189	-.073	0.095	0.048	9.9	1.2	9.9	1.5	A-	A-
3354	715963	6	6	2255	.201	.463	.207	.129	.201	.000	.378	-.200	-.055	-.088	.378	1.533	0.057	-3.4	0.9	6.7	1.5	A+	A-
3355	715964	6	6	2214	.300	.200	.336	.300	.164	.000	.189	-.136	-.028	.189	-.051	0.886	0.051	7.1	1.2	9.9	1.6	A+	A+

Table B–2 (continued). Mathematics Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
3356	715965	6	6	2260	.621	.113	.183	.082	.621	.000	.512	-.303	-.326	-.095	.512	-0.779	0.049	-5.6	0.9	-4.5	0.9	A+	A-
3357	716858	6	6	2321	.526	.526	.217	.167	.090	.000	.443	.443	-.216	-.198	-.204	-0.270	0.047	-2.2	1.0	-0.7	1.0	A+	A-
3358	716859	6	6	2203	.273	.136	.175	.416	.273	.000	.269	-.207	-.280	.117	.269	1.048	0.053	3.6	1.1	8.7	1.5	A-	A-
3359	716860	6	6	2256	.749	.061	.125	.066	.749	.000	.492	-.151	-.362	-.233	.492	-1.523	0.054	-4.2	0.9	-3.6	0.8	A+	A-
3360	716861	6	6	2221	.399	.376	.398	.065	.161	.000	.266	-.014	.266	-.271	-.154	0.388	0.048	6.8	1.1	7.8	1.3	A+	A-
3361	716862	6	6	2191	.633	.633	.079	.080	.208	.000	.512	.512	-.244	-.249	-.280	-0.825	0.050	-5.4	0.9	-5.0	0.8	A+	A+
3362	716863	6	6	2270	.584	.101	.220	.584	.095	.000	.408	-.241	-.176	.408	-.191	-0.608	0.048	0.6	1.0	0.7	1.0	A-	A+
3363	716864	6	6	2283	.655	.080	.107	.158	.655	.000	.477	-.219	-.324	-.184	.477	-0.983	0.049	-3.6	0.9	-3.1	0.9	A-	A+
3364	716865	6	6	2260	.721	.063	.721	.156	.060	.000	.359	-.214	.359	-.181	-.182	-1.332	0.052	1.4	1.0	1.6	1.1	A-	A-
3365	716866	6	6	2143	.767	.057	.767	.119	.057	.000	.353	-.148	.353	-.226	-.179	-1.631	0.057	1.7	1.1	0.9	1.1	A-	A-
3366	716867	6	6	2127	.874	.026	.874	.054	.047	.000	.377	-.180	.377	-.233	-.209	-2.516	0.070	-1.3	0.9	-2.0	0.8	A+	A-
3367	716868	6	6	2233	.597	.027	.366	.597	.010	.000	.153	-.155	-.099	.153	-.022	-0.661	0.048	9.9	1.3	9.9	1.4	A+	A+
3368	716869	6	6	2185	.840	.840	.026	.110	.024	.000	.384	.384	-.234	-.232	-.203	-2.215	0.064	-0.6	1.0	-1.1	0.9	A+	A-
3369	716870	6	6	2147	.596	.097	.138	.169	.596	.000	.450	-.175	-.246	-.225	.450	-0.623	0.049	-2.5	1.0	-2.1	0.9	A+	A-
3370	716871	6	6	2161	.864	.027	.864	.079	.030	.000	.423	-.207	.423	-.248	-.261	-2.425	0.069	-1.9	0.9	-3.4	0.7	A-	A+
3371	716872	6	6	2347	.312	.117	.440	.131	.312	.000	.361	-.175	-.048	-.259	.361	0.842	0.049	0.0	1.0	6.1	1.3	A+	A-
3372	716873	6	6	2247	.387	.387	.032	.057	.523	.000	.374	.374	-.230	-.214	-.183	0.463	0.048	0.5	1.0	5.7	1.2	A-	A+
3373	716874	6	6	2282	.192	.192	.574	.103	.132	.000	.195	.195	.077	-.207	-.155	1.610	0.058	3.0	1.1	9.9	1.9	A-	A+
3374	716875	6	6	2229	.479	.249	.141	.131	.479	.000	.438	-.149	-.219	-.231	.438	-0.032	0.047	-2.9	1.0	0.2	1.0	A-	A-
3375	716876	6	6	2199	.384	.205	.384	.152	.260	.000	.289	-.270	.289	-.092	.003	0.439	0.049	4.6	1.1	7.5	1.3	A+	A-
3376	716877	6	6	2184	.359	.114	.270	.359	.257	.000	.235	-.178	-.123	.235	-.004	0.580	0.050	6.7	1.1	9.9	1.6	A-	A+
3377	716878	6	6	2300	.248	.245	.293	.213	.248	.000	.267	-.029	-.098	-.142	.267	1.203	0.053	2.3	1.1	7.1	1.4	A+	A+
3378	716879	6	6	2275	.597	.094	.218	.597	.092	.000	.404	-.154	-.278	.404	-.134	-0.632	0.048	0.9	1.0	0.7	1.0	A+	A-
3379	716880	6	6	2126	.796	.062	.104	.796	.038	.000	.436	-.194	-.249	.436	-.277	-1.793	0.059	-2.2	0.9	-3.2	0.8	A+	A+
3380	716881	6	6	2248	.453	.263	.453	.161	.123	.000	.381	-.130	.381	-.243	-.131	0.077	0.047	0.4	1.0	2.9	1.1	A-	A-
3381	716882	6	6	2183	.292	.153	.208	.292	.348	.000	.135	-.214	-.211	.135	.213	0.931	0.052	9.2	1.2	9.9	1.8	A-	A+
3382	716883	6	6	2214	.442	.079	.442	.447	.033	.000	.401	-.146	.401	-.268	-.150	0.089	0.048	-0.4	1.0	3.0	1.1	A+	A-
3383	716884	6	6	2224	.506	.268	.149	.506	.077	.000	.398	-.231	-.198	.398	-.099	-0.203	0.047	0.0	1.0	2.0	1.1	A+	A-
3384	716885	6	6	2214	.291	.360	.139	.210	.291	.000	.089	.160	-.147	-.164	.089	0.928	0.051	9.9	1.3	9.9	1.9	A+	A+
3385	716886	6	6	2182	.566	.136	.110	.188	.566	.000	.159	-.082	-.116	-.037	.159	-0.471	0.048	9.9	1.3	9.9	1.5	A+	A-
3386	716887	6	6	2267	.500	.122	.171	.500	.207	.000	.332	-.251	-.188	.332	-.032	-0.150	0.047	5.4	1.1	4.8	1.1	A+	A-
3387	716888	6	6	2211	.498	.498	.091	.064	.348	.000	.285	.285	-.188	-.265	-.049	-0.140	0.048	7.4	1.1	8.0	1.2	A-	A-
3388	716889	6	6	2228	.666	.167	.089	.666	.079	.000	.421	-.150	-.297	.421	-.216	-0.993	0.050	-0.3	1.0	-1.1	1.0	A+	A+
3389	716890	6	6	2186	.732	.065	.105	.732	.098	.000	.479	-.291	-.274	.479	-.190	-1.442	0.054	-3.3	0.9	-4.1	0.8	A-	A-
3390	716891	6	6	2163	.822	.131	.039	.822	.008	.000	.468	-.307	-.324	.468	-.144	-2.014	0.062	-2.8	0.9	-4.5	0.7	A+	A-

Table B–2 (continued). Mathematics Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M /F	W /B
3391	716892	6	6	2175	.271	.215	.217	.296	.271	.000	.211	-.090	-.085	-.048	.211	1.044	0.053	5.1	1.1	9.5	1.5	A+	A+
3392	716893	6	6	2235	.559	.559	.203	.158	.081	.000	.413	.413	-.217	-.162	-.217	-0.454	0.048	0.8	1.0	1.3	1.0	A-	A-
3393	716894	6	6	2252	.580	.040	.155	.580	.224	.000	.088	-.073	-.045	.088	-.031	-0.539	0.047	9.9	1.3	9.9	1.6	A-	A-
3394	716895	6	6	2182	.289	.242	.289	.209	.260	.000	.180	.021	.180	-.132	-.085	0.991	0.052	7.3	1.2	9.9	1.6	A+	A+
3395	716896	6	6	2315	.774	.774	.025	.138	.062	.000	.295	.295	-.250	-.107	-.195	-1.662	0.055	2.9	1.1	4.4	1.3	A+	B-
3396	716897	6	6	2324	.313	.064	.367	.313	.255	.000	.082	-.070	.013	.082	-.063	0.797	0.049	9.9	1.3	9.9	1.9	A-	A-
3397	719213	6	6	2153	.650	.084	.650	.161	.105	.000	.318	-.123	.318	-.190	-.155	-0.932	0.051	4.9	1.1	4.7	1.2	A+	B-
3398	719215	6	6	2208	.351	.351	.259	.216	.174	.000	.172	.172	-.064	-.159	.029	0.567	0.049	9.9	1.2	9.9	1.6	A+	A-
3399	719216	6	6	2205	.429	.231	.429	.183	.156	.000	.257	-.139	.257	-.084	-.100	0.228	0.048	7.5	1.1	9.3	1.3	A+	A-
3400	719217	6	6	2267	.431	.095	.298	.431	.176	.000	.305	-.209	-.172	.305	-.029	0.177	0.047	4.5	1.1	9.1	1.3	A-	A+
3401	719219	6	6	2190	.442	.442	.245	.151	.162	.000	.406	.406	-.103	-.221	-.212	0.122	0.048	-0.2	1.0	0.9	1.0	A+	A-
3402	734645	6	6	2184	.443	.207	.236	.443	.114	.000	.255	-.072	-.069	.255	-.216	0.120	0.048	7.5	1.1	9.9	1.3	A-	A-
3403	734646	6	6	2187	.429	.063	.416	.429	.092	.000	.280	-.206	-.061	.280	-.203	0.248	0.048	5.0	1.1	9.8	1.3	A-	A-
3404	734647	6	6	2246	.486	.486	.203	.115	.197	.000	.399	.399	-.196	-.196	-.146	-0.093	0.047	-0.8	1.0	2.6	1.1	A+	A-
3405	734648	6	6	2166	.566	.566	.276	.105	.053	.000	.214	.214	-.088	-.117	-.138	-0.544	0.048	9.9	1.2	9.5	1.3	A+	A-
3406	734649	6	6	2131	.383	.406	.383	.120	.091	.000	.251	.015	.251	-.231	-.189	0.424	0.049	6.0	1.1	9.9	1.4	A-	A+
3407	734650	6	6	2123	.183	.476	.183	.263	.078	.000	.061	.188	.061	-.162	-.172	1.653	0.061	5.9	1.2	9.9	2.4	A-	A+
3408	734651	6	6	2251	.752	.752	.089	.101	.058	.000	.360	.360	-.187	-.237	-.132	-1.560	0.054	1.2	1.0	0.7	1.0	A+	A+
3409	734652	6	6	2314	.362	.204	.131	.302	.362	.000	.216	.038	-.160	-.142	.216	0.546	0.048	8.2	1.2	9.9	1.6	A+	A-
3410	734653	6	6	2213	.380	.032	.194	.380	.394	.000	.464	-.128	-.362	.464	-.121	0.466	0.049	-5.3	0.9	0.3	1.0	A+	A+
3411	734654	6	6	2250	.601	.092	.112	.601	.195	.000	.302	-.238	-.158	.302	-.074	-0.672	0.048	5.9	1.1	5.6	1.2	A+	A+
3412	734655	6	6	2276	.495	.135	.143	.495	.227	.000	.125	-.098	-.069	.125	-.011	-0.125	0.047	9.9	1.3	9.9	1.5	A+	A-
3413	734656	6	6	2273	.535	.231	.151	.535	.084	.000	.405	-.260	-.162	.405	-.126	-0.362	0.047	0.0	1.0	1.0	1.0	A-	A-
3414	734657	6	6	2275	.517	.203	.174	.106	.517	.000	.475	-.264	-.216	-.160	.475	-0.226	0.047	-4.3	0.9	-1.2	1.0	A-	A+
3415	734658	6	6	2254	.432	.121	.432	.375	.072	.000	.358	-.141	.358	-.222	-.092	0.213	0.047	1.6	1.0	6.0	1.2	A+	A-
3416	734659	6	6	2218	.371	.207	.371	.198	.223	.000	.304	-.059	.304	-.184	-.119	0.499	0.049	3.9	1.1	7.1	1.3	A-	C-
3417	734660	6	6	2283	.326	.180	.362	.326	.131	.000	.178	-.086	-.101	.178	-.005	0.709	0.049	8.5	1.2	9.9	1.6	A-	A+
3418	734661	6	6	2153	.148	.523	.184	.145	.148	.000	.229	.008	-.096	-.137	.229	1.990	0.065	0.3	1.0	7.8	1.8	A+	A+
3419	734662	6	6	2194	.400	.175	.088	.338	.400	.000	.402	-.234	-.239	-.085	.402	0.386	0.049	-0.9	1.0	1.6	1.1	A-	A+
3420	734663	6	6	2299	.316	.118	.133	.433	.316	.000	.215	-.088	-.116	-.065	.215	0.793	0.049	7.6	1.2	9.8	1.5	A+	A+
3421	734664	6	6	2217	.528	.211	.161	.528	.100	.000	.313	-.198	-.156	.313	-.062	-0.329	0.048	6.2	1.1	5.9	1.2	A+	A-
3422	734665	6	6	2234	.248	.216	.244	.292	.248	.000	.243	-.148	-.115	.012	.243	1.155	0.053	2.7	1.1	7.9	1.5	A+	A-
3423	734666	6	6	2272	.765	.048	.087	.101	.765	.000	.455	-.267	-.220	-.247	.455	-1.613	0.055	-2.4	0.9	-2.7	0.9	A+	B-
3424	734667	6	6	2234	.803	.803	.041	.070	.086	.000	.441	.441	-.255	-.265	-.205	-1.891	0.059	-2.2	0.9	-2.6	0.9	A+	A-
3425	734668	6	6	2273	.350	.134	.152	.364	.350	.000	.079	-.095	-.170	.116	.079	0.591	0.049	9.9	1.3	9.9	1.8	A-	A-

Table B–2 (continued). Mathematics Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M /F	W /B
3426	734669	6	6	2234	.500	.119	.115	.500	.265	.000	.454	-.172	-.248	.454	-.208	-0.188	0.048	-2.3	1.0	-0.9	1.0	A-	A-
3427	734670	6	6	2241	.476	.232	.075	.476	.216	.000	.434	-.274	-.163	.434	-.141	-0.053	0.047	-2.0	1.0	-0.3	1.0	A+	A+
3428	734671	6	6	2229	.465	.122	.465	.342	.072	.000	.295	-.226	.295	-.074	-.149	0.062	0.047	6.2	1.1	8.3	1.3	A+	A-
3429	734672	6	6	2228	.725	.071	.171	.032	.725	.000	.255	-.201	-.110	-.117	.255	-1.335	0.053	6.0	1.2	4.0	1.2	A+	A-
3430	734673	6	6	2214	.373	.104	.371	.373	.152	.000	.209	-.085	-.168	.209	.016	0.488	0.049	8.6	1.2	9.9	1.5	A+	A-
3431	734674	6	6	2317	.170	.207	.075	.170	.549	.000	.264	-.136	-.128	.264	-.021	1.772	0.060	-0.2	1.0	8.6	1.7	A-	A-
3432	734675	6	6	2242	.380	.119	.257	.245	.380	.000	.222	-.058	-.090	-.116	.222	0.464	0.049	9.2	1.2	9.9	1.5	A+	A+
3433	734676	6	6	2302	.275	.275	.276	.337	.112	.000	.244	.244	-.058	-.083	-.140	1.023	0.051	3.7	1.1	9.9	1.7	A+	A-
3434	734677	6	6	2246	.368	.203	.368	.293	.136	.000	.065	.002	.065	.003	-.098	0.486	0.048	9.9	1.4	9.9	1.6	A+	A+
3435	734678	6	6	2353	.469	.322	.469	.122	.088	.000	-.018	.114	-.018	-.101	-.040	0.039	0.046	9.9	1.5	9.9	1.8	A-	A-
3436	734679	6	6	2230	.487	.119	.224	.487	.170	.000	.189	-.088	-.102	.189	-.062	-0.096	0.047	9.9	1.2	9.9	1.4	A+	A-
3437	734680	6	6	2186	.467	.157	.467	.182	.194	.000	.211	-.093	.211	-.162	-.023	0.038	0.048	9.9	1.2	9.9	1.4	A-	A+
3438	734681	6	6	2254	.307	.126	.205	.361	.307	.000	.257	-.062	-.109	-.112	.257	0.874	0.050	4.4	1.1	9.9	1.5	A+	A-
3439	734682	6	6	2192	.350	.228	.185	.349	.237	.000	.015	.103	-.121	.015	-.008	0.578	0.049	9.9	1.4	9.9	1.8	A-	A+
3440	734683	6	6	2288	.513	.513	.227	.113	.147	.000	.411	.411	-.103	-.260	-.226	-0.250	0.047	0.2	1.0	1.0	1.0	A+	A-
3441	734684	6	6	2268	.167	.167	.201	.181	.451	.000	.053	.053	-.109	-.163	.174	1.805	0.060	5.1	1.2	9.9	2.2	A+	A-
3442	730180	7	7	1156	.235	.306	.235	.343	.116	.000	.214	-.140	.214	.004	-.088	1.485	0.075	1.4	1.1	8.9	1.9	A+	A+
3443	730181	7	7	1285	.286	.286	.198	.165	.351	.000	.274	.274	-.175	-.170	.020	1.226	0.068	1.6	1.1	6.1	1.5	A-	A-
3444	730182	7	7	1224	.677	.677	.184	.055	.084	.000	.484	.484	-.315	-.241	-.178	-0.868	0.069	-2.4	0.9	-3.1	0.9	A+	A-
3445	730183	7	7	1203	.589	.589	.201	.111	.098	.000	.396	.396	-.185	-.173	-.222	-0.299	0.066	0.9	1.0	1.6	1.1	A-	A-
3446	730184	7	7	1181	.562	.179	.562	.104	.155	.000	.319	-.117	.319	-.187	-.155	-0.244	0.066	4.8	1.1	4.9	1.2	A+	A+
3447	730185	7	7	1193	.450	.450	.296	.160	.094	.000	.360	.360	-.064	-.271	-.172	0.351	0.065	1.5	1.0	3.8	1.2	A-	A-
3448	730186	7	7	1194	.449	.260	.449	.174	.117	.000	.261	-.099	.261	-.111	-.138	0.365	0.065	5.4	1.1	8.3	1.4	A-	A+
3449	730187	7	7	1232	.537	.537	.215	.160	.088	.000	.448	.448	-.247	-.198	-.174	-0.067	0.064	-1.8	1.0	0.2	1.0	A-	A-
3450	730188	7	7	1135	.495	.155	.495	.208	.142	.000	.427	-.189	.427	-.201	-.182	0.142	0.066	-1.4	1.0	1.6	1.1	A-	A-
3451	730189	7	7	1178	.526	.131	.225	.119	.525	.000	.322	-.189	-.184	-.063	.322	-0.007	0.066	4.6	1.1	4.3	1.2	A+	A-
3452	730190	7	7	1178	.806	.043	.806	.048	.104	.000	.357	-.213	.357	-.178	-.198	-1.652	0.081	0.4	1.0	0.4	1.0	A+	A-
3453	730191	7	7	1208	.564	.564	.163	.094	.179	.000	.449	.449	-.277	-.254	-.120	-0.225	0.066	-1.2	1.0	0.6	1.0	A+	A-
3454	730192	7	7	1182	.615	.615	.119	.118	.147	.000	.432	.432	-.143	-.277	-.209	-0.483	0.067	0.1	1.0	-0.8	1.0	B+	A-
3455	730193	7	7	1180	.542	.171	.138	.149	.542	.000	.461	-.252	-.230	-.155	.461	-0.072	0.065	-3.3	0.9	-1.9	0.9	A-	C-
3456	730194	7	7	1161	.608	.608	.144	.109	.140	.000	.382	.382	-.132	-.301	-.135	-0.424	0.067	1.2	1.0	1.0	1.0	A-	B-
3457	730195	7	7	1239	.544	.166	.544	.159	.131	.000	.386	-.178	.386	-.186	-.171	-0.144	0.064	1.1	1.0	1.9	1.1	A-	A+
3458	730196	7	7	1235	.478	.147	.478	.236	.138	.000	.343	-.012	.343	-.245	-.182	0.193	0.064	2.7	1.1	4.1	1.2	A+	A-
3459	730197	7	7	1227	.412	.412	.262	.216	.110	.000	.411	.411	-.082	-.259	-.192	0.534	0.065	-1.4	1.0	1.2	1.1	A+	A-
3460	730198	7	7	1186	.571	.120	.197	.571	.112	.000	.378	-.157	-.253	.378	-.113	-0.236	0.066	1.8	1.1	1.5	1.1	A-	A-

Table B–2 (continued). Mathematics Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M /F	W /B
3461	730199	7	7	1174	.812	.812	.033	.117	.038	.000	.415	.415	-.219	-.241	-.238	-1.705	0.083	-0.6	1.0	-0.6	1.0	C+	A+
3462	730200	7	7	1119	.296	.103	.519	.082	.296	.000	.326	-.263	.006	-.260	.326	1.209	0.072	0.7	1.0	4.4	1.3	A-	A+
3463	730201	7	7	1213	.275	.436	.210	.275	.079	.000	.116	.002	-.014	.116	-.173	1.282	0.070	5.8	1.2	9.9	1.8	A-	A-
3464	736037	7	7	1181	.441	.042	.289	.228	.441	.000	.386	-.168	-.111	-.257	.386	0.426	0.066	0.2	1.0	4.3	1.2	A-	A-
3465	736038	7	7	1159	.185	.098	.469	.185	.248	.000	.117	-.090	.060	.117	-.113	1.913	0.081	2.6	1.1	9.9	2.8	A-	A+
3466	736039	7	7	1225	.480	.282	.480	.153	.084	.000	.392	-.242	.392	-.202	-.051	0.197	0.064	0.1	1.0	3.1	1.1	A-	A-
3467	736040	7	7	1163	.362	.308	.195	.362	.135	.000	.189	-.082	-.152	.189	.022	0.795	0.067	7.0	1.2	9.3	1.6	A+	A+
3468	736041	7	7	1159	.469	.288	.085	.469	.158	.000	.222	-.193	-.111	.222	.022	0.234	0.065	7.4	1.2	7.9	1.4	C-	A-
3469	736042	7	7	1250	.450	.097	.134	.319	.450	.000	.255	-.121	-.271	.002	.255	0.296	0.064	6.7	1.2	7.5	1.3	A+	A+
3470	736043	7	7	1256	.292	.270	.292	.166	.272	.000	.243	-.132	.243	-.208	.057	1.177	0.068	4.0	1.1	5.3	1.4	A-	A-
3471	736044	7	7	1184	.249	.413	.249	.197	.141	.000	.054	.058	.054	-.048	-.095	1.397	0.073	5.9	1.2	9.9	2.5	A+	A-
3472	736045	7	7	1107	.599	.184	.132	.085	.599	.000	.193	-.039	-.112	-.148	.193	-0.413	0.069	8.4	1.3	7.7	1.4	A+	A-
3473	736047	7	7	1170	.372	.403	.164	.372	.061	.000	.409	-.298	-.114	.409	-.038	0.793	0.067	-2.6	0.9	3.0	1.2	A+	A+
3474	736048	7	7	1210	.481	.481	.308	.135	.076	.000	.055	.055	.031	-.034	-.114	0.227	0.064	9.9	1.4	9.9	1.7	A-	A+
3475	736049	7	7	1252	.459	.459	.291	.190	.060	.000	.013	.013	.034	.006	-.102	0.349	0.063	9.9	1.4	9.9	1.7	A+	A-
3476	736050	7	7	1175	.433	.154	.433	.152	.260	.000	.397	-.243	.397	-.154	-.122	0.421	0.065	-1.0	1.0	1.9	1.1	A-	A+
3477	736051	7	7	1249	.409	.259	.195	.409	.137	.000	.239	-.150	-.107	.239	-.028	0.556	0.064	5.7	1.1	8.5	1.4	A-	A-
3478	736053	7	7	1189	.314	.209	.314	.435	.042	.000	.052	-.020	.052	.018	-.124	1.097	0.068	9.3	1.3	9.9	1.9	A+	A-
3479	736054	7	7	1248	.152	.634	.152	.157	.057	.000	.099	.089	.099	-.097	-.186	2.158	0.084	2.0	1.1	9.9	2.8	A-	A-
3480	736055	7	7	1155	.569	.063	.083	.569	.285	.000	.300	-.269	-.262	.300	-.024	-0.294	0.067	5.0	1.1	4.2	1.2	A+	A-
3481	736056	7	7	1247	.609	.046	.081	.265	.609	.000	.378	-.175	-.175	-.227	.378	-0.474	0.066	2.5	1.1	3.3	1.2	A+	B-
3482	736057	7	7	1214	.503	.351	.116	.502	.030	.000	.172	-.012	-.185	.172	-.123	0.079	0.064	9.9	1.3	9.3	1.4	A+	A-
3483	736058	7	7	1270	.576	.202	.167	.576	.056	.000	.427	-.220	-.228	.427	-.166	-0.304	0.064	0.3	1.0	0.7	1.0	A+	C-
3484	736059	7	7	1231	.431	.108	.340	.431	.122	.000	.106	.018	.045	.106	-.243	0.438	0.064	9.9	1.3	9.9	1.7	A-	A+
3485	736060	7	7	1175	.386	.221	.386	.228	.164	.000	.115	-.132	.115	-.065	.070	0.681	0.066	9.6	1.3	9.9	1.8	A-	A-
3486	736061	7	7	1161	.248	.248	.397	.170	.185	.000	.157	.157	.081	-.146	-.136	1.441	0.074	4.3	1.2	9.5	1.9	A-	A-
3487	736062	7	7	1155	.206	.293	.271	.230	.206	.000	.234	-.080	-.109	-.024	.234	1.768	0.079	1.7	1.1	4.7	1.5	A-	A-
3488	736063	7	7	1255	.818	.065	.818	.076	.040	.000	.412	-.264	.412	-.189	-.223	-1.771	0.081	-0.3	1.0	-1.7	0.9	A-	C-
3489	736064	7	7	1129	.580	.580	.238	.150	.032	.000	.413	.413	-.129	-.310	-.216	-0.226	0.067	0.0	1.0	-0.1	1.0	A-	A-
3490	736065	7	7	1176	.134	.134	.533	.307	.026	.000	.116	.116	.135	-.181	-.147	2.353	0.091	1.0	1.1	9.6	2.7	B-	A+
3491	736066	7	7	1166	.634	.105	.130	.130	.634	.000	.534	-.219	-.256	-.308	.534	-0.601	0.068	-4.6	0.9	-4.6	0.8	A+	A-
3492	736067	7	7	1196	.689	.135	.117	.689	.059	.000	.439	-.232	-.245	.439	-.192	-0.835	0.070	-0.9	1.0	-0.5	1.0	A+	A+
3493	736068	7	7	1193	.521	.136	.200	.142	.521	.000	.452	-.151	-.251	-.212	.452	-0.008	0.065	-2.8	0.9	1.1	1.0	A+	A-
3494	736069	7	7	1181	.487	.187	.487	.143	.183	.000	.351	.003	.351	-.215	-.261	0.167	0.065	2.1	1.1	5.6	1.3	A+	A+
3495	736070	7	7	1229	.167	.248	.516	.069	.167	.000	.351	-.058	-.136	-.149	.351	2.058	0.082	-2.3	0.9	3.9	1.5	B-	A-

Table B–2 (continued). Mathematics Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M /F	W /B
3496	736071	7	7	1182	.374	.091	.374	.409	.126	.000	.070	.061	.070	.022	-.188	0.765	0.067	9.9	1.3	9.9	1.9	A+	A+
3497	736072	7	7	1196	.537	.140	.162	.537	.161	.000	.248	-.106	-.150	.248	-.085	-0.070	0.065	7.4	1.2	7.0	1.3	A-	B-
3498	736073	7	7	1197	.274	.249	.277	.200	.274	.000	.317	-.215	-.008	-.112	.317	1.291	0.071	-0.5	1.0	6.3	1.5	A-	A+
3499	736074	7	7	1205	.549	.144	.549	.265	.042	.000	.401	-.136	.401	-.264	-.175	-0.197	0.065	0.5	1.0	0.7	1.0	A+	A-
3500	736075	7	7	1209	.359	.359	.300	.158	.183	.000	.093	.093	-.055	-.091	.035	0.860	0.066	9.9	1.3	9.9	1.8	A+	A+
3501	736685	7	7	1177	.516	.516	.269	.127	.088	.000	.335	.335	-.203	-.186	-.053	0.008	0.065	3.9	1.1	3.7	1.2	A-	A-
3502	736686	7	7	1213	.466	.234	.220	.466	.080	.000	.225	-.088	-.110	.225	-.108	0.232	0.065	8.3	1.2	8.9	1.4	A+	A+
3503	736687	7	7	1162	.365	.213	.365	.288	.133	.000	.094	-.049	.094	-.045	-.014	0.767	0.067	9.9	1.3	9.9	1.8	A+	A+
3504	736688	7	7	1163	.458	.187	.138	.458	.217	.000	.279	-.119	-.240	.279	-.024	0.307	0.066	4.9	1.1	6.8	1.3	A-	A-
3505	736689	7	7	1190	.409	.108	.254	.409	.229	.000	.171	-.168	.020	.171	-.096	0.569	0.065	8.0	1.2	9.9	1.6	A-	A-
3506	736690	7	7	1219	.448	.194	.139	.218	.448	.000	.401	-.202	-.206	-.116	.401	0.329	0.064	-0.5	1.0	2.4	1.1	A+	A-
3507	736691	7	7	1183	.544	.114	.544	.175	.167	.000	.316	-.209	.316	-.087	-.156	-0.107	0.066	4.8	1.1	4.9	1.2	A+	A+
3508	736692	7	7	1154	.722	.075	.115	.722	.088	.000	.549	-.241	-.303	.549	-.303	-1.099	0.074	-3.9	0.9	-4.7	0.7	A+	B-
3509	736693	7	7	1179	.724	.061	.114	.724	.101	.000	.483	-.202	-.270	.483	-.271	-1.149	0.074	-1.2	1.0	-2.8	0.8	A+	A-
3510	736694	7	7	1172	.511	.078	.111	.511	.299	.000	.360	-.157	-.213	.360	-.154	0.036	0.065	2.0	1.1	3.5	1.1	A-	A-
3511	736695	7	7	1209	.449	.149	.283	.449	.119	.000	.387	-.150	-.239	.387	-.097	0.386	0.064	-0.4	1.0	3.2	1.1	A-	A-
3512	736696	7	7	1176	.202	.270	.253	.202	.275	.000	.038	-.054	-.161	.038	.176	1.747	0.079	5.2	1.2	9.9	2.5	A-	A+
3513	736697	7	7	1157	.445	.148	.207	.201	.445	.000	.289	-.085	-.076	-.206	.289	0.410	0.066	4.7	1.1	7.8	1.4	A+	A-
3514	736698	7	7	1193	.448	.199	.448	.242	.111	.000	.352	-.013	.352	-.231	-.226	0.381	0.065	1.7	1.0	3.0	1.1	A+	A-
3515	736699	7	7	1247	.593	.239	.593	.108	.059	.000	.373	-.157	.373	-.190	-.242	-0.365	0.065	1.3	1.0	3.3	1.1	A+	A-
3516	736700	7	7	1223	.290	.241	.201	.268	.289	.000	.300	-.015	-.172	-.138	.300	1.218	0.069	0.5	1.0	9.6	1.8	A-	A-
3517	736701	7	7	1222	.176	.338	.318	.176	.169	.000	.023	-.144	.067	.023	.075	1.960	0.080	4.1	1.2	9.9	2.8	A-	A+
3518	736702	7	7	1212	.288	.288	.389	.183	.140	.000	.054	.054	-.020	-.077	.044	1.249	0.069	8.8	1.3	9.9	2.0	A-	A+
3519	736703	7	7	1197	.345	.088	.247	.345	.320	.000	-.062	-.113	.089	-.062	.049	0.915	0.067	9.9	1.5	9.9	2.2	A+	A+
3520	736704	7	7	1248	.353	.247	.353	.165	.235	.000	.062	.147	.062	-.054	-.173	0.836	0.065	9.9	1.3	9.9	1.6	A+	A-
3521	736922	7	7	1176	.299	.139	.224	.298	.338	.000	.004	-.036	-.200	.004	.199	1.179	0.069	9.9	1.4	9.9	2.1	A-	A-
3522	736923	7	7	1198	.359	.374	.359	.129	.139	.000	.092	.055	.092	-.139	-.070	0.778	0.067	9.9	1.3	9.9	1.8	A-	A+
3523	736924	7	7	1155	.588	.076	.177	.158	.588	.000	.275	-.169	-.150	-.090	.275	-0.282	0.067	5.3	1.2	6.5	1.3	A-	A+
3524	736925	7	7	1199	.566	.054	.348	.565	.033	.000	.185	-.063	-.112	.185	-.136	-0.241	0.066	9.9	1.3	9.9	1.5	A-	A-
3525	736926	7	7	1144	.348	.348	.143	.269	.240	.000	.169	.169	-.141	-.082	.012	0.902	0.069	7.0	1.2	9.9	1.8	A-	A-
3526	736927	7	7	1178	.409	.244	.409	.272	.076	.000	.262	-.031	.262	-.157	-.173	0.526	0.066	5.2	1.1	7.5	1.4	A+	A-
3527	736928	7	7	1232	.219	.219	.180	.196	.404	.000	.236	.236	-.092	-.158	.001	1.655	0.074	0.6	1.0	8.1	1.8	A+	B-
3528	736929	7	7	1213	.211	.200	.264	.325	.211	.000	.174	-.090	-.029	-.047	.174	1.656	0.076	2.3	1.1	9.8	2.1	A-	A-
3529	736930	7	7	1252	.355	.355	.152	.260	.232	.000	.245	.245	-.222	-.165	.082	0.851	0.065	4.9	1.1	7.1	1.4	A+	A-
3530	736931	7	7	1179	.552	.081	.170	.552	.197	.000	.322	-.133	-.073	.322	-.242	-0.129	0.066	4.2	1.1	4.5	1.2	A-	A+

Table B–2 (continued). Mathematics Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M /F	W /B
3531	736932	7	7	1199	.231	.111	.354	.304	.231	.000	.361	-.113	-.196	-.050	.361	1.568	0.075	-2.3	0.9	6.3	1.6	A-	A-
3532	736933	7	7	1165	.298	.236	.376	.298	.090	.000	.300	-.129	-.147	.300	-.040	1.144	0.070	1.0	1.0	6.1	1.5	A-	A-
3533	736934	7	7	1238	.436	.381	.436	.138	.044	.000	.185	-.099	.185	-.090	-.063	0.436	0.064	9.7	1.3	9.9	1.7	A+	A-
3534	736935	7	7	1155	.441	.178	.224	.441	.157	.000	.229	-.133	-.060	.229	-.103	0.374	0.066	6.8	1.2	9.1	1.5	A-	A-
3535	736936	7	7	1179	.331	.331	.310	.291	.068	.000	.242	.242	-.120	-.033	-.171	0.975	0.068	3.1	1.1	8.3	1.6	A+	A-
3536	736937	7	7	1238	.217	.144	.507	.217	.132	.000	.138	-.051	-.121	.138	.064	1.714	0.074	3.6	1.2	9.7	2.1	A-	B-
3537	736938	7	7	1172	.711	.131	.109	.711	.049	.000	.426	-.305	-.203	.426	-.125	-1.021	0.072	-0.2	1.0	-1.0	0.9	A+	B+
3538	736939	7	7	1133	.394	.302	.394	.213	.092	.000	.237	.022	.237	-.240	-.096	0.621	0.067	5.8	1.2	5.9	1.3	A-	A+
3539	736940	7	7	1192	.254	.254	.306	.136	.304	.000	.089	.089	-.004	-.169	.045	1.433	0.072	6.2	1.2	9.9	2.1	A+	A-
3540	737144	7	7	1203	.466	.129	.229	.176	.466	.000	.350	-.196	-.085	-.192	.350	0.265	0.065	2.4	1.1	5.5	1.3	A+	A-
3541	737145	7	7	1119	.656	.082	.163	.656	.099	.000	.390	-.255	-.227	.390	-.106	-0.701	0.071	1.0	1.0	0.6	1.0	A+	C-
3542	737146	7	7	1222	.698	.172	.094	.698	.036	.000	.322	-.162	-.204	.322	-.146	-1.046	0.070	3.5	1.1	3.4	1.2	B+	A-
3543	737147	7	7	1211	.739	.088	.739	.088	.086	.000	.400	-.225	.400	-.149	-.250	-1.214	0.073	0.3	1.0	0.0	1.0	A+	A+
3544	737148	7	7	1202	.475	.374	.475	.057	.094	.000	.329	-.144	.329	-.252	-.125	0.273	0.065	3.1	1.1	5.9	1.3	A-	A+
3545	737149	7	7	1252	.300	.300	.331	.211	.158	.000	.264	.264	-.065	-.132	-.099	1.143	0.068	3.0	1.1	6.8	1.5	A-	B-
3546	737150	7	7	1266	.903	.021	.903	.054	.023	.000	.222	-.224	.222	-.110	-.061	-2.688	0.103	1.3	1.1	3.0	1.5	B+	A-
3547	737151	7	7	1208	.601	.601	.122	.118	.159	.000	.501	.501	-.234	-.363	-.141	-0.418	0.066	-3.3	0.9	-2.4	0.9	A+	A-
3548	737152	7	7	1197	.298	.361	.298	.155	.186	.000	.022	.091	.022	-.172	.023	1.128	0.069	9.9	1.4	9.9	2.2	B+	A+
3549	737153	7	7	1221	.506	.506	.161	.220	.113	.000	.460	.460	-.237	-.186	-.208	0.081	0.065	-2.0	1.0	0.2	1.0	B-	A-
3550	737154	7	7	1184	.486	.486	.269	.139	.106	.000	.341	.341	-.054	-.213	-.236	0.166	0.065	2.4	1.1	5.7	1.3	B-	A-
3551	737155	7	7	1179	.542	.214	.191	.542	.053	.000	.401	-.229	-.195	.401	-.132	-0.144	0.066	1.1	1.0	1.7	1.1	A-	A-
3552	737156	7	7	1180	.309	.362	.308	.185	.145	.000	.073	-.080	.073	.036	-.026	1.033	0.069	8.9	1.3	9.9	1.9	A-	A+
3553	737157	7	7	1187	.402	.267	.157	.174	.402	.000	.475	-.197	-.183	-.208	.475	0.626	0.066	-4.8	0.9	-0.9	1.0	A-	A-
3554	737158	7	7	1203	.285	.149	.179	.387	.285	.000	.295	-.164	-.254	.046	.295	1.202	0.070	1.8	1.1	5.9	1.5	A+	A-
3555	737159	7	7	1166	.563	.173	.166	.563	.099	.000	.301	.017	-.270	.301	-.186	-0.266	0.066	4.9	1.1	5.0	1.2	A+	A-
3556	737160	7	7	1189	.714	.124	.714	.061	.101	.000	.360	-.201	.360	-.142	-.207	-1.066	0.072	2.3	1.1	1.3	1.1	A+	A-
3557	737161	7	7	1198	.621	.621	.137	.168	.074	.000	.445	.445	-.306	-.191	-.149	-0.577	0.067	-1.2	1.0	-0.6	1.0	A-	A-
3558	737162	7	7	1157	.619	.244	.619	.079	.059	.000	.423	-.179	.423	-.331	-.167	-0.476	0.068	-0.7	1.0	0.2	1.0	A+	A+
3559	737163	7	7	1183	.183	.194	.078	.545	.183	.000	.307	-.289	-.238	.119	.307	1.843	0.081	-1.0	1.0	6.4	1.8	A+	A-
3560	737164	7	7	1242	.853	.052	.853	.046	.050	.000	.408	-.226	.408	-.283	-.163	-2.069	0.088	-1.2	0.9	-0.9	0.9	C+	A-
3561	737165	7	7	1237	.568	.186	.093	.153	.568	.000	.453	-.036	-.273	-.364	.453	-0.294	0.065	-0.8	1.0	0.0	1.0	A-	A+
3562	737166	7	7	1250	.282	.090	.282	.554	.074	.000	.010	-.149	.010	.210	-.254	1.283	0.069	9.5	1.3	9.9	2.1	A-	A-
3563	737167	7	7	1229	.733	.068	.141	.058	.733	.000	.433	-.211	-.240	-.236	.433	-1.161	0.072	-0.8	1.0	-1.1	0.9	A+	A-
3564	737168	7	7	1183	.473	.159	.473	.158	.210	.000	.261	-.068	.261	-.064	-.202	0.262	0.065	6.7	1.2	7.7	1.4	A+	A+
3565	737169	7	7	1235	.148	.534	.148	.056	.262	.000	.184	-.092	.184	-.253	.088	2.204	0.085	0.3	1.0	8.3	2.2	A-	A-

Table B–2 (continued). Mathematics Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M /F	W /B
3566	737170	7	7	1169	.595	.070	.039	.595	.295	.000	.051	-.210	-.304	.051	.192	-0.412	0.067	9.9	1.4	9.9	1.6	B+	A+
3567	737171	7	7	1177	.664	.155	.143	.664	.037	.000	.480	-.234	-.290	.480	-.214	-0.811	0.070	-1.3	1.0	-2.5	0.9	A+	A-
3568	737172	7	7	1222	.623	.047	.134	.196	.623	.000	.336	-.217	-.254	-.076	.336	-0.514	0.066	2.8	1.1	3.4	1.2	A+	A-
3569	737173	7	7	1227	.535	.124	.269	.535	.073	.000	.350	-.219	-.083	.350	-.254	-0.025	0.064	2.5	1.1	3.1	1.1	A-	A-
3570	737174	7	7	1229	.686	.042	.179	.093	.686	.000	.477	-.256	-.234	-.277	.477	-0.875	0.070	-1.3	1.0	-1.7	0.9	C+	A-
3571	737175	7	7	1196	.545	.050	.081	.324	.545	.000	.335	-.224	-.313	-.069	.335	-0.157	0.065	3.9	1.1	4.0	1.2	A+	A-
3572	737176	7	7	1135	.560	.286	.559	.073	.081	.000	.375	-.256	.375	-.170	-.096	-0.197	0.067	1.4	1.0	3.1	1.1	A+	A+
3573	737177	7	7	1153	.558	.197	.126	.558	.120	.000	.363	-.114	-.240	.363	-.170	-0.128	0.066	1.8	1.1	3.1	1.1	A-	B-
3574	737178	7	7	1217	.508	.508	.055	.204	.233	.000	.381	.381	-.244	-.203	-.126	0.054	0.064	0.6	1.0	4.3	1.2	A+	B-
3575	737179	7	7	1225	.345	.193	.193	.270	.344	.000	.315	-.079	-.156	-.128	.315	0.864	0.067	2.2	1.1	6.1	1.4	A-	A-
3576	737180	7	7	1230	.563	.070	.276	.563	.091	.000	.326	-.141	-.202	.326	-.123	-0.237	0.065	4.5	1.1	4.4	1.2	A+	A-
3577	737181	7	7	1189	.382	.382	.227	.220	.171	.000	.361	.361	-.177	-.141	-.114	0.674	0.066	-0.1	1.0	5.7	1.3	A-	A-
3578	737182	7	7	1091	.489	.489	.182	.192	.137	.000	.332	.332	-.186	-.189	-.056	0.132	0.068	3.4	1.1	5.5	1.3	A+	A+
3579	737183	7	7	1232	.234	.266	.298	.202	.234	.000	.231	.044	-.117	-.159	.231	1.589	0.073	2.2	1.1	7.1	1.7	A-	A+
3580	737184	7	7	1174	.426	.177	.229	.168	.426	.000	.462	-.223	-.197	-.162	.462	0.454	0.066	-2.7	0.9	0.4	1.0	A+	A-
3581	737185	7	7	1144	.528	.045	.040	.387	.528	.000	.383	-.182	-.268	-.207	.383	-0.020	0.066	0.6	1.0	1.1	1.0	C-	B-
3582	737186	7	7	1225	.727	.727	.138	.109	.025	.000	.434	.434	-.206	-.323	-.137	-1.098	0.072	-0.7	1.0	-1.0	0.9	A-	A-
3583	737187	7	7	1219	.745	.183	.039	.745	.033	.000	.366	-.192	-.274	.366	-.178	-1.251	0.074	1.6	1.1	0.8	1.1	A-	A-
3584	737188	7	7	1248	.728	.032	.038	.201	.728	.000	.425	-.186	-.267	-.263	.425	-1.161	0.071	-0.7	1.0	-1.8	0.9	B-	A-
3585	737207	7	7	1225	.150	.284	.357	.209	.150	.000	.081	-.015	-.018	-.034	.081	2.193	0.085	2.7	1.2	9.9	2.6	A-	A-
3586	737209	7	7	1198	.240	.409	.240	.260	.090	.000	-.063	.228	-.063	-.088	-.162	1.500	0.073	9.6	1.4	9.9	2.5	A-	A-
3587	737210	7	7	1223	.257	.310	.324	.257	.110	.000	.135	-.014	-.062	.135	-.074	1.393	0.072	5.4	1.2	9.9	1.9	A+	B-
3588	737211	7	7	1180	.361	.252	.197	.191	.361	.000	.292	-.042	-.246	-.062	.292	0.830	0.067	2.5	1.1	6.7	1.4	A+	A-
3589	737212	7	7	1190	.422	.214	.250	.422	.113	.000	.296	-.177	-.051	.296	-.162	0.536	0.065	3.0	1.1	8.3	1.4	A-	A-
3590	737213	7	7	1227	.148	.148	.230	.382	.240	.000	.262	.262	-.106	-.046	-.061	2.179	0.086	-0.3	1.0	5.7	1.8	B-	B-
3591	737214	7	7	1208	.267	.185	.255	.294	.267	.000	.258	.038	-.111	-.177	.258	1.363	0.071	1.1	1.0	7.5	1.6	A-	A-
3592	737215	7	7	1225	.256	.180	.256	.317	.247	.000	-.015	-.031	-.015	.012	.030	1.354	0.071	9.1	1.3	9.9	2.3	A+	A+
3593	737216	7	7	1235	.181	.125	.181	.399	.295	.000	-.075	-.166	-.075	.132	.042	1.912	0.079	5.9	1.3	9.9	3.4	A-	A-
3594	737217	7	7	1166	.222	.105	.234	.439	.222	.000	.342	-.165	-.124	-.079	.342	1.664	0.076	-1.1	1.0	2.0	1.2	A-	A+
3595	737218	7	7	1219	.177	.177	.143	.441	.240	.000	.094	.094	-.209	.057	.022	1.987	0.081	3.1	1.2	9.9	2.5	A-	A+
3596	737219	7	7	1197	.447	.183	.447	.241	.129	.000	.195	.026	.195	-.190	-.078	0.310	0.065	8.9	1.2	8.8	1.4	A+	A-
3597	737220	7	7	1275	.348	.347	.187	.313	.153	.000	.199	.199	-.164	-.050	-.021	0.941	0.065	6.5	1.2	7.4	1.4	A+	A-
3598	737221	7	7	1220	.343	.248	.246	.343	.164	.000	.070	.003	.023	.070	-.119	0.855	0.066	9.9	1.3	9.9	1.9	A-	A+
3599	737222	7	7	1187	.298	.206	.259	.237	.298	.000	.303	-.151	-.159	-.018	.303	1.165	0.070	0.7	1.0	7.2	1.6	A+	A-
3600	737223	7	7	1229	.430	.132	.283	.430	.155	.000	-.058	.039	.195	-.058	-.201	0.463	0.064	9.9	1.5	9.9	1.9	A+	A-

Table B–2 (continued). Mathematics Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
3601	737224	7	7	1144	.233	.233	.325	.290	.151	.000	.095	.095	.026	-.106	-.012	1.548	0.076	5.0	1.2	9.9	2.2	A-	
3602	737225	7	7	1181	.556	.049	.370	.556	.025	.000	.345	-.252	-.164	.345	-.246	-0.139	0.065	2.7	1.1	3.3	1.1	B-	A-
3603	737226	7	7	1186	.714	.200	.714	.045	.041	.000	.301	-.129	.301	-.287	-.126	-1.075	0.072	3.9	1.2	1.8	1.1	A-	A-
3604	737227	7	7	1278	.586	.059	.223	.131	.586	.000	.494	-.251	-.326	-.143	.494	-0.279	0.064	-3.0	0.9	-2.7	0.9	B-	B-
3605	737584	7	7	1195	.353	.036	.218	.392	.353	.000	.376	-.190	-.302	-.040	.376	0.844	0.066	-1.4	1.0	1.8	1.1	B-	C-
3606	737585	7	7	1182	.192	.156	.625	.192	.027	.000	.152	-.219	.099	.152	-.173	1.812	0.080	2.3	1.1	9.9	2.4	C-	
3607	737586	7	7	1182	.655	.655	.095	.133	.118	.000	.518	.518	-.211	-.274	-.285	-0.723	0.069	-3.4	0.9	-4.0	0.8	A+	C-
3608	737587	7	7	1184	.560	.177	.129	.560	.134	.000	.350	-.196	-.201	.350	-.093	-0.214	0.066	3.2	1.1	3.3	1.1	A+	A-
3609	737588	7	7	1259	.582	.078	.582	.131	.209	.000	.449	-.155	.449	-.203	-.274	-0.392	0.065	-0.5	1.0	0.2	1.0	A-	A-
3610	737589	7	7	1181	.730	.053	.730	.148	.069	.000	.400	-.212	.400	-.207	-.225	-1.126	0.073	0.6	1.0	-0.4	1.0	A+	A-
3611	737590	7	7	1205	.656	.146	.164	.656	.033	.000	.552	-.313	-.296	.552	-.235	-0.628	0.068	-5.3	0.8	-5.3	0.8	A-	B-
3612	737591	7	7	1215	.481	.481	.224	.159	.137	.000	.391	.391	-.241	-.169	-.097	0.196	0.064	0.3	1.0	3.6	1.2	A+	A-
3613	737592	7	7	1189	.408	.295	.408	.271	.026	.000	.315	-.352	.315	.074	-.169	0.552	0.066	3.1	1.1	6.6	1.4	A-	
3614	737593	7	7	1186	.614	.107	.218	.061	.614	.000	.527	-.230	-.305	-.247	.527	-0.465	0.067	-4.0	0.9	-4.0	0.8	A-	A-
3615	737594	7	7	1174	.377	.377	.234	.316	.072	.000	.305	.305	-.132	-.122	-.136	0.690	0.067	3.3	1.1	6.3	1.4	A-	A+
3616	737595	7	7	1180	.519	.169	.519	.253	.058	.000	.288	.009	.288	-.235	-.191	0.026	0.065	4.4	1.1	8.6	1.4	A+	A-
3617	737596	7	7	1142	.554	.052	.216	.554	.178	.000	.399	-.245	-.218	.399	-.142	-0.178	0.067	0.5	1.0	1.4	1.1	A-	B-
3618	734776	8	8	728	.457	.376	.457	.099	.067	.000	.391	-.360	.391	-.083	.017	0.360	0.083	-0.3	1.0	2.9	1.2	A-	A+
3619	734777	8	8	755	.589	.589	.164	.095	.151	.000	.345	.345	-.175	-.237	-.097	-0.309	0.083	2.5	1.1	2.6	1.1	B+	B-
3620	734778	8	8	728	.449	.209	.261	.449	.081	.000	.331	-.207	-.124	.331	-.095	0.411	0.084	2.1	1.1	4.7	1.3	A-	
3621	734779	8	8	718	.352	.167	.223	.258	.352	.000	.430	-.155	-.100	-.243	.430	0.855	0.087	-2.5	0.9	2.4	1.2	A+	A+
3622	734780	8	8	759	.386	.386	.277	.258	.079	.000	.258	.258	-.137	-.061	-.139	0.692	0.082	4.0	1.1	4.2	1.3	A-	
3623	734781	8	8	740	.245	.245	.245	.234	.277	.000	.190	.190	-.009	-.080	-.098	1.543	0.093	2.3	1.1	6.6	1.8	A-	B-
3624	734782	8	8	797	.315	.315	.292	.312	.080	.000	.289	.289	-.042	-.174	-.126	1.074	0.083	0.8	1.0	4.7	1.4	A+	
3625	734783	8	8	712	.365	.270	.365	.257	.108	.000	.115	.058	.115	-.062	-.174	0.807	0.087	8.0	1.3	8.5	1.7	A+	A+
3626	734784	8	8	726	.461	.208	.165	.165	.461	.000	.350	-.208	-.143	-.101	.350	0.302	0.083	1.0	1.0	5.6	1.3	B+	A+
3627	734785	8	8	735	.671	.215	.671	.073	.041	.000	.266	-.102	.266	-.212	-.141	-0.756	0.089	5.1	1.2	3.5	1.3	A-	A+
3628	734786	8	8	728	.295	.173	.295	.339	.192	.000	.038	-.108	.038	-.001	.060	1.113	0.089	6.8	1.3	9.9	2.6	A-	A+
3629	734787	8	8	663	.489	.157	.176	.489	.178	.000	.373	-.213	-.192	.373	-.095	0.183	0.087	1.2	1.0	1.9	1.1	A+	
3630	735477	8	8	755	.362	.054	.285	.299	.362	.000	.132	-.052	.077	-.190	.132	0.865	0.084	7.9	1.3	9.6	1.9	A+	
3631	735478	8	8	755	.360	.360	.313	.212	.115	.000	.202	.202	-.111	-.066	-.057	0.809	0.084	5.0	1.2	8.4	1.7	A+	A-
3632	735479	8	8	749	.577	.101	.577	.175	.147	.000	.235	-.101	.235	-.128	-.105	-0.188	0.082	4.7	1.2	5.8	1.3	A+	B+
3633	735480	8	8	690	.420	.319	.171	.420	.090	.000	.144	-.017	-.052	.144	-.152	0.464	0.085	6.7	1.2	8.6	1.5	A+	B-
3634	735481	8	8	737	.468	.149	.246	.468	.137	.000	.332	-.117	-.115	.332	-.217	0.249	0.083	3.0	1.1	3.4	1.2	A+	B+
3635	735482	8	8	756	.447	.134	.148	.271	.447	.000	.391	-.085	-.225	-.192	.391	0.415	0.082	0.4	1.0	2.4	1.1	A+	A-

Table B–2 (continued). Mathematics Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M /F	W /B
3636	735483	8	8	753	.594	.024	.594	.201	.182	.000	.372	-.167	.372	-.256	-.142	-0.351	0.083	1.4	1.1	2.7	1.2	A-	A+
3637	735484	8	8	706	.476	.084	.476	.246	.194	.000	.362	-.164	.362	-.212	-.111	0.227	0.084	0.9	1.0	4.5	1.3	A+	
3638	735485	8	8	726	.594	.594	.092	.262	.052	.000	.331	.331	-.165	-.158	-.206	-0.352	0.084	2.2	1.1	3.1	1.2	A+	C-
3639	735486	8	8	716	.525	.525	.208	.113	.154	.000	.207	.207	-.154	-.068	-.053	-0.021	0.084	6.7	1.2	6.4	1.4	A-	A-
3640	735890	8	8	677	.253	.253	.171	.431	.145	.000	.172	.172	-.090	.012	-.133	1.426	0.096	3.0	1.1	5.7	1.7	A-	A+
3641	735891	8	8	719	.586	.074	.586	.213	.128	.000	.418	-.091	.418	-.271	-.213	-0.291	0.085	-0.1	1.0	0.3	1.0	C-	C-
3642	735892	8	8	717	.617	.089	.173	.616	.121	.000	.355	-.148	-.181	.355	-.190	-0.404	0.086	2.1	1.1	1.0	1.1	A-	A+
3643	735893	8	8	761	.422	.117	.290	.422	.171	.000	.230	-.167	-.129	.230	-.003	0.523	0.081	4.6	1.2	8.0	1.5	B-	
3644	735894	8	8	721	.628	.055	.628	.182	.135	.000	.328	-.185	.328	-.171	-.146	-0.570	0.086	2.3	1.1	2.1	1.1	A-	A-
3645	735895	8	8	753	.509	.124	.165	.203	.509	.000	.373	-.028	-.221	-.237	.373	0.039	0.081	0.7	1.0	3.6	1.2	A+	A-
3646	735896	8	8	701	.288	.288	.310	.153	.250	.000	.362	.362	-.107	-.154	-.136	1.245	0.092	-0.6	1.0	3.3	1.3	A-	
3647	735897	8	8	756	.300	.193	.316	.190	.300	.000	.347	-.113	-.224	-.027	.347	1.190	0.087	-0.2	1.0	2.9	1.3	A+	
3648	735898	8	8	715	.352	.196	.270	.352	.182	.000	.020	-.118	.047	.020	.042	0.870	0.086	9.7	1.4	9.9	1.9	A-	
3649	735899	8	8	738	.382	.382	.259	.171	.188	.000	.205	.205	-.003	-.137	-.119	0.805	0.084	5.3	1.2	7.4	1.5	A-	A-
3650	736026	8	8	734	.360	.360	.233	.308	.099	.000	.343	.343	-.096	-.130	-.214	0.863	0.085	0.9	1.0	2.8	1.2	A+	B-
3651	736027	8	8	733	.413	.254	.413	.254	.079	.000	.285	-.018	.285	-.154	-.243	0.582	0.083	2.9	1.1	6.3	1.4	A+	A-
3652	736028	8	8	747	.469	.252	.181	.469	.099	.000	.231	-.032	-.199	.231	-.083	0.273	0.081	5.6	1.2	6.6	1.4	A+	B-
3653	736029	8	8	723	.488	.250	.488	.163	.098	.000	.257	-.022	.257	-.202	-.149	0.157	0.083	4.5	1.1	5.9	1.3	A+	
3654	736030	8	8	753	.461	.133	.461	.283	.124	.000	.211	-.089	.211	-.155	-.016	0.352	0.081	6.4	1.2	6.0	1.4	A+	A-
3655	736031	8	8	751	.527	.527	.261	.129	.083	.000	.436	.436	-.164	-.227	-.252	-0.014	0.082	-1.2	1.0	1.2	1.1	A+	B-
3656	736032	8	8	716	.356	.209	.356	.330	.105	.000	.125	-.087	.125	.001	-.081	0.938	0.086	6.4	1.2	8.9	1.7	A+	A-
3657	736033	8	8	734	.248	.195	.512	.248	.045	.000	.185	-.205	.038	.185	-.085	1.455	0.093	2.8	1.1	7.2	2.0	A+	
3658	736034	8	8	683	.168	.168	.432	.234	.165	.000	.000	.000	.099	-.017	-.114	1.971	0.109	3.3	1.2	9.0	3.0	C+	
3659	736035	8	8	787	.492	.492	.163	.212	.133	.000	.463	.463	-.185	-.290	-.132	0.194	0.080	-2.7	0.9	-0.1	1.0	A+	A-
3660	736649	8	8	742	.216	.387	.216	.310	.088	.000	.120	-.114	.120	.071	-.094	1.744	0.097	2.8	1.2	8.0	2.3	A+	A+
3661	736650	8	8	696	.664	.664	.158	.119	.059	.000	.407	.407	-.075	-.310	-.275	-0.735	0.090	0.3	1.0	0.8	1.1	B+	A-
3662	736651	8	8	716	.221	.208	.370	.201	.221	.000	.086	-.014	.109	-.206	.086	1.673	0.097	3.7	1.2	8.2	2.2	A+	A+
3663	736652	8	8	751	.337	.241	.298	.124	.337	.000	.160	-.001	-.100	-.090	.160	0.945	0.085	5.7	1.2	8.5	1.8	A+	A+
3664	736653	8	8	719	.309	.309	.295	.179	.217	.000	.155	.155	.010	-.012	-.174	1.075	0.088	4.8	1.2	7.5	1.7	A+	A+
3665	736654	8	8	776	.280	.287	.280	.285	.148	.000	.092	.040	.092	-.097	-.043	1.260	0.087	4.7	1.2	9.9	2.1	A-	A-
3666	736655	8	8	792	.450	.299	.449	.138	.114	.000	.251	-.014	.251	-.160	-.199	0.387	0.079	4.9	1.2	7.2	1.4	A+	
3667	736656	8	8	707	.505	.300	.088	.505	.107	.000	-.139	.236	-.113	-.139	-.022	0.124	0.084	9.9	1.6	9.9	1.9	A+	
3668	736657	8	8	728	.334	.243	.334	.249	.174	.000	-.022	-.047	-.022	.017	.060	1.011	0.087	9.9	1.4	9.9	2.2	A+	A+
3669	736658	8	8	734	.237	.666	.045	.052	.237	.000	.188	.026	-.221	-.209	.188	1.605	0.094	1.8	1.1	7.8	2.1	A-	
3670	736659	8	8	719	.337	.249	.228	.337	.186	.000	-.027	.012	.009	-.027	.011	0.933	0.086	9.9	1.4	9.4	1.9	A-	A+

Table B–2 (continued). Mathematics Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M /F	W /B
3671	737024	8	8	692	.369	.169	.368	.275	.188	.000	.206	.037	.206	-.214	-.044	0.806	0.088	5.6	1.2	6.6	1.6	A-	A-
3672	737025	8	8	711	.203	.097	.430	.203	.270	.000	.140	-.168	-.122	.140	.121	1.787	0.100	2.1	1.1	6.3	1.9	A-	A+
3673	737026	8	8	769	.403	.051	.122	.403	.424	.000	.347	-.103	-.069	.347	-.253	0.619	0.082	0.9	1.0	5.6	1.4	A-	A-
3674	737027	8	8	735	.234	.476	.234	.125	.165	.000	.035	.093	.035	-.107	-.069	1.583	0.094	4.3	1.2	9.6	2.4	A-	A+
3675	737028	8	8	703	.206	.088	.121	.206	.585	.000	.078	-.161	-.210	.078	.167	1.744	0.099	2.2	1.1	8.4	2.2	A-	A+
3676	737029	8	8	722	.236	.235	.360	.312	.093	.000	-.008	-.008	.003	.015	-.017	1.595	0.095	5.3	1.3	9.9	2.5	A-	A-
3677	737030	8	8	762	.412	.262	.277	.412	.049	.000	.231	-.229	-.011	.231	-.038	0.610	0.082	5.4	1.2	7.6	1.5	A-	A+
3678	737031	8	8	730	.215	.499	.215	.173	.114	.000	.172	-.078	.172	-.107	.029	1.665	0.097	1.1	1.1	8.7	2.2	A-	B+
3679	737032	8	8	750	.276	.255	.388	.276	.081	.000	.069	.015	-.014	.069	-.114	1.263	0.089	5.4	1.2	9.9	2.2	A+	A+
3680	737033	8	8	731	.510	.275	.510	.152	.063	.000	.246	-.181	.246	-.013	-.153	0.171	0.083	5.5	1.2	6.7	1.4	A-	A-
3681	737034	8	8	746	.160	.209	.393	.160	.239	.000	.051	-.045	-.024	.051	.027	2.094	0.107	3.4	1.2	6.3	2.2	A-	A+
3682	737035	8	8	713	.431	.160	.198	.431	.212	.000	.191	-.106	-.161	.191	.021	0.452	0.084	6.8	1.2	7.7	1.5	A-	A-
3683	737036	8	8	677	.269	.134	.357	.239	.269	.000	.146	-.087	.066	-.156	.146	1.286	0.094	3.1	1.1	8.7	2.1	A-	
3684	737037	8	8	807	.180	.149	.180	.419	.253	.000	.000	-.092	.000	.014	.060	2.031	0.099	4.3	1.3	9.9	3.2	A-	A+
3685	737038	8	8	705	.261	.146	.261	.261	.332	.000	-.017	-.037	-.096	-.017	.133	1.441	0.094	7.0	1.4	9.9	2.8	A+	A-
3686	737529	8	8	751	.388	.372	.387	.072	.169	.000	.004	.044	.004	-.016	-.051	0.722	0.083	9.9	1.4	9.9	2.2	A-	B+
3687	737530	8	8	751	.293	.145	.443	.293	.119	.000	.267	-.227	-.018	.267	-.102	1.248	0.089	2.6	1.1	4.4	1.4	A+	A+
3688	737531	8	8	710	.369	.235	.272	.369	.124	.000	.150	-.047	-.050	.150	-.091	0.764	0.086	7.4	1.3	8.7	1.8	A-	A-
3689	737532	8	8	787	.247	.104	.501	.247	.149	.000	.066	-.063	-.009	.066	-.013	1.498	0.090	5.1	1.2	9.9	2.4	A-	A+
3690	737533	8	8	738	.554	.554	.145	.127	.173	.000	.397	.397	-.227	-.165	-.165	-0.176	0.083	0.7	1.0	2.2	1.1	A+	A-
3691	737534	8	8	725	.429	.166	.196	.210	.429	.000	.289	-.104	-.149	-.110	.289	0.474	0.084	3.3	1.1	7.4	1.5	A+	A+
3692	737535	8	8	687	.536	.176	.536	.131	.157	.000	.284	-.173	.284	-.062	-.151	-0.121	0.086	4.7	1.2	4.8	1.3	A+	
3693	737536	8	8	700	.631	.631	.047	.289	.033	.000	.526	.526	-.235	-.329	-.307	-0.501	0.089	-3.0	0.9	-2.7	0.8	C-	C-
3694	737537	8	8	733	.412	.334	.412	.180	.074	.000	.262	-.035	.262	-.191	-.150	0.541	0.084	3.5	1.1	6.6	1.5	A-	A-
3695	737538	8	8	740	.232	.232	.362	.188	.218	.000	.240	.240	.001	-.119	-.135	1.661	0.095	0.9	1.0	7.0	1.9	A-	A+
3696	737539	8	8	770	.233	.274	.352	.232	.142	.000	.190	-.187	.009	.190	-.004	1.565	0.092	2.0	1.1	6.6	1.8	A+	A+
3697	737540	8	8	715	.225	.450	.245	.225	.080	.000	.132	.003	-.033	.132	-.155	1.680	0.097	2.4	1.1	9.4	2.5	B-	A-
3698	737541	8	8	756	.323	.177	.384	.323	.116	.000	.182	-.110	-.007	.182	-.123	1.002	0.086	3.9	1.2	9.9	2.1	A-	
3699	737542	8	8	727	.691	.129	.085	.095	.691	.000	.455	-.201	-.298	-.203	.455	-0.870	0.090	-1.2	1.0	-1.5	0.9	A+	A-
3700	737556	8	8	766	.398	.398	.281	.133	.188	.000	.242	.242	.052	-.306	-.096	0.643	0.082	4.5	1.1	5.0	1.3	A-	A-
3701	737557	8	8	734	.343	.159	.237	.260	.343	.000	.355	-.231	-.195	-.003	.355	0.934	0.085	-0.1	1.0	1.8	1.1	A+	A-
3702	737558	8	8	771	.619	.619	.148	.145	.088	.000	.381	.381	-.269	-.195	-.073	-0.485	0.084	1.6	1.1	1.8	1.1	A+	A-
3703	737559	8	8	759	.322	.153	.062	.321	.464	.000	.186	-.131	-.150	.186	-.007	1.108	0.085	3.4	1.1	8.0	1.7	A+	A-
3704	737560	8	8	677	.468	.196	.468	.232	.103	.000	.384	-.149	.384	-.222	-.128	0.355	0.086	0.6	1.0	3.3	1.2	A-	A+
3705	737561	8	8	743	.466	.215	.132	.187	.466	.000	.291	-.190	-.092	-.093	.291	0.310	0.082	3.5	1.1	5.0	1.3	A-	B+

Table B–2 (continued). Mathematics Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M /F	W /B
3706	737562	8	8	757	.437	.240	.437	.198	.124	.000	.291	-.140	.291	-.077	-.163	0.427	0.081	2.8	1.1	6.0	1.4	A-	A-
3707	737563	8	8	701	.511	.511	.150	.039	.301	.000	.528	.528	-.139	-.100	-.425	0.067	0.084	-5.1	0.9	-3.7	0.8	A+	B-
3708	737564	8	8	755	.477	.106	.477	.085	.332	.000	.408	-.121	.408	-.083	-.304	0.301	0.081	-0.8	1.0	2.0	1.1	A+	
3709	737565	8	8	753	.700	.048	.082	.700	.170	.000	.424	-.192	-.118	.424	-.322	-0.935	0.089	-0.1	1.0	-0.9	0.9	B-	A-
3710	737566	8	8	733	.312	.188	.299	.201	.312	.000	.234	-.049	-.186	-.011	.234	1.078	0.087	2.2	1.1	7.5	1.7	A-	A+
3711	737567	8	8	729	.391	.388	.391	.099	.122	.000	.352	-.194	.352	-.177	-.074	0.610	0.084	0.0	1.0	4.0	1.3	A-	A+
3712	737568	8	8	723	.407	.107	.407	.318	.169	.000	.380	-.050	.380	-.284	-.104	0.544	0.084	-0.4	1.0	3.0	1.2	A+	A+
3713	737569	8	8	734	.312	.134	.240	.315	.312	.000	.312	-.163	-.114	-.087	.312	1.105	0.087	0.9	1.0	3.5	1.3	A-	A-
3714	737570	8	8	706	.309	.262	.331	.309	.098	.000	.212	-.024	-.073	.212	-.180	1.106	0.089	2.1	1.1	9.9	2.1	A-	A+
3715	737571	8	8	733	.585	.149	.585	.156	.111	.000	.421	-.168	.421	-.261	-.169	-0.325	0.085	0.0	1.0	0.5	1.0	B+	A+
3716	737572	8	8	718	.276	.276	.266	.192	.266	.000	.284	.284	-.146	-.151	-.007	1.292	0.092	1.6	1.1	4.1	1.4	A-	A+
3717	737573	8	8	737	.578	.080	.111	.231	.578	.000	.368	-.139	-.218	-.179	.368	-0.214	0.083	1.3	1.0	1.5	1.1	A+	A+
3718	737574	8	8	726	.368	.222	.348	.368	.062	.000	.291	-.275	.040	.291	-.187	0.792	0.085	2.7	1.1	4.7	1.4	A+	
3719	737575	8	8	719	.348	.153	.256	.243	.348	.000	.103	-.062	.009	-.072	.103	0.901	0.086	7.2	1.3	9.9	2.1	A+	B+
3720	737576	8	8	734	.461	.207	.460	.219	.113	.000	.231	-.086	.231	-.090	-.137	0.319	0.083	6.8	1.2	6.9	1.5	A+	A+
3721	737577	8	8	756	.411	.116	.242	.411	.230	.000	.234	-.166	-.116	.234	-.029	0.597	0.082	4.6	1.2	6.6	1.4	A-	A-
3722	737578	8	8	704	.446	.197	.244	.446	.112	.000	.130	-.119	.048	.130	-.121	0.399	0.084	8.8	1.3	9.3	1.6	A+	A+
3723	737579	8	8	732	.264	.264	.314	.225	.197	.000	.058	.058	.031	-.119	.024	1.347	0.091	5.1	1.2	9.9	2.4	A-	
3724	737580	8	8	732	.242	.347	.204	.242	.208	.000	.031	.062	-.151	.031	.045	1.507	0.093	5.6	1.3	9.2	2.3	A-	A-
3725	737581	8	8	750	.515	.101	.236	.148	.515	.000	.417	-.200	-.170	-.214	.417	0.039	0.081	-1.0	1.0	0.5	1.0	A+	A-
3726	737582	8	8	681	.764	.131	.764	.062	.044	.000	.411	-.245	.411	-.192	-.222	-1.353	0.101	0.6	1.0	-1.3	0.9	A+	A-
3727	737583	8	8	735	.438	.210	.438	.216	.136	.000	.295	-.035	.295	-.159	-.195	0.394	0.082	2.3	1.1	5.9	1.4	A-	A+
3728	739463	8	8	694	.452	.143	.173	.452	.232	.000	.183	-.086	-.214	.183	.046	0.338	0.085	7.1	1.3	9.3	1.7	A+	A+
3729	739464	8	8	765	.455	.150	.318	.455	.077	.000	.254	-.125	-.092	.254	-.147	0.332	0.082	5.5	1.2	7.2	1.5	A-	A-
3730	739465	8	8	700	.386	.243	.386	.109	.263	.000	.011	-.055	.011	-.202	.184	0.721	0.086	9.9	1.4	9.9	2.0	A-	A-
3731	739466	8	8	716	.265	.271	.265	.223	.240	.000	.109	-.039	.109	-.088	.014	1.363	0.092	3.5	1.2	9.9	2.7	A-	A-
3732	739467	8	8	726	.295	.397	.295	.174	.135	.000	.075	.094	.075	-.156	-.062	1.240	0.089	6.0	1.3	8.5	1.9	A-	A+
3733	739468	8	8	741	.224	.534	.206	.035	.224	.000	.150	.061	-.101	-.282	.150	1.606	0.095	2.7	1.1	6.4	1.9	A-	
3734	739469	8	8	716	.175	.137	.450	.239	.175	.000	.241	-.093	-.034	-.099	.241	1.990	0.106	0.3	1.0	3.8	1.6	A-	A+
3735	739470	8	8	748	.313	.313	.386	.211	.090	.000	.310	.310	-.011	-.203	-.196	1.129	0.086	0.5	1.0	4.3	1.4	A+	A-
3736	739471	8	8	731	.376	.111	.086	.376	.427	.000	.264	-.061	-.101	.264	-.162	0.758	0.084	2.6	1.1	6.8	1.5	A-	A-
3737	739472	8	8	753	.499	.259	.162	.499	.080	.000	.343	-.192	-.149	.343	-.120	0.087	0.082	2.2	1.1	3.8	1.2	A-	A-
3738	739595	8	8	723	.548	.183	.108	.162	.548	.000	.431	-.200	-.141	-.253	.431	-0.117	0.083	-1.6	1.0	0.0	1.0	A+	A-
3739	739596	8	8	692	.695	.695	.104	.134	.066	.000	.358	.358	-.229	-.166	-.155	-0.928	0.093	1.9	1.1	1.0	1.1	A-	B-
3740	739597	8	8	740	.251	.188	.266	.295	.251	.000	.110	-.023	-.028	-.057	.110	1.428	0.092	4.2	1.2	9.9	2.8	A-	

Table B–2 (continued). Mathematics Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
3741	739598	8	8	784	.485	.092	.296	.485	.128	.000	.343	-.198	-.115	.343	-.185	0.134	0.080	2.5	1.1	3.5	1.2	A-	A+
3742	739599	8	8	737	.299	.174	.299	.284	.244	.000	.111	-.057	.111	-.028	-.039	1.170	0.087	4.4	1.2	9.9	2.2	A+	A+
3743	739600	8	8	702	.453	.085	.453	.239	.222	.000	.316	-.034	.316	-.126	-.227	0.330	0.084	2.7	1.1	3.9	1.2	A+	A+
3744	739601	8	8	771	.617	.083	.617	.259	.040	.000	.335	-.154	.335	-.169	-.235	-0.510	0.084	3.1	1.1	3.1	1.2	A+	A-
3745	739602	8	8	733	.300	.300	.104	.538	.059	.000	.250	.250	-.182	-.011	-.228	1.233	0.088	1.7	1.1	7.2	1.7	A-	A-
3746	739603	8	8	715	.206	.497	.206	.206	.092	.000	-.089	.183	-.089	-.055	-.116	1.860	0.099	5.4	1.3	9.9	3.3	A+	A+
3747	739604	8	8	696	.267	.154	.261	.318	.267	.000	.132	-.001	-.074	-.056	.132	1.372	0.094	3.9	1.2	7.9	1.9	A-	A-
3748	740101	8	8	710	.492	.154	.492	.206	.149	.000	.326	-.084	.326	-.208	-.136	0.211	0.084	2.9	1.1	3.4	1.2	A+	A-
3749	740102	8	8	711	.352	.169	.352	.335	.145	.000	.033	-.048	.033	.046	-.055	0.935	0.086	9.0	1.3	8.8	1.8	A-	A+
3750	740103	8	8	780	.390	.390	.285	.142	.183	.000	.048	.048	-.109	-.077	.136	0.737	0.081	9.9	1.4	9.9	1.7	A-	A-
3751	740104	8	8	721	.380	.270	.232	.380	.118	.000	.211	-.106	-.174	.211	.057	0.757	0.085	4.5	1.2	8.4	1.7	A-	B-
3752	740105	8	8	701	.318	.318	.250	.241	.191	.000	.095	.095	-.130	-.072	.109	1.083	0.089	6.1	1.2	9.0	1.9	A+	A-
3753	740107	8	8	739	.261	.081	.254	.261	.403	.000	.092	-.012	.134	.092	-.195	1.433	0.091	4.3	1.2	9.6	2.2	A-	
3754	740108	8	8	730	.282	.121	.282	.255	.342	.000	.121	-.114	.121	-.048	.008	1.214	0.090	4.5	1.2	9.0	2.1	A-	A-
3755	740109	8	8	759	.192	.206	.204	.398	.192	.000	.185	.078	.018	-.228	.185	1.844	0.099	1.8	1.1	4.8	1.7	A-	A-
3756	740110	8	8	788	.411	.411	.225	.279	.085	.000	.256	.256	-.122	-.114	-.086	0.560	0.080	3.6	1.1	7.5	1.5	A-	
3757	740111	8	8	716	.507	.507	.219	.105	.169	.000	.369	.369	-.193	-.256	-.069	0.052	0.085	2.2	1.1	3.1	1.2	A+	A-
3758	740112	8	8	681	.300	.134	.408	.159	.300	.000	.106	-.029	-.095	.021	.106	1.219	0.091	4.8	1.2	9.9	2.4	A-	A+
3759	740113	8	8	684	.412	.136	.215	.237	.412	.000	.346	-.120	-.079	-.228	.346	0.571	0.087	1.6	1.1	3.6	1.3	A-	A-
3760	740114	8	8	747	.391	.268	.391	.262	.079	.000	.171	.106	.171	-.187	-.178	0.699	0.083	6.4	1.2	8.5	1.6	A-	A-
3761	740115	8	8	783	.456	.165	.456	.142	.238	.000	.377	-.114	.377	-.188	-.188	0.406	0.079	0.1	1.0	1.7	1.1	A+	A-
3762	740116	8	8	723	.364	.166	.210	.364	.260	.000	.000	-.077	-.064	.000	.125	0.698	0.085	9.9	1.4	9.9	1.9	B-	A+
3763	740117	8	8	695	.236	.173	.239	.353	.236	.000	.102	-.097	.104	-.106	.102	1.598	0.097	3.7	1.2	9.7	2.5	A+	A-
3764	740118	8	8	724	.605	.043	.605	.211	.141	.000	.307	-.197	.307	-.168	-.120	-0.296	0.084	3.0	1.1	2.4	1.1	A-	A+
3765	740119	8	8	723	.432	.432	.308	.129	.131	.000	.345	.345	-.084	-.207	-.187	0.493	0.084	1.4	1.0	4.3	1.3	A-	A-
3766	740120	8	8	755	.385	.310	.385	.226	.078	.000	.284	-.037	.284	-.217	-.112	0.735	0.083	2.6	1.1	6.0	1.5	A-	B-
3767	740121	8	8	708	.496	.496	.194	.184	.127	.000	.471	.471	-.215	-.249	-.162	0.100	0.085	-1.9	0.9	-0.8	1.0	A-	B-
3768	715332	A1	A1	3817	.274	.133	.274	.138	.456	.000	.046	-.137	.046	-.212	.198	1.566	0.039	9.9	1.2	9.9	2.1	A-	A-
3769	715333	A1	A1	3818	.322	.322	.321	.243	.114	.000	.263	.263	-.069	-.131	-.108	1.326	0.038	2.6	1.0	9.9	1.4	A-	A-
3770	715334	A1	A1	3766	.479	.479	.081	.332	.108	.000	.313	.313	-.157	-.193	-.073	0.514	0.036	4.3	1.1	8.7	1.2	A+	A-
3771	715335	A1	A1	3936	.432	.083	.432	.420	.065	.000	.252	-.147	.252	-.128	-.086	0.735	0.035	8.2	1.1	9.9	1.4	A+	A+
3772	715336	A1	A1	3991	.373	.082	.373	.311	.234	.000	.164	-.068	.164	-.139	.009	1.015	0.036	9.9	1.2	9.9	1.5	A-	A-
3773	715337	A1	A1	3921	.308	.452	.118	.308	.122	.000	.045	.126	-.156	.045	-.100	1.412	0.037	9.9	1.3	9.9	1.9	A-	A+
3774	715338	A1	A1	3896	.318	.341	.227	.318	.114	.000	.153	-.092	-.044	.153	-.029	1.334	0.037	8.8	1.1	9.9	1.7	A+	A-
3775	715339	A1	A1	3807	.553	.127	.553	.241	.079	.000	.321	-.175	.321	-.172	-.103	0.151	0.036	4.5	1.1	5.6	1.1	A+	A+

Table B–2 (continued). Mathematics Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
3776	715340	A1	A1	3740	.337	.337	.252	.262	.149	.000	.228	.228	-.103	-.114	-.036	1.212	0.037	5.4	1.1	9.9	1.4	A+	A-
3777	715341	A1	A1	3804	.587	.100	.156	.587	.157	.000	.299	-.149	-.189	.299	-.094	-0.021	0.037	6.4	1.1	8.7	1.2	A+	A-
3778	715885	A1	A1	3903	.206	.334	.193	.267	.206	.000	.226	-.012	-.137	-.072	.226	2.000	0.042	0.4	1.0	8.7	1.5	A+	A+
3779	715886	A1	A1	3803	.304	.175	.298	.223	.304	.000	.173	-.139	.041	-.109	.173	1.392	0.038	8.2	1.1	9.9	1.5	A+	A-
3780	715888	A1	A1	3841	.294	.215	.211	.294	.280	.000	.194	-.063	.014	.194	-.152	1.447	0.038	4.8	1.1	9.9	1.7	A-	A-
3781	715889	A1	A1	3785	.332	.332	.276	.257	.135	.000	.203	.203	-.066	-.127	-.031	1.269	0.037	6.5	1.1	9.9	1.5	A+	A+
3782	715890	A1	A1	3893	.193	.193	.195	.357	.256	.000	.015	.015	-.165	.132	-.009	2.091	0.043	7.6	1.2	9.9	2.4	A+	A-
3783	715891	A1	A1	3806	.386	.136	.187	.386	.291	.000	.138	-.132	-.139	.138	.071	0.990	0.036	9.9	1.2	9.9	1.6	A+	A-
3784	715893	A1	A1	3854	.495	.495	.205	.145	.155	.000	.380	.380	-.220	-.258	-.028	0.417	0.036	-0.3	1.0	3.3	1.1	A-	A-
3785	715926	A1	A1	3793	.263	.329	.202	.263	.206	.000	.021	.031	-.048	.021	-.012	1.623	0.039	9.9	1.2	9.9	2.3	A-	A+
3786	715927	A1	A1	3783	.404	.137	.331	.404	.128	.000	.172	-.114	-.021	.172	-.105	0.901	0.036	9.9	1.2	9.9	1.5	A-	A+
3787	715928	A1	A1	3841	.415	.109	.414	.234	.242	.000	.131	-.087	.131	-.175	.086	0.830	0.036	9.9	1.2	9.9	1.5	A-	A-
3788	719089	A1	A1	3805	.482	.211	.158	.482	.148	.000	.265	-.053	-.178	.265	-.129	0.515	0.036	8.2	1.1	9.9	1.2	A+	A+
3789	719090	A1	A1	3789	.262	.262	.298	.265	.175	.000	.133	.133	-.125	.021	-.028	1.638	0.040	7.2	1.1	9.9	1.8	A-	A-
3790	719091	A1	A1	3803	.397	.130	.148	.325	.397	.000	.262	-.185	-.137	-.037	.262	0.938	0.036	6.4	1.1	9.9	1.3	A-	A-
3791	719117	A1	A1	3786	.623	.172	.623	.133	.072	.000	.383	-.169	.383	-.270	-.117	-0.211	0.037	1.7	1.0	0.9	1.0	A+	A-
3792	719118	A1	A1	3793	.733	.044	.074	.733	.148	.000	.363	-.217	-.259	.363	-.134	-0.826	0.041	2.3	1.1	1.6	1.1	A-	A-
3793	719119	A1	A1	3854	.491	.133	.491	.226	.150	.000	.317	-.093	.317	-.210	-.109	0.453	0.036	4.5	1.1	8.4	1.2	A+	A+
3794	719120	A1	A1	3852	.323	.386	.140	.151	.323	.000	.300	-.102	-.175	-.084	.300	1.294	0.037	0.3	1.0	6.8	1.2	A+	A+
3795	719122	A1	A1	3953	.373	.185	.373	.227	.215	.000	.250	-.091	.250	-.172	-.033	1.041	0.036	5.9	1.1	9.9	1.4	A+	A+
3796	719123	A1	A1	3779	.358	.186	.188	.268	.358	.000	.216	-.030	-.056	-.158	.216	1.120	0.037	8.3	1.1	9.9	1.4	A+	A-
3797	719124	A1	A1	3904	.270	.270	.162	.403	.165	.000	.186	.186	-.133	.012	-.106	1.601	0.039	5.0	1.1	9.9	1.7	A+	A-
3798	724103	A1	A1	3848	.763	.763	.071	.100	.066	.000	.509	.509	-.276	-.276	-.253	-1.012	0.042	-5.4	0.9	-6.9	0.8	A+	A-
3799	724104	A1	A1	3876	.207	.207	.245	.151	.396	.000	.233	.233	-.122	-.194	.056	1.990	0.042	0.4	1.0	9.9	1.6	B-	A-
3800	724105	A1	A1	3918	.568	.118	.229	.568	.085	.000	.284	-.113	-.168	.284	-.121	0.075	0.036	8.5	1.1	9.9	1.3	A-	A-
3801	724106	A1	A1	3862	.698	.100	.131	.698	.071	.000	.431	-.239	-.250	.431	-.163	-0.625	0.039	-1.3	1.0	-2.4	0.9	A-	A-
3802	724107	A1	A1	3741	.263	.161	.292	.284	.262	.000	.219	-.073	-.074	-.079	.219	1.641	0.040	3.0	1.1	9.9	1.6	A+	A-
3803	724108	A1	A1	3785	.448	.448	.180	.294	.078	.000	.339	.339	-.136	-.121	-.227	0.687	0.036	1.0	1.0	6.7	1.2	A-	A-
3804	724109	A1	A1	3826	.324	.069	.324	.416	.191	.000	.212	-.112	.212	-.107	-.046	1.291	0.037	5.1	1.1	9.9	1.6	A+	A+
3805	724110	A1	A1	3920	.605	.167	.147	.605	.081	.000	.317	-.122	-.213	.317	-.124	-0.084	0.036	5.7	1.1	5.5	1.1	A+	A-
3806	724111	A1	A1	3761	.391	.200	.391	.222	.186	.000	.072	.066	.072	-.064	-.090	0.954	0.036	9.9	1.3	9.9	1.7	A+	A+
3807	724112	A1	A1	3747	.726	.104	.086	.084	.726	.000	.373	-.174	-.244	-.162	.373	-0.771	0.041	1.4	1.0	1.1	1.0	A+	A-
3808	734479	A1	A1	3930	.406	.146	.322	.406	.126	.000	.068	-.093	.026	.068	-.037	0.859	0.035	9.9	1.3	9.9	1.6	A+	A-
3809	734480	A1	A1	3803	.303	.240	.303	.376	.081	.000	.113	-.094	.113	.078	-.182	1.396	0.038	9.8	1.2	9.9	1.8	A-	A+
3810	734481	A1	A1	3885	.419	.282	.419	.208	.091	.000	.196	.023	.196	-.208	-.079	0.830	0.035	9.9	1.1	9.9	1.4	A-	A-

Table B–2 (continued). Mathematics Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M /F	W /B
3811	734482	A1	A1	3928	.472	.334	.103	.471	.092	.000	.149	-.013	-.128	.149	-.102	0.540	0.035	9.9	1.2	9.9	1.5	A-	A-
3812	734483	A1	A1	3707	.227	.227	.253	.247	.273	.000	.129	.129	-.076	-.115	.064	1.890	0.042	4.2	1.1	9.9	2.0	A-	A-
3813	734484	A1	A1	3718	.621	.048	.120	.210	.621	.000	.424	-.172	-.216	-.242	.424	-0.200	0.038	-1.4	1.0	-1.0	1.0	A+	A+
3814	734485	A1	A1	3884	.148	.179	.283	.390	.148	.000	.099	-.169	.019	.043	.099	2.426	0.047	2.2	1.1	9.9	2.2	A-	A+
3815	734486	A1	A1	3929	.258	.081	.170	.491	.258	.000	.191	-.203	-.192	.088	.191	1.687	0.039	3.4	1.1	9.9	1.8	A+	A+
3816	734487	A1	A1	3777	.295	.295	.321	.192	.191	.000	.181	.181	-.027	-.139	-.039	1.414	0.039	6.3	1.1	9.9	1.7	A-	B-
3817	734488	A1	A1	3895	.429	.429	.260	.223	.088	.000	.222	.222	-.073	-.107	-.117	0.768	0.035	9.9	1.1	9.9	1.4	A+	A-
3818	735035	A1	A1	3730	.285	.236	.284	.152	.328	.000	.134	-.070	.134	-.087	.001	1.501	0.039	7.7	1.1	9.9	1.7	A+	A-
3819	735036	A1	A1	3958	.157	.157	.202	.429	.212	.000	.115	.115	-.055	-.028	-.014	2.344	0.046	2.6	1.1	9.9	2.2	A-	A+
3820	735037	A1	A1	3817	.619	.129	.131	.122	.619	.000	.492	-.194	-.294	-.229	.492	-0.185	0.037	-6.5	0.9	-5.4	0.9	A+	A-
3821	735038	A1	A1	3810	.526	.525	.147	.163	.165	.000	.366	.366	-.207	-.122	-.174	0.287	0.036	1.0	1.0	4.1	1.1	A+	A+
3822	735039	A1	A1	3860	.489	.489	.118	.278	.115	.000	.370	.370	-.093	-.268	-.109	0.485	0.036	-0.1	1.0	4.8	1.1	A+	A+
3823	735040	A1	A1	3788	.526	.133	.249	.526	.092	.000	.273	-.229	-.104	.273	-.047	0.288	0.036	9.2	1.1	9.9	1.2	A+	A+
3824	735041	A1	A1	3823	.421	.088	.421	.261	.230	.000	.233	-.066	.233	-.151	-.072	0.792	0.036	8.4	1.1	9.9	1.4	A+	A-
3825	735042	A1	A1	3888	.274	.165	.267	.293	.274	.000	.048	-.026	.136	-.158	.048	1.560	0.039	9.9	1.2	9.9	2.1	A+	A-
3826	735043	A1	A1	3865	.126	.123	.450	.301	.126	.000	.054	-.074	.030	-.018	.054	2.652	0.051	2.4	1.1	9.9	2.5	A+	A-
3827	735044	A1	A1	3815	.476	.097	.476	.168	.259	.000	.252	-.153	.252	-.099	-.099	0.571	0.036	8.9	1.1	9.9	1.3	A-	A-
3828	735045	A1	A1	3814	.353	.075	.211	.362	.353	.000	.163	-.072	-.130	-.013	.163	1.139	0.037	9.9	1.2	9.9	1.5	A-	A+
3829	735046	A1	A1	3781	.502	.044	.359	.501	.096	.000	.295	-.221	-.163	.295	-.082	0.382	0.036	6.3	1.1	9.9	1.2	A+	A-
3830	735047	A1	A1	3801	.767	.091	.045	.097	.767	.000	.503	-.236	-.299	-.280	.503	-1.037	0.043	-4.9	0.9	-4.8	0.8	A+	B-
3831	735048	A1	A1	3796	.482	.482	.237	.246	.035	.000	.342	.342	-.191	-.120	-.208	0.506	0.036	2.6	1.0	7.2	1.2	A-	A-
3832	735049	A1	A1	3808	.275	.411	.265	.275	.049	.000	.151	-.015	-.107	.151	-.059	1.575	0.039	6.5	1.1	9.9	1.8	A+	A+
3833	735050	A1	A1	3790	.466	.164	.466	.246	.123	.000	.251	-.149	.251	-.090	-.095	0.574	0.036	9.9	1.1	9.9	1.3	A+	A+
3834	735051	A1	A1	3886	.162	.243	.321	.274	.162	.000	.119	-.042	-.042	-.014	.119	2.338	0.046	1.1	1.0	9.9	2.5	A-	A-
3835	735052	A1	A1	3882	.407	.158	.255	.407	.180	.000	.182	-.066	-.114	.182	-.040	0.844	0.036	9.9	1.2	9.9	1.4	A+	A-
3836	735053	A1	A1	3780	.255	.150	.255	.372	.223	.000	-.013	-.039	-.013	.026	.017	1.673	0.040	9.9	1.3	9.9	2.1	A-	A-
3837	735054	A1	A1	3936	.223	.349	.242	.186	.223	.000	.229	.005	-.132	-.107	.229	1.863	0.041	0.8	1.0	9.9	1.6	A+	A+
3838	735143	A1	A1	3891	.297	.096	.171	.435	.297	.000	.212	-.143	-.124	-.017	.212	1.424	0.038	5.3	1.1	9.9	1.5	A+	A-
3839	735144	A1	A1	3834	.347	.183	.347	.149	.320	.000	.083	.039	.083	-.170	.013	1.182	0.037	9.9	1.2	9.9	1.8	A-	A-
3840	735145	A1	A1	3803	.579	.578	.145	.108	.168	.000	.366	.366	-.241	-.205	-.085	0.036	0.036	1.9	1.0	3.3	1.1	A-	A+
3841	735146	A1	A1	3858	.166	.166	.187	.378	.269	.000	.052	.052	-.103	-.058	.110	2.284	0.046	4.2	1.1	9.9	2.7	A-	A+
3842	735147	A1	A1	3853	.294	.092	.294	.508	.106	.000	.072	-.266	.072	.182	-.152	1.447	0.038	9.9	1.2	9.9	2.0	A-	A-
3843	735148	A1	A1	3786	.806	.063	.806	.083	.049	.000	.454	-.252	.454	-.263	-.213	-1.367	0.046	-2.3	0.9	-4.6	0.8	A+	A-
3844	735149	A1	A1	3865	.357	.122	.179	.343	.357	.000	.283	-.129	-.220	-.019	.283	1.112	0.037	2.7	1.0	9.9	1.3	A+	A-
3845	735150	A1	A1	3818	.098	.126	.595	.181	.098	.000	.151	-.128	.036	-.052	.151	2.957	0.057	-0.4	1.0	9.9	2.3	A-	A+

Table B–2 (continued). Mathematics Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M /F	W /B
3846	735151	A1	A1	3798	.732	.070	.084	.115	.732	.000	.536	-.250	-.278	-.304	.536	-0.769	0.041	-7.6	0.9	-9.1	0.7	B+	A-
3847	735152	A1	A1	3816	.597	.186	.074	.143	.597	.000	.391	-.157	-.218	-.210	.391	-0.043	0.037	0.9	1.0	1.5	1.0	A+	A-
3848	735153	A1	A1	3778	.401	.401	.365	.120	.114	.000	.251	.251	.088	-.264	-.250	0.885	0.036	8.2	1.1	9.9	1.3	A-	A-
3849	735154	A1	A1	3758	.649	.648	.160	.124	.068	.000	.492	.492	-.184	-.336	-.227	-0.354	0.038	-5.6	0.9	-5.7	0.9	A+	A+
3850	735155	A1	A1	3701	.710	.080	.710	.123	.088	.000	.414	-.219	.414	-.254	-.161	-0.691	0.040	-0.9	1.0	-2.4	0.9	A+	A-
3851	735156	A1	A1	3789	.508	.280	.137	.508	.074	.000	.339	-.062	-.258	.339	-.202	0.358	0.036	2.5	1.0	8.7	1.2	A+	A+
3852	735157	A1	A1	3860	.426	.122	.426	.289	.163	.000	.205	-.141	.205	-.045	-.094	0.763	0.036	9.9	1.1	9.9	1.5	A-	A-
3853	735158	A1	A1	3888	.645	.645	.206	.090	.059	.000	.437	.437	-.169	-.313	-.219	-0.326	0.037	-2.2	1.0	-2.6	0.9	A+	A-
3854	735159	A1	A1	3782	.654	.127	.654	.138	.080	.000	.446	-.142	.446	-.314	-.207	-0.350	0.038	-3.1	1.0	-3.5	0.9	A+	A-
3855	735160	A1	A1	3751	.553	.071	.260	.553	.117	.000	.251	-.113	-.122	.251	-.131	0.140	0.036	9.9	1.2	9.9	1.2	A+	A-
3856	735161	A1	A1	3781	.272	.263	.219	.246	.272	.000	.128	.192	-.203	-.135	.128	1.555	0.039	8.4	1.2	9.9	1.9	A+	A-
3857	735162	A1	A1	3885	.385	.242	.385	.160	.213	.000	.181	-.018	.181	-.241	.020	0.955	0.036	9.9	1.2	9.9	1.5	A-	A-
3858	735648	A1	A1	3826	.481	.198	.182	.481	.139	.000	.272	-.057	-.215	.272	-.086	0.520	0.036	7.6	1.1	9.9	1.3	A-	A-
3859	735649	A1	A1	3876	.397	.213	.288	.397	.101	.000	.117	-.044	-.002	.117	-.127	0.898	0.036	9.9	1.2	9.9	1.6	A+	A-
3860	735650	A1	A1	3847	.274	.274	.282	.281	.163	.000	.262	.262	-.024	-.153	-.102	1.574	0.039	1.0	1.0	8.9	1.4	A-	A+
3861	735651	A1	A1	3797	.429	.179	.234	.429	.157	.000	.099	.076	-.101	.099	-.098	0.758	0.036	9.9	1.3	9.9	1.6	A+	A-
3862	735652	A1	A1	3803	.466	.145	.268	.466	.120	.000	.119	-.058	-.026	.119	-.085	0.569	0.036	9.9	1.3	9.9	1.5	A-	A-
3863	735653	A1	A1	3813	.565	.159	.188	.565	.088	.000	.167	-.008	-.069	.167	-.187	0.110	0.036	9.9	1.3	9.9	1.4	A-	A-
3864	735654	A1	A1	3904	.420	.420	.281	.190	.109	.000	.255	.255	-.163	-.103	-.038	0.796	0.036	7.1	1.1	9.9	1.4	A+	A-
3865	735655	A1	A1	3839	.589	.589	.206	.158	.047	.000	.383	.383	-.222	-.185	-.147	-0.010	0.037	0.7	1.0	3.3	1.1	A+	A-
3866	735656	A1	A1	3878	.322	.312	.322	.235	.131	.000	.137	.077	.137	-.116	-.149	1.283	0.037	9.0	1.1	9.9	1.9	A-	A+
3867	735657	A1	A1	3826	.354	.157	.354	.377	.112	.000	.122	-.016	.122	-.015	-.144	1.122	0.037	9.9	1.2	9.9	1.7	A-	A+
3868	735658	A1	A1	3850	.461	.238	.145	.461	.156	.000	.245	-.017	-.234	.245	-.091	0.596	0.036	9.2	1.1	9.9	1.3	A+	A+
3869	735659	A1	A1	3956	.490	.128	.139	.490	.243	.000	.239	-.084	-.191	.239	-.060	0.459	0.035	9.9	1.2	9.9	1.3	A+	A-
3870	735660	A1	A1	3883	.465	.079	.263	.193	.465	.000	.250	-.131	-.069	-.149	.250	0.575	0.035	9.9	1.1	9.9	1.3	A+	A+
3871	735661	A1	A1	3910	.392	.392	.166	.343	.099	.000	.251	.251	-.252	-.002	-.093	0.941	0.036	6.8	1.1	9.9	1.3	A-	A-
3872	735662	A1	A1	3903	.672	.070	.128	.672	.130	.000	.385	-.176	-.171	.385	-.234	-0.461	0.038	1.3	1.0	-0.5	1.0	A+	A-
3873	735663	A1	A1	3923	.446	.194	.250	.446	.110	.000	.201	-.056	-.107	.201	-.101	0.685	0.035	9.9	1.2	9.9	1.4	A+	A+
3874	735664	A1	A1	3737	.563	.164	.562	.184	.090	.000	.329	-.081	.329	-.257	-.118	0.106	0.037	4.6	1.1	4.8	1.1	A+	A-
3875	735665	A1	A1	3767	.404	.235	.404	.237	.124	.000	.133	.076	.133	-.172	-.074	0.863	0.036	9.9	1.2	9.9	1.5	A+	A+
3876	735666	A1	A1	3821	.299	.127	.314	.261	.299	.000	.231	-.095	-.115	-.048	.231	1.456	0.038	3.3	1.1	9.9	1.4	A-	A-
3877	735667	A1	A1	3814	.502	.059	.269	.170	.502	.000	.396	-.229	-.201	-.146	.396	0.428	0.036	-1.5	1.0	1.4	1.0	A-	A-
3878	735984	A1	A1	3732	.247	.247	.148	.429	.176	.000	.160	.160	-.181	.097	-.138	1.750	0.041	4.4	1.1	9.9	1.8	A+	A-
3879	735985	A1	A1	3823	.416	.185	.416	.214	.186	.000	.228	-.025	.228	-.174	-.081	0.823	0.036	9.6	1.1	9.9	1.4	A+	A-
3880	735986	A1	A1	3871	.425	.147	.227	.425	.201	.000	.023	.048	-.069	.023	.001	0.776	0.036	9.9	1.4	9.9	1.7	A+	A-

Table B–2 (continued). Mathematics Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M /F	W /B
3881	735987	A1	A1	3857	.416	.416	.210	.186	.188	.000	.310	.310	-.157	-.214	-.014	0.793	0.036	3.3	1.0	9.6	1.3	A+	A-
3882	735988	A1	A1	3939	.395	.160	.395	.164	.282	.000	.176	-.007	.176	-.226	.000	0.936	0.035	9.9	1.2	9.9	1.4	A-	A+
3883	735989	A1	A1	3733	.746	.746	.076	.102	.076	.000	.546	.546	-.276	-.329	-.245	-0.921	0.042	-7.2	0.9	-8.7	0.7	A-	A-
3884	735990	A1	A1	3793	.485	.214	.167	.485	.134	.000	.203	-.033	-.160	.203	-.083	0.479	0.036	9.9	1.2	9.9	1.4	A+	A-
3885	735991	A1	A1	3885	.520	.133	.520	.228	.120	.000	.292	-.178	.292	-.062	-.183	0.278	0.036	7.7	1.1	9.3	1.2	A-	A+
3886	735992	A1	A1	3741	.321	.269	.200	.211	.321	.000	.238	-.072	-.079	-.117	.238	1.317	0.038	3.3	1.1	9.9	1.5	A-	A-
3887	735993	A1	A1	3825	.552	.148	.193	.552	.106	.000	.297	-.129	-.153	.297	-.135	0.125	0.036	7.6	1.1	9.1	1.2	A+	A+
3888	735994	A1	A1	3880	.469	.223	.469	.213	.094	.000	.301	-.108	.301	-.178	-.111	0.548	0.035	4.5	1.1	9.8	1.2	A+	A-
3889	735995	A1	A1	3770	.366	.144	.366	.309	.181	.000	.095	-.106	.095	-.037	.022	1.055	0.037	9.9	1.3	9.9	1.7	A+	A-
3890	735997	A1	A1	3894	.147	.595	.123	.135	.147	.000	.079	.142	-.134	-.156	.079	2.484	0.048	1.7	1.1	9.9	3.0	A-	A+
3891	735998	A1	A1	3828	.634	.037	.634	.211	.118	.000	.413	-.188	.413	-.226	-.221	-0.273	0.037	-0.4	1.0	-1.2	1.0	A-	A-
3892	735999	A1	A1	3743	.075	.075	.593	.099	.232	.000	-.018	-.018	.302	-.292	-.133	3.264	0.064	1.9	1.1	9.9	3.5	A-	A+
3893	736000	A1	A1	3861	.368	.368	.254	.248	.130	.000	.348	.348	-.089	-.177	-.156	1.042	0.036	-1.7	1.0	7.5	1.2	A-	A-
3894	736001	A1	A1	3880	.322	.109	.399	.170	.322	.000	.221	-.115	.016	-.201	.221	1.297	0.037	5.4	1.1	9.9	1.5	A-	A+
3895	736002	A1	A1	3798	.274	.343	.274	.176	.207	.000	.016	.113	.016	-.161	.001	1.595	0.039	9.9	1.2	9.9	2.1	A-	A+
3896	736003	A1	A1	3855	.415	.186	.415	.265	.134	.000	.165	-.066	.165	-.119	-.008	0.814	0.036	9.9	1.2	9.9	1.5	A+	A+
3897	736472	A1	A1	3759	.138	.285	.206	.371	.138	.000	.082	-.187	-.050	.158	.082	2.564	0.050	1.9	1.1	9.9	3.0	A-	A-
3898	736473	A1	A1	3730	.250	.150	.250	.405	.195	.000	.080	-.029	.080	.003	-.065	1.731	0.040	8.6	1.2	9.9	2.0	A+	A-
3899	736474	A1	A1	3867	.200	.125	.520	.155	.200	.000	.146	.030	-.002	-.186	.146	2.068	0.043	1.8	1.0	9.9	2.2	A+	A-
3900	736475	A1	A1	3851	.377	.186	.377	.247	.190	.000	.073	-.050	.073	-.098	.066	1.035	0.036	9.9	1.3	9.9	1.6	A-	A-
3901	736476	A1	A1	3878	.428	.257	.160	.428	.156	.000	.146	.122	-.177	.146	-.166	0.777	0.035	9.9	1.2	9.9	1.5	A+	A-
3902	736477	A1	A1	3784	.519	.187	.247	.519	.048	.000	.353	-.198	-.135	.353	-.194	0.319	0.036	2.1	1.0	6.8	1.2	A+	A+
3903	736478	A1	A1	3746	.313	.267	.315	.313	.105	.000	.047	-.029	.025	.047	-.066	1.351	0.038	9.9	1.2	9.9	1.9	A-	A+
3904	736479	A1	A1	3792	.546	.161	.546	.247	.046	.000	.317	-.112	.317	-.175	-.195	0.168	0.036	5.5	1.1	7.8	1.2	A+	A-
3905	736480	A1	A1	3766	.356	.356	.287	.264	.094	.000	.353	.353	.007	-.218	-.261	1.142	0.037	-1.7	1.0	4.4	1.1	A-	A-
3906	736481	A1	A1	3915	.281	.281	.284	.259	.176	.000	.280	.280	-.081	-.147	-.066	1.533	0.038	0.2	1.0	9.9	1.4	A+	A-
3907	736482	A1	A1	3859	.557	.241	.104	.098	.557	.000	.337	-.086	-.235	-.198	.337	0.121	0.036	4.8	1.1	5.3	1.1	A-	A-
3908	736483	A1	A1	3734	.324	.378	.324	.157	.140	.000	.114	.016	.114	-.139	-.031	1.310	0.038	9.9	1.2	9.9	1.6	A-	A-
3909	736484	A1	A1	3777	.628	.131	.163	.628	.078	.000	.347	-.212	-.125	.347	-.187	-0.209	0.037	3.9	1.1	2.9	1.1	A-	A+
3910	736485	A1	A1	3826	.646	.028	.211	.646	.115	.000	.367	-.206	-.247	.367	-.129	-0.321	0.038	2.7	1.1	2.4	1.1	A+	A-
3911	736486	A1	A1	3775	.333	.147	.344	.333	.176	.000	.076	-.020	-.019	.076	-.052	1.246	0.037	9.9	1.2	9.9	1.8	A-	A-
3912	736487	A1	A1	3872	.350	.215	.350	.353	.082	.000	.059	.007	.059	.020	-.148	1.169	0.037	9.9	1.3	9.9	1.7	A+	A+
3913	736488	A1	A1	3824	.552	.069	.227	.552	.151	.000	.223	-.098	-.058	.223	-.172	0.132	0.036	9.9	1.2	9.9	1.3	A-	A-
3914	736489	A1	A1	3868	.535	.071	.242	.152	.535	.000	.384	-.129	-.195	-.209	.384	0.257	0.036	-0.2	1.0	3.2	1.1	A-	B-
3915	736490	A1	A1	3830	.150	.222	.150	.220	.408	.000	.013	-.201	.013	-.104	.248	2.423	0.048	3.3	1.1	9.9	3.2	A-	A-

Table B–2 (continued). Mathematics Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M /F	W /B
3916	736491	A1	A1	3871	.223	.223	.333	.262	.182	.000	.082	.082	.078	-.116	-.051	1.876	0.041	6.8	1.2	9.9	2.0	A+	A+

Items with reference line numbers 1-1949 were field tested during the stand-alone field test administered in spring 2010. Items with reference line numbers 1950-2335 were field tested during the embedded field test administered in spring 2013. Items with reference line numbers 2336-3319 were field tested during field test administered in fall 2013. Items with reference line numbers 3320-3916 were field tested during the embedded field test administered during the 2015-2016 school year.

READING/LITERATURE MULTIPLE-CHOICE ITEMS

Table B–3. Reading/Literature Multiple-Choice Item Statistics

Table B–3. Reading/Literature Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M /F	W /B
1	613600	3	3	765	.378	.346	.133	.141	.378	.001	.459	-.140	-.243	-.208	.459	0.282	0.086	-1.6	0.9	-0.5	1.0	A+	A+
2	613567	3	N/A	760	.446	.254	.446	.138	.159	.003	.377	-.186	.377	-.135	-.131	-0.213	0.081	1.8	1.1	2.7	1.1	A-	A-
3	613576	3	N/A	760	.571	.125	.076	.217	.571	.011	.449	-.164	-.262	-.166	.449	-0.876	0.082	0.3	1.0	0.2	1.0	A-	A+
4	613575	3	N/A	760	.425	.100	.425	.257	.203	.016	.298	-.322	.298	-.011	-.035	-0.140	0.082	5.3	1.2	5.7	1.3	A+	A-
5	613448	3	3	760	.649	.649	.071	.104	.155	.021	.549	.549	-.220	-.222	-.276	-1.322	0.086	-3.5	0.9	-3.5	0.8	B+	B-
6	613587	3	3	1535	.930	.930	.012	.029	.026	.003	.432	.432	-.175	-.236	-.234	-3.761	0.113	-1.6	0.9	-4.4	0.4	A+	B-
7	613588	3	N/A	1535	.572	.228	.572	.178	.014	.008	.404	-.196	.404	-.212	-.144	-0.847	0.059	3.5	1.1	2.3	1.1	A+	A+
8	613589	3	N/A	1535	.240	.259	.419	.074	.240	.009	.267	-.167	.057	-.179	.267	1.013	0.066	3.8	1.1	5.4	1.4	A+	A+
9	613595	3	3	1530	.680	.153	.680	.116	.043	.009	.511	-.307	.511	-.211	-.211	-1.452	0.061	-4.5	0.9	-5.4	0.8	A+	A-
10	613596	3	N/A	1530	.285	.498	.074	.137	.285	.006	.292	.028	-.220	-.198	.292	0.620	0.062	1.9	1.1	5.6	1.3	A+	A-
11	613571	3	N/A	760	.695	.159	.093	.032	.695	.021	.461	-.120	-.306	-.182	.461	-1.589	0.088	-0.8	1.0	-0.7	1.0	A+	A+
12	613572	3	N/A	760	.709	.101	.111	.054	.709	.025	.606	-.257	-.319	-.214	.606	-1.685	0.089	-5.6	0.8	-5.2	0.7	A-	A-
13	613465	3	3	760	.238	.401	.128	.204	.238	.029	.320	-.019	-.259	.020	.320	0.832	0.092	1.1	1.1	0.6	1.0	A-	A-
14	613466	3	N/A	760	.491	.228	.100	.150	.491	.032	.501	-.122	-.252	-.210	.501	-0.548	0.081	-3.1	0.9	-2.4	0.9	A-	A+
15	613563	3	N/A	770	.768	.053	.078	.068	.768	.034	.530	-.246	-.246	-.241	.530	-2.143	0.098	-2.9	0.9	-3.1	0.7	A-	
16	613467	3	N/A	771	.658	.078	.097	.658	.147	.021	.531	-.243	-.272	.531	-.162	-1.355	0.087	-2.1	0.9	-2.4	0.8	A-	A-
17	613455	3	3	771	.510	.143	.510	.087	.237	.023	.372	-.255	.372	-.244	.052	-0.552	0.082	3.3	1.1	3.5	1.2	A+	A+
18	613456	3	3	771	.822	.053	.051	.822	.051	.023	.590	-.268	-.284	.590	-.242	-2.560	0.111	-3.2	0.8	-4.3	0.5	B+	B+
19	613457	3	3	771	.734	.734	.060	.110	.067	.029	.450	.450	-.254	-.128	-.178	-1.867	0.095	0.5	1.0	-0.3	1.0	A-	A-
20	613458	3	N/A	771	.658	.048	.198	.067	.658	.029	.534	-.268	-.189	-.268	.534	-1.375	0.087	-2.6	0.9	-1.5	0.9	A+	A+
21	613592	3	N/A	5356	.760	.166	.037	.760	.027	.010	.474	-.246	-.247	.474	-.210	-1.967	0.036	-2.8	1.0	-4.5	0.9	A+	A-
22	613593	3	3	5356	.827	.827	.063	.036	.065	.010	.429	.429	-.165	-.224	-.207	-2.500	0.041	-1.3	1.0	-2.3	0.9	A+	A+
23	613461	3	3	5356	.523	.047	.523	.062	.354	.014	.242	-.213	.242	-.201	.016	-0.619	0.031	9.9	1.3	9.9	1.4	A-	A-
24	613462	3	3	5356	.642	.073	.173	.642	.098	.014	.504	-.234	-.229	.504	-.198	-1.253	0.032	-4.5	0.9	-4.9	0.9	A+	A-
25	613445	3	3	764	.736	.100	.110	.736	.039	.016	.554	-.233	-.288	.554	-.264	-1.881	0.094	-2.7	0.9	-2.7	0.8	B+	
26	613443	3	N/A	764	.542	.126	.152	.542	.149	.031	.513	-.159	-.277	.513	-.182	-0.788	0.085	-0.3	1.0	-1.0	1.0	A-	
27	613442	3	3	764	.695	.695	.103	.094	.071	.037	.459	.459	-.277	-.218	-.101	-1.727	0.093	0.6	1.0	0.8	1.1	A+	
28	613441	3	3	764	.584	.130	.111	.136	.584	.039	.518	-.215	-.276	-.165	.518	-1.053	0.086	-0.8	1.0	-0.8	1.0	A+	
29	613447	3	N/A	760	.583	.226	.090	.583	.083	.018	.443	-.197	-.148	.443	-.214	-0.959	0.083	0.5	1.0	0.6	1.0	A+	A+
30	613450	3	3	770	.408	.247	.244	.082	.408	.020	.199	-.107	.001	-.045	.199	-0.051	0.082	8.1	1.3	7.4	1.4	A-	

Table B–3 (continued). Reading/Literature Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M /F	W /B
31	613451	3	3	770	.449	.268	.140	.120	.449	.023	.395	-.165	-.150	-.092	.395	-0.286	0.081	2.0	1.1	2.4	1.1	A+	
32	613452	3	3	770	.384	.384	.026	.331	.236	.022	.193	.193	-.181	-.049	.001	0.069	0.082	8.2	1.3	7.0	1.4	A+	
33	613468	3	N/A	771	.532	.253	.078	.119	.532	.018	.461	-.134	-.152	-.261	.461	-0.659	0.082	-0.1	1.0	0.0	1.0	A-	A-
34	613463	3	N/A	5356	.854	.854	.033	.034	.066	.013	.486	.486	-.203	-.201	-.261	-2.782	0.044	-4.5	0.9	-6.5	0.7	A-	A-
35	613444	3	3	764	.747	.094	.106	.038	.747	.014	.576	-.315	-.260	-.238	.576	-1.946	0.095	-3.7	0.8	-3.7	0.7	A+	
36	613438	3	3	764	.656	.096	.656	.169	.048	.031	.540	-.225	.540	-.238	-.291	-1.447	0.089	-1.8	0.9	-1.7	0.9	A-	
37	613581	3	N/A	766	.573	.573	.165	.088	.151	.024	.303	.303	-.176	-.110	-.026	-0.944	0.084	6.1	1.2	5.1	1.3	A+	A+
38	613601	3	N/A	765	.761	.059	.076	.761	.099	.005	.527	-.241	-.303	.527	-.261	-1.937	0.096	-2.4	0.9	-3.4	0.7	A+	A-
39	613577	3	N/A	760	.765	.765	.076	.086	.063	.011	.446	.446	-.207	-.200	-.198	-2.006	0.096	-0.3	1.0	-0.7	0.9	A-	A-
40	613598	3	N/A	1530	.712	.712	.110	.102	.070	.006	.322	.322	-.185	-.122	-.141	-1.626	0.062	2.9	1.1	4.2	1.2	A+	A-
41	613597	3	N/A	1530	.282	.191	.282	.158	.361	.008	.268	-.171	.268	.068	-.119	0.641	0.062	3.9	1.1	4.1	1.2	A-	A-
42	613562	3	N/A	770	.617	.617	.094	.117	.146	.027	.513	.513	-.232	-.262	-.155	-1.169	0.084	-2.1	0.9	-2.4	0.9	A+	
43	613583	3	3	766	.608	.158	.107	.103	.608	.024	.472	-.199	-.196	-.176	.472	-1.142	0.085	-0.7	1.0	-1.3	0.9	A+	A-
44	613584	3	3	766	.571	.151	.128	.125	.571	.025	.449	-.130	-.232	-.163	.449	-0.936	0.084	0.9	1.0	1.1	1.1	A+	A-
45	613585	3	3	766	.710	.086	.072	.107	.710	.025	.519	-.316	-.188	-.174	.519	-1.757	0.091	-2.9	0.9	-2.7	0.8	A+	A+
46	613586	3	3	766	.682	.095	.102	.682	.095	.026	.501	-.180	-.274	.501	-.178	-1.581	0.089	-1.9	0.9	-2.4	0.8	A+	A+
47	613602	3	N/A	765	.771	.077	.072	.076	.771	.004	.527	-.279	-.242	-.301	.527	-2.022	0.098	-2.6	0.9	-1.4	0.9	A+	A-
48	613603	3	N/A	765	.399	.218	.216	.157	.399	.011	.400	-.112	-.245	-.088	.400	0.134	0.085	1.9	1.1	2.1	1.2	A+	A+
49	613568	3	3	760	.743	.040	.087	.743	.126	.004	.466	-.157	-.269	.466	-.252	-1.824	0.092	-1.3	0.9	-1.7	0.9	A+	A-
50	613579	3	N/A	760	.486	.070	.107	.328	.486	.011	.382	-.173	-.228	-.099	.382	-0.441	0.081	2.9	1.1	2.9	1.1	A-	A+
51	613580	3	3	760	.740	.072	.740	.133	.045	.011	.448	-.201	.448	-.192	-.239	-1.828	0.092	-0.1	1.0	-0.7	0.9	A+	B-
52	613578	3	N/A	760	.365	.365	.154	.258	.209	.015	.306	.306	-.200	.027	-.135	0.187	0.084	4.1	1.2	4.1	1.3	A-	A+
53	613590	3	N/A	1535	.584	.044	.584	.259	.106	.008	.458	-.112	.458	-.262	-.218	-0.926	0.059	0.4	1.0	0.2	1.0	A+	A-
54	613591	3	3	1535	.371	.371	.212	.141	.265	.011	.267	.267	-.112	-.199	.027	0.200	0.059	8.1	1.2	9.6	1.5	A-	A+
55	613573	3	3	760	.445	.224	.166	.445	.145	.021	.393	-.098	-.135	.393	-.155	-0.289	0.080	1.3	1.0	1.1	1.1	A+	A+
56	613574	3	3	760	.613	.255	.032	.613	.076	.024	.564	-.292	-.175	.564	-.258	-1.140	0.083	-4.9	0.8	-4.7	0.8	A-	B-
57	613564	3	N/A	770	.410	.410	.107	.166	.287	.030	.421	.421	-.200	-.208	-.054	-0.104	0.082	0.8	1.0	1.4	1.1	A-	
58	613565	3	3	770	.513	.175	.125	.513	.156	.031	.482	-.217	-.078	.482	-.251	-0.625	0.081	-1.6	1.0	-1.3	0.9	A-	
59	613599	3	3	765	.777	.042	.050	.129	.777	.003	.432	-.234	-.265	-.214	.432	-2.034	0.098	-1.0	1.0	-1.1	0.9	A+	A+
60	613566	3	3	760	.203	.263	.140	.391	.203	.004	.207	-.062	-.051	-.053	.207	1.216	0.099	2.6	1.2	3.4	1.4	A-	A+
61	613610	3	3	760	.888	.042	.036	.032	.888	.003	.511	-.225	-.276	-.301	.511	-3.035	0.125	-2.6	0.8	-3.9	0.5	A+	A-
62	613611	3	3	760	.803	.803	.074	.034	.082	.008	.428	.428	-.243	-.187	-.195	-2.282	0.102	-0.1	1.0	-1.1	0.9	B-	A-
63	613615	3	3	760	.703	.130	.124	.038	.703	.005	.563	-.319	-.285	-.201	.563	-1.583	0.088	-4.3	0.8	-3.9	0.7	B-	A-
64	613449	3	3	760	.736	.122	.736	.070	.051	.021	.533	-.185	.533	-.314	-.257	-1.852	0.093	-2.7	0.9	-2.9	0.8	A+	B-
65	613606	3	3	764	.547	.101	.123	.221	.547	.008	.351	-.269	-.243	.014	.351	-0.736	0.083	5.1	1.2	4.3	1.3	A-	

Table B–3 (continued). Reading/Literature Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
66	613594	3	3	760	.321	.353	.220	.321	.099	.008	.256	.015	-.153	.256	-.180	0.378	0.084	2.7	1.1	4.0	1.3	A-	A+
67	613608	3	3	760	.372	.168	.372	.296	.157	.007	.274	-.150	.274	-.029	-.113	0.118	0.082	3.1	1.1	4.2	1.2	A-	B+
68	613570	3	3	760	.529	.529	.258	.047	.146	.020	.301	.301	-.016	-.220	-.141	-0.698	0.080	4.8	1.2	3.9	1.2	A-	A-
69	613569	3	3	760	.665	.115	.101	.099	.665	.021	.357	-.138	-.149	-.109	.357	-1.415	0.085	2.4	1.1	2.2	1.1	A+	A-
70	613464	3	N/A	760	.508	.508	.149	.137	.179	.028	.417	.417	-.201	-.212	-.039	-0.622	0.081	0.8	1.0	0.3	1.0	A-	A-
71	613616	3	3	770	.399	.157	.308	.131	.399	.005	.414	-.197	-.126	-.156	.414	0.025	0.082	0.4	1.0	0.1	1.0	B-	
72	613560	3	3	770	.643	.226	.643	.065	.042	.025	.482	-.220	.482	-.240	-.182	-1.300	0.085	-1.0	1.0	-1.0	0.9	A+	
73	613561	3	3	770	.551	.162	.117	.143	.551	.027	.524	-.227	-.193	-.198	.524	-0.813	0.082	-2.7	0.9	-2.8	0.9	B-	
74	613612	3	3	771	.140	.067	.514	.272	.140	.007	.130	-.158	.017	.034	.130	1.855	0.115	1.2	1.1	3.1	1.5	A+	A-
75	613609	3	3	771	.816	.053	.087	.038	.816	.007	.545	-.239	-.296	-.237	.545	-2.391	0.106	-2.6	0.8	-3.2	0.7	A-	A+
76	613453	3	N/A	771	.423	.398	.423	.083	.075	.021	.443	-.229	.443	-.125	-.090	-0.107	0.082	-0.2	1.0	0.4	1.0	B-	A-
77	613454	3	3	771	.700	.700	.127	.043	.105	.025	.478	.478	-.175	-.204	-.227	-1.630	0.091	-0.3	1.0	-1.4	0.9	A+	A+
78	613605	3	N/A	5356	.572	.572	.128	.067	.226	.008	.356	.356	-.251	-.146	-.075	-0.856	0.031	9.2	1.1	8.3	1.2	A+	A+
79	613613	3	3	5356	.623	.094	.172	.623	.103	.009	.468	-.198	-.222	.468	-.194	-1.133	0.032	-1.3	1.0	-1.8	1.0	A-	A+
80	613614	3	3	5356	.884	.040	.031	.884	.037	.008	.497	-.260	-.240	.497	-.213	-3.064	0.048	-5.2	0.8	-8.8	0.5	A-	B-
81	613460	3	3	5356	.578	.241	.578	.066	.103	.012	.494	-.191	.494	-.237	-.232	-0.904	0.031	-3.5	1.0	-3.7	0.9	A-	A-
82	613459	3	3	5356	.641	.117	.641	.106	.122	.013	.502	-.207	.502	-.234	-.206	-1.253	0.032	-4.4	0.9	-4.4	0.9	A+	A+
83	613607	3	3	770	.896	.026	.046	.896	.027	.005	.444	-.181	-.247	.444	-.229	-3.150	0.130	-1.4	0.9	-2.5	0.6	B+	
84	613446	3	3	764	.763	.072	.080	.071	.763	.014	.624	-.285	-.293	-.311	.624	-2.068	0.097	-5.4	0.7	-4.8	0.6	B+	
85	613440	3	3	764	.759	.042	.094	.080	.759	.025	.575	-.207	-.291	-.306	.575	-2.109	0.099	-3.1	0.8	-3.7	0.7	B-	
86	613439	3	3	764	.656	.656	.106	.097	.111	.030	.606	.606	-.278	-.277	-.258	-1.431	0.089	-4.8	0.8	-3.9	0.7	A-	
87	613400	4	4	6629	.571	.176	.213	.036	.571	.005	.438	-.219	-.192	-.204	.438	-0.240	0.028	1.7	1.0	1.9	1.0	A+	A-
88	613401	4	4	6629	.780	.090	.046	.780	.079	.005	.562	-.281	-.301	.562	-.265	-1.486	0.033	-9.9	0.8	-9.9	0.7	A+	A-
89	613214	4	4	818	.752	.059	.100	.075	.752	.015	.546	-.253	-.262	-.233	.546	-1.460	0.093	-3.1	0.9	-3.3	0.7	A+	A-
90	613388	4	4	829	.695	.022	.232	.695	.052	.000	.345	-.275	-.176	.345	-.200	-0.895	0.083	1.8	1.1	1.8	1.1	A+	A-
91	613389	4	4	829	.776	.776	.050	.050	.126	.000	.407	.407	-.223	-.291	-.176	-1.408	0.091	-0.3	1.0	-0.2	1.0	A-	A-
92	613390	4	4	829	.487	.122	.487	.215	.175	.001	.341	-.262	.341	-.115	-.099	0.198	0.078	2.6	1.1	2.5	1.1	A+	A+
93	613375	4	4	824	.470	.058	.299	.171	.470	.002	.354	-.214	-.170	-.104	.354	0.199	0.079	3.2	1.1	3.0	1.2	A+	C+
94	613376	4	4	824	.716	.716	.114	.098	.069	.002	.452	.452	-.246	-.291	-.119	-1.129	0.086	-0.8	1.0	-1.4	0.9	A-	A-
95	613377	4	N/A	824	.659	.041	.204	.093	.659	.002	.444	-.223	-.187	-.281	.444	-0.796	0.082	-0.8	1.0	-1.2	0.9	A-	A-
96	608190	4	4	825	.778	.148	.033	.040	.778	.001	.488	-.312	-.261	-.227	.488	-1.348	0.093	-1.9	0.9	-2.5	0.8	A+	A-
97	613216	4	4	825	.689	.090	.142	.689	.079	.001	.466	-.218	-.268	.466	-.210	-0.768	0.084	-0.8	1.0	-0.8	1.0	A-	A-
98	613175	4	N/A	825	.596	.069	.596	.150	.178	.006	.362	-.197	.362	-.131	-.185	-0.277	0.080	3.7	1.1	3.2	1.2	A-	A+
99	613380	4	4	842	.797	.797	.093	.033	.071	.006	.509	.509	-.286	-.177	-.276	-1.661	0.096	-2.3	0.9	-2.1	0.8	A+	A-
100	613365	4	4	823	.583	.351	.022	.583	.039	.005	.387	-.258	-.152	.387	-.133	-0.276	0.079	2.2	1.1	1.6	1.1	A-	

Table B–3 (continued). Reading/Literature Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M /F	W /B
101	613366	4	N/A	823	.712	.153	.712	.038	.092	.005	.451	-.246	.451	-.182	-.207	-0.989	0.085	-0.5	1.0	-1.4	0.9	A-	
102	613207	4	4	823	.521	.521	.086	.061	.323	.009	.372	.372	-.286	-.144	-.082	0.031	0.078	3.3	1.1	3.4	1.2	A-	
103	613206	4	4	823	.490	.332	.095	.073	.490	.011	.379	-.095	-.148	-.273	.379	0.180	0.078	2.7	1.1	3.5	1.2	A+	
104	613405	4	4	1657	.776	.776	.127	.041	.047	.010	.513	.513	-.269	-.248	-.233	-1.422	0.066	-3.4	0.9	-3.8	0.8	A-	A+
105	613404	4	4	1657	.786	.022	.036	.146	.786	.010	.524	-.215	-.229	-.324	.524	-1.501	0.067	-3.9	0.9	-4.2	0.7	A+	A-
106	613393	4	4	834	.705	.077	.104	.705	.109	.005	.456	-.232	-.211	.456	-.224	-0.934	0.086	0.6	1.0	-0.2	1.0	A-	A+
107	613394	4	4	834	.767	.124	.068	.038	.767	.002	.478	-.247	-.284	-.201	.478	-1.340	0.092	-1.0	1.0	-0.9	0.9	A+	A+
108	613171	4	4	834	.781	.089	.034	.781	.092	.005	.498	-.304	-.199	.498	-.234	-1.436	0.094	-1.3	0.9	-2.4	0.8	A+	A-
109	613172	4	4	834	.694	.052	.694	.083	.164	.007	.519	-.254	.519	-.267	-.242	-0.868	0.085	-1.8	0.9	-1.4	0.9	A-	A+
110	613173	4	N/A	834	.784	.784	.092	.048	.070	.006	.533	.533	-.246	-.263	-.287	-1.474	0.095	-2.4	0.9	-2.8	0.7	A-	B-
111	613211	4	4	834	.637	.215	.637	.091	.053	.005	.479	-.314	.479	-.208	-.104	-0.584	0.080	-2.2	0.9	-2.3	0.9	A+	A-
112	613210	4	N/A	834	.644	.023	.644	.113	.215	.006	.432	-.230	.432	-.242	-.187	-0.626	0.081	-0.1	1.0	-0.6	1.0	A+	A+
113	613370	4	4	825	.617	.103	.617	.093	.177	.010	.517	-.169	.517	-.278	-.275	-0.396	0.081	-2.1	0.9	-2.1	0.9	A+	A-
114	613371	4	4	825	.772	.772	.136	.041	.041	.010	.490	.490	-.289	-.274	-.185	-1.342	0.093	-1.8	0.9	-1.7	0.9	A+	A-
115	613220	4	4	6629	.550	.227	.139	.079	.550	.005	.383	-.178	-.133	-.200	.383	-0.129	0.028	8.1	1.1	6.6	1.1	A+	A+
116	613219	4	N/A	6629	.689	.689	.153	.049	.103	.005	.447	.447	-.134	-.216	-.315	-0.892	0.030	-1.2	1.0	-0.4	1.0	A+	A-
117	613213	4	N/A	818	.621	.621	.087	.212	.065	.016	.498	.498	-.209	-.238	-.193	-0.633	0.083	-0.6	1.0	-0.2	1.0	A-	A+
118	613378	4	4	824	.686	.039	.182	.091	.686	.002	.544	-.221	-.274	-.331	.544	-0.948	0.083	-4.2	0.9	-3.9	0.8	A-	A-
119	608188	4	4	825	.748	.063	.044	.748	.146	.000	.395	-.266	-.255	.395	-.155	-1.120	0.089	0.1	1.0	2.5	1.2	A+	A-
120	608189	4	4	825	.552	.552	.085	.218	.144	.001	.483	.483	-.302	-.131	-.279	-0.033	0.079	-1.4	1.0	-1.2	0.9	A+	A-
121	613177	4	N/A	825	.533	.131	.533	.147	.184	.005	.362	-.137	.362	-.216	-.126	0.048	0.078	4.2	1.1	3.6	1.2	A+	A+
122	613176	4	N/A	825	.358	.136	.358	.410	.091	.006	.282	-.126	.282	-.091	-.127	0.974	0.081	5.4	1.2	5.2	1.4	A+	A+
123	613189	4	4	842	.799	.799	.128	.021	.049	.002	.431	.431	-.296	-.128	-.206	-1.649	0.096	-0.4	1.0	-1.2	0.9	A-	A-
124	613190	4	4	842	.534	.330	.018	.112	.534	.006	.391	-.176	-.124	-.240	.391	-0.084	0.078	3.2	1.1	3.3	1.2	A+	A+
125	613188	4	4	842	.169	.448	.169	.352	.027	.005	.203	-.091	.203	.031	-.183	2.177	0.103	1.3	1.1	3.5	1.5	A+	A+
126	613208	4	4	823	.626	.158	.626	.088	.120	.009	.438	-.197	.438	-.122	-.224	-0.508	0.080	0.3	1.0	0.3	1.0	A+	
127	613209	4	N/A	823	.623	.239	.060	.623	.069	.009	.472	-.184	-.199	.472	-.278	-0.495	0.080	-0.9	1.0	-1.5	0.9	A+	
128	613174	4	N/A	834	.614	.162	.614	.124	.092	.008	.455	-.203	.455	-.204	-.201	-0.403	0.081	1.2	1.0	0.8	1.0	A+	A-
129	613402	4	N/A	6629	.622	.091	.172	.622	.109	.006	.397	-.185	-.169	.397	-.184	-0.513	0.029	5.9	1.1	4.8	1.1	A-	A-
130	613403	4	N/A	6629	.626	.174	.626	.108	.086	.006	.470	-.212	.470	-.285	-.143	-0.534	0.029	-2.4	1.0	-2.8	1.0	A+	A-
131	619041	4	N/A	842	.663	.663	.131	.109	.083	.014	.579	.579	-.304	-.281	-.193	-0.803	0.083	-4.2	0.9	-4.5	0.7	A-	A-
132	619042	4	N/A	842	.556	.099	.556	.081	.251	.014	.362	-.237	.362	-.216	-.050	-0.219	0.079	4.6	1.2	4.0	1.2	A+	A+
133	613395	4	N/A	834	.826	.043	.085	.826	.043	.002	.567	-.275	-.382	.567	-.207	-1.803	0.102	-3.7	0.8	-4.0	0.6	A+	B-
134	613372	4	N/A	825	.741	.056	.078	.741	.116	.010	.540	-.284	-.237	.540	-.290	-1.134	0.089	-3.1	0.9	-3.2	0.8	A-	B-
135	613391	4	4	829	.876	.876	.036	.033	.056	.000	.491	.491	-.251	-.312	-.261	-2.260	0.113	-2.1	0.9	-3.1	0.6	A+	A-

Table B–3 (continued). Reading/Literature Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M /F	W /B
136	613392	4	4	829	.742	.103	.742	.064	.091	.001	.450	-.287	.450	-.210	-.200	-1.186	0.088	-1.4	0.9	-1.3	0.9	A-	A-
137	613381	4	4	842	.462	.217	.462	.182	.133	.006	.398	-.206	.398	-.096	-.175	0.301	0.078	2.7	1.1	2.3	1.1	A-	A+
138	619044	4	4	842	.840	.057	.045	.840	.046	.012	.437	-.171	-.259	.437	-.184	-2.040	0.106	-1.0	0.9	-0.5	0.9	A+	A+
139	619043	4	4	842	.808	.057	.055	.808	.069	.012	.523	-.252	-.250	.523	-.246	-1.796	0.099	-2.4	0.9	-2.8	0.7	A+	A-
140	619045	4	4	842	.840	.840	.055	.049	.044	.013	.561	.561	-.276	-.261	-.279	-2.095	0.108	-3.1	0.8	-4.4	0.5	A+	B-
141	619046	4	4	842	.599	.170	.599	.057	.160	.014	.520	-.204	.520	-.231	-.257	-0.447	0.080	-2.2	0.9	-1.9	0.9	B+	B-
142	613367	4	4	823	.842	.026	.024	.842	.103	.005	.402	-.206	-.183	.402	-.215	-1.919	0.104	-0.4	1.0	-1.1	0.9	A+	
143	613368	4	4	823	.478	.478	.114	.081	.322	.005	.328	.328	-.086	-.157	-.156	0.254	0.078	4.8	1.2	5.6	1.3	A+	
144	613397	4	4	834	.592	.082	.179	.592	.145	.002	.450	-.170	-.232	.450	-.214	-0.277	0.080	1.3	1.1	0.9	1.1	A-	A-
145	613398	4	4	834	.881	.014	.881	.041	.061	.002	.482	-.154	.482	-.295	-.287	-2.358	0.118	-2.1	0.8	-2.3	0.7	A+	A-
146	613396	4	4	834	.706	.706	.116	.096	.078	.004	.452	-.452	-.182	-.189	-.289	-0.933	0.086	0.3	1.0	0.7	1.1	A+	A-
147	613373	4	4	825	.506	.126	.219	.138	.506	.011	.414	-.162	-.206	-.156	.414	0.183	0.078	1.8	1.1	3.0	1.1	A-	A-
148	613399	4	4	6629	.577	.082	.145	.577	.190	.006	.425	-.196	-.270	.425	-.114	-0.272	0.028	3.6	1.0	2.6	1.1	B-	A-
149	613288	4	4	6629	.773	.140	.035	.047	.773	.006	.448	-.237	-.224	-.218	.448	-1.437	0.033	-2.2	1.0	-2.8	0.9	A-	A-
150	613291	4	4	6629	.506	.167	.506	.150	.170	.006	.301	-.129	.301	-.198	-.034	0.098	0.028	9.9	1.2	9.9	1.3	A+	A+
151	613295	4	4	6629	.836	.836	.044	.067	.048	.007	.484	.484	-.266	-.261	-.186	-1.946	0.037	-5.7	0.9	-6.4	0.8	A-	A-
152	613289	4	4	818	.868	.045	.868	.034	.038	.015	.545	-.277	.545	-.245	-.240	-2.492	0.119	-2.6	0.8	-3.4	0.6	A-	A-
153	613292	4	4	818	.782	.049	.782	.059	.097	.013	.490	-.297	.490	-.283	-.121	-1.680	0.097	-0.9	1.0	-1.8	0.8	A+	A-
154	613215	4	4	818	.654	.654	.159	.106	.067	.013	.509	.509	-.213	-.265	-.186	-0.819	0.085	-1.5	0.9	-1.6	0.9	A+	A-
155	613374	4	4	824	.737	.737	.170	.063	.028	.002	.415	.415	-.246	-.198	-.200	-1.257	0.087	-0.2	1.0	0.2	1.0	A+	B-
156	613217	4	4	825	.944	.013	.024	.944	.018	.000	.376	-.134	-.280	.376	-.209	-3.242	0.164	-1.3	0.8	-3.7	0.3	A-	A-
157	613218	4	4	825	.593	.593	.109	.064	.234	.000	.398	.398	-.161	-.259	-.194	-0.241	0.079	2.5	1.1	1.5	1.1	A+	A+
158	613298	4	4	825	.790	.790	.070	.073	.063	.004	.500	.500	-.291	-.257	-.223	-1.445	0.094	-1.9	0.9	-3.0	0.7	A-	A-
159	613379	4	4	842	.910	.910	.037	.026	.023	.005	.391	.391	-.210	-.206	-.150	-2.886	0.137	-0.4	1.0	-1.3	0.7	A+	A-
160	613287	4	4	842	.336	.340	.062	.336	.254	.008	.321	-.109	-.303	.321	-.004	0.955	0.081	3.8	1.1	4.7	1.3	C-	A+
161	613290	4	4	842	.673	.124	.061	.133	.673	.010	.494	-.174	-.292	-.229	.494	-0.854	0.083	-0.8	1.0	-1.4	0.9	A-	A-
162	613294	4	4	842	.672	.249	.050	.672	.019	.010	.496	-.318	-.243	.496	-.112	-0.833	0.083	-1.1	1.0	-1.9	0.9	A-	B-
163	613363	4	4	823	.700	.040	.700	.063	.192	.005	.341	-.123	.341	-.192	-.160	-0.910	0.084	2.7	1.1	1.8	1.1	A-	
164	613364	4	4	823	.683	.683	.103	.058	.150	.006	.379	.379	-.189	-.194	-.160	-0.830	0.083	1.7	1.1	1.6	1.1	A-	
165	613296	4	4	1657	.778	.022	.778	.152	.042	.006	.472	-.209	.472	-.287	-.195	-1.417	0.066	-1.9	0.9	-1.8	0.9	A-	A+
166	613205	4	4	823	.930	.016	.930	.034	.012	.009	.385	-.163	.385	-.155	-.159	-3.040	0.150	-0.6	0.9	-1.5	0.7	A+	
167	613204	4	4	823	.687	.165	.097	.043	.687	.009	.477	-.258	-.186	-.188	.477	-0.845	0.083	-1.4	1.0	-1.7	0.9	A+	
168	613169	4	4	834	.287	.287	.374	.195	.140	.004	.225	.225	.081	-.227	-.104	1.395	0.086	6.3	1.3	5.8	1.6	A-	B+
169	613168	4	4	834	.459	.218	.459	.218	.100	.005	.461	-.158	.461	-.187	-.238	0.426	0.079	0.2	1.0	1.5	1.1	A+	A-
170	613293	4	4	834	.651	.097	.120	.130	.651	.002	.476	-.208	-.192	-.275	.476	-0.656	0.081	-1.9	0.9	-2.4	0.9	A-	A-

Table B–3 (continued). Reading/Literature Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M /F	W /B
171	613297	4	4	834	.531	.079	.029	.531	.357	.004	.371	-.155	-.201	.371	-.202	-0.022	0.078	2.3	1.1	3.3	1.2	A-	A-
172	613212	4	4	834	.362	.315	.175	.143	.362	.005	.240	-.078	-.143	-.032	.240	0.835	0.080	5.8	1.2	4.3	1.3	A-	A+
173	613369	4	4	825	.778	.778	.138	.039	.038	.007	.493	.493	-.260	-.326	-.210	-1.385	0.093	-2.0	0.9	-2.2	0.8	A-	A-
174	613006	5	5	7652	.245	.245	.185	.203	.360	.009	.232	.232	-.042	-.089	-.043	1.886	0.029	7.7	1.1	9.4	1.3	A+	A-
175	611374	5	5	7652	.698	.110	.071	.698	.111	.011	.490	-.261	-.237	.490	-.163	-0.546	0.028	-6.2	0.9	-6.2	0.9	A-	A-
176	611375	5	5	7652	.575	.235	.575	.097	.082	.011	.320	-.108	.320	-.125	-.163	0.124	0.026	9.9	1.1	8.4	1.1	A-	A-
177	611244	5	5	954	.703	.091	.101	.080	.703	.025	.463	-.204	-.173	-.206	.463	-0.707	0.081	-1.6	0.9	-1.6	0.9	A+	A-
178	611270	5	5	960	.852	.047	.042	.852	.055	.004	.450	-.193	-.268	.450	-.204	-1.767	0.103	-0.6	1.0	-1.7	0.8	A-	B+
179	611271	5	N/A	960	.649	.188	.013	.146	.649	.005	.519	-.245	-.204	-.307	.519	-0.324	0.076	-2.9	0.9	-3.5	0.8	A+	A-
180	611432	5	5	973	.700	.700	.060	.104	.116	.021	.470	.470	-.116	-.282	-.182	-0.673	0.079	-2.1	0.9	-1.8	0.9	A+	A-
181	611438	5	5	973	.519	.249	.124	.519	.086	.022	.432	-.108	-.150	.432	-.271	0.311	0.072	-0.8	1.0	-1.4	0.9	A+	A+
182	614009	5	5	948	.876	.039	.033	.051	.876	.002	.414	-.192	-.237	-.233	.414	-1.894	0.109	-1.4	0.9	-2.4	0.7	A+	A-
183	614010	5	N/A	948	.856	.856	.032	.075	.036	.002	.433	.433	-.204	-.295	-.174	-1.709	0.104	-1.2	0.9	-1.9	0.8	A+	A-
184	611242	5	5	954	.390	.390	.433	.054	.117	.006	.119	.119	.077	-.219	-.073	1.039	0.072	7.0	1.2	7.0	1.3	A+	A-
185	611222	5	5	960	.397	.400	.137	.059	.397	.007	.479	-.306	-.111	-.084	.479	1.057	0.073	-2.8	0.9	-2.8	0.9	A+	A-
186	611223	5	5	960	.743	.743	.065	.040	.147	.006	.440	.440	-.216	-.210	-.204	-0.801	0.082	-0.3	1.0	-1.4	0.9	A-	A-
187	611224	5	5	960	.400	.102	.400	.227	.264	.007	.396	-.215	.396	-.127	-.114	1.034	0.073	1.1	1.0	2.1	1.1	A+	A+
188	611275	5	5	1910	.798	.097	.042	.798	.054	.008	.493	-.204	-.287	.493	-.237	-1.120	0.063	-3.3	0.9	-4.2	0.8	A+	A+
189	614003	5	5	960	.745	.745	.075	.065	.083	.032	.551	.551	-.142	-.260	-.310	-0.938	0.085	-3.5	0.9	-3.7	0.7	A-	C-
190	614004	5	N/A	960	.799	.064	.799	.051	.053	.033	.499	-.247	.499	-.158	-.233	-1.361	0.093	-1.9	0.9	-2.5	0.8	A+	B+
191	611190	5	5	950	.304	.211	.304	.107	.365	.013	.241	-.067	.241	-.202	.016	1.603	0.076	3.6	1.1	4.5	1.3	A-	A+
192	611173	5	5	950	.418	.418	.070	.259	.238	.016	.341	.341	-.255	-.174	.008	1.001	0.072	2.4	1.1	3.2	1.1	A+	A+
193	611170	5	5	950	.508	.104	.277	.092	.508	.019	.485	-.204	-.210	-.189	.485	0.556	0.071	-3.3	0.9	-2.8	0.9	A+	A-
194	611207	5	5	950	.717	.078	.108	.073	.717	.024	.567	-.270	-.256	-.265	.567	-0.576	0.080	-4.5	0.8	-5.1	0.7	B+	A-
195	611267	5	N/A	953	.892	.892	.028	.048	.030	.001	.394	.394	-.197	-.243	-.215	-1.956	0.111	-1.4	0.9	-1.9	0.8	B+	A+
196	611266	5	5	953	.727	.727	.064	.114	.091	.003	.390	.390	-.230	-.171	-.205	-0.661	0.079	0.0	1.0	-0.5	1.0	A-	A+
197	611212	5	5	953	.879	.051	.039	.879	.022	.008	.484	-.292	-.191	.484	-.215	-1.865	0.108	-2.1	0.9	-3.1	0.7	A+	A+
198	611211	5	5	953	.751	.097	.079	.063	.751	.011	.524	-.253	-.247	-.244	.524	-0.834	0.082	-3.5	0.9	-3.7	0.8	A+	A+
199	611213	5	5	953	.630	.276	.630	.058	.022	.015	.367	-.075	.367	-.357	-.224	-0.155	0.073	1.3	1.0	2.2	1.1	A-	A-
200	611249	5	5	960	.547	.158	.090	.192	.547	.014	.531	-.100	-.233	-.326	.531	0.189	0.073	-4.0	0.9	-3.7	0.9	B+	A+
201	611248	5	5	960	.228	.072	.228	.351	.335	.014	.122	-.096	.122	-.046	.060	1.964	0.084	4.2	1.2	6.2	1.6	A-	A-
202	611278	5	5	960	.677	.121	.120	.067	.677	.016	.501	-.228	-.333	-.071	.501	-0.539	0.079	-1.3	1.0	-0.9	0.9	A-	A-
203	613007	5	5	7652	.764	.099	.061	.764	.069	.008	.439	-.197	-.223	.439	-.192	-0.957	0.030	-2.7	1.0	-3.5	0.9	A+	A-
204	613005	5	5	7652	.282	.135	.448	.282	.126	.008	.149	-.177	.103	.149	-.094	1.657	0.028	9.9	1.2	9.9	1.5	A-	A+
205	611245	5	5	954	.550	.126	.550	.213	.089	.022	.425	-.159	.425	-.193	-.126	0.154	0.073	1.1	1.0	0.4	1.0	A+	A+

Table B–3 (continued). Reading/Literature Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M / F	W / B
206	611246	5	5	954	.751	.751	.027	.064	.136	.022	.532	.532	-.205	-.226	-.286	-1.013	0.085	-3.4	0.9	-3.6	0.7	A-	A-
207	611243	5	N/A	954	.629	.247	.082	.629	.037	.005	.313	-.122	-.170	.313	-.204	-0.119	0.073	1.8	1.1	0.7	1.0	A+	C+
208	611237	5	5	960	.803	.078	.074	.803	.039	.006	.471	-.187	-.283	.471	-.192	-1.220	0.089	-1.4	0.9	-2.5	0.8	A-	A+
209	611236	5	5	960	.650	.117	.147	.077	.650	.009	.478	-.203	-.183	-.264	.478	-0.263	0.076	-1.5	1.0	-1.5	0.9	A+	A-
210	611235	5	5	960	.696	.194	.696	.052	.051	.007	.478	-.262	.478	-.211	-.188	-0.518	0.078	-0.7	1.0	-2.0	0.9	A+	A+
211	611168	5	5	950	.793	.057	.793	.084	.052	.015	.508	-.188	.508	-.324	-.191	-1.037	0.088	-2.4	0.9	-3.4	0.7	A+	A+
212	611153	5	N/A	950	.503	.218	.076	.503	.186	.017	.508	-.212	-.197	.508	-.215	0.577	0.071	-4.1	0.9	-3.6	0.9	A+	B-
213	611208	5	5	950	.594	.594	.132	.096	.157	.022	.463	.463	-.213	-.268	-.117	0.114	0.073	-1.5	1.0	-1.4	0.9	A+	B-
214	611209	5	5	950	.662	.238	.662	.041	.037	.022	.493	-.264	.493	-.238	-.212	-0.249	0.076	-2.5	0.9	-2.3	0.9	A+	A+
215	611215	5	N/A	953	.718	.104	.101	.718	.069	.008	.425	-.195	-.226	.425	-.154	-0.616	0.078	-0.9	1.0	-0.3	1.0	A+	A-
216	611214	5	5	953	.897	.897	.028	.036	.028	.011	.530	.530	-.236	-.290	-.254	-2.107	0.117	-2.6	0.8	-5.0	0.4	B+	A-
217	611219	5	5	953	.537	.089	.269	.088	.537	.017	.454	-.223	-.201	-.159	.454	0.306	0.071	-2.2	0.9	-2.1	0.9	A+	A-
218	611220	5	5	953	.489	.214	.489	.136	.143	.018	.318	-.158	.318	-.074	-.115	0.537	0.071	3.5	1.1	3.9	1.2	A+	A+
219	611221	5	5	953	.664	.087	.142	.664	.086	.021	.495	-.238	-.236	.495	-.201	-0.365	0.076	-3.0	0.9	-3.2	0.8	A+	A-
220	611251	5	5	960	.835	.835	.044	.053	.056	.012	.517	.517	-.233	-.256	-.244	-1.696	0.101	-1.3	0.9	-2.5	0.7	A+	A-
221	611250	5	N/A	960	.749	.075	.103	.749	.059	.014	.495	-.257	-.227	.495	-.192	-0.999	0.085	-0.8	1.0	-1.3	0.9	A+	A-
222	611376	5	N/A	7652	.825	.101	.026	.039	.825	.009	.530	-.297	-.214	-.254	.530	-1.427	0.033	-7.6	0.9	-9.9	0.7	A+	B-
223	611272	5	N/A	960	.914	.914	.046	.025	.013	.003	.424	.424	-.279	-.176	-.189	-2.562	0.134	-0.7	0.9	-2.1	0.6	B+	A+
224	611439	5	N/A	973	.694	.694	.069	.082	.137	.019	.511	.511	-.256	-.259	-.164	-0.606	0.078	-3.1	0.9	-2.7	0.8	A+	A+
225	611440	5	5	973	.632	.063	.160	.123	.632	.022	.512	-.200	-.230	-.214	.512	-0.286	0.075	-3.2	0.9	-3.1	0.8	C+	A+
226	614011	5	N/A	948	.732	.114	.732	.043	.107	.004	.450	-.268	.450	-.260	-.169	-0.722	0.082	-1.6	0.9	-1.6	0.9	A-	A-
227	614012	5	5	948	.812	.032	.037	.812	.115	.004	.427	-.201	-.255	.427	-.229	-1.313	0.093	-0.8	1.0	-1.7	0.8	A-	A-
228	611276	5	N/A	1910	.742	.742	.044	.057	.149	.008	.418	.418	-.227	-.246	-.148	-0.731	0.058	-0.6	1.0	0.3	1.0	A+	A-
229	614005	5	N/A	960	.443	.133	.293	.100	.443	.031	.509	-.257	-.133	-.173	.509	0.764	0.073	-2.9	0.9	-2.3	0.9	A+	B-
230	611377	5	5	7652	.585	.117	.585	.159	.131	.009	.401	-.156	.401	-.159	-.181	0.078	0.026	1.3	1.0	1.4	1.0	A+	A+
231	611390	5	5	7652	.408	.238	.167	.176	.408	.010	.360	-.109	-.104	-.162	.360	0.962	0.026	4.2	1.0	6.5	1.1	A-	A-
232	611274	5	5	960	.941	.941	.024	.018	.014	.004	.468	.468	-.243	-.254	-.182	-3.201	0.171	-0.9	0.9	-2.6	0.5	B+	A-
233	611273	5	N/A	960	.289	.230	.229	.289	.245	.007	.300	-.066	-.077	.300	-.120	1.575	0.078	1.2	1.0	4.2	1.3	A-	A-
234	611277	5	5	1910	.585	.031	.175	.585	.198	.010	.403	-.194	-.153	.403	-.194	0.142	0.051	1.8	1.0	1.0	1.0	A+	A-
235	614006	5	5	960	.652	.652	.087	.143	.093	.026	.448	.448	-.189	-.171	-.175	-0.329	0.077	0.6	1.0	0.3	1.0	A+	A-
236	614007	5	5	960	.651	.651	.100	.076	.144	.029	.449	.449	-.176	-.231	-.132	-0.332	0.077	0.6	1.0	0.0	1.0	A+	A-
237	611268	5	N/A	953	.689	.689	.102	.120	.085	.004	.336	.336	-.131	-.180	-.155	-0.438	0.076	1.7	1.1	1.4	1.1	B+	A+
238	611309	5	5	960	.760	.760	.085	.097	.043	.015	.519	.519	-.271	-.252	-.185	-1.070	0.087	-1.8	0.9	-2.1	0.8	A+	A-
239	611291	5	N/A	960	.806	.806	.050	.057	.068	.019	.608	.608	-.232	-.293	-.351	-1.506	0.097	-3.9	0.8	-4.3	0.6	A+	A-
240	611554	5	5	7652	.472	.366	.472	.068	.089	.006	.359	-.121	.359	-.234	-.139	0.645	0.025	5.0	1.1	6.6	1.1	A-	A+

Table B–3 (continued). Reading/Literature Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M /F	W /B
241	611354	5	5	7652	.583	.067	.583	.052	.290	.008	.400	-.200	.400	-.232	-.150	0.095	0.026	1.6	1.0	0.1	1.0	A-	A-
242	611550	5	5	954	.763	.763	.049	.090	.083	.015	.528	.528	-.288	-.246	-.180	-1.067	0.086	-2.2	0.9	-2.7	0.8	B-	A-
243	611269	5	5	960	.857	.025	.857	.091	.025	.002	.447	-.280	.447	-.237	-.219	-1.822	0.105	-0.6	1.0	-2.1	0.8	B+	A-
244	611429	5	5	973	.699	.699	.070	.079	.135	.018	.493	.493	-.209	-.290	-.153	-0.651	0.078	-2.1	0.9	-1.7	0.9	A-	A-
245	614008	5	5	948	.769	.769	.197	.018	.015	.001	.491	.491	-.417	-.117	-.170	-0.968	0.086	-2.2	0.9	-2.3	0.8	A-	B-
246	611544	5	5	954	.541	.118	.203	.122	.541	.016	.527	-.174	-.235	-.210	.527	0.229	0.073	-3.9	0.9	-3.6	0.9	A+	A+
247	611241	5	5	954	.884	.039	.043	.031	.884	.003	.405	-.197	-.229	-.171	.405	-1.864	0.108	-0.9	0.9	-2.7	0.7	A+	A+
248	611555	5	5	960	.691	.064	.691	.120	.121	.005	.410	-.214	.410	-.093	-.270	-0.560	0.079	1.0	1.0	0.8	1.1	A-	A+
249	611549	5	5	960	.880	.880	.046	.038	.029	.007	.453	.453	-.221	-.240	-.172	-1.948	0.108	-1.4	0.9	-3.0	0.6	A-	A-
250	611551	5	5	1903	.720	.145	.113	.019	.720	.004	.325	-.270	-.027	-.206	.325	-0.557	0.055	2.0	1.1	3.3	1.2	B-	B+
251	611546	5	5	950	.844	.041	.061	.048	.844	.005	.417	-.208	-.224	-.203	.417	-1.401	0.097	-1.2	0.9	-1.5	0.8	A+	B+
252	611547	5	5	950	.798	.798	.043	.052	.102	.005	.370	.370	-.227	-.129	-.215	-1.019	0.087	0.1	1.0	-0.6	1.0	A-	A-
253	611181	5	5	950	.850	.850	.095	.027	.016	.013	.467	.467	-.281	-.228	-.150	-1.500	0.100	-1.6	0.9	-2.3	0.8	A+	A-
254	611548	5	5	953	.570	.124	.570	.288	.015	.004	.339	-.191	.339	-.181	-.069	0.183	0.071	2.1	1.1	2.0	1.1	A+	B-
255	611552	5	5	953	.607	.104	.172	.110	.607	.007	.333	-.145	-.199	-.083	.333	-0.011	0.072	2.5	1.1	1.6	1.1	A+	A-
256	611210	5	5	953	.639	.639	.176	.134	.042	.008	.382	.382	-.149	-.228	-.121	-0.182	0.073	0.8	1.0	1.0	1.0	A-	A+
257	611247	5	5	960	.868	.024	.047	.050	.868	.012	.540	-.229	-.290	-.258	.540	-2.055	0.113	-1.7	0.9	-3.6	0.6	B+	A-
258	611545	5	5	954	.484	.484	.212	.193	.102	.009	.419	.419	-.150	-.213	-.125	0.581	0.071	-2.5	0.9	-2.4	0.9	A-	B-
259	611553	5	5	954	.782	.072	.782	.049	.090	.006	.446	-.245	.446	-.178	-.202	-1.014	0.085	-1.4	0.9	-1.8	0.9	A-	A+
260	610133	6	6	7268	.646	.224	.646	.070	.041	.019	.499	-.195	.499	-.245	-.250	-0.194	0.028	-4.3	1.0	-4.4	0.9	A+	A-
261	610355	6	6	7268	.569	.090	.078	.569	.243	.020	.413	-.215	-.237	.413	-.075	0.220	0.027	6.0	1.1	5.3	1.1	A+	A-
262	610134	6	6	7268	.696	.159	.072	.696	.052	.021	.515	-.176	-.256	.515	-.257	-0.504	0.029	-5.2	0.9	-5.0	0.9	A+	A-
263	612248	6	6	7268	.735	.067	.094	.735	.076	.027	.535	-.176	-.233	.535	-.259	-0.796	0.031	-6.7	0.9	-6.3	0.8	A+	A-
264	610305	6	6	721	.614	.614	.173	.112	.072	.028	.621	.621	-.297	-.269	-.219	-0.057	0.088	-5.6	0.8	-5.0	0.7	A-	A-
265	610142	6	6	721	.490	.137	.490	.147	.191	.035	.346	-.269	.346	-.173	.086	0.595	0.085	4.8	1.2	4.4	1.2	A+	A+
266	610143	6	6	721	.731	.126	.731	.056	.051	.036	.603	-.274	.603	-.258	-.289	-0.812	0.098	-4.1	0.8	-4.2	0.7	A-	B-
267	610309	6	6	730	.893	.893	.019	.055	.030	.003	.413	.413	-.166	-.256	-.195	-2.027	0.131	-0.7	0.9	-1.6	0.7	A+	A-
268	612265	6	6	725	.430	.334	.101	.131	.430	.004	.231	-.003	-.184	-.142	.231	0.880	0.085	6.7	1.3	6.5	1.4	A+	A+
269	610330	6	6	725	.461	.283	.461	.083	.131	.043	.358	-.051	.358	-.232	-.080	0.642	0.086	4.3	1.2	4.4	1.3	A-	A+
270	612294	6	6	731	.594	.130	.108	.167	.594	.001	.381	-.230	-.122	-.174	.381	0.145	0.084	0.9	1.0	0.5	1.0	A-	A-
271	612237	6	6	731	.781	.019	.781	.044	.155	.001	.395	-.101	.395	-.243	-.257	-0.970	0.099	-0.3	1.0	-1.1	0.9	A-	A+
272	612232	6	6	731	.762	.082	.097	.762	.051	.008	.502	-.231	-.212	.502	-.292	-0.877	0.098	-2.2	0.9	-1.8	0.8	A+	B-
273	612255	6	6	731	.289	.348	.201	.289	.089	.074	.208	.171	-.168	.208	-.103	1.612	0.091	4.4	1.2	5.7	1.5	A+	A+
274	610318	6	6	730	.799	.115	.799	.032	.049	.006	.449	-.264	.449	-.157	-.194	-1.109	0.104	-0.2	1.0	-1.6	0.8	A+	B-
275	610335	6	6	730	.449	.096	.060	.449	.352	.043	.296	-.281	-.267	.296	.161	0.891	0.087	7.1	1.3	6.7	1.4	A-	A+

Table B–3 (continued). Reading/Literature Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M /F	W /B
276	609238	6	6	725	.506	.036	.506	.419	.035	.004	.472	-.140	.472	-.330	-.186	0.443	0.083	-2.7	0.9	-2.2	0.9	A+	A-
277	609239	6	6	725	.738	.738	.050	.150	.058	.004	.285	.285	-.226	-.035	-.193	-0.815	0.093	2.0	1.1	3.5	1.3	A+	B-
278	612221	6	6	725	.596	.168	.596	.073	.156	.007	.431	-.244	.431	-.214	-.120	-0.018	0.085	-0.5	1.0	-0.5	1.0	A+	B-
279	612293	6	6	725	.414	.047	.124	.403	.414	.012	.296	-.185	-.133	-.058	.296	0.909	0.085	3.9	1.1	3.9	1.2	A+	A-
280	612262	6	6	725	.259	.259	.030	.550	.152	.008	.186	.186	-.139	-.023	-.047	1.783	0.093	4.3	1.2	6.3	1.6	A-	A-
281	612225	6	6	725	.559	.188	.072	.559	.095	.087	.557	-.206	-.247	.557	-.208	-0.088	0.089	-3.8	0.9	-3.9	0.8	A+	A+
282	609091	6	6	730	.547	.241	.088	.547	.114	.011	.409	-.094	-.195	.409	-.232	0.380	0.084	1.9	1.1	1.4	1.1	A+	A-
283	609092	6	6	730	.451	.177	.127	.234	.451	.011	.263	-.011	-.113	-.130	.263	0.871	0.084	6.5	1.2	5.5	1.3	A+	B-
284	612211	6	6	730	.704	.112	.071	.085	.704	.027	.650	-.283	-.306	-.272	.650	-0.580	0.094	-5.7	0.8	-5.6	0.6	B-	A-
285	612306	6	6	730	.426	.426	.121	.125	.292	.037	.325	.325	-.309	-.215	.156	0.935	0.085	5.1	1.2	4.4	1.3	A+	A-
286	609196	6	6	730	.725	.725	.063	.101	.053	.058	.632	.632	-.296	-.292	-.229	-0.874	0.101	-4.6	0.8	-4.6	0.6	A+	A-
287	609197	6	6	730	.455	.307	.084	.092	.455	.063	.388	.031	-.317	-.188	.388	0.713	0.086	3.1	1.1	3.0	1.2	A+	A+
288	609275	6	N/A	730	.682	.127	.682	.063	.058	.070	.531	-.155	.531	-.261	-.297	-0.650	0.097	-2.0	0.9	-2.0	0.8	A+	A+
289	612257	6	6	721	.792	.185	.792	.011	.008	.004	.450	-.355	.450	-.193	-.091	-1.074	0.102	-0.7	1.0	-1.1	0.9	A+	A-
290	610117	6	6	721	.775	.040	.025	.155	.775	.004	.418	-.234	-.188	-.228	.418	-0.960	0.099	-0.1	1.0	0.0	1.0	A+	A-
291	610074	6	6	721	.376	.067	.376	.257	.295	.006	.291	-.148	.291	-.168	-.027	1.252	0.086	4.4	1.2	4.9	1.3	A+	B-
292	608010	6	6	721	.559	.104	.089	.241	.559	.007	.420	-.263	-.253	-.081	.420	0.302	0.085	1.5	1.1	1.6	1.1	A+	A+
293	610062	6	6	721	.354	.291	.221	.354	.083	.051	.309	-.032	-.059	.309	-.160	1.289	0.088	4.3	1.2	5.3	1.4	A-	A-
294	610060	6	6	721	.501	.501	.164	.119	.158	.058	.509	.509	-.210	-.190	-.149	0.464	0.087	-1.4	1.0	-1.4	0.9	B-	A+
295	610061	6	6	721	.363	.221	.198	.148	.363	.069	.454	-.022	-.176	-.219	.454	1.195	0.088	-0.5	1.0	0.7	1.0	A+	A-
296	610127	6	6	731	.289	.294	.220	.289	.192	.006	.226	.022	-.084	.226	-.159	1.755	0.090	3.7	1.2	6.1	1.6	A-	A-
297	610128	6	6	731	.358	.424	.079	.358	.133	.006	.337	-.060	-.192	.337	-.185	1.367	0.086	2.0	1.1	3.3	1.2	A+	B+
298	610129	6	N/A	731	.296	.042	.296	.116	.539	.007	.191	-.194	.191	-.112	.003	1.717	0.089	5.0	1.2	6.2	1.6	A+	B+
299	609234	6	6	731	.705	.160	.074	.049	.705	.012	.422	-.208	-.165	-.159	.422	-0.503	0.092	0.2	1.0	0.0	1.0	A-	B-
300	609235	6	6	731	.547	.070	.547	.285	.083	.015	.384	-.198	.384	-.105	-.187	0.376	0.084	2.4	1.1	1.5	1.1	A-	A+
301	608003	6	6	731	.501	.140	.093	.224	.501	.042	.466	-.097	-.254	-.104	.466	0.543	0.085	0.7	1.0	1.2	1.1	A+	A-
302	608007	6	6	731	.743	.058	.743	.067	.083	.049	.656	-.223	.656	-.273	-.293	-0.939	0.101	-5.2	0.7	-5.6	0.5	A+	A-
303	610068	6	6	731	.565	.565	.163	.137	.071	.064	.486	.486	-.107	-.160	-.212	0.118	0.088	0.2	1.0	-0.2	1.0	A-	A-
304	610067	6	6	731	.592	.218	.051	.071	.592	.068	.529	-.131	-.212	-.251	.529	-0.052	0.089	-1.2	1.0	-1.7	0.9	A+	A-
305	609089	6	N/A	731	.505	.145	.103	.505	.159	.089	.449	-.062	-.249	.449	-.072	0.389	0.087	1.4	1.1	1.0	1.1	A+	A+
306	610137	6	6	729	.600	.086	.600	.252	.059	.003	.363	-.183	.363	-.166	-.195	0.141	0.085	2.6	1.1	2.3	1.1	A+	A+
307	610138	6	6	729	.325	.191	.082	.325	.392	.010	.132	-.056	-.163	.132	.035	1.550	0.087	7.3	1.3	8.0	1.7	B-	A+
308	610159	6	6	1453	.792	.070	.045	.089	.792	.003	.363	-.201	-.220	-.134	.363	-1.023	0.073	1.3	1.1	1.1	1.1	A-	B-
309	610160	6	6	1453	.646	.044	.285	.646	.019	.007	.373	-.233	-.216	.373	-.130	-0.104	0.062	3.4	1.1	2.0	1.1	A-	A+
310	610161	6	6	1453	.776	.081	.776	.041	.096	.006	.511	-.255	.511	-.225	-.266	-0.931	0.071	-2.6	0.9	-3.6	0.8	A-	A+

Table B–3 (continued). Reading/Literature Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M /F	W /B
311	612299	6	6	729	.593	.080	.145	.593	.156	.026	.477	-.313	-.192	.477	-.105	0.107	0.086	0.1	1.0	0.6	1.0	A+	A+
312	612300	6	N/A	729	.689	.093	.084	.102	.689	.033	.561	-.156	-.272	-.301	.561	-0.486	0.093	-3.1	0.9	-1.1	0.9	A+	B-
313	609048	6	6	729	.531	.097	.240	.092	.531	.040	.471	-.199	-.097	-.286	.471	0.394	0.085	0.3	1.0	0.8	1.0	A+	A+
314	609043	6	6	729	.565	.086	.244	.059	.565	.045	.434	-.213	-.072	-.277	.434	0.198	0.087	1.9	1.1	2.2	1.1	A-	A+
315	608008	6	6	729	.744	.744	.062	.108	.030	.056	.542	.542	-.313	-.221	-.198	-0.993	0.103	-2.0	0.9	-2.4	0.8	A-	B-
316	612269	6	N/A	722	.137	.216	.137	.068	.572	.007	-.072	-.205	-.072	-.205	.371	2.980	0.119	2.5	1.2	5.8	2.2	A+	A-
317	612270	6	6	722	.691	.071	.091	.691	.140	.007	.371	-.207	-.284	.371	-.040	-0.339	0.091	1.5	1.1	0.8	1.1	A+	A-
318	609189	6	6	722	.445	.287	.445	.114	.107	.049	.385	.018	.385	-.265	-.144	0.871	0.085	1.5	1.1	1.6	1.1	A-	A+
319	609186	6	6	722	.338	.324	.141	.145	.338	.051	.420	.067	-.284	-.157	.420	1.401	0.087	-0.5	1.0	0.5	1.0	A-	A-
320	609188	6	6	722	.772	.054	.039	.083	.772	.053	.608	-.305	-.224	-.246	.608	-1.165	0.110	-2.8	0.8	-4.1	0.6	A-	A+
321	612235	6	6	722	.770	.043	.089	.770	.035	.064	.593	-.227	-.296	.593	-.212	-1.204	0.112	-2.7	0.8	-4.1	0.6	A+	A+
322	612154	6	6	724	.684	.684	.116	.036	.155	.010	.435	.435	-.251	-.251	-.121	-0.317	0.092	0.1	1.0	1.0	1.1	A+	A-
323	612155	6	6	724	.920	.025	.920	.026	.021	.008	.458	-.211	.458	-.200	-.197	-2.492	0.165	-1.3	0.8	-2.1	0.5	B+	B-
324	612156	6	N/A	724	.547	.044	.029	.370	.547	.010	.358	-.195	-.217	-.147	.358	0.452	0.085	3.2	1.1	2.9	1.2	A+	A-
325	610079	6	6	724	.413	.090	.207	.233	.413	.057	.415	-.216	-.170	-.026	.415	1.044	0.087	1.0	1.0	1.6	1.1	A+	A+
326	610081	6	6	724	.634	.634	.095	.082	.124	.065	.513	.513	-.275	-.225	-.128	-0.229	0.093	-2.1	0.9	-2.6	0.8	A+	A+
327	609083	6	N/A	724	.225	.240	.101	.225	.358	.076	.077	.058	-.153	.077	.108	2.214	0.102	5.3	1.3	9.3	2.3	A+	B+
328	610071	6	6	730	.490	.490	.169	.110	.181	.051	.488	.488	-.179	-.192	-.100	0.633	0.087	-0.4	1.0	-0.5	1.0	A-	A+
329	610070	6	6	730	.573	.573	.127	.077	.169	.055	.513	.513	-.208	-.208	-.141	0.151	0.089	-0.9	1.0	-1.5	0.9	A-	A-
330	609023	6	6	1453	.773	.027	.169	.028	.773	.003	.324	-.183	-.165	-.218	.324	-0.897	0.070	2.2	1.1	0.2	1.0	B+	A-
331	609024	6	N/A	1453	.641	.025	.172	.160	.641	.003	.367	-.135	-.185	-.205	.367	-0.078	0.061	2.5	1.1	2.1	1.1	A+	A+
332	610135	6	6	7268	.862	.862	.042	.034	.046	.016	.559	.559	-.276	-.255	-.237	-1.808	0.039	-8.6	0.8	-9.9	0.5	A+	A-
333	610136	6	6	7268	.648	.081	.100	.150	.648	.022	.589	-.234	-.265	-.250	.589	-0.221	0.028	-9.9	0.8	-9.9	0.7	A+	A-
334	610144	6	6	721	.689	.069	.178	.689	.037	.026	.456	-.150	-.234	.456	-.201	-0.494	0.093	0.4	1.0	0.4	1.0	A+	A+
335	610145	6	6	721	.574	.194	.574	.094	.103	.035	.557	-.142	.557	-.248	-.299	0.149	0.087	-2.8	0.9	-2.9	0.8	A+	A-
336	612251	6	6	725	.585	.105	.095	.149	.585	.066	.579	-.232	-.249	-.185	.579	-0.118	0.090	-3.8	0.9	-4.0	0.8	B+	A-
337	612252	6	6	725	.577	.577	.090	.088	.174	.072	.506	.506	-.281	-.168	-.122	-0.091	0.090	-0.5	1.0	-1.0	0.9	A+	A+
338	612253	6	6	725	.272	.059	.272	.508	.088	.073	.320	-.168	.320	.081	-.246	1.663	0.095	2.3	1.1	4.8	1.5	A+	A-
339	610320	6	6	730	.704	.126	.085	.704	.081	.004	.405	-.136	-.239	.405	-.198	-0.449	0.093	1.4	1.1	1.3	1.1	A+	A-
340	610319	6	N/A	730	.492	.099	.314	.090	.492	.006	.366	-.206	-.187	-.047	.366	0.749	0.085	2.9	1.1	2.6	1.1	A+	A-
341	612222	6	6	725	.749	.749	.044	.149	.052	.006	.473	.473	-.242	-.219	-.252	-0.893	0.095	-1.5	0.9	-1.7	0.9	A-	A+
342	612223	6	6	725	.546	.178	.117	.150	.546	.008	.369	-.163	-.210	-.091	.369	0.233	0.084	2.0	1.1	2.0	1.1	A-	A-
343	612226	6	6	725	.592	.106	.148	.079	.592	.076	.556	-.239	-.202	-.212	.556	-0.239	0.090	-3.0	0.9	-3.0	0.8	A+	A+
344	612227	6	6	725	.469	.123	.469	.236	.092	.080	.462	-.183	.462	-.066	-.243	0.435	0.087	0.0	1.0	-0.1	1.0	A-	A-
345	609162	6	6	730	.597	.208	.597	.156	.033	.006	.291	-.030	.291	-.241	-.145	0.122	0.085	5.2	1.2	5.0	1.3	A-	A+

Table B–3 (continued). Reading/Literature Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M /F	W /B
346	609164	6	N/A	730	.392	.107	.392	.310	.186	.006	.293	-.049	.293	-.156	-.099	1.187	0.084	4.5	1.2	4.0	1.3	A+	A+
347	609198	6	6	730	.749	.049	.749	.119	.029	.053	.615	-.271	.615	-.329	-.203	-1.042	0.104	-4.1	0.8	-4.3	0.6	A+	A+
348	609199	6	6	730	.721	.048	.090	.086	.721	.055	.617	-.180	-.250	-.352	.617	-0.832	0.100	-4.2	0.8	-4.2	0.7	A-	A+
349	609200	6	N/A	730	.606	.190	.069	.606	.081	.055	.465	-.202	-.200	.465	-.105	-0.086	0.089	1.1	1.1	0.0	1.0	A+	B-
350	612258	6	6	721	.578	.087	.287	.578	.043	.004	.297	-.245	-.067	.297	-.173	0.208	0.085	5.4	1.2	4.1	1.2	A-	A+
351	608011	6	6	721	.477	.204	.185	.477	.129	.006	.301	-.123	-.134	.301	-.088	0.724	0.084	5.2	1.2	5.6	1.3	A-	B+
352	610130	6	6	731	.662	.040	.066	.223	.662	.010	.314	-.072	-.258	-.118	.314	-0.238	0.088	4.1	1.2	2.8	1.2	A+	A+
353	610131	6	6	731	.639	.093	.639	.223	.040	.006	.479	-.265	.479	-.272	-.129	-0.098	0.087	-1.6	0.9	-2.3	0.9	A-	A-
354	608014	6	6	731	.814	.049	.066	.814	.033	.038	.595	-.233	-.267	.595	-.201	-1.457	0.114	-2.9	0.8	-3.9	0.6	A-	A+
355	609087	6	6	731	.695	.695	.067	.088	.068	.082	.619	.619	-.207	-.294	-.194	-0.771	0.100	-4.1	0.8	-4.3	0.6	A-	A-
356	609088	6	6	731	.532	.137	.170	.075	.532	.086	.539	-.122	-.161	-.248	.539	0.245	0.088	-2.3	0.9	-2.5	0.9	A+	A+
357	610162	6	6	1453	.822	.019	.044	.822	.109	.006	.494	-.218	-.274	.494	-.274	-1.303	0.078	-2.3	0.9	-3.7	0.7	A+	A+
358	612224	6	6	729	.494	.232	.494	.084	.170	.021	.304	-.044	.304	-.267	-.053	0.645	0.084	5.8	1.2	5.3	1.3	A+	A+
359	609036	6	6	729	.855	.026	.855	.058	.026	.036	.503	-.222	.503	-.296	-.139	-1.880	0.128	-1.8	0.9	-1.4	0.8	B-	A-
360	609035	6	6	729	.694	.070	.110	.694	.086	.040	.456	-.125	-.224	.456	-.185	-0.547	0.094	0.7	1.0	0.9	1.1	A+	A-
361	609031	6	N/A	729	.759	.759	.066	.054	.082	.040	.515	.515	-.256	-.282	-.136	-1.002	0.103	-1.3	0.9	-1.2	0.9	A+	A+
362	608009	6	6	729	.787	.045	.060	.055	.787	.052	.648	-.238	-.333	-.338	.648	-1.332	0.111	-5.1	0.7	-5.3	0.5	A-	B-
363	608012	6	6	729	.479	.141	.479	.134	.192	.054	.546	-.180	.546	-.286	-.132	0.638	0.086	-2.8	0.9	-2.3	0.9	A+	A-
364	607993	6	6	722	.751	.062	.060	.751	.096	.032	.531	-.220	-.242	.531	-.196	-0.887	0.102	-1.1	0.9	-1.4	0.9	A+	A-
365	609184	6	6	722	.518	.518	.238	.100	.100	.044	.394	.394	-.130	-.195	-.045	0.477	0.085	2.4	1.1	3.1	1.2	A-	A-
366	609187	6	6	722	.790	.049	.790	.044	.069	.049	.586	-.203	.586	-.256	-.280	-1.268	0.113	-2.7	0.8	-3.5	0.6	A-	B+
367	612157	6	6	724	.856	.856	.028	.043	.066	.007	.478	.478	-.232	-.218	-.233	-1.635	0.124	-1.2	0.9	-1.4	0.8	A+	A-
368	612158	6	6	724	.620	.233	.065	.072	.620	.010	.448	-.171	-.254	-.202	.448	0.030	0.088	0.5	1.0	0.3	1.0	A+	A-
369	609084	6	6	724	.736	.133	.073	.736	.032	.026	.430	-.201	-.198	.430	-.106	-0.679	0.099	0.5	1.0	0.0	1.0	A-	B-
370	609085	6	6	724	.634	.175	.634	.058	.099	.033	.479	-.173	.479	-.183	-.217	-0.128	0.091	-0.1	1.0	-0.8	1.0	A-	A-
371	609086	6	6	724	.481	.102	.286	.481	.097	.035	.292	-.154	.016	.292	-.160	0.732	0.086	7.0	1.3	6.9	1.4	A+	A+
372	609082	6	N/A	724	.105	.408	.105	.115	.304	.069	-.063	.193	-.063	-.206	.120	3.580	0.147	1.9	1.2	5.4	2.7	A+	A+
373	609081	6	6	724	.377	.377	.159	.158	.228	.079	.312	.312	-.181	-.115	.047	1.182	0.089	4.8	1.2	5.7	1.4	A+	A-
374	610328	6	6	725	.683	.075	.066	.683	.120	.057	.600	-.215	-.269	.600	-.238	-0.679	0.096	-3.2	0.9	-3.5	0.7	A-	A+
375	610329	6	6	725	.719	.719	.052	.079	.090	.061	.492	.492	-.156	-.301	-.097	-0.956	0.101	0.4	1.0	-0.5	1.0	A+	A-
376	610066	6	6	730	.348	.255	.348	.201	.144	.052	.378	-.085	.378	-.128	-.038	1.442	0.090	2.2	1.1	4.3	1.3	A-	B+
377	610078	6	6	730	.537	.177	.136	.093	.537	.058	.508	-.116	-.202	-.216	.508	0.347	0.088	-1.5	1.0	-1.0	0.9	A+	A-
378	609025	6	6	1453	.395	.158	.180	.395	.264	.003	.247	-.228	-.052	.247	-.023	1.175	0.059	5.9	1.1	5.6	1.2	A-	A-
379	609026	6	6	1453	.315	.315	.079	.103	.500	.003	.203	.203	-.238	-.224	.094	1.610	0.062	5.8	1.2	7.8	1.4	A-	A-
380	610310	6	6	730	.529	.529	.047	.406	.016	.003	.431	.431	-.130	-.322	-.130	0.493	0.083	0.2	1.0	0.3	1.0	B-	A-

Table B–3 (continued). Reading/Literature Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
381	612264	6	6	725	.641	.641	.028	.046	.284	.001	.346	.346	-.156	-.214	-.197	-0.230	0.088	3.2	1.1	2.8	1.2	A-	A-
382	610331	6	6	725	.731	.731	.066	.069	.092	.041	.563	.563	-.207	-.319	-.181	-0.949	0.099	-2.7	0.9	-2.6	0.8	B-	A-
383	612233	6	N/A	731	.323	.323	.301	.137	.227	.012	.231	.231	-.101	-.146	.039	1.547	0.088	3.0	1.1	4.8	1.4	A-	B-
384	612254	6	N/A	731	.565	.565	.120	.109	.131	.074	.539	.539	-.214	-.250	-.111	0.058	0.088	-2.2	0.9	-1.8	0.9	A+	A+
385	609271	6	6	725	.484	.259	.484	.065	.189	.003	.268	-.147	.268	-.161	-.042	0.558	0.083	5.3	1.2	4.8	1.3	A-	A-
386	609240	6	N/A	725	.247	.175	.117	.457	.247	.004	.222	-.239	-.233	.169	.222	1.866	0.095	2.7	1.1	4.6	1.5	A-	A+
387	612263	6	N/A	725	.501	.313	.501	.092	.083	.011	.396	-.141	.396	-.132	-.228	0.463	0.084	1.6	1.1	3.0	1.2	A-	A-
388	609093	6	6	730	.877	.877	.038	.030	.044	.011	.516	.516	-.246	-.244	-.246	-1.900	0.126	-2.3	0.8	-2.5	0.6	A-	B-
389	612212	6	6	730	.769	.080	.064	.769	.060	.027	.547	-.223	-.229	.547	-.257	-1.020	0.102	-2.1	0.9	-3.2	0.7	B+	A-
390	610076	6	N/A	721	.795	.078	.054	.795	.067	.007	.439	-.199	-.293	.439	-.156	-1.109	0.103	-0.6	1.0	-1.4	0.9	A-	A-
391	610077	6	6	721	.494	.494	.243	.092	.168	.004	.249	.249	-.077	-.225	-.027	0.643	0.084	7.4	1.3	6.2	1.4	A-	A+
392	610063	6	N/A	721	.603	.100	.169	.065	.603	.062	.487	-.194	-.136	-.278	.487	-0.120	0.090	-0.3	1.0	-0.8	1.0	A-	A-
393	609236	6	6	731	.486	.486	.066	.289	.149	.011	.280	.280	-.054	-.076	-.167	0.700	0.083	5.4	1.2	5.8	1.3	A-	A+
394	610069	6	6	731	.720	.056	.101	.063	.720	.060	.555	-.175	-.233	-.196	.555	-0.833	0.100	-2.1	0.9	-1.7	0.8	A+	A+
395	610139	6	N/A	729	.755	.755	.071	.129	.038	.007	.494	.494	-.308	-.253	-.209	-0.799	0.097	-1.6	0.9	-2.1	0.8	A-	A-
396	612271	6	6	722	.801	.801	.111	.043	.040	.006	.465	.465	-.264	-.195	-.221	-1.090	0.105	-1.2	0.9	-1.3	0.9	A+	A-
397	610080	6	6	724	.815	.028	.041	.815	.068	.048	.581	-.173	-.254	.581	-.335	-1.642	0.126	-2.6	0.8	-3.8	0.5	A+	A-
398	612249	6	6	7268	.498	.313	.498	.034	.129	.026	.450	-.216	.450	-.203	-.101	0.580	0.027	0.8	1.0	2.8	1.0	A+	A-
399	612259	6	6	725	.309	.015	.666	.309	.008	.001	.210	-.139	-.132	.210	-.121	1.551	0.090	5.2	1.2	5.1	1.5	A-	A-
400	610333	6	6	725	.559	.559	.121	.075	.201	.044	.487	.487	-.254	-.191	-.103	0.108	0.087	0.5	1.0	0.0	1.0	A+	A-
401	612236	6	6	731	.824	.037	.824	.101	.037	.001	.443	-.208	.443	-.296	-.177	-1.309	0.107	-1.6	0.9	-2.2	0.8	A+	A+
402	610337	6	6	730	.537	.078	.537	.104	.240	.041	.385	-.193	.385	-.223	.011	0.405	0.087	4.2	1.2	4.4	1.3	A+	A-
403	610336	6	6	730	.775	.067	.048	.064	.775	.045	.587	-.221	-.197	-.283	.587	-1.164	0.107	-3.0	0.8	-3.3	0.6	A-	A-
404	609260	6	6	730	.685	.685	.078	.188	.041	.008	.382	.382	-.131	-.189	-.212	-0.373	0.090	1.9	1.1	2.0	1.2	A-	A+
405	609094	6	6	730	.738	.062	.738	.097	.095	.008	.427	-.208	.427	-.155	-.214	-0.709	0.095	0.6	1.0	0.9	1.1	B-	A-
406	612214	6	6	730	.358	.285	.358	.199	.132	.027	.241	.005	.241	-.095	-.080	1.328	0.086	5.6	1.2	8.0	1.6	A-	A+
407	612213	6	6	730	.644	.111	.093	.123	.644	.029	.479	-.285	-.201	-.084	.479	-0.208	0.089	-0.5	1.0	0.4	1.0	A+	A+
408	612215	6	6	730	.752	.070	.752	.069	.077	.033	.561	-.201	.561	-.273	-.236	-0.933	0.100	-2.1	0.9	-3.2	0.7	A+	A-
409	609268	6	6	731	.605	.033	.323	.605	.027	.012	.385	-.109	-.209	.385	-.196	0.073	0.086	1.9	1.1	2.0	1.1	A-	A-
410	609270	6	6	731	.583	.086	.583	.186	.130	.015	.462	-.186	.462	-.135	-.242	0.187	0.085	-0.2	1.0	-0.4	1.0	A-	A-
411	610116	6	6	731	.644	.644	.092	.131	.060	.073	.550	.550	-.209	-.197	-.163	-0.381	0.093	-1.7	0.9	-2.1	0.9	A+	A-
412	610115	6	6	731	.293	.322	.293	.148	.156	.082	.207	.112	.207	-.061	-.063	1.619	0.091	5.8	1.3	7.0	1.6	A-	B-
413	610140	6	6	729	.778	.029	.066	.128	.778	.000	.419	-.217	-.209	-.258	.419	-0.923	0.099	-0.7	1.0	-0.6	0.9	A+	B-
414	610302	6	6	729	.562	.353	.033	.562	.051	.001	.244	-.019	-.278	.244	-.275	0.340	0.084	6.9	1.3	6.2	1.4	A+	A-
415	610298	6	6	1453	.516	.516	.061	.127	.294	.003	.360	.360	-.187	-.153	-.161	0.603	0.059	5.1	1.1	4.5	1.2	A-	A-

Table B–3 (continued). Reading/Literature Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
416	612273	6	6	722	.395	.152	.395	.220	.226	.007	.330	-.149	.330	-.049	-.151	1.196	0.084	1.7	1.1	2.4	1.1	A-	C+
417	612272	6	6	722	.215	.237	.206	.334	.215	.008	.179	-.012	-.173	.053	.179	2.232	0.097	2.2	1.1	3.5	1.4	A-	A-
418	607992	6	6	722	.655	.086	.073	.150	.655	.036	.494	-.149	-.196	-.219	.494	-0.263	0.091	-0.3	1.0	-1.2	0.9	A+	A+
419	612298	6	6	722	.542	.184	.136	.079	.542	.060	.464	-.027	-.268	-.189	.464	0.304	0.087	0.3	1.0	0.6	1.0	B+	A+
420	610107	6	6	724	.695	.695	.077	.112	.066	.050	.561	.561	-.180	-.273	-.249	-0.579	0.098	-2.8	0.9	-3.1	0.7	A+	C-
421	610082	6	6	724	.735	.097	.735	.046	.055	.068	.541	-.200	.541	-.246	-.282	-1.033	0.109	-2.0	0.9	-2.4	0.7	A-	A+
422	610132	6	6	7268	.660	.660	.065	.069	.190	.015	.453	.453	-.270	-.233	-.124	-0.268	0.028	0.8	1.0	-1.8	1.0	A+	A-
423	607918	6	6	7268	.790	.790	.112	.044	.044	.010	.457	.457	-.278	-.215	-.118	-1.098	0.033	-2.9	1.0	-2.9	0.9	B-	A-
424	607921	6	6	7268	.907	.036	.029	.018	.907	.011	.488	-.252	-.211	-.212	.488	-2.333	0.046	-5.1	0.8	-9.2	0.5	A+	A-
425	607927	6	6	721	.479	.316	.082	.114	.479	.010	.401	-.124	-.194	-.204	.401	0.708	0.084	2.2	1.1	1.6	1.1	C-	A-
426	607917	6	6	721	.487	.155	.085	.487	.268	.006	.280	-.116	-.160	.280	-.078	0.674	0.084	6.5	1.2	6.2	1.4	A+	B-
427	610141	6	6	721	.534	.228	.122	.093	.534	.024	.470	-.101	-.269	-.203	.470	0.392	0.085	-0.2	1.0	0.1	1.0	A-	A+
428	607911	6	6	725	.476	.139	.270	.088	.476	.026	.479	-.170	-.156	-.222	.479	0.591	0.085	-0.7	1.0	-0.1	1.0	A+	A+
429	607915	6	6	725	.812	.062	.058	.812	.040	.028	.524	-.250	-.278	.524	-.148	-1.518	0.112	-1.9	0.9	-2.6	0.7	A-	A-
430	607929	6	6	725	.548	.548	.321	.059	.037	.035	.366	.366	-.119	-.236	-.065	0.190	0.087	4.7	1.2	3.2	1.2	B-	A+
431	612231	6	6	731	.792	.052	.792	.120	.027	.008	.436	-.246	.436	-.215	-.198	-1.085	0.102	-0.7	1.0	-0.3	1.0	A-	A+
432	607928	6	6	731	.744	.096	.022	.744	.127	.011	.340	-.091	-.171	.340	-.206	-0.746	0.095	2.1	1.1	1.1	1.1	A+	B-
433	612250	6	6	731	.417	.178	.242	.417	.093	.070	.301	-.185	.116	.301	-.163	0.877	0.086	6.0	1.2	5.7	1.3	A-	A+
434	607913	6	6	730	.553	.081	.084	.553	.249	.033	.458	-.211	-.294	.458	-.038	0.338	0.087	1.4	1.1	1.0	1.1	A-	B-
435	607920	6	6	730	.908	.908	.019	.019	.021	.033	.529	.529	-.202	-.179	-.194	-2.653	0.166	-1.1	0.9	-3.1	0.4	A-	B-
436	607924	6	6	730	.556	.138	.127	.141	.556	.037	.530	-.181	-.222	-.148	.530	0.309	0.087	-2.3	0.9	-1.6	0.9	A-	A+
437	607926	6	6	730	.832	.027	.832	.052	.051	.038	.524	-.165	.524	-.246	-.177	-1.638	0.120	-1.5	0.9	-2.2	0.7	A-	A-
438	609237	6	6	725	.469	.166	.142	.469	.219	.004	.394	-.179	-.126	.394	-.180	0.636	0.083	0.4	1.0	0.4	1.0	A-	B-
439	607923	6	6	725	.463	.112	.463	.188	.221	.017	.362	-.111	.362	-.283	.007	0.640	0.084	2.9	1.1	2.6	1.1	A-	B-
440	609050	6	6	730	.753	.047	.081	.753	.116	.003	.400	-.177	-.239	.400	-.177	-0.781	0.096	0.3	1.0	-0.6	1.0	C-	A-
441	609090	6	6	730	.607	.111	.607	.159	.116	.007	.448	-.268	.448	-.169	-.170	0.070	0.086	-0.6	1.0	-0.9	1.0	A-	A-
442	607906	6	6	730	.641	.049	.114	.641	.186	.010	.327	-.208	-.208	.327	-.035	-0.118	0.087	3.6	1.2	3.8	1.3	A+	A-
443	607914	6	6	730	.514	.385	.038	.052	.514	.011	.397	-.127	-.256	-.247	.397	0.547	0.084	2.5	1.1	2.4	1.1	A-	A+
444	612256	6	6	721	.796	.796	.057	.068	.075	.004	.401	.401	-.266	-.101	-.230	-1.112	0.102	-0.2	1.0	0.2	1.0	A+	C-
445	610075	6	6	721	.746	.046	.176	.746	.029	.003	.383	-.249	-.193	.383	-.167	-0.760	0.096	0.9	1.0	0.5	1.1	A-	A-
446	608013	6	6	721	.820	.820	.058	.067	.047	.008	.496	.496	-.336	-.216	-.187	-1.337	0.108	-2.2	0.9	-2.7	0.7	A-	C-
447	610058	6	6	721	.773	.773	.069	.076	.039	.043	.597	.597	-.308	-.294	-.187	-1.173	0.106	-4.0	0.8	-4.4	0.6	A-	B+
448	610059	6	6	721	.614	.028	.614	.056	.254	.049	.471	-.194	.471	-.235	-.183	-0.122	0.090	0.5	1.0	0.1	1.0	A-	A+
449	610126	6	6	731	.851	.851	.033	.047	.067	.003	.425	.425	-.176	-.204	-.280	-1.556	0.115	-1.2	0.9	-1.9	0.8	A+	A+
450	607916	6	6	731	.852	.042	.058	.034	.852	.014	.478	-.244	-.238	-.115	.478	-1.636	0.118	-1.2	0.9	-1.2	0.8	A-	A+

Table B–3 (continued). Reading/Literature Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M /F	W /B
451	607930	6	6	731	.900	.900	.023	.051	.012	.014	.476	.476	-.223	-.226	-.140	-2.213	0.141	-1.3	0.9	-1.5	0.7	A+	A-
452	610064	6	N/A	731	.274	.274	.123	.510	.033	.060	.173	.173	-.216	.215	-.127	1.756	0.092	6.2	1.3	7.4	1.7	A+	A-
453	607908	6	6	729	.702	.033	.702	.229	.029	.007	.366	-.179	.366	-.185	-.242	-0.453	0.091	2.3	1.1	1.8	1.1	B+	A+
454	607912	6	6	729	.366	.366	.140	.353	.133	.008	.203	.203	-.136	-.020	-.083	1.329	0.086	6.7	1.3	8.7	1.7	A-	A+
455	607919	6	6	729	.910	.910	.023	.026	.037	.004	.400	.400	-.251	-.155	-.213	-2.234	0.140	-0.9	0.9	-1.9	0.7	C-	A-
456	609049	6	6	729	.744	.744	.067	.106	.049	.034	.419	.419	-.121	-.193	-.198	-0.861	0.099	1.5	1.1	0.7	1.1	B-	A+
457	612268	6	6	722	.726	.726	.035	.103	.132	.006	.410	.410	-.293	-.183	-.159	-0.557	0.094	0.4	1.0	-0.4	1.0	A-	A-
458	607909	6	6	722	.269	.269	.194	.241	.290	.007	.251	.251	-.033	-.136	-.035	1.880	0.091	1.7	1.1	4.0	1.4	A-	A-
459	607925	6	6	722	.760	.176	.036	.760	.024	.004	.259	-.065	-.218	.259	-.184	-0.747	0.098	2.7	1.2	2.9	1.3	A+	A+
460	607991	6	6	722	.849	.033	.849	.053	.037	.028	.582	-.267	.582	-.271	-.228	-1.721	0.127	-2.2	0.8	-4.0	0.5	A+	A-
461	609185	6	6	722	.759	.097	.035	.759	.072	.037	.438	-.140	-.239	.438	-.142	-0.933	0.103	0.7	1.0	-0.1	1.0	A-	A-
462	612234	6	6	722	.824	.824	.037	.028	.060	.051	.561	.561	-.286	-.241	-.190	-1.680	0.127	-1.9	0.9	-1.9	0.7	A+	A-
463	612153	6	6	724	.902	.025	.046	.902	.021	.007	.377	-.208	-.160	.377	-.131	-2.157	0.146	-0.4	1.0	0.1	1.0	B+	A-
464	607907	6	6	724	.832	.024	.090	.044	.832	.011	.525	-.184	-.252	-.291	.525	-1.406	0.116	-1.9	0.9	-2.6	0.7	A-	C-
465	607922	6	6	724	.562	.218	.562	.087	.123	.010	.422	-.181	.422	-.223	-.112	0.398	0.086	0.3	1.0	0.9	1.1	A-	A-
466	610174	6	6	724	.617	.140	.070	.129	.617	.044	.544	-.251	-.252	-.146	.544	-0.057	0.090	-2.5	0.9	-2.2	0.9	A+	A-
467	610327	6	N/A	725	.752	.066	.088	.041	.752	.052	.557	-.251	-.252	-.146	.557	-1.156	0.105	-2.0	0.9	-2.5	0.7	A+	A-
468	610065	6	6	730	.510	.152	.189	.104	.510	.045	.419	-.152	-.080	-.149	.419	0.543	0.087	2.7	1.1	2.3	1.1	A-	A+
469	609022	6	6	1453	.729	.084	.729	.058	.127	.002	.397	-.220	.397	-.198	-.187	-0.582	0.066	0.3	1.0	-0.3	1.0	A+	C-
470	609661	7	7	5029	.650	.081	.158	.650	.103	.008	.399	-.217	-.189	.399	-.125	0.321	0.033	1.6	1.0	1.4	1.0	A+	A+
471	610325	7	7	5029	.710	.710	.145	.064	.072	.009	.484	.484	-.243	-.268	-.164	-0.025	0.034	-5.6	0.9	-4.7	0.9	A+	A+
472	610147	7	7	572	.766	.033	.098	.094	.766	.009	.369	-.176	-.175	-.130	.369	-0.522	0.109	0.3	1.0	-0.2	1.0	A-	A+
473	610148	7	N/A	572	.809	.039	.046	.809	.098	.009	.439	-.173	-.244	.439	-.161	-0.829	0.117	-1.0	0.9	-1.5	0.8	A+	A+
474	609053	7	7	554	.776	.776	.065	.069	.074	.016	.550	.550	-.246	-.268	-.226	-0.435	0.114	-2.7	0.8	-3.0	0.7	A-	C-
475	609219	7	7	554	.673	.673	.126	.076	.108	.016	.477	.477	-.240	-.219	-.142	0.220	0.101	-1.6	0.9	-1.6	0.9	A+	A-
476	609038	7	7	556	.682	.682	.034	.095	.184	.005	.387	.387	-.207	-.143	-.207	0.084	0.100	0.5	1.0	0.3	1.0	A+	A-
477	609039	7	7	556	.504	.092	.198	.200	.504	.007	.453	-.145	-.207	-.203	.453	0.972	0.093	-2.1	0.9	-2.0	0.9	A-	A+
478	608015	7	7	554	.717	.166	.087	.027	.717	.004	.308	-.121	-.187	-.131	.308	0.005	0.104	1.7	1.1	2.2	1.2	A+	A+
479	607994	7	N/A	554	.690	.143	.690	.112	.051	.005	.316	-.218	.316	-.066	-.136	0.156	0.102	2.4	1.1	2.2	1.2	A-	A-
480	609073	7	7	5029	.844	.028	.844	.046	.072	.010	.474	-.166	.474	-.250	-.244	-1.006	0.043	-4.5	0.9	-6.4	0.7	A+	A-
481	610316	7	7	554	.538	.103	.316	.538	.042	.002	.390	-.214	-.173	.390	-.219	1.036	0.096	1.0	1.0	0.7	1.0	A-	A+
482	609799	7	N/A	554	.827	.042	.114	.014	.827	.004	.445	-.217	-.307	-.170	.445	-0.724	0.123	-1.1	0.9	-2.1	0.8	A+	A-
483	607982	7	7	554	.718	.718	.070	.199	.009	.004	.367	.367	-.256	-.196	-.139	0.043	0.105	0.7	1.0	-0.1	1.0	A-	A+
484	610175	7	7	552	.732	.732	.058	.056	.138	.016	.499	.499	-.243	-.177	-.292	-0.322	0.107	-2.2	0.9	-2.6	0.8	A+	
485	610343	7	7	552	.683	.109	.683	.091	.103	.015	.459	-.328	.459	-.180	-.119	-0.020	0.102	-1.8	0.9	-1.4	0.9	A-	

Table B–3 (continued). Reading/Literature Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M /F	W /B
486	610176	7	N/A	552	.563	.054	.067	.299	.563	.016	.204	-.148	-.260	.045	.204	0.616	0.096	6.7	1.3	5.0	1.3	A+	
487	609034	7	7	552	.388	.388	.045	.404	.140	.024	.392	.392	-.259	-.063	-.220	1.503	0.098	0.3	1.0	1.1	1.1	A+	
488	609044	7	7	552	.504	.190	.504	.071	.208	.027	.335	-.174	.335	-.243	-.017	0.893	0.096	2.8	1.1	2.0	1.1	A+	
489	609272	7	7	552	.649	.065	.071	.649	.188	.027	.520	-.251	-.215	.520	-.259	0.127	0.101	-3.0	0.9	-2.8	0.8	B+	
490	609033	7	7	552	.518	.170	.190	.518	.094	.027	.403	-.106	-.198	.403	-.184	0.819	0.096	0.7	1.0	0.3	1.0	B+	
491	614852	7	7	552	.882	.045	.024	.045	.882	.004	.221	-.086	-.129	-.151	.221	-1.375	0.143	0.9	1.1	0.7	1.1	A+	B-
492	614853	7	N/A	552	.741	.020	.143	.741	.096	.000	.322	-.241	-.155	.322	-.180	-0.198	0.107	1.1	1.1	1.3	1.1	A-	A-
493	609222	7	N/A	552	.772	.772	.100	.087	.038	.004	.478	.478	-.285	-.235	-.211	-0.410	0.111	-2.2	0.9	-2.2	0.8	B-	B-
494	609278	7	7	552	.768	.768	.116	.047	.067	.002	.416	.416	-.147	-.281	-.249	-0.376	0.111	-0.6	1.0	-1.0	0.9	A+	A+
495	609221	7	7	552	.806	.069	.100	.806	.024	.002	.439	-.321	-.160	.439	-.247	-0.650	0.117	-1.4	0.9	-2.0	0.8	A+	A+
496	612228	7	7	552	.462	.246	.462	.100	.172	.020	.471	-.224	.471	-.196	-.128	1.265	0.097	-1.4	1.0	-0.3	1.0	A+	A-
497	612313	7	7	566	.629	.629	.097	.210	.060	.004	.322	.322	-.160	-.118	-.212	0.528	0.097	2.9	1.1	2.3	1.2	A+	A+
498	612260	7	7	566	.530	.194	.136	.530	.136	.004	.360	-.237	-.109	.360	-.112	1.050	0.093	1.8	1.1	1.4	1.1	A-	A-
499	612314	7	7	566	.458	.484	.019	.037	.458	.002	.382	-.211	-.242	-.233	.382	1.393	0.093	1.1	1.0	1.6	1.1	B-	A+
500	609202	7	7	566	.574	.247	.117	.051	.574	.011	.500	-.284	-.184	-.185	.500	0.803	0.095	-1.8	0.9	-2.0	0.9	A+	A-
501	609201	7	7	566	.617	.094	.617	.156	.120	.014	.500	-.286	.500	-.256	-.118	0.572	0.097	-1.8	0.9	-1.5	0.9	A-	A-
502	609203	7	7	566	.479	.062	.389	.051	.479	.019	.390	-.268	-.102	-.221	.390	1.261	0.094	0.8	1.0	2.5	1.1	A+	A+
503	612207	7	7	566	.489	.288	.489	.120	.076	.027	.381	-.074	.381	-.196	-.201	1.196	0.094	1.9	1.1	1.8	1.1	A+	A+
504	612320	7	7	566	.518	.175	.518	.138	.138	.032	.424	-.234	.424	-.177	-.076	1.030	0.095	0.1	1.0	1.4	1.1	A-	A+
505	610155	7	7	570	.807	.016	.012	.161	.807	.004	.389	-.183	-.101	-.269	.389	-0.597	0.116	0.2	1.0	-0.1	1.0	A+	A-
506	610153	7	7	570	.658	.658	.054	.075	.209	.004	.419	.419	-.258	-.288	-.107	0.339	0.097	-0.7	1.0	0.2	1.0	A+	A-
507	610156	7	N/A	570	.163	.083	.019	.163	.730	.005	-.016	-.128	-.252	-.016	.216	3.071	0.121	2.7	1.2	5.9	2.0	A-	A+
508	609819	7	7	570	.639	.142	.095	.105	.639	.019	.427	-.114	-.149	-.242	.427	0.394	0.097	0.0	1.0	0.3	1.0	A-	A-
509	612239	7	7	570	.618	.054	.086	.618	.223	.019	.376	-.187	-.281	.376	-.035	0.515	0.096	1.0	1.0	1.1	1.1	A+	B-
510	612238	7	7	570	.611	.611	.156	.067	.142	.025	.391	.391	-.112	-.235	-.126	0.537	0.095	0.7	1.0	-0.2	1.0	A+	A-
511	612308	7	7	570	.698	.698	.077	.081	.118	.026	.483	.483	-.216	-.252	-.141	0.025	0.103	-1.8	0.9	-0.3	1.0	A+	A+
512	612209	7	7	570	.818	.039	.083	.818	.030	.032	.512	-.169	-.277	.512	-.220	-0.862	0.127	-1.6	0.9	-2.6	0.7	A+	A+
513	610257	7	7	572	.453	.248	.453	.185	.105	.009	.384	-.109	.384	-.134	-.183	1.167	0.093	0.5	1.0	2.3	1.1	A-	A-
514	610354	7	7	572	.708	.708	.054	.117	.108	.012	.373	.373	-.171	-.236	-.048	-0.152	0.102	0.5	1.0	-0.1	1.0	A-	A-
515	610261	7	N/A	572	.867	.082	.012	.028	.867	.011	.453	-.219	-.151	-.224	.453	-1.368	0.136	-1.1	0.9	-2.2	0.7	A-	A-
516	612244	7	N/A	572	.778	.115	.052	.778	.037	.018	.497	-.226	-.197	.497	-.196	-0.655	0.113	-1.7	0.9	-2.0	0.8	A+	A+
517	609030	7	7	572	.663	.663	.080	.079	.150	.028	.518	.518	-.222	-.238	-.159	0.060	0.099	-3.0	0.9	-3.0	0.8	A+	A+
518	609032	7	7	572	.615	.100	.136	.119	.615	.030	.549	-.177	-.282	-.155	.549	0.298	0.097	-4.0	0.9	-3.9	0.8	B+	A-
519	609028	7	N/A	572	.754	.052	.040	.124	.754	.030	.560	-.249	-.203	-.240	.560	-0.534	0.110	-3.1	0.8	-3.5	0.7	A+	A+
520	612247	7	7	572	.607	.080	.607	.128	.149	.037	.427	-.107	.427	-.185	-.138	0.332	0.097	0.2	1.0	-0.6	1.0	A+	A+

Table B–3 (continued). Reading/Literature Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M /F	W /B
521	609176	7	7	556	.685	.070	.043	.685	.196	.005	.350	-.201	-.255	.350	-.087	0.054	0.100	1.4	1.1	0.5	1.0	A+	A+
522	609177	7	7	556	.860	.034	.032	.067	.860	.007	.528	-.256	-.252	-.258	.528	-1.200	0.133	-2.2	0.8	-2.9	0.6	B+	A+
523	609178	7	7	556	.734	.153	.734	.083	.025	.005	.443	-.176	.443	-.266	-.222	-0.230	0.105	-0.7	1.0	-1.2	0.9	A-	A+
524	609179	7	7	556	.709	.709	.068	.036	.182	.005	.345	.345	-.180	-.232	-.112	-0.079	0.102	1.6	1.1	1.6	1.1	A+	B+
525	612267	7	7	556	.649	.128	.155	.052	.649	.016	.585	-.250	-.319	-.192	.585	0.210	0.099	-4.7	0.8	-4.4	0.7	A+	A-
526	612274	7	7	556	.509	.331	.043	.509	.095	.022	.266	.016	-.194	.266	-.210	0.906	0.094	5.0	1.2	4.3	1.2	A-	A+
527	610270	7	7	556	.579	.130	.579	.189	.079	.023	.431	-.149	.431	-.208	-.155	0.548	0.096	-0.4	1.0	-0.2	1.0	A-	A-
528	610269	7	7	556	.543	.126	.543	.201	.101	.029	.197	-.051	.197	-.007	-.103	0.720	0.095	6.6	1.3	6.4	1.4	A+	A+
529	610271	7	N/A	556	.595	.201	.121	.058	.595	.025	.393	-.063	-.163	-.309	.393	0.461	0.096	0.9	1.0	1.2	1.1	A+	A-
530	612311	7	7	1109	.519	.227	.116	.519	.121	.016	.395	-.109	-.210	.395	-.184	0.949	0.067	1.2	1.0	1.5	1.1	A-	A+
531	609167	7	7	553	.801	.801	.056	.033	.109	.002	.380	.380	-.269	-.223	-.158	-0.523	0.115	-0.2	1.0	-0.7	0.9	A+	
532	609169	7	7	553	.637	.089	.179	.637	.094	.002	.458	-.240	-.240	.458	-.196	0.478	0.098	-1.0	1.0	-1.3	0.9	A-	
533	609229	7	7	553	.561	.052	.071	.561	.300	.016	.457	-.250	-.272	.457	-.153	0.839	0.096	-0.3	1.0	-0.5	1.0	A+	
534	609230	7	7	553	.633	.137	.633	.175	.038	.016	.383	-.167	.383	-.162	-.183	0.459	0.099	1.8	1.1	0.7	1.1	A+	
535	609046	7	7	553	.640	.137	.157	.042	.640	.024	.520	-.242	-.227	-.253	.520	0.391	0.100	-2.0	0.9	-2.7	0.8	A+	
536	609069	7	N/A	553	.653	.653	.060	.118	.145	.025	.511	.511	-.300	-.256	-.166	0.311	0.101	-2.3	0.9	-1.8	0.9	A-	
537	609274	7	7	553	.514	.174	.118	.165	.514	.031	.368	-.050	-.174	-.198	.368	1.035	0.096	2.4	1.1	3.0	1.2	A-	
538	614856	7	7	566	.896	.021	.896	.016	.064	.004	.368	-.296	.368	-.225	-.125	-1.436	0.151	-0.6	0.9	-0.3	0.9	A+	A-
539	614857	7	N/A	566	.922	.004	.058	.922	.012	.004	.258	-.103	-.130	.258	-.214	-1.853	0.175	0.3	1.0	0.0	1.0	A+	A-
540	609072	7	7	553	.821	.047	.087	.042	.821	.004	.465	-.239	-.249	-.239	.465	-0.686	0.120	-1.6	0.9	-2.2	0.7	A+	
541	609208	7	7	554	.783	.099	.783	.063	.045	.009	.375	-.295	.375	-.109	-.124	-0.417	0.115	0.6	1.0	0.1	1.0	A+	B-
542	609663	7	N/A	5029	.809	.080	.809	.034	.070	.007	.443	-.239	.443	-.253	-.158	-0.681	0.039	-3.0	0.9	-3.9	0.9	A-	A+
543	610149	7	7	572	.526	.434	.526	.016	.019	.005	.153	-.029	.153	-.069	-.181	0.828	0.092	8.1	1.3	7.0	1.4	A-	A-
544	610338	7	7	572	.378	.086	.145	.378	.381	.011	.314	-.258	-.190	.314	.052	1.544	0.095	2.3	1.1	2.1	1.1	A+	A+
545	609243	7	7	554	.863	.018	.052	.863	.051	.016	.474	-.199	-.236	.474	-.191	-1.185	0.139	-1.3	0.9	-1.8	0.7	A+	A+
546	609074	7	7	5029	.840	.840	.026	.087	.039	.009	.442	.442	-.230	-.203	-.213	-0.956	0.042	-2.6	0.9	-3.9	0.8	A+	A-
547	609075	7	N/A	5029	.835	.106	.016	.033	.835	.011	.410	-.192	-.185	-.223	.410	-0.928	0.042	-1.1	1.0	-2.4	0.9	A+	A-
548	610073	7	7	554	.668	.076	.139	.103	.668	.014	.476	-.286	-.142	-.199	.476	0.253	0.101	-1.6	0.9	-0.5	1.0	A-	A+
549	610119	7	N/A	554	.491	.098	.321	.491	.074	.016	.388	-.169	-.152	.388	-.131	1.170	0.095	1.1	1.0	1.4	1.1	A-	A-
550	610118	7	7	554	.894	.034	.894	.038	.018	.016	.546	-.242	.546	-.290	-.227	-1.559	0.156	-2.3	0.8	-3.9	0.4	A-	A-
551	609058	7	7	554	.565	.123	.186	.565	.108	.018	.450	-.184	-.148	.450	-.212	0.788	0.096	-0.1	1.0	-0.9	1.0	B+	A-
552	609056	7	N/A	554	.560	.123	.152	.146	.560	.020	.429	-.108	-.196	-.193	.429	0.809	0.096	0.1	1.0	-0.2	1.0	A+	A+
553	609057	7	N/A	554	.614	.043	.614	.045	.276	.022	.230	-.113	.230	-.132	-.049	0.520	0.098	5.4	1.2	5.5	1.4	A-	A+
554	609800	7	7	554	.655	.655	.170	.081	.092	.002	.379	.379	-.160	-.182	-.217	0.419	0.100	1.3	1.1	1.0	1.1	A-	A+
555	609801	7	N/A	554	.803	.074	.060	.061	.803	.002	.395	-.243	-.152	-.209	.395	-0.523	0.117	-0.3	1.0	0.3	1.0	A+	A+

Table B–3 (continued). Reading/Literature Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
556	607983	7	7	554	.937	.014	.029	.937	.018	.002	.424	-.225	-.261	.424	-.190	-2.024	0.185	-1.1	0.8	-2.9	0.4	A-	A-
557	609045	7	N/A	552	.594	.062	.134	.185	.594	.025	.406	-.179	-.188	-.160	.406	0.431	0.098	0.5	1.0	0.5	1.0	A+	
558	609042	7	N/A	552	.692	.080	.692	.083	.120	.025	.466	-.145	.466	-.264	-.224	-0.116	0.104	-1.4	0.9	-2.0	0.8	B+	
559	614854	7	N/A	552	.897	.060	.007	.897	.031	.005	.322	-.211	-.128	.322	-.185	-1.548	0.152	-0.1	1.0	-1.4	0.7	B+	A-
560	612229	7	7	552	.516	.516	.228	.136	.100	.020	.451	.451	-.292	-.108	-.116	0.985	0.096	-0.3	1.0	-0.2	1.0	A+	A-
561	612230	7	N/A	552	.429	.299	.107	.145	.429	.020	.430	-.103	-.158	-.244	.430	1.434	0.097	-0.4	1.0	0.1	1.0	A+	A-
562	609277	7	7	566	.767	.092	.095	.767	.034	.012	.507	-.319	-.196	.507	-.216	-0.302	0.111	-1.9	0.9	-2.4	0.8	A+	B-
563	609204	7	N/A	566	.647	.161	.647	.129	.048	.016	.431	-.236	.431	-.087	-.278	0.414	0.099	0.2	1.0	-0.2	1.0	A+	A-
564	612208	7	N/A	566	.664	.048	.143	.664	.120	.025	.474	-.175	-.197	.474	-.247	0.281	0.101	-0.8	1.0	-1.0	0.9	A+	A+
565	615199	7	7	570	.951	.028	.014	.004	.951	.004	.443	-.235	-.267	-.082	.443	-2.307	0.207	-1.0	0.8	-3.0	0.4	A-	A-
566	610154	7	N/A	570	.633	.175	.149	.633	.039	.004	.274	-.038	-.175	.274	-.180	0.478	0.095	3.6	1.2	3.9	1.2	A-	B+
567	609820	7	7	570	.912	.026	.912	.028	.018	.016	.537	-.232	.537	-.288	-.159	-1.849	0.175	-1.3	0.8	-3.0	0.4	A+	A+
568	609029	7	7	572	.844	.037	.056	.844	.039	.025	.553	-.199	-.246	.553	-.243	-1.273	0.134	-2.3	0.8	-3.0	0.6	B+	A-
569	609027	7	7	572	.512	.512	.189	.063	.210	.026	.445	.445	-.263	-.216	-.021	0.831	0.093	-0.8	1.0	-0.7	1.0	A+	A-
570	612310	7	7	1109	.400	.333	.172	.079	.400	.015	.325	-.074	-.196	-.106	.325	1.543	0.068	3.8	1.1	3.7	1.2	A+	A-
571	609170	7	7	553	.723	.723	.013	.224	.038	.002	.229	.229	-.145	-.122	-.185	-0.013	0.104	3.2	1.2	2.5	1.2	A-	
572	609070	7	7	553	.881	.040	.881	.036	.020	.024	.445	-.217	.445	-.221	-.207	-1.439	0.152	-1.2	0.9	-2.4	0.6	A-	
573	609071	7	N/A	553	.430	.118	.152	.430	.277	.024	.426	-.189	-.270	.426	-.047	1.474	0.096	0.4	1.0	1.0	1.1	A-	
574	614859	7	N/A	566	.822	.822	.023	.085	.069	.002	.386	.386	-.233	-.221	-.195	-0.677	0.121	-0.4	1.0	-0.1	1.0	A+	A-
575	614858	7	7	566	.758	.027	.129	.085	.758	.002	.395	-.139	-.195	-.265	.395	-0.201	0.108	0.0	1.0	-0.1	1.0	A-	A-
576	609209	7	7	554	.489	.107	.323	.489	.072	.009	.388	-.255	-.114	.388	-.184	1.267	0.096	1.5	1.1	1.7	1.1	A+	A+
577	609210	7	7	554	.646	.067	.150	.128	.646	.009	.428	-.244	-.207	-.165	.428	0.443	0.100	0.0	1.0	-0.6	1.0	A+	A-
578	609040	7	7	556	.800	.029	.800	.074	.094	.004	.480	-.141	.480	-.258	-.277	-0.669	0.115	-1.9	0.9	-1.8	0.8	A-	A-
579	607995	7	7	554	.625	.099	.625	.087	.184	.005	.334	-.209	.334	-.156	-.083	0.519	0.097	2.7	1.1	2.0	1.1	A-	A+
580	609223	7	7	552	.473	.375	.473	.098	.051	.004	.281	-.112	.281	-.148	-.147	1.249	0.096	5.0	1.2	4.5	1.3	A-	A+
581	612261	7	7	566	.156	.156	.477	.205	.159	.004	.168	.168	.029	-.051	-.131	3.259	0.126	1.3	1.1	2.7	1.5	A-	A+
582	612309	7	7	570	.419	.246	.419	.291	.025	.019	.349	-.120	.349	-.095	-.187	1.517	0.093	0.1	1.0	1.5	1.1	A-	B-
583	612210	7	7	570	.768	.768	.061	.111	.032	.028	.460	.460	-.180	-.255	-.121	-0.451	0.113	-0.7	1.0	-1.2	0.9	A+	B-
584	612316	7	7	570	.670	.112	.091	.097	.670	.030	.444	-.168	-.223	-.137	.444	0.176	0.100	-0.5	1.0	-0.5	1.0	B-	A-
585	610265	7	N/A	572	.542	.131	.542	.112	.206	.009	.347	-.126	.347	-.107	-.151	0.737	0.093	1.7	1.1	1.8	1.1	A-	A+
586	610272	7	7	556	.644	.644	.110	.148	.072	.027	.507	.507	-.260	-.202	-.179	0.197	0.099	-2.2	0.9	-2.3	0.9	A-	A+
587	609231	7	7	553	.624	.101	.624	.159	.103	.013	.351	-.257	.351	-.059	-.147	0.517	0.098	2.4	1.1	2.0	1.1	A+	
588	609232	7	7	553	.664	.215	.071	.036	.664	.015	.396	-.164	-.171	-.258	.396	0.294	0.100	0.8	1.0	1.2	1.1	C+	
589	609152	7	7	553	.588	.074	.257	.588	.076	.005	.448	-.242	-.304	.448	-.054	0.723	0.096	-0.7	1.0	-0.2	1.0	A+	
590	609041	7	7	556	.558	.558	.038	.279	.121	.005	.298	.298	-.100	-.165	-.109	0.714	0.094	2.8	1.1	2.3	1.1	A-	A-

Table B–3 (continued). Reading/Literature Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
591	610317	7	7	554	.825	.137	.825	.022	.014	.002	.402	-.346	.402	-.142	-.108	-0.693	0.122	-0.9	0.9	-1.0	0.9	A-	B-
592	607984	7	N/A	554	.545	.177	.153	.545	.121	.004	.337	-.148	-.140	.337	-.164	0.994	0.096	2.2	1.1	2.8	1.2	A-	C+
593	610157	7	7	552	.690	.690	.105	.080	.111	.015	.363	.363	-.207	-.102	-.169	-0.062	0.102	0.6	1.0	2.4	1.2	A+	
594	610177	7	7	552	.400	.230	.092	.400	.261	.016	.346	-.238	-.098	.346	-.035	1.451	0.097	2.3	1.1	2.2	1.1	A-	
595	609224	7	N/A	552	.732	.141	.065	.732	.056	.005	.370	-.215	-.210	.370	-.112	-0.152	0.106	0.6	1.0	-0.2	1.0	A-	A+
596	612315	7	N/A	566	.859	.051	.037	.051	.859	.002	.428	-.213	-.254	-.212	.428	-1.000	0.132	-0.9	0.9	-1.4	0.8	A+	A-
597	612217	7	7	566	.876	.876	.023	.035	.034	.032	.408	.408	-.124	-.239	-.201	-1.494	0.156	-0.6	0.9	-0.5	0.9	A+	A-
598	610170	7	7	570	.667	.667	.023	.105	.202	.004	.349	.349	-.208	-.193	-.133	0.292	0.097	1.1	1.1	0.7	1.0	A-	A+
599	610171	7	7	570	.712	.125	.081	.712	.075	.007	.357	-.151	-.179	.357	-.164	0.017	0.102	1.0	1.1	-0.2	1.0	A+	A-
600	610173	7	7	570	.653	.146	.140	.054	.653	.007	.414	-.111	-.239	-.238	.414	0.364	0.097	-1.0	1.0	-0.9	0.9	A-	A-
601	610172	7	7	570	.897	.058	.030	.897	.011	.005	.366	-.137	-.244	.366	-.152	-1.475	0.152	0.0	1.0	-0.5	0.9	B-	A-
602	610169	7	N/A	570	.679	.028	.679	.197	.093	.004	.411	-.125	.411	-.235	-.197	0.224	0.098	-0.2	1.0	-0.7	1.0	A+	A-
603	612240	7	7	570	.335	.146	.335	.216	.283	.021	.344	-.181	.344	-.069	-.050	1.931	0.096	-0.3	1.0	1.3	1.1	A-	A+
604	610353	7	7	572	.701	.100	.701	.046	.147	.007	.239	-.136	.239	-.169	.004	-0.106	0.101	4.3	1.2	3.0	1.3	A+	A+
605	612245	7	7	572	.904	.019	.904	.037	.025	.016	.531	-.197	.531	-.271	-.168	-1.918	0.165	-1.2	0.9	-3.3	0.4	A+	A-
606	612317	7	7	572	.892	.892	.040	.032	.021	.016	.478	.478	-.207	-.168	-.181	-1.714	0.153	-1.0	0.9	-1.7	0.7	A+	A+
607	612318	7	N/A	572	.612	.612	.089	.110	.157	.032	.380	.380	-.211	-.213	.024	0.311	0.097	1.7	1.1	1.6	1.1	B-	A+
608	612266	7	7	556	.639	.639	.137	.176	.036	.013	.441	.441	-.149	-.225	-.211	0.284	0.098	-0.9	1.0	-0.4	1.0	B+	A-
609	610273	7	7	556	.714	.056	.115	.090	.714	.025	.394	-.173	-.168	-.148	.394	-0.206	0.105	0.2	1.0	1.9	1.2	A+	A+
610	609172	7	7	553	.825	.045	.016	.825	.114	.000	.351	-.131	-.207	.351	-.252	-0.692	0.120	-0.3	1.0	-0.4	1.0	A-	
611	609171	7	7	553	.872	.052	.872	.060	.016	.000	.400	-.236	.400	-.233	-.205	-1.110	0.134	-1.2	0.9	-1.9	0.7	A-	
612	615229	7	7	553	.633	.633	.174	.130	.049	.015	.457	.457	-.208	-.242	-.146	0.463	0.099	-0.5	1.0	-0.7	1.0	A+	
613	609233	7	N/A	553	.336	.333	.213	.103	.336	.015	.374	-.036	-.207	-.154	.374	1.989	0.099	0.4	1.0	3.1	1.2	A-	
614	609658	7	7	5029	.735	.735	.102	.116	.041	.007	.443	.443	-.264	-.203	-.146	-0.165	0.035	-2.6	1.0	-3.2	0.9	A-	A-
615	610324	7	7	5029	.643	.199	.097	.643	.054	.007	.405	-.123	-.266	.405	-.186	0.361	0.033	1.5	1.0	1.7	1.0	A-	A+
616	610146	7	7	572	.909	.909	.021	.021	.042	.007	.384	.384	-.130	-.201	-.193	-1.901	0.163	-0.2	1.0	-0.7	0.8	A-	A+
617	607933	7	7	554	.661	.126	.024	.175	.661	.014	.402	-.184	-.213	-.153	.402	0.294	0.100	0.8	1.0	0.8	1.1	A+	B+
618	607936	7	7	554	.601	.051	.033	.601	.301	.014	.316	-.159	-.223	.316	-.090	0.616	0.097	3.8	1.2	3.3	1.2	B-	B+
619	609037	7	7	556	.856	.020	.086	.856	.034	.004	.349	-.228	-.201	.349	-.078	-1.134	0.130	0.1	1.0	-0.4	0.9	B-	A+
620	607939	7	7	5029	.764	.083	.764	.093	.056	.005	.419	-.218	.419	-.214	-.164	-0.346	0.036	-1.6	1.0	-2.1	0.9	A+	A+
621	607945	7	7	5029	.593	.593	.026	.231	.145	.006	.217	.217	-.186	-.020	-.140	0.629	0.032	9.9	1.2	9.9	1.3	A+	A-
622	607938	7	7	554	.731	.731	.094	.045	.114	.016	.531	.531	-.298	-.176	-.221	-0.129	0.107	-3.1	0.8	-2.9	0.8	A-	A+
623	610315	7	7	554	.841	.088	.034	.036	.841	.000	.379	-.200	-.196	-.247	.379	-0.819	0.126	-0.5	1.0	-0.9	0.9	B-	A-
624	607937	7	7	554	.928	.024	.036	.011	.928	.002	.391	-.240	-.214	-.171	.391	-1.893	0.176	-1.2	0.9	-2.3	0.5	A+	A-
625	607943	7	7	554	.709	.052	.709	.200	.034	.004	.293	-.206	.293	-.105	-.210	0.099	0.104	2.3	1.1	2.3	1.2	A-	A+

Table B–3 (continued). Reading/Literature Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
626	607949	7	7	554	.811	.047	.054	.811	.085	.004	.455	-.258	-.207	.455	-.251	-0.591	0.119	-1.1	0.9	-2.3	0.7	A+	B-
627	607932	7	7	552	.770	.053	.103	.069	.770	.005	.381	-.153	-.250	-.147	.381	-0.516	0.111	0.4	1.0	-0.5	0.9	C-	
628	607940	7	7	552	.549	.089	.313	.549	.044	.005	.352	-.159	-.187	.352	-.121	0.729	0.095	2.3	1.1	1.2	1.1	A-	
629	607941	7	7	552	.573	.304	.063	.056	.573	.004	.557	-.432	-.185	-.078	.557	0.613	0.096	-4.5	0.8	-3.6	0.8	C-	
630	610158	7	7	552	.823	.054	.074	.823	.044	.005	.419	-.178	-.279	.419	-.142	-0.901	0.121	-0.8	0.9	-1.2	0.8	A+	
631	609220	7	7	552	.723	.091	.161	.022	.723	.004	.502	-.263	-.297	-.229	.502	-0.093	0.105	-1.9	0.9	-2.6	0.8	A-	A-
632	607935	7	7	552	.652	.652	.190	.054	.098	.005	.362	.362	-.162	-.209	-.171	0.315	0.100	1.8	1.1	0.7	1.0	A+	A+
633	607946	7	7	552	.824	.085	.038	.051	.824	.002	.428	-.192	-.243	-.256	.428	-0.793	0.121	-1.0	0.9	-1.1	0.9	A+	A-
634	607953	7	7	552	.944	.013	.015	.025	.944	.004	.308	-.043	-.245	-.187	.308	-2.296	0.198	-0.4	0.9	-1.2	0.7	A-	A+
635	612312	7	7	566	.917	.046	.009	.917	.027	.002	.323	-.138	-.146	.323	-.243	-1.711	0.166	-0.3	1.0	0.1	1.0	A-	A+
636	607931	7	7	566	.403	.223	.237	.134	.403	.004	.290	-.150	-.182	.020	.290	1.675	0.094	3.6	1.1	2.5	1.2	B-	A-
637	607947	7	7	566	.564	.564	.163	.129	.138	.007	.368	.368	-.184	-.078	-.204	0.881	0.094	1.9	1.1	2.1	1.1	A-	C-
638	609205	7	7	566	.838	.018	.113	.838	.023	.009	.440	-.236	-.254	.440	-.189	-0.854	0.127	-0.4	1.0	-1.3	0.8	C+	A+
639	612206	7	7	566	.763	.763	.062	.051	.099	.025	.404	.404	-.156	-.216	-.159	-0.364	0.113	0.9	1.1	-0.1	1.0	A+	A+
640	612319	7	7	566	.848	.090	.019	.848	.014	.028	.387	-.184	-.221	.387	-.162	-1.147	0.140	-0.1	1.0	0.1	1.0	A-	A-
641	610152	7	7	570	.507	.186	.507	.081	.223	.004	.127	-.014	.127	-.151	.009	1.118	0.092	8.2	1.3	6.6	1.3	A-	A-
642	607944	7	7	570	.905	.025	.042	.905	.023	.005	.426	-.169	-.245	.426	-.161	-1.571	0.157	-0.8	0.9	-1.9	0.7	B-	A-
643	607950	7	7	570	.883	.086	.014	.012	.883	.005	.379	-.238	-.184	-.076	.379	-1.322	0.144	-0.1	1.0	-0.5	0.9	A-	A-
644	609818	7	7	570	.840	.021	.097	.028	.840	.014	.519	-.137	-.298	-.247	.519	-0.955	0.129	-1.4	0.9	-2.4	0.7	A-	A+
645	612307	7	7	570	.793	.019	.119	.053	.793	.016	.501	-.185	-.237	-.243	.501	-0.556	0.116	-1.4	0.9	-1.9	0.8	A-	A+
646	610255	7	7	572	.385	.302	.198	.385	.108	.007	.265	-.017	-.112	.265	-.134	1.531	0.095	3.6	1.1	4.7	1.3	A+	A+
647	607951	7	7	572	.729	.231	.011	.019	.729	.011	.273	-.088	-.153	-.195	.273	-0.289	0.104	2.7	1.2	3.5	1.3	A+	A-
648	607952	7	7	572	.969	.007	.011	.969	.005	.009	.451	-.125	-.184	.451	-.130	-3.427	0.307	-0.2	0.9	-2.2	0.3	A-	A+
649	609047	7	7	572	.248	.316	.248	.308	.101	.026	.273	.073	.273	-.110	-.134	2.278	0.106	1.2	1.1	3.4	1.4	A-	A+
650	612246	7	7	572	.698	.061	.156	.056	.698	.030	.391	-.156	-.110	-.155	.391	-0.169	0.103	1.1	1.1	1.0	1.1	A-	A+
651	609175	7	7	556	.351	.081	.259	.302	.351	.007	.188	-.091	-.050	-.047	.188	1.728	0.096	4.1	1.2	6.2	1.5	A+	B-
652	609174	7	7	556	.858	.059	.041	.036	.858	.005	.426	-.248	-.224	-.140	.426	-1.168	0.132	-0.8	0.9	-1.9	0.7	A+	A-
653	607934	7	7	556	.795	.144	.795	.040	.018	.004	.235	-.078	.235	-.204	-.057	-0.617	0.114	2.2	1.2	2.8	1.3	A-	A-
654	607948	7	7	556	.166	.662	.079	.088	.166	.005	.205	.056	-.219	-.082	.205	2.892	0.120	0.6	1.0	1.9	1.3	A+	B-
655	610268	7	7	556	.838	.031	.094	.838	.018	.020	.531	-.256	-.270	.531	-.250	-1.100	0.130	-2.0	0.8	-3.1	0.6	A-	A-
656	612216	7	7	1109	.748	.061	.124	.748	.050	.016	.511	-.203	-.306	.511	-.213	-0.305	0.077	-3.2	0.9	-4.1	0.7	A+	A+
657	609166	7	7	553	.687	.259	.029	.025	.687	.000	.250	-.130	-.132	-.234	.250	0.206	0.101	3.6	1.2	3.0	1.3	B-	
658	607942	7	7	553	.881	.013	.083	.881	.020	.004	.379	-.209	-.255	.379	-.138	-1.236	0.140	-0.9	0.9	-1.1	0.8	A+	
659	607954	7	7	553	.883	.029	.022	.063	.883	.004	.365	-.128	-.201	-.234	.365	-1.256	0.141	-0.5	1.0	-1.4	0.8	A-	
660	609273	7	7	553	.694	.109	.694	.103	.072	.022	.402	-.160	.402	-.286	-.062	0.088	0.104	0.6	1.0	1.0	1.1	A-	

Table B–3 (continued). Reading/Literature Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
661	614855	7	7	566	.982	.009	.002	.007	.982	.000	.231	-.188	-.113	-.096	.231	-3.744	0.385	-0.3	0.9	-2.3	0.2	A-	A-
662	609059	8	8	4712	.430	.107	.430	.288	.162	.013	.147	-.211	.147	.064	.020	1.449	0.032	9.9	1.3	9.9	1.4	A-	A+
663	607999	8	8	4712	.435	.097	.123	.327	.435	.018	.295	-.113	-.166	-.014	.295	1.415	0.032	8.0	1.1	9.3	1.2	A+	A-
664	609143	8	8	534	.307	.155	.212	.307	.322	.004	.120	-.128	-.057	.120	.061	2.019	0.100	3.9	1.2	3.2	1.2	A+	B+
665	609140	8	8	534	.787	.081	.064	.787	.067	.002	.409	-.152	-.264	.409	-.201	-0.416	0.112	-1.2	0.9	-1.6	0.9	A-	A-
666	609265	8	8	521	.781	.013	.163	.781	.029	.013	.433	-.224	-.158	.433	-.215	-0.487	0.117	-0.7	1.0	0.3	1.0	A-	
667	609266	8	N/A	521	.639	.144	.119	.639	.086	.012	.390	-.174	-.067	.390	-.181	0.371	0.100	0.2	1.0	0.4	1.0	A+	
668	609076	8	8	521	.726	.169	.067	.726	.033	.006	.404	-.202	-.165	.404	-.166	-0.039	0.107	-0.8	1.0	-0.1	1.0	A+	A+
669	607997	8	8	4712	.568	.568	.168	.127	.115	.023	.399	.399	-.127	-.172	-.110	0.755	0.033	0.8	1.0	0.6	1.0	A+	A+
670	610166	8	8	521	.422	.271	.422	.054	.205	.048	.262	.014	.262	-.248	.038	1.404	0.097	4.5	1.2	4.3	1.2	A-	A-
671	610186	8	8	521	.530	.111	.111	.186	.530	.061	.512	-.075	-.210	-.167	.512	0.837	0.099	-3.0	0.9	-2.7	0.9	A-	B-
672	610199	8	8	521	.599	.154	.075	.599	.109	.063	.505	-.072	-.230	.505	-.182	0.472	0.102	-2.3	0.9	-2.5	0.9	A+	B-
673	610198	8	8	521	.507	.507	.146	.104	.177	.067	.460	.460	-.081	-.232	-.069	0.942	0.099	-1.3	1.0	-1.1	1.0	A+	A-
674	610180	8	8	520	.896	.033	.039	.896	.029	.004	.485	-.254	-.259	.485	-.192	-1.452	0.154	-1.5	0.8	-3.1	0.5	B+	
675	610181	8	N/A	520	.719	.092	.719	.129	.056	.004	.483	-.184	.483	-.285	-.208	-0.036	0.106	-2.7	0.9	-2.8	0.8	A-	
676	610308	8	8	520	.348	.252	.146	.348	.248	.006	.138	-.041	-.087	.138	.013	1.822	0.099	4.8	1.2	5.7	1.4	A+	
677	610312	8	8	520	.308	.308	.252	.283	.089	.069	.293	.293	.011	-.041	-.065	1.958	0.104	1.3	1.1	2.4	1.2	A-	
678	609114	8	8	516	.337	.161	.355	.337	.101	.047	.252	-.179	.117	.252	-.152	1.806	0.102	3.1	1.1	3.3	1.3	B-	A-
679	609097	8	8	516	.514	.159	.114	.155	.514	.058	.504	-.068	-.254	-.214	.504	0.869	0.100	-2.3	0.9	-2.0	0.9	A+	B-
680	610188	8	8	516	.607	.145	.109	.607	.070	.070	.568	-.182	-.326	.568	-.170	0.326	0.105	-3.6	0.8	-3.0	0.8	A+	A-
681	609121	8	8	527	.884	.023	.044	.884	.042	.008	.460	-.161	-.197	.460	-.234	-1.292	0.148	-1.5	0.9	-2.6	0.6	A+	
682	609118	8	8	527	.666	.216	.666	.030	.078	.010	.475	-.307	.475	-.127	-.145	0.311	0.102	-2.0	0.9	-2.8	0.8	B-	
683	609122	8	8	527	.890	.890	.047	.034	.019	.010	.422	.422	-.099	-.233	-.233	-1.381	0.153	-1.0	0.9	-1.5	0.7	A+	
684	609099	8	8	527	.696	.044	.127	.696	.125	.008	.350	-.150	-.217	.350	-.074	0.142	0.104	0.3	1.0	-0.3	1.0	A+	
685	610163	8	8	527	.602	.602	.108	.154	.072	.065	.491	.491	-.222	-.120	-.235	0.452	0.103	-2.0	0.9	-1.9	0.9	A+	
686	610164	8	8	527	.550	.137	.177	.550	.072	.065	.471	-.119	-.235	.471	-.141	0.731	0.100	-1.4	1.0	-1.1	0.9	A+	
687	612283	8	N/A	529	.159	.779	.030	.027	.159	.006	-.001	.225	-.204	-.195	-.001	3.093	0.126	2.4	1.2	5.0	1.8	A+	
688	612281	8	8	529	.822	.059	.822	.042	.062	.015	.504	-.206	.504	-.142	-.236	-0.746	0.126	-1.6	0.9	-2.4	0.7	A+	
689	609062	8	8	529	.522	.151	.113	.522	.174	.040	.404	-.032	-.215	.404	-.079	0.971	0.097	0.5	1.0	0.6	1.0	A+	
690	610507	8	8	529	.677	.108	.062	.083	.677	.070	.531	-.123	-.214	-.190	.531	0.000	0.110	-1.8	0.9	-2.0	0.8	A-	
691	610506	8	8	529	.544	.544	.176	.130	.074	.076	.499	.499	-.167	-.119	-.125	0.747	0.100	-2.0	0.9	-1.3	0.9	A+	
692	610522	8	8	529	.425	.062	.320	.115	.425	.078	.370	-.194	.082	-.192	.370	1.359	0.099	1.8	1.1	2.3	1.1	A+	
693	610521	8	8	529	.499	.129	.142	.499	.142	.089	.501	-.233	-.151	.501	-.019	0.942	0.100	-2.4	0.9	-2.0	0.9	B+	
694	610537	8	8	516	.785	.074	.089	.045	.785	.008	.543	-.268	-.250	-.256	.543	-0.393	0.117	-2.8	0.8	-3.4	0.7	A-	
695	610538	8	8	516	.878	.037	.041	.878	.039	.006	.461	-.166	-.251	.461	-.229	-1.192	0.145	-1.3	0.9	-2.4	0.6	A+	

Table B–3 (continued). Reading/Literature Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
696	610539	8	N/A	516	.680	.010	.289	.680	.016	.006	.323	-.220	-.184	.323	-.160	0.264	0.104	2.0	1.1	1.6	1.1	A+	
697	610213	8	8	516	.620	.159	.074	.111	.620	.037	.522	-.185	-.183	-.231	.522	0.487	0.102	-2.5	0.9	-2.8	0.8	A+	
698	610341	8	8	516	.475	.196	.475	.155	.111	.064	.458	-.040	.458	-.186	-.209	1.163	0.100	-1.0	1.0	-0.6	1.0	A+	
699	610224	8	8	516	.485	.485	.200	.165	.083	.068	.486	.486	-.156	-.181	-.117	1.092	0.100	-1.9	0.9	-1.8	0.9	A-	
700	610232	8	8	516	.531	.169	.128	.097	.531	.076	.474	-.061	-.182	-.219	.474	0.841	0.101	-0.9	1.0	-1.1	0.9	A+	
701	609829	8	N/A	516	.684	.056	.684	.072	.109	.080	.585	-.186	.585	-.305	-.187	-0.065	0.114	-3.3	0.8	-3.4	0.7	A-	
702	612288	8	8	521	.488	.488	.031	.432	.042	.008	.199	.199	-.198	.004	-.156	1.117	0.095	6.0	1.2	4.8	1.3	A-	
703	612289	8	8	521	.837	.025	.837	.035	.090	.013	.412	-.117	.412	-.169	-.153	-0.928	0.131	-0.3	1.0	0.2	1.0	A+	
704	612327	8	8	521	.758	.758	.042	.058	.127	.015	.447	.447	-.242	-.202	-.105	-0.338	0.113	-0.6	1.0	-1.2	0.9	A-	
705	612285	8	8	521	.480	.140	.148	.211	.480	.021	.480	-.234	-.196	-.048	.480	1.133	0.096	-3.6	0.9	-2.8	0.9	B+	
706	612286	8	8	521	.772	.075	.058	.772	.073	.023	.508	-.185	-.211	.508	-.175	-0.470	0.117	-1.6	0.9	-2.1	0.8	B+	
707	610543	8	8	521	.561	.052	.561	.171	.192	.025	.472	-.178	.472	-.185	-.137	0.729	0.097	-2.2	0.9	-2.0	0.9	B+	
708	610544	8	8	521	.729	.125	.046	.063	.729	.037	.575	-.211	-.215	-.257	.575	-0.251	0.112	-3.3	0.8	-3.7	0.7	A+	
709	610545	8	8	521	.495	.134	.240	.495	.090	.040	.349	-.091	-.065	.349	-.133	1.012	0.097	1.6	1.1	2.9	1.2	A-	
710	612334	8	8	521	.353	.255	.267	.353	.073	.052	.257	-.010	.021	.257	-.197	1.704	0.100	3.2	1.1	3.2	1.2	A-	
711	615618	8	8	528	.856	.032	.057	.053	.856	.002	.436	-.195	-.203	-.273	.436	-0.911	0.133	-1.4	0.9	-2.2	0.7	A+	
712	615614	8	8	528	.748	.059	.070	.119	.748	.004	.523	-.279	-.244	-.253	.523	-0.100	0.110	-2.4	0.9	-3.0	0.8	A-	
713	615615	8	N/A	528	.314	.025	.314	.612	.046	.004	.068	-.123	.068	.071	-.144	2.176	0.102	6.9	1.3	6.7	1.6	A-	
714	612295	8	8	528	.852	.852	.046	.044	.055	.004	.561	.561	-.205	-.311	-.333	-0.893	0.133	-2.8	0.8	-3.9	0.5	A-	
715	612296	8	8	528	.794	.044	.097	.794	.063	.004	.456	-.202	-.311	.456	-.142	-0.411	0.117	-1.2	0.9	-1.7	0.8	A-	
716	612220	8	8	1062	.694	.082	.133	.694	.049	.042	.498	-.159	-.250	.498	-.226	0.026	0.076	-2.4	0.9	-3.2	0.8	A+	A-
717	612276	8	8	528	.542	.117	.144	.165	.542	.032	.520	-.246	-.226	-.123	.520	0.964	0.098	-2.3	0.9	-2.0	0.9	A+	
718	612275	8	8	528	.623	.100	.089	.623	.150	.038	.434	-.201	-.145	.434	-.137	0.516	0.102	0.8	1.0	0.2	1.0	A+	
719	612277	8	8	528	.580	.146	.580	.153	.078	.044	.460	-.110	.460	-.122	-.301	0.736	0.101	0.0	1.0	-0.1	1.0	A+	
720	610332	8	8	528	.703	.102	.059	.703	.083	.053	.593	-.226	-.230	.593	-.314	-0.030	0.112	-3.5	0.8	-3.9	0.7	A+	
721	610314	8	N/A	528	.705	.034	.055	.152	.705	.055	.571	-.227	-.246	-.283	.571	-0.052	0.112	-2.8	0.9	-3.6	0.7	A+	
722	612331	8	N/A	534	.828	.015	.079	.828	.073	.006	.368	-.188	-.287	.368	-.095	-0.740	0.123	-0.5	1.0	-0.8	0.9	A+	A-
723	612242	8	8	534	.781	.047	.781	.140	.024	.008	.458	-.283	.458	-.195	-.253	-0.405	0.113	-1.6	0.9	-1.7	0.9	A-	B-
724	612243	8	8	534	.661	.056	.077	.202	.661	.004	.452	-.156	-.212	-.259	.452	0.309	0.098	-2.1	0.9	-2.1	0.9	A+	A-
725	612333	8	8	534	.524	.311	.524	.111	.051	.004	.320	-.099	.320	-.146	-.232	0.971	0.093	1.7	1.1	1.5	1.1	A+	A+
726	611455	8	8	534	.710	.060	.133	.075	.710	.023	.551	-.277	-.222	-.250	.551	-0.030	0.105	-3.4	0.8	-3.8	0.7	A+	A+
727	611456	8	8	534	.517	.333	.079	.517	.047	.024	.223	.116	-.232	.223	-.279	0.956	0.094	4.9	1.2	4.4	1.2	A+	A+
728	612305	8	8	534	.581	.200	.109	.069	.581	.041	.564	-.220	-.219	-.249	.564	0.604	0.097	-5.1	0.8	-4.6	0.8	A+	A-
729	612304	8	8	534	.277	.277	.185	.305	.184	.049	.222	.222	-.117	.006	.005	2.108	0.103	1.5	1.1	4.0	1.3	A-	A-
730	612301	8	8	534	.195	.303	.358	.195	.086	.058	.240	.022	.079	.240	-.296	2.615	0.115	0.1	1.0	3.1	1.4	A+	B+

Table B–3 (continued). Reading/Literature Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
731	612279	8	8	520	.627	.065	.173	.627	.129	.006	.334	-.114	-.105	.334	-.211	0.461	0.099	0.7	1.0	0.4	1.0	A-	
732	609245	8	8	529	.667	.023	.032	.667	.268	.010	.257	-.160	-.168	.257	-.060	0.291	0.101	3.1	1.2	3.2	1.2	A+	
733	609252	8	N/A	529	.741	.741	.034	.195	.021	.010	.319	.319	-.208	-.109	-.126	-0.140	0.109	1.0	1.1	1.5	1.1	A+	
734	608016	8	8	4712	.722	.722	.146	.052	.064	.017	.505	.505	-.222	-.260	-.163	-0.061	0.036	-6.7	0.9	-7.2	0.8	A-	C-
735	609267	8	8	521	.503	.284	.050	.148	.503	.015	.330	-.034	-.226	-.111	.330	1.035	0.096	2.0	1.1	1.8	1.1	A+	
736	609269	8	N/A	521	.513	.213	.513	.106	.156	.013	.430	-.290	.430	-.091	-.025	0.993	0.096	-1.6	1.0	-1.1	1.0	A+	
737	609153	8	N/A	521	.493	.142	.493	.140	.217	.008	.253	-.100	.253	-.154	-.004	1.149	0.095	3.3	1.1	3.3	1.2	A+	A+
738	607996	8	8	4712	.813	.104	.813	.037	.026	.020	.500	-.218	.500	-.237	-.185	-0.718	0.042	-4.4	0.9	-6.7	0.8	A+	A-
739	610167	8	8	521	.555	.555	.117	.161	.119	.048	.356	.356	-.138	-.016	-.100	0.746	0.099	1.4	1.1	1.5	1.1	A-	A+
740	610168	8	N/A	521	.660	.134	.060	.096	.660	.050	.504	-.223	-.251	-.027	.504	0.170	0.105	-2.0	0.9	-1.9	0.9	A+	A-
741	610182	8	8	520	.937	.937	.025	.017	.017	.004	.471	.471	-.248	-.225	-.199	-2.065	0.192	-1.4	0.8	-2.8	0.4	A+	
742	610183	8	N/A	520	.698	.154	.106	.037	.698	.006	.453	-.252	-.178	-.226	.453	0.078	0.104	-1.5	0.9	-2.0	0.9	A+	
743	610313	8	N/A	520	.367	.129	.194	.240	.367	.069	.305	-.067	-.023	-.030	.305	1.635	0.100	2.3	1.1	3.2	1.2	A+	
744	609212	8	8	516	.446	.446	.306	.105	.140	.004	.260	.260	-.026	-.087	-.219	1.336	0.097	3.2	1.1	4.0	1.2	A+	A+
745	609213	8	8	516	.291	.205	.384	.118	.291	.002	.210	-.109	-.025	-.088	.210	2.132	0.104	2.4	1.1	3.1	1.3	A-	A-
746	609214	8	8	516	.601	.049	.049	.300	.601	.002	.434	-.223	-.210	-.237	.434	0.585	0.098	-1.0	1.0	-1.1	0.9	A-	A+
747	609117	8	8	516	.746	.062	.093	.746	.056	.043	.566	-.254	-.231	.566	-.235	-0.421	0.117	-2.8	0.8	-3.4	0.7	A+	A-
748	609100	8	8	527	.463	.463	.177	.190	.161	.010	.336	.336	-.118	-.118	-.107	1.329	0.096	1.1	1.0	1.4	1.1	B+	
749	609180	8	8	527	.843	.843	.034	.065	.049	.010	.460	.460	-.212	-.164	-.230	-0.882	0.131	-1.6	0.9	-2.5	0.7	A+	
750	610529	8	N/A	529	.698	.096	.698	.076	.051	.079	.573	-.154	.573	-.233	-.190	-0.180	0.114	-2.5	0.9	-3.3	0.7	A+	
751	610523	8	8	529	.643	.643	.087	.106	.085	.079	.650	.650	-.182	-.234	-.264	0.176	0.107	-5.5	0.8	-5.8	0.6	A-	
752	609218	8	8	529	.448	.174	.130	.448	.146	.102	.343	-.037	-.017	.343	-.107	1.172	0.100	2.8	1.1	3.4	1.2	A+	
753	609261	8	8	529	.645	.645	.183	.044	.025	.104	.369	.369	.027	-.218	-.196	0.042	0.111	1.7	1.1	2.7	1.2	A-	
754	609217	8	8	529	.378	.310	.151	.378	.055	.106	.360	.010	-.062	.360	-.186	1.537	0.101	1.6	1.1	1.8	1.1	A-	
755	610540	8	8	516	.702	.702	.138	.047	.109	.006	.444	.444	-.186	-.317	-.148	0.143	0.106	-0.8	1.0	-1.1	0.9	A+	
756	610541	8	N/A	516	.603	.176	.056	.159	.603	.006	.416	-.106	-.176	-.265	.416	0.675	0.099	-0.8	1.0	-0.5	1.0	A+	
757	610214	8	8	516	.758	.758	.105	.045	.062	.031	.508	.508	-.243	-.180	-.179	-0.325	0.117	-1.7	0.9	-1.7	0.8	A+	
758	609832	8	8	516	.717	.132	.031	.717	.043	.078	.539	-.166	-.264	.539	-.239	-0.285	0.119	-2.1	0.9	-2.0	0.8	A-	
759	609853	8	N/A	516	.580	.070	.114	.155	.580	.081	.492	-.113	-.236	-.130	.492	0.562	0.104	-1.4	0.9	-0.8	1.0	A+	
760	610546	8	8	521	.758	.081	.100	.758	.029	.033	.583	-.266	-.294	.583	-.081	-0.427	0.116	-3.3	0.8	-3.6	0.7	A+	
761	610547	8	N/A	521	.424	.424	.271	.077	.194	.035	.304	.304	.027	-.274	-.033	1.374	0.097	3.0	1.1	1.6	1.1	A+	
762	615616	8	8	528	.314	.316	.292	.314	.072	.006	.155	-.114	.089	.155	-.154	2.175	0.102	4.8	1.2	5.6	1.5	A+	
763	615617	8	N/A	528	.769	.059	.769	.121	.047	.004	.424	-.238	.424	-.133	-.292	-0.238	0.113	-0.5	1.0	-0.6	0.9	A+	
764	612219	8	8	1062	.581	.581	.075	.215	.091	.038	.486	.486	-.189	-.251	-.125	0.671	0.070	-2.4	0.9	-3.0	0.9	A+	A-
765	612218	8	N/A	1062	.491	.164	.246	.491	.061	.039	.421	-.204	-.077	.421	-.217	1.122	0.068	-0.5	1.0	-0.3	1.0	A-	A+

Table B–3 (continued). Reading/Literature Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
766	610334	8	N/A	528	.284	.284	.123	.267	.273	.053	.171	.171	-.180	-.065	.166	2.277	0.105	4.6	1.2	5.2	1.5	A+	
767	611457	8	8	534	.545	.545	.079	.187	.167	.023	.325	.325	-.222	-.067	-.088	0.827	0.094	2.0	1.1	1.7	1.1	A+	A-
768	609254	8	8	529	.469	.299	.053	.469	.170	.010	.339	-.025	-.214	.339	-.183	1.282	0.095	1.6	1.1	1.9	1.1	A-	
769	609279	8	8	529	.677	.132	.095	.085	.677	.011	.367	-.116	-.171	-.142	.367	0.244	0.102	0.8	1.0	0.6	1.0	A-	
770	609060	8	8	4712	.700	.139	.700	.122	.026	.013	.437	-.165	.437	-.217	-.185	0.085	0.035	-2.4	1.0	-3.2	0.9	A+	A-
771	609135	8	8	534	.251	.251	.234	.461	.051	.004	.160	.160	-.125	-.026	.051	2.334	0.106	2.1	1.1	3.8	1.4	A-	A+
772	609131	8	8	534	.916	.039	.011	.032	.916	.002	.461	-.235	-.198	-.285	.461	-1.624	0.163	-1.6	0.8	-2.8	0.6	A+	A+
773	609125	8	8	527	.763	.082	.087	.059	.763	.010	.489	-.248	-.217	-.202	.489	-0.275	0.112	-2.7	0.9	-2.8	0.8	A+	
774	610165	8	8	527	.579	.116	.171	.074	.579	.061	.513	-.233	-.165	-.187	.513	0.590	0.101	-2.6	0.9	-2.3	0.9	A-	
775	612284	8	8	529	.745	.745	.142	.062	.045	.006	.444	.444	-.179	-.309	-.147	-0.152	0.109	-1.7	0.9	-1.3	0.9	B-	
776	612983	8	8	529	.828	.091	.023	.828	.053	.006	.455	-.205	-.209	.455	-.245	-0.753	0.126	-1.3	0.9	-1.2	0.9	A+	
777	610228	8	8	516	.438	.275	.167	.438	.056	.064	.387	-.034	-.124	.387	-.221	1.342	0.100	1.0	1.0	1.1	1.1	A-	
778	612328	8	8	521	.407	.025	.407	.505	.050	.013	.207	-.215	.207	.084	-.236	1.500	0.097	4.8	1.2	4.5	1.3	A-	
779	612332	8	8	528	.462	.241	.091	.203	.462	.004	.439	-.229	-.205	-.112	.439	1.421	0.096	-0.9	1.0	0.4	1.0	A+	
780	612278	8	8	528	.761	.072	.072	.059	.761	.036	.584	-.233	-.240	-.289	.584	-0.344	0.118	-2.9	0.8	-3.1	0.7	B+	
781	612302	8	8	534	.418	.049	.090	.412	.418	.032	.361	-.226	-.198	-.041	.361	1.415	0.095	0.4	1.0	1.0	1.0	A-	A-
782	610087	8	8	516	.928	.021	.033	.928	.014	.004	.362	-.159	-.194	.362	-.214	-1.882	0.184	-0.7	0.9	-2.3	0.5	A+	
783	610260	8	8	516	.888	.012	.035	.058	.888	.008	.372	-.157	-.142	-.246	.372	-1.347	0.153	-0.8	0.9	-1.0	0.8	A+	
784	610090	8	8	516	.723	.107	.723	.037	.130	.004	.338	-.198	.338	-.193	-.104	0.018	0.108	1.1	1.1	1.6	1.1	A-	
785	610089	8	8	516	.684	.684	.173	.062	.076	.006	.337	.337	-.082	-.194	-.202	0.243	0.104	1.5	1.1	1.4	1.1	A-	
786	610088	8	8	516	.543	.109	.233	.543	.109	.008	.350	-.143	-.162	.350	-.113	0.959	0.097	1.2	1.0	2.1	1.1	A-	
787	609120	8	8	534	.622	.064	.622	.090	.223	.002	.424	-.205	.424	-.216	-.197	0.511	0.096	-2.0	0.9	-1.9	0.9	A-	A-
788	607998	8	8	4712	.628	.056	.243	.052	.628	.021	.337	-.165	-.046	-.223	.337	0.449	0.033	5.7	1.1	5.9	1.1	A+	A-
789	610184	8	8	521	.401	.259	.132	.401	.140	.067	.301	.064	-.153	.301	-.056	1.476	0.099	2.3	1.1	2.5	1.1	A-	A+
790	610197	8	8	521	.518	.294	.056	.518	.061	.071	.370	-.006	-.158	.370	-.158	0.879	0.099	1.4	1.1	1.8	1.1	A+	A+
791	609112	8	N/A	516	.479	.112	.186	.171	.479	.052	.532	-.242	-.207	-.114	.532	1.062	0.099	-4.0	0.9	-3.5	0.8	A+	A-
792	609096	8	8	516	.488	.080	.488	.269	.109	.054	.336	-.274	.336	.019	-.108	1.011	0.099	2.5	1.1	3.5	1.2	A-	A+
793	610189	8	N/A	516	.459	.087	.221	.167	.459	.066	.431	-.213	-.054	-.170	.431	1.124	0.100	-0.3	1.0	0.8	1.0	B+	A+
794	609130	8	8	527	.509	.042	.287	.509	.156	.008	.126	-.086	.107	.126	-.159	1.114	0.096	7.8	1.3	8.3	1.4	A-	
795	612282	8	8	529	.501	.121	.093	.274	.501	.011	.400	-.156	-.159	-.125	.400	1.127	0.095	0.0	1.0	0.3	1.0	A+	
796	609063	8	8	529	.216	.340	.216	.217	.185	.042	.231	.068	.231	-.062	-.023	2.612	0.113	1.2	1.1	3.3	1.4	A+	
797	610223	8	8	516	.481	.064	.481	.171	.233	.052	.294	-.109	.294	-.197	.072	1.168	0.099	4.6	1.2	3.9	1.2	A+	
798	612290	8	8	521	.843	.006	.106	.040	.843	.006	.438	-.096	-.245	-.242	.438	-0.931	0.131	-0.9	0.9	-1.6	0.8	A+	
799	612287	8	8	521	.461	.261	.069	.461	.188	.021	.389	-.153	-.115	.389	-.073	1.225	0.096	-0.1	1.0	0.2	1.0	A+	
800	612292	8	N/A	521	.407	.407	.144	.138	.261	.050	.357	.357	-.178	-.204	.076	1.430	0.098	0.6	1.0	1.7	1.1	A+	

Table B–3 (continued). Reading/Literature Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
801	612297	8	8	528	.364	.254	.127	.364	.252	.004	.278	-.099	-.191	.278	-.023	1.914	0.099	2.6	1.1	3.7	1.3	A+	
802	612322	8	8	528	.436	.436	.258	.129	.136	.042	.398	.398	.000	-.182	-.214	1.486	0.098	1.1	1.0	1.0	1.1	A+	
803	612303	8	8	534	.790	.105	.032	.041	.790	.032	.446	-.135	-.264	-.205	.446	-0.611	0.120	-1.0	0.9	-0.3	1.0	A-	A-
804	612324	8	8	520	.598	.083	.598	.092	.219	.008	.336	-.241	.336	-.267	.014	0.604	0.098	0.6	1.0	0.9	1.1	A-	
805	612280	8	8	520	.679	.100	.679	.054	.162	.006	.451	-.115	.451	-.256	-.259	0.186	0.102	-1.7	0.9	-2.2	0.9	A+	
806	608017	8	8	4712	.755	.047	.080	.103	.755	.015	.477	-.152	-.209	-.226	.477	-0.263	0.037	-4.7	0.9	-6.2	0.8	A+	A-
807	609264	8	8	521	.856	.031	.856	.065	.033	.015	.393	-.098	.393	-.123	-.169	-1.126	0.139	0.4	1.0	-0.5	0.9	A+	
808	609136	8	8	521	.756	.052	.086	.098	.756	.008	.292	-.119	-.074	-.157	.292	-0.241	0.111	1.0	1.1	1.1	1.1	A+	A+
809	607955	8	8	4712	.362	.137	.362	.271	.216	.014	.285	-.114	.285	-.025	-.120	1.784	0.033	5.4	1.1	9.3	1.2	A-	A+
810	607973	8	8	4712	.754	.754	.028	.200	.009	.009	.319	.319	-.236	-.128	-.117	-0.233	0.037	3.4	1.1	4.7	1.2	A+	A+
811	607966	8	8	521	.797	.071	.797	.038	.052	.042	.572	-.237	.572	-.220	-.186	-0.736	0.127	-2.2	0.8	-3.2	0.7	A-	B-
812	610349	8	8	521	.791	.791	.042	.058	.052	.058	.493	.493	-.166	-.207	-.092	-0.789	0.130	-0.9	0.9	-1.2	0.8	A+	A-
813	610179	8	8	520	.300	.300	.358	.108	.227	.008	.292	.292	-.088	-.224	.000	2.073	0.103	0.4	1.0	0.6	1.1	A-	
814	607965	8	8	520	.864	.864	.054	.042	.033	.008	.467	.467	-.201	-.245	-.207	-1.115	0.138	-1.3	0.9	-2.4	0.7	A-	
815	610311	8	8	520	.698	.046	.127	.698	.060	.069	.607	-.256	-.233	.607	-.189	-0.165	0.113	-3.2	0.8	-3.7	0.7	A+	
816	607959	8	8	516	.733	.126	.039	.733	.072	.031	.404	-.213	-.193	.404	-.081	-0.269	0.113	0.4	1.0	0.5	1.1	A-	A-
817	607964	8	8	516	.754	.754	.103	.080	.033	.031	.488	.488	-.200	-.245	-.153	-0.408	0.116	-0.8	1.0	-1.0	0.9	A+	A-
818	607969	8	8	516	.785	.041	.087	.785	.056	.031	.526	-.178	-.297	.526	-.177	-0.638	0.123	-1.5	0.9	-2.0	0.8	A+	A-
819	609095	8	8	516	.678	.678	.060	.126	.095	.041	.502	.502	-.301	-.113	-.212	0.031	0.108	-1.8	0.9	-1.2	0.9	A-	B-
820	610187	8	8	516	.533	.533	.244	.097	.066	.060	.397	.397	-.011	-.143	-.333	0.761	0.100	0.6	1.0	0.1	1.0	A+	A+
821	609115	8	8	527	.909	.042	.011	.032	.909	.006	.391	-.239	-.150	-.119	.391	-1.585	0.164	-0.6	0.9	-2.0	0.6	A-	
822	607960	8	8	527	.970	.013	.004	.970	.006	.008	.398	-.141	-.092	.398	-.142	-3.127	0.307	-0.1	0.9	-1.7	0.4	A+	
823	607961	8	8	527	.662	.112	.030	.188	.662	.008	.331	-.210	-.213	-.046	.331	0.335	0.101	0.8	1.0	0.1	1.0	A+	
824	607967	8	8	527	.573	.362	.029	.029	.573	.008	.463	-.265	-.185	-.213	.463	0.795	0.097	-2.1	0.9	-2.4	0.9	A-	
825	612325	8	8	529	.847	.847	.036	.087	.017	.013	.501	.501	-.218	-.257	-.141	-0.960	0.134	-1.7	0.9	-2.5	0.7	A+	
826	607956	8	8	529	.737	.059	.100	.737	.083	.021	.397	-.072	-.180	.397	-.153	-0.157	0.110	0.6	1.0	-0.4	1.0	B-	
827	607978	8	8	529	.909	.019	.909	.032	.025	.015	.520	-.206	.520	-.214	-.159	-1.689	0.171	-1.2	0.9	-2.9	0.5	B+	
828	609061	8	8	529	.790	.790	.061	.066	.047	.036	.584	.584	-.170	-.273	-.205	-0.616	0.123	-2.6	0.8	-3.1	0.7	B+	
829	610536	8	8	516	.775	.775	.124	.070	.025	.006	.389	.389	-.250	-.124	-.141	-0.319	0.115	-0.2	1.0	-0.3	1.0	A+	
830	607972	8	8	516	.459	.190	.459	.118	.223	.010	.323	-.125	.323	-.110	-.115	1.369	0.097	2.2	1.1	1.7	1.1	A+	
831	607975	8	8	516	.771	.103	.072	.049	.771	.006	.424	-.218	-.150	-.219	.424	-0.292	0.114	-0.9	0.9	-0.6	0.9	A-	
832	610212	8	8	516	.830	.016	.016	.830	.114	.025	.461	-.111	-.189	.461	-.244	-0.861	0.133	-0.8	0.9	-1.2	0.8	A-	
833	610227	8	8	516	.673	.093	.047	.673	.143	.045	.435	-.101	-.264	.435	-.125	0.168	0.107	0.5	1.0	-0.3	1.0	A-	
834	612326	8	8	521	.799	.180	.008	.799	.008	.006	.393	-.247	-.233	.393	-.146	-0.587	0.119	-0.2	1.0	-0.2	1.0	A-	
835	607971	8	8	521	.259	.115	.313	.259	.298	.015	.244	-.135	-.044	.244	.029	2.278	0.106	0.9	1.1	2.8	1.3	A-	

Table B–3 (continued). Reading/Literature Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
836	607977	8	8	521	.822	.822	.054	.079	.033	.013	.543	.543	-.213	-.272	-.156	-0.796	0.126	-2.1	0.9	-2.6	0.7	A-	
837	610542	8	8	521	.850	.035	.056	.035	.850	.025	.569	-.225	-.247	-.188	.569	-1.150	0.140	-2.0	0.8	-3.3	0.6	A-	
838	612291	8	8	521	.234	.100	.499	.125	.234	.042	.228	-.032	.154	-.267	.228	2.396	0.110	1.3	1.1	2.4	1.3	A-	
839	615613	8	8	528	.860	.047	.860	.068	.023	.002	.312	-.192	.312	-.160	-.115	-0.947	0.135	0.5	1.0	0.0	1.0	A+	
840	612330	8	8	528	.864	.864	.089	.023	.021	.004	.461	.461	-.254	-.291	-.178	-1.002	0.137	-1.3	0.9	-1.5	0.8	A+	
841	607970	8	8	528	.648	.267	.648	.059	.021	.006	.473	-.288	.473	-.262	-.098	0.483	0.101	-1.0	1.0	-1.4	0.9	A+	
842	607974	8	8	528	.737	.053	.047	.737	.157	.006	.524	-.272	-.243	.524	-.263	-0.033	0.109	-2.1	0.9	-2.9	0.8	A+	
843	612321	8	8	528	.867	.867	.047	.038	.023	.025	.482	.482	-.210	-.241	-.177	-1.231	0.149	-1.1	0.9	-1.9	0.7	A+	
844	612329	8	8	534	.493	.219	.243	.493	.043	.002	.174	.060	-.162	.174	-.151	1.121	0.093	5.1	1.2	5.2	1.2	A-	A-
845	612241	8	8	534	.852	.852	.086	.043	.017	.002	.387	.387	-.263	-.180	-.121	-0.938	0.129	-0.8	0.9	-1.9	0.8	A-	A-
846	607968	8	8	534	.869	.034	.869	.062	.030	.006	.309	-.223	.309	-.139	-.077	-1.109	0.137	0.2	1.0	-0.1	1.0	A-	A-
847	607976	8	8	534	.684	.684	.077	.154	.081	.006	.311	.311	-.132	-.157	-.119	0.187	0.100	1.1	1.1	0.6	1.0	A+	A-
848	612323	8	8	534	.611	.611	.155	.152	.051	.032	.448	.448	-.120	-.201	-.229	0.480	0.098	-1.4	1.0	-1.4	0.9	A+	A-
849	607957	8	8	521	.699	.067	.699	.071	.127	.037	.440	-.162	.440	-.182	-.101	-0.011	0.108	-0.3	1.0	-1.2	0.9	A+	A-
850	607963	8	8	521	.658	.144	.083	.658	.077	.038	.413	-.027	-.188	.413	-.194	0.219	0.104	-0.3	1.0	-0.6	1.0	A-	A+
851	607958	8	8	520	.608	.106	.208	.071	.608	.008	.360	-.128	-.164	-.170	.360	0.556	0.098	1.1	1.0	0.2	1.0	B-	
852	607962	8	8	520	.781	.025	.781	.112	.075	.008	.324	-.218	.324	-.186	-.037	-0.433	0.115	0.4	1.0	1.4	1.2	A+	
853	609244	8	8	529	.556	.193	.556	.185	.061	.006	.372	-.133	.372	-.219	-.085	0.881	0.096	0.2	1.0	-0.2	1.0	B-	
854	608136	Lit	Lit	261	.782	.031	.782	.138	.042	.008	.308	-.184	.308	-.117	-.111	-0.387	0.168	1.8	1.2	0.9	1.2	A+	
855	608137	Lit	Lit	261	.728	.081	.134	.728	.042	.015	.478	-.165	-.224	.478	-.242	-0.063	0.159	-0.8	0.9	0.1	1.0	A-	
856	614030	Lit	Lit	271	.897	.055	.897	.030	.019	.000	.395	-.313	.395	-.176	-.141	-1.301	0.208	-0.9	0.9	-1.9	0.6	A+	
857	614031	Lit	Lit	271	.565	.144	.218	.565	.074	.000	.131	-.138	.038	.131	-.123	0.893	0.135	4.5	1.3	4.8	1.4	A-	
858	610092	Lit	Lit	263	.677	.053	.171	.099	.677	.000	.529	-.182	-.295	-.320	.529	0.264	0.147	-2.1	0.9	-2.3	0.8	A-	
859	610091	Lit	Lit	263	.635	.255	.027	.635	.080	.004	.146	.081	-.142	.146	-.262	0.507	0.143	4.6	1.3	4.7	1.5	A+	
860	612498	Lit	Lit	262	.359	.294	.359	.218	.122	.008	.310	.080	.310	-.187	-.225	1.935	0.140	1.1	1.1	1.8	1.2	A+	
861	612548	Lit	Lit	262	.622	.076	.168	.622	.126	.008	.356	-.170	-.130	.356	-.136	0.634	0.141	1.1	1.1	0.9	1.1	A+	
862	612496	Lit	Lit	262	.687	.687	.092	.115	.099	.008	.390	.390	-.212	-.174	-.101	0.303	0.147	0.2	1.0	0.0	1.0	A+	
863	616077	Lit	Lit	3947	.768	.768	.089	.067	.053	.022	.555	.555	-.277	-.228	-.183	-0.375	0.043	-6.9	0.9	-8.6	0.7	A+	A+
864	610282	Lit	Lit	3947	.688	.061	.688	.136	.090	.025	.561	-.243	.561	-.243	-.201	0.132	0.039	-8.3	0.9	-9.3	0.8	A+	A+
865	612495	Lit	Lit	258	.655	.655	.081	.136	.101	.027	.527	.527	-.131	-.246	-.276	0.275	0.150	-1.2	0.9	-0.6	0.9	A-	
866	612560	Lit	Lit	258	.465	.190	.465	.194	.120	.031	.352	-.115	.352	-.078	-.157	1.285	0.143	2.6	1.2	2.3	1.2	A+	
867	612561	Lit	Lit	258	.516	.202	.078	.516	.178	.027	.281	-.087	-.106	.281	-.077	1.037	0.143	4.4	1.3	3.9	1.4	A-	
868	612559	Lit	Lit	258	.678	.093	.062	.678	.124	.043	.520	-.191	-.268	.520	-.210	0.061	0.155	-1.4	0.9	-1.5	0.8	A+	
869	610229	Lit	Lit	258	.488	.229	.112	.488	.120	.050	.351	.091	-.288	.351	-.191	1.114	0.145	2.4	1.1	2.6	1.2	A+	
870	610307	Lit	Lit	258	.283	.283	.244	.221	.198	.054	.394	.394	-.151	-.090	-.028	2.288	0.158	0.7	1.1	0.7	1.1	A-	

Table B–3 (continued). Reading/Literature Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
871	610253	Lit	Lit	525	.446	.213	.215	.101	.446	.025	.361	-.045	-.090	-.242	.361	1.487	0.099	2.1	1.1	3.4	1.2	B-	
872	612530	Lit	Lit	263	.608	.103	.164	.091	.608	.034	.680	-.298	-.326	-.159	.680	0.619	0.145	-4.4	0.8	-4.1	0.7	A-	
873	612573	Lit	Lit	262	.595	.130	.595	.118	.149	.008	.434	-.069	.434	-.297	-.229	0.759	0.141	-1.4	0.9	-1.3	0.9	B-	
874	612574	Lit	Lit	262	.695	.095	.076	.695	.126	.008	.553	-.258	-.385	.553	-.183	0.196	0.151	-1.6	0.9	-1.8	0.8	A-	
875	612576	Lit	Lit	262	.790	.076	.061	.069	.790	.004	.599	-.337	-.304	-.273	.599	-0.421	0.169	-2.3	0.8	-2.7	0.6	B-	
876	612558	Lit	Lit	262	.489	.336	.027	.134	.489	.015	.368	-.170	-.215	-.079	.368	1.276	0.138	1.6	1.1	2.2	1.2	B-	
877	616076	Lit	Lit	262	.481	.126	.481	.122	.206	.065	.419	-.096	.419	-.252	.002	1.224	0.141	0.5	1.0	0.4	1.0	A+	
878	610233	Lit	Lit	523	.390	.044	.317	.390	.191	.057	.302	-.202	.041	.302	-.069	1.735	0.102	4.5	1.2	6.2	1.5	A-	
879	610234	Lit	Lit	523	.480	.134	.191	.136	.480	.059	.466	-.198	-.092	-.091	.466	1.246	0.101	0.3	1.0	1.1	1.1	A+	
880	608134	Lit	Lit	264	.447	.466	.027	.057	.447	.004	.210	-.002	-.208	-.219	.210	1.357	0.137	4.0	1.2	3.8	1.3	B+	
881	609098	Lit	Lit	264	.424	.201	.140	.224	.424	.011	.430	.017	-.279	-.219	.430	1.459	0.138	-0.4	1.0	0.4	1.0	A-	
882	616073	Lit	Lit	264	.602	.250	.602	.061	.068	.019	.363	-.030	.363	-.301	-.243	0.544	0.141	1.3	1.1	0.8	1.1	A-	
883	616075	Lit	Lit	264	.530	.083	.197	.530	.159	.030	.505	-.296	-.249	.505	-.051	0.884	0.139	-1.5	0.9	-1.4	0.9	A+	
884	610218	Lit	Lit	264	.511	.163	.511	.144	.140	.042	.548	-.127	.548	-.254	-.218	0.956	0.139	-2.6	0.9	-2.2	0.9	A-	
885	610215	Lit	Lit	264	.583	.125	.133	.117	.583	.042	.611	-.265	-.266	-.192	.611	0.581	0.142	-3.8	0.8	-3.6	0.7	A+	
886	610247	Lit	Lit	264	.428	.428	.265	.110	.148	.049	.419	.419	-.062	-.294	-.090	1.353	0.140	0.2	1.0	0.2	1.0	A+	
887	616066	Lit	Lit	261	.705	.077	.142	.065	.705	.012	.531	-.286	-.228	-.175	.531	0.105	0.155	-2.2	0.8	-1.1	0.9	A-	
888	610296	Lit	Lit	261	.625	.058	.107	.625	.199	.012	.367	-.165	-.222	.367	-.067	0.581	0.147	2.1	1.1	1.5	1.2	A+	
889	610295	Lit	Lit	261	.755	.146	.050	.038	.755	.012	.537	-.216	-.290	-.251	.537	-0.222	0.163	-1.9	0.9	-1.4	0.8	A-	
890	608131	Lit	Lit	261	.444	.444	.061	.268	.207	.019	.444	.444	-.307	-.050	-.161	1.534	0.143	1.0	1.1	1.3	1.1	A-	
891	616068	Lit	Lit	261	.529	.268	.529	.088	.073	.042	.428	-.077	.428	-.203	-.110	1.038	0.145	2.0	1.1	2.0	1.2	A-	
892	610120	Lit	Lit	261	.659	.103	.659	.073	.111	.054	.575	-.145	.575	-.227	-.245	0.220	0.156	-1.7	0.9	-1.6	0.8	A-	
893	609253	Lit	Lit	263	.639	.224	.639	.088	.042	.008	.284	-.177	.284	-.054	-.097	0.511	0.140	0.9	1.1	0.9	1.1	A-	
894	609109	Lit	Lit	263	.179	.281	.240	.179	.293	.008	.056	-.040	.025	.056	.054	2.923	0.168	1.6	1.2	3.5	1.7	A-	
895	609107	Lit	Lit	263	.559	.068	.281	.080	.559	.011	.359	-.145	-.062	-.256	.359	0.893	0.135	0.5	1.0	0.1	1.0	A+	
896	609105	Lit	Lit	263	.578	.023	.300	.088	.578	.011	.341	-.222	-.118	-.129	.341	0.801	0.136	0.8	1.0	0.6	1.0	A+	
897	612487	Lit	Lit	263	.654	.654	.156	.129	.049	.011	.412	.412	-.187	-.208	-.063	0.418	0.141	-0.5	1.0	-0.5	1.0	B-	
898	612488	Lit	Lit	263	.681	.122	.681	.095	.084	.019	.447	-.150	.447	-.127	-.267	0.242	0.145	-1.2	0.9	-1.0	0.9	A-	
899	612503	Lit	Lit	263	.327	.145	.327	.395	.118	.015	.248	-.115	.248	.060	-.168	2.010	0.141	1.7	1.1	1.6	1.1	A-	
900	612502	Lit	Lit	263	.761	.129	.042	.761	.057	.011	.467	-.222	-.184	.467	-.187	-0.201	0.157	-1.3	0.9	-1.4	0.8	A+	
901	609113	Lit	Lit	263	.369	.300	.221	.084	.369	.027	.299	.119	-.239	-.150	.299	1.774	0.138	1.0	1.1	1.3	1.1	B+	
902	609156	Lit	Lit	263	.384	.183	.384	.175	.232	.027	.345	-.094	.345	-.146	-.036	1.693	0.137	0.6	1.0	0.5	1.0	B-	
903	609158	Lit	Lit	263	.586	.095	.167	.126	.586	.027	.589	-.223	-.265	-.197	.589	0.711	0.138	-4.2	0.8	-3.7	0.8	A+	
904	616072	Lit	Lit	263	.551	.179	.095	.551	.145	.030	.399	-.103	-.213	.399	-.092	0.873	0.137	0.2	1.0	0.2	1.0	A-	
905	609160	Lit	Lit	263	.422	.422	.209	.141	.194	.034	.368	.368	-.205	-.064	-.025	1.495	0.136	0.2	1.0	0.8	1.1	A+	

Table B–3 (continued). Reading/Literature Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
906	612568	Lit	Lit	263	.506	.506	.099	.179	.183	.034	.453	.453	-.140	-.187	-.121	1.088	0.136	-1.3	0.9	-1.2	0.9	C-	
907	612546	Lit	Lit	262	.863	.038	.027	.069	.863	.004	.535	-.217	-.287	-.295	.535	-1.001	0.198	-1.2	0.9	-2.0	0.6	A-	
908	612492	Lit	Lit	262	.882	.019	.882	.084	.012	.004	.408	-.181	.408	-.247	-.158	-1.166	0.209	-0.6	0.9	-0.6	0.9	A+	
909	612493	Lit	Lit	262	.649	.073	.137	.134	.649	.008	.477	-.362	-.105	-.187	.477	0.513	0.143	-1.2	0.9	-1.4	0.9	A-	
910	612545	Lit	Lit	262	.935	.004	.042	.935	.012	.008	.514	-.100	-.311	.514	-.227	-2.034	0.285	-0.8	0.8	-2.1	0.4	A-	
911	612549	Lit	Lit	262	.584	.157	.145	.103	.584	.012	.466	-.167	-.269	-.115	.466	0.824	0.139	-1.1	0.9	-1.1	0.9	A-	
912	612527	Lit	Lit	262	.282	.099	.282	.221	.370	.027	.230	-.106	.230	-.060	.006	2.342	0.149	1.3	1.1	1.9	1.2	A+	
913	612565	Lit	Lit	262	.435	.088	.435	.321	.122	.034	.383	-.265	.383	-.073	-.084	1.486	0.138	0.2	1.0	0.7	1.1	A-	
914	609141	Lit	Lit	271	.343	.092	.421	.133	.343	.011	.257	-.198	.060	-.190	.257	1.980	0.140	2.3	1.1	2.3	1.2	B+	
915	612489	Lit	Lit	271	.605	.173	.605	.100	.096	.026	.545	-.288	.545	-.244	-.116	0.621	0.139	-2.1	0.9	-2.2	0.8	A+	
916	616070	Lit	Lit	271	.561	.214	.074	.122	.561	.030	.503	-.094	-.192	-.337	.503	0.839	0.137	-1.3	0.9	-1.1	0.9	A-	
917	612501	Lit	Lit	271	.491	.103	.188	.188	.491	.030	.600	-.213	-.230	-.233	.600	1.196	0.136	-3.7	0.8	-3.4	0.8	C+	
918	612556	Lit	Lit	271	.572	.114	.572	.137	.144	.033	.553	-.162	.553	-.246	-.229	0.778	0.138	-2.3	0.9	-2.0	0.9	A-	
919	616074	Lit	Lit	263	.787	.057	.057	.095	.787	.004	.594	-.338	-.263	-.314	.594	-0.451	0.167	-2.7	0.8	-2.9	0.6	A+	
920	616069	Lit	Lit	263	.753	.091	.753	.084	.049	.023	.535	-.163	.535	-.327	-.248	-0.309	0.164	-1.1	0.9	-1.8	0.8	A-	
921	612529	Lit	Lit	263	.551	.152	.088	.551	.183	.027	.371	-.180	-.195	.371	-.048	0.872	0.141	2.0	1.1	2.1	1.2	B+	
922	612528	Lit	Lit	263	.654	.122	.654	.145	.053	.027	.585	-.316	.585	-.210	-.243	0.309	0.148	-2.3	0.9	-2.0	0.8	A+	
923	612486	Lit	Lit	263	.529	.049	.243	.152	.529	.027	.524	-.176	-.229	-.218	.524	0.991	0.140	-1.3	0.9	-1.2	0.9	A-	
924	610608	Lit	Lit	263	.821	.068	.821	.042	.042	.027	.550	-.242	.550	-.266	-.247	-0.808	0.185	-1.8	0.8	-2.0	0.6	C+	
925	610201	Lit	Lit	263	.475	.084	.156	.247	.475	.038	.429	-.193	-.290	-.020	.429	1.231	0.140	0.7	1.0	1.0	1.1	A-	
926	610351	Lit	Lit	263	.426	.183	.426	.126	.228	.038	.390	-.242	.390	-.212	.044	1.509	0.141	1.0	1.1	1.5	1.1	A-	
927	610200	Lit	Lit	263	.574	.186	.103	.574	.099	.038	.447	-.069	-.219	.447	-.268	0.709	0.143	0.7	1.0	0.1	1.0	A-	
928	614018	Lit	Lit	262	.607	.179	.607	.107	.107	.000	.438	-.252	.438	-.299	-.081	0.640	0.140	-0.5	1.0	-0.6	1.0	A-	
929	614021	Lit	Lit	262	.290	.141	.225	.290	.340	.004	.126	-.137	-.135	.126	.103	2.245	0.148	3.4	1.2	4.2	1.6	A-	
930	614020	Lit	Lit	262	.622	.233	.118	.622	.027	.000	.289	-.178	-.160	.289	-.081	0.562	0.141	2.2	1.1	2.2	1.2	B-	
931	616067	Lit	Lit	262	.657	.241	.657	.042	.061	.000	.430	-.128	.430	-.312	-.363	0.380	0.143	-0.1	1.0	-0.6	0.9	A+	
932	609181	Lit	Lit	262	.626	.115	.176	.626	.080	.004	.426	-.160	-.329	.426	-.080	0.538	0.141	0.0	1.0	-0.5	1.0	A+	
933	610251	Lit	Lit	262	.492	.095	.286	.111	.492	.015	.412	-.225	-.054	-.327	.412	1.168	0.138	0.5	1.0	1.0	1.1	A+	
934	610250	Lit	Lit	262	.641	.061	.641	.225	.053	.019	.364	-.197	.364	-.125	-.270	0.386	0.144	1.1	1.1	1.0	1.1	A+	
935	609078	Lit	Lit	523	.686	.048	.149	.092	.686	.025	.595	-.222	-.251	-.351	.595	0.162	0.106	-4.6	0.8	-4.2	0.7	B+	
936	610290	Lit	Lit	262	.439	.439	.386	.084	.065	.027	.460	.460	-.153	-.304	-.223	1.400	0.139	-0.4	1.0	-0.9	0.9	A+	
937	610289	Lit	Lit	262	.622	.622	.076	.172	.103	.027	.631	.631	-.320	-.318	-.285	0.457	0.144	-4.0	0.8	-3.9	0.7	B+	
938	610099	Lit	Lit	261	.575	.172	.575	.088	.157	.008	.289	-.103	.289	-.175	-.096	0.857	0.137	2.1	1.1	1.4	1.1	A-	
939	610101	Lit	Lit	261	.502	.502	.330	.069	.092	.008	.240	.240	-.038	-.082	-.213	1.211	0.136	2.9	1.2	2.7	1.2	A+	
940	610191	Lit	Lit	261	.368	.261	.172	.188	.368	.012	.510	-.134	-.132	-.242	.510	1.871	0.140	-2.5	0.9	-2.5	0.8	A-	

Table B–3 (continued). Reading/Literature Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M /F	W /B
941	610205	Lit	Lit	261	.422	.100	.399	.061	.422	.019	.363	-.272	.006	-.194	.363	1.589	0.138	1.0	1.1	0.8	1.1	A+	
942	610264	Lit	Lit	261	.594	.126	.138	.100	.594	.042	.565	-.268	-.175	-.197	.565	0.672	0.142	-3.0	0.8	-2.8	0.8	B+	
943	609241	Lit	Lit	261	.720	.088	.096	.720	.084	.012	.386	-.229	-.142	.386	-.116	-0.089	0.154	-0.4	1.0	-0.9	0.9	A+	
944	609054	Lit	Lit	261	.318	.364	.180	.123	.318	.015	.347	-.020	-.084	-.181	.347	2.005	0.146	0.5	1.0	1.0	1.1	A+	
945	609052	Lit	Lit	261	.399	.399	.092	.238	.249	.023	.368	.368	-.146	-.037	-.089	1.557	0.140	0.1	1.0	0.2	1.0	A-	
946	616633	Lit	Lit	261	.659	.188	.659	.058	.073	.023	.451	-.152	.451	-.151	-.137	0.222	0.146	-0.3	1.0	-0.5	1.0	A-	
947	609051	Lit	Lit	261	.625	.138	.138	.077	.625	.023	.528	-.090	-.201	-.271	.528	0.411	0.143	-1.9	0.9	-2.0	0.8	A+	
948	610237	Lit	Lit	261	.571	.571	.264	.061	.077	.027	.468	.468	-.165	-.127	-.133	0.681	0.140	-0.9	1.0	-1.2	0.9	A-	
949	610245	Lit	Lit	261	.548	.548	.169	.119	.138	.027	.487	.487	-.108	-.237	-.094	0.798	0.139	-2.1	0.9	-1.5	0.9	A-	
950	610246	Lit	Lit	261	.648	.648	.188	.073	.061	.031	.546	.546	-.155	-.233	-.176	0.265	0.146	-2.4	0.9	-2.4	0.8	A+	
951	609077	Lit	Lit	261	.188	.180	.188	.211	.356	.065	.188	.074	-.188	-.018	.047	2.743	0.171	1.1	1.1	3.8	1.8	A-	
952	609206	Lit	Lit	261	.391	.391	.211	.230	.100	.069	.362	.362	-.018	-.104	-.028	1.495	0.143	1.5	1.1	1.0	1.1	A-	
953	609248	Lit	Lit	269	.621	.621	.294	.030	.052	.004	.260	.260	-.104	-.127	-.171	0.536	0.139	3.0	1.2	2.2	1.2	A+	
954	609247	Lit	Lit	269	.792	.052	.093	.792	.060	.004	.376	-.159	-.172	.376	-.203	-0.483	0.164	0.0	1.0	-0.7	0.9	A+	
955	609246	Lit	Lit	269	.409	.409	.041	.134	.409	.007	.295	-.184	-.036	-.075	.295	1.585	0.137	2.5	1.1	2.7	1.2	B-	
956	610279	Lit	Lit	269	.643	.052	.093	.205	.643	.007	.513	-.244	-.163	-.278	.513	0.410	0.141	-2.2	0.9	-1.3	0.9	A-	
957	610277	Lit	Lit	269	.357	.357	.227	.164	.245	.007	.173	.173	-.051	-.119	.035	1.853	0.139	3.6	1.2	4.0	1.4	A+	
958	610276	Lit	Lit	269	.520	.223	.089	.520	.156	.011	.487	-.150	-.263	.487	-.184	1.040	0.135	-2.0	0.9	-1.8	0.9	A-	
959	610278	Lit	Lit	269	.632	.141	.078	.632	.134	.015	.560	-.212	-.305	.560	-.220	0.440	0.141	-2.9	0.8	-2.9	0.8	A+	
960	614123	Lit	Lit	269	.528	.253	.528	.138	.052	.030	.362	.025	.362	-.236	-.241	0.938	0.137	1.7	1.1	2.0	1.1	A+	
961	612510	Lit	Lit	269	.487	.312	.145	.026	.487	.030	.410	-.125	-.168	-.197	.410	1.144	0.137	0.6	1.0	0.8	1.1	A+	
962	612490	Lit	Lit	269	.465	.119	.152	.465	.231	.034	.444	-.122	-.188	.444	-.139	1.246	0.137	-0.2	1.0	-0.3	1.0	A-	
963	609133	Lit	Lit	262	.710	.710	.088	.126	.073	.004	.503	.503	-.251	-.253	-.210	-0.021	0.151	-2.7	0.8	-2.4	0.8	B+	
964	609138	Lit	Lit	262	.225	.168	.225	.176	.428	.004	.141	-.202	.141	-.162	.196	2.587	0.160	0.9	1.1	2.7	1.5	A+	
965	609137	Lit	Lit	262	.679	.061	.176	.076	.679	.008	.501	-.217	-.220	-.259	.501	0.135	0.147	-1.3	0.9	-1.8	0.8	A+	
966	609132	Lit	Lit	262	.645	.168	.645	.118	.053	.015	.389	-.105	.389	-.174	-.172	0.319	0.144	0.5	1.0	0.5	1.0	A+	
967	610284	Lit	Lit	262	.389	.309	.179	.389	.099	.023	.186	.168	-.125	.186	-.169	1.612	0.140	4.6	1.3	4.3	1.4	A-	
968	610283	Lit	Lit	262	.637	.637	.053	.202	.080	.027	.476	.476	-.268	-.155	-.113	0.310	0.145	-0.8	1.0	-0.9	0.9	B+	
969	612484	Lit	Lit	262	.576	.206	.092	.576	.095	.031	.399	.043	-.211	.399	-.210	0.638	0.141	1.1	1.1	1.7	1.1	B-	
970	612540	Lit	Lit	262	.622	.050	.622	.092	.202	.034	.422	-.151	.422	-.163	-.090	0.376	0.145	0.8	1.1	0.4	1.0	A-	
971	614024	Lit	Lit	527	.899	.032	.899	.017	.017	.034	.576	-.236	.576	-.197	-.119	-1.933	0.186	-1.1	0.8	-2.2	0.5	A+	
972	609192	Lit	Lit	262	.481	.481	.218	.111	.137	.053	.408	.408	-.152	-.096	-.040	1.079	0.140	0.1	1.0	1.1	1.1	A-	
973	612551	Lit	Lit	265	.457	.049	.128	.457	.355	.011	.279	-.250	-.107	.279	.006	1.402	0.137	3.5	1.2	2.8	1.2	A+	
974	612552	Lit	Lit	265	.551	.551	.117	.166	.155	.011	.382	.382	-.239	.015	-.183	0.931	0.138	0.6	1.0	0.8	1.1	B-	
975	616071	Lit	Lit	265	.694	.694	.079	.053	.151	.023	.429	.429	-.193	-.249	-.024	0.127	0.151	0.3	1.0	-0.1	1.0	A+	

Table B–3 (continued). Reading/Literature Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M /F	W /B
976	609104	Lit	Lit	265	.528	.249	.106	.528	.098	.019	.336	.000	-.196	.336	-.111	1.035	0.138	2.5	1.1	2.0	1.2	A+	
977	612507	Lit	Lit	265	.438	.276	.438	.109	.121	.057	.364	.031	.364	-.206	-.084	1.409	0.140	1.9	1.1	1.4	1.1	A-	
978	612508	Lit	Lit	265	.472	.159	.472	.106	.208	.057	.378	-.048	.378	-.238	.012	1.232	0.140	1.6	1.1	1.6	1.1	A+	
979	610603	Lit	Lit	265	.574	.072	.109	.574	.185	.060	.469	-.181	-.148	.469	-.086	0.682	0.144	-0.1	1.0	-0.4	1.0	A+	
980	608138	Lit	Lit	261	.720	.054	.077	.720	.142	.008	.429	-.213	-.235	.429	-.141	0.033	0.156	0.2	1.0	0.4	1.1	A+	
981	614032	Lit	Lit	271	.661	.033	.661	.218	.089	.000	.355	-.237	.355	-.121	-.267	0.406	0.140	1.3	1.1	1.1	1.1	A-	
982	614033	Lit	Lit	271	.849	.044	.081	.849	.026	.000	.401	-.232	-.216	.401	-.233	-0.819	0.179	-1.3	0.9	-1.2	0.8	B+	
983	614034	Lit	Lit	271	.292	.292	.299	.218	.192	.000	.332	.332	-.187	-.085	-.077	2.277	0.145	0.6	1.0	1.9	1.2	A+	
984	610352	Lit	Lit	263	.152	.152	.160	.278	.411	.000	.027	.027	-.124	-.079	.145	3.313	0.186	1.8	1.2	3.6	2.0	A-	
985	610094	Lit	Lit	263	.608	.608	.186	.084	.118	.004	.490	.490	-.103	-.276	-.343	0.629	0.141	-1.0	0.9	-1.0	0.9	A+	
986	610095	Lit	Lit	263	.703	.205	.703	.053	.030	.008	.486	-.261	.486	-.318	-.185	0.106	0.151	-1.2	0.9	-1.5	0.8	A+	
987	610093	Lit	Lit	263	.285	.118	.285	.434	.160	.004	.206	-.230	.206	.107	-.164	2.336	0.150	2.2	1.2	2.8	1.4	A-	
988	610239	Lit	Lit	258	.861	.039	.861	.089	.012	.000	.128	-.109	.128	-.052	-.077	-1.144	0.197	1.1	1.1	1.4	1.4	A-	
989	610240	Lit	Lit	258	.694	.694	.089	.120	.097	.000	.539	.539	-.262	-.357	-.195	0.129	0.150	-2.5	0.8	-2.5	0.7	A-	
990	610242	Lit	Lit	258	.477	.205	.477	.295	.023	.000	.430	-.132	.430	-.299	-.167	1.285	0.141	0.7	1.0	1.0	1.1	B-	
991	610258	Lit	Lit	3947	.354	.036	.241	.352	.354	.017	.334	-.162	-.151	-.028	.334	1.898	0.037	4.5	1.1	7.8	1.2	A+	A-
992	610259	Lit	Lit	3947	.663	.131	.663	.114	.073	.020	.416	-.087	.416	-.225	-.156	0.301	0.038	1.9	1.0	0.7	1.0	A+	A+
993	610262	Lit	Lit	3947	.723	.085	.723	.084	.087	.021	.534	-.185	.534	-.237	-.230	-0.067	0.040	-7.0	0.9	-6.0	0.8	A+	A+
994	612563	Lit	Lit	258	.760	.109	.760	.081	.023	.027	.548	-.346	.548	-.177	-.203	-0.394	0.167	-1.9	0.8	-2.3	0.7	A+	
995	612562	Lit	Lit	258	.667	.078	.105	.112	.667	.039	.553	-.209	-.237	-.252	.553	0.155	0.153	-2.5	0.8	-1.9	0.8	A+	
996	610230	Lit	Lit	258	.574	.574	.151	.078	.147	.050	.388	.388	-.221	-.227	.025	0.648	0.147	1.6	1.1	1.5	1.2	A-	
997	610231	Lit	Lit	258	.395	.109	.163	.283	.395	.050	.453	-.177	-.138	-.122	.453	1.623	0.147	0.3	1.0	0.4	1.0	B-	
998	610226	Lit	Lit	258	.295	.205	.229	.295	.221	.050	.285	-.106	-.140	.285	.078	2.217	0.156	2.6	1.2	4.0	1.6	A+	
999	610300	Lit	Lit	263	.354	.236	.354	.137	.270	.004	.225	.041	.225	-.266	-.035	2.015	0.143	3.1	1.2	2.8	1.3	A+	
1000	610299	Lit	Lit	263	.806	.806	.072	.076	.038	.008	.547	.547	-.266	-.274	-.233	-0.565	0.173	-2.5	0.8	-3.0	0.5	A+	
1001	610256	Lit	Lit	525	.770	.770	.095	.053	.051	.031	.556	.556	-.252	-.253	-.181	-0.405	0.121	-2.1	0.9	-2.0	0.8	C+	
1002	610208	Lit	Lit	527	.687	.093	.173	.687	.040	.008	.360	-.153	-.161	.360	-.192	0.176	0.105	1.3	1.1	0.7	1.1	A-	
1003	612571	Lit	Lit	262	.305	.305	.282	.157	.256	.000	.130	.130	-.141	.016	-.006	2.233	0.146	3.7	1.3	5.0	1.8	A-	
1004	612572	Lit	Lit	262	.653	.653	.061	.042	.237	.008	.415	.415	-.235	-.197	-.203	0.454	0.145	0.1	1.0	-0.4	1.0	A+	
1005	610192	Lit	Lit	262	.351	.351	.149	.286	.149	.065	.447	.447	-.236	-.002	-.092	1.894	0.144	-1.0	0.9	0.4	1.0	A-	
1006	610235	Lit	Lit	523	.447	.218	.447	.187	.086	.061	.412	-.076	.412	-.061	-.186	1.415	0.101	2.4	1.1	2.1	1.1	B+	
1007	608135	Lit	Lit	264	.689	.080	.689	.091	.136	.004	.477	-.147	.477	-.398	-.137	0.124	0.146	-1.3	0.9	-0.7	0.9	A-	
1008	609064	Lit	Lit	264	.663	.144	.663	.095	.091	.008	.485	-.211	.485	-.262	-.174	0.258	0.144	-1.1	0.9	-1.5	0.9	A-	
1009	610306	Lit	Lit	264	.667	.667	.091	.114	.095	.034	.485	.485	-.170	-.171	-.243	0.139	0.148	-1.2	0.9	-0.4	1.0	A-	
1010	610221	Lit	Lit	264	.307	.186	.265	.208	.307	.034	.403	-.203	-.102	-.019	.403	2.038	0.147	-0.2	1.0	0.1	1.0	A-	

Table B–3 (continued). Reading/Literature Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
1011	610342	Lit	Lit	264	.421	.318	.068	.421	.152	.042	.449	-.215	-.165	.449	-.050	1.420	0.139	-0.6	1.0	0.2	1.0	A+	
1012	610263	Lit	Lit	264	.477	.133	.477	.216	.133	.042	.410	-.262	.410	-.054	-.094	1.130	0.139	0.8	1.0	0.6	1.0	A-	
1013	610297	Lit	Lit	261	.368	.368	.211	.299	.111	.012	.247	.247	-.065	-.040	-.096	1.962	0.146	3.6	1.2	4.4	1.6	A-	
1014	608132	Lit	Lit	261	.571	.130	.571	.103	.176	.019	.424	-.066	.424	-.267	-.123	0.856	0.144	1.0	1.1	1.6	1.2	A-	
1015	609065	Lit	Lit	261	.709	.077	.084	.088	.709	.042	.638	-.280	-.234	-.199	.638	-0.043	0.161	-3.2	0.8	-2.3	0.7	A-	
1016	609066	Lit	Lit	261	.590	.590	.234	.031	.103	.042	.469	.469	-.033	-.106	-.345	0.694	0.148	0.9	1.1	0.6	1.1	A-	
1017	609067	Lit	Lit	261	.310	.088	.092	.467	.310	.042	.366	-.227	-.270	.134	.366	2.262	0.152	1.6	1.1	2.1	1.3	A-	
1018	609108	Lit	Lit	263	.350	.171	.350	.434	.038	.008	.208	-.043	.208	-.010	-.207	1.903	0.139	2.9	1.2	2.5	1.2	A-	
1019	609111	Lit	Lit	263	.327	.327	.281	.232	.133	.027	.130	.130	.043	.062	-.125	1.995	0.141	3.8	1.2	3.9	1.4	A-	
1020	609110	Lit	Lit	263	.521	.236	.129	.521	.095	.019	.361	-.073	-.153	.361	-.153	1.052	0.135	0.8	1.0	0.6	1.0	A-	
1021	609159	Lit	Lit	263	.297	.145	.221	.312	.297	.027	.208	-.142	.043	-.004	.208	2.149	0.145	1.9	1.1	2.7	1.3	A+	
1022	612569	Lit	Lit	263	.491	.114	.491	.186	.175	.034	.303	-.116	.303	-.187	.064	1.162	0.136	2.1	1.1	2.2	1.1	B+	
1023	612570	Lit	Lit	263	.548	.133	.145	.548	.137	.038	.381	-.123	-.141	.381	-.095	0.871	0.137	0.5	1.0	0.2	1.0	A+	
1024	612550	Lit	Lit	262	.779	.779	.099	.038	.069	.015	.583	.583	-.308	-.289	-.204	-0.327	0.167	-2.1	0.8	-2.5	0.7	A+	
1025	609255	Lit	Lit	262	.424	.424	.256	.145	.157	.019	.305	.305	-.009	-.232	-.050	1.594	0.137	2.0	1.1	1.9	1.2	A+	
1026	609256	Lit	Lit	262	.687	.141	.687	.092	.065	.015	.340	-.155	.340	-.090	-.135	0.255	0.149	1.4	1.1	2.0	1.2	A+	
1027	609257	Lit	Lit	262	.275	.275	.038	.435	.237	.015	.227	.227	-.261	.063	-.089	2.361	0.148	1.5	1.1	1.9	1.2	A+	
1028	612566	Lit	Lit	262	.275	.130	.332	.275	.225	.038	.274	-.080	-.103	.274	.016	2.350	0.150	0.6	1.0	1.0	1.1	B+	
1029	612567	Lit	Lit	262	.305	.164	.305	.187	.305	.038	.206	-.099	.135	-.170	.206	2.197	0.146	2.5	1.2	1.8	1.2	B+	
1030	609144	Lit	Lit	271	.365	.365	.081	.170	.380	.004	.232	.232	-.252	-.188	.079	1.870	0.138	3.2	1.2	3.0	1.3	A+	
1031	609259	Lit	Lit	271	.568	.568	.214	.092	.103	.022	.366	.366	-.046	-.202	-.192	0.820	0.137	1.8	1.1	1.3	1.1	A-	
1032	609276	Lit	Lit	271	.620	.074	.122	.620	.159	.026	.431	-.227	-.215	.431	-.080	0.543	0.140	0.5	1.0	-0.3	1.0	A-	
1033	609258	Lit	Lit	271	.579	.214	.579	.103	.078	.026	.438	-.131	.438	-.276	-.107	0.755	0.138	0.2	1.0	-0.3	1.0	A+	
1034	612521	Lit	Lit	271	.535	.185	.535	.140	.107	.033	.490	-.092	.490	-.195	-.271	0.967	0.137	-0.9	1.0	-0.6	1.0	B-	
1035	612557	Lit	Lit	271	.410	.410	.210	.148	.203	.030	.359	.359	-.041	-.243	-.050	1.606	0.137	1.7	1.1	1.5	1.1	A+	
1036	612499	Lit	Lit	263	.373	.373	.357	.183	.084	.004	.348	.348	-.125	-.147	-.146	1.830	0.141	1.4	1.1	2.9	1.3	A-	
1037	610609	Lit	Lit	263	.821	.019	.061	.072	.821	.027	.511	-.192	-.304	-.194	.511	-0.843	0.186	-0.9	0.9	-1.6	0.7	A+	
1038	610610	Lit	Lit	263	.521	.198	.122	.521	.129	.030	.472	-.082	-.224	.472	-.242	1.022	0.140	-0.1	1.0	0.1	1.0	A+	
1039	614022	Lit	Lit	262	.599	.599	.149	.164	.084	.004	.366	.366	-.195	-.234	-.063	0.674	0.140	0.8	1.1	0.5	1.0	A-	
1040	614023	Lit	Lit	262	.649	.057	.168	.122	.649	.004	.343	-.191	-.156	-.180	.343	0.407	0.143	1.0	1.1	1.2	1.1	A-	
1041	615185	Lit	Lit	262	.210	.282	.340	.164	.210	.004	.064	.226	-.066	-.264	.064	2.745	0.162	2.6	1.2	3.3	1.6	A-	
1042	609102	Lit	Lit	262	.573	.573	.294	.053	.080	.000	.233	.233	.012	-.295	-.199	0.814	0.138	3.5	1.2	3.4	1.3	A-	
1043	609079	Lit	Lit	523	.551	.142	.551	.109	.178	.021	.441	-.097	.441	-.141	-.275	0.903	0.098	0.0	1.0	-0.5	1.0	C-	
1044	609080	Lit	Lit	523	.555	.126	.207	.555	.086	.027	.432	-.097	-.227	.432	-.184	0.866	0.098	0.0	1.0	-0.1	1.0	A+	
1045	610291	Lit	Lit	262	.473	.115	.199	.187	.473	.027	.568	-.121	-.342	-.243	.568	1.226	0.139	-3.0	0.8	-2.5	0.8	B+	

Table B–3 (continued). Reading/Literature Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
1046	610097	Lit	Lit	261	.425	.425	.073	.299	.199	.004	.171	.171	-.191	.002	-.038	1.592	0.137	4.6	1.3	4.6	1.4	A+	
1047	610096	Lit	Lit	261	.644	.103	.088	.644	.161	.004	.368	-.049	-.157	.368	-.263	0.523	0.141	0.0	1.0	-0.2	1.0	A+	
1048	610098	Lit	Lit	261	.755	.058	.161	.755	.019	.008	.413	-.243	-.200	.413	-.206	-0.126	0.156	-0.6	1.0	-0.8	0.9	A+	
1049	610185	Lit	Lit	261	.651	.192	.058	.651	.092	.008	.297	-.060	-.277	.297	-.075	0.470	0.142	1.7	1.1	1.5	1.2	A+	
1050	610190	Lit	Lit	261	.383	.138	.383	.142	.330	.008	.197	-.215	.197	-.240	.200	1.796	0.139	3.7	1.2	3.3	1.3	B-	
1051	610206	Lit	Lit	261	.414	.138	.126	.414	.303	.019	.410	-.259	-.206	.410	.023	1.627	0.138	-0.1	1.0	0.1	1.0	B-	
1052	610266	Lit	Lit	261	.494	.096	.494	.153	.215	.042	.485	-.098	.485	-.100	-.265	1.181	0.139	-1.3	0.9	-1.4	0.9	A-	
1053	610267	Lit	Lit	261	.245	.245	.295	.249	.169	.042	.199	.199	.194	-.131	-.129	2.529	0.156	2.3	1.2	2.5	1.4	A-	
1054	609055	Lit	Lit	261	.341	.096	.341	.088	.452	.023	.208	-.138	.208	-.242	.190	1.858	0.143	3.4	1.2	3.5	1.4	B-	
1055	612519	Lit	Lit	261	.701	.701	.134	.081	.038	.046	.580	.580	-.223	-.171	-.185	-0.132	0.156	-2.4	0.8	-2.5	0.7	B+	
1056	609068	Lit	Lit	261	.510	.249	.103	.510	.084	.054	.359	.040	-.166	.359	-.138	0.907	0.141	2.2	1.1	1.3	1.1	A+	
1057	609182	Lit	Lit	261	.395	.238	.395	.226	.081	.061	.312	-.115	.312	.082	-.088	1.489	0.142	2.4	1.1	2.8	1.2	A-	
1058	609207	Lit	Lit	261	.617	.103	.103	.107	.617	.069	.602	-.232	-.193	-.148	.602	0.283	0.149	-3.4	0.8	-3.3	0.7	B+	
1059	609183	Lit	Lit	261	.594	.054	.192	.594	.092	.069	.495	-.041	-.140	.495	-.213	0.415	0.147	-0.8	1.0	-1.2	0.9	A+	
1060	609211	Lit	Lit	261	.506	.100	.142	.506	.176	.077	.436	-.024	-.220	.436	-.038	0.873	0.143	0.5	1.0	-0.3	1.0	A-	
1061	609249	Lit	Lit	269	.558	.558	.115	.271	.048	.007	.338	.338	-.217	-.051	-.236	0.853	0.136	1.4	1.1	0.9	1.1	A-	
1062	609250	Lit	Lit	269	.219	.015	.100	.219	.662	.004	.078	-.164	-.141	.078	.105	2.680	0.159	2.3	1.2	4.1	1.7	B-	
1063	609251	Lit	Lit	269	.565	.238	.565	.074	.119	.004	.436	-.118	.436	-.265	-.238	0.820	0.136	-0.4	1.0	-0.5	1.0	A+	
1064	610274	Lit	Lit	269	.744	.744	.063	.093	.089	.011	.409	.409	-.271	-.239	-.026	-0.185	0.155	-0.2	1.0	-0.1	1.0	B+	
1065	610275	Lit	Lit	269	.472	.268	.472	.060	.193	.007	.397	-.156	.397	-.279	-.079	1.291	0.135	0.5	1.0	0.5	1.0	A+	
1066	612542	Lit	Lit	269	.387	.138	.260	.197	.387	.019	.279	-.342	-.015	.085	.279	1.670	0.138	2.9	1.2	2.2	1.2	A+	
1067	612544	Lit	Lit	269	.446	.301	.446	.067	.167	.019	.330	-.055	.330	-.306	-.046	1.369	0.136	2.0	1.1	2.1	1.2	C-	
1068	612543	Lit	Lit	269	.595	.048	.245	.093	.595	.019	.498	-.303	-.230	-.122	.498	0.621	0.139	-1.2	0.9	-1.1	0.9	A-	
1069	614028	Lit	Lit	269	.480	.480	.164	.264	.067	.026	.461	.461	-.142	-.114	-.310	1.185	0.136	-0.5	1.0	-0.7	1.0	A+	
1070	614027	Lit	Lit	269	.617	.078	.115	.617	.160	.030	.484	-.280	-.201	.484	-.108	0.472	0.142	-0.7	1.0	-0.9	0.9	B-	
1071	612515	Lit	Lit	269	.558	.171	.558	.145	.097	.030	.398	-.117	.398	-.095	-.216	0.785	0.138	1.2	1.1	0.6	1.1	A+	
1072	612511	Lit	Lit	269	.684	.108	.684	.115	.060	.034	.589	-.231	.589	-.261	-.265	0.075	0.149	-2.6	0.8	-3.1	0.7	B-	
1073	609139	Lit	Lit	262	.450	.378	.103	.450	.065	.004	.252	.077	-.271	.252	-.250	1.329	0.137	2.7	1.1	3.2	1.3	A+	
1074	610285	Lit	Lit	262	.263	.263	.378	.179	.157	.023	.258	.258	.028	-.064	-.098	2.301	0.152	0.6	1.0	2.2	1.3	A-	
1075	612541	Lit	Lit	262	.603	.603	.134	.164	.073	.027	.545	.545	-.208	-.148	-.223	0.521	0.142	-2.5	0.9	-2.8	0.8	A-	
1076	614026	Lit	Lit	527	.526	.288	.080	.070	.526	.036	.366	.054	-.224	-.200	.366	0.947	0.099	2.7	1.1	2.3	1.1	B+	
1077	614025	Lit	Lit	527	.801	.030	.070	.801	.063	.036	.559	-.092	-.167	.559	-.285	-0.759	0.128	-1.7	0.9	-1.8	0.8	A+	
1078	609191	Lit	Lit	262	.699	.088	.065	.095	.699	.053	.541	-.168	-.169	-.210	.541	-0.138	0.158	-1.4	0.9	-2.0	0.8	A-	
1079	612564	Lit	Lit	265	.377	.109	.174	.332	.377	.008	.345	-.122	-.122	-.102	.345	1.803	0.140	0.8	1.0	2.1	1.2	A+	
1080	612553	Lit	Lit	265	.626	.125	.626	.193	.045	.011	.411	-.100	.411	-.225	-.122	0.538	0.142	0.1	1.0	0.0	1.0	A-	

Table B–3 (continued). Reading/Literature Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
1081	612554	Lit	Lit	265	.732	.732	.125	.079	.053	.011	.518	.518	-.235	-.290	-.096	-0.075	0.155	-1.4	0.9	-2.0	0.8	A+	
1082	612555	Lit	Lit	265	.664	.083	.117	.125	.664	.011	.567	-.232	-.139	-.323	.567	0.331	0.146	-3.3	0.8	-3.1	0.7	A-	
1083	609101	Lit	Lit	265	.362	.045	.362	.298	.276	.019	.265	-.182	.265	-.147	.088	1.868	0.141	2.2	1.1	3.7	1.4	A-	
1084	612512	Lit	Lit	265	.506	.170	.147	.121	.506	.057	.479	-.184	-.081	-.119	.479	1.054	0.141	-0.9	1.0	-0.7	0.9	A-	
1085	612509	Lit	Lit	265	.445	.091	.287	.121	.445	.057	.324	-.173	.115	-.186	.324	1.370	0.140	2.7	1.2	3.2	1.3	C-	
1086	610606	Lit	Lit	265	.543	.079	.272	.049	.543	.057	.563	-.242	-.190	-.129	.563	0.853	0.142	-3.0	0.8	-2.6	0.8	A+	
1087	610604	Lit	Lit	265	.611	.611	.128	.117	.083	.060	.467	.467	-.073	-.251	-.061	0.469	0.147	0.2	1.0	-0.2	1.0	A-	
1088	610281	Lit	Lit	3947	.474	.214	.069	.220	.474	.024	.441	-.122	-.237	-.122	.441	1.275	0.036	-1.2	1.0	0.5	1.0	A+	A-
1089	610210	Lit	Lit	527	.435	.435	.123	.366	.065	.011	.324	.324	-.140	-.037	-.239	1.486	0.098	2.6	1.1	2.5	1.2	A+	
1090	612531	Lit	Lit	263	.502	.502	.160	.186	.122	.030	.525	.525	-.106	-.209	-.226	1.190	0.140	-2.0	0.9	-1.5	0.9	A+	
1091	612534	Lit	Lit	262	.500	.027	.500	.279	.179	.015	.187	-.112	.187	-.139	.041	1.209	0.138	5.0	1.3	4.1	1.4	A+	
1092	612535	Lit	Lit	262	.817	.817	.050	.099	.027	.008	.550	.550	-.290	-.287	-.238	-0.651	0.179	-2.0	0.8	-2.0	0.7	A-	
1093	610196	Lit	Lit	262	.454	.199	.149	.454	.149	.050	.439	-.175	-.119	.439	-.038	1.389	0.140	0.3	1.0	0.5	1.0	B-	
1094	610193	Lit	Lit	262	.679	.679	.080	.111	.080	.050	.539	.539	-.131	-.342	-.057	0.146	0.155	-0.7	1.0	-1.2	0.9	A-	
1095	610194	Lit	Lit	262	.664	.088	.664	.153	.046	.050	.550	-.263	.550	-.159	-.169	0.242	0.153	-1.2	0.9	-1.0	0.9	A+	
1096	610195	Lit	Lit	262	.637	.111	.115	.637	.073	.065	.613	-.177	-.255	.613	-.240	0.334	0.152	-2.6	0.8	-2.5	0.8	A-	
1097	610304	Lit	Lit	264	.640	.189	.640	.087	.057	.027	.442	-.107	.442	-.279	-.164	0.326	0.144	-0.2	1.0	0.0	1.0	A-	
1098	610249	Lit	Lit	264	.519	.106	.133	.197	.519	.046	.426	-.185	-.191	-.078	.426	0.902	0.140	0.3	1.0	0.7	1.1	A-	
1099	610248	Lit	Lit	264	.265	.265	.261	.220	.205	.049	.201	.201	.009	-.037	-.052	2.253	0.153	2.3	1.2	3.8	1.5	A+	
1100	610122	Lit	Lit	261	.659	.188	.659	.065	.042	.046	.561	-.201	.561	-.215	-.207	0.260	0.155	-1.1	0.9	-1.5	0.8	A+	
1101	612504	Lit	Lit	263	.776	.776	.065	.042	.107	.011	.490	.490	-.220	-.195	-.215	-0.296	0.160	-1.3	0.9	-2.1	0.7	A-	
1102	612505	Lit	Lit	263	.776	.107	.068	.776	.034	.015	.492	-.265	-.183	.492	-.146	-0.318	0.161	-1.2	0.9	-2.0	0.8	A+	
1103	612523	Lit	Lit	262	.611	.092	.145	.126	.611	.027	.561	-.215	-.174	-.303	.561	0.654	0.142	-3.1	0.8	-3.2	0.8	A-	
1104	612526	Lit	Lit	262	.405	.080	.141	.347	.405	.027	.374	-.196	-.365	.098	.374	1.670	0.138	0.8	1.0	-0.3	1.0	A+	
1105	609148	Lit	Lit	271	.801	.801	.044	.048	.103	.004	.502	.502	-.240	-.213	-.313	-0.464	0.164	-1.9	0.8	-2.4	0.7	A+	
1106	609147	Lit	Lit	271	.454	.162	.240	.140	.454	.004	.559	-.111	-.309	-.273	.559	1.425	0.134	-3.2	0.9	-2.7	0.8	A-	
1107	609146	Lit	Lit	271	.332	.539	.332	.070	.048	.011	.187	-.013	.187	-.196	-.053	2.038	0.141	3.4	1.2	4.3	1.5	A-	
1108	610350	Lit	Lit	263	.532	.107	.532	.221	.107	.034	.382	-.210	.382	-.126	-.085	0.965	0.141	1.8	1.1	1.4	1.1	A+	
1109	610203	Lit	Lit	263	.479	.110	.266	.479	.110	.034	.395	-.149	-.012	.395	-.313	1.262	0.140	0.9	1.1	0.9	1.1	A+	
1110	610294	Lit	Lit	262	.527	.160	.527	.256	.027	.031	.520	-.264	.520	-.275	-.162	0.945	0.140	-1.7	0.9	-1.5	0.9	A-	
1111	610178	Lit	Lit	261	.904	.023	.904	.035	.031	.008	.448	-.149	.448	-.259	-.173	-1.431	0.227	-0.7	0.9	-1.3	0.7	A+	
1112	610207	Lit	Lit	261	.728	.728	.107	.092	.054	.019	.514	.514	-.161	-.247	-.237	-0.003	0.154	-1.8	0.9	-1.5	0.8	A+	
1113	610340	Lit	Lit	261	.257	.387	.149	.257	.165	.042	.313	-.038	-.186	.313	.046	2.457	0.154	0.6	1.0	1.5	1.2	A-	
1114	610243	Lit	Lit	261	.594	.081	.594	.119	.180	.027	.451	-.185	.451	-.217	-.021	0.561	0.142	-0.7	1.0	0.1	1.0	A+	
1115	610238	Lit	Lit	261	.494	.376	.065	.494	.038	.027	.278	.083	-.203	.278	-.189	1.068	0.138	3.6	1.2	3.1	1.2	A-	

Table B–3 (continued). Reading/Literature Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
1116	612520	Lit	Lit	261	.732	.732	.069	.096	.061	.042	.630	.630	-.246	-.214	-.195	-0.313	0.162	-3.0	0.8	-3.4	0.6	A+	
1117	609216	Lit	Lit	261	.249	.184	.249	.238	.253	.077	.168	-.034	.168	-.093	.230	2.300	0.157	3.0	1.2	3.6	1.5	A-	
1118	612491	Lit	Lit	269	.610	.086	.104	.171	.610	.030	.403	-.142	-.212	-.095	.403	0.512	0.141	0.9	1.1	0.7	1.1	A+	
1119	610288	Lit	Lit	262	.725	.099	.725	.095	.065	.015	.468	-.186	.468	-.159	-.195	-0.156	0.155	-0.5	1.0	-0.6	0.9	A-	
1120	609195	Lit	Lit	262	.279	.134	.168	.366	.279	.053	.173	-.004	-.131	.146	.173	2.143	0.150	3.0	1.2	3.7	1.5	A-	
1121	609103	Lit	Lit	265	.762	.151	.762	.034	.038	.015	.388	-.109	.388	-.144	-.180	-0.280	0.161	1.0	1.1	0.5	1.1	A+	
1122	612513	Lit	Lit	265	.547	.547	.151	.109	.151	.042	.430	.430	-.190	-.113	-.035	0.882	0.141	0.7	1.0	0.4	1.0	A-	
1123	612514	Lit	Lit	265	.577	.577	.094	.170	.109	.049	.577	.577	-.194	-.213	-.149	0.698	0.143	-3.1	0.8	-3.0	0.8	A+	
1124	610280	Lit	Lit	3947	.473	.171	.128	.473	.205	.024	.329	-.080	-.116	.329	-.085	1.278	0.036	9.0	1.1	9.2	1.2	A+	A+
1125	610301	Lit	Lit	263	.532	.532	.319	.114	.030	.004	.275	.275	-.142	-.142	-.045	1.093	0.139	2.9	1.2	3.8	1.3	A+	
1126	610209	Lit	Lit	527	.455	.177	.288	.455	.070	.010	.269	-.177	.074	.269	-.242	1.386	0.097	4.9	1.2	4.1	1.2	A-	
1127	618407	Lit	Lit	527	.839	.059	.055	.839	.038	.010	.502	-.227	-.249	.502	-.190	-0.882	0.130	-2.1	0.8	-2.2	0.7	A+	
1128	612532	Lit	Lit	263	.730	.068	.068	.103	.730	.030	.589	-.290	-.233	-.201	.589	-0.115	0.160	-2.3	0.8	-2.7	0.7	A+	
1129	612516	Lit	Lit	262	.744	.141	.076	.031	.744	.008	.360	-.137	-.171	-.223	.360	-0.112	0.159	0.6	1.1	1.0	1.1	A-	
1130	612517	Lit	Lit	262	.710	.069	.710	.126	.088	.008	.412	-.180	.412	-.231	-.139	0.107	0.153	0.2	1.0	0.2	1.0	A+	
1131	610121	Lit	Lit	261	.529	.092	.077	.529	.257	.046	.401	-.133	-.172	.401	-.053	1.021	0.146	2.3	1.2	2.9	1.3	A-	
1132	610123	Lit	Lit	261	.728	.728	.096	.073	.050	.054	.557	.557	-.297	-.190	-.086	-0.251	0.168	-1.1	0.9	-1.7	0.7	A+	
1133	610125	Lit	Lit	261	.674	.061	.674	.138	.073	.054	.584	-.228	.584	-.151	-.287	0.121	0.158	-1.8	0.9	-1.7	0.8	B+	
1134	610124	Lit	Lit	261	.690	.690	.081	.146	.031	.054	.560	.560	-.235	-.208	-.169	0.019	0.161	-1.6	0.9	-0.7	0.9	A+	
1135	609157	Lit	Lit	263	.631	.631	.118	.133	.091	.027	.515	.515	-.163	-.188	-.247	0.478	0.141	-2.1	0.9	-1.9	0.9	A+	
1136	612485	Lit	Lit	262	.588	.588	.351	.042	.015	.004	.305	.305	-.154	-.150	-.203	0.829	0.138	1.8	1.1	1.4	1.1	A-	
1137	612494	Lit	Lit	262	.756	.756	.099	.057	.084	.004	.334	.334	-.181	-.189	-.087	-0.113	0.158	0.9	1.1	0.3	1.0	A-	
1138	612525	Lit	Lit	262	.542	.168	.202	.542	.061	.027	.326	-.128	.017	.326	-.299	0.988	0.138	2.0	1.1	2.5	1.2	A+	
1139	612539	Lit	Lit	271	.458	.055	.343	.458	.114	.030	.461	-.206	-.136	.461	-.203	1.363	0.136	-0.6	1.0	0.3	1.0	A-	
1140	612538	Lit	Lit	271	.620	.092	.166	.620	.092	.030	.556	-.262	-.251	.556	-.162	0.533	0.141	-2.2	0.9	-2.4	0.8	A-	
1141	612500	Lit	Lit	263	.878	.878	.049	.038	.030	.004	.524	.524	-.306	-.274	-.237	-1.270	0.208	-1.3	0.8	-2.3	0.5	A+	
1142	610202	Lit	Lit	263	.544	.544	.126	.068	.228	.034	.462	.462	-.206	-.237	-.129	0.905	0.141	0.0	1.0	0.0	1.0	A+	
1143	610252	Lit	Lit	262	.576	.576	.225	.115	.057	.027	.521	.521	-.270	-.239	-.204	0.710	0.141	-1.7	0.9	-1.1	0.9	A+	
1144	610292	Lit	Lit	262	.603	.061	.199	.603	.107	.031	.520	-.276	-.278	.520	-.202	0.547	0.143	-1.7	0.9	-1.4	0.9	B+	
1145	610293	Lit	Lit	262	.359	.157	.359	.218	.241	.027	.235	-.146	.235	-.186	.073	1.815	0.142	3.3	1.2	2.9	1.3	A+	
1146	610211	Lit	Lit	261	.674	.084	.674	.088	.142	.012	.340	-.164	.340	-.114	-.111	0.338	0.145	0.6	1.0	2.2	1.2	A-	
1147	610241	Lit	Lit	261	.395	.395	.272	.157	.134	.042	.406	.406	-.120	-.168	-.044	1.685	0.140	0.1	1.0	0.7	1.1	A-	
1148	610244	Lit	Lit	261	.506	.318	.069	.077	.506	.031	.255	.118	-.159	-.181	.255	1.004	0.139	4.3	1.2	3.3	1.3	A+	
1149	609215	Lit	Lit	261	.356	.153	.176	.356	.238	.077	.250	-.021	-.083	.250	.092	1.668	0.145	3.3	1.2	3.9	1.4	A-	
1150	610287	Lit	Lit	262	.382	.038	.050	.512	.382	.019	.185	-.181	-.211	.116	.185	1.635	0.140	4.5	1.3	4.7	1.5	A+	

Table B–3 (continued). Reading/Literature Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
1151	610286	Lit	Lit	262	.550	.103	.118	.550	.206	.023	.474	-.210	-.171	.474	-.097	0.789	0.139	-0.8	1.0	-0.9	0.9	A-	
1152	609193	Lit	Lit	262	.714	.065	.714	.092	.076	.053	.550	-.140	.550	-.214	-.207	-0.266	0.162	-1.4	0.9	-1.5	0.8	A-	
1153	609194	Lit	Lit	262	.626	.626	.095	.157	.069	.053	.531	.531	-.202	-.136	-.201	0.281	0.148	-1.6	0.9	-1.4	0.9	B-	
1154	614029	Lit	Lit	271	.801	.801	.177	.022	.000	.000	.345	.345	-.324	-.097	.000	-0.442	0.162	-0.3	1.0	-0.8	0.9	A-	
1155	608118	Lit	Lit	269	.866	.866	.056	.026	.041	.011	.517	.517	-.312	-.225	-.148	-1.177	0.198	-1.0	0.9	-2.1	0.6	A+	
1156	612547	Lit	Lit	262	.668	.141	.668	.130	.053	.008	.491	-.109	.491	-.335	-.206	0.389	0.145	-1.4	0.9	-1.4	0.9	A-	
1157	608112	Lit	Lit	3947	.819	.075	.045	.819	.047	.014	.456	-.202	-.172	.456	-.193	-0.715	0.046	-1.9	1.0	-4.2	0.8	A-	A-
1158	608115	Lit	Lit	3947	.932	.932	.023	.018	.014	.013	.494	.494	-.200	-.197	-.193	-2.115	0.073	-2.8	0.8	-7.9	0.4	A+	A-
1159	608121	Lit	Lit	3947	.798	.071	.052	.066	.798	.013	.417	-.157	-.195	-.158	.417	-0.550	0.044	-1.1	1.0	-0.2	1.0	A+	A-
1160	610225	Lit	Lit	258	.705	.078	.093	.074	.705	.050	.585	-.243	-.269	-.240	.585	-0.146	0.161	-2.6	0.8	-2.6	0.7	A-	
1161	610254	Lit	Lit	525	.867	.059	.034	.867	.015	.025	.529	-.251	-.261	.529	-.175	-1.292	0.152	-1.5	0.9	-2.6	0.6	A+	
1162	608113	Lit	Lit	263	.399	.399	.475	.080	.030	.015	.233	.233	.012	-.144	-.150	1.747	0.141	4.0	1.2	3.4	1.3	A-	
1163	608122	Lit	Lit	263	.586	.137	.586	.247	.015	.015	.321	-.051	.321	-.148	-.177	0.788	0.142	2.4	1.2	1.6	1.1	A-	
1164	612575	Lit	Lit	262	.691	.092	.084	.134	.691	.000	.303	-.167	-.227	-.085	.303	0.253	0.149	1.5	1.1	2.2	1.3	A+	
1165	612533	Lit	Lit	262	.908	.023	.038	.908	.023	.008	.520	-.216	-.287	.520	-.248	-1.666	0.242	-1.0	0.8	-2.1	0.4	A+	
1166	608105	Lit	Lit	262	.752	.752	.046	.153	.034	.015	.408	.408	-.183	-.265	-.072	-0.209	0.162	0.6	1.1	0.0	1.0	A+	
1167	608133	Lit	Lit	264	.682	.682	.083	.144	.083	.008	.400	.400	-.294	-.103	-.180	0.151	0.146	0.0	1.0	0.7	1.1	A+	
1168	609242	Lit	Lit	264	.318	.242	.239	.193	.318	.008	.323	-.029	.011	-.314	.323	2.014	0.144	0.7	1.0	2.0	1.2	A-	
1169	608100	Lit	Lit	264	.606	.023	.299	.606	.061	.011	.356	-.185	-.156	.356	-.183	0.548	0.140	1.4	1.1	1.3	1.1	A-	
1170	608114	Lit	Lit	264	.546	.068	.546	.231	.136	.019	.308	-.174	.308	-.088	-.113	0.832	0.138	2.7	1.2	2.2	1.2	A+	
1171	610222	Lit	Lit	264	.436	.436	.091	.227	.212	.034	.321	.321	-.212	-.053	-.054	1.353	0.139	2.3	1.1	2.3	1.2	A-	
1172	608130	Lit	Lit	261	.847	.847	.042	.081	.019	.012	.398	.398	-.234	-.110	-.164	-0.963	0.192	-0.3	1.0	0.4	1.1	A-	
1173	608110	Lit	Lit	261	.801	.046	.801	.058	.073	.023	.532	-.276	.532	-.189	-.163	-0.630	0.178	-1.0	0.9	-0.3	0.9	A-	
1174	608111	Lit	Lit	261	.824	.054	.042	.824	.054	.027	.511	-.200	-.165	.511	-.175	-0.852	0.189	-0.8	0.9	-0.9	0.8	A+	
1175	609106	Lit	Lit	263	.517	.517	.042	.331	.107	.004	.272	.272	-.225	-.178	.047	1.098	0.134	2.5	1.1	2.3	1.1	B-	
1176	608120	Lit	Lit	525	.756	.069	.149	.756	.023	.004	.389	-.152	-.234	.389	-.175	-0.177	0.110	-0.5	1.0	-0.3	1.0	C-	
1177	608116	Lit	Lit	262	.470	.237	.157	.470	.126	.012	.305	-.161	-.050	.305	-.068	1.369	0.136	2.3	1.1	1.7	1.1	A-	
1178	612522	Lit	Lit	262	.573	.573	.084	.267	.046	.031	.427	.427	-.225	-.153	-.140	0.825	0.140	0.1	1.0	-0.1	1.0	A-	
1179	612524	Lit	Lit	262	.618	.095	.618	.134	.122	.031	.465	-.341	.465	-.074	-.158	0.578	0.143	-0.6	1.0	-1.1	0.9	A+	
1180	609142	Lit	Lit	271	.550	.126	.052	.269	.550	.004	.230	-.010	-.078	-.188	.230	0.956	0.134	3.7	1.2	3.3	1.3	A+	
1181	608117	Lit	Lit	271	.472	.092	.472	.033	.391	.011	.277	-.032	.277	-.247	-.113	1.324	0.135	3.4	1.2	3.3	1.2	B-	
1182	612536	Lit	Lit	271	.734	.734	.118	.055	.063	.030	.542	.542	-.220	-.247	-.282	-0.144	0.155	-2.1	0.9	-2.3	0.7	A+	
1183	612497	Lit	Lit	263	.521	.030	.205	.521	.232	.011	.235	-.197	-.155	.235	-.002	1.068	0.139	4.0	1.2	4.0	1.3	C-	
1184	608101	Lit	Lit	263	.734	.030	.734	.103	.129	.004	.466	-.227	.466	-.266	-.222	-0.064	0.155	-0.6	1.0	-1.4	0.8	A-	
1185	608106	Lit	Lit	263	.692	.114	.141	.049	.692	.004	.452	-.258	-.206	-.199	.452	0.166	0.149	0.0	1.0	-1.0	0.9	A+	

Table B–3 (continued). Reading/Literature Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
1186	614019	Lit	Lit	262	.699	.130	.699	.103	.069	.000	.325	-.167	.325	-.252	-.066	0.148	0.148	1.3	1.1	0.6	1.1	A-	
1187	608102	Lit	Lit	262	.382	.206	.176	.237	.382	.000	.512	-.134	-.262	-.223	.512	1.759	0.139	-1.8	0.9	-1.4	0.9	A-	
1188	608103	Lit	Lit	262	.897	.897	.027	.034	.042	.000	.419	.419	-.210	-.214	-.273	-1.380	0.213	-0.7	0.9	-2.1	0.5	A+	
1189	610100	Lit	Lit	261	.330	.027	.088	.552	.330	.004	.370	-.030	.002	-.299	.370	2.081	0.143	-0.8	1.0	0.4	1.0	A-	
1190	610204	Lit	Lit	261	.812	.812	.100	.042	.038	.008	.488	.488	-.321	-.173	-.143	-0.524	0.171	-1.3	0.9	-2.0	0.7	A-	
1191	608104	Lit	Lit	261	.625	.084	.100	.625	.176	.015	.399	-.126	-.332	.399	-.030	0.595	0.141	0.3	1.0	-0.1	1.0	A+	
1192	610339	Lit	Lit	261	.540	.195	.042	.184	.540	.038	.419	-.207	-.120	-.095	.419	0.957	0.139	0.4	1.0	-0.2	1.0	B-	
1193	608123	Lit	Lit	261	.854	.854	.031	.023	.069	.023	.457	.457	-.072	-.116	-.178	-1.189	0.200	-0.1	1.0	-0.4	0.9	A-	
1194	612518	Lit	Lit	261	.724	.031	.111	.092	.724	.042	.542	-.139	-.196	-.172	.542	-0.261	0.160	-1.4	0.9	-1.5	0.8	A-	
1195	612506	Lit	Lit	269	.788	.788	.071	.056	.056	.030	.595	.595	-.323	-.214	-.239	-0.612	0.171	-2.3	0.8	-2.9	0.6	B-	
1196	609134	Lit	Lit	262	.313	.439	.210	.034	.313	.004	.302	-.155	-.054	-.123	.302	2.015	0.145	0.2	1.0	0.5	1.1	A+	
1197	608119	Lit	Lit	262	.821	.004	.034	.821	.118	.023	.446	-.085	-.276	.446	-.117	-0.909	0.185	0.2	1.0	0.3	1.1	A-	
1198	609190	Lit	Lit	262	.756	.061	.756	.080	.057	.046	.494	-.228	.494	-.176	-.066	-0.526	0.170	-0.3	1.0	-0.7	0.9	A-	
1199	608107	Lit	Lit	265	.506	.200	.170	.506	.094	.030	.304	.034	-.222	.304	-.020	1.118	0.138	3.4	1.2	3.1	1.3	A+	
1200	608108	Lit	Lit	265	.521	.253	.098	.106	.521	.023	.404	-.146	-.080	-.118	.404	1.069	0.138	1.0	1.1	0.6	1.1	A-	
1201	608109	Lit	Lit	265	.830	.045	.830	.026	.076	.023	.594	-.182	.594	-.202	-.282	-0.863	0.187	-1.7	0.8	-2.6	0.5	A-	
1202	661545	6	6	251	.845	.064	.845	.048	.044	.000	.503	-.402	.503	-.181	-.222	-1.482	0.191	-1.4	0.8	-1.9	0.7	A-	
1203	661546	6	6	606	.828	.053	.828	.053	.066	.000	.426	-.348	.426	-.253	-.106	-1.388	0.119	-0.6	1.0	-0.8	0.9	A+	
1204	661549	6	6	261	.801	.801	.058	.100	.042	.000	.435	.435	-.380	-.184	-.151	-1.207	0.174	-0.2	1.0	-0.8	0.9	A-	
1205	661550	6	6	577	.820	.094	.820	.045	.042	.000	.458	-.282	.458	-.255	-.205	-1.403	0.120	-0.7	1.0	-2.4	0.7	A+	
1206	661553	6	6	294	.721	.099	.143	.037	.721	.000	.459	-.207	-.262	-.277	.459	-0.557	0.145	-0.8	0.9	-1.3	0.9	A+	
1207	661555	6	6	595	.892	.061	.892	.022	.025	.000	.282	-.078	.282	-.241	-.214	-2.013	0.143	0.1	1.0	2.1	1.4	B+	A+
1208	661557	6	6	252	.734	.111	.734	.123	.032	.000	.453	-.274	.453	-.237	-.206	-0.704	0.160	-0.3	1.0	-0.7	0.9	A+	
1209	661558	6	6	618	.835	.078	.835	.044	.044	.000	.497	-.333	.497	-.246	-.220	-1.508	0.119	-1.8	0.9	-3.0	0.7	A-	
1210	661560	6	6	243	.901	.901	.041	.033	.025	.000	.362	.362	-.263	-.123	-.217	-1.938	0.228	-0.3	0.9	-1.1	0.7	A+	
1211	661562	6	6	637	.799	.038	.082	.082	.799	.000	.586	-.268	-.361	-.309	.586	-1.216	0.110	-3.8	0.8	-4.6	0.6	A+	
1212	661564	6	6	237	.317	.190	.317	.236	.257	.000	.196	-.119	.196	-.046	-.056	1.509	0.151	1.4	1.1	4.1	1.6	A-	
1213	661566	6	6	597	.496	.164	.214	.496	.126	.000	.190	-.212	.034	.190	-.092	0.538	0.091	5.9	1.2	5.9	1.3	A-	
1214	663048	6	6	265	.577	.143	.177	.102	.577	.000	.460	-.202	-.193	-.274	.460	0.095	0.141	-0.4	1.0	-0.4	1.0	A-	
1215	663049	6	6	263	.673	.084	.152	.673	.091	.000	.413	-.299	-.108	.413	-.251	-0.389	0.148	0.4	1.0	-0.3	1.0	A-	
1216	663050	6	6	281	.534	.263	.534	.100	.103	.000	.376	-.205	.376	-.120	-.201	0.346	0.135	0.9	1.1	1.1	1.1	A+	
1217	663051	6	6	269	.420	.420	.164	.316	.100	.000	.207	.207	-.221	.030	-.114	0.907	0.138	3.9	1.2	4.2	1.4	A-	
1218	663052	6	6	834	.622	.175	.090	.622	.113	.000	.468	-.191	-.361	.468	-.161	-0.083	0.080	-1.9	0.9	-1.9	0.9	A+	A-
1219	663053	6	6	796	.300	.181	.300	.114	.405	.000	-.003	-.177	-.003	-.132	.228	1.547	0.084	8.1	1.3	9.9	2.0	A+	A+
1220	663054	6	6	784	.429	.329	.107	.429	.135	.000	.186	.030	-.192	.186	-.137	0.880	0.080	5.8	1.2	8.5	1.5	A+	A-

Table B–3 (continued). Reading/Literature Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
1221	663055	6	6	776	.769	.077	.084	.769	.070	.000	.508	-.213	-.281	.508	-.311	-0.986	0.095	-2.4	0.9	-2.9	0.8	A+	B-
1222	663061	6	6	294	.452	.452	.184	.214	.150	.000	.293	.293	-.095	-.061	-.236	0.713	0.132	2.7	1.2	3.2	1.3	A-	
1223	663062	6	6	302	.636	.636	.129	.103	.133	.000	.442	.442	-.274	-.191	-.186	-0.232	0.136	0.1	1.0	-0.2	1.0	A-	
1224	663063	6	6	302	.354	.437	.354	.073	.136	.000	.146	.057	.146	-.242	-.103	1.224	0.133	3.5	1.2	7.2	1.9	B-	
1225	663064	6	6	294	.364	.160	.364	.303	.174	.000	.155	-.076	.155	-.070	-.039	1.177	0.135	4.7	1.3	4.4	1.5	B+	
1226	663065	6	6	198	.697	.697	.116	.091	.096	.000	.571	.571	-.268	-.346	-.262	-0.523	0.176	-1.9	0.8	-1.9	0.8	A+	
1227	663066	6	6	192	.651	.094	.172	.083	.651	.000	.344	-.087	-.261	-.146	.344	-0.232	0.172	1.2	1.1	1.8	1.2	A+	
1228	663067	6	6	201	.617	.134	.139	.110	.617	.000	.478	-.149	-.177	-.384	.478	-0.059	0.165	-1.0	0.9	0.1	1.0	A-	
1229	663068	6	6	804	.746	.746	.180	.037	.036	.000	.316	.316	-.151	-.240	-.182	-0.812	0.090	1.6	1.1	3.3	1.3	A+	
1230	663069	6	6	815	.703	.102	.080	.115	.703	.000	.509	-.281	-.250	-.251	.509	-0.538	0.086	-2.7	0.9	-3.4	0.8	A+	
1231	663070	6	6	849	.481	.200	.124	.196	.481	.000	.361	-.109	-.276	-.116	.361	0.644	0.076	0.7	1.0	1.8	1.1	A+	
1232	663071	6	6	803	.496	.169	.196	.496	.140	.000	.171	-.136	-.010	.171	-.087	0.562	0.079	7.6	1.2	8.1	1.4	B+	
1233	663105	6	6	369	.542	.206	.542	.152	.100	.000	.483	-.221	.483	-.274	-.176	0.354	0.118	-2.0	0.9	-0.8	1.0	A+	
1234	663106	6	6	415	.718	.718	.084	.130	.068	.000	.465	.465	-.270	-.240	-.213	-0.582	0.123	-0.5	1.0	-1.7	0.8	A-	
1235	663107	6	6	389	.283	.283	.278	.368	.072	.000	.185	.185	-.034	.005	-.273	1.713	0.122	2.3	1.1	4.2	1.6	A+	
1236	663108	6	6	387	.762	.762	.109	.090	.039	.000	.516	.516	-.354	-.246	-.202	-0.911	0.134	-1.7	0.9	-1.7	0.8	A-	
1237	663109	6	6	372	.430	.430	.137	.277	.156	.000	.307	.307	-.284	.042	-.201	0.922	0.116	2.1	1.1	2.0	1.2	A-	
1238	663110	6	6	383	.381	.261	.243	.381	.115	.000	.227	.071	-.166	.227	-.219	1.182	0.116	2.8	1.1	4.7	1.5	A-	
1239	663119	6	6	1105	.386	.179	.337	.386	.098	.000	.148	-.057	.067	.148	-.277	1.169	0.068	7.1	1.2	9.9	1.5	A-	A+
1240	663120	6	6	1085	.499	.499	.181	.273	.048	.000	.391	.391	-.282	-.099	-.200	0.607	0.067	-0.6	1.0	1.8	1.1	A-	A-
1241	663121	6	6	1233	.628	.163	.108	.101	.628	.000	.503	-.289	-.275	-.170	.503	-0.026	0.065	-4.4	0.9	-4.4	0.8	A+	A-
1242	663122	6	6	1152	.214	.409	.175	.203	.214	.000	-.038	.159	-.077	-.083	-.038	2.159	0.077	5.6	1.2	9.9	2.5	A+	A-
1243	663123	6	6	1128	.520	.145	.520	.200	.136	.000	.287	-.193	.287	-.144	-.052	0.514	0.066	3.9	1.1	4.6	1.2	A-	B-
1244	663124	6	6	1114	.469	.183	.172	.177	.469	.000	.342	-.156	-.129	-.162	.342	0.758	0.066	0.7	1.0	4.2	1.2	A+	A+
1245	663149	6	6	797	.511	.348	.511	.072	.070	.000	.311	-.071	.311	-.281	-.193	0.491	0.079	3.1	1.1	3.9	1.2	A+	
1246	663150	6	6	804	.619	.619	.167	.086	.128	.000	.437	.437	-.102	-.305	-.266	-0.059	0.082	-0.7	1.0	-0.7	1.0	A+	
1247	663151	6	6	835	.356	.267	.163	.214	.356	.000	.423	-.217	-.276	-.011	.423	1.292	0.079	-2.4	0.9	-1.3	0.9	A+	A-
1248	663152	6	6	790	.603	.187	.141	.070	.603	.000	.350	-.068	-.168	-.340	.350	0.027	0.082	2.1	1.1	2.1	1.1	B+	
1249	663190	6	6	356	.565	.267	.155	.565	.014	.000	.385	-.258	-.169	.385	-.135	0.239	0.120	0.8	1.0	1.1	1.1	A+	
1250	663191	6	6	346	.503	.055	.165	.278	.503	.000	.262	-.142	-.196	-.058	.262	0.580	0.119	2.6	1.1	4.3	1.3	A-	
1251	663192	6	6	343	.781	.082	.781	.096	.041	.000	.497	-.363	.497	-.206	-.229	-1.057	0.147	-0.9	0.9	-1.8	0.8	A-	
1252	663193	6	6	344	.433	.151	.204	.212	.433	.000	.198	-.122	.077	-.209	.198	0.884	0.121	4.3	1.2	5.3	1.5	A+	
1253	663194	6	6	335	.367	.131	.367	.173	.328	.000	.168	-.162	.168	-.271	.163	1.233	0.124	4.3	1.2	4.5	1.5	B-	
1254	663249	6	6	245	.535	.257	.535	.082	.127	.000	.208	-.090	.208	-.234	-.001	0.378	0.143	3.6	1.2	4.5	1.4	A+	
1255	663250	6	6	256	.836	.074	.836	.055	.035	.000	.521	-.264	.521	-.291	-.312	-1.453	0.187	-1.3	0.9	-2.1	0.6	A+	

Table B–3 (continued). Reading/Literature Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M /F	W /B
1256	663251	6	6	246	.504	.171	.504	.232	.094	.000	.316	-.052	.316	-.078	-.362	0.538	0.141	1.8	1.1	1.6	1.1	A+	
1257	663252	6	6	242	.806	.806	.008	.062	.124	.000	.549	.549	-.151	-.340	-.368	-1.251	0.181	-2.0	0.8	-1.6	0.7	A-	
1258	661568	7	7	821	.735	.124	.735	.102	.039	.000	.541	-.321	.541	-.340	-.155	-0.630	0.088	-3.4	0.9	-4.1	0.7	A+	A-
1259	661570	7	7	665	.668	.150	.084	.668	.098	.000	.393	-.214	-.295	.393	-.091	-0.122	0.094	1.5	1.1	1.1	1.1	B-	A-
1260	661600	7	7	705	.678	.095	.180	.047	.678	.000	.480	-.327	-.211	-.224	.480	-0.139	0.092	-1.0	1.0	-1.1	0.9	A-	A-
1261	661601	7	7	829	.865	.041	.059	.035	.865	.000	.503	-.295	-.314	-.214	.503	-1.704	0.111	-2.6	0.8	-3.0	0.7	A+	A-
1262	661602	7	7	672	.362	.423	.362	.080	.135	.000	.177	-.069	.177	-.172	-.013	1.475	0.088	4.8	1.2	7.6	1.6	A-	
1263	661603	7	7	909	.567	.099	.567	.114	.220	.000	.334	-.360	.334	-.142	-.031	0.309	0.075	2.6	1.1	2.7	1.1	A+	B-
1264	661604	7	7	715	.768	.768	.120	.085	.027	.000	.374	.374	-.230	-.211	-.150	-0.752	0.099	0.7	1.0	0.1	1.0	A+	A-
1265	661605	7	7	848	.789	.076	.120	.789	.015	.000	.443	-.293	-.276	.443	-.110	-1.012	0.093	-1.2	0.9	-1.4	0.9	B+	A-
1266	661606	7	7	694	.735	.735	.065	.180	.020	.000	.387	.387	-.354	-.147	-.192	-0.455	0.097	1.0	1.1	-0.2	1.0	A+	
1267	661607	7	7	858	.731	.731	.107	.085	.077	.000	.359	.359	-.124	-.291	-.149	-0.595	0.086	1.3	1.1	1.3	1.1	A+	A-
1268	661608	7	7	674	.576	.576	.061	.043	.321	.000	.233	.233	-.325	-.204	.008	0.392	0.087	5.3	1.2	4.9	1.3	B-	A+
1269	661621	7	7	797	.745	.745	.107	.088	.060	.000	.527	.527	-.396	-.258	-.145	-0.766	0.092	-2.3	0.9	-3.4	0.8	A+	A-
1270	663139	7	7	901	.424	.424	.177	.219	.181	.000	.391	.391	-.310	-.174	-.008	1.176	0.075	-0.7	1.0	1.3	1.1	A-	
1271	663140	7	7	866	.599	.167	.140	.599	.094	.000	.421	-.171	-.133	.421	-.332	0.281	0.078	-0.2	1.0	0.3	1.0	A+	
1272	663141	7	7	856	.457	.280	.152	.457	.111	.000	.226	-.038	-.151	.226	-.132	1.001	0.077	5.6	1.2	8.2	1.4	A+	
1273	663142	7	7	844	.520	.237	.111	.132	.520	.000	.337	-.051	-.242	-.209	.337	0.683	0.077	2.4	1.1	3.8	1.2	B-	
1274	663145	7	7	796	.563	.153	.563	.122	.162	.000	.387	-.269	.387	-.219	-.065	0.368	0.080	0.4	1.0	0.4	1.0	A-	A-
1275	663146	7	7	740	.469	.469	.181	.160	.191	.000	.332	.332	-.166	-.171	-.100	0.813	0.082	1.7	1.1	2.6	1.1	A+	
1276	663147	7	7	731	.425	.213	.200	.425	.161	.000	.205	.075	-.153	.205	-.193	1.024	0.083	5.1	1.2	6.5	1.4	A+	
1277	663148	7	7	725	.290	.457	.290	.117	.137	.000	.037	.287	.037	-.228	-.250	1.741	0.089	6.7	1.3	8.4	1.8	A-	
1278	663165	7	7	847	.508	.156	.174	.163	.508	.000	.411	-.050	-.187	-.317	.411	0.615	0.077	-0.2	1.0	0.5	1.0	B+	A+
1279	663166	7	7	791	.602	.152	.132	.602	.115	.000	.446	-.125	-.286	.446	-.240	0.119	0.082	-0.7	1.0	-0.2	1.0	B+	A-
1280	663167	7	7	806	.458	.458	.143	.101	.299	.000	.243	.243	-.235	-.245	.076	0.861	0.079	6.1	1.2	5.4	1.3	A+	A+
1281	663168	7	7	800	.693	.693	.103	.105	.100	.000	.466	.466	-.227	-.275	-.207	-0.397	0.087	-1.0	1.0	-1.8	0.9	C+	A-
1282	663169	7	7	915	.368	.368	.145	.209	.278	.000	.211	.211	-.222	-.109	.047	1.447	0.075	4.5	1.1	8.5	1.5	A-	A-
1283	663170	7	7	899	.437	.162	.263	.437	.138	.000	.123	-.053	.006	.123	-.127	1.099	0.075	9.8	1.3	9.9	1.6	A+	A-
1284	663171	7	7	876	.691	.111	.081	.118	.691	.000	.488	-.256	-.247	-.243	.488	-0.240	0.083	-1.5	0.9	-2.0	0.9	A+	A-
1285	663172	7	7	961	.486	.214	.486	.200	.100	.000	.398	-.010	.398	-.285	-.269	0.855	0.072	0.2	1.0	0.8	1.0	A+	A-
1286	663180	7	7	774	.470	.470	.101	.190	.239	.000	.405	.405	-.234	-.250	-.078	0.779	0.080	-0.7	1.0	1.0	1.1	A-	A-
1287	663181	7	7	823	.525	.186	.186	.103	.525	.000	.525	-.255	-.275	-.184	.525	0.525	0.078	-5.1	0.9	-4.3	0.8	A-	A-
1288	663182	7	7	795	.584	.225	.068	.123	.584	.000	.319	-.038	-.189	-.285	.319	0.225	0.080	2.8	1.1	2.9	1.1	A-	A+
1289	663183	7	7	784	.383	.383	.255	.218	.144	.000	.253	.253	-.053	-.052	-.224	1.220	0.081	3.4	1.1	5.0	1.3	A+	B+
1290	663199	7	7	900	.321	.314	.321	.218	.147	.000	.014	.193	.014	-.167	-.077	1.719	0.078	9.2	1.3	9.9	1.9	A+	A+

Table B–3 (continued). Reading/Literature Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M /F	W /B
1291	663200	7	7	887	.384	.127	.200	.289	.384	.000	.162	-.178	-.039	-.009	.162	1.388	0.076	6.7	1.2	8.0	1.5	A+	A-
1292	663201	7	7	963	.440	.333	.440	.112	.114	.000	.301	-.052	.301	-.247	-.147	1.126	0.072	2.6	1.1	5.1	1.2	A-	A+
1293	663202	7	7	923	.403	.143	.281	.173	.403	.000	.139	-.153	.100	-.157	.139	1.310	0.074	6.8	1.2	9.9	1.7	A+	A+
1294	663242	7	7	712	.383	.188	.236	.383	.192	.000	.300	-.122	-.089	.300	-.154	1.271	0.086	1.8	1.1	5.6	1.4	A-	A-
1295	663243	7	7	710	.717	.137	.717	.103	.044	.000	.484	-.257	.484	-.253	-.260	-0.512	0.094	-1.2	0.9	-2.2	0.8	A+	A-
1296	663244	7	7	773	.679	.155	.128	.679	.038	.000	.555	-.361	-.306	.555	-.137	-0.252	0.087	-3.5	0.9	-4.2	0.8	A-	A-
1297	663245	7	7	723	.658	.078	.126	.138	.658	.000	.473	-.187	-.246	-.269	.473	-0.156	0.089	-1.2	1.0	-1.2	0.9	A-	A-
1298	663290	7	7	1294	.295	.295	.314	.277	.114	.000	.254	.254	.036	-.118	-.250	1.867	0.066	2.2	1.1	5.9	1.4	A-	A-
1299	663291	7	7	1330	.825	.825	.058	.068	.050	.000	.508	.508	-.302	-.251	-.274	-1.142	0.080	-3.0	0.9	-4.1	0.7	A+	B-
1300	663292	7	7	1379	.604	.212	.604	.116	.068	.000	.362	-.137	.362	-.206	-.220	0.291	0.062	2.4	1.1	2.7	1.1	A-	A-
1301	663293	7	7	1312	.541	.148	.165	.541	.146	.000	.302	-.157	-.125	.302	-.137	0.601	0.062	4.6	1.1	5.7	1.2	A+	A-
1302	663294	7	7	1279	.513	.513	.176	.169	.142	.000	.412	.412	-.267	-.195	-.090	0.735	0.063	-0.3	1.0	1.1	1.0	A+	A-
1303	663295	7	7	1256	.373	.373	.303	.198	.126	.000	.190	.190	-.100	-.093	-.026	1.435	0.064	7.6	1.2	8.4	1.5	A-	A-
1304	663309	7	7	1114	.672	.672	.163	.099	.066	.000	.521	.521	-.255	-.271	-.280	-0.258	0.072	-3.6	0.9	-4.1	0.8	A-	A-
1305	663310	7	7	1107	.651	.103	.155	.090	.651	.000	.566	-.318	-.226	-.318	.566	-0.127	0.071	-5.7	0.8	-5.7	0.8	A-	A-
1306	663311	7	7	1196	.477	.477	.166	.130	.226	.000	.209	.209	-.232	-.071	.014	0.776	0.064	8.1	1.2	7.5	1.3	A+	A+
1307	663312	7	7	1135	.471	.127	.283	.119	.471	.000	.436	-.221	-.099	-.308	.436	0.794	0.066	-2.5	0.9	0.7	1.0	A-	A+
1308	663313	7	7	1098	.416	.175	.416	.248	.161	.000	.117	-.069	.117	-.096	.028	1.066	0.068	9.9	1.3	9.9	1.6	A+	A-
1309	663314	7	7	1081	.333	.184	.333	.347	.136	.000	.030	-.093	.030	.051	-.008	1.495	0.070	9.9	1.3	9.9	1.8	A-	A+
1310	663315	7	7	1099	.746	.104	.089	.746	.061	.000	.518	-.233	-.329	.518	-.255	-0.805	0.077	-3.2	0.9	-4.2	0.8	B+	B-
1311	663316	7	7	1183	.543	.543	.269	.145	.044	.000	.371	.371	-.207	-.177	-.150	0.360	0.065	1.2	1.0	2.4	1.1	A+	A-
1312	663317	7	7	1045	.226	.231	.226	.344	.200	.000	-.154	-.027	-.154	.060	.117	2.024	0.080	9.2	1.4	9.9	2.9	A+	A+
1313	663318	7	7	1071	.379	.379	.194	.252	.175	.000	.320	.320	-.204	-.126	-.052	1.146	0.069	2.4	1.1	2.4	1.1	A+	A-
1314	663319	7	7	1106	.754	.102	.109	.754	.035	.000	.368	-.205	-.152	.368	-.267	-0.849	0.078	1.0	1.0	0.0	1.0	A+	A-
1315	663320	7	7	1085	.634	.176	.083	.634	.107	.000	.507	-.384	-.222	.507	-.119	-0.152	0.071	-3.4	0.9	-3.7	0.8	A+	A-
1316	661609	8	8	5077	.711	.711	.122	.090	.076	.000	.491	.491	-.319	-.263	-.160	-0.041	0.035	-3.7	0.9	-6.1	0.8	A-	A-
1317	661610	8	8	3461	.410	.246	.112	.410	.233	.000	.316	-.206	-.238	.316	.019	1.583	0.038	2.5	1.0	9.8	1.3	A-	A-
1318	661611	8	8	4980	.756	.756	.083	.090	.071	.000	.478	.478	-.349	-.238	-.159	-0.313	0.037	-2.8	0.9	-5.5	0.8	A-	A-
1319	661612	8	8	3536	.381	.195	.381	.265	.159	.000	.129	-.084	.129	.017	-.100	1.734	0.038	9.9	1.2	9.9	1.6	A+	A-
1320	661613	8	8	4975	.604	.604	.144	.225	.027	.000	.223	.223	-.184	-.058	-.123	0.549	0.033	9.9	1.2	9.9	1.4	A+	A-
1321	661614	8	8	3457	.528	.166	.268	.528	.038	.000	.320	-.185	-.144	.320	-.143	1.001	0.038	6.7	1.1	8.1	1.2	A-	C-
1322	661615	8	8	4949	.809	.809	.067	.046	.078	.000	.506	.506	-.355	-.252	-.214	-0.717	0.040	-4.8	0.9	-8.3	0.7	A+	B-
1323	661616	8	8	3400	.905	.044	.905	.036	.014	.000	.503	-.317	.503	-.318	-.191	-1.635	0.064	-4.3	0.8	-7.7	0.5	A+	A+
1324	661617	8	8	4939	.873	.873	.051	.052	.024	.000	.376	.376	-.248	-.230	-.128	-1.329	0.047	-0.2	1.0	-0.7	1.0	B+	A-
1325	661618	8	8	3478	.928	.025	.030	.928	.017	.000	.379	-.217	-.222	.379	-.203	-1.979	0.070	-1.6	0.9	-3.0	0.7	A+	B-

Table B–3 (continued). Reading/Literature Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M /F	W /B
1326	661619	8	8	4964	.505	.093	.340	.063	.505	.000	.337	-.316	-.035	-.250	.337	1.074	0.032	5.8	1.1	8.5	1.2	A+	A-
1327	661620	8	8	3368	.555	.140	.067	.238	.555	.000	.247	-.186	-.163	-.041	.247	0.891	0.039	9.9	1.2	9.9	1.3	A-	A+
1328	663187	8	8	3610	.621	.085	.621	.211	.083	.000	.445	-.232	.445	-.195	-.260	0.495	0.039	-1.7	1.0	-2.1	1.0	A+	A-
1329	663188	8	8	3566	.434	.434	.353	.164	.050	.000	.144	.144	.091	-.151	-.271	1.449	0.037	9.9	1.3	9.9	1.5	A+	A-
1330	663189	8	8	3729	.838	.838	.073	.058	.031	.000	.522	.522	-.348	-.313	-.164	-0.938	0.049	-5.6	0.8	-8.1	0.6	B+	A-
1331	663195	8	8	4829	.637	.117	.139	.108	.637	.000	.525	-.264	-.289	-.219	.525	0.389	0.034	-7.9	0.9	-8.0	0.8	A+	A-
1332	663196	8	8	4914	.492	.159	.492	.147	.202	.000	.211	-.047	.211	-.221	-.025	1.141	0.032	9.9	1.2	9.9	1.4	A-	A+
1333	663197	8	8	4782	.631	.631	.138	.122	.109	.000	.506	.506	-.215	-.325	-.205	0.423	0.034	-6.7	0.9	-5.9	0.9	A+	A-
1334	663198	8	8	5251	.561	.259	.134	.561	.046	.000	.309	-.013	-.275	.309	-.260	0.805	0.031	8.7	1.1	9.9	1.2	A+	A-
1335	663208	8	8	4561	.621	.104	.200	.621	.075	.000	.333	-.154	-.090	.333	-.298	0.567	0.034	5.6	1.1	7.0	1.2	A+	A-
1336	663209	8	8	4489	.528	.101	.528	.265	.106	.000	.325	-.252	.325	-.072	-.177	1.039	0.033	5.6	1.1	9.0	1.2	A+	A-
1337	663210	8	8	4433	.569	.108	.168	.569	.156	.000	.410	-.233	-.178	.410	-.177	0.829	0.034	-0.7	1.0	1.6	1.0	A+	A-
1338	663211	8	8	4845	.506	.138	.154	.203	.506	.000	.444	-.169	-.266	-.169	.444	1.162	0.032	-6.8	0.9	-0.8	1.0	A+	A+
1339	663212	8	8	7150	.475	.475	.329	.138	.058	.000	.214	.214	.091	-.259	-.259	1.217	0.026	9.9	1.2	9.9	1.4	A-	A-
1340	663213	8	8	7677	.624	.146	.624	.103	.127	.000	.401	-.244	.401	-.226	-.118	0.459	0.026	2.1	1.0	1.1	1.0	A+	A-
1341	663214	8	8	7249	.821	.055	.056	.821	.068	.000	.477	-.257	-.312	.477	-.209	-0.832	0.034	-4.7	0.9	-5.3	0.8	A-	A-
1342	663215	8	8	6977	.476	.476	.253	.188	.083	.000	.361	.361	-.090	-.239	-.173	1.193	0.027	2.7	1.0	9.5	1.2	A-	A-
1343	663216	8	8	7109	.454	.143	.193	.210	.454	.000	.406	-.195	-.167	-.167	.406	1.320	0.026	-3.1	1.0	3.9	1.1	A+	A-
1344	663217	8	8	6902	.295	.144	.178	.295	.384	.000	.008	-.106	-.045	.008	.104	2.135	0.029	9.9	1.3	9.9	2.0	A+	A+
1345	663218	8	8	4439	.441	.441	.227	.131	.201	.000	.302	.302	-.048	-.226	-.134	1.435	0.033	6.0	1.1	9.9	1.2	A+	A+
1346	663219	8	8	4494	.610	.140	.610	.126	.124	.000	.513	-.231	.513	-.269	-.245	0.586	0.034	-8.4	0.9	-7.3	0.9	A+	A-
1347	663220	8	8	4662	.409	.133	.210	.248	.409	.000	.398	-.122	-.225	-.145	.398	1.617	0.033	-4.8	0.9	3.3	1.1	A+	A-
1348	663221	8	8	4819	.477	.138	.183	.477	.202	.000	.302	-.141	-.179	.302	-.083	1.278	0.032	6.3	1.1	9.9	1.3	B-	A-
1349	663235	8	8	4952	.597	.118	.597	.134	.152	.000	.308	-.242	.308	-.078	-.129	0.618	0.033	9.3	1.1	9.3	1.2	A-	B-
1350	663236	8	8	4881	.483	.213	.109	.483	.196	.000	.251	-.017	-.266	.251	-.090	1.197	0.032	9.9	1.2	9.9	1.3	A+	A-
1351	663237	8	8	4794	.523	.523	.187	.187	.104	.000	.400	.400	-.182	-.193	-.175	0.986	0.032	0.3	1.0	4.0	1.1	A+	A+
1352	663238	8	8	5227	.438	.127	.244	.438	.192	.000	.160	-.174	-.087	.160	.041	1.426	0.031	9.9	1.2	9.9	1.5	A+	A+
1353	663270	8	8	6662	.328	.328	.279	.257	.136	.000	.241	.241	-.068	-.090	-.128	1.951	0.029	7.8	1.1	9.9	1.5	A-	A+
1354	663271	8	8	7065	.517	.167	.517	.103	.213	.000	.447	-.149	.447	-.297	-.190	0.998	0.027	-4.6	1.0	-0.6	1.0	A-	A-
1355	663272	8	8	6999	.514	.139	.193	.155	.514	.000	.453	-.290	-.147	-.188	.453	1.018	0.027	-5.3	1.0	-2.9	1.0	A-	A-
1356	663273	8	8	6911	.488	.108	.488	.126	.278	.000	.350	-.198	.350	-.277	-.049	1.141	0.027	4.7	1.1	9.3	1.2	A-	A-
1357	663274	8	8	7456	.763	.111	.092	.763	.034	.000	.513	-.241	-.364	.513	-.204	-0.394	0.031	-7.7	0.9	-5.6	0.9	A+	A-
1358	663275	8	8	6770	.379	.379	.302	.197	.122	.000	.185	.185	.037	-.207	-.075	1.692	0.028	9.9	1.2	9.9	1.4	A+	A-
1359	663284	8	8	6777	.737	.055	.121	.737	.088	.000	.435	-.245	-.241	.435	-.202	-0.134	0.031	-1.3	1.0	-2.5	0.9	A-	B-
1360	663285	8	8	7068	.795	.056	.112	.795	.037	.000	.501	-.296	-.300	.501	-.209	-0.529	0.033	-5.8	0.9	-9.1	0.7	A-	B-

Table B–3 (continued). Reading/Literature Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
1361	663286	8	8	6761	.560	.081	.251	.108	.560	.000	.246	-.281	-.085	-.028	.246	0.849	0.027	9.9	1.2	9.9	1.3	A-	A-
1362	663287	8	8	6672	.662	.126	.662	.148	.065	.000	.413	-.137	.413	-.295	-.184	0.310	0.029	1.1	1.0	-2.1	1.0	A+	A+
1363	663288	8	8	6548	.405	.221	.127	.405	.248	.000	.170	-.131	-.278	.170	.147	1.615	0.028	9.9	1.2	9.9	1.6	A-	A+
1364	663289	8	8	6445	.731	.149	.731	.067	.053	.000	.423	-.113	.423	-.315	-.305	-0.116	0.032	-1.0	1.0	0.4	1.0	A+	A-
1365	663296	8	8	4976	.314	.142	.500	.314	.045	.000	.205	-.162	.038	.205	-.279	2.069	0.033	8.6	1.1	9.9	1.6	A-	A-
1366	663297	8	8	4911	.490	.186	.490	.226	.099	.000	.306	-.133	.306	-.134	-.152	1.161	0.032	8.3	1.1	9.9	1.3	A+	A-
1367	663298	8	8	4848	.814	.814	.058	.079	.049	.000	.590	.590	-.279	-.343	-.333	-0.767	0.041	-9.7	0.8	-9.9	0.6	A+	A-
1368	663299	8	8	5236	.465	.166	.197	.172	.465	.000	.469	-.236	-.277	-.095	.469	1.291	0.031	-8.2	0.9	-3.4	0.9	A+	A-
1369	663301	8	8	4633	.449	.285	.076	.190	.449	.000	.310	-.140	-.198	-.099	.310	1.410	0.033	5.6	1.1	9.9	1.2	A-	A-
1370	663302	8	8	4566	.644	.179	.131	.644	.046	.000	.438	-.141	-.314	.438	-.238	0.412	0.035	-1.1	1.0	-2.2	1.0	A+	A+
1371	663303	8	8	4869	.706	.078	.706	.138	.079	.000	.445	-.242	.445	-.184	-.277	0.076	0.035	-1.8	1.0	-3.2	0.9	A+	A-
1372	663304	8	8	4504	.601	.601	.098	.137	.165	.000	.289	.289	-.241	-.214	.009	0.638	0.034	9.3	1.1	9.9	1.2	A+	A+
1373	682472	K	K	452	.936	.022	.031	.936	.009	.002	.430	-.248	-.318	.430	-.173	-4.352	0.203	-1.0	0.9	-1.5	0.6	B-	
1374	686495	K	K	452	.898	.035	.020	.898	.046	.000	.375	-.250	-.162	.375	-.212	-3.777	0.168	-0.1	1.0	-0.8	0.8	A+	
1375	683139	K	K	452	.631	.069	.179	.119	.631	.002	.424	-.194	-.180	-.258	.424	-1.756	0.110	1.0	1.1	0.8	1.1	A-	
1376	683140	K	K	452	.920	.920	.020	.022	.035	.002	.480	.480	-.238	-.274	-.280	-4.088	0.185	-1.2	0.8	-2.7	0.4	A-	
1377	683063	K	K	452	.626	.064	.626	.204	.102	.004	.360	-.149	.360	-.145	-.239	-1.732	0.110	2.5	1.1	1.8	1.1	A+	
1378	683062	K	K	452	.900	.027	.027	.038	.900	.009	.501	-.276	-.212	-.330	.501	-3.806	0.169	-1.4	0.8	-2.5	0.5	A-	
1379	683061	K	K	452	.717	.035	.053	.188	.717	.007	.506	-.144	-.329	-.300	.506	-2.256	0.117	-1.1	0.9	-1.0	0.9	B-	
1380	682473	K	K	447	.866	.866	.045	.049	.040	.000	.431	.431	-.298	-.211	-.201	-3.437	0.150	-0.7	0.9	-1.9	0.7	A+	A+
1381	686535	K	K	447	.483	.483	.264	.089	.159	.004	.340	.340	-.203	-.202	-.060	-1.065	0.107	3.2	1.1	3.3	1.2	A-	A+
1382	683135	K	K	447	.629	.235	.072	.629	.065	.000	.346	-.140	-.225	.346	-.203	-1.814	0.110	2.5	1.1	2.2	1.2	A-	A-
1383	683136	K	K	447	.483	.170	.483	.237	.105	.004	.416	-.273	.416	-.108	-.175	-1.065	0.107	1.0	1.0	1.3	1.1	A+	A+
1384	683138	K	K	447	.678	.136	.045	.678	.139	.002	.533	-.375	-.223	.533	-.219	-2.086	0.113	-2.2	0.9	-2.3	0.8	A-	A+
1385	683125	K	K	447	.770	.098	.027	.105	.770	.000	.489	-.323	-.256	-.224	.489	-2.654	0.124	-1.7	0.9	-0.9	0.9	A+	A-
1386	686541	K	K	447	.801	.801	.043	.141	.009	.007	.426	.426	-.117	-.393	-.045	-2.879	0.130	-0.5	1.0	-1.0	0.9	A-	A-
1387	683126	K	K	447	.758	.034	.094	.758	.110	.004	.436	-.264	-.214	.436	-.232	-2.579	0.122	-0.6	1.0	-0.4	1.0	A+	A-
1388	682474	K	K	453	.843	.020	.093	.042	.843	.002	.431	-.195	-.231	-.304	.431	-3.233	0.137	-1.5	0.9	-1.5	0.8	A+	B-
1389	686537	K	K	453	.671	.671	.166	.099	.060	.004	.328	.328	-.308	-.084	-.065	-2.118	0.108	1.1	1.1	0.9	1.1	A+	A+
1390	683078	K	K	453	.764	.084	.764	.126	.026	.000	.383	-.207	.383	-.215	-.211	-2.654	0.119	-0.4	1.0	-0.8	0.9	A+	A-
1391	683077	K	K	453	.620	.102	.238	.038	.620	.002	.407	-.109	-.257	-.271	.407	-1.856	0.105	-0.3	1.0	-0.5	1.0	A-	A+
1392	683076	K	K	453	.687	.687	.033	.247	.031	.002	.335	.335	-.143	-.204	-.250	-2.201	0.110	0.9	1.0	1.2	1.1	A+	A+
1393	683069	K	K	453	.647	.040	.146	.647	.166	.002	.468	-.168	-.204	.468	-.316	-1.991	0.107	-1.7	0.9	-1.5	0.9	A+	A-
1394	683081	K	K	453	.892	.049	.040	.892	.013	.007	.387	-.160	-.285	.387	-.195	-3.705	0.158	-1.1	0.9	-1.3	0.8	B+	B-
1395	683080	K	K	453	.534	.278	.077	.534	.104	.007	.382	-.211	-.217	.382	-.098	-1.435	0.103	0.6	1.0	0.5	1.0	A+	A-

Table B–3 (continued). Reading/Literature Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
1396	683079	K	K	453	.468	.468	.166	.172	.192	.002	.419	.419	-.109	-.272	-.156	-1.118	0.103	-0.3	1.0	-0.8	1.0	A+	A-
1397	682475	K	K	459	.815	.046	.074	.815	.065	.000	.376	-.253	-.169	.376	-.199	-3.007	0.132	0.1	1.0	0.6	1.1	A+	
1398	686512	K	K	459	.309	.244	.346	.309	.098	.002	.347	-.192	-.080	.347	-.139	-0.009	0.117	2.4	1.1	3.5	1.4	A-	
1399	683112	K	K	459	.852	.035	.852	.031	.078	.004	.412	-.256	.412	-.244	-.203	-3.326	0.142	-0.8	0.9	-0.8	0.8	A+	
1400	683282	K	K	459	.876	.092	.022	.007	.876	.004	.485	-.406	-.228	-.141	.485	-3.564	0.152	-1.9	0.8	-1.8	0.6	C+	
1401	683110	K	K	459	.662	.190	.068	.076	.662	.004	.471	-.200	-.268	-.298	.471	-1.989	0.113	0.3	1.0	-0.1	1.0	C+	
1402	683161	K	K	459	.695	.139	.695	.100	.063	.002	.430	-.259	.430	-.181	-.219	-2.184	0.115	1.1	1.1	0.0	1.0	A+	
1403	683162	K	K	459	.726	.725	.024	.037	.207	.007	.324	.324	-.173	-.304	-.157	-2.374	0.118	2.7	1.2	3.2	1.4	A+	
1404	683142	K	K	459	.791	.102	.039	.791	.063	.004	.536	-.395	-.182	.536	-.264	-2.822	0.127	-2.3	0.9	-1.8	0.7	B+	
1405	682476	K	K	447	.922	.031	.922	.011	.036	.000	.487	-.285	.487	-.197	-.326	-4.183	0.189	-1.5	0.8	-2.7	0.4	A+	
1406	686539	K	K	447	.859	.058	.859	.043	.040	.000	.479	-.323	.479	-.239	-.218	-3.407	0.149	-1.2	0.9	-1.8	0.7	A-	
1407	683156	K	K	447	.653	.038	.282	.022	.653	.004	.391	-.244	-.252	-.182	.391	-1.942	0.113	1.9	1.1	1.8	1.2	A-	
1408	683155	K	K	447	.669	.043	.244	.669	.038	.007	.445	-.227	-.276	.445	-.244	-2.031	0.114	0.5	1.0	0.5	1.0	A+	
1409	683160	K	K	447	.911	.022	.034	.029	.911	.004	.482	-.160	-.318	-.338	.482	-4.014	0.178	-1.7	0.8	-1.4	0.7	A-	
1410	683159	K	K	447	.770	.034	.034	.159	.770	.004	.479	-.254	-.326	-.266	.479	-2.668	0.126	-0.9	0.9	-0.6	0.9	A+	
1411	683158	K	K	447	.852	.067	.852	.029	.049	.002	.390	-.139	.390	-.315	-.221	-3.342	0.146	-0.2	1.0	0.2	1.0	A+	
1412	683157	K	K	447	.680	.192	.036	.680	.092	.000	.334	-.149	-.197	.334	-.209	-2.096	0.115	2.7	1.2	3.8	1.4	A+	
1413	682477	K	K	449	.933	.038	.022	.933	.007	.000	.412	-.330	-.226	.412	-.080	-4.309	0.198	-1.1	0.8	-1.5	0.6	A+	
1414	683058	K	K	449	.793	.056	.111	.793	.038	.002	.597	-.296	-.383	.597	-.285	-2.827	0.127	-3.6	0.8	-3.7	0.6	A+	
1415	683060	K	K	449	.860	.040	.051	.860	.045	.004	.426	-.190	-.225	.426	-.257	-3.380	0.146	-1.2	0.9	0.7	1.1	A+	
1416	683059	K	K	449	.775	.089	.775	.078	.053	.004	.470	-.205	.470	-.300	-.248	-2.700	0.124	-1.0	0.9	-1.8	0.8	A-	
1417	683168	K	K	449	.844	.844	.016	.091	.045	.004	.407	.407	-.156	-.218	-.284	-3.236	0.140	-0.4	1.0	-1.1	0.8	B+	
1418	686542	K	K	449	.555	.227	.555	.073	.143	.002	.452	-.289	.452	-.215	-.127	-1.442	0.107	0.1	1.0	-0.3	1.0	A+	
1419	683165	K	K	449	.512	.225	.143	.118	.512	.002	.311	-.150	-.192	-.071	.311	-1.228	0.106	3.8	1.2	3.1	1.2	A+	
1420	684830	K	K	443	.795	.043	.795	.059	.102	.002	.355	-.231	.355	-.194	-.152	-2.933	0.130	0.6	1.0	0.5	1.1	A+	
1421	683153	K	K	443	.826	.068	.059	.826	.047	.000	.482	-.255	-.300	.482	-.226	-3.182	0.137	-1.7	0.9	-1.9	0.7	B+	
1422	683151	K	K	443	.849	.849	.059	.016	.070	.007	.519	.519	-.335	-.209	-.285	-3.380	0.144	-2.2	0.8	-2.7	0.5	A+	
1423	683169	K	K	443	.865	.063	.029	.034	.865	.009	.404	-.269	-.156	-.235	.404	-3.531	0.150	-0.9	0.9	-0.6	0.9	A+	
1424	683064	K	K	443	.431	.269	.144	.431	.151	.005	.405	-.240	-.134	.405	-.123	-0.855	0.110	2.1	1.1	2.5	1.2	A+	
1425	683067	K	K	443	.885	.034	.068	.011	.885	.002	.499	-.288	-.346	-.157	.499	-3.746	0.160	-2.2	0.8	-2.7	0.5	A+	
1426	683065	K	K	443	.571	.059	.219	.149	.571	.002	.483	-.233	-.253	-.214	.483	-1.588	0.109	-0.3	1.0	-0.2	1.0	A+	
1427	683066	K	K	443	.632	.147	.632	.070	.147	.005	.478	-.315	.478	-.185	-.182	-1.917	0.112	-0.2	1.0	-0.7	0.9	A-	
1428	684832	K	K	453	.746	.038	.029	.188	.746	.000	.419	-.303	-.289	-.196	.419	-2.552	0.121	0.5	1.0	0.8	1.1	A+	
1429	683074	K	K	453	.808	.053	.102	.808	.035	.002	.412	-.291	-.188	.412	-.208	-3.000	0.132	-0.2	1.0	1.0	1.1	A+	
1430	683073	K	K	453	.669	.068	.139	.121	.669	.002	.475	-.270	-.250	-.202	.475	-2.071	0.113	0.1	1.0	-0.5	1.0	A+	

Table B–3 (continued). Reading/Literature Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
1431	683071	K	K	453	.885	.885	.035	.031	.049	.000	.481	.481	-.289	-.222	-.286	-3.729	0.159	-1.3	0.9	-2.1	0.6	A+	
1432	683072	K	K	453	.810	.051	.051	.084	.810	.004	.553	-.281	-.293	-.305	.553	-3.018	0.133	-2.1	0.9	-2.6	0.7	B+	
1433	684833	K	K	460	.609	.211	.083	.609	.096	.002	.329	-.320	-.093	.329	-.011	-1.778	0.104	1.5	1.1	2.1	1.1	A-	
1434	683130	K	K	460	.494	.143	.293	.070	.493	.000	.404	-.328	-.097	-.168	.404	-1.219	0.102	0.0	1.0	-0.3	1.0	A+	
1435	686540	K	K	460	.774	.122	.048	.054	.774	.002	.425	-.282	-.205	-.176	.425	-2.707	0.120	-0.7	1.0	-1.4	0.9	A+	
1436	683129	K	K	460	.811	.113	.022	.052	.811	.002	.400	-.230	-.193	-.249	.400	-2.967	0.128	-0.5	1.0	-1.2	0.9	B+	
1437	684838	K	K	447	.779	.186	.020	.016	.779	.000	.383	-.279	-.210	-.168	.383	-2.691	0.127	0.7	1.1	0.7	1.1	A+	
1438	683145	K	K	447	.819	.078	.027	.076	.819	.000	.441	-.303	-.176	-.227	.441	-3.000	0.136	-0.6	1.0	-0.5	0.9	A+	
1439	683146	K	K	447	.667	.667	.145	.076	.105	.007	.416	.416	-.140	-.282	-.222	-1.974	0.114	1.5	1.1	0.8	1.1	A-	
1440	683148	K	K	447	.477	.477	.065	.136	.322	.000	.215	.215	-.228	-.115	-.025	-0.940	0.109	7.2	1.4	6.4	1.5	A-	
1441	686443	K	K	444	.800	.119	.800	.016	.065	.000	.377	-.259	.377	-.127	-.207	-2.955	0.130	0.3	1.0	-0.4	1.0	A-	A+
1442	683150	K	K	444	.768	.768	.052	.088	.090	.002	.512	.512	-.190	-.250	-.356	-2.729	0.124	-1.7	0.9	-1.8	0.8	A+	A-
1443	683127	K	K	444	.779	.086	.068	.779	.063	.005	.560	-.341	-.275	.560	-.241	-2.808	0.126	-2.8	0.8	-2.2	0.8	A+	A+
1444	683149	K	K	444	.743	.083	.090	.743	.081	.002	.564	-.335	-.290	.564	-.255	-2.565	0.120	-2.7	0.8	-2.8	0.7	A+	B-
1445	683128	K	K	444	.604	.126	.065	.604	.200	.005	.311	-.221	-.314	.311	.008	-1.763	0.109	3.4	1.2	3.3	1.2	A+	A-
1446	686455	K	K	450	.851	.851	.020	.049	.080	.000	.330	.330	-.176	-.287	-.114	-3.260	0.141	-0.1	1.0	0.0	1.0	B+	
1447	683123	K	K	450	.660	.660	.102	.102	.136	.000	.417	.417	-.276	-.217	-.141	-2.015	0.108	-0.7	1.0	-1.0	0.9	A+	
1448	683121	K	K	450	.878	.053	.033	.878	.031	.004	.359	-.092	-.263	.359	-.238	-3.516	0.152	-0.6	0.9	-1.0	0.8	A+	
1449	686468	K	K	440	.534	.168	.091	.534	.202	.005	.386	-.242	-.234	.386	-.089	-1.362	0.106	1.3	1.1	1.1	1.1	A+	
1450	686471	K	K	440	.446	.359	.136	.059	.445	.000	.364	-.266	-.047	-.156	.364	-0.924	0.106	1.6	1.1	2.6	1.2	A+	
1451	683164	K	K	440	.689	.052	.109	.689	.148	.002	.430	-.152	-.288	.430	-.208	-2.165	0.113	-0.4	1.0	-0.5	1.0	A+	
1452	683274	K	K	440	.921	.018	.039	.020	.920	.002	.411	-.212	-.290	-.208	.411	-4.058	0.183	-0.9	0.9	-2.3	0.5	B+	
1453	683163	K	K	440	.836	.045	.836	.032	.084	.002	.476	-.256	.476	-.204	-.310	-3.150	0.138	-1.4	0.9	-2.7	0.6	B+	
1454	683132	K	K	453	.863	.062	.863	.046	.029	.000	.452	-.281	.452	-.280	-.173	-3.472	0.146	-1.2	0.9	-2.3	0.7	A-	
1455	683134	K	K	453	.907	.029	.031	.033	.907	.000	.440	-.198	-.258	-.279	.440	-3.964	0.171	-1.3	0.9	-2.6	0.5	A-	
1456	683131	K	K	453	.647	.647	.095	.066	.188	.004	.443	.443	-.202	-.319	-.163	-2.018	0.108	-0.7	1.0	-1.0	0.9	A-	
1457	682464	1	1	452	.750	.750	.049	.055	.144	.002	.367	.367	-.300	-.254	-.090	-2.469	0.122	1.2	1.1	2.1	1.2	A+	
1458	683503	1	1	452	.737	.126	.035	.097	.737	.004	.447	-.211	-.287	-.222	.447	-2.382	0.120	0.1	1.0	-0.4	1.0	C+	
1459	683505	1	1	452	.378	.088	.378	.188	.330	.015	.267	-.272	.267	-.127	.043	-0.457	0.108	3.8	1.2	4.0	1.4	A+	
1460	683504	1	1	452	.274	.476	.104	.274	.128	.018	.326	.086	-.237	.326	-.265	0.125	0.116	-0.1	1.0	3.3	1.4	A+	
1461	683506	1	1	452	.666	.086	.115	.117	.666	.015	.570	-.288	-.300	-.201	.570	-1.953	0.112	-2.7	0.9	-1.8	0.9	A-	
1462	683070	1	1	447	.902	.902	.058	.027	.013	.000	.428	.428	-.355	-.160	-.159	-3.840	0.169	-1.1	0.9	-1.8	0.6	A-	A-
1463	683231	1	1	447	.875	.875	.049	.027	.047	.002	.466	.466	-.337	-.126	-.293	-3.529	0.154	-1.4	0.9	-2.2	0.6	A+	A-
1464	683068	1	1	447	.503	.215	.503	.163	.110	.009	.394	-.164	.394	-.116	-.235	-1.167	0.106	1.5	1.1	2.5	1.2	A-	A-
1465	682465	1	1	453	.464	.106	.020	.464	.408	.002	.405	-.350	-.103	.405	-.153	-1.097	0.103	0.0	1.0	0.2	1.0	A+	A-

Table B–3 (continued). Reading/Literature Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
1466	682466	1	1	453	.470	.470	.351	.097	.075	.007	.406	.406	-.280	-.149	-.055	-1.129	0.103	-0.1	1.0	0.0	1.0	B-	A-
1467	685910	1	1	453	.413	.351	.413	.106	.119	.011	.363	-.006	.363	-.207	-.293	-0.850	0.104	1.0	1.0	0.9	1.1	A-	A+
1468	685912	1	1	453	.444	.051	.433	.444	.066	.007	.345	-.236	-.104	.345	-.231	-1.001	0.103	1.3	1.1	1.6	1.1	A+	A-
1469	685909	1	1	453	.402	.402	.307	.148	.137	.007	.466	.466	-.136	-.109	-.339	-0.796	0.105	-1.7	0.9	-1.4	0.9	A+	A+
1470	685911	1	1	453	.384	.274	.132	.384	.201	.009	.438	-.058	-.249	.438	-.222	-0.707	0.105	-1.3	1.0	-0.9	1.0	A+	A-
1471	683382	1	1	459	.739	.179	.739	.028	.048	.007	.600	-.407	.600	-.262	-.275	-2.459	0.119	-3.5	0.8	-2.9	0.7	A+	
1472	683387	1	1	459	.767	.133	.767	.059	.035	.007	.623	-.417	.623	-.295	-.227	-2.650	0.123	-4.1	0.8	-3.4	0.6	B+	
1473	683385	1	1	459	.139	.205	.294	.139	.355	.007	.104	-.070	.125	.104	-.112	1.312	0.152	2.9	1.3	5.7	2.8	A+	
1474	683383	1	1	459	.527	.292	.046	.126	.527	.009	.446	-.208	-.174	-.236	.446	-1.238	0.109	1.7	1.1	0.8	1.1	A+	
1475	682468	1	1	447	.931	.025	.931	.022	.022	.000	.447	-.286	.447	-.264	-.205	-4.334	0.199	-1.1	0.9	-1.9	0.5	A+	
1476	682467	1	1	447	.835	.089	.834	.047	.029	.000	.478	-.274	.478	-.296	-.221	-3.177	0.140	-1.1	0.9	-1.5	0.8	B-	
1477	683086	1	1	447	.819	.819	.074	.043	.060	.004	.443	.443	-.188	-.232	-.277	-3.043	0.136	-0.3	1.0	-1.0	0.8	A-	
1478	683088	1	1	447	.472	.101	.139	.472	.284	.004	.494	-.143	-.306	.494	-.195	-0.979	0.108	-1.3	1.0	-0.3	1.0	A+	
1479	683087	1	1	447	.418	.291	.116	.172	.418	.002	.445	-.175	-.334	-.069	.445	-0.699	0.109	-0.2	1.0	1.6	1.1	A+	
1480	683089	1	1	447	.468	.468	.313	.098	.119	.002	.399	.399	-.201	-.104	-.208	-0.956	0.108	1.6	1.1	3.1	1.3	A-	
1481	682469	1	1	449	.924	.027	.031	.018	.924	.000	.415	-.229	-.268	-.200	.415	-4.160	0.188	-1.1	0.9	-1.3	0.7	A+	
1482	683377	1	1	449	.568	.143	.236	.053	.568	.000	.492	-.261	-.215	-.271	.492	-1.510	0.107	-1.1	1.0	-0.8	0.9	A+	
1483	683379	1	1	449	.806	.109	.036	.045	.806	.004	.500	-.304	-.242	-.248	.500	-2.926	0.130	-1.9	0.9	-1.9	0.8	A+	
1484	683378	1	1	449	.278	.278	.038	.655	.024	.004	.223	.223	-.244	-.018	-.253	0.024	0.117	3.0	1.2	4.4	1.5	A-	
1485	683372	1	1	449	.510	.131	.276	.510	.076	.007	.546	-.350	-.242	.546	-.143	-1.217	0.106	-2.9	0.9	-2.3	0.9	A-	
1486	683381	1	1	449	.423	.339	.423	.163	.067	.009	.279	-.171	.279	-.032	-.142	-0.776	0.107	3.8	1.2	4.2	1.3	A+	
1487	683384	1	1	449	.579	.147	.065	.198	.579	.011	.484	-.241	-.234	-.218	.484	-1.568	0.107	-0.9	1.0	-1.0	0.9	A-	
1488	683373	1	1	449	.588	.082	.089	.227	.588	.013	.472	-.252	-.274	-.168	.472	-1.614	0.107	-0.6	1.0	-0.8	0.9	A-	
1489	684088	1	1	443	.546	.352	.546	.038	.059	.005	.299	-.086	.299	-.228	-.238	-1.458	0.109	4.8	1.2	4.8	1.4	A+	
1490	684087	1	1	443	.670	.670	.070	.129	.126	.005	.524	.524	-.276	-.262	-.242	-2.133	0.114	-1.8	0.9	-1.4	0.9	A+	
1491	684089	1	1	443	.494	.208	.494	.160	.129	.009	.496	-.140	.496	-.220	-.291	-1.187	0.108	-0.5	1.0	-0.1	1.0	A-	
1492	684090	1	1	443	.438	.124	.111	.316	.438	.011	.453	-.189	-.272	-.135	.453	-0.891	0.109	0.8	1.0	0.2	1.0	A-	
1493	682471	1	1	453	.951	.022	.951	.015	.011	.000	.386	-.260	.386	-.228	-.160	-4.780	0.228	-0.7	0.9	-2.2	0.4	A-	
1494	682470	1	1	453	.510	.225	.214	.510	.049	.002	.471	-.237	-.236	.471	-.190	-1.209	0.107	-0.5	1.0	0.8	1.1	A+	
1495	684091	1	1	453	.768	.768	.071	.102	.055	.004	.569	.569	-.320	-.298	-.261	-2.703	0.125	-2.5	0.8	-1.9	0.8	A+	
1496	684092	1	1	453	.709	.104	.709	.119	.062	.007	.564	-.174	.564	-.412	-.249	-2.310	0.117	-2.1	0.9	-2.5	0.8	A+	
1497	684093	1	1	453	.530	.530	.075	.225	.163	.007	.446	.446	-.292	.013	-.376	-1.313	0.107	0.9	1.0	0.0	1.0	A-	
1498	684094	1	1	453	.333	.190	.117	.333	.349	.011	.215	-.215	-.219	.215	.140	-0.273	0.112	4.4	1.2	5.6	1.6	A-	
1499	683102	1	1	453	.570	.570	.073	.121	.227	.009	.385	.385	-.151	-.322	-.074	-1.522	0.108	2.6	1.1	2.5	1.2	A+	
1500	683103	1	1	453	.607	.607	.126	.139	.117	.011	.529	.529	-.235	-.145	-.357	-1.724	0.110	-1.2	0.9	-1.7	0.9	A+	

Table B–3 (continued). Reading/Literature Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M /F	W /B
1501	683277	1	1	453	.784	.082	.073	.784	.049	.013	.609	-.338	-.298	.609	-.309	-2.815	0.127	-3.2	0.8	-3.5	0.6	A+	
1502	683104	1	1	453	.740	.049	.113	.084	.740	.015	.581	-.284	-.356	-.218	.581	-2.508	0.121	-2.5	0.9	-2.8	0.7	A+	
1503	683386	1	1	460	.157	.211	.074	.557	.157	.002	.086	-.187	-.188	.193	.086	0.710	0.136	1.5	1.1	4.8	1.9	A+	
1504	683376	1	1	460	.667	.139	.137	.057	.667	.000	.514	-.332	-.234	-.203	.514	-2.080	0.108	-2.5	0.9	-2.7	0.8	A+	
1505	683375	1	1	460	.365	.083	.087	.365	.463	.002	.313	-.209	-.206	.313	-.066	-0.593	0.105	1.3	1.1	2.4	1.2	A-	
1506	683374	1	1	460	.313	.313	.226	.276	.178	.007	.034	.034	-.100	.066	-.019	-0.319	0.109	6.0	1.3	6.3	1.6	A-	
1507	683084	1	1	460	.448	.309	.448	.117	.124	.002	.349	-.160	.349	-.199	-.091	-1.000	0.102	1.2	1.0	1.2	1.1	A-	
1508	683082	1	1	460	.641	.141	.109	.641	.102	.007	.379	-.184	-.261	.379	-.088	-1.943	0.106	0.4	1.0	0.2	1.0	A+	
1509	683085	1	1	460	.746	.746	.091	.072	.089	.002	.556	.556	-.296	-.291	-.265	-2.526	0.116	-3.2	0.8	-3.6	0.7	A-	
1510	683083	1	1	460	.635	.174	.635	.111	.072	.009	.452	-.337	.452	.018	-.310	-1.910	0.106	-1.3	0.9	-1.3	0.9	A-	
1511	683492	1	1	447	.718	.718	.058	.179	.045	.000	.589	.589	-.307	-.394	-.204	-2.285	0.119	-3.0	0.8	-3.0	0.7	B+	
1512	683491	1	1	447	.515	.192	.515	.201	.083	.009	.525	-.211	.525	-.238	-.285	-1.141	0.109	-1.1	1.0	-0.7	1.0	A+	
1513	683493	1	1	447	.468	.161	.047	.322	.468	.002	.416	-.315	-.268	-.068	.416	-0.892	0.109	2.2	1.1	2.1	1.2	A-	
1514	683494	1	1	447	.711	.074	.143	.711	.067	.004	.572	-.252	-.346	.572	-.271	-2.243	0.118	-2.5	0.9	-2.7	0.7	A+	
1515	683499	1	1	447	.640	.132	.130	.640	.092	.007	.541	-.316	-.157	.541	-.317	-1.820	0.113	-1.7	0.9	-1.0	0.9	A+	
1516	683500	1	1	447	.828	.047	.049	.828	.069	.007	.536	-.252	-.259	.536	-.322	-3.075	0.138	-2.1	0.8	-2.4	0.6	A+	
1517	683502	1	1	447	.752	.060	.752	.110	.067	.011	.538	-.335	.538	-.250	-.234	-2.504	0.123	-2.0	0.9	-1.9	0.8	A+	
1518	683501	1	1	447	.188	.497	.145	.188	.157	.013	.164	-.051	-.089	.164	.038	0.831	0.135	2.6	1.2	5.3	2.1	A+	
1519	683509	1	1	444	.484	.070	.041	.484	.403	.002	.251	-.275	-.194	.251	-.036	-1.153	0.107	5.1	1.2	5.2	1.3	A+	A+
1520	683513	1	1	444	.658	.137	.658	.110	.095	.000	.480	-.277	.480	-.298	-.134	-2.055	0.112	-0.7	1.0	-1.1	0.9	A+	A+
1521	683489	1	1	444	.613	.613	.104	.164	.117	.002	.391	.391	-.143	-.166	-.254	-1.810	0.109	1.5	1.1	1.0	1.1	B-	A-
1522	683490	1	1	444	.617	.137	.617	.146	.092	.007	.509	-.257	.509	-.238	-.226	-1.834	0.110	-1.4	0.9	-1.6	0.9	A+	A-
1523	683488	1	1	444	.649	.135	.124	.088	.649	.005	.487	-.228	-.312	-.154	.487	-2.005	0.111	-0.9	1.0	-0.5	1.0	A+	A+
1524	683108	1	1	444	.658	.077	.074	.658	.180	.011	.496	-.235	-.183	.496	-.275	-2.055	0.112	-1.1	1.0	-1.1	0.9	B+	A+
1525	683107	1	1	444	.712	.191	.712	.038	.045	.014	.580	-.364	.580	-.239	-.245	-2.368	0.117	-3.1	0.8	-3.2	0.7	A+	A+
1526	683109	1	1	444	.588	.135	.072	.191	.588	.014	.477	-.278	-.282	-.111	.477	-1.680	0.108	-0.5	1.0	-0.9	0.9	A+	A-
1527	683106	1	1	444	.682	.137	.065	.099	.682	.016	.555	-.267	-.288	-.243	.555	-2.196	0.114	-2.5	0.9	-2.4	0.8	A+	A-
1528	683276	1	1	450	.769	.769	.062	.069	.100	.000	.449	.449	-.204	-.298	-.216	-2.642	0.120	-1.4	0.9	-1.5	0.9	B+	
1529	683100	1	1	450	.676	.153	.093	.076	.676	.002	.430	-.229	-.177	-.231	.430	-2.097	0.109	-1.0	1.0	-1.0	0.9	A+	
1530	683101	1	1	450	.327	.216	.327	.216	.242	.000	.180	-.121	.180	-.153	.066	-0.386	0.108	3.3	1.2	2.9	1.2	A+	
1531	683099	1	1	450	.596	.596	.136	.129	.129	.011	.470	.470	-.198	-.238	-.198	-1.690	0.104	-2.0	0.9	-1.8	0.9	A+	
1532	683498	1	1	450	.653	.653	.093	.202	.044	.007	.390	.390	-.228	-.171	-.178	-1.980	0.107	-0.1	1.0	-0.1	1.0	A+	
1533	683495	1	1	450	.591	.089	.171	.591	.144	.004	.331	-.144	-.056	.331	-.263	-1.668	0.104	1.4	1.1	1.4	1.1	A+	
1534	683496	1	1	450	.302	.302	.249	.127	.313	.009	.228	.228	.032	-.237	-.058	-0.254	0.110	2.3	1.1	2.3	1.2	A+	
1535	683497	1	1	450	.549	.549	.096	.144	.202	.009	.259	.259	-.274	-.123	.022	-1.465	0.103	3.3	1.1	3.1	1.2	A-	

Table B–3 (continued). Reading/Literature Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
1536	683301	1	1	440	.627	.100	.205	.627	.061	.007	.507	-.269	-.217	.507	-.294	-1.833	0.109	-2.0	0.9	-1.9	0.9	A-	
1537	683300	1	1	440	.752	.752	.064	.061	.111	.011	.491	.491	-.224	-.282	-.262	-2.544	0.120	-2.0	0.9	-1.5	0.8	A-	
1538	683293	1	1	440	.698	.102	.152	.698	.043	.005	.483	-.198	-.309	.483	-.222	-2.216	0.114	-1.4	0.9	-1.9	0.8	A+	
1539	683302	1	1	440	.684	.684	.095	.105	.109	.007	.316	.316	-.169	-.172	-.112	-2.139	0.113	1.8	1.1	1.9	1.2	A+	
1540	683292	1	1	440	.191	.289	.295	.218	.191	.007	-.025	.079	.058	-.103	-.025	0.554	0.131	4.3	1.4	6.2	2.1	A-	
1541	684101	1	1	440	.621	.216	.061	.095	.620	.007	.417	-.185	-.217	-.211	.417	-1.798	0.109	0.3	1.0	-0.6	1.0	B+	
1542	684100	1	1	440	.418	.418	.105	.205	.259	.014	.432	.432	-.138	-.143	-.218	-0.787	0.107	-0.7	1.0	0.3	1.0	A-	
1543	684085	1	1	440	.591	.086	.591	.216	.091	.016	.441	-.135	.441	-.113	-.371	-1.646	0.107	-0.2	1.0	-0.6	1.0	A-	
1544	684102	1	1	440	.414	.120	.268	.180	.414	.018	.453	-.204	-.134	-.194	.453	-0.764	0.107	-1.0	1.0	-0.7	1.0	A-	
1545	684086	1	1	440	.523	.093	.300	.523	.068	.016	.367	-.240	-.127	.367	-.124	-1.306	0.106	1.8	1.1	2.0	1.1	A+	
1546	683510	1	1	453	.684	.684	.084	.075	.157	.000	.419	.419	-.339	-.175	-.151	-2.221	0.111	-0.2	1.0	-0.7	0.9	A-	
1547	683512	1	1	453	.254	.227	.313	.254	.203	.002	.329	-.049	-.151	.329	-.131	-0.007	0.116	0.3	1.0	0.6	1.1	A-	
1548	683508	1	1	453	.322	.320	.322	.172	.179	.007	.241	.003	.241	-.082	-.203	-0.399	0.109	2.3	1.1	3.9	1.3	A+	
1549	683511	1	1	453	.819	.819	.044	.071	.060	.007	.438	.438	-.176	-.299	-.211	-3.091	0.132	-0.8	0.9	-1.5	0.8	A+	
1550	684095	1	1	453	.885	.885	.007	.031	.071	.007	.334	.334	-.143	-.216	-.184	-3.699	0.156	-0.1	1.0	-0.9	0.8	A+	
1551	684097	1	1	453	.717	.084	.717	.121	.071	.007	.500	-.143	.500	-.302	-.289	-2.410	0.114	-2.0	0.9	-2.1	0.8	B+	
1552	684099	1	1	453	.600	.196	.600	.108	.082	.013	.510	-.203	.510	-.245	-.257	-1.779	0.105	-2.5	0.9	-2.0	0.9	A+	
1553	684096	1	1	453	.327	.355	.327	.068	.236	.013	.284	.006	.284	-.227	-.136	-0.423	0.109	2.1	1.1	1.7	1.1	A-	
1554	684098	1	1	453	.214	.214	.139	.276	.355	.015	.088	.088	-.058	.092	-.066	0.249	0.123	3.1	1.2	4.2	1.6	A+	
1555	682480	2	2	452	.403	.403	.279	.181	.117	.020	.260	.260	.027	-.148	-.150	-0.584	0.107	4.3	1.2	4.3	1.4	A+	
1556	683114	2	2	452	.719	.046	.075	.135	.719	.024	.489	-.238	-.284	-.163	.489	-2.269	0.117	-0.9	1.0	-0.1	1.0	A-	
1557	683113	2	2	452	.794	.060	.794	.046	.071	.029	.603	-.229	.603	-.298	-.336	-2.783	0.129	-3.0	0.8	-3.2	0.6	A+	
1558	683278	2	2	452	.449	.117	.449	.197	.210	.027	.380	-.079	.380	-.182	-.123	-0.821	0.106	1.7	1.1	1.3	1.1	A-	
1559	683298	2	2	452	.547	.111	.100	.208	.546	.035	.498	-.153	-.238	-.220	.498	-1.314	0.106	-1.3	1.0	-1.3	0.9	B-	
1560	683370	2	2	452	.673	.162	.080	.673	.055	.031	.563	-.159	-.333	.563	-.343	-1.991	0.113	-2.5	0.9	-1.5	0.9	C-	
1561	683297	2	2	452	.797	.796	.040	.073	.060	.031	.614	.614	-.233	-.340	-.321	-2.800	0.130	-3.5	0.8	-2.4	0.7	A-	
1562	683299	2	2	452	.449	.290	.449	.122	.104	.035	.354	-.064	.354	-.186	-.167	-0.821	0.106	2.3	1.1	2.2	1.2	A-	
1563	682481	2	2	447	.904	.036	.904	.013	.034	.013	.483	-.311	.483	-.159	-.266	-3.869	0.171	-1.5	0.8	-2.8	0.4	A-	A-
1564	683280	2	2	447	.392	.391	.282	.128	.177	.022	.418	.418	-.182	-.116	-.138	-0.591	0.109	0.5	1.0	1.8	1.1	A+	A+
1565	683119	2	2	447	.682	.078	.116	.101	.682	.022	.508	-.216	-.204	-.274	.508	-2.111	0.113	-1.6	0.9	-1.8	0.9	A-	A-
1566	683120	2	2	447	.445	.242	.150	.445	.139	.025	.468	-.112	-.185	.468	-.251	-0.871	0.107	-0.7	1.0	-0.4	1.0	A+	A-
1567	683118	2	2	447	.597	.597	.145	.072	.163	.022	.433	.433	-.234	-.205	-.123	-1.648	0.108	0.5	1.0	0.2	1.0	A+	A+
1568	685008	2	2	447	.414	.150	.414	.230	.183	.022	.459	-.172	.459	-.198	-.144	-0.709	0.108	-0.6	1.0	0.2	1.0	A+	A+
1569	685009	2	2	447	.459	.262	.114	.141	.459	.025	.492	-.082	-.175	-.355	.492	-0.940	0.107	-1.2	1.0	-0.8	1.0	A+	A-
1570	685010	2	2	447	.407	.139	.255	.177	.407	.022	.371	-.210	-.070	-.141	.371	-0.674	0.108	1.5	1.1	3.3	1.3	A+	A-

Table B–3 (continued). Reading/Literature Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
1571	685011	2	2	447	.354	.362	.353	.107	.152	.025	.351	.038	.351	-.262	-.219	-0.385	0.111	1.9	1.1	2.3	1.2	A-	A-
1572	682482	2	2	453	.768	.064	.084	.768	.068	.015	.533	-.207	-.318	.533	-.263	-2.683	0.119	-2.8	0.8	-3.2	0.7	A+	A-
1573	683096	2	2	453	.585	.104	.585	.221	.071	.020	.458	-.213	.458	-.156	-.293	-1.681	0.104	-1.5	0.9	-1.6	0.9	A-	A+
1574	683097	2	2	453	.289	.327	.203	.163	.289	.018	.279	.058	-.160	-.186	.279	-0.200	0.113	1.3	1.1	2.8	1.3	A-	A+
1575	683098	2	2	453	.422	.422	.210	.159	.190	.020	.414	.414	-.194	-.106	-.171	-0.894	0.104	-0.4	1.0	-0.9	1.0	A+	B-
1576	683095	2	2	453	.442	.307	.115	.442	.117	.020	.310	-.019	-.244	.310	-.148	-0.991	0.103	2.5	1.1	2.6	1.2	A-	A-
1577	685004	2	2	459	.573	.214	.124	.573	.076	.013	.488	-.248	-.232	.488	-.181	-1.487	0.109	0.3	1.0	0.3	1.0	A-	
1578	685005	2	2	459	.588	.168	.111	.588	.120	.013	.533	-.271	-.267	.533	-.194	-1.570	0.110	-1.0	1.0	0.0	1.0	A-	
1579	685006	2	2	459	.730	.089	.076	.089	.730	.015	.636	-.341	-.298	-.320	.636	-2.402	0.118	-4.4	0.8	-3.6	0.6	A+	
1580	685007	2	2	459	.730	.730	.129	.081	.046	.015	.538	.538	-.252	-.285	-.284	-2.402	0.118	-1.9	0.9	-1.1	0.9	A+	
1581	685395	2	2	459	.377	.314	.124	.377	.170	.015	.341	-.010	-.282	.341	-.140	-0.412	0.112	3.5	1.2	3.5	1.3	A+	
1582	685394	2	2	459	.612	.612	.166	.098	.107	.017	.513	.513	-.237	-.274	-.220	-1.703	0.110	-0.5	1.0	-0.1	1.0	A+	
1583	685393	2	2	459	.477	.131	.214	.157	.477	.022	.584	-.255	-.201	-.302	.584	-0.967	0.109	-2.7	0.9	-2.4	0.8	A-	
1584	685392	2	2	459	.608	.170	.089	.115	.608	.017	.541	-.304	-.202	-.262	.541	-1.679	0.110	-1.3	0.9	-1.6	0.9	A+	
1585	682484	2	2	447	.694	.123	.083	.694	.087	.013	.608	-.339	-.323	.608	-.227	-2.176	0.116	-3.5	0.8	-3.3	0.7	A+	
1586	682483	2	2	447	.850	.067	.038	.031	.850	.013	.552	-.350	-.277	-.235	.552	-3.320	0.146	-2.3	0.8	-2.3	0.6	A+	
1587	686427	2	2	447	.300	.116	.242	.315	.300	.027	.249	-.205	.000	-.049	.249	-0.035	0.116	2.9	1.2	5.9	1.8	A-	
1588	686428	2	2	447	.336	.365	.336	.143	.134	.022	.376	-.168	.376	-.007	-.204	-0.245	0.113	1.1	1.1	2.9	1.3	A-	
1589	686426	2	2	447	.483	.246	.116	.483	.130	.025	.442	-.128	-.248	.442	-.183	-1.037	0.108	0.3	1.0	0.7	1.1	A+	
1590	686429	2	2	447	.481	.150	.105	.481	.230	.034	.470	-.143	-.275	.470	-.162	-1.026	0.108	-0.5	1.0	0.4	1.0	A-	
1591	682485	2	2	449	.813	.813	.049	.047	.076	.016	.551	.551	-.325	-.283	-.275	-2.977	0.132	-2.6	0.8	-3.1	0.6	A+	
1592	686173	2	2	449	.488	.163	.488	.131	.196	.022	.478	-.291	.478	-.233	-.093	-1.104	0.106	-1.2	1.0	-0.2	1.0	A+	
1593	686174	2	2	449	.515	.165	.122	.514	.169	.029	.440	-.255	-.167	.440	-.139	-1.239	0.106	0.1	1.0	0.2	1.0	B-	
1594	686176	2	2	449	.552	.552	.105	.060	.254	.029	.498	.498	-.107	-.239	-.326	-1.431	0.106	-1.3	0.9	-1.3	0.9	A+	
1595	686175	2	2	449	.481	.209	.140	.140	.481	.029	.524	-.202	-.234	-.223	.524	-1.070	0.106	-2.5	0.9	-0.9	0.9	A+	
1596	686456	2	2	443	.431	.431	.363	.093	.090	.023	.510	.510	-.134	-.287	-.260	-0.855	0.110	-1.1	1.0	-0.8	0.9	A+	
1597	686458	2	2	443	.499	.178	.097	.499	.194	.032	.463	-.173	-.299	.463	-.109	-1.210	0.108	0.4	1.0	0.2	1.0	A+	
1598	686459	2	2	443	.542	.176	.169	.086	.542	.027	.566	-.198	-.321	-.199	.566	-1.434	0.109	-2.6	0.9	-2.2	0.8	A-	
1599	686457	2	2	443	.540	.122	.540	.237	.065	.036	.561	-.217	.561	-.253	-.268	-1.422	0.109	-2.4	0.9	-1.0	0.9	A+	
1600	687261	2	2	443	.321	.262	.192	.192	.321	.034	.478	-.181	-.018	-.262	.478	-0.238	0.116	-0.8	1.0	0.6	1.1	A-	
1601	687259	2	2	443	.289	.321	.289	.260	.093	.038	.289	-.070	.289	-.059	-.177	-0.045	0.119	2.9	1.2	4.8	1.6	A+	
1602	687254	2	2	443	.526	.526	.169	.140	.124	.041	.520	.520	-.232	-.145	-.282	-1.351	0.109	-1.1	1.0	-1.4	0.9	A-	
1603	687260	2	2	443	.205	.271	.284	.205	.199	.041	.227	-.062	.044	.227	-.127	0.533	0.132	2.6	1.2	3.6	1.6	A+	
1604	682479	2	2	453	.702	.057	.702	.166	.053	.022	.474	-.201	.474	-.259	-.216	-2.269	0.116	-0.1	1.0	-0.6	0.9	A+	
1605	686460	2	2	453	.600	.106	.600	.126	.146	.022	.513	-.129	.513	-.274	-.274	-1.688	0.109	-0.9	1.0	0.3	1.0	A-	

Table B–3 (continued). Reading/Literature Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
1606	686461	2	2	453	.495	.494	.238	.124	.119	.024	.422	.422	-.005	-.343	-.224	-1.129	0.107	1.3	1.1	2.1	1.1	A-	
1607	686462	2	2	453	.311	.285	.203	.170	.311	.031	.325	.037	-.132	-.230	.325	-0.146	0.113	1.7	1.1	2.7	1.3	A-	
1608	686463	2	2	453	.483	.093	.163	.227	.483	.033	.488	-.248	-.166	-.194	.488	-1.072	0.107	-0.6	1.0	-1.0	0.9	A+	
1609	686536	2	2	460	.724	.724	.087	.078	.096	.015	.528	.528	-.340	-.246	-.182	-2.396	0.113	-2.9	0.9	-2.7	0.8	A-	
1610	686524	2	2	460	.344	.320	.087	.343	.233	.017	.352	-.136	-.139	.352	-.102	-0.481	0.106	0.3	1.0	1.6	1.1	A-	
1611	686523	2	2	460	.583	.117	.583	.083	.200	.017	.512	-.234	.512	-.204	-.248	-1.648	0.103	-2.8	0.9	-3.0	0.8	A+	
1612	686525	2	2	460	.554	.130	.554	.067	.228	.020	.543	-.328	.543	-.207	-.198	-1.511	0.103	-3.8	0.9	-3.3	0.8	A+	
1613	684021	2	2	460	.663	.663	.130	.122	.059	.026	.437	.437	-.207	-.133	-.278	-2.057	0.107	-1.1	1.0	-0.8	1.0	A+	
1614	684018	2	2	460	.391	.159	.120	.391	.302	.028	.325	-.258	-.259	.325	.098	-0.724	0.104	1.6	1.1	2.0	1.1	A-	
1615	684019	2	2	460	.441	.191	.441	.174	.157	.037	.400	-.229	.400	-.070	-.166	-0.969	0.102	0.0	1.0	-0.3	1.0	A+	
1616	684020	2	2	460	.294	.267	.228	.293	.174	.037	.274	-.133	-.035	.274	-.075	-0.211	0.110	1.2	1.1	2.2	1.2	A+	
1617	684032	2	2	447	.461	.237	.461	.139	.139	.025	.551	-.279	.551	-.122	-.235	-0.856	0.109	-1.9	0.9	-1.8	0.9	A-	
1618	684030	2	2	447	.465	.210	.465	.121	.177	.027	.478	-.055	.478	-.291	-.230	-0.880	0.109	0.0	1.0	1.2	1.1	A+	
1619	684031	2	2	447	.732	.732	.058	.076	.105	.029	.620	.620	-.239	-.320	-.327	-2.371	0.120	-3.7	0.8	-3.7	0.6	A-	
1620	683093	2	2	447	.557	.557	.186	.101	.128	.029	.584	.584	-.165	-.306	-.302	-1.367	0.109	-2.7	0.9	-2.0	0.9	B+	
1621	683091	2	2	447	.407	.407	.230	.150	.181	.031	.346	.346	.001	-.212	-.153	-0.568	0.110	3.5	1.2	2.7	1.2	A+	
1622	683092	2	2	447	.606	.094	.606	.132	.139	.029	.534	-.280	.534	-.222	-.210	-1.633	0.111	-1.2	0.9	-1.8	0.9	A+	
1623	683090	2	2	447	.588	.208	.588	.096	.072	.036	.549	-.291	.549	-.222	-.220	-1.535	0.110	-1.6	0.9	-2.2	0.8	A-	
1624	683094	2	2	447	.396	.280	.396	.128	.168	.029	.347	-.200	.347	-.165	.018	-0.506	0.111	3.0	1.2	3.1	1.3	A+	
1625	682478	2	2	444	.399	.399	.137	.113	.327	.025	.316	.316	-.180	-.311	.081	-0.717	0.108	2.8	1.1	2.8	1.2	A-	A-
1626	671417	2	2	444	.282	.282	.164	.106	.414	.034	.223	.223	-.218	-.230	.166	-0.072	0.116	3.3	1.2	3.8	1.4	A-	A-
1627	671414	2	2	444	.653	.144	.653	.088	.088	.027	.621	-.277	.621	-.231	-.356	-2.030	0.112	-4.2	0.8	-4.1	0.7	B+	B-
1628	671418	2	2	444	.480	.205	.104	.480	.180	.032	.464	-.025	-.264	.464	-.275	-1.130	0.107	-0.7	1.0	-0.3	1.0	A-	A-
1629	671416	2	2	444	.383	.383	.196	.173	.214	.034	.290	.290	-.083	-.057	-.118	-0.635	0.109	3.1	1.1	3.5	1.3	A-	A-
1630	671415	2	2	444	.228	.279	.252	.227	.209	.032	.177	-.089	.095	.177	-.098	0.270	0.123	2.3	1.2	4.7	1.7	B+	A-
1631	683295	2	2	450	.667	.667	.067	.067	.176	.024	.432	.432	-.145	-.229	-.206	-2.050	0.108	-1.1	1.0	-1.1	0.9	A+	
1632	683303	2	2	450	.571	.571	.133	.082	.187	.027	.472	.472	-.273	-.248	-.099	-1.571	0.103	-2.1	0.9	-2.0	0.9	A+	
1633	683294	2	2	450	.413	.100	.413	.031	.427	.029	.437	-.129	.437	-.312	-.172	-0.821	0.104	-1.5	1.0	-1.5	0.9	A-	
1634	683296	2	2	450	.209	.209	.191	.209	.367	.024	.162	-.127	-.072	.162	.099	0.311	0.123	1.4	1.1	3.4	1.4	A+	
1635	685396	2	2	450	.458	.189	.167	.458	.156	.031	.350	-.155	-.128	.350	-.078	-1.034	0.103	0.9	1.0	1.4	1.1	A-	
1636	685413	2	2	450	.487	.140	.487	.153	.187	.033	.439	-.143	.439	-.247	-.109	-1.170	0.102	-1.3	1.0	-1.3	0.9	A-	
1637	685397	2	2	450	.362	.229	.220	.158	.362	.031	.382	-.260	-.020	-.072	.382	-0.569	0.106	-0.9	1.0	1.0	1.1	A+	
1638	685399	2	2	450	.673	.673	.104	.104	.084	.033	.617	.617	-.223	-.313	-.291	-2.085	0.109	-5.1	0.8	-4.7	0.7	A+	
1639	685398	2	2	450	.536	.536	.098	.171	.153	.042	.456	.456	-.159	-.130	-.234	-1.401	0.103	-1.8	0.9	-1.2	0.9	B-	
1640	684025	2	2	440	.782	.077	.782	.050	.061	.030	.533	-.211	.533	-.312	-.282	-2.739	0.125	-2.6	0.8	-2.8	0.7	B-	

Table B–3 (continued). Reading/Literature Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
1641	684026	2	2	440	.655	.105	.655	.141	.070	.030	.441	-.221	.441	-.122	-.278	-1.978	0.111	-0.4	1.0	-0.6	1.0	A-	
1642	684027	2	2	440	.525	.107	.525	.120	.220	.027	.505	-.257	.505	-.293	-.128	-1.317	0.106	-2.0	0.9	-1.5	0.9	A-	
1643	684029	2	2	440	.530	.145	.530	.111	.182	.032	.512	-.172	.512	-.227	-.251	-1.340	0.106	-2.2	0.9	-2.2	0.9	A+	
1644	684028	2	2	440	.289	.289	.105	.273	.302	.032	.140	.140	-.063	-.043	.003	-0.090	0.115	4.1	1.2	5.0	1.5	A-	
1645	684023	2	2	453	.225	.194	.309	.225	.245	.026	.169	-.009	.009	.169	-.066	0.175	0.121	2.3	1.2	3.1	1.4	A-	
1646	684033	2	2	453	.583	.049	.313	.583	.026	.029	.437	-.242	-.189	.437	-.203	-1.691	0.105	-0.5	1.0	-0.6	1.0	A+	
1647	684024	2	2	453	.576	.576	.084	.221	.088	.031	.503	.503	-.252	-.179	-.222	-1.658	0.105	-2.2	0.9	-2.4	0.9	A-	
1648	684022	2	2	453	.336	.263	.236	.130	.336	.035	.343	-.068	-.106	-.138	.343	-0.470	0.108	0.4	1.0	2.3	1.2	A+	
1649	683279	2	2	453	.532	.532	.062	.311	.060	.035	.504	.504	-.211	-.235	-.224	-1.442	0.104	-2.5	0.9	-2.0	0.9	A-	
1650	683115	2	2	453	.419	.419	.256	.181	.106	.038	.462	.462	-.085	-.148	-.304	-0.896	0.104	-1.6	0.9	-1.4	0.9	A+	
1651	683117	2	2	453	.263	.214	.221	.263	.263	.040	.286	-.084	-.080	.286	-.052	-0.061	0.115	1.0	1.1	2.1	1.2	A-	
1652	683116	2	2	453	.249	.252	.291	.163	.249	.044	.186	.044	-.136	.010	.186	0.020	0.117	2.3	1.1	4.2	1.5	A-	
1653	682517	3	3	665	.802	.128	.062	.802	.009	.000	.482	-.392	-.202	.482	-.134	-2.076	0.106	-1.6	0.9	-2.1	0.8	A+	A+
1654	682511	3	3	665	.608	.281	.608	.072	.036	.003	.471	-.304	.471	-.209	-.182	-0.912	0.088	-0.6	1.0	-1.0	0.9	A-	A+
1655	671475	3	3	665	.571	.167	.129	.571	.129	.003	.463	-.240	-.254	.463	-.158	-0.728	0.087	0.1	1.0	-0.5	1.0	A-	A-
1656	671481	3	3	665	.758	.140	.080	.758	.020	.003	.412	-.170	-.317	.412	-.217	-1.772	0.099	0.0	1.0	-0.5	1.0	A+	A-
1657	671477	3	3	665	.779	.081	.050	.089	.779	.002	.502	-.281	-.243	-.266	.502	-1.914	0.102	-1.9	0.9	-2.8	0.8	B+	A+
1658	686588	3	3	665	.490	.220	.490	.209	.080	.002	.471	-.326	.471	-.115	-.201	-0.324	0.086	-1.4	1.0	-0.8	1.0	A+	A-
1659	671478	3	3	665	.528	.317	.528	.078	.074	.003	.391	-.096	.391	-.315	-.244	-0.510	0.086	1.9	1.1	1.2	1.1	A+	A+
1660	682505	3	3	665	.865	.062	.045	.029	.865	.000	.496	-.245	-.316	-.271	.496	-2.615	0.122	-2.4	0.8	-2.2	0.7	A+	A+
1661	682498	3	3	665	.838	.051	.026	.086	.838	.000	.483	-.265	-.277	-.272	.483	-2.366	0.114	-2.0	0.9	-2.4	0.7	A-	A-
1662	686501	3	3	665	.562	.180	.182	.071	.562	.005	.460	-.238	-.176	-.243	.460	-0.682	0.087	-0.2	1.0	-0.1	1.0	A+	A+
1663	686500	3	3	665	.250	.251	.400	.250	.092	.008	.218	-.223	.101	.218	-.120	0.967	0.098	2.9	1.2	5.7	1.6	A-	A-
1664	686502	3	3	665	.483	.483	.071	.078	.359	.009	.252	.252	-.133	-.234	-.038	-0.287	0.086	6.0	1.2	5.8	1.3	C+	B-
1665	686498	3	3	665	.495	.307	.126	.059	.495	.014	.488	-.210	-.197	-.286	.488	-0.346	0.086	-1.5	1.0	-0.6	1.0	B-	A-
1666	686499	3	3	665	.379	.274	.379	.167	.162	.018	.243	-.111	.243	-.137	-.005	0.236	0.088	5.3	1.2	5.9	1.4	A-	A-
1667	682492	3	3	665	.883	.071	.021	.017	.883	.009	.547	-.428	-.193	-.217	.547	-2.804	0.129	-2.9	0.8	-4.4	0.4	A-	A-
1668	686552	3	3	665	.381	.355	.170	.078	.380	.017	.461	-.133	-.201	-.255	.461	0.228	0.088	-1.4	1.0	-0.5	1.0	A-	B-
1669	686546	3	3	665	.582	.582	.152	.141	.105	.020	.505	.505	-.233	-.274	-.176	-0.781	0.087	-2.4	0.9	-2.2	0.9	C-	A-
1670	686545	3	3	665	.614	.152	.072	.614	.146	.017	.528	-.318	-.304	.528	-.132	-0.943	0.088	-2.6	0.9	-2.9	0.9	A+	A-
1671	686544	3	3	665	.278	.194	.278	.340	.167	.021	.202	-.182	.202	-.051	.058	0.792	0.095	3.7	1.2	6.2	1.6	A-	A+
1672	686543	3	3	665	.200	.541	.146	.089	.200	.024	.147	.212	-.206	-.246	.147	1.303	0.105	3.8	1.2	4.3	1.6	B+	A-
1673	682510	3	3	697	.818	.093	.069	.818	.019	.001	.486	-.303	-.299	.486	-.168	-2.432	0.105	-2.6	0.9	-2.9	0.7	A+	A-
1674	671530	3	3	697	.412	.412	.297	.135	.156	.000	.404	.404	-.180	-.167	-.164	-0.233	0.084	0.1	1.0	0.5	1.0	A-	A-
1675	671528	3	3	697	.759	.052	.143	.759	.040	.006	.554	-.240	-.372	.554	-.250	-2.023	0.096	-3.9	0.8	-4.7	0.7	C+	A-

Table B–3 (continued). Reading/Literature Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M /F	W /B
1676	671532	3	3	697	.585	.253	.585	.088	.072	.003	.507	-.267	.507	-.233	-.243	-1.074	0.084	-2.7	0.9	-2.7	0.9	A+	A-
1677	686585	3	3	697	.199	.143	.248	.406	.199	.003	.199	-.180	.032	-.060	.199	0.977	0.101	1.6	1.1	6.9	1.8	A+	B-
1678	686586	3	3	697	.475	.283	.098	.475	.145	.000	.366	-.052	-.225	.366	-.262	-0.540	0.083	2.2	1.1	1.8	1.1	B+	A-
1679	686587	3	3	697	.119	.683	.119	.122	.075	.001	.014	.203	.014	-.116	-.225	1.664	0.123	2.2	1.2	7.2	2.4	A-	A+
1680	682504	3	3	697	.531	.327	.531	.060	.080	.001	.431	-.168	.431	-.245	-.273	-0.808	0.083	-0.4	1.0	0.6	1.0	A+	B-
1681	682497	3	3	697	.760	.129	.082	.760	.024	.004	.485	-.272	-.251	.485	-.242	-2.032	0.096	-2.4	0.9	-3.1	0.8	A+	A+
1682	671553	3	3	697	.445	.306	.103	.445	.138	.009	.460	-.297	-.181	.460	-.057	-0.394	0.083	-1.5	1.0	-1.3	0.9	A-	A+
1683	671567	3	3	697	.799	.057	.070	.063	.799	.010	.533	-.242	-.293	-.261	.533	-2.294	0.101	-3.4	0.8	-4.1	0.7	B-	A-
1684	671563	3	3	697	.426	.244	.426	.090	.227	.013	.393	-.071	.393	-.264	-.164	-0.303	0.084	0.9	1.0	1.0	1.1	A-	A+
1685	671561	3	3	697	.551	.551	.222	.102	.110	.014	.399	.399	-.188	-.187	-.137	-0.906	0.083	0.5	1.0	0.3	1.0	A+	A-
1686	671555	3	3	697	.294	.172	.225	.294	.293	.016	.348	.003	-.199	.348	-.120	0.382	0.090	0.4	1.0	2.5	1.2	A+	A+
1687	682491	3	3	697	.818	.818	.055	.060	.052	.016	.503	.503	-.284	-.286	-.165	-2.432	0.105	-2.7	0.8	-3.6	0.7	A-	B-
1688	686577	3	3	697	.235	.419	.189	.235	.138	.019	.181	.124	-.172	.181	-.124	0.735	0.096	2.9	1.2	4.4	1.4	A-	B+
1689	686576	3	3	697	.286	.320	.286	.129	.242	.023	.299	.015	.299	-.156	-.142	0.431	0.091	1.6	1.1	3.1	1.2	A+	A-
1690	686579	3	3	697	.466	.132	.247	.466	.135	.020	.417	-.128	-.161	.417	-.200	-0.498	0.083	-0.1	1.0	0.5	1.0	A+	A-
1691	686578	3	3	697	.416	.416	.171	.260	.132	.022	.536	.536	-.165	-.252	-.186	-0.254	0.084	-4.6	0.9	-3.7	0.8	A-	A+
1692	686575	3	3	697	.254	.244	.300	.254	.181	.022	.200	-.013	-.066	.200	-.059	0.618	0.094	3.4	1.2	3.7	1.3	A-	A+
1693	682515	3	3	686	.876	.054	.039	.031	.876	.000	.492	-.282	-.292	-.242	.492	-2.882	0.125	-1.8	0.9	-3.2	0.6	B+	A+
1694	686589	3	3	686	.483	.219	.169	.483	.130	.000	.459	-.269	-.202	.459	-.126	-0.399	0.085	-1.0	1.0	0.7	1.0	A+	A-
1695	671544	3	3	686	.434	.292	.092	.434	.178	.004	.370	-.151	-.311	.370	-.055	-0.158	0.086	1.9	1.1	2.0	1.1	A+	A-
1696	671550	3	3	686	.388	.232	.388	.157	.220	.003	.296	-.150	.296	-.102	-.105	0.080	0.087	4.0	1.1	5.3	1.4	A+	A-
1697	671547	3	3	686	.889	.026	.051	.031	.889	.003	.482	-.217	-.282	-.313	.482	-3.030	0.131	-1.6	0.9	-3.1	0.6	A+	A+
1698	686590	3	3	686	.729	.729	.111	.087	.073	.000	.477	.477	-.228	-.239	-.281	-1.718	0.095	-1.1	1.0	-1.6	0.9	A+	A+
1699	686591	3	3	686	.657	.105	.089	.657	.147	.001	.460	-.265	-.169	.460	-.240	-1.300	0.090	-0.6	1.0	0.0	1.0	A+	A+
1700	682509	3	3	686	.557	.080	.286	.557	.074	.003	.445	-.237	-.214	.445	-.200	-0.771	0.086	0.1	1.0	0.0	1.0	A-	B+
1701	686447	3	3	686	.783	.099	.783	.067	.045	.006	.526	-.258	.526	-.333	-.209	-2.077	0.102	-2.5	0.9	-2.8	0.7	A+	A-
1702	686448	3	3	686	.563	.563	.048	.163	.217	.009	.418	.418	-.248	-.232	-.126	-0.801	0.086	1.0	1.0	0.9	1.1	A+	A-
1703	686451	3	3	686	.410	.410	.156	.306	.120	.009	.214	.214	-.177	.121	-.249	-0.032	0.086	6.5	1.2	5.7	1.4	A-	A+
1704	686450	3	3	686	.270	.098	.356	.267	.270	.010	.105	-.248	.036	.067	.105	0.736	0.094	5.6	1.3	6.9	1.8	A-	A+
1705	686449	3	3	686	.356	.223	.356	.168	.245	.009	.231	-.053	.231	-.161	-.024	0.249	0.088	4.7	1.2	6.2	1.5	B-	A-
1706	682503	3	3	686	.831	.831	.077	.055	.028	.009	.511	.511	-.315	-.249	-.199	-2.451	0.111	-2.1	0.9	-2.5	0.7	A+	A-
1707	682496	3	3	686	.653	.090	.653	.207	.038	.012	.480	-.243	.480	-.233	-.233	-1.276	0.090	-1.0	1.0	-1.5	0.9	A+	B-
1708	686567	3	3	686	.416	.232	.134	.201	.415	.017	.379	-.161	-.138	-.118	.379	-0.062	0.086	1.2	1.0	1.6	1.1	A-	A-
1709	686566	3	3	686	.462	.214	.211	.090	.462	.022	.513	-.218	-.193	-.197	.513	-0.297	0.085	-3.3	0.9	-1.4	0.9	A-	B-
1710	686568	3	3	686	.867	.035	.867	.052	.029	.016	.522	-.249	.522	-.325	-.203	-2.790	0.122	-2.4	0.8	-3.1	0.6	A+	A-

Table B–3 (continued). Reading/Literature Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
1711	686571	3	3	686	.313	.222	.138	.313	.310	.016	.323	-.239	-.125	.323	.038	0.481	0.091	1.1	1.0	3.4	1.3	A+	A-
1712	686572	3	3	686	.376	.197	.146	.376	.261	.020	.397	-.183	-.159	.397	-.085	0.141	0.087	0.5	1.0	1.1	1.1	A-	B-
1713	682514	3	3	692	.436	.214	.275	.436	.069	.006	.400	-.302	-.087	.400	-.125	0.032	0.086	1.5	1.1	1.9	1.1	B-	A-
1714	686509	3	3	692	.646	.132	.646	.084	.139	.000	.454	-.111	.454	-.281	-.294	-1.044	0.089	0.1	1.0	-0.9	1.0	A+	A-
1715	686508	3	3	692	.634	.634	.088	.149	.129	.000	.436	.436	-.276	-.236	-.142	-0.981	0.088	0.3	1.0	-0.2	1.0	A-	A-
1716	686510	3	3	692	.298	.377	.173	.149	.298	.003	.222	.080	-.143	-.228	.222	0.777	0.092	4.7	1.2	5.9	1.5	A+	A-
1717	686511	3	3	692	.718	.081	.101	.718	.097	.003	.590	-.322	-.355	.590	-.226	-1.459	0.094	-4.4	0.8	-4.7	0.7	A+	A-
1718	686472	3	3	692	.529	.529	.173	.191	.107	.000	.485	.485	-.268	-.150	-.264	-0.434	0.085	-1.0	1.0	-0.7	1.0	A-	A+
1719	682508	3	3	692	.895	.039	.035	.895	.032	.000	.481	-.324	-.263	.481	-.209	-2.895	0.133	-1.9	0.8	-3.2	0.5	A+	A+
1720	686515	3	3	692	.526	.092	.171	.204	.526	.007	.500	-.271	-.139	-.250	.500	-0.420	0.085	-1.0	1.0	-1.6	0.9	A-	A-
1721	686516	3	3	692	.698	.111	.698	.069	.113	.009	.601	-.329	.601	-.279	-.262	-1.338	0.092	-4.7	0.8	-4.3	0.7	A+	A+
1722	686514	3	3	692	.778	.072	.098	.777	.043	.009	.514	-.304	-.258	.514	-.188	-1.845	0.101	-2.0	0.9	-2.8	0.7	A-	A+
1723	686530	3	3	692	.634	.634	.059	.267	.027	.012	.382	.382	-.264	-.160	-.187	-0.981	0.088	2.4	1.1	2.0	1.1	B-	B-
1724	686517	3	3	692	.256	.185	.256	.249	.298	.013	.236	-.126	.236	-.076	.008	1.032	0.096	2.9	1.1	5.3	1.6	A+	A-
1725	682502	3	3	692	.857	.039	.062	.030	.857	.012	.511	-.338	-.240	-.186	.511	-2.490	0.118	-2.5	0.8	-2.9	0.6	A-	A-
1726	682495	3	3	692	.733	.124	.058	.071	.733	.014	.532	-.302	-.177	-.273	.532	-1.548	0.095	-2.1	0.9	-2.2	0.8	A+	A+
1727	686570	3	3	692	.786	.064	.074	.053	.786	.023	.600	-.273	-.354	-.247	.600	-1.907	0.102	-3.9	0.8	-4.3	0.6	B-	A-
1728	686562	3	3	692	.621	.118	.088	.155	.621	.017	.519	-.170	-.267	-.267	.519	-0.911	0.088	-1.5	0.9	-2.1	0.9	A+	A+
1729	686563	3	3	692	.314	.334	.314	.146	.185	.022	.208	-.016	.208	-.133	-.037	0.686	0.091	5.4	1.2	7.0	1.6	A+	A-
1730	686565	3	3	692	.455	.455	.199	.095	.231	.019	.361	.361	-.132	-.203	-.103	-0.063	0.085	2.8	1.1	2.4	1.1	A-	A+
1731	686592	3	3	692	.166	.474	.166	.169	.171	.020	.148	.125	.148	-.209	-.040	1.678	0.110	2.1	1.1	6.1	2.0	A+	B+
1732	686564	3	3	692	.413	.186	.139	.413	.237	.025	.230	-.199	-.072	.230	.035	0.150	0.086	7.1	1.3	7.2	1.5	A-	A-
1733	682516	3	3	688	.455	.227	.231	.087	.455	.000	.535	-.216	-.331	-.129	.535	-0.392	0.084	-4.6	0.9	-4.0	0.8	A-	
1734	686503	3	3	688	.718	.718	.128	.070	.084	.000	.424	.424	-.292	-.187	-.164	-1.711	0.091	-0.9	1.0	-0.8	0.9	A-	
1735	686507	3	3	688	.849	.849	.067	.057	.026	.001	.448	.448	-.242	-.275	-.208	-2.612	0.112	-2.0	0.9	-2.6	0.7	A+	
1736	686506	3	3	688	.320	.182	.368	.131	.320	.000	.237	-.154	.030	-.193	.237	0.289	0.089	3.5	1.1	4.7	1.3	A-	
1737	686505	3	3	688	.267	.350	.179	.267	.203	.000	.198	.077	-.199	.198	-.119	0.585	0.093	3.2	1.2	4.2	1.3	A-	
1738	686504	3	3	688	.545	.182	.124	.545	.150	.000	.406	-.194	-.299	.406	-.081	-0.822	0.083	0.3	1.0	0.3	1.0	A+	
1739	682513	3	3	688	.942	.942	.029	.020	.007	.001	.410	.410	-.264	-.247	-.184	-3.762	0.167	-1.0	0.9	-3.2	0.4	A-	
1740	682507	3	3	688	.821	.041	.128	.010	.821	.000	.202	-.123	-.099	-.202	.202	-2.387	0.106	1.4	1.1	3.4	1.4	A+	
1741	686513	3	3	688	.478	.182	.144	.192	.478	.004	.383	-.160	-.181	-.154	.383	-0.503	0.083	0.5	1.0	0.7	1.0	A+	
1742	686527	3	3	688	.641	.163	.089	.641	.103	.004	.576	-.335	-.237	.576	-.263	-1.295	0.086	-5.6	0.8	-5.3	0.7	A-	
1743	686528	3	3	688	.640	.640	.132	.121	.102	.006	.515	.515	-.213	-.288	-.240	-1.287	0.086	-3.2	0.9	-3.0	0.9	A+	
1744	686526	3	3	688	.608	.113	.608	.166	.108	.006	.468	-.276	.468	-.239	-.147	-1.126	0.085	-2.2	0.9	-1.3	0.9	A+	
1745	686529	3	3	688	.326	.092	.304	.273	.326	.006	.359	-.201	-.160	-.065	.359	0.258	0.088	-0.1	1.0	1.7	1.1	A+	

Table B–3 (continued). Reading/Literature Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M /F	W /B
1746	682500	3	3	688	.664	.160	.664	.065	.105	.006	.390	-.136	.390	-.204	-.249	-1.416	0.087	0.1	1.0	0.0	1.0	A+	
1747	682494	3	3	688	.545	.073	.102	.273	.545	.007	.343	-.278	-.321	.012	.343	-0.822	0.083	2.2	1.1	2.7	1.1	A-	
1748	687070	3	3	688	.295	.295	.358	.195	.142	.010	.246	.246	-.243	.063	-.038	0.425	0.091	3.5	1.2	2.7	1.2	A-	
1749	687071	3	3	688	.640	.090	.094	.640	.164	.012	.421	-.216	-.321	.421	-.100	-1.287	0.086	-1.2	1.0	-0.6	1.0	B-	
1750	687068	3	3	688	.448	.448	.090	.177	.273	.012	.351	.351	-.261	-.216	-.017	-0.357	0.084	2.1	1.1	1.6	1.1	A-	
1751	687067	3	3	688	.265	.331	.160	.233	.265	.012	.331	.051	-.267	-.151	.331	0.602	0.093	0.6	1.0	1.9	1.1	A+	
1752	687069	3	3	688	.355	.169	.355	.260	.203	.013	.358	-.095	.358	-.114	-.185	0.105	0.087	0.6	1.0	1.3	1.1	A-	
1753	682512	3	3	681	.796	.097	.090	.016	.796	.001	.412	-.325	-.172	-.133	.412	-2.159	0.103	-0.8	1.0	-1.3	0.9	A-	A-
1754	686483	3	3	681	.652	.122	.652	.182	.043	.001	.488	-.326	.488	-.251	-.139	-1.288	0.088	-2.0	0.9	-2.1	0.9	A-	A-
1755	686479	3	3	681	.609	.167	.609	.132	.091	.000	.414	-.188	.414	-.224	-.194	-1.066	0.086	0.3	1.0	-1.0	1.0	B+	A-
1756	686478	3	3	681	.256	.201	.200	.342	.256	.001	.303	-.219	-.223	.098	.303	0.762	0.095	0.8	1.0	3.5	1.3	A-	A+
1757	686480	3	3	681	.256	.280	.184	.256	.276	.004	.182	-.050	-.118	.182	-.023	0.762	0.095	3.1	1.2	4.6	1.4	A-	A+
1758	686481	3	3	681	.673	.075	.117	.126	.673	.009	.469	-.233	-.344	-.129	.469	-1.399	0.090	-1.7	0.9	-1.2	0.9	C+	A+
1759	686482	3	3	681	.554	.554	.148	.195	.103	.000	.421	.421	-.210	-.199	-.185	-0.787	0.085	0.1	1.0	-0.7	1.0	B+	A+
1760	682506	3	3	681	.759	.759	.090	.047	.104	.000	.384	.384	-.240	-.207	-.170	-1.910	0.097	0.0	1.0	-0.5	1.0	A+	A-
1761	686518	3	3	681	.442	.123	.332	.090	.442	.013	.357	-.262	.017	-.269	.357	-0.242	0.085	2.2	1.1	1.5	1.1	A-	A-
1762	686519	3	3	681	.413	.107	.282	.413	.185	.013	.410	-.189	-.135	.410	-.162	-0.096	0.086	0.0	1.0	0.4	1.0	A-	A+
1763	686522	3	3	681	.536	.088	.189	.170	.536	.016	.500	-.290	-.117	-.261	.500	-0.701	0.085	-2.7	0.9	-2.8	0.9	A-	A+
1764	686521	3	3	681	.373	.373	.189	.313	.104	.021	.255	.255	-.167	.066	-.193	0.105	0.087	4.2	1.2	4.6	1.3	A+	A+
1765	686520	3	3	681	.319	.267	.261	.319	.134	.019	.211	.040	-.100	.211	-.137	0.395	0.090	3.8	1.2	5.6	1.4	A+	A+
1766	682499	3	3	681	.847	.847	.041	.066	.029	.016	.558	.558	-.301	-.318	-.210	-2.568	0.114	-3.4	0.8	-4.4	0.5	A-	A+
1767	682493	3	3	681	.797	.044	.797	.032	.109	.018	.401	-.232	.401	-.164	-.191	-2.170	0.103	-0.8	1.0	-0.4	1.0	A-	A-
1768	686584	3	3	681	.676	.072	.675	.094	.134	.025	.528	-.271	.528	-.297	-.178	-1.415	0.090	-3.4	0.9	-3.0	0.8	A+	A+
1769	686580	3	3	681	.466	.465	.078	.283	.148	.025	.413	.413	-.217	-.110	-.201	-0.357	0.085	0.3	1.0	0.4	1.0	A-	A+
1770	686583	3	3	681	.269	.166	.269	.140	.402	.023	.141	-.267	.141	-.188	.263	0.681	0.094	4.5	1.2	7.6	1.8	A+	A-
1771	686581	3	3	681	.361	.110	.294	.361	.209	.026	.228	-.138	.061	.228	-.166	0.166	0.088	4.5	1.2	5.1	1.3	A-	A+
1772	686582	3	3	681	.637	.637	.062	.179	.097	.025	.432	.432	-.147	-.253	-.159	-1.210	0.088	-0.3	1.0	-1.3	0.9	A-	B-
1773	661504	3	3	691	.949	.949	.026	.014	.010	.000	.303	.303	-.261	-.110	-.119	-3.820	0.181	-0.3	1.0	-1.9	0.6	A-	A-
1774	661505	3	3	691	.501	.333	.501	.098	.067	.001	.443	-.244	.443	-.177	-.219	-0.367	0.085	0.3	1.0	-0.1	1.0	B-	A-
1775	661506	3	3	691	.874	.055	.019	.874	.052	.000	.406	-.304	-.111	.406	-.227	-2.712	0.123	-0.9	0.9	-1.1	0.8	A+	A+
1776	661507	3	3	691	.973	.014	.004	.007	.973	.001	.259	-.188	-.095	-.151	.259	-4.500	0.240	-0.5	0.9	-1.9	0.5	A+	A-
1777	663040	3	3	691	.262	.327	.262	.068	.340	.003	.276	-.169	.276	-.236	.042	0.920	0.095	2.5	1.1	5.8	1.6	A+	A+
1778	663039	3	3	691	.385	.135	.260	.385	.217	.003	.343	-.119	-.216	.343	-.065	0.222	0.087	2.6	1.1	3.7	1.2	A-	A-
1779	663042	3	3	691	.408	.201	.207	.408	.182	.001	.322	-.157	-.162	.322	-.070	0.102	0.086	4.5	1.2	4.4	1.3	A-	A+
1780	663041	3	3	691	.544	.544	.075	.120	.255	.006	.417	.417	-.265	-.202	-.154	-0.585	0.085	1.1	1.0	1.3	1.1	A-	A+

Table B–3 (continued). Reading/Literature Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
1781	663038	3	3	691	.605	.181	.605	.116	.093	.006	.450	-.244	.450	-.211	-.172	-0.896	0.087	0.2	1.0	0.4	1.0	A-	A-
1782	662754	3	3	691	.664	.664	.078	.191	.056	.010	.458	.458	-.165	-.302	-.164	-1.213	0.090	-0.8	1.0	-0.9	0.9	A+	A-
1783	662755	3	3	691	.421	.323	.162	.080	.421	.014	.492	-.217	-.160	-.218	.492	0.035	0.086	-1.8	0.9	-0.8	1.0	A-	A-
1784	662756	3	3	691	.360	.298	.234	.360	.094	.013	.331	-.025	-.137	.331	-.224	0.353	0.088	3.6	1.1	4.0	1.3	A+	A-
1785	662751	3	3	691	.606	.606	.116	.110	.151	.017	.430	.430	-.148	-.240	-.174	-0.903	0.087	0.9	1.0	0.4	1.0	A+	A+
1786	662752	3	3	691	.575	.142	.575	.182	.087	.014	.554	-.264	.554	-.254	-.217	-0.739	0.086	-3.3	0.9	-3.1	0.8	A-	B-
1787	662438	3	3	691	.439	.085	.149	.307	.438	.020	.470	-.177	-.274	-.139	.470	-0.054	0.086	-0.7	1.0	-0.4	1.0	A-	A-
1788	662435	3	3	691	.540	.540	.151	.136	.156	.017	.478	.478	-.209	-.196	-.192	-0.563	0.085	-0.4	1.0	-0.5	1.0	A-	A-
1789	662436	3	3	691	.371	.236	.370	.181	.192	.020	.257	-.066	.257	-.127	-.062	0.299	0.088	5.4	1.2	5.7	1.4	A+	A+
1790	662437	3	3	691	.731	.111	.059	.731	.077	.022	.527	-.264	-.266	.527	-.217	-1.601	0.095	-2.3	0.9	-3.0	0.8	A+	A-
1791	661526	3	3	1370	.642	.112	.125	.109	.642	.011	.519	-.230	-.211	-.286	.519	-1.160	0.062	-4.5	0.9	-4.4	0.8	B+	A-
1792	661508	3	3	1370	.491	.041	.491	.429	.028	.012	.328	-.265	.328	-.136	-.162	-0.398	0.060	5.7	1.1	4.8	1.2	A+	A+
1793	661502	3	3	679	.844	.844	.072	.027	.054	.003	.159	.159	-.013	-.218	-.073	-2.498	0.112	1.6	1.1	3.1	1.4	A+	
1794	661522	3	3	679	.795	.060	.050	.795	.090	.004	.415	-.242	-.305	.415	-.134	-2.124	0.102	-1.2	0.9	-1.8	0.8	A+	
1795	663060	3	3	679	.757	.071	.100	.072	.757	.000	.446	-.251	-.212	-.244	.446	-1.870	0.096	-1.4	0.9	-2.2	0.8	A+	
1796	663056	3	3	679	.529	.122	.529	.159	.187	.003	.390	-.181	.390	-.214	-.148	-0.663	0.084	0.6	1.0	0.6	1.0	A-	
1797	663057	3	3	679	.555	.152	.221	.555	.072	.000	.401	-.200	-.175	.401	-.212	-0.791	0.085	0.4	1.0	-0.3	1.0	A+	
1798	663058	3	3	679	.597	.069	.080	.255	.596	.000	.450	-.278	-.260	-.183	.450	-0.993	0.085	-0.9	1.0	-0.9	1.0	B-	
1799	663059	3	3	679	.866	.866	.044	.049	.040	.001	.471	.471	-.205	-.293	-.268	-2.697	0.119	-2.0	0.9	-3.5	0.6	A+	
1800	662914	3	3	679	.542	.133	.542	.169	.144	.012	.443	-.110	.443	-.302	-.155	-0.727	0.084	-0.8	1.0	-0.8	1.0	A+	
1801	662915	3	3	679	.321	.165	.370	.131	.321	.013	.334	-.141	-.035	-.206	.334	0.373	0.090	1.0	1.0	2.6	1.2	A-	
1802	662913	3	3	679	.548	.548	.053	.271	.113	.015	.445	.445	-.114	-.273	-.185	-0.755	0.084	-0.9	1.0	-0.6	1.0	A-	
1803	662912	3	3	679	.526	.146	.526	.109	.200	.019	.456	-.261	.456	-.182	-.130	-0.648	0.084	-1.3	1.0	-1.6	0.9	A+	
1804	662916	3	3	679	.482	.482	.222	.174	.099	.024	.288	.288	-.020	-.153	-.176	-0.436	0.084	4.1	1.1	4.2	1.2	A-	
1805	662745	3	3	679	.563	.563	.216	.093	.103	.025	.462	.462	-.244	-.236	-.107	-0.826	0.085	-1.3	1.0	-1.0	1.0	A-	
1806	662746	3	3	679	.546	.277	.072	.546	.078	.027	.487	-.262	-.208	.487	-.154	-0.748	0.084	-2.2	0.9	-1.4	0.9	A+	
1807	662750	3	3	679	.476	.476	.253	.143	.102	.027	.570	.570	-.271	-.233	-.182	-0.408	0.084	-5.4	0.8	-4.7	0.8	A+	
1808	662749	3	3	679	.695	.090	.695	.081	.108	.027	.508	-.172	.508	-.209	-.314	-1.506	0.090	-3.0	0.9	-2.7	0.8	A+	
1809	662748	3	3	679	.437	.215	.178	.143	.437	.027	.386	-.118	-.205	-.099	.386	-0.222	0.085	1.1	1.0	1.6	1.1	A-	
1810	662747	3	3	679	.196	.196	.262	.196	.315	.031	.076	-.141	.046	.076	.069	1.151	0.104	3.6	1.2	6.6	1.8	A-	
1811	661523	3	3	691	.659	.084	.221	.658	.036	.000	.492	-.338	-.255	.492	-.182	-1.348	0.089	-1.9	0.9	-1.5	0.9	B-	A-
1812	661524	3	3	691	.933	.032	.933	.022	.013	.000	.368	-.270	.368	-.199	-.137	-3.653	0.160	-1.1	0.9	-2.4	0.5	A+	C-
1813	661525	3	3	691	.902	.902	.035	.043	.016	.004	.392	.392	-.264	-.186	-.196	-3.183	0.135	-1.1	0.9	-1.5	0.7	A+	A-
1814	661503	3	3	691	.685	.051	.161	.685	.103	.001	.552	-.212	-.297	.552	-.324	-1.493	0.091	-3.5	0.9	-3.9	0.7	B+	A-
1815	662981	3	3	691	.672	.097	.048	.182	.671	.001	.477	-.304	-.204	-.237	.477	-1.420	0.090	-1.5	0.9	-1.4	0.9	A+	A+

Table B–3 (continued). Reading/Literature Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M /F	W /B
1816	662982	3	3	691	.329	.156	.318	.329	.191	.006	.259	-.108	-.054	.259	-.140	0.360	0.090	3.9	1.2	5.5	1.4	A-	A+
1817	662983	3	3	691	.514	.185	.155	.514	.145	.001	.365	-.182	-.139	.365	-.166	-0.600	0.085	2.8	1.1	2.5	1.1	A-	A+
1818	662985	3	3	691	.417	.263	.187	.129	.417	.004	.444	-.119	-.217	-.222	.444	-0.111	0.086	-0.4	1.0	0.1	1.0	A+	A-
1819	662984	3	3	691	.399	.201	.399	.321	.074	.004	.392	-.188	.392	-.133	-.197	-0.021	0.087	1.5	1.1	1.7	1.1	A+	A-
1820	662763	3	3	691	.375	.200	.276	.375	.137	.012	.437	-.249	-.042	.437	-.228	0.108	0.088	-0.4	1.0	0.2	1.0	A+	A+
1821	662762	3	3	691	.441	.185	.201	.155	.441	.017	.456	-.149	-.205	-.194	.456	-0.236	0.086	-0.7	1.0	0.2	1.0	A+	B+
1822	662766	3	3	691	.708	.088	.041	.149	.708	.014	.526	-.272	-.219	-.285	.526	-1.627	0.092	-2.8	0.9	-2.8	0.8	A-	A+
1823	662765	3	3	691	.401	.182	.401	.217	.179	.020	.303	-.114	.303	-.165	-.046	-0.028	0.087	3.8	1.1	4.2	1.3	A+	B+
1824	662764	3	3	691	.538	.538	.171	.148	.122	.022	.521	.521	-.284	-.203	-.179	-0.723	0.085	-2.6	0.9	-2.8	0.9	A+	A+
1825	662446	3	3	691	.269	.421	.269	.181	.101	.027	.265	.038	.265	-.196	-.116	0.709	0.095	2.7	1.1	3.8	1.3	A-	A+
1826	662445	3	3	691	.344	.214	.344	.307	.107	.027	.181	-.204	-.181	.152	-.134	0.272	0.089	6.5	1.3	7.5	1.6	A-	A-
1827	662444	3	3	691	.447	.269	.168	.447	.081	.035	.383	-.140	-.146	.383	-.162	-0.266	0.086	1.9	1.1	3.1	1.2	A-	A-
1828	662443	3	3	691	.505	.139	.139	.185	.505	.032	.504	-.176	-.199	-.243	.504	-0.556	0.085	-2.2	0.9	-0.6	1.0	A-	A-
1829	662448	3	3	691	.207	.253	.221	.284	.207	.035	.092	-.157	.056	.084	.092	1.124	0.102	4.8	1.3	6.1	1.8	A+	A+
1830	662447	3	3	691	.566	.566	.146	.149	.104	.035	.551	.551	-.273	-.226	-.224	-0.862	0.086	-3.6	0.9	-3.5	0.8	A-	A-
1831	682524	4	4	629	.715	.202	.041	.715	.041	.000	.285	-.156	-.187	.285	-.145	-1.014	0.100	4.6	1.2	2.8	1.3	A+	A-
1832	686493	4	4	629	.876	.033	.041	.048	.876	.002	.489	-.230	-.280	-.301	.489	-2.282	0.130	-2.0	0.8	-3.0	0.5	A+	B-
1833	686497	4	4	629	.795	.060	.795	.040	.103	.002	.507	-.260	.507	-.249	-.300	-1.561	0.110	-1.7	0.9	-2.1	0.7	A+	A-
1834	686494	4	4	629	.801	.092	.075	.032	.801	.000	.477	-.318	-.203	-.255	.477	-1.610	0.111	-1.4	0.9	-1.1	0.8	A+	A-
1835	686599	4	4	629	.188	.353	.188	.134	.321	.005	.119	-.038	.119	-.125	.049	2.147	0.115	3.9	1.3	8.2	2.7	A-	A+
1836	686496	4	4	629	.522	.335	.056	.521	.087	.000	.529	-.248	-.246	.529	-.321	0.095	0.093	-1.0	1.0	-0.4	1.0	A-	A-
1837	682530	4	4	629	.615	.024	.121	.615	.237	.003	.511	-.157	-.365	.511	-.234	-0.420	0.095	-0.3	1.0	-0.5	1.0	A+	A+
1838	682537	4	4	629	.785	.081	.785	.054	.075	.005	.574	-.296	.574	-.294	-.302	-1.490	0.108	-3.6	0.8	-3.1	0.6	A-	A+
1839	687450	4	4	629	.795	.072	.070	.795	.051	.013	.500	-.196	-.280	.500	-.272	-1.561	0.110	-1.9	0.9	-1.6	0.8	A-	B-
1840	687444	4	4	629	.518	.049	.518	.145	.275	.013	.510	-.181	.510	-.295	-.208	0.112	0.093	-0.1	1.0	-0.1	1.0	A+	A+
1841	687443	4	4	629	.483	.059	.382	.062	.483	.014	.481	-.285	-.182	-.250	.481	0.302	0.093	0.7	1.0	1.5	1.1	A+	A+
1842	687448	4	4	629	.688	.688	.111	.086	.102	.013	.616	.616	-.281	-.260	-.338	-0.847	0.098	-4.3	0.8	-3.0	0.7	A-	A-
1843	687445	4	4	629	.421	.151	.213	.196	.421	.019	.475	-.214	-.077	-.255	.475	0.641	0.094	0.7	1.0	0.5	1.0	A+	A-
1844	687447	4	4	629	.545	.215	.545	.127	.095	.017	.598	-.215	.598	-.247	-.341	-0.034	0.093	-3.3	0.9	-2.6	0.8	A+	A-
1845	682543	4	4	629	.800	.070	.079	.800	.035	.016	.545	-.282	-.255	.545	-.279	-1.598	0.111	-3.0	0.8	-2.4	0.7	A-	A+
1846	686551	4	4	629	.606	.183	.606	.103	.089	.019	.581	-.345	.581	-.222	-.202	-0.367	0.094	-2.7	0.9	-2.7	0.8	A-	A-
1847	686548	4	4	629	.579	.186	.126	.092	.579	.017	.577	-.297	-.191	-.279	.577	-0.217	0.094	-2.5	0.9	-2.6	0.8	A+	A-
1848	686547	4	4	629	.599	.095	.599	.073	.213	.019	.526	-.269	.526	-.196	-.250	-0.331	0.094	-0.8	1.0	-0.8	0.9	A-	A-
1849	686550	4	4	629	.542	.137	.542	.130	.172	.019	.473	-.256	.473	-.344	-.017	-0.017	0.093	1.2	1.1	0.4	1.0	A+	A+
1850	686549	4	4	629	.552	.552	.116	.116	.197	.019	.418	.418	-.123	-.227	-.175	-0.069	0.093	2.9	1.1	2.5	1.2	A+	A+

Table B–3 (continued). Reading/Literature Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M /F	W /B
1851	682519	4	4	622	.614	.050	.614	.228	.106	.002	.356	-.206	.356	-.219	-.119	-0.116	0.093	2.9	1.1	1.9	1.1	A-	A-
1852	686435	4	4	622	.847	.847	.071	.037	.045	.000	.464	.464	-.319	-.210	-.220	-1.648	0.121	-1.2	0.9	-2.0	0.7	B+	A-
1853	686432	4	4	622	.667	.058	.039	.236	.667	.000	.450	-.226	-.235	-.268	.450	-0.406	0.095	0.0	1.0	-0.2	1.0	A+	A-
1854	686430	4	4	622	.804	.061	.804	.103	.032	.000	.499	-.275	.499	-.324	-.192	-1.287	0.111	-1.7	0.9	-1.7	0.8	A+	A-
1855	686434	4	4	622	.470	.257	.087	.183	.469	.003	.245	-.074	-.241	-.045	.245	0.631	0.091	6.5	1.3	6.6	1.4	A+	A-
1856	686431	4	4	622	.521	.280	.130	.521	.069	.000	.441	-.205	-.164	.441	-.287	0.368	0.091	0.3	1.0	0.6	1.0	A+	A+
1857	682525	4	4	622	.752	.137	.752	.082	.029	.000	.435	-.272	.435	-.215	-.211	-0.923	0.103	-0.2	1.0	-0.3	1.0	A+	A-
1858	682532	4	4	622	.915	.035	.915	.027	.023	.000	.442	-.286	.442	-.234	-.219	-2.409	0.152	-1.4	0.9	-1.2	0.7	B-	A-
1859	673190	4	4	622	.826	.109	.826	.032	.027	.005	.417	-.225	.417	-.232	-.234	-1.466	0.116	-0.5	1.0	-0.4	0.9	A-	A+
1860	686413	4	4	622	.727	.056	.116	.727	.096	.005	.545	-.248	-.303	.545	-.278	-0.758	0.100	-2.5	0.9	-3.2	0.7	A+	B-
1861	686411	4	4	622	.883	.883	.047	.040	.027	.003	.507	.507	-.272	-.289	-.267	-2.003	0.134	-2.0	0.8	-2.5	0.6	A-	A+
1862	686453	4	4	622	.744	.043	.744	.084	.125	.003	.515	-.239	.515	-.353	-.219	-0.871	0.102	-1.9	0.9	-1.9	0.8	A-	A-
1863	686412	4	4	622	.613	.613	.151	.051	.182	.003	.375	.375	-.218	-.272	-.101	-0.107	0.093	2.4	1.1	1.9	1.1	A-	A-
1864	682538	4	4	622	.547	.166	.100	.183	.547	.005	.589	-.285	-.299	-.231	.589	0.237	0.091	-4.5	0.8	-4.3	0.8	A-	A+
1865	686418	4	4	622	.539	.106	.109	.539	.243	.003	.488	-.144	-.388	.488	-.168	0.278	0.091	-1.4	1.0	-0.6	1.0	A-	A-
1866	686417	4	4	622	.502	.132	.502	.138	.220	.008	.428	-.201	.428	-.349	-.043	0.467	0.090	0.7	1.0	0.7	1.0	A+	A-
1867	686486	4	4	622	.526	.137	.241	.088	.526	.008	.495	-.115	-.288	-.264	.495	0.344	0.091	-1.7	0.9	-1.7	0.9	A-	A-
1868	686531	4	4	622	.238	.238	.109	.518	.127	.008	.275	.275	-.118	-.079	-.104	1.939	0.104	1.9	1.1	3.4	1.4	A-	A-
1869	686415	4	4	622	.510	.510	.220	.138	.124	.008	.242	.242	-.128	-.184	.006	0.426	0.091	6.9	1.3	6.3	1.4	A+	A-
1870	686416	4	4	622	.283	.127	.185	.397	.283	.008	.247	-.138	-.121	-.020	.247	1.649	0.099	2.8	1.1	5.2	1.5	A+	A+
1871	682520	4	4	625	.821	.821	.114	.035	.030	.000	.424	.424	-.237	-.262	-.229	-1.630	0.113	-0.6	1.0	-1.1	0.9	A-	
1872	685404	4	4	625	.734	.734	.019	.077	.170	.000	.435	.435	-.242	-.274	-.229	-1.023	0.100	-0.5	1.0	0.3	1.0	A+	
1873	685400	4	4	625	.725	.038	.090	.725	.147	.000	.407	-.204	-.204	.407	-.238	-0.964	0.099	0.6	1.0	-0.2	1.0	A+	
1874	685402	4	4	625	.706	.094	.091	.109	.706	.000	.434	-.212	-.259	-.197	.434	-0.848	0.097	0.0	1.0	-1.0	0.9	A+	
1875	685401	4	4	625	.682	.163	.109	.682	.045	.002	.447	-.262	-.202	.447	-.237	-0.709	0.095	-0.3	1.0	-0.5	1.0	B+	
1876	685403	4	4	625	.416	.416	.141	.146	.298	.000	.236	.236	-.136	-.119	-.059	0.660	0.090	4.9	1.2	6.3	1.4	A-	
1877	682526	4	4	625	.902	.032	.030	.902	.035	.000	.499	-.318	-.303	.499	-.218	-2.443	0.143	-2.1	0.8	-2.5	0.6	A+	
1878	685921	4	4	625	.589	.118	.165	.120	.589	.008	.511	-.334	-.195	-.171	.511	-0.210	0.091	-2.2	0.9	-1.5	0.9	A-	
1879	685922	4	4	625	.709	.709	.085	.046	.152	.008	.460	.460	-.352	-.150	-.177	-0.867	0.097	-0.9	1.0	-1.0	0.9	A-	
1880	673227	4	4	625	.459	.326	.459	.096	.110	.008	.475	-.161	.475	-.324	-.161	0.442	0.090	-1.5	1.0	-1.2	0.9	A+	
1881	685919	4	4	625	.344	.210	.344	.275	.160	.011	.323	-.085	.323	-.125	-.117	1.038	0.093	1.7	1.1	3.9	1.3	A-	
1882	685920	4	4	625	.622	.134	.141	.622	.093	.010	.561	-.310	-.211	.561	-.257	-0.385	0.092	-3.6	0.9	-3.9	0.8	B-	
1883	682533	4	4	625	.638	.638	.125	.054	.173	.010	.453	.453	-.179	-.263	-.214	-0.471	0.093	-0.4	1.0	-0.5	1.0	A+	
1884	682539	4	4	625	.926	.021	.926	.018	.022	.013	.450	-.216	.450	-.217	-.260	-2.788	0.161	-1.4	0.8	-2.8	0.5	A-	
1885	686489	4	4	625	.622	.192	.622	.088	.083	.014	.560	-.247	.560	-.283	-.274	-0.385	0.092	-3.5	0.9	-3.7	0.8	A+	

Table B–3 (continued). Reading/Literature Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
1886	686492	4	4	625	.286	.226	.245	.286	.227	.016	.210	-.075	-.116	.210	.024	1.363	0.097	4.4	1.2	4.0	1.4	A-	
1887	686574	4	4	625	.515	.216	.058	.195	.515	.016	.305	-.017	-.184	-.200	.305	0.162	0.089	4.3	1.2	4.1	1.2	A-	
1888	686491	4	4	625	.536	.170	.072	.536	.206	.016	.437	-.263	-.233	.437	-.088	0.058	0.090	0.0	1.0	0.1	1.0	A-	
1889	686573	4	4	625	.478	.166	.218	.478	.125	.013	.506	-.150	-.220	.506	-.259	0.346	0.089	-2.5	0.9	-2.3	0.9	A+	
1890	686490	4	4	625	.395	.395	.221	.296	.072	.016	.116	.116	-.112	.174	-.258	0.767	0.091	8.8	1.4	8.2	1.6	A-	
1891	682521	4	4	630	.722	.048	.106	.124	.722	.000	.366	-.234	-.179	-.178	.366	-0.932	0.097	0.6	1.0	0.4	1.0	A+	B-
1892	682518	4	4	630	.779	.130	.779	.073	.017	.000	.525	-.360	.525	-.286	-.169	-1.294	0.104	-2.9	0.9	-3.5	0.7	A+	B-
1893	685406	4	4	630	.773	.103	.044	.076	.773	.003	.454	-.183	-.272	-.293	.454	-1.251	0.103	-1.5	0.9	-1.2	0.9	A+	A+
1894	685405	4	4	630	.570	.570	.054	.051	.322	.003	.459	.459	-.276	-.135	-.284	-0.117	0.089	-1.1	1.0	-0.4	1.0	A+	A+
1895	685409	4	4	630	.579	.184	.043	.579	.190	.003	.392	-.271	-.180	.392	-.126	-0.165	0.089	1.0	1.0	0.5	1.0	A+	A-
1896	685407	4	4	630	.333	.198	.333	.184	.281	.003	.312	-.160	.312	-.052	-.140	1.073	0.093	2.0	1.1	2.6	1.2	A-	A+
1897	685408	4	4	630	.554	.179	.160	.102	.554	.005	.527	-.332	-.119	-.281	.527	-0.038	0.089	-3.3	0.9	-3.2	0.9	A+	A+
1898	682527	4	4	630	.695	.695	.041	.176	.086	.002	.297	.297	-.185	-.085	-.228	-0.776	0.095	2.4	1.1	2.0	1.2	A+	A-
1899	682534	4	4	630	.967	.019	.967	.006	.006	.002	.307	-.200	.307	-.136	-.167	-3.608	0.227	-0.5	0.9	-2.3	0.4	B+	A-
1900	673234	4	4	630	.491	.490	.221	.075	.208	.006	.227	.227	-.308	-.204	.190	0.274	0.088	6.1	1.2	7.3	1.4	A-	A-
1901	673236	4	4	630	.779	.097	.038	.779	.081	.005	.312	-.041	-.294	.312	-.190	-1.294	0.104	0.7	1.0	1.3	1.1	B+	A-
1902	673235	4	4	630	.605	.168	.070	.605	.151	.006	.478	-.159	-.268	.478	-.265	-0.293	0.090	-1.7	0.9	-1.4	0.9	A-	A-
1903	673232	4	4	630	.686	.686	.073	.114	.119	.008	.460	.460	-.254	-.236	-.185	-0.722	0.094	-1.4	0.9	-1.5	0.9	A+	A-
1904	686553	4	4	630	.644	.095	.217	.035	.644	.008	.481	-.317	-.231	-.161	.481	-0.499	0.092	-1.9	0.9	-1.6	0.9	A-	A-
1905	682540	4	4	630	.716	.716	.087	.075	.113	.010	.346	.346	-.188	-.123	-.178	-0.895	0.096	1.3	1.1	0.5	1.0	A-	A+
1906	686557	4	4	630	.632	.632	.178	.078	.095	.017	.407	.407	-.216	-.169	-.171	-0.432	0.091	0.3	1.0	0.3	1.0	A+	A-
1907	686561	4	4	630	.479	.151	.210	.479	.143	.017	.403	-.111	-.226	.403	-.132	0.328	0.088	0.4	1.0	1.4	1.1	A-	A-
1908	686560	4	4	630	.532	.181	.532	.130	.140	.017	.429	-.209	.429	-.204	-.126	0.071	0.088	-0.2	1.0	-0.5	1.0	A+	A+
1909	686558	4	4	630	.335	.229	.335	.224	.194	.019	.344	-.086	.344	-.119	-.134	1.065	0.093	1.1	1.0	2.2	1.2	A-	A-
1910	686559	4	4	630	.376	.249	.162	.192	.376	.021	.471	-.173	-.194	-.150	.471	0.846	0.091	-2.2	0.9	-0.9	1.0	A+	A+
1911	682522	4	4	641	.902	.041	.017	.902	.041	.000	.300	-.216	-.135	.300	-.148	-2.215	0.141	-0.1	1.0	0.0	1.0	B+	A-
1912	685918	4	4	641	.805	.023	.805	.092	.080	.000	.443	-.192	.443	-.254	-.269	-1.291	0.109	-0.9	1.0	-1.2	0.9	B+	A+
1913	685917	4	4	641	.389	.388	.119	.189	.303	.002	.316	.316	-.333	-.137	.019	1.030	0.091	3.7	1.1	3.1	1.2	A+	A-
1914	685913	4	4	641	.651	.651	.250	.056	.042	.002	.389	.389	-.231	-.210	-.196	-0.321	0.092	1.5	1.1	1.3	1.1	A+	A+
1915	685916	4	4	641	.658	.658	.139	.147	.056	.000	.408	.408	-.207	-.172	-.265	-0.364	0.093	0.9	1.0	0.5	1.0	A-	A-
1916	685914	4	4	641	.342	.289	.254	.342	.112	.003	.244	-.048	-.125	.244	-.118	1.283	0.093	4.2	1.2	5.0	1.4	A-	A+
1917	685915	4	4	641	.711	.090	.119	.080	.711	.000	.499	-.244	-.287	-.234	.499	-0.668	0.097	-1.9	0.9	-1.5	0.9	A+	A+
1918	682528	4	4	641	.613	.042	.114	.613	.231	.000	.439	-.281	-.233	.439	-.198	-0.120	0.091	0.4	1.0	-0.3	1.0	A-	A+
1919	673243	4	4	641	.652	.042	.204	.100	.652	.002	.634	-.268	-.401	-.280	.634	-0.329	0.093	-5.8	0.8	-5.2	0.7	A-	A+
1920	686410	4	4	641	.626	.626	.103	.114	.151	.006	.448	.448	-.275	-.270	-.109	-0.186	0.091	0.0	1.0	-0.4	1.0	A-	A-

Table B–3 (continued). Reading/Literature Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
1921	686409	4	4	641	.376	.376	.243	.109	.267	.005	.279	.279	-.159	-.240	.031	1.096	0.091	4.6	1.2	3.9	1.3	A-	A-
1922	686442	4	4	641	.304	.069	.491	.128	.304	.008	.289	-.285	.045	-.228	.289	1.495	0.095	2.8	1.1	2.9	1.3	A-	A-
1923	686408	4	4	641	.481	.223	.480	.162	.123	.011	.419	-.188	.419	-.233	-.099	0.558	0.089	0.8	1.0	1.5	1.1	A+	A+
1924	682535	4	4	641	.819	.070	.070	.819	.031	.009	.515	-.327	-.342	.515	-.120	-1.400	0.112	-2.3	0.9	-3.1	0.7	B+	B-
1925	682541	4	4	641	.680	.089	.045	.173	.680	.012	.499	-.303	-.228	-.234	.499	-0.486	0.094	-1.8	0.9	-1.5	0.9	A+	C-
1926	686473	4	4	641	.282	.282	.204	.354	.147	.012	.358	.358	-.127	-.108	-.132	1.624	0.097	0.7	1.0	1.6	1.1	A+	A-
1927	686533	4	4	641	.435	.134	.122	.292	.435	.017	.366	-.217	-.253	-.014	.366	0.787	0.089	2.5	1.1	2.4	1.1	A+	A-
1928	686477	4	4	641	.495	.095	.175	.495	.223	.012	.400	-.222	-.260	.400	-.060	0.487	0.089	1.4	1.1	2.6	1.1	A-	A+
1929	686475	4	4	641	.506	.172	.142	.168	.505	.012	.507	-.120	-.274	-.272	.507	0.432	0.089	-2.1	0.9	-1.7	0.9	A+	A+
1930	686474	4	4	641	.529	.126	.179	.150	.529	.016	.534	-.209	-.208	-.299	.534	0.313	0.089	-2.9	0.9	-1.9	0.9	A+	A+
1931	682523	4	4	627	.759	.759	.048	.080	.113	.000	.490	.490	-.204	-.193	-.360	-1.237	0.102	-1.7	0.9	-2.5	0.8	A-	C-
1932	671734	4	4	627	.557	.077	.557	.309	.057	.000	.438	-.276	.438	-.308	-.007	-0.111	0.089	0.1	1.0	-0.2	1.0	A+	A-
1933	671735	4	4	627	.507	.158	.293	.507	.040	.002	.502	-.296	-.236	.502	-.167	0.136	0.089	-2.2	0.9	-2.2	0.9	A+	B+
1934	686421	4	4	627	.494	.059	.290	.155	.494	.002	.384	-.218	-.087	-.270	.384	0.199	0.089	1.8	1.1	1.4	1.1	A+	A+
1935	686422	4	4	627	.494	.494	.137	.238	.131	.000	.456	.456	-.283	-.180	-.161	0.199	0.089	-0.6	1.0	-0.2	1.0	A+	A-
1936	686424	4	4	627	.793	.793	.064	.081	.062	.000	.505	.505	-.287	-.246	-.279	-1.466	0.107	-2.4	0.9	-1.6	0.8	A+	A-
1937	686423	4	4	627	.501	.207	.501	.113	.177	.002	.360	-.184	.360	-.231	-.076	0.167	0.089	2.5	1.1	1.9	1.1	A-	A+
1938	682529	4	4	627	.700	.700	.123	.121	.054	.002	.357	.357	-.269	-.049	-.248	-0.874	0.096	1.4	1.1	1.2	1.1	A-	A+
1939	686446	4	4	627	.657	.166	.657	.120	.054	.003	.424	-.250	.424	-.189	-.184	-0.633	0.093	0.3	1.0	-0.2	1.0	A+	A+
1940	686452	4	4	627	.327	.056	.233	.327	.380	.005	.227	-.174	-.146	.227	.007	1.060	0.094	4.1	1.2	5.0	1.4	A-	A+
1941	673239	4	4	627	.252	.370	.220	.153	.252	.005	.261	.055	-.272	-.055	.261	1.501	0.100	2.0	1.1	3.4	1.3	A+	A-
1942	686445	4	4	627	.442	.442	.349	.054	.152	.003	.340	.340	-.016	-.257	-.273	0.461	0.089	2.7	1.1	2.1	1.1	A-	A+
1943	686444	4	4	627	.252	.204	.343	.193	.252	.008	.305	-.105	-.035	-.163	.305	1.501	0.100	1.7	1.1	1.0	1.1	A-	B+
1944	682536	4	4	627	.923	.032	.923	.018	.019	.008	.352	-.176	.352	-.207	-.197	-2.774	0.157	-0.5	0.9	-2.0	0.6	A-	A-
1945	682542	4	4	627	.700	.043	.053	.195	.700	.010	.478	-.240	-.214	-.283	.478	-0.874	0.096	-1.4	0.9	-1.5	0.9	A-	A-
1946	685411	4	4	627	.333	.343	.333	.228	.085	.011	.180	.020	.180	-.091	-.164	1.025	0.093	5.2	1.2	6.4	1.5	A-	A-
1947	686180	4	4	627	.491	.204	.491	.112	.182	.011	.461	-.179	.461	-.159	-.253	0.215	0.089	-0.9	1.0	-0.6	1.0	B-	B-
1948	685410	4	4	627	.546	.172	.128	.144	.545	.011	.479	-.173	-.232	-.243	.479	-0.055	0.089	-1.3	1.0	-1.2	0.9	A+	A+
1949	686181	4	4	627	.533	.203	.155	.533	.096	.014	.447	-.135	-.216	.447	-.271	0.009	0.089	-0.3	1.0	-0.3	1.0	B+	A+
1950	685412	4	4	627	.608	.070	.069	.239	.608	.014	.562	-.215	-.260	-.336	.562	-0.371	0.091	-3.9	0.9	-3.6	0.8	A+	A-
1951	661514	4	4	640	.839	.134	.839	.009	.017	.000	.462	-.399	.462	-.138	-.157	-1.867	0.116	-1.8	0.9	-3.1	0.7	A-	
1952	661516	4	4	640	.852	.852	.017	.091	.041	.000	.377	.377	-.146	-.209	-.279	-1.977	0.119	-0.7	0.9	-1.3	0.8	A-	
1953	661517	4	4	640	.942	.016	.025	.016	.942	.002	.310	-.164	-.192	-.179	.310	-3.141	0.177	-0.5	0.9	-1.9	0.6	A+	
1954	662801	4	4	640	.617	.617	.097	.094	.192	.000	.488	.488	-.235	-.287	-.213	-0.470	0.090	-2.0	0.9	-1.8	0.9	A+	
1955	662805	4	4	640	.683	.145	.059	.683	.113	.000	.537	-.230	-.290	.537	-.317	-0.821	0.093	-3.7	0.9	-3.2	0.8	A+	

Table B–3 (continued). Reading/Literature Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
1956	662803	4	4	640	.728	.130	.067	.728	.070	.005	.504	-.298	-.263	.504	-.213	-1.084	0.097	-2.7	0.9	-2.4	0.8	A+	
1957	662804	4	4	640	.161	.161	.114	.641	.083	.002	.082	.082	-.141	.133	-.167	2.089	0.115	2.6	1.2	5.3	1.9	A-	
1958	662802	4	4	640	.372	.250	.248	.128	.372	.002	.418	-.101	-.179	-.232	.418	0.757	0.090	-0.1	1.0	0.1	1.0	A+	
1959	662794	4	4	640	.445	.339	.445	.063	.145	.008	.375	-.089	.375	-.248	-.211	0.385	0.088	1.6	1.1	1.8	1.1	A-	
1960	662792	4	4	640	.206	.506	.136	.142	.206	.009	.385	-.004	-.193	-.217	.385	1.739	0.105	-0.9	1.0	0.9	1.1	A-	
1961	662795	4	4	640	.539	.539	.170	.173	.105	.013	.471	.471	-.132	-.215	-.287	-0.077	0.088	-1.6	1.0	-1.4	0.9	A-	
1962	662797	4	4	640	.323	.289	.209	.323	.166	.013	.307	-.024	-.147	.307	-.158	1.016	0.093	2.2	1.1	5.1	1.4	A+	
1963	662793	4	4	640	.364	.364	.319	.214	.088	.016	.299	.299	.042	-.227	-.200	0.798	0.091	3.3	1.1	2.6	1.2	A-	
1964	662796	4	4	640	.403	.188	.403	.166	.225	.019	.414	-.102	.414	-.131	-.236	0.596	0.089	0.0	1.0	1.1	1.1	A-	
1965	662432	4	4	1271	.497	.109	.247	.124	.496	.024	.485	-.209	-.249	-.149	.485	0.126	0.062	-2.6	0.9	-2.3	0.9	A+	
1966	662434	4	4	1271	.230	.230	.107	.429	.208	.027	.069	.069	-.078	.048	-.011	1.581	0.072	7.3	1.3	9.3	1.8	B-	
1967	662433	4	4	1271	.639	.044	.256	.035	.639	.025	.471	-.235	-.253	-.242	.471	-0.593	0.065	-2.4	0.9	-2.3	0.9	A+	
1968	662504	4	4	1264	.131	.399	.131	.404	.047	.020	.111	.028	.111	.056	-.288	2.464	0.089	2.4	1.1	7.3	2.0	A+	
1969	662503	4	4	1264	.347	.172	.317	.146	.347	.019	.409	-.134	-.112	-.213	.409	0.967	0.065	-0.3	1.0	1.4	1.1	A-	
1970	662505	4	4	1264	.290	.335	.165	.189	.290	.021	.383	-.070	-.115	-.200	.383	1.282	0.068	-0.5	1.0	2.5	1.2	A-	
1971	661518	4	4	624	.950	.034	.950	.014	.000	.002	.240	-.221	.240	-.082	.000	-3.165	0.191	-0.1	1.0	-0.7	0.8	A+	
1972	661519	4	4	624	.923	.923	.043	.014	.019	.000	.395	.395	-.269	-.225	-.173	-2.660	0.157	-1.2	0.9	-2.3	0.6	B+	
1973	661520	4	4	624	.724	.079	.171	.724	.026	.000	.395	-.238	-.238	.395	-.145	-0.919	0.098	0.3	1.0	-0.3	1.0	A-	
1974	662811	4	4	624	.370	.168	.204	.255	.370	.003	.409	-.162	-.103	-.209	.409	0.919	0.092	0.1	1.0	0.8	1.1	A+	
1975	662809	4	4	624	.716	.716	.077	.095	.111	.002	.510	.510	-.261	-.207	-.313	-0.871	0.097	-2.6	0.9	-2.1	0.8	A-	
1976	662810	4	4	624	.244	.300	.346	.111	.244	.000	.322	-.172	.051	-.267	.322	1.655	0.102	1.1	1.1	1.8	1.2	A-	
1977	662807	4	4	624	.708	.130	.708	.107	.054	.000	.478	-.295	.478	-.212	-.231	-0.824	0.097	-1.8	0.9	-1.9	0.9	A-	
1978	662808	4	4	624	.487	.325	.072	.487	.111	.005	.303	-.043	-.233	.303	-.205	0.326	0.089	4.2	1.2	3.3	1.2	A+	
1979	662481	4	4	624	.364	.213	.252	.167	.364	.005	.332	-.149	-.063	-.174	.332	0.953	0.092	2.8	1.1	2.2	1.1	A-	
1980	662480	4	4	624	.651	.651	.098	.128	.112	.011	.497	.497	-.243	-.210	-.267	-0.502	0.093	-2.3	0.9	-1.4	0.9	A-	
1981	662482	4	4	624	.521	.521	.114	.082	.277	.006	.365	.365	-.258	-.179	-.092	0.159	0.089	2.3	1.1	2.6	1.1	A-	
1982	662479	4	4	624	.633	.106	.633	.144	.111	.006	.547	-.259	.547	-.260	-.264	-0.409	0.092	-3.6	0.9	-3.3	0.8	A-	
1983	662770	4	4	624	.596	.072	.596	.268	.054	.010	.410	-.233	.410	-.197	-.190	-0.218	0.090	0.7	1.0	0.2	1.0	A+	
1984	662769	4	4	624	.551	.090	.074	.551	.274	.011	.319	-.250	-.270	.319	-.013	0.008	0.089	3.6	1.1	3.7	1.2	A-	
1985	662768	4	4	624	.561	.123	.199	.106	.561	.011	.488	-.292	-.197	-.177	.488	-0.040	0.090	-1.8	0.9	-1.0	1.0	A+	
1986	662767	4	4	624	.285	.170	.192	.285	.338	.014	.279	-.135	-.219	.279	.057	1.394	0.098	1.9	1.1	3.4	1.3	A+	
1987	661511	4	4	1257	.593	.308	.070	.593	.023	.006	.446	-.259	-.254	.446	-.182	-0.278	0.064	0.8	1.0	0.5	1.0	A-	A-
1988	661509	4	4	633	.670	.240	.670	.024	.065	.002	.499	-.391	.499	-.169	-.169	-0.779	0.095	-1.1	1.0	-2.0	0.9	B+	
1989	661510	4	4	633	.777	.777	.065	.136	.021	.002	.324	.324	-.109	-.248	-.168	-1.451	0.105	1.5	1.1	2.0	1.2	A+	
1990	662740	4	4	633	.727	.103	.066	.727	.104	.000	.486	-.275	-.301	.486	-.191	-1.117	0.099	-1.3	0.9	-0.7	0.9	A+	

Table B–3 (continued). Reading/Literature Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
1991	662742	4	4	633	.749	.055	.749	.038	.156	.002	.452	-.214	.452	-.237	-.281	-1.258	0.102	-0.7	1.0	-0.7	0.9	B-	
1992	662744	4	4	633	.314	.314	.166	.267	.251	.002	.171	.171	-.145	-.013	-.044	1.122	0.096	6.2	1.3	6.8	1.7	A+	
1993	662743	4	4	633	.264	.156	.447	.133	.264	.000	.253	-.203	.095	-.251	.253	1.433	0.101	3.6	1.2	4.8	1.5	A+	
1994	662741	4	4	633	.649	.649	.123	.087	.139	.002	.545	.545	-.188	-.311	-.310	-0.664	0.094	-2.6	0.9	-2.8	0.8	A+	
1995	662772	4	4	633	.714	.130	.062	.714	.088	.006	.534	-.242	-.324	.534	-.254	-1.039	0.098	-2.5	0.9	-2.5	0.8	A-	
1996	662771	4	4	633	.871	.039	.870	.044	.039	.006	.504	-.280	.504	-.303	-.217	-2.229	0.127	-2.2	0.8	-3.1	0.6	A+	
1997	662773	4	4	633	.386	.185	.385	.275	.148	.006	.283	-.054	.283	-.103	-.170	0.723	0.092	4.5	1.2	4.7	1.3	A-	
1998	662774	4	4	633	.559	.270	.096	.068	.559	.006	.545	-.245	-.230	-.333	.545	-0.182	0.091	-2.7	0.9	-2.7	0.9	A+	
1999	662451	4	4	633	.621	.196	.621	.103	.070	.011	.568	-.191	.568	-.366	-.290	-0.508	0.092	-3.4	0.9	-3.3	0.8	A-	
2000	662450	4	4	633	.346	.120	.390	.126	.346	.017	.343	-.207	.036	-.273	.343	0.940	0.094	2.7	1.1	2.9	1.2	A+	
2001	662449	4	4	633	.792	.791	.052	.066	.070	.021	.571	.571	-.265	-.263	-.335	-1.553	0.108	-3.5	0.8	-3.7	0.6	A-	
2002	662452	4	4	633	.461	.163	.182	.175	.461	.019	.410	-.176	-.134	-.182	.410	0.323	0.090	1.6	1.1	1.6	1.1	A+	
2003	662760	4	4	1264	.650	.169	.089	.650	.075	.016	.498	-.209	-.254	.498	-.263	-0.667	0.066	-3.2	0.9	-3.6	0.8	A+	A+
2004	662759	4	4	1264	.703	.160	.052	.703	.070	.015	.548	-.268	-.283	.548	-.276	-0.967	0.068	-5.4	0.8	-5.3	0.7	A+	A-
2005	662757	4	4	1264	.184	.184	.280	.193	.327	.016	.252	.252	-.032	-.117	-.042	1.957	0.079	1.3	1.1	4.7	1.5	A+	A+
2006	662758	4	4	1264	.343	.188	.343	.213	.237	.019	.379	-.168	.379	-.141	-.084	0.934	0.066	1.0	1.0	3.0	1.2	A-	A-
2007	661512	4	4	631	.891	.014	.041	.054	.891	.000	.355	-.147	-.114	-.313	.355	-2.396	0.135	-0.9	0.9	-0.2	1.0	A+	
2008	661513	4	4	631	.900	.900	.024	.041	.035	.000	.385	.385	-.219	-.196	-.234	-2.509	0.140	-1.0	0.9	-2.3	0.6	A+	
2009	661515	4	4	631	.712	.074	.712	.122	.089	.003	.330	-.101	.330	-.193	-.199	-1.009	0.097	1.7	1.1	1.8	1.1	A+	
2010	662999	4	4	631	.675	.675	.135	.157	.032	.002	.365	.365	-.183	-.217	-.159	-0.801	0.094	1.5	1.1	1.1	1.1	A-	
2011	663001	4	4	631	.296	.114	.433	.154	.296	.003	.298	-.240	.015	-.180	.298	1.168	0.096	2.2	1.1	3.3	1.3	A+	
2012	663002	4	4	631	.506	.506	.122	.208	.162	.003	.443	.443	-.140	-.240	-.200	0.074	0.089	-0.1	1.0	-0.1	1.0	A+	
2013	662997	4	4	631	.328	.151	.260	.328	.257	.005	.419	-.113	-.243	.419	-.093	0.988	0.094	-0.5	1.0	0.8	1.1	A+	
2014	663000	4	4	631	.217	.181	.217	.222	.379	.002	.180	-.164	.180	-.289	.232	1.670	0.105	2.9	1.2	4.8	1.6	B+	
2015	662998	4	4	631	.399	.255	.399	.211	.132	.003	.409	-.137	.409	-.238	-.111	0.608	0.090	0.6	1.0	1.1	1.1	B-	
2016	662492	4	4	631	.643	.179	.643	.106	.051	.021	.562	-.283	.562	-.311	-.191	-0.628	0.092	-4.1	0.9	-3.6	0.8	B+	
2017	662494	4	4	631	.645	.645	.078	.187	.068	.022	.587	.587	-.219	-.324	-.279	-0.637	0.092	-4.8	0.8	-4.6	0.7	A-	
2018	662491	4	4	631	.715	.060	.715	.146	.054	.025	.523	-.249	.523	-.268	-.253	-1.028	0.097	-3.0	0.9	-2.9	0.8	A+	
2019	662493	4	4	631	.346	.295	.158	.345	.177	.024	.259	.046	-.247	.259	-.073	0.893	0.093	3.9	1.2	4.7	1.3	A+	
2020	661521	5	5	440	.825	.089	.825	.070	.016	.000	.503	-.310	.503	-.320	-.170	-1.622	0.137	-2.0	0.9	-2.7	0.6	A-	
2021	661535	5	5	403	.913	.060	.913	.010	.017	.000	.385	-.302	.385	-.164	-.159	-2.461	0.185	-0.9	0.9	-2.3	0.5	A+	
2022	661539	5	5	407	.700	.076	.059	.165	.700	.000	.464	-.283	-.342	-.154	.464	-0.777	0.120	-1.5	0.9	-1.6	0.9	A+	
2023	661543	5	5	415	.841	.046	.841	.027	.087	.000	.272	-.219	.272	-.231	-.058	-1.572	0.145	0.7	1.1	0.5	1.1	B+	
2024	661574	5	5	408	.753	.752	.071	.105	.071	.000	.434	.434	-.319	-.218	-.149	-1.012	0.126	-0.9	0.9	-1.2	0.9	A+	
2025	661578	5	5	416	.808	.149	.808	.031	.012	.000	.422	-.334	.422	-.197	-.119	-1.340	0.135	-0.9	0.9	-1.3	0.8	A-	

Table B–3 (continued). Reading/Literature Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
2026	661537	5	5	368	.840	.840	.087	.035	.038	.000	.384	.384	-.242	-.298	-.093	-1.625	0.154	-0.5	1.0	-1.0	0.8	A-	
2027	661541	5	5	409	.804	.042	.804	.134	.020	.000	.310	-.258	.310	-.122	-.215	-1.434	0.135	0.5	1.0	0.6	1.1	A+	
2028	661544	5	5	406	.803	.803	.108	.079	.010	.000	.436	.436	-.291	-.287	-.061	-1.398	0.136	-0.9	0.9	-1.7	0.8	A+	
2029	661572	5	5	414	.742	.742	.053	.041	.164	.000	.429	.429	-.327	-.147	-.230	-1.021	0.124	-0.5	1.0	-0.9	0.9	A-	
2030	661576	5	5	430	.909	.044	.909	.028	.019	.000	.434	-.295	.434	-.260	-.157	-2.377	0.177	-1.2	0.9	-2.6	0.5	A-	A-
2031	661580	5	5	441	.635	.082	.086	.197	.635	.000	.526	-.152	-.405	-.246	.526	-0.327	0.111	-2.8	0.9	-2.6	0.8	A+	
2032	673452	5	5	1067	.306	.149	.374	.172	.306	.000	.194	-.236	.123	-.172	.194	1.396	0.072	4.3	1.1	5.5	1.3	A+	A+
2033	673466	5	5	1017	.563	.186	.151	.563	.099	.000	.307	-.029	-.196	.307	-.236	0.104	0.070	3.2	1.1	2.6	1.1	A+	A-
2034	673479	5	5	1899	.530	.273	.530	.127	.071	.000	.326	-.098	.326	-.201	-.204	0.229	0.051	2.8	1.1	3.2	1.1	A+	A-
2035	673493	5	5	1019	.604	.604	.191	.108	.097	.000	.449	.449	-.162	-.304	-.208	-0.106	0.071	-2.2	0.9	-2.3	0.9	A+	A+
2036	673506	5	5	1080	.673	.168	.673	.106	.053	.000	.471	-.215	.471	-.239	-.298	-0.507	0.072	-3.1	0.9	-2.1	0.9	A-	A+
2037	673516	5	5	1044	.313	.090	.195	.313	.401	.000	.077	-.208	-.168	.077	.184	1.314	0.072	7.3	1.2	9.3	1.6	A+	A-
2038	673518	5	5	2004	.641	.216	.058	.641	.084	.000	.429	-.248	-.167	.429	-.233	-0.333	0.051	-1.6	1.0	-2.5	0.9	A+	A-
2039	673519	5	5	1173	.582	.109	.219	.090	.582	.000	.474	-.249	-.147	-.334	.474	-0.075	0.066	-3.7	0.9	-3.6	0.9	A+	A-
2040	673520	5	5	2249	.557	.217	.130	.097	.557	.000	.508	-.267	-.252	-.195	.508	0.065	0.047	-6.8	0.9	-6.6	0.9	A+	A-
2041	673521	5	5	1099	.514	.514	.180	.209	.096	.000	.329	.329	-.164	-.068	-.251	0.238	0.067	2.4	1.1	2.4	1.1	A+	A-
2042	673522	5	5	2253	.768	.075	.110	.768	.046	.000	.497	-.303	-.282	.497	-.198	-1.131	0.055	-4.4	0.9	-6.3	0.7	B+	A-
2043	673523	5	5	1151	.374	.374	.119	.119	.388	.000	.321	.321	-.277	-.167	-.024	0.967	0.067	1.8	1.1	3.1	1.1	A+	A-
2044	673524	5	5	1138	.384	.326	.178	.384	.112	.000	.247	.040	-.141	.247	-.270	0.925	0.067	4.5	1.1	6.5	1.3	A+	A+
2045	673533	5	5	1130	.410	.158	.224	.208	.410	.000	.364	-.161	-.087	-.206	.364	0.804	0.067	0.2	1.0	3.0	1.1	A+	A-
2046	673544	5	5	1129	.502	.185	.161	.502	.151	.000	.402	-.172	-.231	.402	-.137	0.331	0.066	0.2	1.0	0.8	1.0	A+	A+
2047	673557	5	5	1223	.697	.697	.182	.085	.037	.000	.449	.449	-.241	-.292	-.172	-0.686	0.069	-1.8	0.9	-2.2	0.9	A+	A-
2048	673583	5	5	1073	.693	.693	.092	.144	.070	.000	.387	.387	-.327	-.085	-.212	-0.611	0.073	-0.6	1.0	0.1	1.0	A+	
2049	673609	5	5	1175	.504	.129	.214	.153	.504	.000	.392	-.190	-.139	-.208	.392	0.325	0.065	0.2	1.0	1.6	1.1	A+	A+
2050	673635	5	5	1144	.555	.555	.216	.068	.161	.000	.270	.270	.012	-.274	-.190	0.074	0.067	5.1	1.1	6.1	1.2	A+	A-
2051	673646	5	5	1150	.707	.090	.707	.060	.143	.000	.417	-.163	.417	-.240	-.246	-0.782	0.072	-0.9	1.0	-1.0	1.0	A-	A-
2052	673672	5	5	1067	.346	.205	.346	.199	.250	.000	.096	.084	.096	-.253	.049	1.139	0.070	8.1	1.2	8.5	1.5	A-	A+
2053	673681	5	5	1159	.566	.235	.566	.108	.091	.000	.349	-.056	.349	-.304	-.191	0.055	0.066	1.4	1.0	2.2	1.1	A-	A-
2054	673684	5	5	1917	.599	.131	.104	.599	.166	.000	.396	-.092	-.268	.396	-.218	-0.153	0.052	0.3	1.0	0.1	1.0	A-	A-
2055	673688	5	5	1120	.315	.264	.279	.315	.141	.000	.174	.008	-.033	.174	-.200	1.329	0.070	4.3	1.1	8.2	1.5	A+	
2056	673689	5	5	1031	.681	.062	.123	.134	.681	.000	.439	-.180	-.207	-.273	.439	-0.571	0.074	-1.6	1.0	-1.9	0.9	A-	C-
2057	673690	5	5	1125	.466	.193	.172	.170	.466	.000	.384	-.113	-.206	-.184	.384	0.534	0.066	-0.8	1.0	0.7	1.0	A-	A-
2058	673692	5	5	1070	.456	.293	.456	.156	.095	.000	.323	-.114	.323	-.222	-.096	0.577	0.068	1.8	1.0	2.8	1.1	A+	A+
2059	673693	5	5	1944	.452	.056	.452	.059	.433	.000	.107	-.237	.107	-.307	.149	0.591	0.050	9.9	1.3	9.9	1.4	A-	A-
2060	673694	5	5	1090	.673	.106	.673	.144	.076	.000	.469	-.208	.469	-.279	-.217	-0.465	0.071	-2.7	0.9	-3.8	0.8	A+	A-

Table B–3 (continued). Reading/Literature Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
2061	673695	5	5	1062	.590	.150	.590	.159	.101	.000	.379	-.133	.379	-.176	-.247	-0.041	0.069	0.6	1.0	-0.3	1.0	A-	A-
2062	673696	5	5	1990	.504	.357	.082	.504	.056	.000	.310	-.090	-.246	.310	-.191	0.379	0.050	4.2	1.1	4.1	1.1	A-	A-
2063	673730	5	5	1199	.394	.355	.167	.084	.394	.000	.381	.003	-.365	-.186	.381	0.855	0.065	-1.0	1.0	0.5	1.0	A+	A-
2064	673732	5	5	1142	.436	.146	.207	.436	.211	.000	.219	-.221	.002	.219	-.077	0.636	0.066	6.0	1.2	6.6	1.3	A+	A-
2065	682544	5	5	429	.312	.420	.121	.312	.147	.000	.186	-.104	-.140	.186	.030	1.325	0.113	2.7	1.1	3.7	1.3	A-	
2066	682545	5	5	423	.274	.426	.180	.274	.121	.000	.182	-.028	-.125	.182	-.060	1.514	0.118	2.3	1.1	4.6	1.5	C-	
2067	682546	5	5	415	.800	.080	.800	.055	.065	.000	.447	-.349	.447	-.242	-.118	-1.401	0.134	-1.4	0.9	-1.4	0.8	A-	
2068	682547	5	5	414	.565	.188	.121	.126	.565	.000	.487	-.246	-.241	-.202	.487	0.008	0.112	-1.5	0.9	-2.0	0.9	C-	
2069	682548	5	5	421	.468	.401	.062	.069	.468	.000	.382	-.169	-.209	-.227	.382	0.561	0.108	0.0	1.0	0.6	1.0	A-	
2070	682549	5	5	389	.329	.329	.437	.152	.082	.000	.121	.121	.016	-.233	.069	1.194	0.118	4.2	1.2	4.9	1.5	B-	
2071	682550	5	5	403	.936	.035	.935	.017	.012	.000	.399	-.262	.399	-.239	-.169	-2.749	0.211	-0.9	0.9	-2.5	0.4	A+	
2072	682551	5	5	431	.469	.390	.056	.469	.086	.000	.305	-.130	-.289	.305	-.080	0.567	0.106	2.1	1.1	2.3	1.1	A-	A-
2073	682552	5	5	424	.821	.821	.050	.021	.108	.000	.481	.481	-.351	-.222	-.246	-1.441	0.137	-1.7	0.9	-2.9	0.7	A+	
2074	682553	5	5	405	.746	.052	.156	.047	.746	.000	.358	-.253	-.132	-.246	.358	-0.900	0.124	0.1	1.0	0.0	1.0	B-	A-
2075	682554	5	5	416	.490	.190	.139	.490	.180	.000	.391	-.243	-.172	.391	-.106	0.351	0.110	0.5	1.0	0.7	1.0	A-	
2076	682555	5	5	392	.617	.617	.110	.143	.130	.000	.266	.266	-.211	-.170	-.012	-0.374	0.116	3.5	1.2	2.9	1.2	A-	
2077	682556	5	5	415	.684	.219	.684	.051	.046	.000	.359	-.243	.359	-.185	-.125	-0.575	0.117	0.9	1.1	0.1	1.0	A-	
2078	682557	5	5	381	.738	.738	.076	.171	.016	.000	.459	.459	-.271	-.287	-.178	-0.852	0.129	-1.3	0.9	-0.9	0.9	A-	
2079	682558	5	5	390	.636	.636	.292	.041	.031	.000	.349	.349	-.177	-.281	-.184	-0.312	0.117	1.1	1.1	0.5	1.0	B+	
2080	682559	5	5	406	.805	.106	.805	.064	.025	.000	.406	-.246	.406	-.267	-.128	-1.459	0.138	-0.4	1.0	-1.2	0.8	A+	
2081	682560	5	5	427	.773	.773	.108	.059	.061	.000	.406	.406	-.326	-.179	-.112	-1.177	0.126	-0.7	1.0	-1.2	0.9	A-	
2082	682561	5	5	395	.879	.066	.878	.043	.013	.000	.283	-.191	.283	-.137	-.155	-2.055	0.164	0.0	1.0	0.6	1.1	A-	
2083	682562	5	5	440	.821	.820	.107	.039	.034	.000	.404	.404	-.280	-.166	-.201	-1.552	0.134	-1.0	0.9	-1.3	0.8	A+	
2084	682563	5	5	451	.674	.197	.674	.098	.031	.000	.568	-.420	.568	-.237	-.166	-0.518	0.111	-3.7	0.8	-4.2	0.7	A+	
2085	682564	5	5	410	.620	.046	.112	.222	.620	.000	.493	-.209	-.262	-.271	.493	-0.260	0.113	-2.2	0.9	-2.4	0.9	B+	
2086	682565	5	5	420	.743	.169	.076	.743	.012	.000	.373	-.250	-.231	.373	-.074	-0.968	0.123	0.3	1.0	-0.2	1.0	A+	
2087	682566	5	5	389	.846	.846	.026	.041	.087	.000	.333	.333	-.258	-.343	-.040	-1.689	0.152	-0.2	1.0	0.3	1.0	A-	
2088	682567	5	5	410	.551	.112	.180	.551	.156	.000	.236	-.186	-.058	.236	-.100	0.034	0.109	3.0	1.1	2.6	1.1	A-	
2089	682568	5	5	397	.665	.239	.040	.055	.665	.000	.478	-.236	-.301	-.288	.478	-0.513	0.118	-1.6	0.9	-2.0	0.9	A-	
2090	682569	5	5	433	.889	.889	.051	.028	.032	.000	.419	.419	-.252	-.267	-.183	-2.084	0.164	-1.0	0.9	-2.0	0.7	B+	
2091	686596	5	5	997	.351	.351	.249	.234	.166	.000	.262	.262	-.034	-.160	-.116	1.140	0.072	2.7	1.1	4.4	1.2	A-	A-
2092	686608	5	5	1022	.635	.144	.134	.087	.635	.000	.614	-.300	-.301	-.311	.614	-0.338	0.073	-7.9	0.8	-8.0	0.7	B+	A-
2093	686609	5	5	995	.511	.511	.115	.134	.241	.000	.444	.444	-.308	-.277	-.069	0.285	0.071	-1.6	1.0	-1.8	0.9	A-	A-
2094	686610	5	5	961	.574	.574	.165	.125	.135	.000	.486	.486	-.157	-.267	-.274	-0.037	0.073	-3.3	0.9	-3.3	0.9	A+	C-
2095	686611	5	5	941	.521	.213	.057	.209	.521	.000	.349	-.188	-.288	-.075	.349	0.232	0.073	2.2	1.1	2.4	1.1	A+	A-

Table B–3 (continued). Reading/Literature Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
2096	686612	5	5	939	.544	.544	.201	.131	.124	.000	.420	.420	-.129	-.244	-.229	0.113	0.073	-0.5	1.0	-0.3	1.0	A+	A-
2097	686614	5	5	1086	.588	.588	.194	.113	.104	.000	.491	.491	-.206	-.257	-.258	-0.076	0.068	-3.9	0.9	-4.4	0.8	A+	
2098	686615	5	5	1071	.400	.290	.400	.157	.153	.000	.257	.022	.257	-.174	-.202	0.870	0.069	3.6	1.1	5.8	1.3	A-	
2099	686616	5	5	1074	.460	.169	.305	.460	.065	.000	.426	-.227	-.165	.426	-.209	0.570	0.068	-2.3	0.9	-1.1	1.0	A-	
2100	686617	5	5	1056	.601	.112	.078	.209	.601	.000	.436	-.072	-.312	-.264	.436	-0.133	0.070	-1.4	1.0	-1.8	0.9	A-	
2101	686618	5	5	1214	.547	.110	.547	.214	.129	.000	.368	-.158	.368	-.247	-.097	0.175	0.064	1.3	1.0	1.4	1.1	A+	A-
2102	686619	5	5	1154	.300	.282	.300	.256	.162	.000	.140	-.031	.140	-.099	-.018	1.426	0.070	6.0	1.2	7.6	1.5	A-	A+
2103	686620	5	5	1145	.440	.177	.440	.192	.190	.000	.294	-.095	.294	-.112	-.167	0.675	0.066	3.6	1.1	4.4	1.2	A-	A+
2104	686621	5	5	1113	.669	.668	.101	.118	.113	.000	.571	.571	-.304	-.322	-.233	-0.477	0.071	-6.4	0.8	-6.2	0.7	A+	B-
2105	686622	5	5	1103	.375	.306	.375	.084	.235	.000	.253	-.038	.253	-.288	-.058	0.999	0.068	3.5	1.1	5.6	1.3	A+	A+
2106	686623	5	5	2238	.681	.681	.101	.129	.088	.000	.487	.487	-.254	-.223	-.266	-0.590	0.050	-4.5	0.9	-5.0	0.8	A-	B-
2107	687039	5	5	1066	.637	.163	.131	.637	.068	.000	.467	-.237	-.270	.467	-.182	-0.376	0.071	-1.8	0.9	-2.8	0.9	A+	A+
2108	687040	5	5	1011	.481	.481	.102	.150	.267	.000	.382	.382	-.223	-.245	-.081	0.407	0.071	1.3	1.0	1.2	1.1	A+	B-
2109	687042	5	5	1019	.221	.274	.333	.173	.221	.000	.196	-.040	.010	-.180	.196	1.860	0.081	1.9	1.1	4.0	1.3	A+	
2110	687043	5	5	997	.463	.244	.121	.172	.463	.000	.188	.122	-.301	-.127	.188	0.547	0.070	7.0	1.2	7.1	1.3	A+	
2111	687044	5	5	990	.516	.516	.251	.166	.068	.000	.383	.383	-.111	-.198	-.278	0.289	0.070	0.3	1.0	0.2	1.0	A+	
2112	687045	5	5	1003	.401	.401	.113	.161	.326	.000	.251	.251	-.273	-.191	.071	0.812	0.072	5.8	1.2	4.9	1.2	A-	A+
2113	687046	5	5	990	.568	.568	.144	.145	.142	.000	.475	.475	-.184	-.299	-.188	-0.036	0.072	-2.3	0.9	-1.8	0.9	A-	A+
2114	687047	5	5	973	.617	.103	.617	.137	.144	.000	.475	-.243	.475	-.239	-.215	-0.287	0.074	-1.9	0.9	-2.3	0.9	A+	A-
2115	687048	5	5	1114	.583	.583	.191	.112	.114	.000	.422	.422	-.132	-.277	-.217	-0.093	0.068	-0.2	1.0	-0.3	1.0	A+	A-
2116	687049	5	5	1068	.435	.144	.199	.434	.223	.000	.232	-.256	-.218	.232	.149	0.646	0.069	6.1	1.2	6.8	1.3	A-	
2117	687050	5	5	1013	.336	.336	.152	.253	.260	.000	.238	.238	-.141	-.035	-.106	1.148	0.073	4.2	1.1	4.4	1.3	A-	
2118	687051	5	5	972	.433	.193	.153	.220	.433	.000	.285	-.109	-.183	-.077	.285	0.617	0.072	3.9	1.1	4.8	1.2	A-	
2119	687052	5	5	973	.515	.242	.515	.144	.100	.000	.406	-.150	.406	-.208	-.218	0.208	0.072	0.1	1.0	-0.3	1.0	A+	
2120	687053	5	5	960	.463	.156	.179	.202	.463	.000	.463	-.146	-.234	-.219	.463	0.459	0.072	-3.1	0.9	-1.1	1.0	A+	
2121	687054	5	5	1868	.659	.659	.074	.191	.076	.000	.343	.343	-.242	-.074	-.264	-0.441	0.054	1.9	1.1	2.2	1.1	A-	B-
2122	687058	5	5	1101	.499	.159	.499	.096	.246	.000	.414	-.167	.414	-.311	-.126	0.317	0.067	-1.3	1.0	-0.5	1.0	A-	A+
2123	687059	5	5	1067	.425	.333	.140	.425	.103	.000	.261	.045	-.221	.261	-.240	0.672	0.068	4.2	1.1	4.6	1.2	A+	A-
2124	687060	5	5	1081	.597	.597	.084	.116	.204	.000	.298	.298	-.306	-.244	.042	-0.181	0.069	2.7	1.1	5.0	1.2	A+	A-
2125	687062	5	5	1084	.608	.608	.121	.163	.108	.000	.572	.572	-.312	-.297	-.219	-0.291	0.069	-6.8	0.8	-6.9	0.7	A+	A-
2126	687063	5	5	1008	.450	.176	.205	.169	.450	.000	.432	-.164	-.161	-.234	.432	0.512	0.071	-1.7	1.0	0.1	1.0	A+	A+
2127	687064	5	5	989	.637	.109	.126	.637	.127	.000	.493	-.183	-.295	.493	-.247	-0.464	0.074	-3.3	0.9	-3.5	0.8	A+	A-
2128	687065	5	5	1901	.718	.139	.718	.097	.046	.000	.477	-.272	.477	-.250	-.224	-0.846	0.056	-3.7	0.9	-5.1	0.8	A-	A-
2129	687066	5	5	968	.457	.213	.161	.169	.457	.000	.309	-.095	-.049	-.259	.309	0.466	0.072	3.1	1.1	4.4	1.2	A+	A-
2130	687250	5	5	1131	.679	.679	.117	.100	.104	.000	.527	.527	-.313	-.284	-.197	-0.609	0.071	-4.4	0.9	-5.0	0.8	A+	A-

Table B–3 (continued). Reading/Literature Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M /F	W /B
2131	687252	5	5	2188	.741	.095	.741	.105	.059	.000	.492	-.278	.492	-.276	-.210	-0.958	0.054	-4.4	0.9	-5.3	0.8	A+	A-
2132	687432	5	5	1015	.752	.752	.122	.072	.054	.000	.561	.561	-.284	-.288	-.331	-0.980	0.080	-5.3	0.8	-5.5	0.7	A-	B-
2133	687433	5	5	1009	.387	.387	.193	.114	.306	.000	.232	.232	-.115	-.226	.009	0.928	0.071	4.1	1.1	5.9	1.3	A-	A+
2134	687434	5	5	1042	.222	.381	.306	.091	.222	.000	.222	.126	-.136	-.316	.222	1.912	0.080	0.8	1.0	5.3	1.5	A+	A-
2135	687435	5	5	1113	.219	.179	.504	.219	.098	.000	.031	-.092	.210	.031	-.277	1.825	0.077	4.9	1.2	9.6	1.9	A-	A+
2136	687436	5	5	1113	.516	.516	.111	.276	.097	.000	.302	.302	-.224	-.072	-.164	0.235	0.066	3.4	1.1	4.4	1.2	A+	A-
2137	687437	5	5	1105	.400	.234	.164	.202	.400	.000	.355	-.092	-.176	-.174	.355	0.802	0.067	-0.2	1.0	2.8	1.1	A+	A-
2138	687440	5	5	1094	.475	.152	.475	.156	.217	.000	.183	-.164	.183	-.144	.047	0.436	0.067	7.8	1.2	7.8	1.3	A-	A-
2139	687441	5	5	1031	.519	.519	.177	.193	.112	.000	.315	.315	-.234	-.107	-.084	0.255	0.069	2.6	1.1	2.8	1.1	A+	A-
2140	687442	5	5	1033	.492	.197	.148	.164	.492	.000	.411	-.156	-.233	-.164	.411	0.379	0.069	-1.8	1.0	-0.3	1.0	A+	A-
2141	687453	5	5	1069	.374	.514	.062	.374	.050	.000	.234	.005	-.315	.234	-.183	1.001	0.069	3.8	1.1	5.8	1.3	A+	B+
2142	687454	5	5	1046	.508	.508	.173	.089	.230	.000	.242	.242	-.163	-.306	.066	0.340	0.068	5.8	1.2	5.2	1.2	A+	A-
2143	687455	5	5	1018	.656	.155	.656	.103	.085	.000	.510	-.151	.510	-.314	-.330	-0.421	0.073	-3.9	0.9	-4.3	0.8	A+	A+
2144	687456	5	5	1016	.681	.094	.096	.128	.681	.000	.480	-.262	-.261	-.210	.480	-0.565	0.074	-3.1	0.9	-3.0	0.9	A+	A+
2145	687457	5	5	1922	.365	.543	.067	.365	.025	.000	.168	.039	-.285	.168	-.185	1.053	0.052	8.2	1.2	9.9	1.4	A+	B-
2146	687458	5	5	1025	.669	.087	.162	.669	.082	.000	.423	-.212	-.178	.423	-.269	-0.499	0.073	-1.0	1.0	-1.7	0.9	A+	A+
2147	687459	5	5	1015	.614	.189	.614	.100	.098	.000	.376	-.109	.376	-.247	-.223	-0.210	0.071	0.5	1.0	0.4	1.0	A+	A-
2148	687460	5	5	1043	.458	.255	.129	.458	.157	.000	.392	-.056	-.284	.392	-.208	0.613	0.069	-1.1	1.0	0.8	1.0	A+	A-
2149	687898	5	5	1078	.498	.498	.289	.141	.071	.000	.358	.358	-.164	-.229	-.097	0.407	0.068	1.8	1.1	2.2	1.1	A+	A+
2150	687899	5	5	1013	.396	.281	.182	.396	.141	.000	.319	-.113	-.216	.319	-.062	0.915	0.071	1.8	1.1	4.4	1.2	A+	A+
2151	687900	5	5	1004	.423	.112	.423	.259	.206	.000	.291	-.245	.291	-.028	-.135	0.768	0.071	3.9	1.1	4.3	1.2	A-	A-
2152	687901	5	5	986	.229	.181	.276	.314	.229	.000	.151	-.172	-.029	.034	.151	1.859	0.082	3.1	1.1	7.3	1.7	A+	A-
2153	687902	5	5	1854	.587	.172	.159	.587	.083	.000	.495	-.239	-.252	.495	-.222	-0.099	0.053	-4.1	0.9	-4.0	0.9	A+	A-
2154	741071	6	6	2761	.653	.120	.184	.653	.043	.000	.323	-.299	-.052	.323	-.179	-0.156	0.044	3.7	1.1	4.2	1.1	A-	A-
2155	741068	6	6	2761	.419	.419	.192	.127	.263	.000	.215	.215	-.036	-.216	-.045	1.028	0.043	9.9	1.2	9.9	1.3	A-	A-
2156	741070	6	6	2761	.763	.084	.044	.109	.763	.000	.364	-.219	-.245	-.140	.364	-0.816	0.049	0.8	1.0	-0.2	1.0	A+	A-
2157	741067	6	6	2761	.420	.217	.209	.154	.420	.000	.299	-.201	-.068	-.103	.299	1.022	0.042	4.7	1.1	5.9	1.2	A-	A-
2158	741069	6	6	2761	.568	.161	.568	.171	.100	.000	.427	-.099	.427	-.232	-.293	0.289	0.043	-1.6	1.0	-1.6	1.0	A+	A-
2159	740356	6	6	2767	.626	.172	.626	.123	.079	.000	.376	-.263	.376	-.164	-.106	-0.026	0.044	1.4	1.0	0.1	1.0	A-	A-
2160	740358	6	6	2767	.458	.180	.165	.197	.458	.000	.408	-.082	-.261	-.187	.408	0.821	0.042	-2.9	1.0	0.7	1.0	A+	A+
2161	740354	6	6	2767	.714	.073	.110	.103	.714	.000	.549	-.288	-.273	-.288	.549	-0.517	0.047	-7.9	0.8	-9.4	0.7	A-	A-
2162	740357	6	6	2767	.489	.172	.258	.489	.081	.000	.291	-.102	-.073	.291	-.274	0.664	0.042	5.9	1.1	6.6	1.2	A+	A+
2163	740355	6	6	2767	.455	.455	.206	.156	.183	.000	.348	.348	-.216	-.225	-.010	0.832	0.042	1.4	1.0	4.0	1.1	A-	A+
2164	741189	6	6	2714	.724	.724	.113	.104	.059	.000	.472	.472	-.260	-.239	-.235	-0.553	0.048	-3.4	0.9	-4.4	0.9	A-	A-
2165	741193	6	6	2714	.656	.108	.656	.070	.165	.000	.472	-.209	.472	-.270	-.243	-0.161	0.045	-3.3	0.9	-4.5	0.9	A-	A-

Table B–3 (continued). Reading/Literature Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M /F	W /B
2166	741188	6	6	2714	.507	.190	.208	.507	.095	.000	.303	-.115	-.150	.303	-.157	0.607	0.043	5.8	1.1	6.4	1.2	A+	A-
2167	741192	6	6	2714	.408	.190	.408	.213	.189	.000	.201	-.129	.201	-.114	-.004	1.101	0.043	9.9	1.2	9.9	1.4	A+	A-
2168	741190	6	6	2714	.525	.249	.145	.082	.525	.000	.373	-.037	-.262	-.285	.373	0.521	0.043	1.5	1.0	2.6	1.1	A+	A-
2169	741074	6	6	2732	.545	.146	.545	.247	.061	.000	.207	-.251	.207	.034	-.123	0.348	0.043	9.9	1.2	9.9	1.3	A-	A+
2170	741077	6	6	2732	.209	.083	.181	.209	.526	.000	.147	-.117	-.170	.147	.076	2.168	0.050	2.9	1.1	9.9	1.9	A-	A-
2171	741075	6	6	2732	.592	.592	.101	.162	.144	.000	.468	.468	-.314	-.205	-.169	0.110	0.043	-3.5	0.9	-4.0	0.9	A-	A-
2172	741073	6	6	2732	.253	.231	.327	.189	.253	.000	.088	-.033	.103	-.186	.088	1.881	0.048	8.1	1.2	9.9	1.8	A-	A-
2173	741078	6	6	2732	.305	.305	.204	.190	.302	.000	.103	.103	-.178	-.183	.208	1.579	0.045	9.9	1.2	9.9	1.7	A-	A-
2174	741083	6	6	2826	.513	.276	.084	.513	.127	.000	.301	-.067	-.252	.301	-.153	0.559	0.042	7.3	1.1	7.9	1.2	A+	A-
2175	741085	6	6	2826	.592	.115	.116	.177	.592	.000	.510	-.210	-.237	-.282	.510	0.160	0.043	-6.1	0.9	-5.9	0.9	B+	A+
2176	741080	6	6	2826	.562	.562	.152	.195	.091	.000	.391	.391	-.200	-.149	-.220	0.313	0.043	0.9	1.0	2.9	1.1	A+	A+
2177	741081	6	6	2826	.446	.446	.196	.283	.074	.000	.284	.284	-.162	-.008	-.279	0.896	0.042	7.2	1.1	9.4	1.3	A-	A-
2178	741082	6	6	2826	.638	.074	.638	.190	.098	.000	.455	-.199	.455	-.195	-.303	-0.088	0.044	-2.2	1.0	-2.0	0.9	A-	A-
2179	740321	6	6	2790	.550	.550	.182	.217	.051	.000	.125	.125	.004	-.039	-.216	0.380	0.042	9.9	1.3	9.9	1.4	A+	A-
2180	740319	6	6	2790	.390	.146	.377	.086	.390	.000	.210	-.142	.046	-.266	.210	1.170	0.043	9.1	1.2	9.9	1.3	A+	A-
2181	740318	6	6	2790	.812	.070	.812	.044	.075	.000	.475	-.267	.475	-.273	-.235	-1.168	0.053	-4.1	0.9	-4.3	0.8	A+	A-
2182	740316	6	6	2790	.389	.350	.150	.112	.389	.000	.334	-.064	-.174	-.224	.334	1.177	0.043	1.5	1.0	5.3	1.2	A+	A-
2183	740317	6	6	2790	.200	.114	.603	.200	.084	.000	-.061	-.225	.341	-.061	-.257	2.268	0.050	8.6	1.3	9.9	2.5	A+	A+
2184	739547	6	6	2846	.726	.726	.131	.076	.068	.000	.496	.496	-.198	-.320	-.278	-0.555	0.047	-5.3	0.9	-4.9	0.8	B+	A-
2185	739543	6	6	2846	.552	.552	.184	.132	.132	.000	.290	.290	-.161	-.114	-.128	0.392	0.042	7.5	1.1	6.9	1.2	A+	A+
2186	739546	6	6	2846	.787	.081	.077	.787	.055	.000	.491	-.249	-.292	.491	-.243	-0.966	0.050	-4.8	0.9	-5.9	0.8	A+	A-
2187	739542	6	6	2846	.572	.187	.076	.165	.572	.000	.389	-.158	-.228	-.189	.389	0.292	0.042	0.7	1.0	1.2	1.0	A+	A+
2188	739544	6	6	2846	.553	.214	.553	.154	.078	.000	.475	-.146	.475	-.255	-.314	0.385	0.042	-5.0	0.9	-4.4	0.9	A+	A-
2189	739552	6	6	2700	.807	.807	.067	.085	.041	.000	.549	.549	-.300	-.313	-.273	-1.168	0.054	-6.6	0.8	-8.7	0.6	A-	A-
2190	739551	6	6	2700	.555	.184	.555	.140	.121	.000	.443	-.164	.443	-.268	-.194	0.329	0.043	-2.1	1.0	-2.0	1.0	A-	A-
2191	739549	6	6	2700	.300	.300	.098	.185	.417	.000	.159	.159	-.254	-.149	.123	1.634	0.046	8.6	1.2	9.9	1.5	A-	A+
2192	739548	6	6	2700	.749	.176	.039	.749	.036	.000	.294	-.140	-.169	.294	-.223	-0.759	0.049	4.3	1.1	3.7	1.2	A-	C-
2193	739550	6	6	2700	.433	.153	.189	.225	.433	.000	.240	-.055	-.056	-.185	.240	0.935	0.043	8.6	1.2	9.9	1.3	A+	A-
2194	737516	6	6	2780	.527	.178	.234	.527	.061	.000	.370	-.172	-.140	.370	-.250	0.469	0.042	2.4	1.0	3.1	1.1	A+	A-
2195	737515	6	6	2780	.812	.050	.812	.064	.074	.000	.505	-.287	.505	-.312	-.223	-1.195	0.053	-5.5	0.8	-5.7	0.7	A+	A-
2196	737514	6	6	2780	.658	.658	.175	.091	.076	.000	.373	.373	-.151	-.221	-.211	-0.210	0.045	2.1	1.0	1.0	1.0	A-	A-
2197	737517	6	6	2780	.465	.237	.167	.131	.465	.000	.397	-.087	-.198	-.258	.397	0.779	0.042	-1.0	1.0	2.7	1.1	A+	A+
2198	737518	6	6	2780	.489	.095	.171	.488	.246	.000	.223	-.219	.005	.223	-.114	0.663	0.042	9.9	1.2	9.9	1.3	A+	A+
2199	740074	6	6	2805	.445	.445	.110	.366	.080	.000	.205	.205	-.293	.064	-.153	0.890	0.042	9.9	1.2	9.9	1.3	A-	A-
2200	740075	6	6	2805	.613	.099	.098	.190	.613	.000	.378	-.202	-.143	-.207	.378	0.045	0.043	1.8	1.0	0.8	1.0	A+	A-

Table B–3 (continued). Reading/Literature Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M /F	W /B
2201	740076	6	6	2805	.837	.036	.837	.051	.076	.000	.442	-.213	.442	-.241	-.265	-1.386	0.056	-3.0	0.9	-3.9	0.8	A-	A-
2202	740078	6	6	2805	.410	.410	.156	.255	.179	.000	.226	.226	-.204	-.072	-.016	1.061	0.042	9.5	1.2	9.7	1.3	A+	A-
2203	740073	6	6	2805	.472	.232	.145	.472	.151	.000	.262	-.025	-.157	.262	-.182	0.753	0.042	8.0	1.1	9.7	1.2	A+	A-
2204	741218	6	6	2816	.794	.131	.794	.038	.038	.000	.460	-.241	.460	-.311	-.238	-1.058	0.051	-3.2	0.9	-4.4	0.8	A+	B-
2205	741216	6	6	2816	.454	.162	.453	.116	.269	.000	.275	-.201	.275	-.280	.060	0.837	0.042	7.3	1.1	8.2	1.2	A-	A+
2206	741215	6	6	2816	.383	.140	.338	.139	.383	.000	.245	-.139	.047	-.268	.245	1.193	0.043	7.3	1.1	9.5	1.3	A+	A+
2207	741217	6	6	2816	.511	.138	.209	.511	.142	.000	.457	-.189	-.177	.457	-.261	0.554	0.042	-4.3	0.9	-2.2	1.0	A-	A-
2208	741214	6	6	2816	.413	.413	.216	.244	.127	.000	.230	.230	-.228	-.039	-.009	1.038	0.042	9.1	1.2	9.9	1.3	A-	A+
2209	740161	6	6	2838	.416	.062	.416	.079	.443	.000	.180	-.285	.180	-.267	.105	1.026	0.042	9.9	1.2	9.9	1.4	A-	A+
2210	740159	6	6	2838	.482	.144	.482	.233	.140	.000	.212	-.170	.212	-.090	-.023	0.695	0.042	9.9	1.2	9.9	1.3	A-	A+
2211	740164	6	6	2838	.650	.081	.104	.165	.650	.000	.506	-.252	-.314	-.207	.506	-0.164	0.044	-5.9	0.9	-5.7	0.9	A+	A-
2212	740160	6	6	2838	.502	.502	.184	.122	.192	.000	.305	.305	-.145	-.158	-.113	0.598	0.042	5.6	1.1	6.5	1.2	A-	A+
2213	740163	6	6	2838	.774	.080	.085	.774	.061	.000	.508	-.236	-.265	.508	-.311	-0.916	0.049	-5.2	0.9	-7.2	0.7	A-	B-
2214	737328	6	6	2773	.254	.254	.190	.237	.320	.000	.112	.112	-.013	-.145	.038	1.936	0.047	8.3	1.2	9.9	1.7	A-	A-
2215	737331	6	6	2773	.742	.116	.742	.070	.072	.000	.511	-.274	.511	-.309	-.219	-0.692	0.048	-5.4	0.9	-6.1	0.8	A+	A+
2216	737333	6	6	2773	.631	.059	.098	.631	.212	.000	.435	-.276	-.290	.435	-.144	-0.043	0.044	-1.2	1.0	-1.9	1.0	A-	A-
2217	737330	6	6	2773	.464	.129	.228	.180	.464	.000	.411	-.230	-.134	-.188	.411	0.808	0.042	-1.8	1.0	2.0	1.1	A-	A+
2218	737332	6	6	2773	.545	.545	.068	.228	.159	.000	.418	.418	-.284	-.158	-.192	0.400	0.043	-0.7	1.0	0.0	1.0	A-	A-
2219	741124	6	6	2733	.499	.196	.499	.126	.179	.000	.343	-.144	.343	-.259	-.073	0.641	0.043	4.1	1.1	4.0	1.1	A+	A+
2220	741126	6	6	2733	.826	.826	.075	.060	.039	.000	.452	.452	-.221	-.287	-.232	-1.287	0.055	-3.3	0.9	-4.9	0.7	A+	A-
2221	741127	6	6	2733	.576	.576	.125	.186	.113	.000	.393	.393	-.221	-.127	-.226	0.254	0.043	1.4	1.0	1.1	1.0	A+	A-
2222	741125	6	6	2733	.582	.118	.153	.582	.146	.000	.483	-.271	-.271	.483	-.150	0.222	0.043	-4.8	0.9	-5.0	0.9	A-	A+
2223	741128	6	6	2733	.534	.183	.162	.533	.121	.000	.314	-.102	-.152	.314	-.186	0.469	0.043	5.6	1.1	6.7	1.2	A+	A+
2224	741326	6	6	2708	.743	.056	.121	.080	.743	.000	.513	-.277	-.266	-.272	.513	-0.694	0.049	-5.9	0.9	-6.0	0.8	A+	A-
2225	741325	6	6	2708	.511	.179	.511	.101	.209	.000	.362	-.200	.362	-.256	-.068	0.565	0.043	2.0	1.0	3.0	1.1	A+	A+
2226	741324	6	6	2708	.396	.199	.233	.395	.172	.000	.238	-.163	.015	.238	-.152	1.143	0.043	7.8	1.1	9.1	1.3	A+	A+
2227	741327	6	6	2708	.446	.151	.152	.251	.446	.000	.359	-.195	-.202	-.084	.359	0.889	0.043	1.1	1.0	4.2	1.1	A+	A+
2228	741328	6	6	2708	.502	.502	.109	.234	.155	.000	.352	.352	-.258	-.087	-.162	0.610	0.043	2.7	1.0	3.9	1.1	A+	A-
2229	740150	6	6	2690	.660	.097	.154	.659	.090	.000	.454	-.322	-.208	.454	-.156	-0.265	0.046	-2.3	1.0	-3.5	0.9	A+	A+
2230	740147	6	6	2690	.340	.340	.112	.306	.242	.000	.167	.167	-.248	-.013	.012	1.381	0.045	9.9	1.2	9.9	1.5	A+	A+
2231	740151	6	6	2690	.648	.094	.648	.122	.136	.000	.463	-.235	.463	-.294	-.165	-0.201	0.045	-2.4	1.0	-4.0	0.9	A+	A+
2232	740152	6	6	2690	.548	.145	.143	.163	.548	.000	.533	-.218	-.285	-.240	.533	0.325	0.043	-8.6	0.9	-7.7	0.8	B+	A+
2233	741338	6	6	2780	.519	.519	.063	.351	.068	.000	.290	.290	-.281	-.052	-.208	0.516	0.042	7.9	1.1	6.8	1.2	C-	B-
2234	741337	6	6	2780	.866	.044	.036	.866	.054	.000	.484	-.246	-.275	.484	-.279	-1.685	0.060	-4.2	0.9	-6.9	0.6	A-	B-
2235	741336	6	6	2780	.815	.815	.069	.059	.057	.000	.476	.476	-.333	-.265	-.164	-1.229	0.054	-4.0	0.9	-3.9	0.8	A+	A-

Table B–3 (continued). Reading/Literature Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
2236	741339	6	6	2780	.530	.265	.130	.530	.074	.000	.335	-.073	-.164	.335	-.303	0.461	0.042	4.4	1.1	5.5	1.1	A-	A-
2237	741340	6	6	2780	.449	.153	.449	.123	.275	.000	.362	-.111	.362	-.299	-.094	0.868	0.042	1.4	1.0	3.8	1.1	A-	A-
2238	741362	6	6	2821	.491	.137	.491	.289	.083	.000	.337	-.220	.337	-.102	-.168	0.673	0.042	4.0	1.1	5.7	1.1	A-	A-
2239	741363	6	6	2821	.800	.051	.092	.800	.057	.000	.542	-.303	-.300	.542	-.273	-1.097	0.052	-6.4	0.8	-8.2	0.6	A-	A-
2240	741361	6	6	2821	.566	.566	.135	.158	.140	.000	.475	.475	-.310	-.205	-.158	0.297	0.043	-4.6	0.9	-3.6	0.9	A+	A-
2241	741364	6	6	2821	.364	.233	.364	.211	.192	.000	.333	-.093	.333	-.175	-.125	1.317	0.043	0.4	1.0	7.2	1.2	A+	A-
2242	741360	6	6	2821	.404	.404	.285	.202	.110	.000	.344	.344	-.128	-.115	-.207	1.111	0.042	1.6	1.0	4.9	1.1	A+	A-
2243	741351	6	6	2686	.486	.485	.220	.111	.183	.000	.275	.275	-.100	-.247	-.048	0.679	0.043	7.7	1.1	7.9	1.2	A-	A-
2244	741352	6	6	2686	.392	.158	.136	.313	.392	.000	.227	-.104	-.227	.011	.227	1.146	0.044	9.0	1.2	9.9	1.3	A+	A-
2245	741353	6	6	2686	.417	.255	.207	.417	.121	.000	.255	-.032	-.181	.255	-.118	1.019	0.043	7.7	1.1	9.7	1.3	A-	A+
2246	741349	6	6	2686	.370	.370	.251	.171	.208	.000	.303	.303	-.042	-.188	-.141	1.259	0.044	3.1	1.1	7.2	1.2	A-	A-
2247	741350	6	6	2686	.604	.109	.201	.086	.604	.000	.463	-.206	-.192	-.303	.463	0.082	0.044	-3.2	0.9	-3.9	0.9	A-	A-
2248	741507	6	6	2788	.770	.053	.770	.104	.072	.000	.442	-.204	.442	-.234	-.266	-0.852	0.049	-2.3	0.9	-4.4	0.8	A-	A-
2249	741504	6	6	2788	.349	.171	.283	.197	.349	.000	.331	-.139	-.136	-.112	.331	1.385	0.043	-0.5	1.0	5.9	1.2	A-	A+
2250	741505	6	6	2788	.637	.637	.159	.113	.091	.000	.477	.477	-.264	-.232	-.208	-0.063	0.044	-4.6	0.9	-5.4	0.9	A-	A+
2251	741506	6	6	2788	.487	.159	.197	.487	.156	.000	.360	-.110	-.118	.360	-.255	0.692	0.042	1.5	1.0	2.9	1.1	A-	A-
2252	741503	6	6	2788	.463	.130	.463	.249	.158	.000	.198	-.178	.198	-.099	.011	0.813	0.042	9.9	1.2	9.9	1.3	A-	A-
2253	741540	6	6	2821	.543	.218	.093	.543	.146	.000	.373	-.065	-.302	.373	-.200	0.382	0.042	2.0	1.0	3.1	1.1	A+	A-
2254	741536	6	6	2821	.411	.151	.161	.278	.410	.000	.250	-.258	-.217	.110	.250	1.040	0.042	8.2	1.1	9.2	1.3	A+	A-
2255	741537	6	6	2821	.616	.133	.114	.136	.616	.000	.373	-.157	-.208	-.180	.373	0.003	0.043	2.4	1.1	1.8	1.1	A+	A+
2256	741535	6	6	2821	.630	.124	.630	.166	.081	.000	.436	-.230	.436	-.214	-.204	-0.069	0.044	-1.3	1.0	-2.3	0.9	A+	A-
2257	741539	6	6	2821	.355	.185	.355	.224	.236	.000	.155	-.061	.155	-.167	.045	1.326	0.043	9.9	1.2	9.9	1.5	A+	A+
2258	740263	7	7	2020	.397	.090	.156	.357	.397	.000	.328	-.290	-.127	-.066	.328	1.332	0.050	2.8	1.1	5.3	1.2	A-	A-
2259	740266	7	7	2020	.699	.699	.116	.095	.091	.000	.475	.475	-.205	-.291	-.234	-0.253	0.055	-2.4	0.9	-4.1	0.8	A+	A-
2260	740264	7	7	2020	.734	.075	.124	.734	.068	.000	.510	-.269	-.257	.510	-.279	-0.471	0.056	-4.1	0.9	-4.8	0.8	B+	B-
2261	740265	7	7	2020	.639	.084	.639	.167	.110	.000	.546	-.271	.546	-.222	-.334	0.090	0.052	-6.4	0.9	-6.8	0.8	A+	A-
2262	740262	7	7	2020	.468	.200	.468	.247	.086	.000	.238	.003	.238	-.148	-.200	0.971	0.050	9.5	1.2	9.6	1.3	A+	A+
2263	740157	7	7	1925	.759	.122	.060	.059	.759	.000	.533	-.309	-.286	-.251	.533	-0.673	0.060	-4.8	0.9	-5.2	0.8	A+	A-
2264	740156	7	7	1925	.656	.188	.086	.656	.071	.000	.414	-.142	-.248	.414	-.281	-0.037	0.054	0.7	1.0	-0.9	1.0	A+	A-
2265	740158	7	7	1925	.674	.079	.170	.077	.674	.000	.502	-.325	-.189	-.288	.502	-0.140	0.055	-4.0	0.9	-3.0	0.9	B+	A+
2266	740154	7	7	1925	.518	.518	.089	.176	.217	.000	.396	.396	-.259	-.179	-.136	0.688	0.051	1.0	1.0	1.8	1.1	A+	A-
2267	740153	7	7	1925	.356	.276	.356	.155	.214	.000	.166	.026	.166	-.242	-.009	1.517	0.053	8.4	1.2	9.9	1.7	A+	A-
2268	740344	7	7	1971	.646	.103	.161	.089	.646	.000	.590	-.293	-.296	-.295	.590	0.053	0.053	-8.7	0.8	-8.9	0.7	A+	A-
2269	740345	7	7	1971	.400	.363	.136	.400	.100	.000	.103	.159	-.192	.103	-.202	1.311	0.051	9.9	1.3	9.9	1.6	A-	A-
2270	740342	7	7	1971	.251	.186	.447	.116	.251	.000	.140	-.147	.158	-.256	.140	2.135	0.056	4.2	1.1	9.9	1.8	A-	A+

Table B–3 (continued). Reading/Literature Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M /F	W /B
2271	740339	7	7	1971	.576	.576	.100	.203	.120	.000	.396	.396	-.288	-.087	-.228	0.428	0.051	0.8	1.0	1.2	1.0	A-	A+
2272	740340	7	7	1971	.596	.124	.596	.136	.144	.000	.496	-.181	.496	-.277	-.253	0.326	0.052	-4.3	0.9	-4.2	0.9	A-	A-
2273	740562	7	7	1983	.775	.775	.074	.047	.103	.000	.499	.499	-.287	-.324	-.211	-0.769	0.060	-3.8	0.9	-3.6	0.8	A+	A-
2274	740566	7	7	1983	.522	.175	.522	.152	.150	.000	.332	-.101	.332	-.226	-.130	0.682	0.051	4.3	1.1	6.0	1.2	A+	A-
2275	740567	7	7	1983	.573	.100	.148	.179	.573	.000	.461	-.308	-.233	-.139	.461	0.422	0.051	-2.3	1.0	-2.1	0.9	A+	A-
2276	740563	7	7	1983	.788	.068	.788	.069	.076	.000	.548	-.255	.548	-.303	-.315	-0.861	0.061	-5.2	0.8	-7.0	0.6	A+	A-
2277	740565	7	7	1983	.526	.245	.093	.526	.136	.000	.335	-.072	-.332	.335	-.115	0.665	0.051	4.9	1.1	4.5	1.1	A+	A-
2278	741320	7	7	2009	.494	.494	.178	.201	.127	.000	.409	.409	-.148	-.233	-.164	0.841	0.050	-0.4	1.0	0.5	1.0	A+	A+
2279	741321	7	7	2009	.747	.074	.085	.095	.747	.000	.582	-.310	-.311	-.292	.582	-0.555	0.057	-7.1	0.8	-8.4	0.6	A+	A+
2280	741322	7	7	2009	.802	.044	.802	.057	.097	.000	.537	-.268	.537	-.275	-.323	-0.949	0.062	-5.2	0.8	-6.4	0.7	A+	B-
2281	741319	7	7	2009	.283	.283	.105	.344	.269	.000	.097	.097	-.190	.001	.032	1.943	0.054	9.0	1.2	9.9	1.7	A-	A+
2282	741318	7	7	2009	.484	.176	.237	.484	.102	.000	.342	-.151	-.153	.342	-.159	0.888	0.050	3.3	1.1	4.9	1.2	A+	A+
2283	740816	7	7	2008	.654	.145	.119	.654	.082	.000	.476	-.155	-.326	.476	-.241	-0.013	0.053	-2.0	1.0	-2.7	0.9	A+	A+
2284	740814	7	7	2008	.429	.336	.429	.122	.114	.000	.264	.034	.264	-.269	-.186	1.158	0.050	7.8	1.2	8.1	1.3	A+	A-
2285	740811	7	7	2008	.531	.531	.235	.141	.092	.000	.357	.357	.004	-.273	-.293	0.641	0.050	3.7	1.1	4.5	1.1	A+	A-
2286	740812	7	7	2008	.497	.169	.152	.181	.497	.000	.416	-.144	-.278	-.142	.416	0.815	0.050	-0.3	1.0	2.2	1.1	A+	A-
2287	740815	7	7	2008	.606	.188	.606	.128	.078	.000	.440	-.085	.440	-.288	-.319	0.255	0.052	-0.7	1.0	-0.2	1.0	A+	A-
2288	740348	7	7	2000	.422	.158	.349	.072	.422	.000	.278	-.162	-.023	-.263	.278	1.185	0.050	6.3	1.1	7.1	1.2	A+	A+
2289	740347	7	7	2000	.773	.071	.102	.773	.055	.000	.560	-.325	-.337	.560	-.218	-0.754	0.060	-6.0	0.8	-7.0	0.7	B+	A-
2290	740352	7	7	2000	.534	.534	.093	.181	.193	.000	.390	.390	-.207	-.162	-.182	0.622	0.050	1.2	1.0	1.8	1.1	A+	A+
2291	740349	7	7	2000	.606	.118	.606	.129	.147	.000	.388	-.134	.388	-.264	-.163	0.249	0.052	1.9	1.0	2.2	1.1	A+	A+
2292	740350	7	7	2000	.567	.567	.107	.130	.197	.000	.475	.475	-.277	-.225	-.186	0.453	0.051	-3.4	0.9	-3.0	0.9	A+	A-
2293	737327	7	7	2032	.653	.251	.050	.653	.045	.000	.254	-.019	-.297	.254	-.231	0.001	0.053	8.3	1.2	7.6	1.3	A-	A-
2294	737322	7	7	2032	.579	.579	.183	.156	.082	.000	.393	.393	-.159	-.204	-.214	0.401	0.051	1.8	1.0	2.6	1.1	A-	A-
2295	737326	7	7	2032	.645	.645	.188	.091	.076	.000	.489	.489	-.189	-.320	-.256	0.045	0.052	-3.1	0.9	-2.9	0.9	A-	B-
2296	737324	7	7	2032	.649	.103	.649	.103	.144	.000	.545	-.206	.545	-.332	-.273	0.023	0.053	-5.7	0.9	-6.2	0.8	B+	A+
2297	737323	7	7	2032	.698	.077	.137	.698	.088	.000	.563	-.300	-.262	.563	-.313	-0.264	0.055	-6.4	0.8	-7.3	0.7	B+	A-
2298	737754	7	7	2030	.677	.677	.119	.162	.041	.000	.366	.366	-.108	-.284	-.159	-0.177	0.053	2.6	1.1	2.8	1.1	A-	A-
2299	737752	7	7	2030	.408	.148	.185	.408	.260	.000	.267	-.161	-.242	.267	.046	1.226	0.050	5.9	1.1	8.8	1.3	A+	A-
2300	737753	7	7	2030	.452	.310	.126	.113	.452	.000	.357	-.070	-.237	-.212	.357	1.003	0.050	0.9	1.0	6.1	1.2	A+	A-
2301	737755	7	7	2030	.472	.124	.272	.132	.472	.000	.308	-.176	-.032	-.240	.308	0.902	0.050	5.0	1.1	7.0	1.2	A+	A+
2302	737757	7	7	2030	.445	.211	.445	.185	.159	.000	.179	-.094	.179	-.101	-.032	1.036	0.050	9.9	1.2	9.9	1.4	A+	A-
2303	739556	7	7	1992	.369	.059	.482	.089	.369	.000	.230	-.246	.063	-.296	.230	1.500	0.051	7.7	1.2	8.9	1.4	A-	A+
2304	739557	7	7	1992	.643	.643	.068	.144	.146	.000	.486	.486	-.269	-.242	-.227	0.079	0.053	-2.1	1.0	-3.1	0.9	A-	A+
2305	739559	7	7	1992	.746	.098	.746	.081	.075	.000	.588	-.261	.588	-.358	-.307	-0.549	0.058	-6.6	0.8	-7.9	0.7	A-	A+

Table B–3 (continued). Reading/Literature Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M /F	W /B
2306	739555	7	7	1992	.482	.294	.140	.482	.084	.000	.315	-.042	-.145	.315	-.316	0.921	0.050	5.5	1.1	6.7	1.2	A+	A+
2307	739554	7	7	1992	.614	.101	.613	.108	.178	.000	.519	-.247	.519	-.312	-.213	0.239	0.052	-4.6	0.9	-4.8	0.9	A+	A+
2308	740757	7	7	2095	.811	.811	.067	.062	.060	.000	.548	.548	-.301	-.334	-.247	-1.053	0.062	-5.3	0.8	-7.1	0.6	A+	A+
2309	740756	7	7	2095	.771	.067	.088	.073	.771	.000	.509	-.217	-.249	-.341	.509	-0.752	0.058	-3.7	0.9	-4.8	0.8	B+	A+
2310	740754	7	7	2095	.509	.509	.260	.179	.052	.000	.341	.341	-.072	-.184	-.309	0.761	0.049	5.2	1.1	5.2	1.2	A-	A-
2311	740759	7	7	2095	.583	.136	.583	.187	.094	.000	.503	-.136	.503	-.276	-.321	0.377	0.050	-3.6	0.9	-4.0	0.9	A+	A+
2312	740755	7	7	2095	.600	.128	.185	.088	.600	.000	.582	-.315	-.246	-.299	.582	0.290	0.051	-8.8	0.8	-8.0	0.8	A+	A-
2313	737520	7	7	2116	.779	.065	.094	.779	.062	.000	.510	-.263	-.305	.510	-.240	-0.811	0.058	-3.9	0.9	-5.5	0.7	A-	A-
2314	737525	7	7	2116	.495	.170	.495	.264	.071	.000	.254	-.262	.254	.050	-.196	0.809	0.049	8.8	1.2	9.4	1.3	A+	A-
2315	737522	7	7	2116	.265	.099	.128	.509	.265	.000	.103	-.214	-.218	.182	.103	2.035	0.053	7.0	1.2	9.9	2.0	A-	A+
2316	737521	7	7	2116	.519	.519	.138	.184	.159	.000	.454	.454	-.170	-.199	-.249	0.689	0.049	-2.6	1.0	-0.8	1.0	A+	A-
2317	737726	7	7	2116	.296	.296	.288	.200	.216	.000	.123	.123	.002	-.125	-.018	1.852	0.052	9.1	1.2	9.9	1.8	A-	A+
2318	741152	7	7	1963	.905	.905	.033	.034	.029	.000	.505	.505	-.291	-.289	-.265	-2.019	0.083	-3.9	0.8	-7.0	0.4	A+	A-
2319	741156	7	7	1963	.645	.114	.117	.645	.124	.000	.440	-.228	-.243	.440	-.182	0.025	0.053	0.0	1.0	-1.2	1.0	A-	A-
2320	741155	7	7	1963	.645	.062	.645	.161	.131	.000	.431	-.198	.431	-.211	-.239	0.025	0.053	0.1	1.0	-0.2	1.0	A+	A+
2321	741154	7	7	1963	.647	.137	.101	.115	.647	.000	.508	-.265	-.291	-.200	.508	0.017	0.054	-3.8	0.9	-4.1	0.9	A+	A+
2322	741153	7	7	1963	.398	.398	.128	.225	.249	.000	.217	.217	-.293	-.161	.137	1.307	0.051	9.0	1.2	9.9	1.4	A+	A-
2323	741093	7	7	1923	.302	.480	.153	.066	.302	.000	.268	.081	-.225	-.333	.268	1.836	0.055	2.8	1.1	7.4	1.4	A+	A-
2324	741094	7	7	1923	.732	.094	.120	.732	.054	.000	.539	-.297	-.326	.539	-.205	-0.476	0.058	-5.3	0.9	-6.3	0.7	A+	B-
2325	741095	7	7	1923	.653	.653	.086	.111	.150	.000	.550	.550	-.285	-.229	-.308	-0.002	0.054	-6.4	0.9	-6.8	0.8	A+	A-
2326	741092	7	7	1923	.441	.161	.203	.441	.196	.000	.330	-.130	-.119	.330	-.171	1.096	0.051	3.3	1.1	7.0	1.2	A+	A+
2327	741097	7	7	1923	.554	.284	.554	.091	.071	.000	.428	-.116	.428	-.297	-.291	0.524	0.052	-0.3	1.0	-0.4	1.0	A+	A-
2328	741285	7	7	1996	.374	.175	.309	.374	.142	.000	.205	-.151	-.086	.205	-.005	1.466	0.051	8.7	1.2	9.9	1.5	A-	B-
2329	741288	7	7	1996	.744	.055	.743	.100	.102	.000	.431	-.206	.431	-.273	-.197	-0.538	0.058	-0.1	1.0	-1.3	0.9	A-	A-
2330	741286	7	7	1996	.687	.110	.094	.109	.687	.000	.528	-.231	-.274	-.297	.528	-0.183	0.055	-4.2	0.9	-5.6	0.8	A+	A-
2331	741289	7	7	1996	.667	.091	.076	.166	.667	.000	.489	-.212	-.267	-.266	.489	-0.068	0.054	-2.6	0.9	-3.9	0.9	A+	A-
2332	741287	7	7	1996	.439	.439	.207	.215	.139	.000	.345	.345	-.312	-.091	-.021	1.133	0.051	2.6	1.1	5.6	1.2	A-	A+
2333	741622	7	7	2074	.438	.282	.438	.140	.139	.000	.151	.103	.151	-.176	-.173	1.153	0.049	9.9	1.3	9.9	1.5	A+	A+
2334	741620	7	7	2074	.426	.426	.172	.225	.177	.000	.333	.333	-.234	-.039	-.157	1.216	0.049	3.1	1.1	3.9	1.1	A+	A+
2335	741623	7	7	2074	.464	.226	.157	.464	.154	.000	.391	-.093	-.269	.391	-.161	1.025	0.049	-0.4	1.0	3.7	1.1	A+	A+
2336	741619	7	7	2074	.630	.177	.080	.630	.113	.000	.458	-.165	-.293	.458	-.248	0.176	0.051	-1.9	1.0	-2.5	0.9	A+	A-
2337	741618	7	7	2074	.379	.313	.176	.132	.379	.000	.344	-.023	-.190	-.248	.344	1.454	0.050	0.8	1.0	3.5	1.1	A+	A-
2338	741679	7	7	2020	.745	.141	.745	.065	.050	.000	.534	-.349	.534	-.277	-.199	-0.533	0.057	-4.5	0.9	-6.1	0.7	A-	A-
2339	741677	7	7	2020	.550	.213	.550	.059	.177	.000	.426	-.193	.426	-.312	-.155	0.571	0.050	-0.1	1.0	0.6	1.0	A-	A-
2340	741678	7	7	2020	.649	.649	.092	.109	.150	.000	.478	.478	-.332	-.311	-.098	0.043	0.053	-2.7	0.9	-1.9	0.9	A+	A+

Table B–3 (continued). Reading/Literature Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M /F	W /B
2341	741675	7	7	2020	.215	.104	.417	.263	.215	.000	-.011	-.180	.239	-.133	-.011	2.395	0.058	8.1	1.3	9.9	2.5	A+	A-
2342	741680	7	7	2020	.302	.301	.229	.288	.181	.000	.073	.073	-.136	-.016	.080	1.862	0.053	9.9	1.3	9.9	1.8	A-	A-
2343	741683	7	7	2038	.683	.683	.104	.173	.040	.000	.475	.475	-.331	-.221	-.186	-0.178	0.053	-2.5	0.9	-3.2	0.9	A+	A+
2344	741684	7	7	2038	.636	.084	.199	.636	.081	.000	.304	-.176	-.074	.304	-.248	0.086	0.052	5.9	1.1	4.6	1.2	A-	A-
2345	741686	7	7	2038	.740	.740	.073	.154	.033	.000	.448	.448	-.351	-.183	-.220	-0.530	0.056	-1.6	1.0	-1.3	0.9	A+	A+
2346	741682	7	7	2038	.659	.097	.658	.154	.091	.000	.481	-.202	.481	-.218	-.314	-0.039	0.052	-3.0	0.9	-3.9	0.9	A+	A+
2347	741681	7	7	2038	.610	.142	.610	.180	.069	.000	.487	-.218	.487	-.237	-.278	0.226	0.051	-3.5	0.9	-4.2	0.9	A+	A-
2348	741358	7	7	1974	.615	.270	.068	.614	.048	.000	.429	-.168	-.317	.429	-.257	0.240	0.052	0.2	1.0	-0.3	1.0	A+	A-
2349	741357	7	7	1974	.660	.660	.108	.129	.102	.000	.466	.466	-.203	-.240	-.255	-0.012	0.054	-2.1	1.0	-1.6	0.9	B+	A-
2350	741356	7	7	1974	.425	.425	.162	.257	.156	.000	.232	.232	-.156	-.093	-.045	1.213	0.051	8.5	1.2	9.9	1.4	A+	A-
2351	741355	7	7	1974	.348	.284	.188	.348	.180	.000	.152	.077	-.139	-.152	-.139	1.613	0.052	9.6	1.2	9.9	1.7	A-	A-
2352	741354	7	7	1974	.661	.138	.102	.099	.661	.000	.456	-.181	-.204	-.306	.456	-0.014	0.054	-1.3	1.0	-2.4	0.9	A+	A+
2353	741826	7	7	2019	.479	.478	.122	.205	.195	.000	.320	.320	-.201	-.143	-.092	0.908	0.049	3.7	1.1	5.4	1.2	A-	A-
2354	741824	7	7	2019	.319	.399	.063	.219	.318	.000	.204	-.101	-.308	.071	.204	1.726	0.052	5.8	1.1	8.6	1.4	B-	A+
2355	741825	7	7	2019	.534	.185	.534	.118	.163	.000	.251	-.089	.251	-.246	-.030	0.633	0.050	7.6	1.2	8.8	1.3	A-	A-
2356	741822	7	7	2019	.617	.175	.098	.110	.617	.000	.468	-.183	-.274	-.243	.468	0.207	0.051	-2.8	0.9	-3.4	0.9	A+	A+
2357	741823	7	7	2019	.395	.301	.179	.395	.125	.000	.133	.084	-.112	.133	-.184	1.323	0.050	9.9	1.2	9.9	1.5	A+	A+
2358	741696	7	7	2122	.768	.091	.768	.090	.051	.000	.440	-.248	.440	-.212	-.244	-0.685	0.057	-0.9	1.0	-2.9	0.9	A+	A+
2359	741694	7	7	2122	.478	.478	.323	.145	.055	.000	.268	.268	-.033	-.236	-.155	0.942	0.049	8.2	1.2	8.8	1.3	A-	A+
2360	741695	7	7	2122	.831	.831	.043	.066	.061	.000	.553	.553	-.267	-.317	-.313	-1.169	0.064	-5.7	0.8	-8.0	0.5	A-	A+
2361	741693	7	7	2122	.674	.139	.106	.674	.081	.000	.452	-.157	-.274	.452	-.269	-0.094	0.052	-1.1	1.0	-2.9	0.9	A+	A-
2362	741698	7	7	2122	.702	.070	.107	.702	.120	.000	.519	-.262	-.259	.519	-.277	-0.258	0.053	-4.4	0.9	-5.8	0.8	A+	A-
2363	737001	8	8	4103	.616	.616	.108	.160	.116	.000	.498	.498	-.328	-.218	-.190	0.480	0.037	-3.8	0.9	-3.8	0.9	A-	A-
2364	737002	8	8	4103	.721	.090	.721	.117	.071	.000	.534	-.296	.534	-.299	-.227	-0.144	0.040	-5.5	0.9	-6.7	0.8	A+	A+
2365	737000	8	8	4103	.834	.047	.055	.834	.065	.000	.573	-.324	-.314	.573	-.299	-0.995	0.047	-7.8	0.8	-9.9	0.5	A+	A-
2366	736999	8	8	4103	.619	.192	.619	.099	.090	.000	.385	-.088	.385	-.293	-.226	0.466	0.037	4.5	1.1	5.2	1.1	A+	A+
2367	737006	8	8	4245	.351	.535	.051	.063	.351	.000	.113	.193	-.279	-.366	.113	1.876	0.036	9.9	1.3	9.9	1.8	A+	A-
2368	737005	8	8	4245	.590	.183	.139	.088	.590	.000	.422	-.114	-.270	-.247	.422	0.645	0.035	1.1	1.0	2.0	1.0	A+	A+
2369	737009	8	8	4245	.686	.056	.097	.686	.161	.000	.397	-.321	-.225	.397	-.119	0.101	0.038	2.3	1.0	4.6	1.1	A+	A+
2370	737007	8	8	4245	.465	.341	.131	.465	.063	.000	.231	.042	-.195	.231	-.285	1.287	0.035	9.9	1.2	9.9	1.4	B+	A-
2371	737004	8	8	4245	.653	.653	.066	.107	.175	.000	.493	.493	-.294	-.235	-.236	0.297	0.037	-3.9	0.9	-3.8	0.9	A-	A-
2372	740361	8	8	4194	.702	.127	.130	.702	.042	.000	.507	-.270	-.271	.507	-.255	-0.024	0.039	-3.1	0.9	-6.2	0.8	A-	B-
2373	740365	8	8	4194	.503	.086	.153	.258	.503	.000	.490	-.248	-.275	-.175	.490	1.073	0.035	-6.4	0.9	-2.7	0.9	A-	A-
2374	740364	8	8	4194	.473	.147	.179	.473	.201	.000	.267	-.178	-.169	.267	-.015	1.222	0.035	9.9	1.2	9.9	1.4	A+	A-
2375	740362	8	8	4194	.587	.134	.587	.098	.180	.000	.430	-.218	.430	-.251	-.164	0.634	0.036	0.9	1.0	1.5	1.0	A+	A-

Table B–3 (continued). Reading/Literature Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M /F	W /B
2376	740360	8	8	4194	.545	.545	.192	.085	.178	.000	.417	.417	-.041	-.319	-.268	0.856	0.035	1.3	1.0	2.3	1.1	A+	A+
2377	740243	8	8	4253	.841	.079	.051	.841	.029	.000	.462	-.201	-.306	.462	-.284	-1.074	0.047	-2.8	0.9	-3.9	0.8	A-	A-
2378	740244	8	8	4253	.685	.685	.175	.098	.041	.000	.511	.511	-.278	-.307	-.203	0.062	0.038	-4.7	0.9	-5.4	0.9	A-	B-
2379	740239	8	8	4253	.408	.161	.408	.182	.249	.000	.117	-.114	.117	-.215	.156	1.534	0.035	9.9	1.3	9.9	1.7	A-	A+
2380	740241	8	8	4253	.404	.214	.403	.178	.204	.000	.287	-.048	.287	-.231	-.082	1.557	0.035	7.8	1.1	9.9	1.4	A-	A-
2381	740242	8	8	4253	.541	.541	.151	.130	.178	.000	.505	.505	-.138	-.265	-.296	0.855	0.035	-7.2	0.9	-4.5	0.9	A-	A-
2382	737746	8	8	4103	.567	.146	.143	.144	.567	.000	.345	-.178	-.082	-.225	.345	0.733	0.036	6.2	1.1	7.0	1.2	A+	A+
2383	737749	8	8	4103	.703	.086	.703	.087	.124	.000	.440	-.244	.440	-.334	-.117	-0.029	0.039	-0.6	1.0	-1.1	1.0	A+	A-
2384	737751	8	8	4103	.611	.611	.111	.101	.177	.000	.466	.466	-.282	-.336	-.099	0.498	0.036	-2.8	1.0	-2.2	1.0	A+	A-
2385	737747	8	8	4103	.643	.119	.643	.097	.141	.000	.497	-.264	.497	-.306	-.178	0.323	0.037	-4.1	0.9	-4.9	0.9	A+	A+
2386	737748	8	8	4103	.512	.085	.247	.156	.512	.000	.354	-.276	-.021	-.252	.354	1.015	0.035	4.7	1.1	6.8	1.2	A+	A-
2387	739757	8	8	4266	.856	.054	.037	.053	.856	.000	.499	-.276	-.313	-.240	.499	-1.213	0.048	-5.0	0.9	-5.7	0.7	A+	A-
2388	739758	8	8	4266	.704	.704	.092	.094	.110	.000	.532	.532	-.193	-.307	-.311	-0.047	0.038	-5.8	0.9	-6.8	0.8	A+	A+
2389	739756	8	8	4266	.710	.098	.119	.073	.710	.000	.431	-.180	-.195	-.305	.431	-0.087	0.038	0.9	1.0	-0.6	1.0	A+	A-
2390	739755	8	8	4266	.466	.092	.084	.466	.358	.000	.227	-.281	-.257	.227	.081	1.244	0.035	9.9	1.2	9.9	1.4	A-	A-
2391	739754	8	8	4266	.584	.140	.109	.166	.584	.000	.462	-.229	-.241	-.196	.462	0.636	0.035	-2.0	1.0	-0.9	1.0	A+	A-
2392	739565	8	8	4235	.615	.080	.615	.200	.105	.000	.339	-.182	.339	-.096	-.251	0.512	0.036	7.3	1.1	6.5	1.2	A-	A-
2393	739562	8	8	4235	.418	.118	.302	.418	.163	.000	.272	-.217	-.136	.272	-.005	1.522	0.035	8.1	1.1	9.9	1.4	A-	A+
2394	739563	8	8	4235	.316	.316	.203	.370	.111	.000	.140	.140	-.139	.118	-.212	2.059	0.036	9.9	1.2	9.9	1.6	A+	A+
2395	739564	8	8	4235	.356	.363	.139	.356	.143	.000	.170	.139	-.232	.170	-.194	1.843	0.035	9.9	1.2	9.9	1.7	A-	A-
2396	739561	8	8	4235	.604	.198	.604	.128	.069	.000	.425	-.127	.425	-.261	-.275	0.568	0.036	0.1	1.0	1.1	1.0	A+	A+
2397	740082	8	8	4214	.658	.197	.658	.062	.083	.000	.456	-.210	.456	-.309	-.212	0.257	0.037	-0.9	1.0	-2.2	1.0	A+	A+
2398	740080	8	8	4214	.652	.652	.073	.167	.108	.000	.413	.413	-.326	-.181	-.142	0.292	0.037	1.9	1.0	0.6	1.0	A+	A+
2399	740081	8	8	4214	.827	.827	.046	.076	.051	.000	.573	.573	-.283	-.303	-.351	-0.908	0.046	-8.4	0.8	-9.9	0.6	A+	A-
2400	740083	8	8	4214	.494	.379	.494	.087	.040	.000	.175	.088	.175	-.288	-.251	1.125	0.035	9.9	1.3	9.9	1.5	A-	A+
2401	740079	8	8	4214	.271	.247	.075	.407	.271	.000	.066	-.070	-.271	.147	.066	2.311	0.038	9.9	1.3	9.9	2.1	A+	A-
2402	740311	8	8	4077	.304	.308	.253	.135	.304	.000	.243	.005	-.119	-.182	.243	2.124	0.037	5.4	1.1	9.9	1.5	A-	A+
2403	740309	8	8	4077	.547	.106	.134	.213	.547	.000	.401	-.275	-.233	-.088	.401	0.864	0.036	1.3	1.0	3.6	1.1	A-	A+
2404	740307	8	8	4077	.608	.136	.090	.166	.608	.000	.383	-.209	-.225	-.137	.383	0.545	0.036	4.1	1.1	3.6	1.1	A-	A-
2405	740310	8	8	4077	.660	.660	.088	.173	.079	.000	.424	.424	-.308	-.185	-.160	0.259	0.037	0.9	1.0	-0.3	1.0	A+	A-
2406	740306	8	8	4077	.622	.063	.221	.622	.094	.000	.368	-.264	-.128	.368	-.211	0.468	0.037	4.8	1.1	4.4	1.1	A-	A-
2407	739761	8	8	4122	.748	.123	.099	.748	.031	.000	.474	-.230	-.290	.474	-.254	-0.326	0.041	-1.9	1.0	-3.6	0.9	A+	A-
2408	739759	8	8	4122	.195	.625	.195	.080	.100	.000	-.069	.322	-.069	-.325	-.135	2.799	0.042	9.9	1.3	9.9	3.1	A-	A-
2409	739760	8	8	4122	.703	.127	.054	.703	.116	.000	.481	-.227	-.238	.481	-.282	-0.038	0.039	-2.0	1.0	-4.4	0.9	B+	A+
2410	739762	8	8	4122	.726	.040	.078	.156	.726	.000	.583	-.275	-.307	-.341	.583	-0.179	0.040	-9.1	0.8	-9.9	0.7	A-	A-

Table B–3 (continued). Reading/Literature Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M /F	W /B
2411	739764	8	8	4122	.485	.485	.086	.283	.146	.000	.336	.336	-.321	-.053	-.154	1.155	0.035	6.1	1.1	9.9	1.2	A-	A+
2412	741513	8	8	4247	.647	.056	.157	.647	.139	.000	.384	-.274	-.212	.384	-.126	0.302	0.037	3.5	1.1	4.7	1.1	A+	A+
2413	741511	8	8	4247	.649	.053	.247	.051	.649	.000	.438	-.324	-.163	-.299	.438	0.294	0.037	0.2	1.0	0.0	1.0	A+	A-
2414	741514	8	8	4247	.352	.352	.199	.088	.360	.000	.293	.293	-.267	-.267	.089	1.848	0.036	4.3	1.1	9.9	1.4	A-	A-
2415	741510	8	8	4247	.566	.176	.148	.110	.566	.000	.405	-.209	-.135	-.235	.405	0.742	0.035	2.4	1.0	3.1	1.1	A+	A+
2416	741334	8	8	4142	.787	.088	.787	.053	.073	.000	.469	-.268	.469	-.278	-.209	-0.595	0.043	-1.9	1.0	-3.9	0.9	A-	A-
2417	741332	8	8	4142	.449	.198	.200	.153	.449	.000	.288	-.060	-.111	-.208	.288	1.345	0.035	9.4	1.1	9.9	1.3	A+	A+
2418	741333	8	8	4142	.662	.662	.071	.133	.134	.000	.411	.411	-.301	-.220	-.125	0.221	0.037	2.6	1.1	1.4	1.0	A+	A+
2419	741335	8	8	4142	.718	.718	.091	.086	.105	.000	.521	.521	-.295	-.285	-.227	-0.120	0.039	-4.6	0.9	-6.2	0.8	A+	A+
2420	741331	8	8	4142	.327	.170	.337	.327	.166	.000	.170	-.050	.048	.170	-.224	1.983	0.036	9.9	1.2	9.9	1.7	A-	A-
2421	741130	8	8	4176	.387	.387	.267	.272	.074	.000	.256	.256	-.053	-.105	-.207	1.661	0.035	9.9	1.1	9.9	1.4	A-	A-
2422	741133	8	8	4176	.764	.088	.068	.764	.080	.000	.506	-.269	-.257	.506	-.273	-0.437	0.041	-4.2	0.9	-6.7	0.8	A-	A-
2423	741132	8	8	4176	.820	.062	.820	.048	.070	.000	.512	-.272	.512	-.307	-.257	-0.867	0.045	-5.0	0.9	-7.7	0.7	A-	B-
2424	741134	8	8	4176	.691	.079	.133	.097	.691	.000	.543	-.264	-.279	-.287	.543	0.043	0.038	-7.0	0.9	-8.5	0.8	A+	A-
2425	741135	8	8	4176	.326	.138	.261	.326	.275	.000	.075	-.258	-.058	.075	.177	1.986	0.036	9.9	1.3	9.9	2.0	A+	A-
2426	741721	8	8	4228	.404	.097	.266	.404	.233	.000	.252	-.212	-.050	.252	-.092	1.555	0.035	8.8	1.1	9.9	1.4	A+	A-
2427	741723	8	8	4228	.421	.165	.352	.061	.421	.000	.358	-.179	-.079	-.303	.358	1.464	0.035	1.7	1.0	5.7	1.1	A+	A+
2428	741722	8	8	4228	.600	.600	.135	.146	.119	.000	.459	.459	-.189	-.274	-.197	0.546	0.036	-1.7	1.0	-1.6	1.0	A-	A-
2429	741720	8	8	4228	.410	.204	.410	.215	.171	.000	.347	-.093	.347	-.157	-.182	1.523	0.035	1.6	1.0	8.7	1.2	A+	A-
2430	741725	8	8	4228	.422	.213	.186	.421	.179	.000	.230	-.100	-.198	.230	.011	1.463	0.035	9.9	1.2	9.9	1.4	A+	A+
2431	741530	8	8	4294	.385	.176	.122	.316	.385	.000	.382	-.136	-.231	-.126	.382	1.686	0.035	-2.3	1.0	6.0	1.2	A-	A-
2432	741531	8	8	4294	.605	.139	.605	.152	.104	.000	.421	-.217	.421	-.197	-.197	0.563	0.035	0.2	1.0	0.5	1.0	A-	A-
2433	741532	8	8	4294	.782	.096	.054	.782	.069	.000	.473	-.247	-.280	.473	-.237	-0.518	0.041	-2.9	0.9	-4.7	0.8	B-	B-
2434	741534	8	8	4294	.442	.442	.143	.231	.183	.000	.359	.359	-.273	-.075	-.132	1.397	0.034	2.3	1.0	6.4	1.2	A-	A-
2435	741529	8	8	4294	.513	.513	.145	.186	.156	.000	.325	.325	-.273	-.162	-.008	1.039	0.034	6.8	1.1	9.0	1.2	A-	A-
2436	741672	8	8	4230	.915	.029	.023	.033	.915	.000	.451	-.224	-.237	-.294	.451	-1.924	0.060	-3.5	0.9	-6.4	0.6	A+	A-
2437	741674	8	8	4230	.685	.189	.089	.038	.685	.000	.467	-.236	-.262	-.264	.467	0.075	0.038	-1.2	1.0	-2.8	0.9	A-	A+
2438	741671	8	8	4230	.546	.546	.177	.148	.129	.000	.437	.437	-.202	-.242	-.164	0.838	0.035	-0.9	1.0	0.8	1.0	A-	A+
2439	741669	8	8	4230	.499	.217	.499	.159	.125	.000	.286	-.027	.286	-.183	-.196	1.081	0.035	9.9	1.2	9.9	1.3	A-	A-
2440	741673	8	8	4230	.238	.575	.238	.099	.087	.000	.110	.215	.110	-.312	-.213	2.493	0.039	8.0	1.2	9.9	2.2	A-	A-
2441	741498	8	8	4196	.880	.880	.044	.035	.041	.000	.516	.516	-.272	-.284	-.300	-1.451	0.052	-5.6	0.8	-9.0	0.5	A+	A-
2442	741496	8	8	4196	.745	.060	.075	.121	.745	.000	.515	-.255	-.333	-.235	.515	-0.292	0.040	-5.7	0.9	-2.3	0.9	A+	A-
2443	741497	8	8	4196	.659	.099	.078	.659	.164	.000	.500	-.294	-.285	.500	-.197	0.243	0.037	-3.3	0.9	-4.4	0.9	A-	A-
2444	741502	8	8	4196	.710	.095	.710	.095	.099	.000	.597	-.331	.597	-.300	-.287	-0.068	0.039	-9.9	0.8	-9.9	0.7	A-	A-
2445	741501	8	8	4196	.445	.214	.445	.233	.109	.000	.254	-.131	.254	-.122	-.067	1.388	0.035	9.9	1.2	9.9	1.4	A+	A+

Table B–3 (continued). Reading/Literature Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
2446	741628	8	8	4280	.631	.217	.631	.084	.068	.000	.427	-.095	.427	-.331	-.299	0.375	0.036	1.7	1.0	1.1	1.0	A-	A-
2447	741625	8	8	4280	.671	.064	.671	.152	.113	.000	.488	-.277	.488	-.251	-.225	0.149	0.037	-3.2	0.9	-2.4	0.9	A+	A-
2448	741629	8	8	4280	.678	.107	.117	.678	.098	.000	.409	-.232	-.234	.409	-.149	0.103	0.037	2.6	1.1	2.3	1.1	A-	A-
2449	741626	8	8	4280	.634	.100	.179	.634	.086	.000	.426	-.239	-.143	.426	-.281	0.358	0.036	1.9	1.0	1.3	1.0	A+	A+
2450	741627	8	8	4280	.666	.666	.112	.125	.098	.000	.531	.531	-.244	-.274	-.279	0.178	0.037	-6.0	0.9	-6.5	0.8	A+	A-
2451	742014	8	8	4187	.518	.176	.518	.231	.075	.000	.366	-.150	.366	-.181	-.187	0.999	0.035	4.4	1.1	6.2	1.1	A+	A+
2452	742019	8	8	4187	.549	.113	.159	.549	.178	.000	.361	-.211	-.214	.361	-.089	0.841	0.035	5.2	1.1	6.5	1.1	A+	A+
2453	742015	8	8	4187	.778	.052	.118	.052	.778	.000	.521	-.320	-.244	-.302	.521	-0.515	0.042	-5.7	0.9	-6.8	0.8	A+	A+
2454	742016	8	8	4187	.649	.099	.649	.145	.107	.000	.486	-.290	.486	-.258	-.177	0.303	0.037	-3.5	0.9	-4.5	0.9	A-	A+
2455	742018	8	8	4187	.587	.587	.087	.209	.116	.000	.426	.426	-.227	-.161	-.250	0.642	0.036	0.4	1.0	1.3	1.0	A-	A+
2456	741689	8	8	4134	.788	.126	.788	.046	.040	.000	.456	-.221	.456	-.303	-.251	-0.605	0.043	-1.6	1.0	-2.8	0.9	A+	A-
2457	741687	8	8	4134	.668	.062	.194	.668	.076	.000	.423	-.334	-.186	.423	-.171	0.188	0.038	1.3	1.0	0.8	1.0	A+	A-
2458	741692	8	8	4134	.403	.272	.403	.224	.101	.000	.272	.048	.272	-.216	-.215	1.587	0.035	9.2	1.1	9.9	1.4	A+	A+
2459	741688	8	8	4134	.692	.109	.075	.125	.692	.000	.468	-.149	-.314	-.264	.468	0.042	0.038	-1.8	1.0	-1.8	1.0	A+	A-
2460	741691	8	8	4134	.752	.077	.115	.752	.057	.000	.526	-.247	-.268	.526	-.328	-0.343	0.041	-5.1	0.9	-7.3	0.8	A+	A-
2461	741713	8	8	4059	.689	.689	.103	.078	.130	.000	.405	.405	-.318	-.310	-.023	0.027	0.039	2.7	1.1	1.0	1.0	A+	A+
2462	741715	8	8	4059	.614	.124	.614	.198	.064	.000	.420	-.214	.420	-.198	-.224	0.458	0.037	1.4	1.0	0.8	1.0	A-	A+
2463	741716	8	8	4059	.634	.140	.119	.634	.107	.000	.440	-.219	-.213	.440	-.218	0.344	0.037	0.7	1.0	-0.4	1.0	A-	A+
2464	741718	8	8	4059	.516	.123	.143	.218	.516	.000	.389	-.179	-.112	-.233	.389	0.977	0.036	2.1	1.0	5.0	1.1	A-	A+
2465	741714	8	8	4059	.535	.535	.203	.114	.148	.000	.406	.406	-.235	-.247	-.083	0.876	0.036	0.9	1.0	3.8	1.1	A-	A+
2466	739746	Lit	Lit	3678	.636	.082	.636	.180	.103	.000	.378	-.270	.378	-.177	-.133	0.406	0.039	4.7	1.1	3.9	1.1	A-	A-
2467	739745	Lit	Lit	3678	.542	.159	.162	.137	.542	.000	.452	-.166	-.188	-.276	.452	0.907	0.037	-2.4	1.0	-0.3	1.0	A+	A+
2468	739744	Lit	Lit	3678	.588	.134	.158	.120	.588	.000	.418	-.191	-.189	-.221	.418	0.666	0.038	1.4	1.0	2.8	1.1	A+	A-
2469	739742	Lit	Lit	3678	.430	.158	.136	.430	.277	.000	.238	-.152	-.256	.238	.056	1.481	0.037	9.9	1.2	9.9	1.5	A-	A-
2470	739743	Lit	Lit	3678	.582	.582	.072	.159	.187	.000	.446	.446	-.294	-.240	-.144	0.701	0.038	-0.8	1.0	0.3	1.0	A-	A+
2471	739741	Lit	Lit	3678	.455	.455	.144	.258	.142	.000	.363	.363	-.182	-.164	-.129	1.349	0.037	2.8	1.0	7.1	1.2	A-	A+
2472	740065	Lit	Lit	3486	.574	.574	.165	.094	.167	.000	.344	.344	-.108	-.304	-.110	0.702	0.039	6.3	1.1	7.0	1.2	A-	A+
2473	740062	Lit	Lit	3486	.235	.098	.235	.550	.117	.000	.077	-.194	.077	.171	-.186	2.520	0.043	8.7	1.2	9.9	2.2	A+	A+
2474	740066	Lit	Lit	3486	.558	.111	.184	.147	.558	.000	.482	-.219	-.176	-.289	.482	0.783	0.039	-3.9	0.9	-3.2	0.9	A+	A-
2475	740064	Lit	Lit	3486	.352	.179	.268	.352	.201	.000	.140	-.168	.023	.140	-.032	1.842	0.039	9.9	1.2	9.9	1.6	A+	A-
2476	740063	Lit	Lit	3486	.675	.097	.135	.093	.675	.000	.492	-.189	-.237	-.322	.492	0.144	0.041	-3.1	0.9	-3.9	0.9	A-	A-
2477	740061	Lit	Lit	3486	.456	.136	.258	.456	.151	.000	.230	-.168	.032	.230	-.198	1.306	0.038	9.9	1.2	9.9	1.4	A-	A-
2478	737740	Lit	Lit	3546	.485	.303	.115	.097	.485	.000	.297	-.034	-.207	-.226	.297	1.212	0.038	9.5	1.1	9.0	1.2	A+	A+
2479	737745	Lit	Lit	3546	.743	.047	.044	.167	.743	.000	.489	-.286	-.292	-.251	.489	-0.230	0.044	-2.6	0.9	-3.5	0.9	A+	A-
2480	737743	Lit	Lit	3546	.540	.240	.539	.177	.044	.000	.235	-.036	.235	-.137	-.241	0.935	0.038	9.9	1.2	9.9	1.4	A+	A-

Table B–3 (continued). Reading/Literature Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
2481	737744	Lit	Lit	3546	.198	.198	.464	.208	.130	.000	.126	.126	.183	-.229	-.144	2.822	0.045	4.1	1.1	9.9	2.3	A-	A+
2482	737742	Lit	Lit	3546	.668	.125	.668	.148	.058	.000	.483	-.239	.483	-.250	-.253	0.237	0.041	-1.9	1.0	-3.9	0.9	A-	A-
2483	737741	Lit	Lit	3546	.642	.122	.168	.642	.068	.000	.416	-.153	-.198	.416	-.299	0.387	0.040	1.7	1.0	1.8	1.1	A+	A-
2484	739751	Lit	Lit	3632	.575	.068	.137	.220	.575	.000	.572	-.266	-.276	-.292	.572	0.744	0.038	-9.9	0.8	-9.9	0.8	A+	A-
2485	739752	Lit	Lit	3632	.329	.329	.122	.387	.162	.000	.332	.332	-.244	.009	-.218	2.017	0.039	0.2	1.0	9.5	1.4	A+	A-
2486	739750	Lit	Lit	3632	.520	.520	.260	.164	.056	.000	.424	.424	-.125	-.269	-.251	1.031	0.038	-0.4	1.0	2.1	1.1	A-	A-
2487	739749	Lit	Lit	3632	.526	.100	.526	.210	.164	.000	.317	-.161	.317	-.200	-.078	0.995	0.038	8.1	1.1	9.2	1.2	A+	A+
2488	739748	Lit	Lit	3632	.546	.094	.546	.205	.156	.000	.396	-.232	.396	-.247	-.082	0.895	0.038	2.0	1.0	4.3	1.1	A+	A+
2489	739747	Lit	Lit	3632	.335	.222	.118	.335	.326	.000	.135	-.110	-.269	.135	.147	1.985	0.039	9.9	1.2	9.9	1.7	A-	A+
2490	741062	Lit	Lit	3618	.345	.258	.140	.345	.257	.000	.205	.045	-.287	.205	-.041	1.866	0.039	9.9	1.2	9.9	1.7	A+	A-
2491	741061	Lit	Lit	3618	.506	.158	.144	.192	.506	.000	.374	-.094	-.215	-.197	.374	1.036	0.038	3.3	1.1	6.4	1.2	A-	A-
2492	741063	Lit	Lit	3618	.435	.244	.435	.170	.151	.000	.242	-.021	.242	-.196	-.106	1.398	0.038	9.9	1.2	9.9	1.4	A-	A-
2493	741064	Lit	Lit	3618	.546	.148	.114	.546	.191	.000	.368	-.163	-.240	.368	-.124	0.830	0.038	4.7	1.1	6.5	1.2	A-	A-
2494	741066	Lit	Lit	3618	.286	.286	.504	.098	.111	.000	.064	.064	.197	-.285	-.136	2.196	0.040	9.9	1.3	9.9	2.1	A+	A+
2495	741065	Lit	Lit	3618	.649	.130	.649	.117	.104	.000	.461	-.112	.461	-.362	-.215	0.276	0.040	-0.7	1.0	-1.5	1.0	A+	A+
2496	739533	Lit	Lit	3590	.268	.223	.324	.185	.268	.000	.115	.000	.053	-.195	.115	2.351	0.041	9.9	1.2	9.9	2.0	A+	A+
2497	739535	Lit	Lit	3590	.618	.136	.134	.618	.112	.000	.390	-.172	-.243	.390	-.150	0.495	0.039	3.5	1.1	3.3	1.1	A+	A-
2498	739530	Lit	Lit	3590	.606	.136	.144	.114	.606	.000	.473	-.201	-.174	-.318	.473	0.559	0.039	-2.4	1.0	-1.8	1.0	A+	A-
2499	739531	Lit	Lit	3590	.520	.520	.088	.196	.196	.000	.339	.339	-.310	-.141	-.064	1.013	0.038	6.4	1.1	8.1	1.2	A+	A+
2500	739532	Lit	Lit	3590	.675	.073	.675	.107	.145	.000	.485	-.279	.485	-.303	-.172	0.172	0.041	-2.8	1.0	-2.9	0.9	A+	A-
2501	739534	Lit	Lit	3590	.420	.148	.176	.420	.257	.000	.142	-.152	-.153	.142	.096	1.520	0.038	9.9	1.3	9.9	1.6	A+	A+
2502	739538	Lit	Lit	3632	.553	.553	.251	.136	.060	.000	.242	.242	-.155	-.006	-.215	0.894	0.037	9.9	1.2	9.9	1.3	A-	A-
2503	739536	Lit	Lit	3632	.664	.664	.116	.158	.062	.000	.394	.394	-.204	-.173	-.239	0.300	0.040	2.0	1.0	2.7	1.1	A+	A-
2504	739537	Lit	Lit	3632	.604	.072	.211	.604	.113	.000	.317	-.179	-.130	.317	-.175	0.633	0.038	7.2	1.1	7.7	1.2	A+	A-
2505	739539	Lit	Lit	3632	.358	.262	.358	.113	.267	.000	.147	-.035	.147	-.200	.018	1.877	0.038	9.9	1.2	9.9	1.6	A-	A-
2506	739540	Lit	Lit	3632	.347	.369	.141	.143	.347	.000	.148	.079	-.122	-.188	.148	1.936	0.038	9.9	1.2	9.9	1.8	A-	A-
2507	739541	Lit	Lit	3632	.430	.449	.430	.073	.048	.000	.117	.182	.117	-.312	-.313	1.511	0.037	9.9	1.3	9.9	1.6	A-	A-
2508	740067	Lit	Lit	3640	.624	.624	.082	.129	.164	.000	.490	.490	-.251	-.285	-.195	0.440	0.039	-3.0	1.0	-4.3	0.9	A+	A+
2509	740069	Lit	Lit	3640	.573	.573	.130	.170	.127	.000	.346	.346	-.140	-.261	-.078	0.714	0.038	6.8	1.1	7.2	1.2	A-	A+
2510	740072	Lit	Lit	3640	.602	.138	.184	.602	.077	.000	.421	-.214	-.184	.421	-.230	0.562	0.039	1.2	1.0	1.3	1.0	A-	A-
2511	740068	Lit	Lit	3640	.533	.102	.213	.152	.533	.000	.363	-.186	-.132	-.197	.363	0.927	0.038	4.6	1.1	7.4	1.2	A+	A+
2512	740070	Lit	Lit	3640	.477	.202	.148	.477	.173	.000	.329	-.115	-.155	.329	-.166	1.212	0.037	6.4	1.1	9.9	1.3	A+	A+
2513	740071	Lit	Lit	3640	.603	.138	.108	.151	.602	.000	.414	-.147	-.263	-.196	.414	0.558	0.039	1.9	1.0	2.1	1.1	A+	A+
2514	741492	Lit	Lit	3621	.719	.097	.719	.120	.063	.000	.485	-.232	.485	-.276	-.245	-0.094	0.042	-2.2	1.0	-4.8	0.9	A-	A-
2515	741494	Lit	Lit	3621	.431	.227	.255	.431	.088	.000	.337	.003	-.213	.337	-.267	1.457	0.037	3.5	1.1	8.0	1.2	B-	A-

Table B–3 (continued). Reading/Literature Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
2516	741490	Lit	Lit	3621	.377	.286	.156	.181	.377	.000	.352	-.045	-.289	-.118	.352	1.736	0.038	0.1	1.0	6.4	1.2	A-	A-
2517	741493	Lit	Lit	3621	.329	.123	.329	.245	.303	.000	.189	-.258	.189	-.121	.104	1.991	0.039	9.5	1.2	9.9	1.6	A-	A+
2518	741495	Lit	Lit	3621	.387	.123	.285	.387	.205	.000	.200	-.233	.042	.200	-.098	1.682	0.038	9.9	1.2	9.9	1.6	A-	A-
2519	741491	Lit	Lit	3621	.359	.358	.280	.087	.274	.000	.081	.081	-.023	-.198	.062	1.831	0.038	9.9	1.3	9.9	1.8	A+	A-
2520	741198	Lit	Lit	3698	.730	.062	.160	.730	.048	.000	.318	-.165	-.162	.318	-.197	-0.156	0.042	6.5	1.2	4.0	1.2	A+	A-
2521	741199	Lit	Lit	3698	.613	.613	.117	.117	.154	.000	.464	.464	-.237	-.267	-.177	0.536	0.038	-2.4	1.0	-1.8	1.0	A-	A-
2522	741194	Lit	Lit	3698	.303	.130	.203	.364	.303	.000	.213	-.207	-.120	.042	.213	2.156	0.039	7.3	1.1	9.9	1.6	A+	A-
2523	741197	Lit	Lit	3698	.565	.565	.117	.185	.132	.000	.434	.434	-.161	-.243	-.203	0.787	0.038	-0.7	1.0	-0.5	1.0	A-	A-
2524	741196	Lit	Lit	3698	.538	.259	.092	.538	.111	.000	.355	-.064	-.306	.355	-.193	0.931	0.037	4.9	1.1	6.5	1.2	A-	A-
2525	741195	Lit	Lit	3698	.657	.147	.657	.131	.065	.000	.441	-.154	.441	-.293	-.226	0.291	0.039	-0.1	1.0	-1.1	1.0	A+	A-
2526	741089	Lit	Lit	3586	.425	.148	.159	.268	.425	.000	.437	-.234	-.297	-.055	.437	1.499	0.038	-4.1	0.9	1.9	1.1	A+	A-
2527	741087	Lit	Lit	3586	.577	.092	.113	.577	.218	.000	.361	-.236	-.141	.361	-.159	0.717	0.038	5.4	1.1	5.9	1.1	A-	A+
2528	741090	Lit	Lit	3586	.653	.653	.115	.128	.104	.000	.532	.532	-.242	-.279	-.271	0.298	0.040	-5.8	0.9	-6.9	0.8	A-	A-
2529	741086	Lit	Lit	3586	.294	.085	.547	.294	.074	.000	.121	-.301	.194	.121	-.259	2.205	0.040	9.9	1.2	9.9	2.0	A-	A-
2530	741091	Lit	Lit	3586	.661	.096	.661	.133	.110	.000	.555	-.244	.555	-.291	-.295	0.253	0.040	-7.3	0.9	-8.3	0.8	A-	A-
2531	737019	Lit	Lit	3565	.756	.093	.079	.072	.756	.000	.626	-.303	-.380	-.303	.626	-0.345	0.044	-9.9	0.8	-9.9	0.6	B+	B-
2532	737020	Lit	Lit	3565	.493	.241	.075	.493	.191	.000	.269	-.076	-.294	.269	-.063	1.149	0.038	9.9	1.2	9.9	1.3	A+	A-
2533	737021	Lit	Lit	3565	.604	.604	.162	.115	.120	.000	.412	.412	-.146	-.240	-.219	0.572	0.039	2.3	1.0	2.2	1.1	A-	A+
2534	737017	Lit	Lit	3565	.739	.098	.103	.739	.060	.000	.518	-.221	-.329	.518	-.261	-0.231	0.043	-4.3	0.9	-6.4	0.8	A+	A-
2535	737018	Lit	Lit	3565	.557	.557	.234	.084	.126	.000	.281	.281	.004	-.279	-.194	0.824	0.038	9.9	1.2	9.9	1.3	A+	A+
2536	737016	Lit	Lit	3565	.541	.119	.541	.139	.202	.000	.435	-.203	.435	-.220	-.187	0.907	0.038	-0.5	1.0	1.5	1.0	A+	A-
2537	740302	Lit	Lit	3588	.799	.799	.049	.102	.050	.000	.363	.363	-.294	-.126	-.200	-0.659	0.047	2.2	1.1	3.9	1.2	A+	A-
2538	740301	Lit	Lit	3588	.634	.158	.100	.108	.634	.000	.532	-.193	-.362	-.249	.532	0.419	0.040	-6.6	0.9	-6.3	0.8	A+	A-
2539	740303	Lit	Lit	3588	.568	.107	.568	.178	.146	.000	.418	-.172	.418	-.192	-.227	0.774	0.038	1.4	1.0	1.9	1.0	A+	A-
2540	740304	Lit	Lit	3588	.475	.293	.475	.166	.065	.000	.194	-.038	.194	-.101	-.170	1.252	0.038	9.9	1.3	9.9	1.5	A-	A-
2541	740299	Lit	Lit	3588	.495	.223	.181	.101	.495	.000	.290	-.063	-.054	-.324	.290	1.152	0.038	9.4	1.1	9.9	1.3	A+	A-
2542	740300	Lit	Lit	3588	.637	.159	.086	.637	.118	.000	.468	-.150	-.283	.468	-.282	0.400	0.040	-1.8	1.0	-1.7	1.0	A+	A+
2543	740086	Lit	Lit	3627	.373	.145	.422	.373	.060	.000	.282	-.267	.004	.282	-.184	1.767	0.038	4.4	1.1	9.9	1.5	A-	A+
2544	740090	Lit	Lit	3627	.609	.170	.608	.128	.093	.000	.405	-.182	.405	-.223	-.188	0.558	0.038	1.5	1.0	2.1	1.1	A-	A-
2545	740085	Lit	Lit	3627	.308	.376	.308	.181	.135	.000	.147	.138	.147	-.208	-.159	2.120	0.039	9.9	1.2	9.9	1.7	A+	A-
2546	740088	Lit	Lit	3627	.441	.144	.110	.305	.441	.000	.359	-.161	-.208	-.123	.359	1.417	0.037	1.2	1.0	8.0	1.2	A-	B-
2547	740089	Lit	Lit	3627	.448	.448	.195	.140	.216	.000	.332	.332	-.146	-.203	-.089	1.381	0.037	4.1	1.1	8.9	1.2	A-	A+
2548	740087	Lit	Lit	3627	.398	.398	.197	.280	.125	.000	.300	.300	-.206	-.105	-.053	1.637	0.038	4.6	1.1	9.9	1.3	A-	A-
2549	741201	Lit	Lit	3646	.637	.101	.192	.070	.637	.000	.416	-.261	-.124	-.285	.416	0.406	0.039	2.1	1.0	1.6	1.0	A+	A-
2550	741204	Lit	Lit	3646	.755	.057	.138	.050	.755	.000	.496	-.245	-.246	-.329	.496	-0.329	0.044	-2.8	0.9	-4.6	0.8	B+	A-

Table B–3 (continued). Reading/Literature Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
2551	741200	Lit	Lit	3646	.722	.058	.722	.092	.129	.000	.477	-.293	.477	-.301	-.175	-0.102	0.042	-2.0	1.0	-2.9	0.9	B+	A-
2552	741205	Lit	Lit	3646	.590	.590	.117	.084	.208	.000	.468	.468	-.277	-.262	-.167	0.662	0.038	-2.1	1.0	-1.4	1.0	A+	A-
2553	741203	Lit	Lit	3646	.321	.321	.239	.053	.388	.000	.169	.169	-.068	-.315	.042	2.063	0.039	9.9	1.2	9.9	1.7	A+	A+
2554	741202	Lit	Lit	3646	.476	.203	.144	.476	.178	.000	.256	-.170	-.270	.256	.092	1.254	0.037	9.9	1.2	9.9	1.4	A+	A-
2555	741344	Lit	Lit	3629	.538	.142	.236	.083	.538	.000	.526	-.207	-.287	-.246	.526	0.904	0.038	-8.8	0.9	-5.8	0.9	A+	A-
2556	741342	Lit	Lit	3629	.609	.083	.109	.199	.609	.000	.402	-.168	-.181	-.234	.402	0.534	0.039	2.0	1.0	2.6	1.1	B+	A-
2557	741346	Lit	Lit	3629	.560	.560	.162	.217	.061	.000	.325	.325	-.254	-.020	-.250	0.791	0.038	7.3	1.1	8.8	1.2	A+	A+
2558	741343	Lit	Lit	3629	.245	.403	.245	.152	.200	.000	.110	.115	.110	-.275	-.013	2.473	0.042	8.6	1.2	9.9	2.0	A-	A-
2559	741347	Lit	Lit	3629	.330	.132	.330	.330	.208	.000	.148	-.192	.148	.014	-.027	1.975	0.039	9.9	1.2	9.9	1.8	A-	A+
2560	741345	Lit	Lit	3629	.608	.136	.140	.608	.117	.000	.351	-.104	-.206	.351	-.200	0.539	0.039	5.7	1.1	5.8	1.2	A+	A-
2561	742521	Lit	Lit	3702	.642	.642	.142	.186	.030	.000	.370	.370	-.330	-.087	-.166	0.392	0.039	4.1	1.1	4.0	1.1	A-	A-
2562	742518	Lit	Lit	3702	.675	.675	.140	.084	.101	.000	.481	.481	-.157	-.264	-.324	0.202	0.040	-2.8	1.0	-3.1	0.9	A-	A-
2563	742519	Lit	Lit	3702	.768	.076	.096	.768	.060	.000	.530	-.251	-.301	.530	-.289	-0.394	0.044	-5.0	0.9	-7.8	0.7	A+	A-
2564	742520	Lit	Lit	3702	.282	.375	.282	.141	.202	.000	-.019	.150	-.019	-.175	-.007	2.272	0.040	9.9	1.4	9.9	2.1	A-	A-
2565	742523	Lit	Lit	3702	.245	.592	.056	.107	.245	.000	.026	.301	-.272	-.312	.026	2.496	0.041	9.9	1.2	9.9	2.4	A-	A-
2566	742522	Lit	Lit	3702	.622	.140	.622	.103	.134	.000	.383	-.079	.383	-.310	-.188	0.501	0.038	3.3	1.1	3.4	1.1	A+	A+
2567	742529	Lit	Lit	3602	.610	.097	.146	.148	.610	.000	.426	-.225	-.207	-.192	.426	0.541	0.039	0.3	1.0	0.5	1.0	A+	A-
2568	742524	Lit	Lit	3602	.577	.577	.076	.298	.049	.000	.170	.170	-.324	.103	-.207	0.717	0.038	9.9	1.3	9.9	1.5	A+	A-
2569	742525	Lit	Lit	3602	.618	.107	.117	.618	.158	.000	.390	-.212	-.126	.390	-.230	0.495	0.039	2.9	1.1	2.3	1.1	A-	A-
2570	742526	Lit	Lit	3602	.521	.090	.521	.143	.246	.000	.271	-.207	.271	-.197	-.016	1.000	0.038	9.9	1.2	9.9	1.3	A-	A-
2571	742528	Lit	Lit	3602	.480	.480	.141	.289	.090	.000	.307	.307	-.145	-.079	-.235	1.208	0.037	7.6	1.1	9.6	1.2	A+	A-
2572	742527	Lit	Lit	3602	.611	.198	.084	.611	.106	.000	.343	-.067	-.255	.343	-.225	0.533	0.039	5.7	1.1	5.8	1.2	A+	A+
2573	742006	Lit	Lit	3555	.628	.165	.097	.628	.110	.000	.354	-.253	-.213	.354	-.046	0.448	0.040	6.1	1.1	6.2	1.2	A-	A-
2574	742007	Lit	Lit	3555	.591	.099	.591	.209	.100	.000	.395	-.210	.395	-.133	-.257	0.647	0.039	3.8	1.1	2.9	1.1	A-	A-
2575	742003	Lit	Lit	3555	.643	.643	.162	.066	.129	.000	.408	.408	-.161	-.315	-.172	0.360	0.040	2.4	1.1	2.7	1.1	A-	A-
2576	742002	Lit	Lit	3555	.747	.054	.747	.129	.070	.000	.521	-.301	.521	-.231	-.318	-0.287	0.044	-5.1	0.9	-3.9	0.9	A+	A-
2577	742004	Lit	Lit	3555	.712	.712	.116	.116	.057	.000	.516	.516	-.274	-.288	-.235	-0.055	0.042	-4.1	0.9	-5.4	0.8	A-	A-
2578	742005	Lit	Lit	3555	.748	.082	.086	.084	.748	.000	.554	-.254	-.297	-.315	.554	-0.291	0.044	-6.1	0.9	-7.7	0.7	A+	A-
2579	742011	Lit	Lit	3667	.497	.275	.497	.077	.151	.000	.258	.061	.258	-.320	-.198	1.140	0.037	9.9	1.2	9.9	1.3	A+	A+
2580	742008	Lit	Lit	3667	.553	.178	.102	.167	.553	.000	.294	-.090	-.208	-.131	.294	0.859	0.037	9.5	1.2	9.4	1.2	A+	A+
2581	742009	Lit	Lit	3667	.698	.130	.097	.698	.076	.000	.420	-.204	-.246	.420	-.194	0.059	0.041	1.1	1.0	-0.3	1.0	A+	A+
2582	742012	Lit	Lit	3667	.626	.626	.134	.087	.154	.000	.493	.493	-.211	-.297	-.230	0.473	0.039	-4.0	0.9	-4.6	0.9	A+	A+
2583	742013	Lit	Lit	3667	.395	.098	.182	.395	.325	.000	.093	-.171	-.089	.093	.084	1.655	0.037	9.9	1.3	9.9	1.7	A-	A+
2584	742010	Lit	Lit	3667	.387	.091	.078	.445	.387	.000	.152	-.277	-.320	.183	.152	1.697	0.037	9.9	1.3	9.9	1.5	A+	A+
2585	742025	Lit	Lit	3708	.800	.070	.074	.056	.800	.000	.561	-.272	-.305	-.328	.561	-0.648	0.046	-6.5	0.8	-9.0	0.6	A+	A-

Table B–3 (continued). Reading/Literature Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M /F	W /B
2586	742024	Lit	Lit	3708	.754	.111	.754	.063	.072	.000	.498	-.251	.498	-.299	-.245	-0.305	0.043	-3.2	0.9	-4.7	0.8	A+	A+
2587	742020	Lit	Lit	3708	.214	.383	.227	.214	.177	.000	.046	.055	.036	.046	-.159	2.723	0.043	8.3	1.2	9.9	2.5	A+	A+
2588	742021	Lit	Lit	3708	.330	.280	.283	.330	.108	.000	.098	-.023	.008	.098	-.127	2.023	0.038	9.9	1.3	9.9	1.9	A+	A-
2589	742023	Lit	Lit	3708	.527	.086	.188	.199	.527	.000	.290	-.239	-.073	-.123	.290	1.002	0.037	9.8	1.2	9.9	1.3	B+	A+
2590	742022	Lit	Lit	3708	.676	.125	.676	.105	.094	.000	.486	-.252	.486	-.218	-.265	0.190	0.040	-2.5	1.0	-3.3	0.9	A+	A-

Items with reference line numbers 1-1201 were field tested during the stand-alone field test administered in fall 2010. Items with reference line numbers 1202-1372 were field tested during the embedded field test administered in spring 2013. Items with reference line numbers 1372-2153 were field tested during the field test administered in fall 2013. Items with reference line numbers 2154-2590 were field tested during the embedded field test administered during the 2015-2016 school year.

SCIENCE MULTIPLE-CHOICE ITEMS

Table B–4. Science Multiple-Choice Item Statistics

Table B–4. Science Multiple-Choice Item Statistics

Ref	ID	FT Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M /F	W /B
1	615336	3	5599	.828	.828	.039	.055	.076	.002	.359	.359	-.203	-.261	-.100	-2.713	0.039	0.9	1.0	-0.1	1.0	A-	A-
2	615326	3	816	.814	.038	.814	.092	.056	.000	.320	-.136	.320	-.207	-.169	-2.533	0.099	1.3	1.1	1.0	1.1	A+	
3	615352	3	5599	.531	.127	.531	.254	.085	.003	.306	-.151	.306	-.080	-.202	-0.933	0.030	9.9	1.1	9.9	1.2	A-	A-
4	615346	3	797	.816	.132	.816	.021	.025	.006	.456	-.260	.456	-.234	-.197	-2.724	0.103	-1.0	0.9	-1.6	0.8	A-	C-
5	615328	3	797	.812	.812	.038	.083	.062	.006	.391	.391	-.185	-.201	-.152	-2.703	0.103	0.5	1.0	-0.8	0.9	A+	A-
6	615337	3	794	.752	.121	.752	.039	.086	.003	.399	-.250	.399	-.132	-.183	-2.151	0.090	0.5	1.0	-0.7	1.0	A-	C-
7	615343	3	794	.833	.038	.115	.011	.833	.004	.427	-.183	-.287	-.142	.427	-2.730	0.103	-0.7	1.0	-1.7	0.8	A+	A+
8	615344	3	794	.767	.767	.033	.136	.062	.003	.444	.444	-.231	-.247	-.200	-2.235	0.092	-1.2	0.9	-1.5	0.9	A+	A-
9	615338	3	802	.880	.880	.072	.018	.025	.005	.427	.427	-.231	-.205	-.218	-3.177	0.118	-0.8	0.9	-1.7	0.8	A-	
10	615353	3	802	.480	.125	.299	.092	.480	.004	.348	-.136	-.121	-.197	.348	-0.634	0.078	3.2	1.1	3.1	1.1	A-	
11	615329	3	802	.801	.029	.046	.801	.121	.004	.239	-.115	-.138	.239	-.095	-2.442	0.097	3.2	1.2	3.9	1.4	A+	
12	615340	3	800	.571	.265	.046	.116	.571	.001	.442	-.238	-.161	-.226	.442	-1.125	0.079	-0.5	1.0	-0.9	1.0	A+	A-
13	615330	3	800	.739	.124	.739	.080	.054	.004	.443	-.303	.443	-.244	-.070	-2.065	0.089	-0.9	1.0	-1.1	0.9	A-	B-
14	615348	3	800	.695	.695	.090	.043	.166	.006	.542	.542	-.254	-.258	-.299	-1.795	0.085	-4.3	0.8	-4.1	0.8	A+	B+
15	615341	3	796	.250	.112	.250	.421	.217	.000	.173	-.151	.173	-.013	-.051	0.480	0.088	2.9	1.1	5.1	1.5	A+	
16	615349	3	796	.480	.108	.335	.077	.480	.000	.411	-.281	-.178	-.129	.411	-0.756	0.077	0.0	1.0	0.5	1.0	A-	
17	615350	3	796	.472	.226	.116	.185	.472	.001	.426	-.230	-.227	-.109	.426	-0.716	0.077	-0.8	1.0	0.2	1.0	A+	
18	615332	3	796	.633	.067	.104	.195	.633	.001	.417	-.350	-.185	-.140	.417	-1.513	0.080	-0.4	1.0	-0.4	1.0	A+	
19	615342	3	794	.893	.052	.032	.021	.893	.003	.338	-.197	-.146	-.180	.338	-3.365	0.126	-0.2	1.0	-0.6	0.9	A+	A-
20	615335	3	794	.664	.059	.074	.664	.199	.004	.426	-.192	-.248	.426	-.199	-1.699	0.082	-0.9	1.0	-0.9	1.0	B-	A-
21	615351	3	794	.533	.123	.533	.131	.209	.004	.455	-.247	.455	-.235	-.135	-1.021	0.077	-3.3	0.9	-3.1	0.9	A+	A-
22	615333	3	794	.358	.238	.244	.151	.358	.009	.315	-.063	-.141	-.123	.315	-0.164	0.080	0.5	1.0	1.7	1.1	A+	B+
23	615331	3	794	.754	.754	.087	.092	.057	.010	.453	.453	-.213	-.201	-.238	-2.183	0.091	-1.4	0.9	-1.0	0.9	A+	A-
24	615347	3	802	.739	.739	.084	.126	.047	.004	.459	.459	-.233	-.267	-.151	-2.019	0.089	-0.8	1.0	-1.7	0.9	A+	
25	615339	3	800	.594	.594	.131	.195	.075	.005	.378	.378	-.159	-.205	-.154	-1.257	0.080	1.4	1.0	1.6	1.1	A+	A+
26	615325	3	794	.621	.621	.141	.049	.185	.004	.263	.263	-.096	-.134	-.150	-1.436	0.079	3.2	1.1	3.2	1.2	A+	A+
27	615327	3	794	.863	.863	.029	.064	.040	.004	.273	.273	-.130	-.101	-.157	-3.029	0.112	1.5	1.1	1.8	1.3	B+	A-
28	615334	3	802	.626	.160	.133	.626	.075	.006	.458	-.185	-.227	.458	-.221	-1.376	0.081	-0.8	1.0	-1.1	0.9	A+	
29	615405	3	816	.950	.950	.023	.011	.015	.001	.212	.212	-.177	-.074	-.108	-4.701	0.204	-0.1	1.0	-1.4	0.6	A+	
30	615377	3	5599	.851	.049	.851	.054	.044	.002	.441	-.266	.441	-.227	-.185	-2.918	0.041	-3.2	0.9	-5.3	0.8	A+	A-

Table B-4 (continued). Science Multiple-Choice Item Statistics

Ref	ID	FT Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
31	615391	3	5599	.895	.018	.895	.061	.022	.004	.382	-.221	.382	-.191	-.192	-3.441	0.048	-1.4	1.0	-2.1	0.9	A-	A-
32	615389	3	816	.344	.363	.199	.092	.344	.003	.380	-.170	-.132	-.147	.380	0.224	0.086	0.4	1.0	0.4	1.0	A+	
33	615403	3	797	.484	.139	.272	.484	.102	.003	.346	-.302	-.013	.346	-.162	-0.662	0.081	2.3	1.1	2.6	1.1	A-	A+
34	615393	3	794	.679	.679	.045	.242	.032	.003	.457	.457	-.243	-.271	-.189	-1.712	0.083	-1.1	1.0	-1.7	0.9	A-	A+
35	615386	3	794	.356	.218	.175	.246	.356	.005	.304	-.121	-.135	-.070	.304	-0.083	0.081	2.3	1.1	3.7	1.2	A+	A-
36	615398	3	794	.623	.241	.066	.623	.064	.006	.443	-.231	-.309	.443	-.078	-1.422	0.081	-0.5	1.0	-1.0	1.0	A+	A+
37	615394	3	802	.450	.335	.128	.084	.450	.003	.424	-.204	-.105	-.236	.424	-0.491	0.078	-0.2	1.0	0.0	1.0	A-	
38	615387	3	802	.544	.137	.106	.544	.211	.003	.259	-.176	-.122	.259	-.042	-0.939	0.078	6.2	1.2	5.9	1.3	A-	
39	615375	3	802	.758	.120	.091	.025	.758	.006	.385	-.248	-.147	-.147	.385	-2.152	0.091	0.9	1.0	1.1	1.1	A-	
40	615399	3	802	.854	.047	.854	.036	.055	.008	.487	-.239	.487	-.232	-.263	-2.931	0.110	-2.2	0.9	-2.4	0.7	A-	
41	615396	3	800	.315	.291	.244	.149	.315	.001	.283	-.094	-.121	-.083	.283	0.187	0.083	2.8	1.1	3.5	1.2	A-	A+
42	615388	3	800	.450	.223	.216	.450	.110	.001	.355	-.143	-.127	.355	-.183	-0.527	0.078	2.3	1.1	2.1	1.1	A+	A+
43	615402	3	800	.971	.014	.971	.001	.009	.005	.292	-.130	.292	-.038	-.183	-5.319	0.281	-0.1	1.0	-1.6	0.5	A+	B-
44	617120	3	796	.851	.036	.025	.851	.087	.001	.363	-.145	-.249	.363	-.215	-2.929	0.107	-0.2	1.0	-0.9	0.9	A-	
45	615390	3	796	.602	.602	.114	.155	.129	.000	.433	.433	-.153	-.211	-.258	-1.330	0.079	-1.2	1.0	-0.9	1.0	A-	
46	615378	3	796	.241	.281	.168	.241	.308	.001	.287	.013	-.114	.287	-.183	0.534	0.089	0.3	1.0	2.7	1.2	A-	
47	615401	3	796	.499	.204	.133	.499	.161	.004	.410	-.254	-.203	.410	-.082	-0.848	0.077	-0.2	1.0	0.4	1.0	A-	
48	615397	3	794	.855	.086	.033	.025	.855	.001	.470	-.300	-.231	-.209	.470	-2.989	0.111	-1.7	0.9	-2.3	0.8	A-	A-
49	615392	3	794	.490	.490	.331	.061	.117	.001	.328	.328	-.084	-.254	-.175	-0.837	0.077	2.0	1.1	2.1	1.1	B-	A-
50	615379	3	796	.255	.060	.338	.255	.347	.000	.284	-.242	-.145	.284	.005	0.425	0.087	1.3	1.1	2.6	1.2	A-	
51	615395	3	802	.519	.061	.246	.172	.519	.003	.333	-.129	-.078	-.233	.333	-0.816	0.078	3.4	1.1	3.4	1.2	A-	
52	615385	3	794	.408	.076	.438	.408	.071	.008	.327	-.179	-.093	.327	-.192	-0.441	0.078	1.2	1.0	2.6	1.1	A-	A+
53	615400	3	794	.227	.227	.105	.419	.241	.009	.244	.244	-.225	.121	-.168	0.554	0.091	1.3	1.1	3.4	1.3	A+	A+
54	615376	3	800	.616	.158	.148	.616	.074	.005	.418	-.115	-.288	.418	-.169	-1.350	0.080	0.4	1.0	0.2	1.0	A+	A+
55	615316	3	5599	.654	.094	.169	.081	.654	.003	.510	-.256	-.261	-.219	.510	-1.576	0.031	-8.5	0.9	-7.8	0.8	A+	A-
56	615310	3	5599	.882	.882	.038	.039	.038	.003	.480	.480	-.262	-.257	-.220	-3.270	0.046	-4.6	0.9	-8.0	0.6	A+	A-
57	615321	3	5599	.918	.037	.013	.027	.918	.005	.477	-.295	-.206	-.229	.477	-3.799	0.055	-4.2	0.8	-9.1	0.5	A+	B-
58	615320	3	1594	.636	.636	.170	.100	.092	.002	.300	.300	-.164	-.206	-.036	-1.456	0.057	5.4	1.1	5.1	1.2	A+	A+
59	617273	3	1590	.736	.736	.116	.062	.084	.003	.448	.448	-.278	-.183	-.202	-2.056	0.062	-1.7	1.0	-2.6	0.9	A+	A+
60	615317	3	802	.914	.008	.069	.006	.914	.004	.368	-.133	-.249	-.170	.368	-3.605	0.136	-0.2	1.0	-1.2	0.8	A-	
61	615318	3	800	.546	.093	.086	.273	.546	.003	.439	-.264	-.236	-.147	.439	-0.985	0.078	-1.2	1.0	-0.4	1.0	A-	A-
62	615309	3	800	.761	.761	.046	.104	.085	.004	.505	.505	-.283	-.269	-.221	-2.186	0.091	-2.9	0.9	-2.8	0.8	A-	A-
63	615323	3	800	.656	.281	.656	.009	.051	.003	.267	-.180	.267	-.125	-.107	-1.557	0.082	4.5	1.2	4.1	1.3	A-	A+
64	615311	3	796	.694	.098	.118	.694	.089	.001	.449	-.302	-.309	.449	-.061	-1.825	0.084	-1.4	1.0	-1.6	0.9	A+	
65	615313	3	794	.719	.074	.150	.055	.719	.001	.304	-.201	-.098	-.180	.304	-1.989	0.086	1.9	1.1	2.0	1.1	A-	A+

Table B–4 (continued). Science Multiple-Choice Item Statistics

Ref	ID	FT Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
66	615312	3	794	.733	.073	.151	.037	.733	.006	.486	-.276	-.239	-.217	.486	-2.104	0.088	-2.8	0.9	-2.8	0.8	A+	A-
67	615315	3	796	.310	.111	.446	.310	.131	.003	.205	-.080	-.036	.205	-.144	0.097	0.083	4.8	1.2	4.6	1.3	A-	
68	615314	3	802	.641	.143	.168	.641	.044	.004	.405	-.230	-.184	.405	-.142	-1.446	0.081	0.8	1.0	0.9	1.1	A-	
69	615324	3	794	.455	.455	.214	.204	.122	.005	.280	.280	-.162	-.079	-.080	-0.572	0.078	4.5	1.1	5.7	1.3	A-	A+
70	615319	3	816	.590	.590	.165	.098	.143	.004	.506	.506	-.218	-.211	-.293	-1.137	0.082	-3.0	0.9	-2.2	0.9	A-	
71	617274	3	802	.526	.340	.074	.056	.526	.004	.336	-.119	-.181	-.207	.336	-0.855	0.078	3.6	1.1	3.3	1.2	A+	
72	615322	3	1593	.374	.186	.232	.374	.206	.002	.363	-.148	-.098	.363	-.163	-0.156	0.058	1.0	1.0	1.6	1.1	A-	A-
73	615358	3	5599	.953	.029	.006	.011	.953	.002	.381	-.252	-.150	-.174	.381	-4.489	0.072	-2.0	0.9	-6.6	0.5	A+	B-
74	615360	3	5599	.332	.087	.264	.314	.332	.003	.360	-.102	-.232	-.060	.360	0.090	0.031	1.2	1.0	3.8	1.1	A+	A-
75	615374	3	816	.925	.025	.016	.925	.034	.000	.245	-.213	-.131	.245	-.084	-3.846	0.147	-0.4	1.0	-0.8	0.8	A+	
76	615373	3	5599	.683	.075	.683	.089	.147	.006	.395	-.145	-.395	-.185	-.220	-1.740	0.032	1.4	1.0	0.2	1.0	A+	A+
77	615355	3	797	.753	.084	.053	.103	.753	.008	.450	-.184	-.191	-.245	.450	-2.259	0.093	-0.6	1.0	-0.4	1.0	A+	A-
78	615357	3	794	.455	.306	.042	.455	.194	.004	.428	-.236	-.167	.428	-.149	-0.590	0.078	-1.2	1.0	0.2	1.0	A-	A-
79	615366	3	794	.902	.902	.026	.049	.020	.003	.391	.391	-.253	-.170	-.177	-3.468	0.129	-0.6	0.9	-1.6	0.8	A+	A+
80	615372	3	794	.840	.048	.054	.840	.053	.005	.464	-.198	-.256	.464	-.222	-2.828	0.106	-1.7	0.9	-1.4	0.8	A-	C-
81	615356	3	794	.271	.271	.233	.183	.309	.005	.194	.194	-.199	-.134	.145	0.394	0.087	4.3	1.2	3.8	1.3	A-	A-
82	615359	3	802	.560	.560	.201	.039	.197	.004	.403	.403	-.269	-.192	-.097	-1.021	0.079	1.0	1.0	1.0	1.0	A+	
83	615381	3	802	.907	.032	.032	.026	.907	.003	.442	-.212	-.250	-.206	.442	-3.482	0.130	-1.5	0.9	-1.8	0.7	A-	
84	615367	3	800	.809	.809	.025	.029	.136	.001	.445	.445	-.253	-.269	-.243	-2.535	0.098	-1.5	0.9	-1.9	0.8	A+	A-
85	615354	3	800	.735	.163	.026	.073	.735	.004	.412	-.212	-.215	-.217	.412	-2.010	0.088	-0.2	1.0	-0.1	1.0	A-	A-
86	615364	3	796	.511	.511	.173	.212	.103	.000	.271	.271	-.178	-.036	-.177	-0.895	0.077	4.8	1.1	4.9	1.2	A+	
87	615369	3	796	.682	.106	.188	.682	.023	.001	.360	-.266	-.201	.360	-.048	-1.769	0.083	1.2	1.1	1.0	1.1	A+	
88	615365	3	794	.802	.105	.802	.049	.042	.003	.353	-.311	.353	-.051	-.134	-2.536	0.097	0.2	1.0	-0.2	1.0	A-	A-
89	615371	3	794	.791	.791	.030	.160	.018	.001	.240	.240	-.126	-.106	-.226	-2.426	0.094	2.3	1.1	1.6	1.1	A-	A-
90	615363	3	1594	.256	.359	.136	.256	.245	.004	.215	-.086	-.155	.215	.030	0.484	0.062	2.6	1.1	5.6	1.3	A+	A+
91	615368	3	794	.199	.325	.161	.199	.310	.005	.062	.121	-.154	.062	-.020	0.813	0.096	3.0	1.2	4.6	1.5	A+	A+
92	617095	4	1114	.686	.199	.065	.686	.046	.005	.359	-.245	-.158	.359	-.103	-1.357	0.070	0.1	1.0	-0.3	1.0	A-	A+
93	617099	4	541	.638	.153	.638	.109	.096	.004	.413	-.276	.413	-.174	-.079	-1.123	0.097	-0.9	1.0	-1.1	0.9	C+	
94	617084	4	541	.442	.442	.098	.375	.080	.006	.286	.286	-.209	-.056	-.131	-0.299	0.093	2.2	1.1	1.8	1.1	A+	
95	617096	4	1103	.638	.099	.075	.638	.181	.006	.433	-.276	-.156	.433	-.197	-1.136	0.067	-3.3	0.9	-2.2	0.9	A-	B-
96	617101	4	544	.371	.156	.257	.211	.371	.004	.350	-.122	-.073	-.179	.350	0.085	0.095	-0.2	1.0	0.4	1.0	A-	B+
97	617091	4	541	.671	.091	.671	.085	.148	.006	.462	-.304	.462	-.180	-.180	-1.340	0.102	-1.6	0.9	-1.7	0.9	C+	
98	617105	4	541	.778	.778	.072	.054	.092	.004	.448	.448	-.213	-.209	-.232	-1.980	0.114	-1.0	0.9	-1.8	0.8	A+	
99	617085	4	5980	.922	.022	.020	.922	.034	.003	.351	-.189	-.173	.351	-.159	-3.399	0.052	-1.4	0.9	-4.8	0.7	A-	A-
100	617093	4	5980	.768	.768	.021	.090	.117	.004	.463	.463	-.174	-.250	-.255	-1.911	0.033	-6.0	0.9	-7.2	0.8	A-	B-

Table B-4 (continued). Science Multiple-Choice Item Statistics

Ref	ID	FT Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M /F	W /B
101	617106	4	541	.824	.089	.009	.824	.074	.004	.389	-.268	-.153	.389	-.157	-2.379	0.125	-0.7	1.0	-0.9	0.9	A+	
102	617094	4	1080	.465	.044	.431	.465	.055	.006	.442	-.212	-.227	.442	-.204	-0.320	0.067	-2.6	0.9	-2.3	0.9	A-	B-
103	617107	4	539	.520	.520	.152	.067	.262	.000	.323	.323	-.167	-.259	-.083	-0.587	0.095	2.3	1.1	1.9	1.1	A+	
104	617108	4	552	.654	.140	.654	.098	.105	.004	.367	-.144	.367	-.201	-.159	-1.262	0.099	0.1	1.0	0.2	1.0	A+	
105	617083	4	562	.790	.790	.027	.037	.146	.000	.329	.329	-.203	-.216	-.171	-1.889	0.110	0.0	1.0	0.1	1.0	A-	A-
106	617109	4	562	.973	.007	.973	.013	.007	.000	.235	-.087	.235	-.181	-.126	-4.453	0.282	-0.1	1.0	-1.4	0.5	A+	A-
107	617097	4	541	.630	.630	.024	.292	.052	.002	.395	.395	-.076	-.272	-.195	-1.161	0.095	-1.6	0.9	-0.7	1.0	C+	
108	617110	4	541	.634	.081	.189	.634	.089	.007	.395	-.172	-.274	.395	-.064	-1.217	0.095	-1.1	1.0	-1.3	0.9	A-	
109	617086	4	541	.882	.882	.041	.026	.046	.006	.453	.453	-.203	-.241	-.197	-2.807	0.142	-1.3	0.9	-2.0	0.7	A+	
110	617111	4	541	.828	.031	.828	.085	.048	.007	.412	-.222	.412	-.157	-.184	-2.311	0.122	-0.9	0.9	-0.7	0.9	A+	
111	617100	4	539	.915	.032	.039	.915	.011	.004	.333	-.213	-.118	.333	-.170	-3.294	0.163	-0.3	1.0	-0.9	0.8	A-	
112	617104	4	539	.338	.338	.213	.260	.187	.002	.152	.152	-.184	.021	.016	0.251	0.098	4.5	1.2	5.1	1.4	A+	
113	617087	4	539	.922	.011	.052	.922	.011	.004	.305	-.117	-.138	.305	-.210	-3.469	0.173	-0.3	1.0	-0.6	0.9	A+	
114	617119	4	539	.714	.714	.186	.028	.065	.007	.467	.467	-.241	-.222	-.258	-1.653	0.104	-1.7	0.9	-1.6	0.9	A+	
115	617088	4	544	.478	.478	.066	.085	.368	.004	.311	.311	-.207	-.097	-.118	-0.433	0.092	2.0	1.1	1.9	1.1	A-	A-
116	617113	4	544	.460	.221	.460	.215	.101	.004	.463	-.316	.463	-.110	-.116	-0.347	0.092	-3.0	0.9	-2.4	0.9	A-	A-
117	617118	4	544	.210	.131	.327	.320	.210	.013	.108	-.164	-.020	.076	.108	0.966	0.111	2.3	1.1	3.6	1.4	A+	A-
118	617117	4	541	.634	.139	.634	.087	.139	.002	.429	-.157	.429	-.270	-.218	-1.150	0.096	-1.2	1.0	-1.5	0.9	A+	
119	617114	4	541	.771	.100	.056	.074	.771	.000	.446	-.253	-.255	-.204	.446	-1.903	0.109	-1.8	0.9	-2.6	0.8	A+	
120	617103	4	539	.679	.056	.679	.200	.059	.006	.402	-.201	.402	-.195	-.142	-1.420	0.101	0.2	1.0	-0.2	1.0	A+	
121	617090	4	539	.518	.045	.161	.518	.269	.007	.397	-.216	-.151	.397	-.131	-0.611	0.094	-0.2	1.0	-0.1	1.0	A-	
122	617115	4	539	.570	.323	.052	.048	.570	.007	.338	-.113	-.153	-.189	.338	-0.863	0.095	2.0	1.1	2.7	1.1	A-	
123	617116	4	539	.629	.629	.095	.080	.187	.009	.518	.518	-.223	-.244	-.193	-1.165	0.098	-3.2	0.9	-3.3	0.8	A+	
124	617092	4	541	.719	.070	.061	.719	.144	.006	.352	-.173	-.178	.352	-.159	-1.614	0.106	0.8	1.0	-0.3	1.0	B+	
125	617102	4	541	.142	.083	.340	.433	.142	.002	.176	-.235	.078	-.067	.176	1.663	0.134	1.0	1.1	1.6	1.2	B-	
126	617112	4	539	.442	.130	.317	.108	.442	.004	.412	-.209	-.111	-.213	.412	-0.268	0.094	-1.0	1.0	0.2	1.0	A-	
127	617089	4	541	.595	.028	.336	.039	.595	.002	.238	-.111	-.118	-.219	.238	-0.949	0.095	4.0	1.1	3.5	1.2	A+	
128	617244	4	562	.383	.383	.151	.306	.157	.004	.311	.311	-.190	-.078	-.121	0.186	0.093	1.7	1.1	2.1	1.1	A-	A+
129	617249	4	544	.465	.090	.210	.465	.230	.006	.382	-.148	-.256	.382	-.057	-0.378	0.092	-0.3	1.0	0.1	1.0	A-	A+
130	617245	4	541	.364	.344	.063	.224	.364	.006	.310	-.217	-.032	-.054	.310	0.073	0.095	0.6	1.0	1.4	1.1	A-	
131	617255	4	541	.573	.255	.573	.056	.111	.006	.289	-.138	.289	-.163	-.076	-0.810	0.094	2.8	1.1	2.1	1.1	A-	
132	617253	4	562	.399	.183	.399	.167	.249	.002	.174	-.100	.174	-.140	.016	0.119	0.093	4.7	1.2	5.9	1.3	A+	A+
133	617258	4	541	.704	.061	.192	.704	.041	.002	.430	-.213	-.234	.430	-.211	-1.503	0.104	-0.9	1.0	-1.4	0.9	A-	
134	617248	4	5980	.437	.229	.030	.300	.437	.004	.416	-.191	-.198	-.172	.416	-0.180	0.028	-3.6	1.0	-3.1	1.0	A+	A-
135	617250	4	5980	.899	.899	.019	.039	.040	.004	.296	.296	-.146	-.127	-.144	-3.065	0.046	0.4	1.0	-1.0	0.9	A-	A-

Table B-4 (continued). Science Multiple-Choice Item Statistics

Ref	ID	FT Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
136	617269	4	541	.418	.366	.083	.129	.418	.004	.364	-.062	-.234	-.204	.364	-0.011	0.097	0.3	1.0	0.4	1.0	A-	
137	617262	4	541	.246	.373	.237	.246	.137	.007	.204	-.087	-.055	.204	-.004	0.969	0.111	2.5	1.2	2.2	1.3	A+	
138	617264	4	541	.826	.019	.826	.076	.070	.009	.375	-.148	.375	-.216	-.156	-2.436	0.127	-0.2	1.0	0.4	1.1	A-	
139	617270	4	541	.531	.177	.203	.531	.080	.009	.398	-.221	-.171	.398	-.074	-0.614	0.097	0.5	1.0	0.8	1.0	A-	
140	617265	4	539	.366	.087	.260	.366	.280	.007	.201	-.164	.027	.201	-.136	0.151	0.098	4.1	1.2	5.2	1.4	A+	
141	617261	4	552	.286	.496	.286	.067	.147	.004	.296	-.043	.296	-.148	-.183	0.721	0.106	1.4	1.1	1.8	1.2	A+	
142	617266	4	552	.788	.788	.071	.118	.020	.004	.390	.390	-.175	-.242	-.146	-2.093	0.114	-0.8	1.0	-1.5	0.8	A-	
143	617272	4	552	.404	.147	.228	.404	.216	.005	.435	-.188	-.189	.435	-.122	0.045	0.098	-1.0	1.0	-0.5	1.0	B-	
144	617275	4	562	.548	.548	.146	.061	.244	.002	.395	.395	-.248	-.177	-.150	-0.593	0.091	-0.9	1.0	-0.7	1.0	A+	A+
145	617254	4	541	.887	.046	.037	.887	.024	.006	.362	-.176	-.214	.362	-.135	-2.928	0.145	-0.7	0.9	-1.5	0.8	A+	
146	617276	4	541	.381	.324	.141	.381	.146	.009	.234	.022	-.198	.234	-.104	-0.025	0.095	3.1	1.1	3.5	1.2	A-	
147	617277	4	541	.632	.098	.632	.076	.185	.009	.309	-.083	.309	-.079	-.178	-1.110	0.097	2.1	1.1	2.2	1.1	A+	
148	617256	4	539	.674	.059	.674	.232	.033	.002	.326	-.182	.326	-.131	-.238	-1.420	0.100	1.4	1.1	1.2	1.1	A-	
149	617247	4	539	.887	.035	.887	.041	.033	.004	.307	-.221	.307	-.133	-.075	-2.966	0.145	0.4	1.0	-0.3	0.9	A+	
150	617267	4	541	.930	.030	.930	.026	.015	.000	.272	-.152	.272	-.172	-.137	-3.383	0.173	-0.2	1.0	-1.6	0.7	A+	
151	617251	4	541	.762	.113	.762	.094	.031	.000	.326	-.169	.326	-.205	-.146	-1.855	0.108	0.4	1.0	-0.1	1.0	B+	
152	617268	4	539	.687	.015	.687	.130	.161	.007	.411	-.155	.411	-.146	-.225	-1.451	0.101	-0.1	1.0	-1.0	0.9	A-	
153	617252	4	539	.729	.063	.126	.074	.729	.007	.390	-.213	-.087	-.201	.390	-1.722	0.106	0.3	1.0	0.7	1.1	B+	
154	617246	4	541	.433	.102	.213	.433	.246	.007	.439	-.087	-.323	.439	-.060	-0.143	0.094	-2.0	0.9	-1.6	0.9	A-	
155	617259	4	541	.410	.144	.211	.410	.229	.006	.285	-.179	-.171	.285	.012	0.012	0.098	3.1	1.1	4.0	1.3	A+	
156	617257	4	544	.579	.254	.053	.107	.579	.007	.421	-.146	-.176	-.274	.421	-0.911	0.094	-1.5	1.0	-1.0	1.0	A+	A+
157	617271	4	539	.518	.308	.518	.108	.067	.000	.393	-.137	.393	-.233	-.246	-0.577	0.095	-0.4	1.0	-0.5	1.0	B-	
158	617260	4	539	.245	.097	.213	.442	.245	.004	.133	-.172	-.154	.122	.133	0.845	0.108	2.2	1.1	2.1	1.2	A-	
159	617061	4	1101	.606	.606	.232	.116	.041	.006	.334	.334	-.117	-.161	-.192	-0.968	0.067	2.1	1.1	2.0	1.1	B+	A-
160	615621	4	1080	.184	.184	.038	.326	.446	.006	.155	.155	-.189	-.101	.106	1.197	0.084	1.8	1.1	4.2	1.4	A+	A+
161	615625	4	544	.708	.029	.066	.708	.191	.006	.373	-.207	-.222	.373	-.149	-1.575	0.102	0.1	1.0	-0.2	1.0	A-	A-
162	615632	4	539	.610	.121	.147	.121	.610	.002	.463	-.212	-.230	-.195	.463	-1.075	0.096	-1.9	0.9	-2.1	0.9	A+	
163	615627	4	539	.289	.468	.030	.206	.289	.007	.203	.003	-.063	-.106	.203	0.537	0.102	2.8	1.1	3.5	1.3	A+	
164	617071	4	539	.356	.215	.098	.323	.356	.007	.208	-.215	.009	.007	.208	0.134	0.097	4.0	1.2	4.0	1.3	B+	
165	615630	4	5980	.437	.399	.027	.437	.134	.004	.264	-.080	-.161	.264	-.153	-0.181	0.028	9.9	1.1	9.8	1.2	A+	A-
166	615624	4	5980	.884	.009	.064	.040	.884	.005	.290	-.102	-.198	-.089	.290	-2.909	0.044	0.4	1.0	0.0	1.0	A-	A-
167	615636	4	5980	.363	.363	.138	.335	.157	.008	.305	.305	-.212	-.091	-.034	0.178	0.029	4.9	1.1	5.3	1.1	A+	A+
168	615628	4	562	.875	.023	.091	.011	.875	.000	.338	-.204	-.230	-.145	.338	-2.586	0.134	-0.5	1.0	-1.1	0.8	B+	A-
169	615620	4	562	.781	.781	.135	.032	.052	.000	.291	.291	-.120	-.203	-.196	-1.829	0.108	0.7	1.0	0.3	1.0	A+	A-
170	617067	4	562	.648	.046	.648	.265	.041	.000	.338	-.232	.338	-.165	-.202	-1.071	0.094	0.5	1.0	0.5	1.0	A-	A-

Table B–4 (continued). Science Multiple-Choice Item Statistics

Ref	ID	FT Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
171	615629	4	541	.747	.013	.747	.229	.009	.002	.229	-.136	.229	-.151	-.093	-1.789	0.104	1.6	1.1	1.2	1.1	A+	
172	617063	4	541	.551	.081	.551	.244	.118	.006	.381	-.181	.381	-.167	-.157	-0.813	0.092	-0.7	1.0	-0.8	1.0	A+	
173	617076	4	541	.407	.181	.124	.281	.407	.007	.356	-.174	-.218	-.041	.356	-0.148	0.094	0.3	1.0	-0.3	1.0	A+	
174	615631	4	541	.348	.081	.129	.348	.438	.004	.224	-.153	-.219	.224	.062	0.281	0.097	3.6	1.1	3.8	1.3	A-	
175	615622	4	541	.677	.137	.044	.677	.133	.009	.345	-.149	-.264	.345	-.093	-1.345	0.100	0.5	1.0	1.3	1.1	A-	
176	617064	4	541	.848	.046	.848	.037	.061	.007	.456	-.175	.456	-.214	-.220	-2.485	0.128	-1.2	0.9	-2.3	0.7	A-	
177	617077	4	541	.423	.320	.423	.068	.181	.007	.335	-.046	.335	-.233	-.133	-0.099	0.094	1.1	1.0	1.9	1.1	A-	
178	615623	4	539	.920	.030	.920	.020	.028	.002	.444	-.196	.444	-.193	-.291	-3.382	0.168	-1.2	0.9	-2.7	0.5	A+	
179	615635	4	539	.677	.206	.050	.063	.677	.004	.365	-.132	-.231	-.206	.365	-1.428	0.100	0.6	1.0	0.7	1.0	A+	
180	615633	4	544	.728	.048	.728	.136	.086	.002	.367	-.162	.367	-.081	-.319	-1.674	0.103	-0.3	1.0	0.0	1.0	A+	A-
181	615637	4	544	.621	.074	.621	.204	.097	.004	.368	-.152	.368	-.110	-.251	-1.124	0.095	0.2	1.0	0.4	1.0	A+	A-
182	617065	4	544	.737	.175	.737	.033	.052	.004	.431	-.276	.431	-.220	-.117	-1.739	0.105	-1.1	0.9	-1.4	0.9	A-	A-
183	617081	4	544	.410	.153	.410	.204	.228	.006	.260	-.161	.260	-.268	.140	-0.125	0.093	2.7	1.1	3.3	1.2	A+	B-
184	615634	4	541	.734	.734	.142	.081	.043	.000	.325	.325	-.169	-.210	-.134	-1.664	0.104	0.3	1.0	-0.3	1.0	A-	
185	615626	4	541	.793	.011	.141	.056	.793	.000	.299	-.097	-.180	-.211	.299	-2.038	0.112	0.2	1.0	0.4	1.0	A-	
186	615638	4	541	.484	.139	.484	.257	.118	.002	.349	-.198	.349	-.164	-.103	-0.436	0.093	1.3	1.0	1.2	1.1	A-	
187	617073	4	541	.732	.732	.107	.068	.092	.000	.423	.423	-.230	-.181	-.244	-1.664	0.104	-1.6	0.9	-1.6	0.9	A-	
188	617082	4	541	.329	.248	.329	.113	.309	.002	.299	-.117	.299	-.142	-.095	0.353	0.099	1.8	1.1	2.3	1.2	A-	
189	617098	4	541	.612	.612	.129	.026	.233	.000	.405	.405	-.236	-.230	-.193	-1.034	0.095	-0.7	1.0	-0.3	1.0	C-	
190	617066	4	539	.763	.117	.058	.763	.054	.009	.434	-.211	-.179	.434	-.149	-1.931	0.111	-0.6	1.0	-0.7	0.9	A-	
191	617060	4	539	.534	.134	.534	.195	.132	.006	.368	-.201	.368	-.052	-.218	-0.686	0.094	0.8	1.0	1.2	1.1	A+	
192	617074	4	539	.625	.223	.035	.110	.625	.007	.455	-.207	-.179	-.196	.455	-1.143	0.097	-1.3	1.0	-1.2	0.9	A+	
193	617068	4	541	.614	.035	.614	.301	.044	.006	.321	-.218	.321	-.166	-.115	-1.111	0.094	0.8	1.0	0.8	1.0	A+	
194	617075	4	562	.514	.514	.134	.253	.094	.005	.348	.348	-.243	-.125	-.105	-0.441	0.091	0.9	1.0	1.5	1.1	A-	A-
195	617072	4	544	.472	.158	.193	.472	.171	.006	.406	-.242	-.218	.406	-.021	-0.412	0.092	-1.1	1.0	-0.8	1.0	A-	A+
196	617080	4	539	.234	.058	.520	.234	.186	.004	.015	-.207	.118	.015	-.001	0.829	0.108	3.9	1.2	7.0	1.8	A-	
197	617070	4	541	.702	.129	.085	.702	.076	.007	.444	-.257	-.145	.444	-.161	-1.478	0.102	-1.3	0.9	-1.5	0.9	A-	
198	617229	4	541	.760	.022	.142	.760	.070	.006	.453	-.165	-.269	.453	-.216	-1.818	0.108	-1.7	0.9	-2.4	0.8	A+	
199	617239	4	1083	.457	.147	.236	.457	.156	.004	.502	-.233	-.187	.502	-.192	-0.334	0.066	-5.9	0.9	-4.4	0.9	B-	A+
200	617233	4	541	.710	.037	.080	.174	.710	.000	.443	-.207	-.174	-.303	.443	-1.557	0.102	-1.9	0.9	-2.1	0.8	A+	
201	617238	4	5980	.325	.357	.221	.325	.093	.004	.437	-.194	-.173	.437	-.083	0.390	0.030	-6.3	0.9	-3.2	0.9	B-	A-
202	617243	4	5980	.943	.019	.019	.943	.016	.004	.369	-.153	-.187	.369	-.181	-3.849	0.062	-1.9	0.9	-6.4	0.5	A+	A-
203	617232	4	5980	.723	.134	.723	.108	.030	.006	.408	-.288	.408	-.108	-.191	-1.643	0.031	-2.4	1.0	-2.2	1.0	A+	A+
204	617227	4	1101	.800	.023	.096	.078	.800	.003	.406	-.171	-.264	-.186	.406	-2.085	0.081	-1.5	0.9	-1.4	0.9	A+	B-
205	617235	4	1103	.776	.174	.038	.776	.012	.000	.374	-.304	-.174	.374	-.068	-1.866	0.077	-1.0	1.0	-1.4	0.9	A-	C-

Table B-4 (continued). Science Multiple-Choice Item Statistics

Ref	ID	FT Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
206	617228	4	1082	.534	.016	.214	.534	.230	.006	.256	-.199	-.162	.256	-.028	-0.677	0.066	5.5	1.1	4.5	1.2	A-	A+
207	617236	4	541	.501	.501	.170	.155	.170	.004	.261	.261	-.175	-.103	-.037	-0.569	0.092	2.7	1.1	2.4	1.1	A+	
208	617230	4	1080	.442	.166	.442	.291	.098	.004	.329	-.156	.329	-.100	-.152	-0.286	0.066	1.4	1.0	1.1	1.0	A-	A+
209	617241	4	1080	.806	.806	.074	.107	.011	.003	.252	.252	-.222	-.052	-.092	-2.184	0.083	1.7	1.1	2.7	1.2	A-	A+
210	617242	4	539	.777	.777	.117	.084	.015	.007	.445	.445	-.236	-.223	-.065	-2.025	0.113	-0.9	0.9	-1.3	0.9	A-	
211	617231	4	1106	.756	.097	.082	.756	.062	.003	.370	-.168	-.226	.370	-.149	-1.764	0.075	-0.6	1.0	-0.2	1.0	A+	A-
212	617237	4	541	.529	.529	.111	.307	.048	.006	.416	.416	-.118	-.265	-.101	-0.598	0.093	-1.0	1.0	-0.7	1.0	A+	
213	617240	4	544	.410	.092	.360	.410	.134	.004	.281	-.188	-.083	.281	-.071	-0.112	0.093	2.5	1.1	2.4	1.1	A+	A+
214	617234	4	539	.531	.097	.286	.078	.531	.009	.404	-.054	-.189	-.212	.404	-0.675	0.094	-0.4	1.0	-0.4	1.0	A-	
215	617311	5	614	.660	.660	.067	.081	.181	.011	.407	.407	-.190	-.163	-.181	-1.224	0.092	-0.7	1.0	-0.9	1.0	A-	A+
216	615950	5	619	.659	.105	.659	.126	.105	.005	.439	-.246	.439	-.216	-.177	-1.224	0.090	-2.1	0.9	-2.0	0.9	C+	
217	617504	5	633	.254	.562	.254	.070	.109	.005	.247	.019	.247	-.185	-.195	0.793	0.095	0.5	1.0	0.9	1.1	A+	
218	615943	5	633	.570	.046	.218	.570	.156	.010	.418	-.201	-.255	.418	-.110	-0.713	0.085	-2.3	0.9	-2.8	0.9	A-	
219	617502	5	619	.446	.084	.357	.446	.108	.005	.396	-.152	-.211	.396	-.151	-0.215	0.086	-0.9	1.0	-0.7	1.0	A-	
220	615948	5	5562	.254	.313	.080	.350	.254	.004	.170	.047	-.181	-.083	.170	0.839	0.033	6.8	1.1	8.2	1.2	A-	A-
221	617322	5	609	.348	.348	.174	.191	.286	.002	.289	.289	-.155	-.181	-.010	0.350	0.092	0.7	1.0	0.5	1.0	A-	
222	617314	5	5562	.305	.305	.389	.154	.147	.006	.360	.360	-.178	-.119	-.066	0.543	0.031	-2.0	1.0	-0.5	1.0	A-	A+
223	616318	5	608	.806	.806	.082	.059	.049	.003	.463	.463	-.348	-.216	-.123	-2.147	0.112	-1.0	0.9	-1.7	0.8	A-	B-
224	617503	5	615	.740	.036	.132	.091	.740	.002	.447	-.194	-.285	-.221	.447	-1.662	0.098	-1.3	0.9	-1.9	0.9	B+	A-
225	615951	5	615	.688	.688	.138	.098	.067	.010	.374	.374	-.216	-.158	-.133	-1.385	0.094	-0.7	1.0	0.5	1.0	A+	A-
226	617313	5	614	.476	.145	.181	.476	.189	.010	.442	-.104	-.202	.442	-.202	-0.323	0.087	-2.3	0.9	-2.0	0.9	B+	A+
227	615954	5	614	.684	.054	.068	.187	.684	.007	.545	-.223	-.300	-.258	.545	-1.337	0.093	-4.2	0.8	-4.5	0.8	A+	B-
228	617505	5	614	.604	.604	.160	.121	.104	.011	.431	.431	-.261	-.142	-.109	-0.938	0.089	-1.3	1.0	-1.4	0.9	A+	A-
229	617730	5	619	.250	.247	.330	.171	.250	.002	.247	-.088	-.093	-.066	.247	0.796	0.098	1.1	1.1	2.0	1.2	B-	
230	617315	5	619	.606	.606	.110	.081	.200	.003	.415	.415	-.169	-.271	-.172	-0.954	0.088	-1.3	1.0	-1.9	0.9	A+	
231	615955	5	619	.448	.448	.131	.187	.229	.005	.343	.343	-.135	-.172	-.119	-0.221	0.086	0.8	1.0	0.8	1.0	A-	
232	615944	5	619	.475	.475	.102	.372	.049	.003	.457	.457	-.233	-.251	-.138	-0.345	0.086	-2.9	0.9	-2.8	0.9	A+	
233	617316	5	633	.313	.313	.182	.297	.205	.003	.343	.343	-.105	-.171	-.100	0.484	0.089	-1.3	1.0	-0.9	1.0	A+	
234	617727	5	633	.743	.030	.163	.062	.743	.003	.428	-.176	-.224	-.277	.428	-1.560	0.095	-2.1	0.9	-2.3	0.9	A-	
235	615945	5	633	.706	.706	.134	.049	.106	.005	.357	.357	-.157	-.277	-.131	-1.366	0.091	-0.9	1.0	-0.6	1.0	A+	
236	617320	5	611	.339	.339	.519	.041	.102	.000	.424	.424	-.326	-.099	-.060	0.354	0.090	-2.2	0.9	-1.8	0.9	A+	B-
237	615952	5	611	.705	.705	.113	.105	.074	.003	.429	.429	-.171	-.272	-.197	-1.387	0.093	-2.3	0.9	-1.7	0.9	B+	A-
238	617317	5	638	.408	.268	.408	.216	.107	.002	.302	-.080	.302	-.211	-.079	0.075	0.085	1.4	1.0	2.0	1.1	A-	B+
239	615953	5	638	.484	.135	.176	.484	.204	.002	.393	-.226	-.087	.393	-.211	-0.279	0.084	-1.2	1.0	-1.3	1.0	B-	A-
240	617321	5	638	.690	.114	.690	.082	.113	.002	.459	-.232	.459	-.267	-.198	-1.254	0.090	-2.9	0.9	-2.9	0.8	A+	A-

Table B-4 (continued). Science Multiple-Choice Item Statistics

Ref	ID	FT Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
241	615949	5	633	.218	.384	.193	.218	.199	.006	.125	.099	-.155	.125	-.056	1.012	0.099	1.7	1.1	3.3	1.3	A-	
242	615946	5	619	.338	.136	.338	.207	.317	.003	.320	-.196	.320	-.187	-.003	0.313	0.090	0.8	1.0	0.8	1.0	A-	
243	617318	5	633	.352	.346	.352	.120	.175	.006	.217	-.165	.217	-.099	.025	0.282	0.087	1.8	1.1	2.6	1.1	A-	
244	617729	5	1225	.331	.189	.311	.165	.331	.005	.331	-.260	-.036	-.053	.331	0.389	0.064	0.3	1.0	1.0	1.0	A+	B-
245	617312	5	638	.397	.193	.232	.172	.397	.006	.274	-.094	-.181	-.043	.274	0.119	0.086	2.2	1.1	2.1	1.1	A-	A+
246	615962	5	609	.726	.138	.726	.062	.071	.003	.421	-.213	.421	-.267	-.174	-1.545	0.098	-1.4	0.9	-0.7	0.9	A+	
247	617330	5	638	.495	.113	.248	.141	.495	.003	.532	-.180	-.371	-.138	.532	-0.334	0.084	-6.1	0.8	-5.3	0.8	A+	A-
248	617338	5	619	.624	.134	.079	.624	.160	.003	.449	-.142	-.244	.449	-.267	-1.037	0.088	-2.6	0.9	-2.6	0.9	A-	
249	615965	5	614	.412	.108	.083	.412	.393	.005	.441	-.039	-.217	.441	-.246	-0.006	0.088	-2.5	0.9	-2.2	0.9	A-	A-
250	615964	5	609	.332	.123	.243	.332	.294	.008	.287	-.168	-.131	.287	-.037	0.437	0.093	0.9	1.0	2.0	1.1	A-	
251	616322	5	5562	.505	.505	.127	.278	.087	.003	.373	.373	-.216	-.141	-.148	-0.424	0.029	-1.6	1.0	-2.0	1.0	A-	A-
252	615961	5	5562	.463	.463	.277	.126	.130	.005	.402	.402	-.113	-.198	-.213	-0.231	0.029	-3.4	1.0	-1.5	1.0	C-	A-
253	617341	5	609	.215	.126	.264	.384	.215	.010	.167	-.176	-.138	.135	.167	1.119	0.105	2.1	1.1	2.7	1.3	A+	
254	617343	5	608	.173	.173	.229	.240	.352	.007	.202	.202	-.047	-.160	.053	1.461	0.115	0.7	1.0	0.8	1.1	A-	A-
255	617336	5	614	.611	.121	.611	.101	.161	.007	.392	-.190	.392	-.067	-.232	-0.961	0.089	-0.5	1.0	-0.8	1.0	A-	A-
256	617337	5	619	.485	.141	.147	.485	.225	.003	.322	-.172	-.109	.322	-.133	-0.390	0.086	1.7	1.1	1.3	1.1	A+	
257	617731	5	633	.570	.182	.570	.155	.085	.008	.392	-.187	.392	-.228	-.081	-0.711	0.084	-1.6	1.0	-2.1	0.9	A-	
258	617331	5	611	.540	.540	.228	.090	.138	.005	.491	.491	-.220	-.292	-.170	-0.588	0.086	-4.5	0.9	-4.2	0.9	A+	A-
259	617333	5	611	.709	.098	.709	.046	.141	.007	.359	-.137	.359	-.230	-.191	-1.418	0.094	-0.7	1.0	-0.7	1.0	A-	A+
260	617335	5	638	.477	.135	.149	.477	.238	.002	.349	-.168	-.080	.349	-.205	-0.243	0.084	0.5	1.0	-0.1	1.0	A+	A+
261	617340	5	638	.335	.249	.323	.335	.091	.002	.161	-.087	-.007	.161	-.116	0.426	0.089	4.3	1.2	3.6	1.2	A+	A+
262	617332	5	638	.698	.096	.698	.143	.060	.005	.386	-.166	.386	-.243	-.160	-1.308	0.091	-1.3	1.0	-0.5	1.0	A+	A-
263	615963	5	619	.312	.194	.205	.312	.286	.003	.299	.038	-.153	.299	-.187	0.448	0.092	1.0	1.0	1.6	1.1	A-	
264	617339	5	614	.226	.244	.204	.311	.226	.015	.282	-.093	-.123	.017	.282	0.973	0.102	0.4	1.0	1.9	1.2	A-	A+
265	617342	5	619	.280	.280	.263	.359	.094	.005	.285	.285	-.131	-.066	-.107	0.622	0.095	1.2	1.1	1.5	1.1	A+	
266	616317	5	611	.548	.034	.097	.548	.319	.002	.250	-.072	-.211	.250	-.098	-0.618	0.086	2.7	1.1	2.5	1.1	A+	A+
267	617304	5	608	.380	.262	.176	.380	.176	.007	.357	-.111	-.240	.357	-.056	0.164	0.091	0.7	1.0	1.7	1.1	A-	A-
268	615936	5	633	.713	.035	.191	.713	.062	.000	.447	-.245	-.267	.447	-.219	-1.381	0.092	-2.7	0.9	-2.8	0.9	B+	
269	617307	5	638	.430	.155	.249	.161	.430	.005	.392	-.148	-.113	-.233	.392	-0.033	0.085	-0.9	1.0	-1.1	1.0	A-	A-
270	615939	5	615	.563	.117	.563	.236	.078	.007	.532	-.226	.532	-.250	-.256	-0.740	0.088	-5.0	0.9	-4.5	0.8	A+	A+
271	617499	5	615	.524	.263	.524	.101	.111	.002	.339	-.080	.339	-.285	-.124	-0.452	0.087	0.0	1.0	0.8	1.0	A-	A+
272	615942	5	614	.896	.018	.059	.023	.896	.005	.364	-.181	-.172	-.146	.364	-2.899	0.141	-0.5	0.9	-1.3	0.8	A+	A+
273	615940	5	1220	.471	.109	.049	.471	.367	.004	.374	-.230	-.199	.374	-.137	-0.263	0.061	-1.0	1.0	-0.1	1.0	A+	A+
274	615937	5	5562	.561	.170	.106	.160	.561	.004	.464	-.213	-.204	-.214	.464	-0.686	0.029	-9.9	0.9	-8.4	0.9	A+	A-
275	615941	5	5562	.475	.241	.475	.122	.155	.007	.263	-.204	.263	-.105	.014	-0.293	0.029	8.5	1.1	8.6	1.1	A-	A-

Table B-4 (continued). Science Multiple-Choice Item Statistics

Ref	ID	FT Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
276	615947	5	615	.870	.024	.080	.024	.870	.002	.363	-.155	-.232	-.169	.363	-2.506	0.125	-0.7	0.9	-2.0	0.7	A-	A+
277	617500	5	615	.615	.083	.140	.615	.161	.002	.376	-.195	-.212	.376	-.127	-0.886	0.089	-0.1	1.0	-0.4	1.0	A+	A+
278	617724	5	614	.446	.209	.217	.446	.121	.008	.406	-.076	-.192	.406	-.205	-0.177	0.087	-1.2	1.0	-1.1	1.0	A+	A-
279	617726	5	619	.701	.183	.032	.082	.701	.002	.501	-.336	-.160	-.257	.501	-1.431	0.093	-3.5	0.9	-3.0	0.8	A+	
280	617319	5	633	.403	.453	.403	.038	.103	.003	.268	-.063	.268	-.191	-.197	0.051	0.085	1.1	1.0	1.6	1.1	A+	
281	617308	5	611	.881	.087	.026	.881	.007	.000	.291	-.194	-.209	.291	-.080	-2.582	0.128	-0.5	1.0	-1.2	0.8	A-	A-
282	617306	5	638	.633	.221	.063	.082	.633	.002	.412	-.241	-.167	-.198	.412	-0.967	0.087	-2.0	0.9	-1.1	1.0	A+	A-
283	617309	5	638	.580	.241	.071	.580	.103	.005	.414	-.209	-.211	.414	-.184	-0.724	0.085	-1.8	1.0	-1.9	0.9	A-	A-
284	615938	5	611	.493	.077	.493	.144	.283	.003	.264	-.173	.264	-.210	-.012	-0.371	0.086	2.5	1.1	2.7	1.1	A+	A-
285	617725	5	614	.138	.207	.192	.138	.448	.015	-.027	-.111	-.109	-.027	.269	1.683	0.123	2.2	1.2	5.3	1.9	A+	A+
286	617501	5	614	.340	.340	.204	.178	.270	.008	.281	.281	-.160	-.129	.023	0.335	0.091	2.1	1.1	2.1	1.1	A-	A-
287	617310	5	633	.531	.289	.531	.057	.115	.008	.281	-.083	.281	-.236	-.096	-0.533	0.084	1.6	1.0	1.1	1.0	A+	
288	617305	5	619	.246	.283	.250	.246	.218	.003	.311	-.116	-.122	.311	-.052	0.823	0.099	0.1	1.0	1.4	1.1	A-	
289	617328	5	611	.668	.668	.136	.088	.108	.000	.497	.497	-.215	-.265	-.273	-1.181	0.090	-4.1	0.9	-3.8	0.8	A-	A+
290	615958	5	633	.608	.608	.081	.122	.183	.006	.310	.310	-.127	-.304	-.021	-0.882	0.086	0.3	1.0	0.4	1.0	A+	
291	616969	5	638	.666	.078	.666	.136	.118	.002	.300	-.204	.300	-.145	-.110	-1.134	0.089	0.9	1.0	0.8	1.0	A-	A+
292	617507	5	611	.408	.349	.088	.151	.408	.005	.194	.028	-.221	-.106	.194	0.018	0.087	4.3	1.1	3.6	1.2	A+	A+
293	616320	5	5562	.831	.831	.081	.071	.016	.001	.381	.381	-.255	-.172	-.190	-2.216	0.038	-3.2	0.9	-4.9	0.8	A-	A-
294	616971	5	5562	.527	.081	.271	.527	.117	.005	.338	-.246	-.164	.338	-.057	-0.529	0.029	1.8	1.0	1.3	1.0	A-	A-
295	615956	5	5562	.399	.067	.491	.039	.399	.005	.298	-.193	-.104	-.169	.298	0.069	0.029	4.8	1.1	4.2	1.1	A+	A+
296	615959	5	5562	.630	.169	.122	.630	.072	.007	.421	-.184	-.191	.421	-.220	-1.028	0.030	-5.0	0.9	-5.0	0.9	A+	A-
297	615957	5	608	.145	.169	.329	.145	.352	.005	.264	-.211	.062	.264	-.066	1.676	0.123	0.1	1.0	-0.1	1.0	A-	A-
298	616973	5	608	.549	.258	.091	.095	.549	.007	.410	-.195	-.211	-.147	.410	-0.672	0.089	-0.3	1.0	-0.9	1.0	C+	A-
299	616974	5	615	.395	.208	.218	.395	.177	.002	.222	-.083	-.163	.222	.005	0.157	0.089	2.6	1.1	1.6	1.1	A+	A+
300	615960	5	615	.607	.607	.278	.070	.042	.003	.340	.340	-.123	-.233	-.206	-0.853	0.089	0.4	1.0	0.5	1.0	A+	A+
301	616975	5	615	.468	.468	.156	.148	.223	.005	.302	.302	-.158	-.115	-.114	-0.298	0.087	2.0	1.1	1.4	1.1	A-	A-
302	616321	5	614	.710	.098	.147	.710	.041	.005	.516	-.187	-.337	.516	-.174	-1.473	0.095	-3.3	0.9	-3.9	0.8	A+	A-
303	617324	5	614	.446	.287	.098	.156	.446	.013	.466	-.194	-.156	-.172	.466	-0.192	0.087	-2.8	0.9	-2.9	0.9	A+	A-
304	617325	5	619	.399	.399	.176	.131	.291	.003	.409	.409	-.257	-.098	-.151	0.011	0.088	-1.5	1.0	-1.8	0.9	A-	
305	617506	5	619	.407	.176	.407	.247	.166	.003	.133	-.224	.133	-.099	.176	-0.029	0.087	6.2	1.2	5.8	1.3	A+	
306	617329	5	633	.223	.477	.103	.223	.193	.005	.028	.152	-.195	.028	-.048	0.983	0.099	2.8	1.2	5.1	1.4	A-	
307	616976	5	633	.273	.273	.261	.256	.201	.010	.114	.114	-.109	-.061	.104	0.683	0.093	2.8	1.1	3.1	1.2	A-	
308	616977	5	611	.224	.360	.131	.224	.282	.003	.203	-.170	-.031	.203	.033	0.998	0.102	1.0	1.1	2.3	1.2	A-	A+
309	616972	5	611	.146	.624	.144	.146	.079	.008	.042	.155	-.083	.042	-.190	1.572	0.119	1.6	1.1	3.9	1.5	A+	B+
310	617334	5	614	.266	.238	.223	.264	.266	.010	.185	-.115	-.107	.098	.185	0.741	0.097	2.9	1.1	3.7	1.3	A+	A+

Table B-4 (continued). Science Multiple-Choice Item Statistics

Ref	ID	FT Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
311	616968	5	611	.306	.409	.069	.213	.306	.003	.289	-.190	-.165	.022	.289	0.518	0.092	1.0	1.0	0.6	1.0	A-	A-
312	616319	5	638	.488	.213	.193	.105	.488	.002	.307	-.190	-.039	-.188	.307	-0.293	0.084	1.5	1.0	2.0	1.1	A+	A-
313	616970	5	638	.641	.102	.641	.194	.061	.002	.219	-.143	.219	-.024	-.211	-1.009	0.087	3.1	1.1	2.5	1.1	A+	A+
314	617326	5	638	.301	.334	.320	.301	.042	.003	.349	-.134	-.123	.349	-.174	0.604	0.091	-0.3	1.0	0.4	1.0	A+	B+
315	617323	5	1226	.362	.075	.362	.479	.080	.004	.330	-.117	.330	-.194	-.078	0.226	0.063	0.2	1.0	1.5	1.1	A-	A-
316	617327	5	633	.209	.164	.218	.403	.209	.006	.056	-.120	-.081	.137	.056	1.072	0.101	2.4	1.1	3.5	1.3	A+	
317	617741	6	627	.729	.104	.729	.091	.059	.018	.563	-.281	.563	-.278	-.242	-1.338	0.097	-3.9	0.8	-4.4	0.7	A+	
318	615554	6	626	.534	.243	.083	.141	.534	.000	.375	-.138	-.150	-.249	.375	-0.250	0.085	-1.2	1.0	-1.0	1.0	A-	
319	615532	6	626	.864	.037	.864	.061	.034	.005	.450	-.231	.450	-.187	-.262	-2.265	0.125	-1.4	0.9	-2.7	0.7	A+	
320	615540	6	625	.635	.195	.123	.635	.045	.002	.471	-.217	-.295	.471	-.212	-0.729	0.088	-3.4	0.9	-3.5	0.9	A+	
321	617508	6	626	.582	.582	.235	.107	.075	.002	.344	.344	-.127	-.192	-.176	-0.292	0.086	-0.2	1.0	-0.3	1.0	A-	
322	615539	6	5636	.817	.817	.061	.086	.032	.004	.335	.335	-.146	-.231	-.060	-1.778	0.036	-1.4	1.0	-0.7	1.0	A-	A+
323	619628	6	627	.533	.034	.533	.260	.168	.006	.306	-.027	.306	-.123	-.159	-0.244	0.086	1.8	1.1	1.5	1.1	B-	
324	619307	6	1252	.427	.336	.102	.121	.427	.014	.339	-.025	-.176	-.230	.339	0.221	0.061	0.0	1.0	0.3	1.0	A+	A-
325	619124	6	5636	.546	.546	.098	.247	.103	.007	.437	.437	-.239	-.175	-.149	-0.290	0.029	-8.9	0.9	-8.6	0.9	A-	A-
326	619308	6	627	.526	.199	.182	.526	.093	.000	.448	-.221	-.192	.448	-.212	-0.219	0.085	-3.3	0.9	-3.1	0.9	A-	
327	617510	6	627	.266	.279	.247	.206	.266	.002	.267	-.022	-.118	-.148	.267	1.045	0.095	0.1	1.0	0.9	1.1	A-	
328	619305	6	627	.397	.294	.204	.397	.077	.029	.297	-.121	-.136	.297	-.108	0.314	0.088	0.6	1.0	0.8	1.0	A-	
329	619306	6	623	.178	.225	.178	.416	.173	.008	.254	-.082	.254	.034	-.108	1.655	0.109	-0.2	1.0	-0.3	1.0	A-	
330	619309	6	623	.273	.101	.273	.527	.092	.008	.115	-.144	.115	.105	-.076	1.051	0.095	2.2	1.1	3.3	1.2	A-	
331	617511	6	623	.368	.262	.177	.170	.368	.024	.413	.026	-.179	-.211	.413	0.539	0.088	-2.5	0.9	-2.2	0.9	A+	
332	619310	6	629	.547	.323	.547	.099	.027	.005	.361	-.155	.361	-.200	-.159	-0.239	0.086	-0.1	1.0	-0.4	1.0	A-	
333	619128	6	626	.709	.709	.042	.131	.113	.005	.354	.354	-.226	-.087	-.242	-1.119	0.093	-0.6	1.0	-0.9	1.0	A-	
334	615527	6	626	.447	.328	.097	.123	.447	.005	.380	-.103	-.179	-.222	.380	0.136	0.085	-1.3	1.0	-0.9	1.0	A-	
335	615541	6	626	.505	.105	.241	.505	.136	.013	.241	-.277	-.003	.241	-.010	-0.142	0.085	3.5	1.1	3.6	1.1	A+	
336	619129	6	627	.349	.239	.164	.244	.349	.003	.196	.018	-.069	-.170	.196	0.560	0.089	2.9	1.1	3.5	1.2	A+	
337	615528	6	627	.585	.155	.072	.585	.187	.002	.219	-.093	-.037	.219	-.154	-0.537	0.087	3.6	1.1	3.5	1.2	A+	
338	615542	6	627	.612	.120	.139	.612	.102	.027	.493	-.184	-.296	.493	-.143	-0.738	0.089	-2.9	0.9	-2.9	0.9	A+	
339	619125	6	626	.296	.296	.113	.185	.403	.003	.203	.203	-.114	-.081	-.008	1.067	0.092	1.2	1.1	2.5	1.2	A-	
340	615529	6	626	.374	.374	.113	.141	.345	.027	.251	.251	-.265	-.115	.108	0.621	0.088	2.2	1.1	2.3	1.1	A-	
341	619130	6	626	.214	.264	.307	.214	.185	.030	.059	-.027	-.077	.059	.191	1.538	0.103	2.3	1.1	4.2	1.4	B-	
342	619126	6	626	.615	.086	.131	.157	.615	.011	.443	-.207	-.148	-.209	.443	-0.688	0.088	-2.2	0.9	-2.3	0.9	B+	
343	615553	6	626	.695	.062	.695	.125	.109	.010	.424	-.179	.424	-.171	-.205	-1.096	0.093	-1.7	0.9	-1.7	0.9	C+	
344	617753	6	626	.613	.115	.113	.136	.613	.022	.476	-.169	-.237	-.183	.476	-0.717	0.089	-3.3	0.9	-2.7	0.9	A+	
345	619304	6	626	.324	.145	.351	.153	.324	.026	.366	-.166	.022	-.234	.366	0.671	0.091	-1.1	1.0	-0.7	1.0	A+	

Table B–4 (continued). Science Multiple-Choice Item Statistics

Ref	ID	FT Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
346	619127	6	625	.674	.136	.674	.149	.042	.000	.372	-.284	.372	-.151	-.115	-0.914	0.090	-1.2	1.0	-0.5	1.0	A+	
347	617509	6	625	.586	.586	.088	.078	.246	.002	.363	.363	-.135	-.130	-.247	-0.494	0.086	-0.7	1.0	-0.4	1.0	A+	
348	615536	6	625	.347	.054	.080	.347	.510	.008	.194	-.224	-.118	.194	.001	0.599	0.089	2.8	1.1	3.4	1.2	A-	
349	615530	6	1253	.715	.050	.715	.152	.069	.015	.354	-.188	.354	-.160	-.095	-1.189	0.067	-0.4	1.0	0.0	1.0	A+	A+
350	615531	6	1253	.333	.144	.133	.373	.333	.018	.203	-.104	-.125	.038	.203	0.739	0.064	4.1	1.1	4.4	1.2	A-	A+
351	617533	6	1253	.194	.360	.049	.394	.194	.003	.171	-.012	-.202	-.014	.171	1.472	0.074	1.5	1.1	3.9	1.3	A+	B+
352	615594	6	626	.490	.169	.149	.189	.490	.003	.260	-.161	-.135	-.025	.260	-0.060	0.085	2.3	1.1	1.9	1.1	A+	
353	615603	6	627	.384	.043	.330	.225	.384	.018	.333	-.206	-.066	-.148	.333	0.367	0.088	0.6	1.0	0.7	1.0	A-	
354	615601	6	626	.727	.727	.168	.038	.059	.008	.336	.336	-.168	-.258	-.058	-1.059	0.096	0.0	1.0	0.1	1.0	A-	
355	619365	6	626	.842	.842	.066	.042	.042	.010	.454	.454	-.265	-.272	-.084	-2.086	0.118	-1.6	0.9	-1.9	0.8	A+	
356	615599	6	5636	.605	.222	.092	.605	.077	.005	.305	-.121	-.165	.305	-.121	-0.557	0.029	2.3	1.0	1.9	1.0	A-	A+
357	615590	6	627	.324	.239	.163	.324	.268	.006	.096	.031	-.049	.096	-.013	0.755	0.091	4.9	1.2	4.5	1.3	A-	
358	615600	6	1252	.682	.682	.068	.129	.115	.006	.342	.342	-.173	-.153	-.128	-0.973	0.065	-0.2	1.0	0.4	1.0	A-	A-
359	615602	6	627	.372	.420	.094	.372	.101	.014	.388	-.117	-.154	.388	-.126	0.497	0.089	-1.9	0.9	-1.2	0.9	A-	
360	615589	6	5636	.184	.189	.349	.265	.184	.014	.177	.015	-.068	-.021	.177	1.590	0.036	3.2	1.1	5.9	1.2	A+	A+
361	615591	6	627	.512	.112	.270	.107	.512	.000	.367	-.241	-.209	-.048	.367	-0.154	0.085	-0.1	1.0	0.0	1.0	A+	
362	619139	6	627	.330	.112	.386	.330	.147	.026	.204	-.205	.035	.204	-.116	0.656	0.091	3.0	1.1	4.1	1.2	A+	
363	619364	6	623	.154	.154	.361	.096	.380	.008	.008	.008	.025	-.005	.050	1.844	0.115	1.9	1.2	3.3	1.4	A-	
364	615592	6	623	.509	.509	.170	.117	.193	.011	.324	.324	-.108	-.199	-.027	-0.104	0.086	-0.4	1.0	-0.5	1.0	A-	
365	619142	6	623	.271	.271	.197	.241	.276	.014	.189	.189	-.080	-.124	.122	1.056	0.095	1.5	1.1	2.8	1.2	A-	
366	619363	6	629	.479	.479	.229	.162	.124	.006	.293	.293	-.084	-.165	-.089	0.074	0.086	2.4	1.1	2.5	1.1	A+	
367	615593	6	629	.448	.272	.448	.172	.100	.008	.257	.052	.257	-.175	-.200	0.216	0.086	3.3	1.1	3.1	1.1	A+	
368	619143	6	629	.580	.146	.124	.142	.580	.008	.456	-.244	-.209	-.129	.456	-0.406	0.087	-3.2	0.9	-3.1	0.9	A+	
369	619617	6	626	.264	.029	.264	.086	.620	.002	.142	-.190	.142	.036	-.063	1.054	0.095	2.2	1.1	3.3	1.2	A+	
370	619623	6	626	.374	.155	.090	.374	.372	.010	.151	-.027	-.212	.151	.053	0.472	0.087	4.4	1.2	5.1	1.2	A-	
371	619618	6	627	.426	.426	.201	.263	.109	.002	.220	.220	-.096	-.040	-.171	0.200	0.086	4.2	1.1	3.6	1.2	A-	
372	619625	6	627	.767	.030	.062	.139	.767	.002	.423	-.220	-.258	-.213	.423	-1.501	0.100	-1.7	0.9	-1.4	0.9	A+	
373	615595	6	627	.260	.169	.380	.177	.260	.014	.281	-.031	-.045	-.168	.281	1.022	0.096	0.7	1.0	0.9	1.1	A-	
374	615596	6	626	.808	.006	.011	.808	.169	.005	.335	-.128	-.110	.335	-.211	-1.555	0.108	-0.1	1.0	-0.7	0.9	A-	
375	619619	6	626	.318	.131	.395	.318	.142	.014	.123	-.070	.016	.123	.004	0.920	0.091	4.0	1.2	4.7	1.3	A+	
376	619626	6	626	.711	.711	.091	.136	.046	.016	.394	.394	-.177	-.178	-.106	-0.976	0.095	-0.9	1.0	-1.1	0.9	B-	
377	620237	6	626	.492	.232	.126	.492	.137	.013	.325	.016	-.215	.325	-.193	-0.097	0.086	0.7	1.0	0.7	1.0	A-	
378	619136	6	626	.308	.321	.308	.105	.259	.006	.246	-.013	.246	-.212	-.021	0.793	0.092	1.6	1.1	2.7	1.2	A+	
379	619622	6	626	.577	.198	.577	.097	.113	.014	.378	-.178	.378	-.203	-.054	-0.510	0.087	-0.4	1.0	-0.3	1.0	A-	
380	615588	6	626	.305	.134	.222	.305	.321	.018	.051	-.026	.081	.051	-.018	0.807	0.092	5.3	1.2	6.0	1.4	A-	

Table B-4 (continued). Science Multiple-Choice Item Statistics

Ref	ID	FT Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
381	619137	6	625	.285	.190	.090	.434	.285	.002	.270	-.150	-.173	-.028	.270	0.927	0.093	0.7	1.0	0.7	1.0	A+	
382	619150	6	625	.507	.155	.242	.091	.507	.005	.407	-.217	-.132	-.214	.407	-0.141	0.085	-1.8	1.0	-2.0	0.9	A-	
383	620236	6	625	.261	.443	.141	.261	.147	.008	.265	.051	-.283	.265	-.093	1.055	0.095	0.4	1.0	1.5	1.1	A-	
384	619141	6	626	.500	.500	.120	.300	.072	.008	.244	.244	-.018	-.080	-.203	0.073	0.085	3.2	1.1	3.1	1.1	A+	
385	619624	6	627	.812	.064	.064	.061	.812	.000	.384	-.210	-.212	-.197	.384	-1.742	0.107	-1.5	0.9	-2.1	0.8	A-	
386	615518	6	627	.788	.788	.032	.161	.016	.003	.375	.375	-.182	-.232	-.215	-1.642	0.103	-0.8	1.0	-1.6	0.9	C-	
387	615520	6	626	.845	.053	.054	.845	.045	.003	.333	-.164	-.148	.333	-.143	-1.861	0.118	0.0	1.0	-0.6	0.9	A+	
388	615514	6	626	.808	.030	.040	.118	.808	.003	.353	-.153	-.209	-.185	.353	-1.722	0.107	-0.6	1.0	-0.9	0.9	B-	
389	618591	6	625	.869	.042	.869	.038	.051	.000	.211	-.089	.211	-.155	-.107	-2.191	0.122	0.3	1.0	0.7	1.1	A+	
390	619296	6	626	.829	.043	.053	.829	.074	.002	.454	-.216	-.247	.454	-.235	-1.867	0.111	-1.9	0.9	-2.9	0.7	A+	
391	615526	6	626	.708	.083	.708	.069	.134	.006	.424	-.177	.424	-.173	-.208	-1.153	0.094	-1.5	0.9	-1.9	0.9	A+	
392	618594	6	627	.783	.094	.783	.048	.065	.010	.373	-.191	.373	-.120	-.136	-1.579	0.104	-0.9	1.0	-1.3	0.9	A-	
393	618593	6	1253	.646	.120	.646	.131	.093	.011	.487	-.237	.487	-.242	-.128	-0.820	0.064	-5.2	0.9	-4.8	0.8	A+	
394	615509	6	5636	.869	.869	.066	.036	.024	.005	.466	.466	-.269	-.223	-.184	-2.223	0.042	-5.1	0.9	-9.3	0.7	A+	A-
395	619303	6	627	.447	.368	.447	.091	.085	.010	.387	-.174	.387	-.101	-.132	0.150	0.086	-2.1	0.9	-2.0	0.9	A-	
396	618790	6	5636	.414	.287	.047	.414	.243	.009	.348	-.085	-.194	.348	-.146	0.319	0.029	-1.2	1.0	1.3	1.0	A+	B-
397	620217	6	627	.499	.161	.089	.233	.499	.018	.479	-.224	-.228	-.108	.479	-0.114	0.086	-4.1	0.9	-4.0	0.9	A-	
398	619121	6	5636	.460	.085	.242	.191	.460	.022	.369	-.191	-.040	-.201	.369	0.072	0.029	-1.9	1.0	-1.6	1.0	A+	A-
399	618792	6	1253	.707	.116	.062	.707	.109	.006	.364	-.144	-.204	.364	-.162	-1.027	0.066	-1.1	1.0	-1.4	0.9	A+	A+
400	620358	6	627	.447	.177	.021	.356	.447	.000	.342	-.076	-.187	-.239	.342	0.146	0.086	-0.1	1.0	-0.3	1.0	B-	
401	619293	6	627	.416	.132	.121	.329	.416	.002	.373	-.196	-.212	-.098	.373	0.283	0.086	-1.0	1.0	-1.0	1.0	A-	
402	619120	6	623	.779	.043	.103	.779	.067	.008	.295	-.149	-.087	.295	-.108	-1.493	0.103	0.8	1.1	0.7	1.1	A+	
403	619616	6	623	.469	.469	.039	.112	.372	.008	.341	.341	-.156	-.144	-.111	0.089	0.086	-0.5	1.0	-0.3	1.0	A-	
404	619295	6	623	.344	.509	.344	.079	.056	.013	.187	.108	.187	-.210	-.147	0.678	0.089	2.9	1.1	2.2	1.1	A+	
405	615523	6	623	.502	.059	.257	.151	.502	.031	.442	-.157	-.095	-.218	.442	-0.114	0.086	-3.9	0.9	-3.7	0.9	A+	
406	619122	6	629	.614	.614	.183	.051	.148	.005	.283	.283	-.157	-.126	-.078	-0.557	0.088	2.1	1.1	1.3	1.1	A+	
407	619298	6	629	.822	.043	.024	.822	.102	.010	.325	-.192	-.181	.325	-.101	-1.822	0.112	-0.3	1.0	-0.6	0.9	A+	
408	615524	6	629	.661	.076	.200	.048	.661	.014	.430	-.261	-.142	-.225	.430	-0.830	0.091	-2.0	0.9	-1.8	0.9	A+	
409	615525	6	626	.669	.090	.171	.059	.669	.011	.474	-.117	-.261	-.276	.474	-0.927	0.091	-3.1	0.9	-3.0	0.9	A+	
410	619301	6	626	.752	.070	.102	.066	.752	.010	.545	-.254	-.254	-.263	.545	-1.383	0.099	-3.7	0.8	-4.4	0.7	B+	
411	619123	6	626	.296	.181	.296	.318	.197	.010	.070	.082	.070	-.067	-.010	0.868	0.092	4.4	1.2	5.8	1.4	A+	
412	619299	6	626	.824	.824	.038	.094	.034	.010	.524	.524	-.204	-.304	-.242	-1.878	0.112	-2.5	0.8	-4.0	0.6	A-	
413	615513	6	627	.622	.622	.190	.093	.093	.003	.401	.401	-.122	-.275	-.200	-0.714	0.088	-0.9	1.0	-0.4	1.0	A+	
414	617740	6	627	.608	.209	.070	.112	.608	.002	.530	-.213	-.282	-.303	.530	-0.643	0.087	-5.1	0.8	-5.1	0.8	A+	
415	619300	6	627	.727	.048	.166	.046	.727	.013	.424	-.207	-.192	-.231	.424	-1.303	0.096	-1.2	0.9	-0.9	0.9	A-	

Table B-4 (continued). Science Multiple-Choice Item Statistics

Ref	ID	FT Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
416	615534	6	1253	.880	.880	.032	.042	.036	.010	.484	.484	-.200	-.259	-.219	-2.347	0.094	-2.2	0.9	-4.5	0.6	A+	A-
417	619134	6	627	.558	.558	.169	.180	.078	.014	.508	.508	-.201	-.253	-.200	-0.442	0.087	-4.1	0.9	-3.8	0.9	A-	
418	616333	6	626	.768	.029	.768	.109	.086	.008	.480	-.137	.480	-.253	-.235	-1.298	0.101	-2.4	0.9	-3.5	0.8	A+	
419	615522	6	626	.102	.021	.839	.029	.102	.010	-.106	-.116	.321	-.184	-.106	2.546	0.139	1.3	1.1	4.5	1.8	A+	
420	619302	6	626	.494	.189	.133	.173	.494	.013	.336	.034	-.248	-.149	.336	0.093	0.085	0.2	1.0	-0.1	1.0	A+	
421	618592	6	1251	.595	.106	.595	.126	.166	.007	.380	-.176	.380	-.189	-.129	-0.461	0.061	-1.2	1.0	-1.1	1.0	A+	A-
422	615516	6	626	.246	.030	.024	.246	.693	.006	.089	-.120	-.165	.089	.088	1.160	0.098	3.0	1.2	4.6	1.4	A-	
423	618789	6	626	.748	.748	.077	.037	.133	.006	.283	.283	-.159	-.203	-.028	-1.384	0.098	1.3	1.1	1.1	1.1	A-	
424	615511	6	1251	.440	.401	.440	.122	.032	.005	.297	-.199	.297	-.021	-.130	0.156	0.061	2.1	1.0	1.8	1.1	A-	A+
425	615612	6	626	.385	.486	.385	.085	.032	.013	.176	.049	.176	-.136	-.192	0.397	0.088	4.6	1.2	4.7	1.2	A+	
426	615519	6	625	.550	.333	.061	.056	.550	.000	.286	-.106	-.192	-.203	.286	-0.328	0.085	1.7	1.1	1.4	1.1	A-	
427	619313	6	625	.434	.434	.264	.211	.082	.010	.316	.316	-.109	-.183	-.084	0.186	0.086	0.9	1.0	0.6	1.0	A-	
428	615535	6	1253	.652	.077	.652	.093	.176	.002	.428	-.230	.428	-.261	-.135	-0.832	0.063	-3.2	0.9	-3.2	0.9	A+	
429	615510	6	1256	.678	.206	.047	.067	.678	.002	.295	-.111	-.182	-.178	.295	-0.935	0.064	1.2	1.0	1.3	1.1	A+	
430	618590	6	1251	.333	.270	.333	.213	.177	.006	.265	-.131	.265	-.086	-.047	0.672	0.063	1.6	1.0	2.1	1.1	A+	A-
431	615512	6	1253	.625	.073	.625	.098	.192	.012	.340	-.181	.340	-.143	-.104	-0.616	0.063	0.2	1.0	0.4	1.0	A-	A-
432	618791	6	1255	.583	.070	.583	.148	.186	.014	.394	-.220	.394	-.182	-.105	-0.483	0.062	-1.3	1.0	-1.4	1.0	A+	
433	616332	6	1248	.678	.678	.091	.118	.097	.016	.403	.403	-.170	-.161	-.173	-0.961	0.065	-1.7	1.0	-2.1	0.9	A+	A-
434	615517	6	1251	.689	.054	.162	.090	.689	.005	.571	-.243	-.363	-.224	.571	-1.008	0.065	-7.5	0.8	-7.6	0.7	A-	A-
435	615560	6	627	.353	.064	.353	.507	.070	.006	.240	-.167	.240	-.016	-.235	0.540	0.089	2.3	1.1	2.6	1.1	A+	
436	619132	6	626	.746	.046	.070	.746	.131	.006	.408	-.181	-.230	.408	-.142	-1.150	0.098	-1.4	0.9	-1.8	0.9	B-	
437	615557	6	626	.754	.072	.754	.104	.061	.010	.515	-.247	.515	-.255	-.217	-1.393	0.099	-3.0	0.9	-3.8	0.7	A-	
438	615574	6	626	.792	.077	.792	.054	.070	.006	.451	-.135	.451	-.244	-.230	-1.675	0.105	-1.8	0.9	-1.8	0.9	A-	
439	617512	6	625	.203	.243	.400	.154	.203	.000	.248	-.134	-.028	-.080	.248	1.418	0.103	0.1	1.0	1.0	1.1	A-	
440	615566	6	627	.376	.416	.376	.112	.088	.008	.301	-.099	.301	-.104	-.094	0.489	0.088	0.6	1.0	1.0	1.0	A+	
441	615578	6	5636	.241	.203	.405	.241	.146	.005	.087	-.052	.073	.087	-.093	1.226	0.033	9.0	1.2	9.9	1.4	A-	A+
442	615583	6	627	.585	.585	.109	.136	.158	.013	.273	.273	-.123	-.001	-.139	-0.506	0.087	2.7	1.1	2.0	1.1	A-	
443	618600	6	5636	.584	.584	.175	.121	.111	.009	.397	.397	-.142	-.193	-.158	-0.473	0.029	-4.1	1.0	-3.9	1.0	A+	A+
444	615571	6	627	.294	.510	.147	.294	.035	.014	.266	-.006	-.141	.266	-.133	0.903	0.093	0.7	1.0	2.7	1.2	A-	
445	615549	6	5636	.426	.130	.112	.314	.426	.018	.391	-.171	-.194	-.088	.391	0.240	0.029	-4.1	1.0	-3.1	1.0	A+	A+
446	615584	6	627	.397	.195	.265	.397	.139	.005	.119	-.160	-.043	.119	.074	0.367	0.087	5.2	1.2	4.6	1.2	A+	
447	615568	6	627	.388	.392	.093	.124	.388	.003	.352	-.101	-.220	-.167	.352	0.417	0.087	0.0	1.0	0.0	1.0	A+	
448	619361	6	627	.410	.410	.231	.262	.088	.010	.299	.299	-.113	-.087	-.192	0.297	0.087	0.9	1.0	1.6	1.1	A-	
449	619360	6	627	.424	.424	.222	.295	.046	.013	.445	.445	-.161	-.238	-.182	0.221	0.086	-2.7	0.9	-2.5	0.9	A-	
450	615581	6	627	.322	.152	.383	.322	.124	.019	.164	-.062	-.048	.164	-.070	0.711	0.091	3.4	1.1	3.6	1.2	A+	

Table B-4 (continued). Science Multiple-Choice Item Statistics

Ref	ID	FT Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
451	615582	6	623	.268	.151	.323	.268	.250	.008	.145	.001	.058	.145	-.123	1.078	0.095	2.4	1.1	2.5	1.2	A-	
452	615585	6	623	.435	.432	.435	.043	.077	.013	.229	.023	.229	-.222	-.121	0.231	0.086	3.3	1.1	3.1	1.1	A-	
453	615569	6	623	.677	.202	.050	.677	.059	.011	.436	-.241	-.194	.436	-.065	-0.912	0.092	-1.8	0.9	-1.8	0.9	B+	
454	615544	6	623	.191	.397	.303	.090	.191	.019	.243	.082	-.023	-.223	.243	1.556	0.106	-0.3	1.0	0.6	1.1	A+	
455	615586	6	629	.351	.046	.351	.526	.068	.008	.323	-.142	.323	-.116	-.160	0.687	0.089	-0.3	1.0	0.3	1.0	A-	
456	619362	6	629	.262	.288	.390	.053	.262	.008	.224	-.180	.103	-.195	.224	1.168	0.096	1.8	1.1	2.5	1.2	A-	
457	615545	6	629	.277	.262	.313	.143	.277	.005	.367	-.147	-.114	-.076	.367	1.091	0.095	-1.2	1.0	0.3	1.0	A-	
458	615543	6	629	.490	.127	.154	.490	.219	.010	.330	-.157	-.158	.330	-.075	0.013	0.086	0.8	1.0	0.6	1.0	A-	
459	615570	6	629	.673	.156	.073	.673	.089	.010	.459	-.185	-.273	.459	-.175	-0.871	0.091	-2.7	0.9	-2.9	0.8	A-	
460	615546	6	626	.300	.377	.213	.300	.107	.003	.266	-.047	-.218	.266	.018	0.853	0.092	0.6	1.0	1.6	1.1	A+	
461	615552	6	626	.227	.166	.227	.490	.115	.002	.101	-.040	.101	.028	-.099	1.273	0.100	2.1	1.1	4.6	1.4	A-	
462	618795	6	626	.283	.283	.391	.090	.232	.005	.206	.206	-.012	-.155	-.060	0.944	0.093	1.9	1.1	2.3	1.2	A-	
463	615550	6	626	.425	.235	.304	.425	.027	.010	.252	-.038	-.137	.252	-.107	0.231	0.086	2.6	1.1	2.8	1.1	B+	
464	617742	6	626	.340	.230	.401	.340	.018	.011	.274	-.191	-.005	.274	-.130	0.635	0.089	1.2	1.0	1.6	1.1	A-	
465	618805	6	626	.414	.230	.190	.150	.414	.016	.340	-.018	-.093	-.250	.340	0.274	0.086	0.2	1.0	0.2	1.0	A+	
466	615565	6	627	.236	.112	.633	.236	.018	.002	.187	-.244	.045	.187	-.172	1.184	0.098	0.8	1.0	3.3	1.3	A+	
467	617743	6	627	.499	.354	.030	.115	.499	.002	.380	-.216	-.221	-.139	.380	-0.138	0.085	-0.6	1.0	-1.0	1.0	A-	
468	615597	6	627	.510	.199	.510	.156	.129	.005	.224	-.103	.224	-.122	-.058	-0.199	0.085	4.0	1.1	4.2	1.2	A+	
469	615558	6	627	.494	.262	.494	.120	.112	.013	.346	-.073	.346	-.138	-.225	-0.138	0.086	0.8	1.0	0.7	1.0	A-	
470	618595	6	627	.627	.099	.152	.105	.627	.018	.475	-.259	-.143	-.239	.475	-0.784	0.089	-2.4	0.9	-2.8	0.9	A+	
471	615547	6	627	.418	.132	.418	.201	.220	.029	.328	-.140	.328	-.189	-.008	0.189	0.087	1.1	1.0	1.6	1.1	A-	
472	615573	6	626	.514	.401	.027	.514	.054	.003	.405	-.224	-.145	.405	-.215	0.009	0.085	-2.2	0.9	-2.4	0.9	A+	
473	619135	6	626	.275	.302	.176	.243	.275	.005	.110	.003	-.020	-.027	.110	1.181	0.094	2.7	1.1	4.5	1.3	A+	
474	615559	6	626	.733	.091	.035	.733	.133	.008	.516	-.300	-.216	.516	-.195	-1.083	0.097	-3.4	0.8	-4.3	0.7	A-	
475	618596	6	626	.626	.190	.104	.626	.061	.019	.496	-.159	-.270	.496	-.204	-0.547	0.089	-4.0	0.9	-4.1	0.8	A-	
476	615548	6	626	.324	.273	.259	.324	.117	.027	.330	-.150	-.023	.330	-.090	0.893	0.091	-0.9	1.0	-0.3	1.0	A+	
477	615575	6	626	.645	.058	.645	.070	.222	.005	.439	-.173	.439	-.212	-.209	-0.818	0.089	-2.2	0.9	-2.2	0.9	A-	
478	619358	6	626	.439	.171	.439	.153	.227	.010	.334	-.126	.334	-.206	-.024	0.144	0.086	0.5	1.0	0.6	1.0	A-	
479	615563	6	626	.553	.553	.077	.305	.056	.010	.379	.379	-.178	-.141	-.177	-0.381	0.086	-0.7	1.0	-0.6	1.0	A-	
480	618597	6	626	.503	.503	.353	.080	.045	.019	.459	.459	-.221	-.247	-.080	-0.177	0.086	-3.4	0.9	-3.1	0.9	C-	
481	615579	6	626	.203	.355	.241	.203	.179	.022	.072	.105	-.049	.072	-.048	1.410	0.105	2.2	1.1	5.2	1.5	A+	
482	618599	6	625	.506	.157	.139	.197	.506	.002	.425	-.095	-.138	-.320	.425	-0.127	0.085	-2.6	0.9	-2.6	0.9	A-	
483	618598	6	625	.490	.219	.490	.061	.230	.000	.408	-.246	.408	-.226	-.115	-0.053	0.085	-2.2	0.9	-1.7	0.9	A-	
484	615564	6	625	.378	.168	.200	.378	.250	.005	.313	-.080	-.199	.313	-.082	0.455	0.087	0.3	1.0	0.8	1.0	A+	
485	617513	6	625	.259	.408	.224	.101	.259	.008	.265	.095	-.205	-.222	.265	1.064	0.096	0.5	1.0	1.2	1.1	A-	

Table B-4 (continued). Science Multiple-Choice Item Statistics

Ref	ID	FT Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
486	619359	6	625	.344	.382	.182	.344	.078	.013	.196	.093	-.267	.196	-.085	0.607	0.089	3.0	1.1	2.8	1.1	A+	
487	615562	6	626	.527	.141	.527	.069	.254	.010	.393	-.279	.393	-.245	-.021	-0.238	0.085	-1.3	1.0	-1.2	1.0	A-	
488	618609	6	625	.701	.085	.115	.701	.099	.000	.367	-.252	-.212	.367	-.101	-1.055	0.092	-0.5	1.0	-1.3	0.9	A-	
489	615576	6	627	.443	.271	.102	.174	.443	.010	.396	-.294	.025	-.136	.396	0.106	0.086	-1.2	1.0	-1.2	1.0	B-	
490	615551	6	629	.523	.523	.126	.245	.095	.011	.397	.397	-.160	-.099	-.248	-0.142	0.086	-1.2	1.0	-1.3	1.0	A-	
491	615577	6	626	.190	.190	.377	.147	.278	.008	.124	.124	.131	-.148	-.056	1.501	0.106	1.6	1.1	2.9	1.3	A-	
492	619149	6	627	.317	.262	.317	.225	.182	.014	.160	-.044	.160	-.044	.024	0.775	0.092	3.1	1.1	4.2	1.3	A+	
493	618794	6	625	.674	.674	.067	.141	.117	.002	.287	.287	-.235	-.061	-.160	-0.918	0.090	0.5	1.0	1.7	1.1	A-	
494	615567	6	626	.649	.078	.113	.649	.152	.008	.389	-.222	-.194	.389	-.080	-0.627	0.089	-1.2	1.0	-1.4	0.9	A+	
495	615235	7	430	.707	.161	.067	.707	.065	.000	.399	-.212	-.225	.399	-.193	-1.035	0.112	-1.1	0.9	-1.4	0.9	A-	A-
496	615275	7	876	.539	.185	.175	.096	.539	.006	.415	-.012	-.280	-.258	.415	-0.223	0.072	-3.5	0.9	-3.1	0.9	A+	A-
497	615238	7	428	.895	.054	.895	.023	.028	.000	.339	-.261	.339	-.189	-.100	-2.432	0.163	-0.4	0.9	-1.5	0.8	A+	
498	615252	7	445	.636	.036	.148	.180	.636	.000	.533	-.126	-.314	-.317	.533	-0.684	0.104	-4.2	0.8	-4.4	0.8	C-	
499	615234	7	428	.386	.269	.140	.203	.386	.002	.448	-.204	-.238	-.116	.448	0.498	0.105	-2.6	0.9	-2.3	0.9	A+	
500	615253	7	428	.610	.063	.124	.610	.203	.000	.474	-.182	-.233	.474	-.273	-0.530	0.105	-3.2	0.9	-3.2	0.9	A+	
501	615230	7	6496	.598	.206	.085	.598	.108	.004	.357	-.194	-.178	.357	-.096	-0.504	0.027	-2.2	1.0	-2.3	1.0	A-	A+
502	615258	7	428	.477	.477	.133	.182	.201	.007	.500	.500	-.238	-.286	-.100	0.076	0.103	-3.9	0.9	-3.2	0.9	A-	
503	615232	7	428	.577	.129	.152	.136	.577	.007	.474	-.209	-.203	-.210	.474	-0.386	0.104	-3.4	0.9	-3.3	0.9	A+	
504	615268	7	428	.533	.241	.094	.124	.533	.009	.461	-.196	-.200	-.206	.461	-0.189	0.103	-2.8	0.9	-2.8	0.9	A-	
505	618857	7	6496	.286	.285	.201	.286	.219	.009	.254	-.100	-.141	.254	.028	0.966	0.029	2.1	1.0	5.5	1.1	A-	A+
506	618799	7	428	.299	.467	.154	.299	.068	.012	.186	.069	-.222	.186	-.073	0.922	0.112	1.5	1.1	1.9	1.1	A-	
507	616023	7	1286	.450	.143	.229	.167	.450	.011	.345	-.206	-.015	-.211	.345	0.134	0.060	-0.2	1.0	-0.5	1.0	A+	A+
508	615254	7	431	.292	.091	.415	.292	.195	.007	.286	-.100	-.068	.286	-.065	0.972	0.111	-0.4	1.0	0.2	1.0	A+	A-
509	615605	7	431	.478	.478	.153	.123	.239	.007	.291	.291	-.240	.001	-.039	0.079	0.102	0.2	1.0	0.9	1.0	A-	A-
510	616350	7	431	.381	.116	.381	.327	.169	.007	.280	-.279	.280	.079	-.111	0.529	0.105	-0.2	1.0	-0.1	1.0	A-	A+
511	615997	7	431	.446	.149	.446	.320	.077	.009	.196	-.132	.196	.047	-.101	0.221	0.103	2.5	1.1	2.8	1.1	A+	A+
512	615244	7	431	.397	.160	.116	.316	.397	.012	.274	-.082	-.109	-.041	.274	0.444	0.104	1.2	1.0	1.3	1.1	A-	A-
513	615269	7	431	.522	.211	.522	.070	.183	.014	.425	-.223	.425	-.192	-.056	-0.135	0.103	-2.8	0.9	-2.6	0.9	A-	A+
514	615273	7	859	.552	.232	.552	.134	.069	.014	.367	-.093	.367	-.218	-.110	-0.302	0.073	-1.2	1.0	-1.4	1.0	A-	A-
515	616009	7	450	.711	.193	.042	.053	.711	.000	.379	-.338	-.064	-.114	.379	-1.063	0.110	-1.7	0.9	-1.4	0.9	A+	
516	616351	7	450	.247	.098	.247	.387	.260	.009	.149	-.116	.149	.051	-.062	1.168	0.114	0.5	1.0	2.2	1.2	A+	
517	615606	7	450	.307	.344	.164	.176	.307	.009	.259	.036	-.183	-.098	.259	0.829	0.107	0.1	1.0	0.3	1.0	A+	
518	615237	7	450	.298	.220	.311	.298	.164	.007	.196	-.077	-.182	.196	.153	0.889	0.108	0.4	1.0	0.3	1.0	A+	
519	618793	7	450	.553	.264	.124	.051	.553	.007	.412	-.119	-.257	-.170	.412	-0.316	0.100	-2.2	0.9	-2.3	0.9	B-	
520	615245	7	450	.804	.804	.062	.053	.071	.009	.410	.410	-.250	-.131	-.166	-1.672	0.127	-0.6	1.0	-1.3	0.9	A-	

Table B-4 (continued). Science Multiple-Choice Item Statistics

Ref	ID	FT Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
521	615274	7	878	.751	.051	.088	.751	.101	.009	.423	-.223	-.189	.423	-.174	-1.343	0.083	-1.8	0.9	-2.5	0.9	A+	A-
522	615609	7	434	.412	.412	.242	.251	.095	.000	.353	.353	-.151	-.186	-.097	0.435	0.104	-0.6	1.0	-0.3	1.0	A-	
523	615607	7	434	.498	.076	.281	.145	.498	.000	.387	-.213	-.200	-.133	.387	0.050	0.103	-1.5	1.0	-1.5	0.9	A-	
524	615239	7	434	.770	.060	.023	.148	.770	.000	.452	-.254	-.081	-.333	.452	-1.346	0.120	-1.7	0.9	-2.0	0.8	A-	
525	615264	7	434	.606	.606	.159	.108	.124	.002	.414	.414	-.242	-.247	-.097	-0.469	0.105	-1.8	0.9	-1.9	0.9	A-	
526	616017	7	434	.705	.088	.705	.088	.115	.005	.418	-.213	.418	-.263	-.151	-0.981	0.112	-1.3	0.9	-1.7	0.9	A+	
527	616004	7	434	.889	.058	.039	.009	.889	.005	.366	-.158	-.293	-.157	.366	-2.390	0.164	-1.0	0.9	-1.8	0.7	B+	
528	617514	7	879	.537	.224	.135	.537	.101	.002	.304	-.025	-.275	.304	-.145	-0.190	0.072	1.0	1.0	1.2	1.0	A+	A-
529	616349	7	430	.649	.649	.107	.121	.119	.005	.465	.465	-.293	-.191	-.139	-0.779	0.107	-3.3	0.9	-3.2	0.8	B+	A+
530	618797	7	430	.454	.274	.067	.454	.200	.005	.254	-.075	-.204	.254	-.037	0.122	0.102	1.2	1.0	1.1	1.0	A-	A-
531	617517	7	430	.591	.074	.193	.591	.130	.012	.470	-.149	-.246	.470	-.144	-0.513	0.104	-3.6	0.9	-3.2	0.9	B-	B-
532	617515	7	861	.283	.378	.196	.135	.283	.008	.322	-.030	-.161	-.086	.322	0.963	0.079	-0.9	1.0	-1.0	1.0	A-	B-
533	616018	7	430	.212	.158	.212	.579	.042	.009	.166	-.011	.166	.018	-.144	1.373	0.123	0.7	1.0	3.0	1.3	B-	A+
534	615267	7	430	.319	.319	.479	.084	.107	.012	.243	.243	.088	-.210	-.186	0.749	0.109	1.0	1.0	1.5	1.1	A-	A+
535	616006	7	430	.393	.063	.144	.386	.393	.014	.369	-.214	-.116	-.096	.369	0.379	0.104	-1.3	1.0	-1.4	0.9	A+	A+
536	616345	7	430	.440	.072	.221	.440	.265	.002	.375	-.100	-.123	.375	-.216	0.247	0.103	-0.8	1.0	-0.5	1.0	A-	
537	616010	7	430	.605	.151	.226	.605	.016	.002	.137	-.145	.024	.137	-.087	-0.509	0.105	4.1	1.2	4.9	1.3	A+	
538	615282	7	430	.540	.198	.172	.086	.540	.005	.477	-.159	-.279	-.192	.477	-0.213	0.103	-3.7	0.9	-3.4	0.9	A-	
539	620004	7	858	.442	.240	.442	.099	.215	.005	.347	-.154	.347	-.253	-.055	0.162	0.073	-0.5	1.0	-0.3	1.0	A-	A+
540	617749	7	430	.558	.558	.070	.237	.123	.012	.444	.444	-.151	-.167	-.263	-0.318	0.104	-2.5	0.9	-2.5	0.9	A-	
541	616019	7	430	.526	.342	.077	.526	.049	.007	.432	-.279	-.122	.432	-.140	-0.158	0.103	-2.4	0.9	-2.1	0.9	A-	
542	615246	7	430	.277	.091	.128	.495	.277	.009	.198	-.038	-.225	.042	.198	1.048	0.114	1.9	1.1	2.1	1.2	A+	
543	615256	7	434	.636	.636	.159	.134	.067	.005	.513	.513	-.264	-.266	-.156	-0.740	0.106	-3.8	0.9	-3.7	0.8	A-	
544	615608	7	434	.311	.237	.092	.311	.357	.002	.312	-.071	-.138	.312	-.127	0.808	0.110	0.1	1.0	0.7	1.1	A-	
545	616026	7	862	.580	.067	.580	.210	.139	.004	.374	-.139	.374	-.138	-.231	-0.462	0.073	-1.2	1.0	-1.8	1.0	A-	A-
546	617516	7	434	.539	.099	.168	.539	.191	.002	.468	-.202	-.208	.468	-.207	-0.278	0.103	-3.3	0.9	-2.9	0.9	B-	
547	615270	7	434	.311	.249	.196	.233	.311	.012	.148	-.036	-.108	.068	.148	0.804	0.110	3.3	1.2	3.4	1.2	A+	
548	616005	7	434	.493	.191	.120	.187	.493	.009	.458	-.166	-.194	-.169	.458	-0.072	0.103	-2.9	0.9	-2.6	0.9	A+	
549	615247	7	434	.740	.118	.069	.062	.740	.012	.583	-.256	-.276	-.283	.583	-1.314	0.117	-4.0	0.8	-4.7	0.7	A+	
550	615240	7	427	.712	.712	.138	.080	.070	.000	.366	.366	-.278	-.103	-.166	-1.020	0.112	-1.1	0.9	-1.3	0.9	A+	A-
551	615265	7	427	.300	.049	.300	.515	.134	.002	-.009	-.155	-.009	.191	-.171	0.936	0.111	4.4	1.2	5.4	1.4	A-	B-
552	616021	7	855	.371	.112	.233	.371	.278	.006	.150	-.004	-.096	.150	-.044	0.499	0.075	4.4	1.1	4.5	1.2	A+	B+
553	615276	7	427	.398	.127	.398	.152	.321	.002	.391	-.079	.391	-.194	-.190	0.449	0.105	-1.3	1.0	-0.9	1.0	A-	B-
554	617750	7	427	.440	.440	.267	.141	.150	.002	.303	.303	-.226	-.075	-.050	0.254	0.103	0.7	1.0	0.5	1.0	A-	A+
555	615259	7	427	.410	.410	.098	.429	.052	.012	.591	.591	-.290	-.306	-.147	0.382	0.105	-6.0	0.8	-5.7	0.8	A-	A-

Table B-4 (continued). Science Multiple-Choice Item Statistics

Ref	ID	FT Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
556	618800	7	427	.719	.719	.122	.075	.070	.014	.518	.518	-.351	-.196	-.181	-1.114	0.115	-3.0	0.9	-3.1	0.8	B+	A-
557	615241	7	442	.396	.396	.088	.222	.292	.002	.425	.425	-.230	-.272	-.037	0.470	0.104	-1.7	0.9	-1.3	0.9	A-	
558	615266	7	442	.450	.095	.305	.145	.450	.005	.452	-.163	-.171	-.233	.452	0.210	0.103	-2.3	0.9	-2.2	0.9	A+	
559	616020	7	873	.560	.181	.136	.111	.560	.012	.462	-.150	-.211	-.217	.462	-0.320	0.073	-4.3	0.9	-4.4	0.9	A+	A-
560	615277	7	442	.572	.572	.274	.091	.059	.005	.398	.398	-.077	-.289	-.265	-0.365	0.104	-0.6	1.0	-1.0	1.0	A+	
561	615281	7	442	.321	.321	.324	.249	.102	.005	.220	.220	-.036	-.096	-.091	0.839	0.109	2.2	1.1	2.9	1.2	A+	
562	615260	7	442	.649	.054	.199	.091	.649	.007	.546	-.261	-.274	-.251	.546	-0.749	0.107	-4.1	0.8	-4.0	0.8	A+	
563	616347	7	442	.661	.079	.152	.102	.661	.007	.573	-.245	-.215	-.357	.573	-0.807	0.108	-4.7	0.8	-4.5	0.7	A+	
564	615248	7	430	.467	.088	.221	.223	.467	.000	.289	.004	-.337	-.013	.289	0.104	0.102	1.1	1.0	1.2	1.1	B-	A-
565	617518	7	430	.437	.037	.470	.056	.437	.000	.224	-.122	-.088	-.192	.224	0.241	0.103	2.5	1.1	2.3	1.1	A-	A-
566	615272	7	875	.709	.709	.094	.149	.047	.002	.508	.508	-.244	-.294	-.256	-1.057	0.079	-4.1	0.9	-4.7	0.8	A-	A-
567	616355	7	430	.437	.112	.165	.279	.437	.007	.314	-.083	-.183	-.123	.314	0.230	0.103	0.4	1.0	0.5	1.0	A+	B-
568	615278	7	430	.616	.133	.098	.151	.616	.002	.416	-.175	-.160	-.268	.416	-0.585	0.105	-1.6	0.9	-1.7	0.9	A-	B-
569	616352	7	430	.137	.137	.316	.126	.419	.002	.170	.170	-.050	-.177	.046	1.969	0.144	0.3	1.0	1.1	1.2	A-	A-
570	615257	7	430	.265	.458	.265	.216	.061	.000	.085	.189	.085	-.181	-.242	1.092	0.114	2.5	1.1	3.4	1.3	A-	A+
571	615242	7	430	.519	.170	.519	.088	.221	.002	.416	-.186	.416	-.280	-.139	-0.133	0.102	-1.8	0.9	-2.0	0.9	A+	A+
572	615250	7	428	.346	.103	.458	.091	.346	.002	.438	-.212	-.177	-.190	.438	0.644	0.108	-2.6	0.9	-2.1	0.9	A+	
573	620005	7	428	.201	.217	.463	.201	.115	.005	-.002	-.198	.285	-.002	-.131	1.471	0.126	2.9	1.2	3.5	1.4	A-	
574	615271	7	856	.471	.471	.320	.050	.153	.006	.359	.359	-.076	-.209	-.230	0.038	0.073	-1.1	1.0	-0.7	1.0	B-	B-
575	617751	7	428	.675	.675	.129	.131	.061	.005	.373	.373	-.216	-.083	-.227	-0.899	0.109	-1.3	0.9	0.0	1.0	A-	
576	616025	7	428	.451	.355	.068	.451	.122	.005	.281	-.119	-.095	.281	-.118	0.149	0.103	1.5	1.1	1.5	1.1	A+	
577	616353	7	428	.470	.189	.206	.129	.470	.007	.413	-.176	-.097	-.218	.413	0.061	0.103	-1.9	0.9	-2.1	0.9	A-	
578	616001	7	428	.549	.115	.208	.549	.115	.014	.423	-.153	-.214	.423	-.133	-0.317	0.104	-2.0	0.9	-2.2	0.9	A+	
579	615262	7	428	.530	.079	.171	.530	.208	.012	.347	-.211	-.276	.347	.046	-0.225	0.103	-0.1	1.0	-0.1	1.0	A-	
580	616008	7	428	.542	.072	.061	.542	.325	.000	.257	-.272	-.137	.257	-.053	-0.270	0.102	0.7	1.0	0.9	1.0	A-	
581	615236	7	428	.591	.297	.591	.082	.028	.002	.255	-.125	.255	-.163	-.081	-0.515	0.104	1.5	1.1	1.2	1.1	B+	
582	620002	7	428	.280	.269	.259	.280	.189	.002	.237	.056	-.156	.237	-.135	0.955	0.113	0.6	1.0	0.9	1.1	B-	
583	617748	7	428	.131	.098	.416	.131	.348	.007	-.057	-.150	.185	-.057	-.025	1.984	0.148	1.4	1.2	3.6	1.6	A-	
584	616002	7	428	.115	.115	.374	.273	.229	.009	.024	.024	.059	-.034	-.008	2.196	0.160	0.5	1.1	2.6	1.5	B+	
585	615251	7	445	.099	.710	.067	.099	.121	.002	-.151	.345	-.158	-.151	-.217	2.360	0.164	1.2	1.2	4.0	1.8	B+	
586	620003	7	445	.362	.265	.362	.198	.175	.000	.231	-.169	.231	-.028	-.066	0.573	0.104	1.4	1.1	2.0	1.1	A+	
587	616011	7	445	.400	.148	.142	.400	.308	.002	.217	-.077	-.281	.217	.048	0.390	0.102	2.1	1.1	2.2	1.1	A+	
588	615255	7	445	.614	.112	.121	.614	.142	.011	.612	-.342	-.288	.612	-.277	-0.615	0.104	-6.4	0.8	-6.3	0.7	A+	
589	617747	7	431	.452	.452	.158	.218	.165	.007	.413	.413	-.175	-.174	-.103	0.169	0.102	-3.1	0.9	-2.7	0.9	B-	A+
590	616354	7	431	.622	.186	.622	.139	.046	.007	.422	-.197	.422	-.181	-.153	-0.598	0.105	-2.4	0.9	-2.3	0.9	B+	A+

Table B–4 (continued). Science Multiple-Choice Item Statistics

Ref	ID	FT Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
591	616013	7	431	.381	.070	.309	.225	.381	.016	.265	-.236	-.033	-.021	.265	0.484	0.104	0.8	1.0	0.8	1.0	A+	A+
592	618798	7	431	.336	.172	.239	.234	.336	.019	.342	-.048	-.080	-.149	.342	0.693	0.107	-1.0	1.0	-0.7	1.0	A-	A+
593	615996	7	428	.255	.570	.147	.255	.028	.000	.293	-.325	.105	.293	-.023	1.033	0.116	0.0	1.0	0.2	1.0	A-	
594	617752	7	428	.215	.453	.215	.122	.210	.000	.228	.025	.228	-.275	-.040	1.274	0.122	0.4	1.0	1.0	1.1	B-	
595	615261	7	428	.486	.089	.486	.327	.096	.002	.404	-.242	.404	-.111	-.236	-0.095	0.102	-1.9	0.9	-1.9	0.9	A-	
596	615263	7	428	.353	.117	.166	.355	.353	.009	.412	-.140	-.196	-.120	.412	0.505	0.107	-2.0	0.9	-1.5	0.9	A+	
597	616346	7	428	.430	.164	.178	.430	.220	.009	.454	-.190	-.298	.454	-.046	0.143	0.103	-3.0	0.9	-3.2	0.9	A-	
598	615249	7	430	.377	.167	.340	.377	.105	.012	.260	-.166	-.037	.260	-.071	0.525	0.106	1.8	1.1	1.8	1.1	A-	
599	615999	7	430	.644	.644	.147	.107	.086	.016	.414	.414	-.191	-.169	-.140	-0.793	0.107	-2.1	0.9	-1.8	0.9	B+	A+
600	616348	7	442	.618	.231	.618	.036	.106	.009	.230	-.014	.230	-.150	-.186	-0.596	0.106	3.1	1.1	3.1	1.2	A+	
601	616014	7	427	.548	.187	.127	.548	.119	.019	.372	-.097	-.229	.372	-.143	-0.269	0.104	-0.5	1.0	-0.6	1.0	A+	B+
602	616007	7	434	.198	.198	.230	.426	.134	.012	-.008	-.008	-.040	.145	-.049	1.477	0.127	2.7	1.2	5.4	1.7	B-	
603	616616	7	430	.484	.340	.063	.109	.484	.005	.265	.055	-.281	-.270	.265	0.023	0.102	1.8	1.1	1.5	1.1	B+	A-
604	618806	7	428	.729	.117	.079	.729	.072	.002	.448	-.218	-.235	.448	-.194	-1.177	0.114	-2.3	0.9	-2.4	0.8	A+	
605	617531	7	428	.266	.016	.266	.086	.629	.002	.067	-.177	.067	-.224	.137	1.020	0.114	2.7	1.2	3.5	1.3	A-	
606	616626	7	445	.474	.474	.389	.047	.088	.002	.454	.454	-.214	-.210	-.273	0.052	0.100	-3.2	0.9	-3.1	0.9	B-	
607	618607	7	428	.554	.150	.047	.554	.250	.000	.229	-.166	-.191	.229	-.033	-0.268	0.103	1.9	1.1	1.8	1.1	A-	
608	616984	7	6496	.662	.065	.022	.248	.662	.003	.368	-.204	-.082	-.222	.368	-0.811	0.028	-3.0	1.0	-3.2	1.0	A-	B-
609	616991	7	856	.329	.195	.134	.335	.329	.006	.254	-.062	-.196	-.027	.254	0.740	0.077	1.1	1.0	1.3	1.1	A-	A+
610	620012	7	428	.551	.133	.182	.551	.126	.007	.384	-.253	-.116	.384	-.124	-0.266	0.104	-1.3	1.0	-1.4	0.9	A-	
611	618604	7	6496	.583	.583	.299	.051	.060	.007	.212	.212	-.019	-.162	-.160	-0.442	0.027	9.9	1.1	9.7	1.1	A-	A+
612	616978	7	428	.414	.115	.414	.112	.351	.009	.049	-.178	.049	-.147	.206	0.359	0.104	5.9	1.2	5.2	1.3	A-	
613	618608	7	431	.896	.028	.042	.896	.028	.007	.535	-.237	-.288	.535	-.151	-2.434	0.167	-1.3	0.8	-3.1	0.5	A-	B-
614	616992	7	876	.384	.086	.384	.239	.289	.003	.150	-.045	.150	-.013	-.072	0.492	0.073	4.4	1.1	5.0	1.2	A+	B-
615	616981	7	431	.627	.088	.116	.160	.627	.009	.553	-.235	-.226	-.227	.553	-0.615	0.106	-5.1	0.8	-4.6	0.8	B+	A-
616	616979	7	431	.473	.473	.278	.107	.125	.016	.314	.314	-.135	-.165	.011	0.078	0.103	-0.2	1.0	0.7	1.0	A-	A+
617	617001	7	450	.820	.060	.820	.027	.084	.009	.313	-.001	.313	-.142	-.220	-1.803	0.132	0.2	1.0	-0.1	1.0	A-	
618	618804	7	881	.329	.329	.182	.207	.271	.011	.191	.191	.036	-.113	-.048	0.725	0.075	2.5	1.1	3.1	1.1	A-	B-
619	616982	7	450	.596	.280	.044	.071	.596	.009	.308	-.172	-.136	-.062	.308	-0.497	0.102	-0.4	1.0	-0.3	1.0	A-	
620	616980	7	450	.138	.478	.216	.156	.138	.013	-.012	.295	-.124	-.153	-.012	1.964	0.143	1.2	1.1	2.4	1.4	A+	
621	617002	7	434	.440	.440	.122	.353	.085	.000	.326	.326	-.130	-.166	-.143	0.305	0.103	0.3	1.0	0.7	1.0	A+	
622	616993	7	862	.565	.565	.142	.122	.169	.002	.079	.079	-.036	-.110	.043	-0.365	0.073	7.5	1.2	7.0	1.2	A-	A+
623	616983	7	434	.818	.108	.046	.023	.818	.005	.515	-.336	-.246	-.245	.515	-1.705	0.132	-2.0	0.9	-2.9	0.7	A-	
624	618892	7	434	.173	.288	.173	.311	.224	.005	.092	-.193	.092	.013	.126	1.812	0.134	1.3	1.1	2.5	1.3	A-	
625	617003	7	430	.512	.512	.230	.049	.205	.005	.414	.414	-.149	-.234	-.164	-0.140	0.102	-2.5	0.9	-2.3	0.9	B-	A-

Table B–4 (continued). Science Multiple-Choice Item Statistics

Ref	ID	FT Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
626	616985	7	430	.542	.093	.174	.181	.542	.009	.370	-.142	-.169	-.091	.370	-0.284	0.103	-1.0	1.0	-1.3	1.0	A+	B-
627	616623	7	430	.381	.130	.233	.381	.242	.014	.212	-.149	-.039	.212	.010	0.434	0.105	2.3	1.1	2.3	1.1	A+	B-
628	616631	7	430	.256	.481	.102	.158	.256	.002	.426	-.117	-.113	-.217	.426	1.179	0.117	-1.8	0.9	-1.9	0.9	C-	
629	617532	7	430	.607	.198	.044	.149	.607	.002	.360	-.296	-.209	-.003	.360	-0.520	0.105	-0.7	1.0	-0.3	1.0	A-	
630	616624	7	430	.507	.142	.507	.177	.158	.016	.424	-.260	.424	-.126	-.127	-0.093	0.103	-2.0	0.9	-1.8	0.9	A-	
631	616995	7	434	.369	.217	.369	.205	.207	.002	.214	-.181	.214	-.026	-.011	0.516	0.106	2.6	1.1	3.2	1.2	A-	
632	616617	7	434	.378	.357	.378	.228	.025	.012	.349	-.137	.349	-.090	-.195	0.462	0.106	-0.1	1.0	0.1	1.0	A-	
633	616996	7	427	.637	.192	.082	.637	.089	.000	.434	-.227	-.199	.434	-.228	-0.640	0.106	-1.9	0.9	-2.5	0.9	C-	A+
634	616618	7	427	.347	.187	.347	.281	.169	.016	.188	-.077	.188	-.122	.043	0.675	0.108	2.4	1.1	3.3	1.2	A+	A-
635	618610	7	442	.817	.817	.086	.048	.041	.009	.320	.320	-.176	-.165	-.125	-1.778	0.132	0.0	1.0	-0.6	0.9	A-	
636	618861	7	442	.274	.274	.192	.267	.258	.009	.120	.120	-.156	.085	-.020	1.094	0.114	3.3	1.2	4.2	1.4	B-	
637	616997	7	430	.286	.288	.212	.286	.214	.000	.306	-.020	-.167	.306	-.148	0.977	0.112	-0.3	1.0	0.2	1.0	B-	A-
638	616987	7	430	.593	.049	.174	.593	.172	.012	.408	-.161	-.236	.408	-.203	-0.505	0.105	-1.6	0.9	-1.5	0.9	A+	A+
639	616998	7	428	.294	.294	.334	.227	.140	.005	.282	.282	-.047	-.136	-.138	0.905	0.112	0.4	1.0	1.0	1.1	B-	
640	616988	7	428	.271	.072	.505	.271	.133	.019	.118	-.129	.148	.118	-.165	1.022	0.115	2.8	1.2	3.2	1.3	A-	
641	616627	7	428	.605	.154	.147	.091	.605	.002	.315	-.067	-.253	-.104	.315	-0.580	0.104	0.2	1.0	-0.2	1.0	A-	
642	616989	7	428	.252	.150	.402	.187	.252	.009	.217	-.070	-.025	-.100	.217	1.091	0.116	0.9	1.1	1.1	1.1	A-	
643	616625	7	445	.578	.079	.148	.578	.196	.000	.287	-.245	-.239	.287	.023	-0.409	0.101	1.1	1.0	1.0	1.0	A+	
644	616990	7	445	.339	.333	.339	.178	.142	.009	.132	.070	.132	-.194	-.063	0.662	0.105	2.9	1.1	3.6	1.2	A+	
645	616994	7	431	.325	.207	.325	.327	.137	.005	.087	-.077	.087	.067	-.031	0.770	0.108	3.3	1.2	3.9	1.2	B+	A+
646	618862	7	431	.404	.232	.060	.299	.404	.005	.048	-.125	-.152	.210	.048	0.394	0.103	5.7	1.2	5.1	1.2	A+	A+
647	616615	7	431	.582	.111	.582	.220	.081	.005	.365	-.022	.365	-.260	-.128	-0.409	0.103	-1.8	0.9	-1.2	1.0	A-	A+
648	616999	7	431	.297	.297	.320	.269	.097	.016	.166	.166	-.014	-.015	-.061	0.898	0.110	1.6	1.1	2.7	1.2	A+	A-
649	618606	7	428	.332	.530	.332	.089	.049	.000	.335	-.196	.335	-.104	-.141	0.622	0.108	-0.8	1.0	-0.3	1.0	B-	
650	618860	7	428	.610	.115	.096	.610	.178	.002	.317	-.162	-.244	.317	-.051	-0.654	0.104	-0.2	1.0	0.0	1.0	A+	
651	616620	7	428	.231	.171	.442	.231	.152	.005	.036	-.113	.111	.036	-.042	1.168	0.119	2.3	1.2	3.6	1.3	A+	
652	616619	7	430	.265	.265	.219	.223	.284	.009	.190	.190	.023	-.055	-.058	1.047	0.115	1.4	1.1	2.0	1.2	B-	A-
653	616622	7	430	.386	.242	.188	.177	.386	.007	.367	-.154	-.097	-.143	.367	0.488	0.105	-0.3	1.0	-1.0	1.0	A-	
654	618803	7	434	.459	.099	.459	.240	.198	.005	.156	-.082	.156	-.111	.028	0.090	0.103	5.0	1.2	4.3	1.2	A-	
655	616621	7	427	.089	.183	.319	.408	.089	.002	.046	-.193	.005	.134	.046	2.532	0.174	0.6	1.1	2.6	1.6	A-	A+
656	617000	7	442	.468	.224	.468	.208	.097	.002	.309	-.038	.309	-.237	-.099	0.128	0.102	1.6	1.1	2.1	1.1	A-	
657	617184	7	428	.194	.493	.194	.061	.243	.009	.269	-.053	.269	-.213	-.026	1.513	0.128	-0.2	1.0	1.5	1.2	A+	
658	615974	7	445	.596	.252	.079	.072	.596	.002	.298	-.121	-.191	-.153	.298	-0.497	0.102	0.7	1.0	0.7	1.0	A+	
659	615973	7	428	.794	.044	.794	.096	.063	.002	.424	-.166	.424	-.211	-.266	-1.609	0.126	-1.4	0.9	-1.5	0.9	A-	
660	616339	7	434	.866	.025	.866	.046	.060	.002	.207	-.171	.207	-.199	.013	-2.091	0.148	0.3	1.0	0.7	1.1	A+	

Table B-4 (continued). Science Multiple-Choice Item Statistics

Ref	ID	FT Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
661	615970	7	431	.550	.051	.088	.306	.550	.005	.356	-.227	-.096	-.151	.356	-0.262	0.102	-1.2	1.0	-1.1	1.0	B+	A+
662	617195	7	450	.831	.058	.069	.831	.036	.007	.485	-.219	-.243	.485	-.232	-1.881	0.134	-1.4	0.9	-2.5	0.7	A-	
663	619627	7	428	.657	.657	.243	.058	.042	.000	.358	.358	-.175	-.213	-.222	-0.873	0.107	-1.2	1.0	-1.3	0.9	A+	
664	617189	7	6496	.647	.087	.161	.647	.101	.005	.420	-.175	-.245	.420	-.159	-0.743	0.028	-7.6	0.9	-7.9	0.9	A+	A-
665	616022	7	428	.572	.572	.030	.285	.112	.000	.381	.381	-.123	-.159	-.303	-0.354	0.104	-1.2	1.0	-1.3	0.9	A-	
666	617183	7	6496	.718	.718	.080	.066	.131	.005	.399	.399	-.260	-.242	-.087	-1.114	0.029	-5.2	0.9	-4.1	0.9	B+	A-
667	615980	7	6496	.825	.025	.077	.063	.825	.010	.411	-.159	-.195	-.224	.411	-1.829	0.035	-4.0	0.9	-6.4	0.8	A+	A-
668	615994	7	431	.568	.167	.097	.165	.568	.002	.501	-.245	-.186	-.236	.501	-0.333	0.103	-4.8	0.9	-4.3	0.8	A+	A+
669	615979	7	430	.633	.633	.067	.119	.177	.005	.331	.331	-.247	-.191	-.023	-0.697	0.106	-0.4	1.0	2.5	1.1	A-	A-
670	617200	7	430	.602	.063	.158	.602	.167	.009	.192	-.189	-.119	.192	.104	-0.563	0.104	3.0	1.1	3.2	1.2	A+	A+
671	617187	7	430	.402	.235	.233	.119	.402	.012	.458	-.128	-.123	-.222	.458	0.348	0.104	-3.6	0.9	-3.2	0.9	A+	A+
672	615610	7	430	.393	.226	.174	.198	.393	.009	.272	.038	-.165	-.106	.272	0.394	0.104	1.1	1.0	0.8	1.0	A+	A-
673	615982	7	430	.537	.114	.537	.084	.256	.009	.270	-.055	.270	-.176	-.057	-0.263	0.103	1.8	1.1	1.3	1.1	A+	A+
674	619311	7	430	.244	.244	.405	.174	.165	.012	.146	.146	-.026	.015	-.033	1.163	0.118	1.6	1.1	2.4	1.2	A+	A+
675	619148	7	430	.502	.074	.216	.198	.502	.009	.348	-.130	-.090	-.149	.348	-0.105	0.102	-0.6	1.0	-0.7	1.0	A+	A+
676	617204	7	430	.437	.158	.181	.437	.209	.014	.272	-.113	-.179	.272	.040	0.174	0.103	1.4	1.0	0.9	1.0	A+	A-
677	618008	7	430	.533	.172	.533	.163	.128	.005	.418	-.180	.418	-.184	-.171	-0.181	0.103	-2.4	0.9	-2.2	0.9	A+	
678	617212	7	430	.574	.240	.574	.112	.072	.002	.459	-.285	.459	-.156	-.162	-0.368	0.104	-2.9	0.9	-3.0	0.9	A+	
679	617218	7	430	.379	.367	.065	.379	.181	.007	.352	-.116	-.166	.352	-.145	0.522	0.106	-0.4	1.0	0.0	1.0	A-	
680	616340	7	430	.426	.084	.426	.121	.363	.007	.317	-.111	.317	-.158	-.116	0.300	0.104	0.4	1.0	1.1	1.1	A+	
681	616337	7	430	.493	.147	.181	.172	.493	.007	.388	-.217	-.104	-.149	.388	-0.009	0.103	-1.0	1.0	-1.5	0.9	B+	
682	619147	7	430	.488	.191	.488	.112	.200	.009	.363	-.132	.363	-.178	-.130	0.006	0.103	-0.4	1.0	-0.3	1.0	A-	
683	617188	7	430	.814	.065	.814	.054	.056	.012	.456	-.222	.456	-.223	-.209	-1.732	0.132	-1.6	0.9	-2.7	0.7	A+	
684	615975	7	430	.261	.230	.261	.344	.156	.009	.280	-.075	.280	.039	-.238	1.142	0.116	0.4	1.0	1.0	1.1	A-	
685	618009	7	434	.652	.652	.214	.042	.085	.007	.472	.472	-.320	-.187	-.173	-0.833	0.108	-3.4	0.9	-2.9	0.8	A-	
686	617213	7	434	.548	.076	.189	.184	.548	.002	.383	-.158	-.138	-.209	.383	-0.321	0.103	-0.9	1.0	-0.4	1.0	A+	
687	617190	7	434	.691	.120	.088	.099	.691	.002	.468	-.242	-.200	-.226	.468	-1.018	0.110	-2.6	0.9	-2.4	0.8	B+	
688	616341	7	434	.482	.037	.071	.482	.403	.007	.299	-.141	-.233	.299	-.074	-0.019	0.103	1.3	1.0	1.9	1.1	A-	
689	616338	7	434	.790	.042	.120	.790	.039	.009	.461	-.212	-.265	.461	-.126	-1.623	0.125	-1.8	0.9	-2.2	0.8	B+	
690	617222	7	434	.777	.044	.777	.122	.048	.009	.468	-.129	.468	-.238	-.258	-1.531	0.122	-2.0	0.9	-2.1	0.8	B-	
691	617219	7	434	.399	.150	.113	.330	.399	.009	.545	-.223	-.238	-.164	.545	0.368	0.105	-5.4	0.8	-4.5	0.8	B-	
692	616334	7	434	.523	.088	.205	.523	.173	.012	.460	-.197	-.201	.460	-.153	-0.218	0.103	-2.9	0.9	-2.7	0.9	A-	
693	618010	7	427	.665	.665	.171	.089	.075	.000	.342	.342	-.162	-.207	-.158	-0.778	0.108	-0.3	1.0	-0.1	1.0	A-	A+
694	617215	7	427	.508	.508	.297	.075	.117	.002	.369	.369	-.270	-.166	-.033	-0.053	0.103	-0.7	1.0	-1.0	1.0	B+	A-
695	615987	7	427	.511	.176	.169	.143	.511	.002	.439	-.116	-.193	-.276	.439	-0.064	0.103	-2.7	0.9	-2.7	0.9	A+	A-

Table B-4 (continued). Science Multiple-Choice Item Statistics

Ref	ID	FT Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
696	617191	7	427	.838	.030	.838	.082	.045	.005	.431	-.165	.431	-.285	-.223	-1.861	0.138	-1.4	0.9	-2.7	0.7	A-	A-
697	615991	7	427	.424	.333	.119	.424	.122	.002	.200	-.023	-.027	.200	-.222	0.329	0.104	3.0	1.1	2.7	1.1	B-	A-
698	615984	7	427	.824	.033	.061	.077	.824	.005	.522	-.271	-.313	-.240	.522	-1.745	0.133	-2.2	0.8	-3.7	0.6	A+	A-
699	617223	7	427	.302	.112	.234	.302	.342	.009	.062	-.198	-.172	.062	.265	0.917	0.111	3.6	1.2	4.6	1.3	A-	A+
700	616335	7	427	.550	.070	.171	.192	.550	.016	.557	-.228	-.270	-.246	.557	-0.277	0.104	-5.5	0.8	-4.6	0.8	A+	A+
701	618856	7	442	.581	.222	.075	.120	.581	.002	.439	-.162	-.167	-.284	.439	-0.401	0.104	-1.7	0.9	-1.7	0.9	A-	
702	615988	7	442	.244	.134	.403	.215	.244	.005	.140	-.079	.141	-.207	.140	1.272	0.117	2.7	1.2	2.8	1.3	A+	
703	615972	7	442	.550	.333	.077	.550	.034	.007	.337	-.096	-.249	.337	-.192	-0.260	0.103	1.0	1.0	0.8	1.0	A-	
704	617211	7	442	.423	.235	.204	.134	.423	.005	.448	-.111	-.225	-.196	.448	0.335	0.103	-2.3	0.9	-1.9	0.9	A+	
705	617205	7	442	.796	.072	.796	.050	.075	.007	.380	-.191	.380	-.165	-.176	-1.610	0.126	-0.5	1.0	-1.0	0.9	A-	
706	615992	7	442	.622	.077	.622	.167	.129	.005	.451	-.302	.451	-.250	-.082	-0.606	0.106	-2.0	0.9	-1.8	0.9	A+	
707	615995	7	442	.697	.697	.102	.118	.079	.005	.468	.468	-.186	-.186	-.302	-0.992	0.111	-2.3	0.9	-1.8	0.9	A+	
708	615976	7	442	.342	.222	.100	.342	.328	.009	.132	-.136	-.187	.132	.150	0.728	0.107	4.2	1.2	5.4	1.4	B+	
709	615989	7	430	.488	.133	.488	.167	.209	.002	.399	-.199	.399	-.176	-.168	0.003	0.102	-1.7	1.0	-1.3	1.0	A-	A-
710	617186	7	858	.671	.100	.671	.110	.114	.005	.457	-.162	.457	-.254	-.239	-0.912	0.077	-3.3	0.9	-3.8	0.9	B+	A-
711	616344	7	430	.142	.712	.142	.037	.109	.000	.079	.094	.079	-.174	-.120	1.932	0.142	0.7	1.1	3.2	1.5	B-	A+
712	617207	7	430	.779	.119	.779	.049	.054	.000	.463	-.210	.463	-.258	-.304	-1.457	0.122	-1.9	0.9	-2.2	0.8	A-	A+
713	617201	7	430	.716	.716	.147	.077	.061	.000	.502	.502	-.285	-.271	-.224	-1.085	0.113	-2.9	0.9	-2.8	0.8	A+	A-
714	618796	7	430	.584	.081	.216	.119	.584	.000	.454	-.091	-.223	-.332	.454	-0.424	0.104	-2.6	0.9	-2.6	0.9	A-	A+
715	615977	7	430	.507	.086	.147	.507	.258	.002	.377	-.238	-.222	.377	-.097	-0.080	0.102	-0.9	1.0	-0.9	1.0	A+	A-
716	616342	7	428	.708	.708	.124	.089	.075	.005	.385	.385	-.125	-.230	-.201	-1.071	0.112	-1.3	0.9	-1.6	0.9	A-	
717	617203	7	428	.456	.159	.187	.189	.456	.009	.288	-.153	-.118	-.044	.288	0.120	0.103	1.2	1.0	1.0	1.0	A-	
718	615968	7	428	.645	.194	.105	.047	.645	.009	.476	-.202	-.283	-.182	.476	-0.762	0.107	-3.0	0.9	-3.0	0.8	B+	
719	617208	7	428	.624	.058	.624	.168	.143	.007	.384	-.208	.384	-.166	-.143	-0.650	0.106	-1.1	1.0	-1.2	0.9	A-	
720	617202	7	428	.797	.035	.065	.797	.094	.009	.412	-.234	-.261	.412	-.109	-1.630	0.127	-1.4	0.9	-1.3	0.9	A+	
721	615604	7	428	.526	.117	.217	.126	.526	.014	.415	-.196	-.171	-.125	.415	-0.210	0.103	-2.0	0.9	-1.4	0.9	A+	
722	615978	7	428	.472	.175	.287	.051	.472	.014	.259	-.061	-.095	-.142	.259	0.036	0.103	2.1	1.1	2.4	1.1	B-	
723	616343	7	428	.575	.575	.098	.065	.262	.000	.332	.332	-.282	-.091	-.131	-0.429	0.103	-0.6	1.0	-0.7	1.0	A-	
724	615993	7	428	.808	.068	.054	.808	.068	.002	.419	-.160	-.306	.419	-.181	-1.707	0.129	-1.2	0.9	-1.7	0.8	A+	
725	617744	7	428	.678	.678	.173	.070	.077	.002	.371	.371	-.181	-.250	-.116	-0.932	0.109	-1.1	1.0	-0.7	1.0	B+	
726	617192	7	428	.439	.439	.124	.348	.084	.005	.441	.441	-.211	-.168	-.206	0.185	0.103	-3.5	0.9	-3.3	0.9	A+	
727	617209	7	428	.456	.336	.456	.124	.077	.007	.471	-.283	.471	-.129	-.168	0.097	0.103	-4.2	0.9	-3.3	0.9	A+	
728	619145	7	428	.108	.108	.329	.495	.061	.007	.070	.070	-.090	.175	-.216	2.223	0.161	0.5	1.1	2.1	1.4	B-	
729	617197	7	428	.451	.182	.294	.451	.063	.009	.358	-.111	-.174	.358	-.157	0.105	0.103	-0.8	1.0	-0.5	1.0	B-	
730	615990	7	445	.205	.416	.103	.205	.272	.005	.052	-.001	.075	.052	-.088	1.432	0.122	1.9	1.1	3.0	1.3	A-	

Table B-4 (continued). Science Multiple-Choice Item Statistics

Ref	ID	FT Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
731	617745	7	445	.737	.130	.737	.079	.052	.002	.463	-.229	.463	-.277	-.215	-1.216	0.113	-2.0	0.9	-2.7	0.8	B+	
732	617193	7	445	.874	.034	.072	.874	.020	.000	.448	-.245	-.294	.448	-.201	-2.203	0.148	-1.3	0.9	-2.6	0.7	A-	
733	617220	7	445	.533	.128	.533	.205	.133	.002	.462	-.166	.462	-.208	-.259	-0.210	0.101	-3.2	0.9	-3.2	0.9	A+	
734	617210	7	445	.539	.294	.539	.099	.067	.000	.328	-.120	.328	-.231	-.159	-0.226	0.100	-0.2	1.0	-0.2	1.0	A+	
735	619146	7	445	.690	.205	.049	.690	.056	.000	.277	.001	-.251	.277	-.320	-0.954	0.108	0.5	1.0	1.1	1.1	A+	
736	616336	7	445	.721	.047	.721	.155	.072	.005	.401	-.140	.401	-.204	-.288	-1.142	0.112	-1.2	0.9	-1.3	0.9	B+	
737	617216	7	431	.348	.186	.348	.246	.216	.005	.220	-.052	.220	-.100	-.027	0.656	0.106	1.2	1.1	1.4	1.1	A-	A+
738	619366	7	431	.900	.900	.046	.030	.012	.012	.325	.325	-.178	-.140	-.023	-2.531	0.173	-0.3	1.0	-0.6	0.9	A+	A-
739	617221	7	431	.527	.072	.527	.149	.246	.007	.375	-.125	.375	-.161	-.144	-0.161	0.102	-1.7	1.0	-1.7	0.9	A+	A-
740	615985	7	431	.668	.668	.125	.072	.128	.007	.417	.417	-.232	-.258	-.061	-0.826	0.108	-2.1	0.9	-1.8	0.9	A+	B-
741	617746	7	431	.406	.074	.355	.153	.406	.012	.401	-.105	-.185	-.117	.401	0.372	0.103	-2.3	0.9	-2.2	0.9	A+	A+
742	617224	7	431	.552	.039	.299	.552	.100	.009	.255	-.116	-.109	.255	-.056	-0.282	0.102	1.6	1.1	1.6	1.1	A-	A+
743	618854	7	431	.578	.072	.165	.169	.578	.016	.428	-.195	-.205	-.107	.428	-0.416	0.104	-2.5	0.9	-2.5	0.9	A-	A-
744	617217	7	428	.360	.234	.248	.157	.360	.002	.147	-.046	-.127	.043	.147	0.484	0.106	3.1	1.1	2.8	1.2	A+	
745	617194	7	428	.509	.108	.278	.509	.103	.002	.298	-.236	-.023	.298	-.177	-0.199	0.102	0.4	1.0	0.5	1.0	A+	
746	617199	7	428	.773	.054	.145	.773	.023	.005	.497	-.243	-.346	.497	-.113	-1.525	0.121	-2.5	0.9	-3.1	0.8	A+	
747	617225	7	428	.598	.154	.145	.598	.094	.009	.426	-.150	-.188	.426	-.228	-0.620	0.104	-2.3	0.9	-2.1	0.9	B+	
748	615986	7	428	.262	.140	.145	.442	.262	.012	.156	-.137	-.238	.175	.156	0.979	0.115	1.6	1.1	2.5	1.2	A-	
749	617226	7	428	.682	.110	.108	.682	.091	.009	.487	-.130	-.349	.487	-.196	-1.030	0.110	-3.1	0.9	-2.9	0.8	A-	
750	617198	7	434	.479	.191	.131	.479	.191	.007	.383	-.250	-.200	.383	-.008	-0.010	0.103	-0.6	1.0	-0.6	1.0	A+	
751	615969	7	430	.356	.091	.358	.188	.356	.007	.370	-.183	-.057	-.152	.370	0.576	0.106	-1.2	1.0	-1.4	0.9	C-	A-
752	615971	7	430	.505	.270	.133	.091	.505	.002	.296	-.114	-.194	-.060	.296	-0.050	0.103	1.1	1.0	0.9	1.0	C+	
753	618855	7	430	.670	.147	.670	.100	.084	.000	.349	-.215	.349	-.178	-.126	-0.840	0.108	-0.2	1.0	-0.5	1.0	B-	A-
754	618853	7	427	.419	.300	.197	.080	.419	.005	.296	-.117	-.104	-.178	.296	0.343	0.104	0.8	1.0	0.4	1.0	A+	A-
755	617196	7	442	.491	.050	.201	.491	.256	.002	.419	-.219	-.212	.419	-.146	0.023	0.102	-1.7	0.9	-1.2	1.0	A+	
756	618603	7	442	.613	.192	.613	.104	.084	.007	.564	-.298	.564	-.310	-.155	-0.567	0.105	-5.0	0.8	-4.5	0.8	A-	
757	618802	7	430	.833	.833	.063	.049	.056	.000	.514	.514	-.370	-.219	-.240	-1.833	0.134	-2.1	0.8	-3.3	0.7	B+	A-
758	617526	7	428	.432	.432	.416	.084	.054	.014	.402	.402	-.123	-.219	-.201	0.219	0.104	-1.6	1.0	-1.4	0.9	A+	
759	616039	7	428	.764	.764	.049	.143	.042	.002	.344	.344	-.223	-.147	-.180	-1.413	0.120	-0.6	1.0	-0.8	0.9	A-	
760	616028	7	428	.238	.108	.586	.238	.065	.002	.129	-.106	-.010	.129	-.047	1.280	0.119	1.6	1.1	2.1	1.2	A-	
761	615289	7	6496	.377	.122	.377	.329	.166	.006	.133	-.019	.133	-.020	-.086	0.508	0.027	9.9	1.1	9.9	1.2	A-	A+
762	617521	7	428	.575	.194	.575	.072	.154	.005	.405	-.120	.405	-.214	-.230	-0.372	0.104	-1.1	1.0	-1.6	0.9	A-	
763	617519	7	6496	.524	.156	.261	.524	.053	.006	.289	-.157	-.076	.289	-.141	-0.169	0.026	4.8	1.0	4.4	1.1	A-	A+
764	615290	7	428	.409	.255	.241	.409	.084	.012	.196	-.034	-.116	.196	-.038	0.377	0.105	2.9	1.1	2.7	1.1	A+	
765	616316	7	6496	.384	.222	.327	.384	.055	.013	.213	.039	-.118	.213	-.169	0.460	0.027	9.3	1.1	9.2	1.1	A+	A-

Table B-4 (continued). Science Multiple-Choice Item Statistics

Ref	ID	FT Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
766	615284	7	431	.186	.246	.186	.420	.139	.009	.145	-.098	.145	.018	.068	1.625	0.129	0.6	1.1	2.0	1.2	A-	A-
767	620006	7	431	.383	.137	.383	.049	.425	.007	.170	-.123	.170	-.141	.065	0.518	0.105	2.3	1.1	1.9	1.1	A-	A+
768	616033	7	431	.299	.343	.186	.299	.158	.014	.235	-.104	-.076	.235	.058	0.924	0.111	0.6	1.0	0.8	1.1	C+	A+
769	615285	7	450	.162	.511	.256	.162	.067	.004	-.054	.072	.025	-.054	-.050	1.767	0.133	1.7	1.2	3.4	1.5	A-	
770	617522	7	450	.393	.393	.313	.242	.042	.009	.334	.334	-.119	-.105	-.166	0.404	0.102	-0.5	1.0	0.1	1.0	A-	
771	615291	7	450	.256	.182	.173	.376	.256	.013	.324	-.118	-.195	.031	.324	1.112	0.113	-1.3	0.9	-0.8	0.9	A+	
772	617520	7	434	.664	.228	.067	.664	.042	.000	.363	-.184	-.321	.363	-.071	-0.750	0.108	-0.9	1.0	-0.9	0.9	A+	
773	615286	7	434	.339	.339	.279	.120	.260	.002	.192	.192	-.050	-.199	-.008	0.802	0.108	1.9	1.1	3.1	1.2	A-	
774	615292	7	434	.392	.392	.099	.145	.359	.005	.365	.365	-.246	-.172	-.079	0.513	0.105	-0.9	1.0	0.2	1.0	A-	
775	615287	7	430	.623	.077	.623	.156	.133	.012	.322	-.104	.322	-.158	-.087	-0.667	0.106	0.5	1.0	-0.4	1.0	A+	A+
776	615302	7	430	.437	.172	.437	.102	.279	.009	.292	-.121	.292	-.143	-.027	0.190	0.103	0.8	1.0	0.7	1.0	A-	A-
777	615294	7	430	.633	.633	.140	.119	.100	.009	.412	.412	-.130	-.193	-.158	-0.707	0.106	-1.8	0.9	-2.0	0.9	A-	A-
778	616030	7	430	.342	.172	.202	.342	.281	.002	.182	-.196	-.116	.182	.108	0.714	0.108	2.6	1.1	2.5	1.2	B+	
779	615303	7	430	.426	.400	.426	.088	.077	.009	.261	-.042	.261	-.196	-.122	0.297	0.104	1.7	1.1	2.2	1.1	A+	
780	617527	7	430	.402	.074	.200	.402	.316	.007	.318	-.173	-.102	.318	-.106	0.410	0.105	0.5	1.0	1.0	1.1	A-	
781	616031	7	434	.507	.221	.507	.074	.194	.005	.219	-.076	.219	-.141	-.069	-0.137	0.103	3.3	1.1	3.5	1.2	A+	
782	615304	7	434	.463	.194	.166	.463	.168	.009	.322	-.087	-.119	.322	-.168	0.056	0.103	0.6	1.0	0.3	1.0	A-	
783	615307	7	434	.369	.182	.283	.369	.157	.009	.293	-.111	-.039	.293	-.127	0.513	0.106	1.2	1.1	1.3	1.1	A+	
784	615295	7	434	.373	.373	.118	.120	.380	.009	.354	.354	-.238	-.201	.012	0.490	0.106	0.0	1.0	-0.3	1.0	A-	
785	615288	7	427	.693	.119	.693	.094	.091	.002	.393	-.203	.393	-.163	-.213	-0.931	0.111	-1.2	1.0	-1.8	0.9	A-	A-
786	615305	7	427	.478	.356	.478	.063	.096	.007	.342	-.169	.342	-.226	-.084	0.076	0.103	-0.1	1.0	-0.1	1.0	A-	A+
787	620011	7	427	.157	.169	.361	.307	.157	.007	.194	-.070	-.029	-.036	.194	1.843	0.138	0.3	1.0	1.4	1.2	A-	A-
788	615296	7	427	.391	.391	.384	.110	.105	.009	.359	.359	-.117	-.198	-.123	0.474	0.105	-0.6	1.0	0.0	1.0	A-	A-
789	615293	7	442	.477	.477	.260	.149	.109	.005	.448	.448	-.133	-.236	-.222	0.080	0.103	-2.6	0.9	-2.2	0.9	A-	
790	615306	7	442	.432	.432	.109	.315	.140	.005	.373	.373	-.189	-.030	-.273	0.292	0.103	-0.1	1.0	-0.3	1.0	A-	
791	616614	7	442	.509	.170	.509	.163	.154	.005	.404	-.152	.404	-.203	-.147	-0.068	0.102	-1.0	1.0	-0.7	1.0	A+	
792	616036	7	442	.403	.127	.113	.403	.351	.007	.284	-.164	-.302	.284	.065	0.429	0.104	1.9	1.1	2.1	1.1	A-	
793	617523	7	430	.554	.554	.095	.058	.288	.005	.228	.228	-.183	-.193	-.029	-0.297	0.103	2.6	1.1	2.4	1.1	B+	A+
794	618859	7	430	.242	.242	.300	.249	.205	.005	.069	.069	-.076	-.031	.049	1.218	0.118	2.4	1.1	3.6	1.4	A+	A+
795	616037	7	430	.407	.230	.147	.216	.407	.000	.197	.129	-.118	-.265	.197	0.380	0.104	2.8	1.1	2.5	1.1	A+	A-
796	617524	7	428	.734	.147	.734	.047	.065	.007	.348	-.215	.348	-.183	-.084	-1.221	0.116	-0.8	1.0	-0.1	1.0	A+	
797	618601	7	428	.294	.372	.192	.294	.133	.009	.275	-.001	-.235	.275	-.030	0.902	0.112	0.4	1.0	1.1	1.1	A-	
798	618858	7	428	.547	.119	.145	.547	.182	.007	.306	-.106	-.208	.306	-.050	-0.290	0.103	0.8	1.0	0.7	1.0	A-	
799	618602	7	428	.423	.180	.154	.241	.423	.002	.310	-.051	-.210	-.112	.310	0.266	0.103	-0.1	1.0	-0.3	1.0	A+	
800	620010	7	428	.528	.112	.178	.528	.180	.002	.328	-.154	-.105	.328	-.168	-0.228	0.102	-0.1	1.0	-0.2	1.0	B+	

Table B-4 (continued). Science Multiple-Choice Item Statistics

Ref	ID	FT Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
801	617530	7	428	.285	.329	.077	.285	.301	.007	.280	-.117	-.260	.280	.030	0.911	0.112	0.2	1.0	0.4	1.0	A+	
802	620007	7	428	.451	.224	.451	.136	.182	.007	.195	.011	.195	-.114	-.122	0.129	0.103	2.7	1.1	2.7	1.1	A+	
803	615297	7	445	.173	.301	.173	.173	.353	.000	.101	.036	.101	-.173	.023	1.673	0.130	0.6	1.1	3.4	1.4	A-	
804	617528	7	445	.467	.119	.467	.236	.175	.002	.251	-.080	.251	-.075	-.175	0.092	0.100	1.5	1.1	1.4	1.1	A+	
805	615283	7	445	.400	.285	.175	.400	.139	.000	.367	-.151	-.219	.367	-.082	0.394	0.102	-1.1	1.0	-0.9	1.0	A-	
806	616314	7	445	.562	.128	.562	.223	.085	.002	.340	-.070	.340	-.247	-.155	-0.334	0.101	-0.5	1.0	-0.6	1.0	B-	
807	620008	7	445	.344	.344	.178	.198	.279	.002	.254	.254	-.106	-.047	-.131	0.658	0.105	0.9	1.0	1.4	1.1	A-	
808	615299	7	431	.139	.336	.274	.241	.139	.009	.140	.011	-.012	-.041	.140	1.940	0.143	0.4	1.0	1.1	1.1	A+	A-
809	615279	7	431	.446	.195	.446	.142	.214	.005	.348	-.109	.348	-.162	-.105	0.204	0.102	-1.0	1.0	-0.7	1.0	A+	A+
810	620009	7	431	.450	.339	.118	.450	.088	.005	.216	-.012	-.167	.216	-.061	0.183	0.102	2.6	1.1	2.3	1.1	A-	A+
811	617529	7	431	.548	.548	.227	.151	.067	.007	.426	.426	-.196	-.145	-.181	-0.258	0.102	-3.1	0.9	-3.0	0.9	A-	B-
812	615298	7	431	.241	.028	.160	.559	.241	.012	.058	-.107	-.169	.191	.058	1.214	0.117	2.3	1.1	3.6	1.3	A-	A+
813	615233	7	428	.332	.276	.332	.297	.094	.002	.161	.011	.161	-.158	.012	0.621	0.108	2.3	1.1	2.6	1.2	A-	
814	615301	7	428	.407	.126	.407	.327	.138	.002	.203	-.234	.203	.061	-.113	0.264	0.104	2.2	1.1	2.2	1.1	B-	
815	615280	7	428	.402	.150	.341	.103	.402	.005	.384	-.101	-.168	-.192	.384	0.279	0.104	-1.6	1.0	-1.3	1.0	A-	
816	617525	7	428	.327	.143	.231	.294	.327	.005	.344	.012	-.157	-.186	.344	0.638	0.108	-0.6	1.0	-0.5	1.0	A+	
817	615300	7	428	.577	.577	.203	.150	.061	.009	.457	.457	-.261	-.180	-.146	-0.522	0.103	-3.1	0.9	-3.2	0.9	A+	
818	616038	7	430	.363	.154	.195	.274	.363	.014	.311	-.053	-.055	-.152	.311	0.523	0.106	-0.1	1.0	0.3	1.0	A+	A+
819	618801	7	430	.116	.051	.347	.479	.116	.007	.062	-.253	.058	.057	.062	2.227	0.156	1.0	1.1	3.1	1.6	A+	
820	615308	7	427	.450	.148	.450	.262	.129	.012	.350	-.044	.350	-.215	-.129	0.197	0.104	-0.2	1.0	0.4	1.0	A-	A+
821	616313	7	434	.311	.249	.152	.311	.279	.009	.357	-.105	-.126	.357	-.089	0.805	0.110	-0.8	1.0	0.6	1.0	A-	
822	615784	8	264	.784	.008	.186	.023	.784	.000	.362	-.049	-.322	-.129	.362	-1.327	0.158	-0.7	0.9	-1.5	0.8	B-	
823	615776	8	263	.897	.023	.897	.034	.027	.019	.314	-.042	.314	-.059	-.092	-2.589	0.241	0.5	1.1	0.6	1.2	A+	
824	617289	8	260	.100	.100	.081	.650	.162	.008	.066	.066	.036	-.158	.145	2.722	0.220	0.2	1.0	1.6	1.4	A-	
825	617279	8	260	.858	.039	.058	.858	.039	.008	.452	-.191	-.196	.452	-.204	-2.003	0.191	-0.6	0.9	-1.6	0.7	A-	
826	620400	8	263	.764	.061	.076	.080	.764	.019	.585	-.165	-.313	-.230	.585	-1.277	0.164	-2.4	0.8	-3.0	0.6	A+	
827	615850	8	260	.415	.223	.135	.415	.215	.012	.280	.022	-.180	.280	-.089	0.540	0.139	1.9	1.1	1.9	1.2	A+	
828	620416	8	260	.308	.250	.308	.165	.265	.012	.123	-.016	.123	-.163	.156	1.109	0.147	4.1	1.3	3.9	1.5	A+	
829	620411	8	260	.235	.162	.208	.385	.235	.012	.442	-.108	-.166	-.046	.442	1.554	0.160	-2.1	0.8	-2.0	0.7	B-	
830	617280	8	5825	.823	.090	.823	.029	.052	.006	.422	-.259	.422	-.198	-.121	-1.660	0.037	-4.1	0.9	-4.6	0.8	A+	A-
831	620636	8	260	.369	.312	.108	.196	.369	.015	.241	.094	-.169	-.107	.241	0.773	0.141	2.8	1.2	2.1	1.2	A-	
832	617282	8	5825	.412	.412	.359	.133	.089	.008	.318	.318	.043	-.253	-.215	0.591	0.029	5.9	1.1	4.5	1.1	A+	A-
833	615845	8	260	.619	.073	.212	.619	.077	.019	.427	-.310	-.133	.427	-.026	-0.499	0.142	-1.0	0.9	-0.3	1.0	A-	
834	620412	8	259	.772	.772	.073	.073	.077	.004	.409	.409	-.291	-.138	-.138	-1.362	0.164	-0.6	1.0	-1.2	0.8	A+	
835	620638	8	259	.618	.127	.618	.073	.174	.008	.354	-.006	.354	-.310	-.172	-0.474	0.143	1.0	1.1	0.7	1.1	A-	

Table B-4 (continued). Science Multiple-Choice Item Statistics

Ref	ID	FT Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
836	620428	8	259	.548	.193	.162	.548	.085	.012	.325	-.039	-.059	.325	-.283	-0.109	0.139	2.1	1.1	1.5	1.1	A-	
837	620417	8	259	.622	.077	.239	.622	.046	.015	.375	-.302	-.055	.375	-.112	-0.472	0.143	0.6	1.0	-0.1	1.0	A+	
838	617300	8	259	.193	.286	.324	.182	.193	.015	.269	.003	-.069	-.053	.269	1.860	0.170	0.4	1.0	0.2	1.0	B+	
839	620429	8	259	.653	.031	.212	.100	.653	.004	.374	-.093	-.242	-.184	.374	-0.633	0.143	0.0	1.0	0.3	1.0	A-	
840	620639	8	259	.448	.112	.170	.448	.259	.012	.410	-.117	-.270	.410	-.133	0.380	0.138	-0.4	1.0	-0.7	1.0	B-	
841	617301	8	259	.378	.293	.378	.139	.189	.000	.188	.040	.188	-.217	-.087	0.731	0.140	3.7	1.2	3.8	1.3	B+	
842	620031	8	259	.660	.143	.660	.116	.077	.004	.288	-.037	.288	-.229	-.168	-0.663	0.144	1.2	1.1	1.9	1.2	A+	
843	620398	8	265	.423	.196	.423	.272	.109	.000	.274	-.174	.274	-.120	-.040	0.553	0.135	1.9	1.1	1.5	1.1	A+	
844	617302	8	265	.626	.034	.117	.626	.223	.000	.364	-.163	-.198	.364	-.199	-0.431	0.139	-0.3	1.0	-0.2	1.0	A-	
845	615903	8	265	.457	.181	.457	.279	.083	.000	.230	-.266	.230	.070	-.157	0.408	0.134	2.0	1.1	2.9	1.2	A-	
846	620033	8	265	.676	.676	.083	.125	.117	.000	.437	.437	-.122	-.292	-.233	-0.668	0.143	-1.2	0.9	-1.5	0.9	A+	
847	620399	8	262	.489	.489	.179	.225	.092	.015	.346	.346	-.233	-.095	.026	0.199	0.138	1.4	1.1	1.1	1.1	B+	
848	617303	8	262	.580	.118	.122	.580	.164	.015	.283	-.317	-.147	.283	.195	-0.254	0.140	2.2	1.1	3.1	1.3	A+	
849	615904	8	262	.672	.057	.092	.168	.672	.012	.485	-.177	-.164	-.230	.485	-0.741	0.146	-1.6	0.9	-1.6	0.8	A+	
850	620402	8	262	.611	.324	.611	.019	.038	.008	.236	-.049	.236	-.212	-.086	-0.235	0.139	2.2	1.1	1.2	1.1	B-	
851	620418	8	288	.271	.198	.424	.271	.104	.004	.378	-.154	-.050	.378	-.191	1.458	0.140	-1.1	0.9	-0.7	0.9	B-	
852	620384	8	263	.635	.635	.213	.076	.072	.004	.541	.541	-.389	-.216	-.082	-0.442	0.139	-3.5	0.8	-3.4	0.8	A-	
853	620423	8	263	.323	.270	.080	.323	.323	.004	.314	-.051	-.256	.314	-.069	1.083	0.142	0.8	1.1	1.6	1.2	B-	
854	620419	8	263	.578	.126	.099	.190	.578	.008	.554	-.186	-.257	-.283	.554	-0.173	0.136	-4.2	0.8	-3.5	0.8	A-	
855	615779	8	263	.434	.190	.171	.434	.186	.019	.296	-.110	-.051	.296	-.142	0.498	0.136	1.9	1.1	1.9	1.1	A+	
856	620420	8	263	.677	.099	.677	.183	.034	.008	.328	-.084	.328	-.154	-.161	-0.648	0.146	1.6	1.1	0.6	1.1	A-	
857	617283	8	263	.662	.662	.065	.088	.179	.008	.503	.503	-.223	-.294	-.157	-0.584	0.145	-1.6	0.9	-1.6	0.9	A+	
858	615896	8	263	.548	.107	.221	.548	.114	.011	.392	-.265	-.007	.392	-.192	0.013	0.139	0.4	1.0	0.4	1.0	A-	
859	620424	8	263	.574	.080	.574	.228	.099	.019	.438	-.084	.438	-.185	-.176	-0.157	0.140	0.1	1.0	-0.1	1.0	A-	
860	620421	8	264	.375	.375	.129	.231	.258	.008	.309	.309	-.160	-.195	.039	0.727	0.137	0.8	1.0	1.0	1.1	A-	
861	615897	8	264	.477	.239	.110	.163	.477	.011	.412	-.104	-.174	-.196	.412	0.226	0.134	-1.0	1.0	-0.5	1.0	A-	
862	620403	8	264	.424	.246	.216	.424	.106	.008	.331	.003	-.198	.331	-.169	0.486	0.135	1.2	1.1	0.8	1.1	A+	
863	620394	8	264	.466	.102	.311	.466	.110	.011	.448	-.054	-.265	.448	-.159	0.280	0.134	-1.4	0.9	-1.2	0.9	B-	
864	615782	8	264	.742	.042	.742	.083	.121	.011	.282	.012	.282	-.222	-.090	-1.129	0.152	1.0	1.1	1.0	1.1	A-	
865	620425	8	264	.436	.197	.436	.246	.110	.011	.437	-.222	.437	-.108	-.151	0.424	0.135	-1.2	0.9	-0.5	1.0	A-	
866	617286	8	264	.591	.068	.136	.193	.591	.011	.503	-.176	-.233	-.224	.503	-0.317	0.136	-2.7	0.9	-2.2	0.9	B+	
867	617285	8	269	.829	.829	.063	.019	.082	.007	.447	.447	-.216	-.200	-.172	-1.634	0.175	-1.2	0.9	-1.3	0.8	A+	
868	620395	8	269	.729	.130	.729	.063	.071	.007	.488	-.200	.488	-.300	-.138	-0.946	0.148	-1.9	0.9	-2.1	0.8	A+	
869	620404	8	269	.714	.714	.108	.134	.034	.011	.482	.482	-.205	-.236	-.168	-0.854	0.146	-2.1	0.9	-2.1	0.8	A-	
870	620397	8	259	.568	.189	.147	.089	.568	.008	.330	-.073	-.146	-.154	.330	-0.099	0.139	1.3	1.1	1.8	1.1	A+	

Table B-4 (continued). Science Multiple-Choice Item Statistics

Ref	ID	FT Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M /F	W /B
871	620405	8	259	.317	.127	.394	.154	.317	.008	.388	-.091	-.058	-.228	.388	1.164	0.146	-0.7	1.0	-0.8	0.9	A-	
872	617287	8	259	.537	.170	.537	.104	.178	.012	.436	-.179	.436	-.129	-.171	0.047	0.138	-0.2	1.0	-0.4	1.0	A+	
873	617278	8	259	.614	.143	.147	.073	.614	.023	.458	-.104	-.281	-.125	.458	-0.386	0.143	-0.7	1.0	-1.2	0.9	A-	
874	615793	8	260	.158	.227	.446	.162	.158	.008	.220	-.049	.025	-.149	.220	2.174	0.181	0.1	1.0	0.8	1.2	A-	
875	620640	8	260	.842	.081	.015	.842	.058	.004	.313	-.171	-.115	.313	-.179	-1.797	0.184	0.2	1.0	-0.3	0.9	A+	
876	617281	8	260	.619	.139	.619	.142	.092	.008	.444	-.265	.444	-.232	-.090	-0.396	0.140	-1.1	0.9	-1.4	0.9	A+	
877	620406	8	260	.496	.496	.162	.142	.189	.012	.498	.498	-.247	-.295	-.093	0.200	0.136	-2.5	0.9	-2.4	0.9	A+	
878	620641	8	273	.377	.282	.377	.227	.114	.000	.431	-.168	.431	-.211	-.143	0.711	0.134	-1.7	0.9	-2.0	0.9	A-	
879	620407	8	273	.513	.205	.128	.150	.513	.004	.481	-.129	-.210	-.268	.481	0.074	0.130	-2.7	0.9	-2.2	0.9	A-	
880	615794	8	273	.381	.213	.128	.381	.271	.007	.274	-.136	-.205	-.274	.039	0.691	0.133	0.9	1.0	1.6	1.1	A-	
881	615795	8	262	.615	.615	.050	.107	.221	.008	.551	.551	-.240	-.329	-.216	-0.543	0.139	-3.3	0.8	-3.1	0.8	B-	
882	620642	8	262	.527	.176	.130	.157	.527	.012	.519	-.205	-.174	-.247	.519	-0.125	0.136	-2.5	0.9	-2.4	0.9	A+	
883	615796	8	262	.657	.061	.195	.657	.073	.015	.533	-.190	-.225	.533	-.312	-0.813	0.144	-1.9	0.9	-2.4	0.8	A-	
884	615772	8	262	.313	.313	.160	.302	.206	.019	.371	.371	-.113	-.180	-.022	0.926	0.145	-0.3	1.0	1.3	1.1	B-	
885	615797	8	260	.539	.242	.042	.173	.539	.004	.436	-.268	-.118	-.149	.436	-0.110	0.135	-1.2	0.9	-1.7	0.9	A-	
886	615775	8	260	.727	.727	.050	.085	.135	.004	.326	.326	-.100	-.145	-.178	-1.080	0.150	0.3	1.0	-0.2	1.0	A+	
887	620643	8	260	.515	.208	.123	.515	.150	.004	.384	-.168	-.363	.384	.050	0.000	0.135	-0.2	1.0	-0.2	1.0	A-	
888	615898	8	260	.500	.096	.165	.235	.500	.004	.408	-.198	-.186	-.127	.408	0.073	0.135	-0.1	1.0	-0.4	1.0	B+	
889	620644	8	259	.676	.178	.039	.676	.100	.008	.540	-.332	-.227	.540	-.187	-0.705	0.144	-3.5	0.8	-3.4	0.7	A-	
890	615799	8	259	.425	.297	.425	.135	.139	.004	.337	-.175	.337	-.089	-.101	0.535	0.137	0.5	1.0	0.7	1.0	A-	
891	615846	8	289	.401	.197	.173	.225	.401	.004	.396	-.149	-.129	-.206	.396	0.596	0.130	-0.3	1.0	-0.3	1.0	A-	
892	615783	8	289	.716	.222	.042	.716	.017	.004	.346	-.232	-.192	.346	-.097	-0.958	0.140	0.2	1.0	0.2	1.0	A-	
893	615800	8	289	.796	.125	.796	.055	.024	.000	.395	-.185	.395	-.344	-.128	-1.448	0.155	-0.7	0.9	-0.7	0.9	A+	
894	615786	8	260	.369	.131	.127	.369	.365	.008	.183	-.008	-.064	.183	-.059	0.752	0.139	2.9	1.2	3.0	1.3	A+	
895	620408	8	260	.608	.096	.204	.608	.081	.012	.405	-.153	-.139	.405	-.187	-0.417	0.139	-0.4	1.0	-0.2	1.0	A-	
896	615847	8	260	.596	.096	.115	.596	.181	.012	.508	-.224	-.232	.508	-.164	-0.359	0.138	-2.2	0.9	-2.2	0.8	A-	
897	615801	8	260	.350	.350	.127	.481	.031	.012	.345	.345	-.277	-.025	-.082	0.845	0.141	0.2	1.0	0.9	1.1	A-	
898	620413	8	260	.385	.092	.385	.285	.223	.015	.334	-.098	.334	-.033	-.180	0.661	0.139	0.7	1.0	0.5	1.0	A+	
899	620414	8	260	.508	.039	.408	.042	.508	.004	.233	-.161	-.075	-.195	.233	0.129	0.134	2.6	1.1	2.8	1.2	B+	
900	615902	8	260	.865	.069	.031	.035	.865	.000	.339	-.260	-.184	-.099	.339	-1.973	0.194	-0.3	1.0	-0.9	0.8	A-	
901	617288	8	260	.654	.050	.654	.196	.100	.000	.429	-.193	.429	-.187	-.292	-0.562	0.141	-1.5	0.9	-1.8	0.9	A+	
902	615848	8	260	.196	.146	.365	.196	.289	.004	.118	-.294	-.031	.118	.162	1.806	0.165	0.9	1.1	2.9	1.5	A-	
903	620383	8	260	.577	.212	.100	.577	.112	.000	.395	-.158	-.214	.395	-.212	-0.199	0.136	-0.2	1.0	-0.1	1.0	B+	
904	620409	8	260	.339	.173	.204	.339	.285	.000	.299	-.158	-.213	.299	.010	0.945	0.140	0.5	1.0	1.0	1.1	A+	
905	615787	8	260	.508	.146	.150	.185	.508	.012	.438	-.132	-.282	-.161	.438	0.102	0.135	-0.9	1.0	-1.1	0.9	A+	

Table B-4 (continued). Science Multiple-Choice Item Statistics

Ref	ID	FT Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
906	617290	8	261	.556	.556	.088	.184	.169	.004	.305	.305	-.111	-.116	-.145	-0.191	0.136	1.6	1.1	1.9	1.1	A+	
907	615849	8	261	.571	.571	.111	.138	.176	.004	.438	.438	-.157	-.173	-.228	-0.265	0.137	-0.5	1.0	-0.6	1.0	A-	
908	620410	8	261	.617	.142	.061	.617	.176	.004	.465	-.344	-.267	.465	-.055	-0.493	0.139	-1.4	0.9	-1.9	0.9	B+	
909	620415	8	261	.487	.084	.295	.487	.130	.004	.417	-.183	-.175	.417	-.169	0.140	0.135	-0.7	1.0	-0.5	1.0	B-	
910	620635	8	261	.245	.146	.245	.360	.241	.008	.162	-.182	.162	-.051	.095	1.396	0.154	2.0	1.2	2.7	1.4	A-	
911	620382	8	261	.621	.157	.153	.621	.061	.008	.339	-.119	-.187	.339	-.121	-0.525	0.140	0.6	1.0	1.1	1.1	A-	
912	620381	8	261	.264	.264	.295	.261	.172	.008	.235	.235	-.092	.075	-.183	1.278	0.151	1.4	1.1	1.2	1.1	A+	
913	615777	8	264	.288	.250	.296	.155	.288	.011	.065	-.124	.034	.121	.065	1.181	0.146	4.0	1.3	4.1	1.5	A-	
914	615790	8	260	.439	.439	.219	.239	.104	.000	.351	.351	-.107	-.235	-.099	0.500	0.136	1.0	1.1	0.6	1.0	B-	
915	615789	8	259	.583	.147	.135	.583	.127	.008	.386	-.186	-.310	.386	.064	-0.177	0.139	0.4	1.0	1.1	1.1	A-	
916	617059	8	269	.093	.216	.123	.093	.561	.007	.117	-.074	-.097	.117	.141	2.810	0.222	0.2	1.0	1.5	1.4	A-	
917	615791	8	536	.334	.274	.216	.168	.334	.008	.331	-.049	-.049	-.219	.331	1.011	0.100	0.6	1.0	0.6	1.0	A+	
918	617284	8	260	.619	.181	.065	.619	.131	.004	.457	-.243	-.293	.457	-.099	-0.503	0.138	-1.6	0.9	-1.4	0.9	A+	
919	620396	8	259	.425	.127	.151	.425	.293	.004	.185	-.121	-.275	.185	.115	0.492	0.138	3.7	1.2	3.4	1.3	A-	
920	617292	8	260	.335	.242	.335	.258	.158	.008	.330	-.091	.330	-.152	-.115	0.972	0.141	0.2	1.0	0.6	1.1	A+	
921	620637	8	265	.438	.094	.113	.351	.438	.004	.380	-.127	-.244	-.149	.380	0.494	0.135	0.1	1.0	0.3	1.0	A+	
922	620401	8	262	.710	.088	.710	.095	.095	.012	.392	-.148	.392	-.112	-.168	-0.963	0.151	0.0	1.0	0.0	1.0	A-	
923	620426	8	259	.421	.270	.421	.220	.077	.012	.288	-.060	.288	-.016	-.228	0.528	0.139	2.0	1.1	1.6	1.1	A+	
924	620427	8	288	.403	.257	.247	.403	.090	.004	.298	-.028	-.165	.298	-.137	0.785	0.128	0.8	1.0	0.6	1.0	A+	
925	620362	8	273	.502	.502	.051	.081	.359	.007	.429	.429	-.041	-.177	-.280	0.113	0.130	-1.6	0.9	-1.7	0.9	A+	
926	617484	8	260	.900	.015	.035	.046	.900	.004	.318	-.131	-.126	-.212	.318	-2.408	0.223	0.0	1.0	-0.3	0.9	A+	
927	618896	8	273	.714	.714	.051	.048	.183	.004	.323	.323	-.164	-.198	-.118	-0.918	0.143	-0.1	1.0	0.6	1.1	A+	
928	617294	8	263	.380	.179	.205	.232	.380	.004	.312	-.180	-.117	-.030	.312	0.789	0.138	1.1	1.1	0.6	1.0	A+	
929	617293	8	288	.701	.024	.108	.160	.701	.007	.341	-.074	-.174	-.171	.341	-0.640	0.137	-0.2	1.0	0.0	1.0	A+	
930	617485	8	5825	.783	.066	.114	.783	.032	.006	.513	-.220	-.309	.513	-.189	-1.354	0.034	-9.0	0.8	-9.9	0.7	A-	A-
931	617577	8	5825	.527	.527	.197	.163	.105	.008	.452	.452	-.215	-.198	-.120	0.034	0.029	-6.8	0.9	-6.3	0.9	A+	A-
932	617585	8	5825	.443	.092	.242	.443	.212	.011	.301	-.138	-.211	.301	.035	0.436	0.029	7.5	1.1	7.0	1.1	A+	A+
933	615834	8	259	.583	.220	.583	.116	.081	.000	.380	-.210	.380	-.139	-.205	-0.273	0.138	0.1	1.0	0.3	1.0	A-	
934	615835	8	265	.347	.555	.072	.347	.026	.000	.012	.089	-.152	.012	-.066	0.946	0.139	4.8	1.3	5.0	1.5	A+	
935	615836	8	262	.550	.061	.122	.550	.252	.015	.392	-.107	-.242	.392	-.085	-0.107	0.139	0.6	1.0	0.2	1.0	A+	
936	620041	8	262	.305	.305	.046	.534	.107	.008	.096	.096	-.082	-.014	.086	1.306	0.147	4.3	1.3	4.6	1.6	A-	
937	615838	8	262	.523	.523	.115	.279	.076	.008	.405	.405	-.203	-.094	-.186	0.200	0.136	-0.6	1.0	-0.9	0.9	A-	
938	617579	8	268	.369	.369	.306	.168	.157	.000	.353	.353	-.222	-.069	-.117	0.906	0.138	0.7	1.0	0.8	1.1	A+	
939	617595	8	268	.668	.078	.668	.179	.075	.000	.346	-.096	.346	-.340	-.026	-0.563	0.141	0.4	1.0	0.7	1.1	A-	
940	617488	8	268	.795	.795	.060	.075	.067	.004	.493	.493	-.176	-.320	-.276	-1.342	0.162	-1.6	0.9	-1.9	0.7	A+	

Table B-4 (continued). Science Multiple-Choice Item Statistics

Ref	ID	FT Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
941	615839	8	268	.761	.086	.082	.067	.761	.004	.584	-.223	-.354	-.335	.584	-1.121	0.154	-3.1	0.8	-2.7	0.7	A+	
942	618893	8	268	.698	.698	.127	.116	.052	.008	.392	.392	-.205	-.137	-.252	-0.752	0.145	-0.3	1.0	0.4	1.0	A+	
943	618549	8	268	.414	.414	.164	.280	.138	.004	.325	.325	-.075	-.203	-.104	0.672	0.135	1.2	1.1	0.7	1.1	A-	
944	618550	8	288	.688	.021	.038	.250	.688	.004	.478	-.187	-.166	-.322	.478	-0.557	0.135	-2.5	0.9	-2.5	0.8	A+	
945	617581	8	288	.375	.254	.129	.375	.240	.004	.147	-.137	-.009	.147	.035	0.918	0.129	2.8	1.1	3.3	1.2	B-	
946	618897	8	288	.389	.115	.212	.389	.281	.004	.204	-.188	-.120	.204	.073	0.851	0.129	1.6	1.1	1.8	1.1	A+	
947	615851	8	288	.458	.125	.344	.069	.458	.004	.503	-.230	-.254	-.118	.503	0.527	0.126	-4.0	0.8	-3.4	0.8	C-	
948	617597	8	288	.847	.847	.014	.090	.045	.004	.110	.110	-.056	.044	-.105	-1.584	0.171	0.9	1.1	2.9	1.5	A+	
949	617582	8	263	.319	.376	.186	.319	.110	.008	.226	-.095	-.204	.226	.127	1.089	0.143	2.1	1.1	2.1	1.2	A-	
950	615831	8	263	.369	.369	.308	.198	.107	.019	.386	.386	-.090	-.191	-.153	0.808	0.139	-0.7	1.0	-0.8	0.9	A+	
951	615852	8	263	.434	.213	.088	.243	.434	.023	.337	-.025	-.206	-.166	.337	0.484	0.136	1.0	1.1	0.4	1.0	A-	
952	618964	8	263	.319	.373	.319	.202	.084	.023	.171	.042	.171	-.115	-.092	1.072	0.144	3.1	1.2	2.4	1.2	A-	
953	615853	8	263	.453	.323	.148	.453	.068	.008	.340	-.193	-.107	.340	-.005	0.495	0.138	1.8	1.1	1.7	1.1	A-	
954	617295	8	263	.095	.095	.285	.266	.342	.011	.054	.054	.085	-.165	.143	2.907	0.222	0.7	1.1	2.5	1.9	C-	
955	615855	8	264	.216	.273	.205	.296	.216	.011	.329	-.051	-.152	-.036	.329	1.622	0.159	-0.5	1.0	0.5	1.1	A-	
956	615856	8	269	.219	.294	.216	.219	.264	.007	.195	-.099	-.063	.195	.072	1.678	0.156	0.8	1.1	1.7	1.2	A-	
957	618966	8	269	.617	.617	.089	.171	.108	.015	.453	.453	-.198	-.202	-.115	-0.365	0.136	-2.1	0.9	-1.7	0.9	A+	
958	618969	8	259	.282	.282	.135	.154	.417	.012	.228	.228	-.122	-.241	.139	1.358	0.150	2.2	1.2	2.8	1.4	A-	
959	615858	8	259	.432	.127	.139	.432	.282	.019	.154	-.076	-.074	.154	.064	0.542	0.139	5.2	1.3	5.0	1.4	A+	
960	615859	8	260	.292	.292	.162	.377	.169	.000	.309	.309	-.109	-.060	-.191	1.247	0.147	0.7	1.1	0.5	1.1	A+	
961	617592	8	260	.181	.242	.154	.419	.181	.004	-.018	-.021	-.134	.155	-.018	1.958	0.171	2.5	1.3	4.4	2.0	A+	
962	618970	8	260	.696	.058	.096	.696	.142	.008	.436	-.178	-.276	.436	-.174	-0.809	0.148	-0.5	1.0	-0.7	0.9	A+	
963	617594	8	273	.147	.377	.147	.202	.267	.007	-.062	.064	-.062	.008	.021	2.120	0.178	1.9	1.2	3.7	1.8	A-	
964	615860	8	273	.319	.491	.073	.319	.110	.007	.245	.069	-.328	.245	-.128	0.997	0.139	1.2	1.1	1.7	1.2	B-	
965	619020	8	273	.209	.454	.271	.209	.055	.011	.081	.062	-.028	.081	-.134	1.636	0.157	1.8	1.2	2.6	1.4	A-	
966	620037	8	262	.756	.107	.107	.027	.756	.004	.374	-.123	-.240	-.180	.374	-1.348	0.156	-0.4	1.0	0.6	1.1	A-	
967	620361	8	262	.454	.324	.454	.065	.153	.004	.151	.151	.151	-.251	-.179	0.228	0.136	4.4	1.2	3.9	1.3	A+	
968	619021	8	262	.798	.050	.798	.095	.053	.004	.487	-.230	.487	-.300	-.170	-1.632	0.166	-1.6	0.9	-2.2	0.7	A+	
969	620036	8	262	.359	.149	.244	.233	.359	.015	.361	-.260	-.045	-.059	.361	0.684	0.141	0.2	1.0	0.4	1.0	A-	
970	620038	8	260	.673	.031	.150	.142	.673	.004	.382	-.164	-.194	-.171	.382	-0.781	0.143	-0.1	1.0	0.0	1.0	A+	
971	617583	8	260	.569	.062	.281	.569	.077	.012	.378	-.156	-.121	.378	-.252	-0.275	0.137	-0.4	1.0	-0.3	1.0	B-	
972	617584	8	259	.297	.154	.479	.066	.297	.004	.403	-.117	-.171	-.142	.403	1.212	0.147	-0.7	1.0	-0.7	0.9	A-	
973	620039	8	259	.479	.479	.178	.182	.154	.008	.433	.433	-.344	-.011	-.140	0.270	0.136	-1.0	1.0	-0.7	1.0	A-	
974	615864	8	289	.325	.197	.325	.266	.208	.004	.173	.061	.173	-.184	-.059	0.982	0.135	3.0	1.2	3.3	1.3	A-	
975	617586	8	289	.488	.177	.488	.142	.194	.000	.209	-.070	.209	-.251	.026	0.189	0.128	3.9	1.2	3.3	1.2	B-	

Table B-4 (continued). Science Multiple-Choice Item Statistics

Ref	ID	FT Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
976	620040	8	289	.294	.540	.100	.066	.294	.000	.369	-.153	-.199	-.129	.369	1.156	0.139	-0.5	1.0	1.1	1.1	A-	
977	615865	8	260	.439	.092	.373	.439	.092	.004	.388	-.163	-.122	.388	-.226	0.411	0.136	-0.6	1.0	-0.3	1.0	A-	
978	617587	8	260	.204	.104	.327	.204	.346	.019	.111	-.043	-.082	.111	.102	1.689	0.164	1.2	1.1	4.6	1.8	B-	
979	617574	8	260	.269	.339	.077	.269	.300	.015	.204	.121	-.236	.204	-.087	1.281	0.150	1.7	1.1	2.3	1.3	B-	
980	617575	8	260	.242	.292	.242	.169	.296	.000	.111	-.046	.111	.122	-.158	1.480	0.153	1.8	1.1	3.2	1.4	B-	
981	615866	8	260	.319	.142	.308	.319	.223	.008	.049	-.124	.034	.049	.035	1.040	0.142	4.0	1.3	4.2	1.4	A-	
982	620365	8	260	.377	.300	.192	.131	.377	.000	.362	-.064	-.281	-.105	.362	0.752	0.137	0.1	1.0	0.0	1.0	A+	
983	617486	8	261	.433	.433	.058	.276	.226	.008	.164	.164	-.230	.154	-.175	0.392	0.136	4.4	1.2	5.2	1.4	B-	
984	617578	8	261	.513	.119	.084	.280	.513	.004	.306	-.147	-.139	-.101	.306	0.012	0.135	1.3	1.1	0.9	1.1	A-	
985	620364	8	260	.350	.131	.300	.350	.204	.015	.145	-.080	-.011	.145	.015	0.836	0.141	3.7	1.2	3.4	1.3	A+	
986	618548	8	261	.548	.138	.195	.115	.548	.004	.323	-.090	-.106	-.208	.323	-0.154	0.136	1.9	1.1	1.6	1.1	A+	
987	615833	8	269	.245	.294	.294	.245	.156	.011	.252	.008	-.142	.252	-.019	1.485	0.150	0.6	1.0	0.9	1.1	A-	
988	615857	8	268	.310	.403	.183	.310	.101	.004	.144	.118	-.179	.144	-.164	1.211	0.143	2.8	1.2	4.6	1.5	A-	
989	615771	8	263	.734	.734	.190	.042	.030	.004	.460	.460	-.306	-.169	-.157	-0.979	0.150	-1.3	0.9	-1.6	0.8	A+	
990	618535	8	268	.840	.011	.840	.078	.067	.004	.449	-.071	.449	-.292	-.293	-1.692	0.177	-1.0	0.9	-1.8	0.7	A-	
991	617735	8	288	.743	.174	.042	.038	.743	.004	.258	-.170	-.078	-.046	.258	-0.864	0.142	0.6	1.0	0.4	1.0	A-	
992	620027	8	289	.630	.177	.121	.630	.073	.000	.501	-.275	-.240	.501	-.226	-0.493	0.132	-2.4	0.9	-2.3	0.8	A-	
993	617962	8	260	.662	.135	.065	.135	.662	.004	.404	-.267	-.149	-.120	.404	-0.720	0.142	-0.1	1.0	-0.5	1.0	A-	
994	620020	8	259	.228	.259	.328	.228	.182	.004	.173	-.038	-.058	.173	-.019	1.609	0.159	1.3	1.1	3.1	1.5	C-	
995	615702	8	5825	.394	.119	.245	.236	.394	.005	.370	-.184	-.133	-.098	.370	0.689	0.029	-0.3	1.0	0.5	1.0	A+	A+
996	617961	8	5825	.794	.027	.794	.081	.092	.007	.422	-.186	.422	-.228	-.175	-1.442	0.035	-3.2	0.9	-4.6	0.9	A+	A-
997	615886	8	260	.769	.069	.073	.769	.065	.023	.525	-.240	-.228	.525	-.118	-1.410	0.166	-1.4	0.9	-1.8	0.7	A+	
998	615871	8	260	.642	.104	.642	.131	.096	.027	.566	-.228	.566	-.245	-.159	-0.638	0.145	-3.5	0.8	-3.0	0.7	A+	
999	615704	8	5825	.565	.165	.565	.133	.126	.012	.468	-.161	.468	-.189	-.225	-0.156	0.029	-8.0	0.9	-7.7	0.9	A+	A+
1000	615750	8	260	.258	.585	.258	.065	.062	.031	.228	.015	.228	-.076	-.037	1.402	0.156	1.4	1.1	3.1	1.5	B-	
1001	615872	8	259	.073	.162	.097	.664	.073	.004	.198	-.234	-.210	.254	.198	3.309	0.269	-0.2	0.9	-1.2	0.6	B-	
1002	615888	8	259	.776	.066	.776	.131	.015	.012	.434	-.242	.434	-.185	-.118	-1.431	0.168	-0.1	1.0	-0.5	0.9	A+	
1003	615751	8	259	.672	.151	.672	.089	.070	.019	.568	-.295	.568	-.184	-.204	-0.785	0.149	-3.1	0.8	-2.9	0.7	A+	
1004	615889	8	259	.765	.205	.012	.765	.019	.000	.356	-.283	-.102	.356	-.189	-1.280	0.159	-0.2	1.0	-0.7	0.9	A-	
1005	615873	8	259	.668	.085	.154	.093	.668	.000	.569	-.332	-.281	-.257	.569	-0.690	0.144	-3.3	0.8	-3.2	0.7	A+	
1006	615752	8	259	.166	.154	.166	.166	.514	.000	.157	-.074	-.205	.157	.089	2.111	0.182	0.5	1.1	1.6	1.3	A+	
1007	615890	8	265	.917	.049	.011	.023	.917	.000	.317	-.175	-.122	-.247	.317	-2.654	0.241	-0.2	1.0	-1.2	0.7	A+	
1008	615874	8	265	.570	.109	.238	.570	.083	.000	.474	-.215	-.308	.474	-.134	-0.132	0.135	-2.1	0.9	-1.3	0.9	A-	
1009	615722	8	265	.366	.366	.094	.113	.426	.000	.070	.070	-.222	-.320	.267	0.831	0.137	3.9	1.2	4.9	1.5	A+	
1010	615891	8	262	.538	.134	.157	.538	.160	.012	.335	-.035	-.066	.335	-.212	-0.037	0.139	2.3	1.1	1.6	1.1	A-	

Table B-4 (continued). Science Multiple-Choice Item Statistics

Ref	ID	FT Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
1011	615725	8	262	.485	.485	.168	.202	.134	.012	.456	.456	-.082	-.269	-.105	0.232	0.138	-0.8	1.0	-0.8	0.9	A+	
1012	615731	8	262	.267	.431	.107	.183	.267	.012	.344	.098	-.192	-.227	.344	1.404	0.154	0.5	1.0	0.6	1.1	A-	
1013	615726	8	262	.435	.099	.263	.435	.195	.008	.358	-.288	-.060	.358	-.047	0.628	0.137	0.8	1.0	0.3	1.0	A-	
1014	615892	8	262	.534	.015	.095	.534	.344	.012	.461	-.065	-.266	.461	-.192	0.140	0.137	-2.3	0.9	-2.3	0.9	A+	
1015	615732	8	262	.756	.057	.756	.130	.042	.015	.416	-.216	.416	-.145	-.130	-1.079	0.158	-0.6	1.0	-1.4	0.8	A+	
1016	620026	8	268	.522	.075	.522	.179	.216	.008	.378	-.170	.378	-.232	-.122	0.145	0.134	0.4	1.0	1.4	1.1	A+	
1017	615893	8	268	.526	.063	.526	.138	.272	.000	.308	-.015	.308	-.173	-.203	0.143	0.134	1.5	1.1	1.4	1.1	A-	
1018	615729	8	268	.418	.418	.276	.123	.175	.008	.518	.518	-.217	-.324	-.112	0.648	0.135	-2.3	0.9	-2.2	0.9	A-	
1019	615733	8	268	.388	.261	.153	.194	.388	.004	.314	-.159	-.171	-.041	.314	0.801	0.137	1.7	1.1	1.5	1.1	B+	
1020	615894	8	288	.882	.063	.882	.038	.014	.004	.274	-.084	.274	-.136	-.156	-1.909	0.191	-0.1	1.0	0.0	1.0	B+	
1021	615734	8	561	.392	.210	.392	.201	.189	.007	.344	-.018	.344	-.212	-.128	0.734	0.092	-0.3	1.0	0.9	1.0	B-	
1022	617706	8	288	.295	.545	.295	.104	.049	.007	.010	.277	.010	-.255	-.180	1.320	0.137	4.0	1.3	4.1	1.4	A-	
1023	617707	8	263	.753	.095	.753	.053	.004	.352	-.131	-.180	.352	-.169	-1.094	0.153	-0.4	1.0	0.4	1.1	A+		
1024	615753	8	263	.487	.376	.068	.487	.057	.011	.269	-.126	-.211	.269	.008	0.256	0.135	2.5	1.1	2.3	1.2	B+	
1025	615895	8	263	.643	.643	.179	.114	.061	.004	.459	.459	-.180	-.243	-.215	-0.481	0.139	-1.7	0.9	-1.8	0.9	A-	
1026	615735	8	263	.247	.247	.247	.240	.247	.019	.080	-.049	.080	-.026	.066	1.498	0.154	3.1	1.3	4.4	1.6	A+	
1027	615876	8	263	.673	.673	.049	.209	.061	.008	.502	.502	-.172	-.265	-.212	-0.670	0.147	-1.7	0.9	-2.1	0.8	B-	
1028	615705	8	263	.662	.034	.076	.213	.662	.015	.532	-.142	-.278	-.254	.532	-0.631	0.147	-1.9	0.9	-2.1	0.8	A+	
1029	615764	8	263	.555	.167	.167	.099	.555	.011	.597	-.188	-.257	-.272	.597	-0.045	0.139	-4.4	0.8	-3.3	0.8	B+	
1030	615710	8	263	.449	.449	.080	.262	.190	.019	.437	.437	-.184	-.196	-.045	0.501	0.139	-0.6	1.0	-0.1	1.0	B-	
1031	615756	8	263	.323	.099	.126	.434	.323	.019	.159	-0.007	-.115	.058	.159	1.142	0.145	3.9	1.3	4.4	1.5	B+	
1032	617296	8	264	.318	.155	.254	.318	.269	.004	.083	-.155	-.161	.083	.238	1.040	0.143	3.6	1.2	3.7	1.4	A-	
1033	615765	8	264	.148	.148	.402	.292	.152	.008	.148	.148	.025	-.134	.077	2.145	0.182	0.8	1.1	2.9	1.6	A+	
1034	615877	8	264	.686	.030	.686	.076	.197	.011	.322	-0.079	.322	-.252	-.102	-0.806	0.143	0.6	1.0	0.4	1.0	A-	
1035	615757	8	264	.152	.136	.242	.462	.152	.008	.096	-.160	-.185	.263	.096	2.112	0.180	1.5	1.2	1.8	1.3	A+	
1036	615706	8	264	.837	.837	.046	.076	.034	.008	.510	.510	-.189	-.286	-.231	-1.776	0.178	-1.8	0.8	-2.7	0.6	A-	
1037	615711	8	264	.489	.201	.212	.489	.091	.008	.389	-.131	-.182	.389	-.127	0.180	0.133	-0.3	1.0	0.2	1.0	A+	
1038	618681	8	264	.606	.133	.121	.133	.606	.008	.391	-.105	-.237	-.138	.391	-0.380	0.136	-0.7	1.0	-0.5	1.0	B+	
1039	618682	8	269	.290	.097	.290	.193	.413	.007	.157	-.141	.157	-.083	.091	1.233	0.143	2.3	1.2	2.9	1.3	A+	
1040	615713	8	529	.677	.677	.132	.144	.044	.004	.400	.400	-.152	-.227	-.161	-0.659	0.100	-1.2	1.0	-1.3	0.9	A-	A+
1041	617297	8	269	.691	.123	.078	.100	.692	.007	.441	-.228	-.151	-.156	.441	-0.736	0.142	-1.4	0.9	-1.5	0.9	B+	
1042	615758	8	269	.439	.030	.439	.428	.097	.007	-.003	-.031	-.003	.093	.006	0.490	0.132	7.1	1.3	6.2	1.5	A-	
1043	615878	8	269	.435	.286	.074	.197	.435	.007	.445	-.116	-.201	-.187	.445	0.507	0.132	-2.1	0.9	-1.4	0.9	A+	
1044	615767	8	269	.201	.201	.145	.082	.565	.007	.115	.115	-.138	-.136	.164	1.779	0.160	1.4	1.1	2.2	1.3	A-	
1045	615700	8	269	.231	.231	.205	.454	.100	.011	.197	.197	-.031	-.034	-.036	1.579	0.153	0.8	1.1	2.6	1.3	A-	

Table B-4 (continued). Science Multiple-Choice Item Statistics

Ref	ID	FT Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
1046	615743	8	269	.294	.182	.294	.294	.223	.007	.249	-.073	-.141	.249	.049	1.213	0.142	0.9	1.1	1.8	1.2	A-	
1047	620422	8	269	.591	.078	.145	.591	.175	.011	.391	-.163	-.231	.391	-.057	-0.229	0.134	-0.9	1.0	-0.7	1.0	A+	
1048	615707	8	269	.257	.045	.257	.539	.145	.015	.188	-.019	.188	.062	-.163	1.418	0.148	1.6	1.1	2.9	1.4	A-	
1049	617733	8	269	.219	.160	.041	.565	.219	.015	.275	-.025	-.152	-.046	.275	1.649	0.156	0.0	1.0	1.0	1.1	A+	
1050	615768	8	259	.738	.108	.027	.738	.120	.008	.346	-.189	-.081	.346	-.127	-1.026	0.155	1.0	1.1	0.7	1.1	A+	
1051	615701	8	259	.301	.054	.301	.498	.139	.008	.117	-.183	.117	.172	-.171	1.251	0.148	3.4	1.2	3.5	1.4	A+	
1052	615708	8	259	.807	.043	.077	.062	.807	.012	.476	-.189	-.222	-.199	.476	-1.526	0.173	-1.1	0.9	-1.8	0.7	A-	
1053	618683	8	259	.591	.591	.112	.251	.035	.012	.390	.390	-.273	-.085	-.128	-0.224	0.140	0.3	1.0	0.2	1.0	A+	
1054	617298	8	259	.653	.104	.653	.205	.027	.012	.322	-.213	.322	-.094	-.074	-0.553	0.144	1.6	1.1	0.7	1.1	A+	
1055	618536	8	259	.799	.031	.799	.100	.050	.019	.547	-.117	.547	-.300	-.248	-1.514	0.173	-1.8	0.8	-2.3	0.6	A+	
1056	615908	8	259	.456	.085	.332	.456	.108	.019	.397	-.174	-.076	.397	-.190	0.427	0.138	0.4	1.0	1.0	1.1	A-	
1057	615714	8	259	.452	.201	.151	.178	.452	.019	.414	-.168	-.123	-.121	.414	0.438	0.138	-0.3	1.0	-0.6	1.0	C-	
1058	615744	8	259	.695	.046	.147	.695	.093	.019	.389	-.145	-.109	.389	-.213	-0.825	0.150	0.4	1.0	0.7	1.1	B+	
1059	615716	8	259	.490	.108	.174	.205	.490	.023	.519	-.074	-.135	-.325	.519	0.241	0.138	-2.7	0.9	-2.5	0.8	A+	
1060	615879	8	259	.548	.143	.120	.548	.162	.027	.376	-.201	-.165	.376	-.014	-0.053	0.140	1.0	1.1	0.7	1.1	B-	
1061	618538	8	260	.889	.035	.065	.889	.012	.000	.418	-.297	-.241	.418	-.166	-2.180	0.207	-1.1	0.8	-2.0	0.6	A-	
1062	615745	8	260	.781	.131	.062	.781	.019	.008	.328	-.143	-.138	.328	-.273	-1.335	0.164	0.5	1.0	0.6	1.1	A+	
1063	615703	8	260	.512	.073	.135	.273	.512	.008	.513	-.127	-.390	-.164	.513	0.137	0.136	-2.2	0.9	-2.0	0.9	A+	
1064	615717	8	260	.419	.419	.115	.196	.258	.012	.421	.421	-.117	-.153	-.222	0.589	0.137	-1.4	0.9	-0.4	1.0	A-	
1065	615909	8	260	.627	.031	.031	.627	.308	.004	.291	-.200	-.123	.291	-.158	-0.425	0.140	2.2	1.1	2.0	1.2	A+	
1066	617964	8	260	.600	.119	.600	.127	.150	.004	.517	-.284	.517	-.168	-.261	-0.289	0.138	-1.9	0.9	-2.0	0.9	A-	
1067	615715	8	260	.385	.189	.181	.385	.242	.004	.333	-.189	-.214	.333	.015	0.755	0.138	1.1	1.1	0.8	1.1	B+	
1068	615709	8	260	.385	.131	.342	.385	.135	.008	.197	-.209	-.115	.197	.136	0.770	0.139	3.0	1.2	3.0	1.3	A-	
1069	615769	8	260	.804	.069	.058	.062	.804	.008	.380	-.223	-.157	-.171	.380	-1.508	0.171	-0.3	1.0	-0.5	0.9	A+	
1070	615880	8	260	.392	.392	.435	.104	.062	.008	.231	.231	.083	-.325	-.158	0.712	0.138	3.2	1.2	2.6	1.2	A-	
1071	615719	8	273	.216	.114	.582	.216	.088	.000	-.041	-.181	.234	-.041	-.145	1.603	0.155	3.0	1.3	4.7	1.7	A+	
1072	617958	8	273	.575	.176	.095	.150	.575	.004	.369	-.216	-.193	-.061	.369	-0.216	0.131	-0.4	1.0	-0.4	1.0	B+	
1073	615966	8	273	.667	.180	.667	.110	.040	.004	.389	-.115	.389	-.294	-.127	-0.664	0.137	-0.8	1.0	-1.1	0.9	A+	
1074	615746	8	273	.696	.242	.022	.696	.037	.004	.413	-.266	-.120	.413	-.194	-0.818	0.140	-1.0	0.9	-1.4	0.9	A+	
1075	617055	8	273	.711	.084	.092	.711	.106	.007	.459	-.198	-.234	.459	-.179	-0.905	0.143	-1.3	0.9	-1.5	0.9	A+	
1076	618541	8	273	.648	.077	.103	.648	.169	.004	.512	-.198	-.260	.512	-.242	-0.571	0.136	-3.0	0.9	-3.0	0.8	C+	
1077	615910	8	273	.202	.392	.154	.249	.202	.004	.148	.261	-.247	-.175	.148	1.701	0.159	1.4	1.1	1.9	1.3	A-	
1078	615736	8	273	.169	.169	.260	.447	.117	.007	.204	.204	-.030	-.068	-.019	1.934	0.169	0.3	1.0	2.3	1.4	B-	
1079	615912	8	262	.298	.099	.095	.500	.298	.008	.399	-.090	-.183	-.155	.399	1.029	0.146	-0.1	1.0	-0.1	1.0	A+	
1080	615861	8	262	.221	.248	.221	.229	.294	.008	-.074	.172	-.074	-.080	.036	1.487	0.159	4.1	1.4	5.5	2.0	A+	

Table B-4 (continued). Science Multiple-Choice Item Statistics

Ref	ID	FT Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
1081	615747	8	262	.359	.359	.172	.294	.164	.012	.298	.298	-.224	-.061	.002	0.691	0.141	1.7	1.1	0.8	1.1	A-	
1082	615721	8	262	.748	.050	.088	.748	.107	.008	.510	-.191	-.225	.510	-.292	-1.320	0.155	-1.8	0.9	-1.9	0.8	A-	
1083	617738	8	262	.531	.126	.126	.531	.202	.015	.452	-.194	-.273	.452	-.082	-0.168	0.137	-0.6	1.0	-0.5	1.0	B-	
1084	620022	8	262	.622	.157	.115	.092	.622	.015	.565	-.237	-.280	-.212	.565	-0.630	0.141	-3.1	0.8	-2.3	0.8	A+	
1085	617959	8	262	.496	.107	.218	.164	.496	.015	.418	-.106	-.261	-.084	.418	0.000	0.136	0.0	1.0	-0.2	1.0	A+	
1086	615738	8	262	.267	.225	.248	.244	.267	.015	.228	.092	-.243	.008	.228	1.216	0.151	1.5	1.1	1.5	1.2	A-	
1087	617056	8	262	.431	.229	.103	.221	.431	.015	.366	-.024	-.119	-.237	.366	0.317	0.137	0.9	1.0	0.9	1.1	B+	
1088	615739	8	260	.312	.292	.246	.312	.131	.019	.167	.013	-.098	.167	-.015	0.998	0.146	2.9	1.2	3.9	1.4	A-	
1089	615841	8	260	.535	.265	.089	.104	.535	.008	.368	-.126	-.217	-.133	.368	-0.101	0.136	0.5	1.0	1.0	1.1	A+	
1090	620014	8	260	.542	.077	.542	.162	.212	.008	.313	-.129	.313	-.212	-.044	-0.138	0.136	1.4	1.1	1.0	1.1	B+	
1091	618788	8	260	.704	.027	.169	.089	.704	.012	.357	-.158	-.136	-.198	.357	-0.975	0.148	0.1	1.0	-0.3	1.0	C+	
1092	617496	8	260	.462	.327	.462	.089	.115	.008	.237	.001	.237	-.158	-.146	0.252	0.136	3.1	1.2	3.4	1.3	A-	
1093	620024	8	260	.285	.189	.408	.285	.115	.004	-.008	.000	.012	-.008	.062	1.164	0.149	4.4	1.3	6.0	1.8	A+	
1094	615862	8	260	.554	.381	.554	.039	.023	.004	.337	-.196	.337	-.165	-.125	-0.184	0.136	0.7	1.0	1.1	1.1	A-	
1095	617963	8	260	.696	.108	.696	.069	.123	.004	.446	-.247	.446	-.182	-.182	-0.906	0.145	-1.4	0.9	-1.6	0.8	A+	
1096	615913	8	260	.508	.508	.162	.219	.108	.004	.463	.463	-.222	-.242	-.088	0.036	0.135	-1.1	1.0	-0.7	1.0	A-	
1097	617057	8	260	.558	.215	.558	.112	.104	.012	.426	-.156	.426	-.273	-.110	-0.219	0.137	-0.8	1.0	-0.9	0.9	A-	
1098	618849	8	259	.641	.066	.205	.641	.085	.004	.361	-.178	-.192	.361	-.109	-0.512	0.141	0.3	1.0	-0.4	1.0	A-	
1099	615759	8	259	.197	.548	.127	.124	.197	.004	.314	-.055	-.175	-.054	.314	1.821	0.167	-0.5	1.0	-0.1	1.0	A-	
1100	617497	8	259	.537	.066	.112	.537	.282	.004	.371	-.229	-.279	.371	-.043	0.000	0.136	0.4	1.0	0.6	1.0	A+	
1101	618532	8	259	.587	.112	.104	.587	.193	.004	.508	-.274	-.216	.508	-.193	-0.242	0.137	-2.9	0.9	-2.7	0.8	A+	
1102	615863	8	259	.745	.170	.050	.745	.027	.008	.293	-.061	-.221	.293	-.162	-1.130	0.155	0.2	1.0	0.8	1.1	B+	
1103	617058	8	259	.514	.189	.514	.135	.154	.008	.194	-.019	.194	-.117	-.055	0.104	0.136	4.3	1.2	4.3	1.3	A+	
1104	615740	8	259	.263	.216	.313	.263	.201	.008	.289	-.116	-.052	.289	-.063	1.388	0.152	0.6	1.0	2.4	1.3	A-	
1105	615842	8	259	.614	.139	.614	.143	.097	.008	.396	-.133	.396	-.140	-.229	-0.384	0.139	0.3	1.0	-0.2	1.0	A+	
1106	620017	8	259	.599	.599	.189	.097	.108	.008	.458	.458	-.154	-.307	-.141	-0.307	0.138	-1.8	0.9	-1.2	0.9	B+	
1107	618850	8	289	.716	.152	.028	.100	.716	.004	.422	-.231	-.141	-.249	.422	-0.958	0.140	-1.1	0.9	-1.0	0.9	C+	
1108	615741	8	289	.609	.609	.080	.190	.121	.000	.218	.218	-.234	.014	-.149	-0.390	0.130	2.4	1.1	3.4	1.3	A+	
1109	615843	8	289	.751	.751	.021	.190	.038	.000	.416	.416	-.153	-.285	-.241	-1.156	0.145	-1.4	0.9	-1.1	0.9	A+	
1110	620018	8	289	.568	.228	.132	.073	.568	.000	.408	-.272	-.087	-.226	.408	-0.188	0.129	-1.0	1.0	-0.9	0.9	B+	
1111	615760	8	289	.401	.173	.215	.208	.401	.004	.311	-.112	-.051	-.226	.311	0.593	0.130	1.1	1.1	1.0	1.1	A+	
1112	618533	8	289	.609	.166	.111	.609	.114	.000	.429	-.103	-.212	.429	-.329	-0.390	0.130	-0.8	1.0	-1.5	0.9	A+	
1113	615761	8	260	.323	.450	.323	.096	.123	.008	.099	.093	.099	-.210	.017	0.991	0.143	4.2	1.3	4.0	1.4	A-	
1114	615881	8	260	.762	.039	.115	.077	.762	.008	.530	-.154	-.322	-.213	.530	-1.264	0.157	-2.6	0.8	-2.5	0.7	A-	
1115	615844	8	260	.646	.054	.162	.646	.127	.012	.507	-.184	-.303	.507	-.131	-0.615	0.142	-2.2	0.9	-2.1	0.8	A-	

Table B-4 (continued). Science Multiple-Choice Item Statistics

Ref	ID	FT Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
1116	618534	8	260	.523	.200	.154	.112	.523	.012	.467	-.135	-.095	-.315	.467	-0.002	0.136	-1.7	0.9	-1.1	0.9	B+	
1117	618851	8	260	.458	.085	.285	.458	.162	.012	.453	-.205	-.130	.453	-.174	0.312	0.136	-1.8	0.9	-1.4	0.9	A-	
1118	620019	8	260	.581	.581	.092	.112	.204	.012	.436	.436	-.283	-.111	-.130	-0.283	0.138	-0.7	1.0	-0.8	0.9	A+	
1119	615762	8	260	.158	.158	.200	.319	.319	.004	.098	.098	.009	-.024	-.065	2.100	0.179	0.7	1.1	1.9	1.4	A+	
1120	615882	8	260	.277	.289	.277	.319	.108	.008	-.052	.064	-.052	.074	-.105	1.287	0.148	3.9	1.3	5.5	1.7	A-	
1121	615748	8	261	.330	.172	.241	.330	.249	.008	.368	-.202	-.118	.368	-.052	0.915	0.143	-0.3	1.0	1.4	1.1	A-	
1122	615763	8	261	.429	.061	.207	.299	.429	.004	.379	-.205	-.219	-.062	.379	0.416	0.136	-0.4	1.0	0.5	1.0	A-	
1123	615885	8	261	.740	.046	.138	.740	.073	.004	.468	-.223	-.220	.468	-.236	-1.164	0.153	-1.1	0.9	-1.4	0.8	A-	
1124	618852	8	261	.617	.081	.153	.138	.617	.012	.559	-.193	-.341	-.187	.559	-0.510	0.140	-3.6	0.8	-3.1	0.8	A+	
1125	615868	8	261	.402	.184	.402	.249	.157	.008	.365	-.182	.365	-.157	-.043	0.540	0.138	0.1	1.0	1.3	1.1	A-	
1126	617739	8	289	.661	.170	.104	.661	.062	.004	.540	-.428	-.206	.540	-.110	-0.658	0.134	-2.8	0.9	-2.8	0.8	A-	
1127	618786	8	262	.401	.088	.191	.401	.305	.015	.230	-.119	-.179	.230	.063	0.471	0.138	3.2	1.2	2.8	1.2	A+	
1128	620015	8	259	.517	.143	.517	.127	.209	.004	.092	-.018	.092	.032	-.067	0.106	0.138	4.8	1.3	4.3	1.4	B+	
1129	617737	8	260	.489	.300	.108	.489	.077	.027	.230	-.023	-.177	.230	.086	0.149	0.138	3.3	1.2	3.0	1.2	A+	
1130	618540	8	262	.332	.332	.168	.370	.118	.012	.339	.339	-.172	.015	-.153	1.156	0.144	-0.1	1.0	0.2	1.0	A-	
1131	620029	8	528	.434	.112	.434	.203	.242	.010	.168	-.063	.168	-.113	.043	0.513	0.096	5.9	1.2	7.2	1.4	A-	
1132	620025	8	263	.525	.110	.243	.114	.525	.008	.359	-.174	-.058	-.188	.359	0.113	0.138	1.3	1.1	1.1	1.1	A-	
1133	620021	8	263	.840	.065	.053	.840	.038	.004	.399	-.246	-.271	.399	-.012	-1.718	0.179	-0.8	0.9	-1.1	0.8	A+	
1134	615749	8	260	.781	.035	.150	.781	.035	.000	.360	-.123	-.302	.360	-.103	-1.271	0.161	-0.6	1.0	-0.6	0.9	A+	
1135	615723	8	273	.414	.117	.154	.304	.414	.011	.281	-.271	-.109	.032	.281	0.519	0.132	1.1	1.1	1.1	1.1	A+	
1136	615884	8	259	.610	.151	.131	.610	.085	.023	.373	-.054	-.206	.373	-.139	-0.365	0.142	0.7	1.0	0.9	1.1	A+	
1137	620030	8	263	.818	.049	.072	.818	.053	.008	.481	-.262	-.200	.481	-.167	-1.636	0.177	-1.0	0.9	-2.0	0.7	A+	
1138	615927	8	269	.442	.186	.126	.238	.442	.007	.258	-.043	-.123	-.069	.258	0.472	0.132	1.9	1.1	1.8	1.1	A+	
1139	620023	8	264	.136	.136	.254	.349	.254	.008	.137	.137	-.037	.020	-.020	2.248	0.188	0.8	1.1	1.6	1.3	A+	
1140	617489	8	259	.772	.772	.120	.035	.066	.008	.420	.420	-.195	-.198	-.151	-1.252	0.162	-0.4	1.0	-1.0	0.9	B-	
1141	618543	8	269	.766	.045	.082	.766	.093	.015	.417	-.233	-.174	.417	-.100	-1.202	0.157	-0.7	0.9	-0.9	0.9	A+	
1142	618544	8	261	.322	.035	.464	.322	.176	.004	.284	-.229	-.185	.284	.060	0.959	0.143	1.5	1.1	1.5	1.2	A+	
1143	615810	8	268	.821	.041	.821	.060	.075	.004	.271	-.172	.271	-.186	-.077	-1.541	0.170	0.5	1.0	0.6	1.1	A-	
1144	618542	8	5825	.479	.086	.245	.185	.479	.006	.494	-.193	-.288	-.112	.494	0.274	0.029	-9.9	0.9	-9.9	0.9	C-	C-
1145	615914	8	260	.815	.815	.069	.046	.058	.012	.528	.528	-.233	-.243	-.157	-1.696	0.177	-2.0	0.8	-1.5	0.7	B+	
1146	620360	8	5825	.475	.288	.475	.129	.098	.010	.423	-.186	.423	-.186	-.107	0.288	0.029	-4.5	1.0	-3.0	1.0	A-	A-
1147	615916	8	259	.869	.869	.031	.066	.031	.004	.415	.415	-.220	-.160	-.226	-2.191	0.205	-0.5	0.9	-1.2	0.7	A+	
1148	615917	8	259	.618	.618	.108	.251	.023	.000	.410	.410	-.234	-.265	-.078	-0.448	0.140	0.1	1.0	-0.4	1.0	A-	
1149	615918	8	265	.374	.260	.117	.374	.249	.000	.313	-.087	-.215	.313	-.102	0.812	0.137	0.4	1.0	0.5	1.0	A+	
1150	620034	8	262	.679	.065	.679	.092	.153	.012	.353	-.230	.353	-.120	-.055	-0.784	0.147	0.9	1.1	1.4	1.2	A+	

Table B-4 (continued). Science Multiple-Choice Item Statistics

Ref	ID	FT Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
1151	615921	8	262	.668	.084	.668	.179	.053	.015	.447	-.195	.447	-.188	-.122	-0.731	0.147	-0.9	0.9	0.2	1.0	A+	
1152	620035	8	262	.370	.095	.370	.370	.157	.008	.349	-.255	.349	-.039	-.078	0.956	0.140	0.6	1.0	0.5	1.0	A-	
1153	615922	8	262	.782	.782	.015	.153	.042	.008	.184	.184	-.037	-.041	-.050	-1.225	0.162	2.0	1.2	3.0	1.5	A+	
1154	615905	8	262	.718	.042	.149	.080	.718	.012	.517	-.180	-.225	-.235	.517	-0.823	0.150	-2.1	0.9	-2.4	0.7	A+	
1155	615923	8	268	.567	.287	.056	.090	.567	.000	.444	-.245	-.167	-.248	.444	-0.054	0.134	-1.0	1.0	-0.8	0.9	A-	
1156	617493	8	268	.452	.220	.142	.452	.187	.000	.391	-.108	-.250	.391	-.161	0.501	0.134	-0.1	1.0	0.8	1.1	A-	
1157	615906	8	268	.780	.780	.090	.049	.078	.004	.254	.254	-.178	-.075	-.150	-1.243	0.159	0.9	1.1	0.5	1.1	A+	
1158	615829	8	268	.403	.187	.403	.164	.243	.004	.323	-.098	.323	-.269	-.035	0.727	0.136	1.2	1.1	0.9	1.1	B-	
1159	618545	8	268	.545	.235	.545	.105	.112	.004	.329	-.162	.329	-.286	-.006	0.041	0.134	1.1	1.1	0.9	1.1	A-	
1160	615805	8	268	.481	.090	.336	.090	.481	.004	.463	-.234	-.183	-.254	.463	0.346	0.134	-1.7	0.9	-1.0	0.9	A-	
1161	615806	8	288	.583	.038	.583	.056	.316	.007	.222	-.173	.222	-.159	-.027	-0.052	0.128	2.3	1.1	2.0	1.1	A+	
1162	615816	8	288	.424	.424	.038	.451	.080	.007	.328	.328	-.225	-.109	-.130	0.684	0.127	-0.1	1.0	-0.1	1.0	A-	
1163	617494	8	288	.420	.281	.420	.087	.208	.004	.277	-.079	.277	-.289	.010	0.704	0.127	1.2	1.1	0.6	1.0	B+	
1164	615924	8	288	.313	.125	.177	.382	.313	.004	.261	-.139	-.170	.027	.261	1.231	0.135	0.7	1.0	1.6	1.1	A+	
1165	615907	8	288	.715	.069	.715	.174	.038	.004	.426	-.208	.426	-.209	-.190	-0.706	0.138	-1.6	0.9	-1.9	0.8	A-	
1166	618546	8	288	.684	.038	.684	.146	.129	.004	.367	-.156	.367	-.116	-.227	-0.539	0.134	-0.8	1.0	-0.4	1.0	A-	
1167	615830	8	288	.611	.611	.212	.115	.059	.004	.291	.291	-.154	-.118	-.076	-0.177	0.129	0.8	1.0	1.0	1.1	A-	
1168	615818	8	263	.852	.852	.019	.057	.068	.004	.293	.293	-.063	-.160	-.143	-1.817	0.184	0.2	1.0	0.3	1.1	A+	
1169	615925	8	263	.589	.084	.126	.198	.589	.004	.472	-.184	-.245	-.194	.472	-0.216	0.136	-2.2	0.9	-2.3	0.8	A-	
1170	617495	8	263	.247	.247	.095	.468	.186	.004	.140	.140	-.213	.255	-.263	1.517	0.153	2.7	1.2	2.6	1.4	A-	
1171	618552	8	263	.422	.418	.422	.038	.114	.008	.340	-.212	.340	-.070	-.086	0.576	0.136	0.7	1.0	1.9	1.1	B-	
1172	618553	8	263	.601	.601	.076	.221	.095	.008	.415	.415	-.187	-.077	-.278	-0.256	0.141	-0.1	1.0	0.0	1.0	B+	
1173	615820	8	263	.582	.167	.099	.582	.145	.008	.455	-.236	-.106	.455	-.184	-0.158	0.140	-1.0	0.9	-1.3	0.9	B-	
1174	615808	8	263	.152	.388	.156	.152	.297	.008	.000	-.014	-.096	.000	.179	2.304	0.183	2.0	1.2	4.1	2.1	A-	
1175	617709	8	263	.312	.107	.179	.392	.312	.011	.156	-.100	.085	-.051	.156	1.235	0.147	3.7	1.3	3.2	1.4	A+	
1176	617732	8	525	.250	.250	.259	.320	.164	.008	.281	.281	-.216	-.013	.020	1.390	0.108	0.9	1.1	1.6	1.1	A-	
1177	620359	8	273	.476	.278	.476	.169	.073	.004	.405	-.211	.405	-.186	-.062	0.244	0.130	-1.0	1.0	-0.8	1.0	A-	
1178	615821	8	262	.317	.382	.317	.195	.099	.008	.240	.146	.240	-.209	-.252	0.923	0.144	2.2	1.1	1.8	1.2	A+	
1179	615823	8	260	.469	.231	.100	.469	.189	.012	.288	-.086	-.193	.288	-.056	0.205	0.136	1.8	1.1	1.4	1.1	A-	
1180	615899	8	259	.541	.131	.116	.541	.209	.004	.213	-.240	-.037	.213	.020	-0.018	0.136	3.3	1.2	3.2	1.2	A-	
1181	615824	8	259	.386	.209	.151	.386	.247	.008	.371	-.187	-.118	.371	-.075	0.720	0.139	0.1	1.0	-0.3	1.0	A+	
1182	615900	8	289	.301	.145	.301	.246	.301	.007	.317	-.009	.317	-.118	-.195	1.110	0.138	0.2	1.0	1.3	1.1	A+	
1183	617498	8	289	.433	.235	.433	.183	.145	.004	.076	-.011	.076	.018	-.087	0.450	0.129	5.4	1.3	5.6	1.4	A+	
1184	615825	8	289	.190	.052	.329	.190	.429	.000	.060	-.183	.034	.060	.002	1.808	0.159	1.7	1.2	4.9	1.9	B-	
1185	615812	8	289	.381	.125	.381	.080	.415	.000	.368	-.006	.368	-.230	-.232	0.704	0.131	0.1	1.0	0.0	1.0	A+	

Table B-4 (continued). Science Multiple-Choice Item Statistics

Ref	ID	FT Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
1186	615901	8	260	.312	.185	.312	.423	.077	.004	.001	-.097	.001	.121	-.006	1.053	0.144	4.9	1.3	5.4	1.6	A-	
1187	615813	8	260	.115	.096	.292	.115	.485	.012	.289	-.129	-.100	.289	.074	2.455	0.203	-0.4	0.9	-0.1	1.0	A-	
1188	615815	8	260	.300	.062	.289	.300	.346	.004	.440	-.121	-.273	.440	-.110	1.138	0.144	-1.5	0.9	-1.4	0.9	A-	
1189	618547	8	260	.323	.139	.208	.331	.323	.000	.467	-.184	-.327	-.048	.467	1.025	0.142	-1.6	0.9	-1.1	0.9	A-	
1190	617490	8	260	.685	.062	.158	.685	.089	.008	.410	-.251	-.227	.410	-.140	-0.775	0.146	-0.5	1.0	-0.5	1.0	A-	
1191	617491	8	261	.387	.387	.372	.153	.081	.008	.462	.462	-.211	-.198	-.097	0.617	0.138	-1.7	0.9	-1.6	0.9	A-	
1192	615817	8	524	.347	.168	.384	.099	.347	.002	.260	-.220	.044	-.172	.260	0.953	0.099	1.8	1.1	2.6	1.2	A+	
1193	615822	8	547	.309	.146	.227	.309	.313	.006	.285	-.157	-.230	.285	.077	1.188	0.100	0.4	1.0	1.2	1.1	A-	
1194	615819	8	264	.371	.371	.167	.133	.318	.011	.246	.246	-.074	-.290	.089	0.740	0.138	2.2	1.1	1.7	1.1	A-	
1195	615809	8	521	.123	.184	.438	.242	.123	.013	.103	-.084	.067	-.015	.103	2.401	0.142	1.1	1.1	2.8	1.5	A+	A+
1196	615919	8	262	.584	.584	.103	.034	.271	.008	.317	.317	-.227	-.123	-.042	-0.100	0.138	0.2	1.0	0.5	1.0	A-	
1197	615826	8	263	.468	.061	.179	.468	.289	.004	.334	-.143	-.219	.334	-.057	0.365	0.134	0.5	1.0	1.2	1.1	A+	
1198	615804	8	262	.473	.271	.199	.473	.050	.008	.452	-.157	-.228	.452	-.111	0.308	0.138	-1.3	0.9	-1.1	0.9	A-	
1199	617694	11	260	.177	.108	.150	.177	.546	.019	.115	-.078	-.179	.115	.232	1.924	0.174	1.1	1.1	3.9	1.8	A-	
1200	617693	11	260	.646	.115	.123	.100	.646	.015	.433	-.067	-.140	-.250	.433	-0.589	0.142	-1.0	0.9	-1.0	0.9	B-	
1201	617701	11	259	.259	.236	.290	.259	.205	.012	.041	.256	-.118	.041	-.072	1.383	0.153	3.1	1.2	4.5	1.6	A+	
1202	617702	11	259	.355	.390	.174	.355	.077	.004	.357	.005	-.368	.357	-.122	0.832	0.141	-0.2	1.0	0.2	1.0	A-	
1203	617704	11	265	.223	.155	.449	.223	.174	.000	.087	-.163	.072	.087	-.034	1.594	0.155	1.6	1.1	2.5	1.3	A-	
1204	617705	11	262	.275	.164	.374	.168	.275	.019	.209	-.113	.136	-.160	.209	1.300	0.150	2.1	1.2	1.8	1.2	A-	
1205	620380	11	262	.260	.218	.195	.321	.260	.008	.193	-.052	.046	-.075	.193	1.523	0.151	1.4	1.1	1.1	1.1	A+	
1206	617674	11	263	.137	.243	.369	.243	.137	.008	-.141	-.244	.330	.031	-.141	2.287	0.188	2.1	1.3	4.8	2.2	A+	
1207	617676	11	263	.437	.164	.160	.437	.232	.008	.118	.076	-.027	.118	-.089	0.513	0.136	5.5	1.3	4.9	1.4	A-	
1208	617677	11	264	.519	.250	.519	.117	.106	.008	.138	.016	.138	-.115	-.025	0.045	0.132	4.2	1.2	4.2	1.2	A-	
1209	617678	11	269	.290	.346	.201	.290	.156	.007	.332	-.141	-.129	.332	.027	1.228	0.143	-0.6	1.0	0.2	1.0	A-	
1210	617679	11	259	.533	.533	.043	.058	.359	.008	.110	.110	-.018	-.094	.022	0.063	0.136	5.7	1.3	5.1	1.4	A+	
1211	617680	11	260	.462	.169	.135	.462	.227	.008	.294	-.206	-.280	.294	.103	0.359	0.135	1.7	1.1	2.1	1.1	B-	
1212	617681	11	273	.330	.051	.330	.081	.535	.004	.293	-.263	.293	-.187	-.014	0.942	0.136	0.6	1.0	0.3	1.0	B-	
1213	617682	11	262	.183	.275	.199	.336	.183	.008	.242	-.248	.000	.089	.242	1.758	0.169	0.6	1.1	0.9	1.2	A-	
1214	617683	11	260	.515	.069	.135	.515	.277	.004	.259	-.043	-.024	.259	-.196	-0.016	0.133	2.0	1.1	1.5	1.1	A-	
1215	617695	11	260	.192	.192	.496	.219	.081	.012	.073	.073	.247	-.200	-.149	1.678	0.166	1.8	1.2	2.7	1.4	A+	
1216	617696	11	259	.313	.282	.282	.313	.120	.004	.353	-.072	-.137	.353	-.149	1.103	0.145	0.0	1.0	0.6	1.1	A-	
1217	617684	11	259	.533	.093	.533	.158	.209	.008	.416	-.211	.416	-.140	-.161	0.018	0.135	-0.7	1.0	-0.8	1.0	A+	
1218	617685	11	289	.727	.048	.727	.138	.083	.004	.556	-.245	.556	-.383	-.210	-1.003	0.141	-3.1	0.8	-3.0	0.7	A-	
1219	617697	11	289	.225	.332	.225	.208	.235	.000	.068	.084	.068	-.252	.081	1.541	0.149	2.3	1.2	3.0	1.4	A+	
1220	617689	11	289	.599	.170	.128	.599	.104	.000	.169	-.023	-.177	.169	-.048	-0.333	0.129	3.3	1.2	3.2	1.2	A+	

Table B-4 (continued). Science Multiple-Choice Item Statistics

Ref	ID	FT Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
1221	617686	11	260	.423	.423	.365	.073	.131	.008	.326	.326	-.034	-.113	-.275	0.496	0.136	0.0	1.0	0.6	1.0	A+	
1222	617698	11	260	.189	.189	.519	.173	.108	.012	.073	.073	.064	-.022	-.034	1.791	0.167	1.7	1.2	2.8	1.5	A-	
1223	617690	11	260	.408	.408	.258	.173	.150	.012	.306	.306	-.203	-.092	.053	0.552	0.136	1.3	1.1	0.7	1.1	A-	
1224	617699	11	260	.127	.227	.127	.481	.165	.000	.001	-.139	.001	.177	-.082	2.339	0.194	0.8	1.1	2.1	1.4	A-	
1225	617687	11	260	.173	.054	.173	.685	.089	.000	-.108	-.265	-.108	.265	-.079	1.941	0.171	1.9	1.2	3.6	1.6	A+	
1226	617691	11	260	.346	.127	.419	.346	.108	.000	.274	-.101	-.222	.274	.041	0.890	0.138	0.6	1.0	1.3	1.1	A+	
1227	617688	11	261	.452	.138	.452	.291	.111	.008	.146	-.023	.146	.003	-.144	0.291	0.134	4.3	1.2	3.8	1.2	A+	
1228	617692	11	261	.280	.126	.280	.479	.111	.004	.241	-.214	.241	.048	-.126	1.162	0.146	0.9	1.1	1.7	1.2	A-	
1229	617700	11	261	.559	.119	.153	.157	.559	.012	.537	-.249	-.202	-.224	.537	-0.215	0.135	-3.3	0.9	-3.5	0.8	A-	
1230	617613	11	260	.431	.239	.065	.254	.431	.012	.292	-.226	-.049	.050	.292	0.453	0.137	1.8	1.1	2.4	1.2	A+	
1231	617634	11	260	.242	.204	.242	.335	.192	.027	.145	.000	.145	.095	-.087	1.444	0.156	2.2	1.2	2.7	1.4	A+	
1232	617636	11	259	.313	.158	.313	.232	.293	.004	.195	-.114	.195	-.102	.038	1.075	0.145	2.5	1.2	3.2	1.3	A-	
1233	617614	11	259	.359	.359	.158	.185	.282	.015	.305	.305	-.081	-.129	-.027	0.826	0.141	0.1	1.0	0.5	1.0	A-	
1234	620645	11	259	.521	.201	.081	.521	.182	.015	.352	-.040	-.232	.352	-.109	0.012	0.137	1.2	1.1	1.1	1.1	A-	
1235	617615	11	259	.772	.043	.050	.772	.127	.008	.317	-.262	-.185	.317	-.080	-1.296	0.160	-0.1	1.0	-0.4	0.9	A-	
1236	617598	11	259	.270	.278	.209	.243	.270	.000	.215	-.109	.032	-.140	.215	1.304	0.151	1.3	1.1	1.4	1.2	A+	
1237	617637	11	259	.224	.166	.340	.266	.224	.004	.252	.092	-.198	-.091	.252	1.589	0.160	1.0	1.1	1.3	1.2	B+	
1238	617601	11	265	.491	.102	.491	.287	.121	.000	.200	-.109	.200	.005	-.212	0.240	0.132	2.3	1.1	2.0	1.1	A-	
1239	617617	11	265	.268	.268	.200	.287	.245	.000	.242	.242	-.129	-.075	-.051	1.322	0.146	0.3	1.0	1.3	1.1	A+	
1240	617638	11	265	.408	.140	.260	.408	.193	.000	.224	-.246	-.059	.224	.002	0.609	0.134	2.2	1.1	2.5	1.2	A+	
1241	617640	11	262	.206	.359	.206	.302	.122	.012	.061	.094	.061	-.056	.029	1.749	0.163	2.5	1.2	4.0	1.8	B-	
1242	617602	11	262	.389	.172	.122	.305	.389	.012	.485	-.145	-.227	-.117	.485	0.690	0.139	-2.5	0.9	-2.1	0.8	C-	
1243	617618	11	262	.454	.191	.225	.454	.118	.012	.254	.009	-.205	.254	.028	0.367	0.137	2.8	1.2	2.0	1.2	A+	
1244	617627	11	262	.695	.038	.221	.695	.034	.012	.252	-.081	-.076	.252	-.106	-0.674	0.146	1.4	1.1	2.6	1.3	A+	
1245	617603	11	262	.412	.149	.229	.195	.412	.015	.226	-.003	.004	-.140	.226	0.711	0.136	2.3	1.1	1.9	1.1	A-	
1246	617626	11	262	.248	.248	.103	.588	.050	.012	.133	.133	-.116	.095	-.075	1.590	0.153	2.1	1.2	2.8	1.4	A+	
1247	617604	11	268	.466	.105	.190	.239	.466	.000	.295	-.036	-.144	-.187	.295	0.417	0.133	1.5	1.1	1.6	1.1	A+	
1248	617628	11	268	.560	.157	.560	.164	.116	.004	.462	-.109	.462	-.311	-.217	-0.035	0.134	-1.4	0.9	-1.7	0.9	A-	
1249	617642	11	268	.231	.231	.332	.336	.097	.004	.115	.115	.013	.014	-.188	1.642	0.154	2.2	1.2	2.8	1.4	A+	
1250	617629	11	288	.306	.306	.281	.264	.142	.007	.044	.044	.055	-.006	-.032	1.255	0.135	3.1	1.2	4.0	1.3	A+	
1251	617605	11	288	.431	.250	.167	.431	.149	.004	.194	.003	.004	.194	-.210	0.652	0.126	2.4	1.1	2.4	1.1	A+	
1252	617643	11	288	.292	.417	.191	.097	.292	.004	.277	-.010	-.110	-.183	.277	1.330	0.136	0.2	1.0	0.3	1.0	A+	
1253	617646	11	263	.354	.297	.354	.110	.232	.008	.257	-.091	.257	-.130	-.051	0.894	0.138	1.4	1.1	2.0	1.2	A-	
1254	617606	11	263	.703	.019	.224	.703	.049	.004	.175	-.081	.009	.175	-.230	-0.784	0.144	2.4	1.2	1.7	1.2	B-	
1255	617633	11	263	.270	.236	.270	.350	.126	.019	.198	.081	.198	-.095	-.157	1.325	0.149	1.4	1.1	2.1	1.2	A+	

Table B-4 (continued). Science Multiple-Choice Item Statistics

Ref	ID	FT Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
1256	617607	11	263	.525	.160	.217	.525	.088	.011	.276	-.211	-.022	.276	-.040	0.117	0.136	2.3	1.1	2.7	1.2	A-	
1257	617647	11	263	.331	.126	.331	.376	.156	.011	.313	-.123	.313	.050	-.225	1.087	0.142	0.6	1.0	1.1	1.1	A-	
1258	617635	11	263	.278	.202	.278	.186	.316	.019	.127	-.023	.127	-.153	.163	1.377	0.149	2.3	1.2	3.5	1.4	A+	
1259	617608	11	264	.224	.163	.224	.538	.068	.008	.175	-.074	.175	-.051	.044	1.549	0.156	1.1	1.1	2.0	1.3	A-	
1260	617710	11	264	.375	.280	.375	.224	.114	.008	.164	.017	.164	-.071	-.082	0.718	0.136	3.0	1.2	3.1	1.2	A-	
1261	617639	11	264	.500	.110	.292	.500	.087	.011	.233	-.175	-.001	.233	-.093	0.123	0.132	2.7	1.1	2.3	1.1	A+	
1262	617641	11	269	.599	.130	.108	.599	.156	.007	.481	-.128	-.214	.481	-.234	-0.251	0.133	-2.9	0.9	-2.8	0.8	A+	
1263	620377	11	269	.126	.138	.476	.253	.126	.007	.071	-.052	.155	-.095	.071	2.377	0.191	0.9	1.1	2.6	1.6	B-	
1264	617609	11	269	.353	.149	.305	.353	.178	.015	.256	-.199	-.066	.256	.080	0.891	0.136	1.2	1.1	1.4	1.1	A+	
1265	620379	11	259	.359	.359	.205	.286	.139	.012	.355	.355	-.204	-.163	.090	0.905	0.141	0.2	1.0	0.3	1.0	A-	
1266	617644	11	259	.452	.452	.112	.270	.147	.019	.287	.287	-.110	.008	-.161	0.428	0.137	2.2	1.1	2.2	1.2	A+	
1267	617616	11	259	.375	.239	.236	.131	.375	.019	.407	-.131	-.133	-.089	.407	0.810	0.140	-0.7	1.0	-0.2	1.0	A-	
1268	617645	11	260	.442	.096	.442	.235	.223	.004	.274	-.155	.274	-.167	-.019	0.456	0.135	2.2	1.1	1.9	1.1	A+	
1269	617619	11	260	.669	.119	.669	.081	.127	.004	.257	.001	.257	-.093	-.253	-0.643	0.143	1.7	1.1	1.6	1.2	C-	
1270	617648	11	273	.143	.077	.143	.473	.300	.007	.109	-.065	.109	-.105	.125	2.132	0.179	0.6	1.1	2.0	1.4	A-	
1271	617620	11	273	.352	.352	.385	.106	.150	.007	.342	.342	-.094	-.104	-.174	0.822	0.135	-0.3	1.0	-0.5	1.0	A+	
1272	617621	11	262	.397	.168	.206	.214	.397	.015	.469	-.191	-.047	-.247	.469	0.487	0.139	-1.4	0.9	-1.2	0.9	A+	
1273	620376	11	262	.542	.153	.130	.157	.542	.019	.554	-.211	-.126	-.320	.554	-0.215	0.137	-3.4	0.8	-2.8	0.8	B+	
1274	617622	11	260	.339	.169	.265	.223	.339	.004	.320	-.164	-.045	-.115	.320	0.824	0.140	0.1	1.0	0.9	1.1	A+	
1275	620378	11	260	.350	.350	.219	.165	.254	.012	.344	.344	-.281	-.037	-.012	0.756	0.139	0.2	1.0	-0.4	1.0	A-	
1276	617623	11	259	.888	.888	.043	.035	.031	.004	.376	.376	-.199	-.148	-.172	-2.216	0.210	-0.4	0.9	-1.1	0.7	A+	
1277	617599	11	259	.409	.409	.189	.263	.131	.008	.324	.324	-.117	-.081	-.141	0.607	0.137	1.3	1.1	0.7	1.0	A+	
1278	617600	11	289	.315	.249	.315	.197	.235	.004	.217	-.046	.217	-.204	.001	1.016	0.135	1.6	1.1	2.4	1.2	A+	
1279	617624	11	289	.699	.699	.121	.031	.145	.004	.232	.232	-.250	-.169	.027	-0.848	0.137	1.3	1.1	2.5	1.2	B-	
1280	617610	11	260	.542	.250	.077	.542	.115	.015	.329	-.037	-.212	.329	-.152	-0.101	0.136	1.1	1.1	0.9	1.1	A+	
1281	617625	11	260	.192	.381	.235	.192	.173	.019	.095	.005	.031	.095	-.029	1.745	0.166	1.3	1.1	3.8	1.7	A-	
1282	617630	11	260	.523	.131	.215	.523	.131	.000	.377	-.181	-.246	.377	-.078	0.066	0.133	-0.5	1.0	-0.4	1.0	A-	
1283	617611	11	260	.239	.146	.292	.312	.239	.012	.046	-.165	.058	.048	.046	1.460	0.153	2.2	1.2	3.0	1.4	A-	
1284	617612	11	261	.364	.364	.226	.176	.230	.004	.318	.318	-.104	-.144	-.080	0.721	0.138	0.5	1.0	0.6	1.0	A+	
1285	617631	11	261	.322	.272	.322	.253	.146	.008	.199	.055	.199	-.071	-.175	0.929	0.142	2.0	1.1	2.4	1.2	A+	
1286	617675	11	268	.313	.164	.082	.440	.313	.000	.120	-.078	-.212	.063	.120	1.174	0.141	3.4	1.2	3.4	1.3	A+	
1287	619999	11	268	.224	.343	.224	.187	.243	.004	.299	-.155	.299	-.162	.041	1.691	0.156	0.3	1.0	0.7	1.1	A+	
1288	617649	11	288	.149	.743	.063	.149	.042	.004	.125	.077	-.062	.125	-.198	2.260	0.171	0.5	1.1	2.1	1.4	A-	
1289	620001	11	288	.740	.066	.108	.740	.083	.004	.402	-.135	-.222	.402	-.182	-0.827	0.141	-1.1	0.9	-1.6	0.9	A+	
1290	617650	11	263	.354	.354	.145	.297	.198	.008	.405	.405	-.089	-.137	-.202	0.894	0.138	-1.1	0.9	-1.2	0.9	B-	

Table B-4 (continued). Science Multiple-Choice Item Statistics

Ref	ID	FT Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
1291	617651	11	263	.449	.080	.126	.338	.449	.008	.185	-.104	-.247	.122	.185	0.476	0.136	4.1	1.2	3.1	1.2	B+	
1292	617652	11	264	.311	.367	.239	.072	.311	.011	.313	-.083	-.046	-.195	.313	1.041	0.142	0.3	1.0	0.2	1.0	A-	
1293	617653	11	269	.245	.175	.245	.257	.316	.007	.068	-.086	.068	.167	-.060	1.506	0.151	2.3	1.2	3.3	1.4	A-	
1294	617654	11	259	.135	.104	.170	.568	.135	.023	.082	-.047	-.167	.209	.082	2.340	0.191	1.1	1.1	2.9	1.7	A-	
1295	617655	11	260	.204	.523	.204	.069	.204	.000	.212	-.025	-.075	-.169	.212	1.765	0.163	0.1	1.0	2.8	1.5	B-	
1296	617670	11	260	.165	.189	.627	.165	.012	.008	.185	-.059	-.014	.185	-.207	2.039	0.176	0.5	1.1	2.3	1.4	B-	
1297	617671	11	273	.443	.125	.245	.183	.443	.004	.249	-.153	.028	-.163	.249	0.398	0.130	1.7	1.1	1.5	1.1	A+	
1298	617656	11	273	.260	.231	.260	.256	.245	.007	.112	-.047	.112	-.062	.048	1.309	0.146	2.0	1.1	2.8	1.3	A-	
1299	617663	11	262	.248	.248	.195	.126	.420	.012	.161	.161	-.242	-.282	.306	1.308	0.154	2.4	1.2	2.5	1.3	A-	
1300	617672	11	262	.699	.061	.699	.157	.073	.012	.412	-.104	.412	-.183	-.251	-1.015	0.148	-0.3	1.0	-0.7	0.9	A-	
1301	617673	11	260	.162	.162	.500	.131	.204	.004	-.093	-.093	.175	-.129	.030	1.918	0.177	2.1	1.2	5.0	2.1	A-	
1302	617664	11	260	.165	.108	.165	.223	.500	.004	-.119	-.117	-.119	-.078	.270	1.887	0.175	2.4	1.3	4.8	2.0	A-	
1303	617665	11	259	.390	.220	.108	.278	.390	.004	.212	-.093	-.174	.024	.212	0.724	0.138	2.7	1.2	2.8	1.2	A-	
1304	620000	11	259	.390	.058	.127	.417	.390	.008	.333	-.176	-.185	-.060	.333	0.721	0.138	0.5	1.0	0.7	1.1	C+	
1305	617657	11	259	.730	.054	.116	.093	.730	.008	.473	-.200	-.242	-.198	.473	-0.973	0.151	-1.8	0.9	-1.8	0.8	A-	
1306	617658	11	289	.412	.170	.412	.173	.246	.000	.422	-.086	.422	-.272	-.169	0.541	0.128	-1.4	0.9	-0.8	1.0	B-	
1307	617666	11	289	.495	.170	.159	.495	.177	.000	.255	-.233	-.157	.255	.046	0.153	0.127	2.1	1.1	2.4	1.1	A-	
1308	617659	11	260	.546	.131	.546	.204	.104	.015	.417	-.088	.417	-.321	-.020	-0.119	0.136	-0.8	1.0	-0.8	1.0	A-	
1309	617667	11	260	.696	.181	.696	.073	.035	.015	.453	-.269	.453	-.196	-.033	-0.878	0.147	-1.2	0.9	-0.9	0.9	A+	
1310	617668	11	260	.212	.008	.212	.273	.508	.000	.068	-.200	.068	-.071	.043	1.668	0.159	1.3	1.1	2.7	1.4	A-	
1311	617660	11	260	.396	.169	.215	.212	.396	.008	.426	-.168	-.125	-.211	.426	0.637	0.135	-1.4	0.9	-1.6	0.9	A+	
1312	617661	11	261	.211	.153	.192	.211	.441	.004	-.039	-.101	-.125	-.039	.247	1.581	0.160	2.7	1.3	4.4	1.7	B+	
1313	617669	11	261	.410	.341	.410	.126	.115	.008	.226	.067	.226	-.166	-.198	0.491	0.135	2.5	1.1	2.4	1.2	B-	
1314	616111	Bio	307	.730	.730	.088	.098	.072	.013	.422	.422	-.179	-.254	-.152	-0.558	0.137	-1.2	0.9	-2.0	0.8	A-	
1315	617013	Bio	311	.318	.203	.318	.405	.074	.000	.333	-.175	.333	-.072	-.189	1.482	0.128	-0.3	1.0	-0.4	1.0	A-	
1316	616112	Bio	307	.547	.547	.261	.101	.085	.007	.461	.461	-.245	-.140	-.203	0.269	0.122	-3.0	0.9	-3.0	0.9	C-	
1317	617004	Bio	4897	.391	.266	.083	.256	.391	.004	.350	-.077	-.123	-.196	.350	1.056	0.031	-3.0	1.0	-3.4	1.0	A+	A+
1318	616118	Bio	4897	.165	.467	.228	.135	.165	.005	.181	.198	-.165	-.218	.181	2.361	0.040	1.8	1.1	4.2	1.2	A+	A-
1319	617775	Bio	307	.202	.202	.427	.186	.179	.007	.079	.079	.121	-.147	-.019	2.040	0.150	1.5	1.1	1.9	1.3	A-	
1320	617776	Bio	300	.347	.490	.347	.080	.077	.007	.337	-.138	.337	-.124	-.083	1.351	0.129	0.1	1.0	0.0	1.0	A-	
1321	616126	Bio	312	.356	.154	.208	.279	.356	.003	.351	-.187	-.151	-.083	.351	1.179	0.124	-0.8	1.0	-1.0	1.0	A-	
1322	617016	Bio	312	.381	.160	.381	.231	.224	.003	.343	-.080	.343	-.134	-.190	1.058	0.122	-0.8	1.0	-0.7	1.0	A-	
1323	617014	Bio	312	.401	.266	.401	.247	.087	.000	.297	-.097	.297	-.122	-.178	0.974	0.121	0.0	1.0	0.0	1.0	A+	
1324	617570	Bio	312	.462	.045	.112	.462	.381	.000	.288	-.179	-.110	.288	-.148	0.703	0.119	0.1	1.0	0.2	1.0	A-	
1325	617777	Bio	312	.279	.279	.330	.337	.055	.000	.311	.311	-.134	-.041	-.250	1.571	0.131	-0.3	1.0	-0.3	1.0	A+	

Table B-4 (continued). Science Multiple-Choice Item Statistics

Ref	ID	FT Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
1326	617792	Bio	312	.324	.186	.324	.385	.103	.003	.150	-.055	.150	.012	-.172	1.335	0.126	1.6	1.1	2.2	1.2	A-	
1327	616113	Bio	306	.464	.154	.464	.226	.150	.007	.470	-.136	.470	-.183	-.201	0.730	0.121	-4.2	0.9	-4.0	0.8	A+	
1328	617778	Bio	306	.382	.304	.105	.199	.382	.010	.339	-.110	-.106	-.087	.339	1.100	0.124	-0.7	1.0	-0.8	1.0	A+	
1329	617015	Bio	306	.268	.144	.268	.324	.255	.010	.068	-.097	.068	-.075	.198	1.679	0.135	2.3	1.2	3.1	1.3	B-	
1330	617783	Bio	306	.340	.327	.144	.180	.340	.010	.455	-.097	-.084	-.244	.455	1.304	0.127	-2.7	0.9	-2.8	0.8	A+	
1331	617793	Bio	306	.363	.340	.167	.363	.118	.013	.191	.098	-.109	.191	-.147	1.190	0.125	1.7	1.1	2.7	1.2	A+	
1332	617571	Bio	306	.768	.768	.023	.085	.108	.016	.408	.408	-.096	-.209	-.146	-0.791	0.144	-0.9	0.9	-1.2	0.9	A+	
1333	617779	Bio	301	.352	.253	.352	.136	.256	.003	.215	-.186	.215	-.160	.108	1.247	0.128	1.8	1.1	1.9	1.1	B+	
1334	616114	Bio	301	.535	.153	.086	.535	.223	.003	.412	-.145	-.164	.412	-.225	0.404	0.122	-1.7	0.9	-2.0	0.9	A+	
1335	617800	Bio	301	.738	.073	.073	.738	.113	.003	.285	-.068	-.216	.285	-.118	-0.593	0.138	0.2	1.0	0.1	1.0	C+	
1336	617794	Bio	301	.282	.239	.332	.282	.143	.003	.178	-.131	.034	.178	-.076	1.609	0.135	1.5	1.1	2.7	1.2	A-	
1337	617572	Bio	301	.402	.402	.183	.206	.196	.013	.379	.379	-.196	-.144	-.074	0.990	0.125	-1.0	1.0	-0.4	1.0	A-	
1338	616128	Bio	301	.269	.080	.455	.186	.269	.010	.090	-.093	.078	-.078	.090	1.676	0.137	2.6	1.2	3.2	1.3	A-	
1339	617780	Bio	297	.512	.108	.155	.219	.512	.007	.379	-.174	-.272	-.044	.379	0.435	0.122	-1.4	1.0	-1.3	0.9	A+	
1340	617795	Bio	297	.391	.071	.330	.202	.391	.007	.340	-.145	-.072	-.198	.340	0.980	0.125	-0.5	1.0	-0.5	1.0	A-	
1341	617017	Bio	297	.300	.300	.229	.189	.280	.003	.168	.168	-.094	-.111	.057	1.438	0.133	1.6	1.1	2.1	1.2	A+	
1342	617765	Bio	297	.330	.222	.104	.333	.330	.010	.412	-.094	-.195	-.145	.412	1.271	0.130	-1.6	0.9	-1.5	0.9	A-	
1343	616115	Bio	297	.562	.098	.179	.152	.562	.010	.433	-.128	-.258	-.145	.433	0.202	0.123	-2.5	0.9	-2.6	0.9	A+	
1344	616129	Bio	297	.411	.323	.189	.411	.067	.010	.358	-.143	-.170	.358	-.065	0.884	0.124	-0.9	1.0	-0.8	1.0	A+	
1345	617781	Bio	308	.244	.149	.383	.244	.218	.007	.447	-.159	-.174	.447	-.066	1.696	0.138	-1.9	0.9	-2.3	0.8	A-	
1346	616130	Bio	308	.490	.490	.276	.094	.133	.007	.209	.209	-.034	-.075	-.146	0.494	0.119	1.8	1.1	1.7	1.1	A+	
1347	616116	Bio	308	.474	.205	.130	.474	.188	.003	.369	-.185	-.184	.369	-.069	0.590	0.119	-1.8	0.9	-1.6	0.9	A-	
1348	617018	Bio	308	.299	.224	.162	.299	.312	.003	.216	-.014	-.155	.216	-.034	1.395	0.130	0.7	1.0	0.9	1.1	A+	
1349	617766	Bio	308	.429	.318	.429	.097	.153	.003	.326	-.158	.326	-.137	-.074	0.777	0.120	-0.7	1.0	-0.5	1.0	A+	
1350	617797	Bio	308	.273	.114	.406	.201	.273	.007	.333	-.046	-.108	-.142	.333	1.530	0.133	-0.7	1.0	-0.8	0.9	A+	
1351	617006	Bio	311	.508	.360	.026	.106	.508	.000	.187	-.068	-.161	-.114	.187	0.568	0.119	2.9	1.1	2.0	1.1	B+	
1352	620046	Bio	311	.424	.196	.424	.145	.235	.000	.327	-.121	.327	-.219	-.086	0.941	0.121	-0.3	1.0	-0.2	1.0	A+	
1353	617344	Bio	311	.605	.084	.167	.145	.605	.000	.362	-.165	-.195	-.167	.362	0.136	0.121	-1.2	1.0	-0.7	1.0	A+	
1354	616117	Bio	311	.463	.228	.225	.084	.463	.000	.363	-.149	-.231	-.080	.363	0.768	0.120	-0.9	1.0	-1.0	1.0	A+	
1355	617798	Bio	311	.161	.389	.318	.129	.161	.003	.285	.018	-.195	-.070	.285	2.421	0.161	-0.4	1.0	0.8	1.1	A-	
1356	617782	Bio	311	.232	.093	.405	.264	.232	.006	.221	-.175	.094	-.187	.221	1.922	0.141	0.8	1.1	0.5	1.1	A+	
1357	617812	Bio	311	.399	.399	.132	.097	.367	.006	.276	.276	-.160	-.283	.019	1.047	0.122	0.9	1.0	0.7	1.0	A-	
1358	617799	Bio	307	.160	.111	.160	.505	.222	.003	.326	-.077	.326	-.081	-.131	2.462	0.163	-0.3	1.0	-0.1	1.0	A-	
1359	620042	Bio	307	.332	.332	.287	.248	.130	.003	.340	.340	-.238	-.172	.076	1.384	0.129	0.2	1.0	0.2	1.0	A-	
1360	617345	Bio	307	.580	.114	.160	.580	.147	.000	.391	-.163	-.212	.391	-.179	0.230	0.123	-1.1	1.0	-1.4	0.9	A-	

Table B-4 (continued). Science Multiple-Choice Item Statistics

Ref	ID	FT Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
1361	617768	Bio	307	.450	.192	.450	.166	.192	.000	.486	-.137	.486	-.261	-.229	0.824	0.122	-3.0	0.9	-3.0	0.9	A-	
1362	617005	Bio	307	.518	.189	.518	.176	.108	.010	.373	-.220	.373	-.093	-.173	0.491	0.122	-0.6	1.0	-0.6	1.0	A+	
1363	620043	Bio	298	.534	.141	.171	.151	.534	.003	.385	-.139	-.147	-.190	.385	0.414	0.122	-1.9	0.9	-1.5	0.9	B+	
1364	617007	Bio	298	.473	.168	.473	.148	.208	.003	.299	-.155	.299	-.099	-.088	0.681	0.122	0.3	1.0	-0.1	1.0	A-	
1365	616119	Bio	298	.352	.352	.094	.208	.342	.003	.338	.338	-.185	-.173	-.036	1.234	0.127	-0.8	1.0	-0.5	1.0	A-	
1366	617769	Bio	298	.443	.443	.248	.104	.201	.003	.361	.361	-.137	-.188	-.106	0.815	0.122	-1.2	1.0	-1.1	1.0	A+	
1367	617346	Bio	298	.349	.379	.185	.349	.081	.007	.269	.029	-.239	.269	-.110	1.241	0.128	0.5	1.0	0.4	1.0	A-	
1368	617784	Bio	298	.487	.198	.138	.171	.487	.007	.465	-.212	-.102	-.247	.465	0.611	0.122	-3.8	0.9	-3.6	0.9	A+	
1369	617770	Bio	313	.805	.070	.029	.805	.090	.006	.426	-.228	-.179	.426	-.165	-0.989	0.149	-1.1	0.9	-1.9	0.8	A-	
1370	617347	Bio	313	.697	.150	.697	.080	.064	.010	.290	-.090	.290	-.194	-.065	-0.356	0.130	0.0	1.0	1.1	1.1	A+	
1371	617801	Bio	313	.348	.185	.329	.131	.348	.006	.291	-.140	-.053	-.076	.291	1.280	0.125	0.2	1.0	0.3	1.0	B+	
1372	617008	Bio	313	.240	.182	.284	.240	.281	.013	.282	.003	-.085	.282	-.100	1.851	0.138	-0.2	1.0	0.3	1.0	A+	
1373	617785	Bio	313	.220	.371	.166	.230	.220	.013	.224	.099	-.184	-.080	.224	1.969	0.142	0.4	1.0	0.8	1.1	A+	
1374	620044	Bio	313	.316	.307	.316	.265	.102	.010	.165	-.134	.165	.055	-.002	1.437	0.128	2.1	1.1	2.0	1.1	A-	
1375	616120	Bio	313	.157	.173	.508	.150	.157	.013	.091	-.065	.156	-.135	.091	2.425	0.161	0.9	1.1	2.0	1.3	A-	
1376	617802	Bio	317	.653	.085	.164	.653	.098	.000	.432	-.136	-.296	.432	-.197	-0.203	0.126	-1.5	0.9	-1.7	0.9	A-	
1377	617786	Bio	317	.060	.524	.060	.221	.186	.010	.120	.146	.120	-.162	-.026	3.731	0.261	-0.1	1.0	0.5	1.1	A-	
1378	617348	Bio	317	.448	.249	.180	.114	.448	.010	.362	-.016	-.233	-.176	.362	0.772	0.121	-0.7	1.0	2.3	1.1	A-	
1379	620045	Bio	317	.786	.786	.028	.142	.035	.010	.315	.315	-.079	-.198	-.096	-0.971	0.147	0.2	1.0	0.3	1.0	B+	
1380	616121	Bio	317	.820	.820	.025	.110	.038	.006	.471	.471	-.164	-.305	-.181	-1.238	0.158	-1.3	0.9	-1.7	0.8	A-	
1381	617009	Bio	317	.177	.151	.177	.416	.246	.010	.088	-.180	.088	.092	.021	2.269	0.155	1.2	1.1	2.5	1.4	A-	
1382	617771	Bio	317	.754	.044	.754	.073	.120	.010	.511	-.132	.511	-.273	-.303	-0.771	0.140	-2.2	0.9	-2.8	0.7	A+	
1383	616122	Bio	311	.312	.161	.161	.312	.360	.006	.162	-.054	.079	.162	-.098	1.424	0.128	1.6	1.1	2.4	1.2	A+	
1384	617787	Bio	311	.106	.453	.106	.119	.315	.006	.086	.222	.086	-.096	-.148	2.873	0.190	0.5	1.1	1.9	1.4	A+	
1385	617803	Bio	311	.457	.209	.190	.457	.138	.006	.473	-.179	-.234	.473	-.098	0.742	0.120	-4.1	0.9	-3.8	0.8	A-	
1386	617010	Bio	311	.306	.248	.306	.167	.273	.006	.157	.068	.157	-.243	.060	1.457	0.129	2.0	1.1	1.5	1.1	A-	
1387	617772	Bio	311	.640	.640	.100	.084	.170	.006	.382	.382	-.071	-.182	-.197	-0.090	0.124	-1.4	0.9	-1.1	0.9	A-	
1388	617011	Bio	300	.183	.297	.400	.113	.183	.007	.075	-.030	.059	-.026	.075	2.270	0.156	1.4	1.1	2.5	1.4	A-	
1389	617788	Bio	300	.137	.280	.273	.137	.300	.010	.028	-.205	.054	.028	.206	2.646	0.174	1.2	1.1	2.9	1.6	A-	
1390	617773	Bio	300	.280	.067	.417	.230	.280	.007	.254	-.066	-.150	.031	.254	1.662	0.136	0.8	1.1	0.7	1.1	A-	
1391	616123	Bio	300	.473	.473	.377	.063	.077	.010	.384	.384	-.120	-.216	-.128	0.714	0.123	-1.4	1.0	-0.5	1.0	C-	
1392	617804	Bio	300	.140	.140	.387	.310	.153	.010	-.048	-.048	.097	.065	-.038	2.618	0.173	1.8	1.2	3.2	1.6	B-	
1393	616124	Bio	298	.342	.369	.232	.342	.054	.003	.321	-.117	-.118	.321	-.167	1.292	0.129	-0.4	1.0	-0.1	1.0	B+	
1394	617790	Bio	298	.312	.312	.309	.245	.131	.003	.344	.344	-.255	-.071	-.008	1.444	0.132	-0.5	1.0	0.3	1.0	A-	
1395	617012	Bio	298	.309	.185	.064	.309	.436	.007	.302	-.157	-.110	.302	-.071	1.456	0.132	0.0	1.0	1.0	1.1	A+	

Table B-4 (continued). Science Multiple-Choice Item Statistics

Ref	ID	FT Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
1396	617568	Bio	298	.802	.030	.094	.802	.067	.007	.398	-.180	-.192	.398	-.218	-0.991	0.152	-1.0	0.9	-1.4	0.8	A+	
1397	617774	Bio	298	.309	.309	.547	.060	.077	.007	.194	.194	-.033	-.076	-.143	1.456	0.132	1.6	1.1	1.6	1.1	A+	
1398	617791	Bio	311	.219	.219	.177	.306	.299	.000	.146	.146	-.091	.017	-.073	2.045	0.143	1.2	1.1	1.7	1.2	B+	
1399	616125	Bio	311	.289	.206	.154	.351	.289	.000	.092	-.059	-.036	-.011	.092	1.633	0.131	2.3	1.1	3.0	1.3	A+	
1400	617569	Bio	311	.679	.064	.051	.679	.203	.003	.390	-.252	-.066	.390	-.251	-0.200	0.127	-1.2	0.9	-1.0	0.9	A-	
1401	617789	Bio	311	.605	.605	.209	.145	.035	.006	.421	.421	-.304	-.166	-.099	0.148	0.122	-2.0	0.9	-1.8	0.9	A-	
1402	617377	Bio	307	.775	.775	.062	.114	.042	.007	.357	.357	-.222	-.156	-.115	-0.918	0.145	-0.2	1.0	-0.5	0.9	A+	
1403	617839	Bio	301	.734	.040	.130	.734	.093	.003	.405	-.212	-.193	.405	-.202	-0.574	0.137	-1.3	0.9	-1.6	0.9	A-	
1404	617349	Bio	311	.688	.119	.035	.688	.151	.006	.389	-.223	-.113	.389	-.139	-0.329	0.129	-1.3	0.9	-1.2	0.9	A+	
1405	617836	Bio	307	.492	.085	.267	.150	.492	.007	.444	-.196	-.203	-.147	.444	0.524	0.122	-3.9	0.9	-3.3	0.8	A+	
1406	617464	Bio	307	.300	.300	.368	.186	.140	.007	.228	.228	.004	-.141	-.099	1.444	0.132	1.3	1.1	1.0	1.1	A+	
1407	617361	Bio	4897	.204	.095	.396	.204	.298	.008	.179	-.154	-.006	.179	.000	2.067	0.037	2.8	1.1	5.8	1.2	A-	A+
1408	617465	Bio	300	.277	.277	.053	.203	.460	.007	.135	.135	-.068	-.006	-.013	1.723	0.137	2.1	1.1	2.7	1.3	A-	
1409	617368	Bio	312	.253	.135	.295	.317	.253	.000	.146	-.225	.027	.002	.146	1.714	0.135	1.4	1.1	1.0	1.1	B+	
1410	617353	Bio	312	.561	.561	.180	.144	.112	.003	.304	.304	-.199	-.161	-.048	0.261	0.119	-0.3	1.0	-0.5	1.0	A+	
1411	617807	Bio	312	.494	.180	.189	.494	.138	.000	.327	-.159	-.180	.327	-.092	0.562	0.118	-0.6	1.0	-0.9	1.0	A+	
1412	617837	Bio	312	.760	.016	.760	.064	.160	.000	.242	-.096	.242	-.197	-.118	-0.707	0.136	-0.2	1.0	0.8	1.1	A+	
1413	620062	Bio	312	.359	.391	.160	.359	.090	.000	.276	-.093	-.110	.276	-.164	1.168	0.123	0.3	1.0	0.2	1.0	A-	
1414	617822	Bio	312	.481	.109	.481	.250	.160	.000	.337	-.092	.337	-.265	-.068	0.618	0.118	-0.8	1.0	-1.1	1.0	A-	
1415	617369	Bio	306	.333	.150	.147	.363	.333	.007	.229	-.005	-.088	-.080	.229	1.338	0.127	1.1	1.1	0.8	1.1	A-	
1416	620063	Bio	306	.343	.088	.343	.386	.177	.007	.387	-.157	.387	-.125	-.110	1.290	0.126	-1.6	0.9	-1.4	0.9	B-	
1417	617838	Bio	306	.637	.170	.062	.118	.637	.013	.413	-.107	-.168	-.213	.413	-0.069	0.126	-1.7	0.9	-1.8	0.9	A+	
1418	617808	Bio	306	.438	.438	.190	.137	.226	.010	.365	.365	-.197	-.134	-.026	0.844	0.121	-1.3	1.0	-1.0	1.0	A-	
1419	617823	Bio	306	.425	.206	.425	.203	.157	.010	.446	-.114	.446	-.250	-.075	0.904	0.122	-3.0	0.9	-3.0	0.9	A+	
1420	617354	Bio	306	.350	.134	.252	.255	.350	.010	.304	-.037	-.052	-.144	.304	1.256	0.126	-0.1	1.0	-0.1	1.0	A-	
1421	617355	Bio	301	.332	.143	.332	.269	.256	.000	.146	.072	.146	-.087	-.127	1.349	0.129	2.4	1.1	3.2	1.2	A-	
1422	620367	Bio	301	.568	.568	.156	.166	.110	.000	.418	.418	-.281	-.203	-.095	0.258	0.123	-2.5	0.9	-2.0	0.9	A-	
1423	617370	Bio	301	.495	.136	.156	.209	.495	.003	.494	-.170	-.161	-.287	.494	0.584	0.122	-3.6	0.9	-3.3	0.8	A+	
1424	617809	Bio	301	.372	.372	.203	.106	.312	.007	.188	.188	-.079	-.188	.040	1.146	0.126	2.7	1.1	2.1	1.1	A+	
1425	617825	Bio	301	.395	.106	.395	.269	.219	.010	.431	-.145	.431	-.184	-.148	1.029	0.125	-1.9	0.9	-1.7	0.9	A-	
1426	617810	Bio	297	.461	.259	.461	.165	.111	.003	.327	-.141	.327	-.097	-.145	0.668	0.123	-0.3	1.0	-0.6	1.0	A+	
1427	617840	Bio	297	.317	.175	.283	.317	.222	.003	.102	.037	-.138	.102	.049	1.350	0.131	2.7	1.2	2.6	1.2	C-	
1428	617815	Bio	297	.519	.519	.077	.155	.246	.003	.408	.408	-.241	-.155	-.147	0.414	0.122	-2.2	0.9	-2.3	0.9	A+	
1429	617371	Bio	297	.280	.253	.185	.280	.280	.003	.106	.075	-.236	.106	.071	1.546	0.136	2.2	1.1	2.5	1.2	A-	
1430	617826	Bio	297	.340	.242	.340	.306	.104	.007	.261	-.085	.261	-.123	-.035	1.223	0.129	0.5	1.0	1.1	1.1	A-	

Table B-4 (continued). Science Multiple-Choice Item Statistics

Ref	ID	FT Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
1431	620369	Bio	297	.471	.148	.313	.471	.061	.007	.386	-.172	-.194	.386	-.090	0.613	0.123	-1.5	1.0	-1.7	0.9	A-	
1432	620370	Bio	308	.494	.120	.341	.494	.042	.003	.228	-.031	-.143	.228	-.078	0.504	0.119	1.2	1.0	1.4	1.1	A-	
1433	617811	Bio	308	.536	.169	.114	.179	.536	.003	.376	-.215	-.104	-.139	.376	0.304	0.120	-1.7	0.9	-1.7	0.9	A-	
1434	617357	Bio	308	.354	.354	.146	.146	.347	.007	.393	.393	-.138	-.190	-.106	1.116	0.124	-1.7	0.9	-1.7	0.9	A-	
1435	617841	Bio	308	.838	.049	.055	.838	.055	.003	.332	-.203	-.097	.332	-.158	-1.331	0.161	-0.4	1.0	-0.8	0.9	A+	
1436	617827	Bio	308	.195	.367	.195	.208	.227	.003	.044	.004	.044	-.076	.078	2.005	0.149	1.5	1.1	1.8	1.2	A-	
1437	617832	Bio	308	.253	.042	.253	.584	.117	.003	.167	-.136	.167	-.059	.014	1.642	0.136	0.9	1.1	1.3	1.1	B-	
1438	617358	Bio	311	.209	.125	.151	.515	.209	.000	.105	-.073	.069	-.087	.105	2.075	0.146	1.5	1.1	2.1	1.2	A+	
1439	618573	Bio	311	.248	.145	.042	.566	.248	.000	.121	-.071	-.182	.019	.121	1.834	0.138	1.7	1.1	2.1	1.2	A+	
1440	617372	Bio	311	.177	.219	.177	.129	.476	.000	.152	-.020	-.152	-.082	-.045	2.301	0.155	0.5	1.0	2.5	1.4	A-	
1441	620371	Bio	311	.756	.756	.061	.061	.122	.000	.396	.396	-.171	-.202	-.247	-0.631	0.137	-1.4	0.9	-1.2	0.9	B-	
1442	617828	Bio	311	.334	.222	.138	.334	.299	.006	.265	-.058	-.157	.265	-.088	1.356	0.127	0.6	1.0	1.1	1.1	A+	
1443	617373	Bio	311	.354	.122	.347	.354	.170	.006	.338	-.132	-.129	.338	-.135	1.261	0.125	-0.3	1.0	-0.4	1.0	A+	
1444	617813	Bio	307	.391	.163	.117	.329	.391	.000	.415	-.242	-.067	-.195	.415	1.098	0.125	-1.1	1.0	-1.2	0.9	A+	
1445	617359	Bio	307	.121	.186	.257	.437	.121	.000	.174	.120	-.082	-.137	.174	2.822	0.182	0.4	1.0	1.7	1.3	A-	
1446	617374	Bio	307	.287	.287	.316	.195	.195	.007	.284	.284	-.041	-.170	-.072	1.623	0.134	0.8	1.1	0.6	1.1	A-	
1447	617829	Bio	307	.518	.173	.209	.518	.095	.007	.443	-.246	-.220	.443	-.088	0.502	0.122	-2.1	0.9	-1.7	0.9	B-	
1448	617830	Bio	298	.611	.611	.218	.104	.057	.010	.301	.301	-.094	-.177	-.115	0.052	0.125	0.1	1.0	-0.1	1.0	A+	
1449	617375	Bio	298	.178	.178	.027	.178	.611	.007	.268	.268	-.137	-.194	.028	2.237	0.158	-0.2	1.0	0.4	1.1	B-	
1450	617360	Bio	298	.440	.188	.175	.440	.191	.007	.107	-.145	-.054	.107	.111	0.820	0.123	3.8	1.1	4.1	1.2	A+	
1451	617814	Bio	298	.329	.178	.218	.329	.265	.010	.171	-.018	-.119	.171	-.018	1.332	0.129	1.7	1.1	1.7	1.1	A-	
1452	617362	Bio	313	.326	.329	.326	.029	.310	.006	.187	-.101	.187	-.042	-.033	1.383	0.127	1.4	1.1	2.5	1.2	A-	
1453	617376	Bio	313	.451	.451	.192	.300	.054	.003	.204	.204	-.228	.089	-.147	0.807	0.120	2.2	1.1	2.3	1.1	A+	
1454	617831	Bio	313	.575	.115	.575	.144	.160	.006	.375	-.239	.375	-.229	.012	0.245	0.121	-1.3	1.0	-1.1	0.9	A+	
1455	620060	Bio	317	.423	.082	.300	.423	.186	.010	.278	-.159	-.144	.278	-.015	0.869	0.122	1.5	1.1	1.6	1.1	A-	
1456	617816	Bio	317	.659	.155	.659	.095	.082	.010	.424	-.164	.424	-.291	-.122	-0.238	0.127	-1.3	0.9	-1.5	0.9	A-	
1457	617463	Bio	317	.543	.044	.290	.543	.117	.006	.394	-.183	-.138	.394	-.222	0.354	0.121	-1.3	1.0	-1.1	0.9	A-	
1458	617363	Bio	317	.476	.177	.476	.202	.136	.010	.412	-.142	.412	-.166	-.178	0.637	0.121	-1.6	0.9	-1.0	1.0	C+	
1459	617817	Bio	311	.457	.457	.199	.183	.154	.006	.381	.381	-.139	-.089	-.172	0.742	0.120	-1.8	0.9	-1.8	0.9	A-	
1460	617833	Bio	311	.232	.232	.566	.093	.103	.006	.223	.223	.131	-.184	-.225	1.871	0.140	0.4	1.0	0.7	1.1	A+	
1461	617364	Bio	311	.228	.338	.315	.228	.113	.006	.260	-.083	-.089	.260	.028	1.891	0.141	0.1	1.0	0.1	1.0	A+	
1462	617466	Bio	311	.235	.135	.232	.392	.235	.006	.213	-.084	-.037	-.018	.213	1.851	0.139	0.5	1.0	1.2	1.1	A-	
1463	617834	Bio	300	.200	.213	.287	.200	.293	.007	.261	.070	-.210	.261	-.004	2.152	0.151	-0.1	1.0	0.5	1.1	A-	
1464	617467	Bio	300	.370	.080	.057	.370	.483	.010	.218	.020	-.108	.218	-.078	1.196	0.127	1.8	1.1	2.1	1.1	A-	
1465	617350	Bio	300	.290	.380	.057	.260	.290	.013	.395	-.140	-.212	-.043	.395	1.597	0.135	-1.3	0.9	-1.1	0.9	B-	

Table B-4 (continued). Science Multiple-Choice Item Statistics

Ref	ID	FT Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
1466	617365	Bio	300	.413	.170	.310	.413	.097	.010	.238	-.149	.053	.238	-.132	0.990	0.125	1.7	1.1	2.6	1.2	A-	
1467	617819	Bio	300	.630	.043	.200	.630	.117	.010	.361	-.057	-.193	.361	-.120	-0.012	0.127	-0.3	1.0	-0.8	1.0	A+	
1468	620059	Bio	300	.370	.233	.370	.200	.180	.017	.361	-.177	.361	-.098	-.035	1.180	0.127	-0.8	1.0	-0.3	1.0	A+	
1469	617366	Bio	298	.252	.302	.235	.252	.211	.000	.194	-.260	-.055	.194	.142	1.796	0.141	0.8	1.1	1.3	1.1	A-	
1470	617835	Bio	298	.426	.151	.339	.426	.081	.003	.387	-.169	-.189	.387	-.121	0.904	0.124	-1.5	0.9	-1.6	0.9	A-	
1471	617805	Bio	298	.305	.305	.235	.225	.232	.003	.363	.363	-.134	-.150	-.093	1.479	0.132	-0.5	1.0	-0.9	0.9	A-	
1472	617820	Bio	298	.557	.228	.557	.151	.057	.007	.340	-.093	.340	-.200	-.179	0.301	0.123	-0.3	1.0	-0.6	1.0	A-	
1473	617351	Bio	298	.386	.175	.232	.201	.386	.007	.492	-.209	-.148	-.201	.492	1.075	0.126	-3.0	0.9	-3.1	0.8	B-	
1474	617367	Bio	311	.293	.293	.370	.203	.135	.000	.110	.110	.099	-.180	-.076	1.616	0.131	2.4	1.1	2.3	1.2	A-	
1475	617806	Bio	311	.659	.659	.055	.209	.077	.000	.440	.440	-.213	-.296	-.150	-0.095	0.125	-2.2	0.9	-2.4	0.9	A-	
1476	617352	Bio	311	.637	.035	.228	.100	.637	.000	.354	-.231	-.118	-.260	.354	0.013	0.124	-0.8	1.0	-0.8	1.0	A-	
1477	620061	Bio	311	.486	.486	.154	.248	.109	.003	.323	.323	-.080	-.254	-.057	0.695	0.120	0.0	1.0	0.1	1.0	B+	
1478	617821	Bio	311	.264	.264	.306	.164	.261	.006	.202	.202	-.029	-.047	-.125	1.767	0.135	0.9	1.1	1.7	1.2	A+	
1479	617401	Bio	4897	.507	.141	.266	.507	.082	.004	.414	-.129	-.259	.414	-.104	0.526	0.030	-8.6	0.9	-8.1	0.9	A+	A+
1480	617395	Bio	313	.329	.329	.278	.284	.099	.010	.204	.204	.004	-.170	.060	1.372	0.126	1.3	1.1	1.7	1.1	B-	
1481	617394	Bio	298	.554	.104	.178	.158	.554	.007	.335	-.102	-.161	-.149	.335	0.313	0.122	-0.8	1.0	-1.0	1.0	B+	
1482	617414	Bio	301	.452	.060	.452	.233	.253	.003	.121	-.192	.121	-.128	.123	0.779	0.123	4.4	1.2	3.7	1.2	A+	
1483	617880	Bio	307	.538	.538	.179	.143	.134	.007	.352	.352	-.130	-.247	-.077	0.412	0.122	-0.1	1.0	-0.3	1.0	A-	
1484	617418	Bio	307	.218	.218	.293	.127	.352	.010	.208	.208	-.065	-.079	-.018	1.920	0.146	0.5	1.0	0.6	1.1	A-	
1485	617890	Bio	307	.238	.176	.306	.277	.238	.003	.327	-.043	-.177	-.049	.327	1.808	0.141	-0.8	0.9	-0.5	1.0	A-	
1486	617885	Bio	4897	.282	.222	.311	.179	.282	.007	.268	-.058	-.029	-.156	.268	1.596	0.033	1.6	1.0	2.0	1.0	A+	A-
1487	617873	Bio	307	.570	.081	.222	.570	.121	.007	.399	-.064	-.284	.399	-.121	0.164	0.123	-1.6	0.9	-1.2	0.9	B+	
1488	617386	Bio	4897	.246	.370	.127	.249	.246	.009	.333	-.108	-.093	-.082	.333	1.802	0.035	-2.2	1.0	-1.0	1.0	A+	A-
1489	617403	Bio	300	.520	.080	.520	.273	.120	.007	.388	-.196	.388	-.142	-.126	0.535	0.123	-1.2	1.0	-0.9	1.0	A+	
1490	617397	Bio	300	.377	.217	.263	.137	.377	.007	.402	-.120	-.131	-.150	.402	1.202	0.127	-1.7	0.9	-1.8	0.9	B+	
1491	617419	Bio	300	.183	.150	.183	.300	.357	.010	-.048	-.132	-.048	.080	.134	2.316	0.157	2.8	1.3	2.8	1.4	A-	
1492	617384	Bio	300	.300	.197	.300	.283	.213	.007	.286	-.054	.286	-.123	-.044	1.594	0.134	0.4	1.0	1.8	1.2	A-	
1493	617402	Bio	300	.393	.060	.183	.393	.353	.010	.202	-.138	-.041	.202	-.019	1.121	0.126	2.2	1.1	1.8	1.1	A-	
1494	617874	Bio	300	.203	.283	.193	.313	.203	.007	.306	.046	-.152	-.103	.306	2.178	0.151	-0.1	1.0	-0.2	1.0	A+	
1495	617856	Bio	300	.293	.210	.293	.380	.110	.007	.225	.000	.225	-.005	-.203	1.630	0.135	0.9	1.1	1.2	1.1	A-	
1496	617420	Bio	312	.571	.074	.571	.192	.157	.006	.357	-.123	.357	-.327	-.051	0.206	0.120	-1.5	1.0	-1.5	0.9	A+	
1497	617387	Bio	312	.542	.112	.170	.542	.176	.000	.388	-.239	-.178	.388	-.134	0.352	0.118	-2.0	0.9	-2.2	0.9	A-	
1498	617892	Bio	312	.305	.147	.317	.231	.305	.000	.411	-.141	-.131	-.186	.411	1.436	0.128	-1.4	0.9	-1.8	0.9	A-	
1499	617859	Bio	312	.462	.462	.039	.263	.234	.003	.139	.139	-.066	-.130	-.004	0.694	0.119	2.9	1.1	3.0	1.1	B+	
1500	617413	Bio	312	.301	.218	.301	.324	.154	.003	.135	-.009	.135	-.090	-.030	1.451	0.129	1.8	1.1	1.8	1.1	A-	

Table B-4 (continued). Science Multiple-Choice Item Statistics

Ref	ID	FT Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
1501	617404	Bio	312	.590	.061	.115	.590	.234	.000	.223	-.139	-.229	.223	-.008	0.140	0.120	1.0	1.0	1.2	1.1	A-	
1502	617875	Bio	312	.183	.231	.183	.442	.144	.000	.119	-.051	.119	.003	-.074	2.164	0.152	0.8	1.1	1.7	1.2	A-	
1503	617388	Bio	306	.340	.193	.183	.340	.278	.007	.100	-.104	-.134	.100	.184	1.306	0.127	2.8	1.1	2.8	1.2	A-	
1504	617860	Bio	306	.614	.239	.092	.614	.049	.007	.347	-.140	-.208	.347	-.059	0.054	0.123	-0.6	1.0	-0.7	1.0	B+	
1505	617842	Bio	306	.431	.154	.320	.431	.082	.013	.094	.047	.010	.094	-.071	0.869	0.122	4.5	1.2	4.1	1.2	A-	
1506	617405	Bio	306	.216	.141	.242	.389	.216	.013	.281	-.021	-.054	-.074	.281	1.988	0.145	-0.3	1.0	0.0	1.0	A-	
1507	617845	Bio	306	.235	.180	.294	.281	.235	.010	.088	-.071	.024	.058	.088	1.869	0.140	1.9	1.2	1.9	1.2	A-	
1508	617421	Bio	306	.088	.196	.477	.226	.088	.013	.032	-.111	.217	-.051	.032	3.102	0.206	0.6	1.1	1.6	1.4	A-	
1509	617876	Bio	306	.350	.343	.118	.350	.177	.013	.132	.141	-.204	.132	-.032	1.253	0.126	2.8	1.1	2.6	1.2	A+	
1510	617861	Bio	301	.362	.150	.160	.329	.362	.000	.402	-.160	-.182	-.149	.402	1.201	0.127	-1.5	0.9	-1.3	0.9	A+	
1511	617422	Bio	301	.419	.419	.216	.239	.120	.007	.322	.322	-.181	-.099	-.070	0.926	0.124	0.5	1.0	0.1	1.0	A+	
1512	617843	Bio	301	.332	.455	.080	.130	.332	.003	.324	-.204	.054	-.154	.324	1.347	0.129	-0.2	1.0	0.4	1.0	A-	
1513	617389	Bio	301	.365	.249	.123	.253	.365	.010	.389	-.137	-.130	-.142	.389	1.173	0.127	-0.9	1.0	-0.9	1.0	A-	
1514	617406	Bio	301	.356	.163	.166	.306	.356	.010	.393	-.156	-.131	-.128	.393	1.221	0.128	-0.9	1.0	-1.2	0.9	A+	
1515	617390	Bio	297	.306	.091	.205	.394	.306	.003	.270	-.170	-.106	-.027	.270	1.403	0.132	0.3	1.0	0.9	1.1	A-	
1516	617844	Bio	297	.343	.185	.414	.343	.054	.003	.284	-.023	-.181	.284	-.074	1.216	0.128	0.4	1.0	0.5	1.0	B-	
1517	617878	Bio	297	.468	.094	.162	.468	.269	.007	.383	-.224	-.211	.383	-.051	0.635	0.123	-1.6	1.0	-1.4	0.9	A-	
1518	617851	Bio	297	.253	.239	.263	.239	.253	.007	.344	-.197	.035	-.143	.344	1.690	0.140	-0.6	1.0	-0.7	0.9	A+	
1519	617407	Bio	297	.482	.182	.236	.482	.091	.010	.262	.014	-.154	.262	-.154	0.564	0.123	1.2	1.0	1.3	1.1	B+	
1520	617423	Bio	297	.407	.229	.407	.148	.205	.010	.244	.026	.244	-.146	-.130	0.900	0.125	1.3	1.1	1.4	1.1	A-	
1521	617863	Bio	308	.221	.062	.630	.084	.221	.003	.104	-.136	.098	-.133	.104	1.856	0.143	1.2	1.1	1.4	1.2	A-	
1522	617408	Bio	308	.143	.127	.458	.266	.143	.007	.145	.040	.110	-.225	.145	2.426	0.169	0.2	1.0	1.0	1.2	A-	
1523	617391	Bio	308	.552	.110	.552	.273	.062	.003	.169	-.099	.169	-.041	-.058	0.232	0.120	2.4	1.1	2.7	1.1	A-	
1524	617864	Bio	308	.234	.289	.331	.234	.143	.003	.259	-.113	-.076	.259	-.005	1.776	0.140	-0.2	1.0	0.3	1.0	A-	
1525	617879	Bio	308	.175	.296	.149	.377	.175	.003	.233	-.013	-.108	-.048	.233	2.143	0.154	0.0	1.0	0.1	1.0	A-	
1526	617424	Bio	308	.370	.065	.205	.357	.370	.003	.312	-.090	-.104	-.137	.312	1.044	0.123	-0.3	1.0	-0.5	1.0	A-	
1527	617426	Bio	311	.489	.148	.042	.489	.322	.000	.247	-.123	-.184	.247	-.092	0.653	0.119	1.5	1.1	0.8	1.0	A-	
1528	617392	Bio	311	.457	.103	.457	.251	.187	.003	.349	-.148	.349	-.338	.052	0.789	0.120	-0.7	1.0	-0.8	1.0	A-	
1529	617846	Bio	311	.177	.518	.177	.154	.145	.006	.185	-.004	.185	-.190	.018	2.293	0.155	0.8	1.1	1.0	1.1	A-	
1530	617409	Bio	311	.322	.135	.373	.164	.322	.006	.289	-.286	.056	-.157	.289	1.421	0.128	0.5	1.0	0.2	1.0	A+	
1531	617862	Bio	311	.463	.135	.113	.283	.463	.006	.350	-.180	-.258	-.057	.350	0.754	0.120	-0.7	1.0	-0.4	1.0	A+	
1532	617865	Bio	307	.599	.599	.143	.143	.114	.000	.236	.236	-.149	-.095	-.094	0.139	0.123	1.4	1.1	2.4	1.2	A-	
1533	617393	Bio	307	.404	.147	.404	.235	.215	.000	.371	-.081	.371	-.208	-.159	1.036	0.124	-0.6	1.0	-0.6	1.0	A-	
1534	617881	Bio	307	.502	.502	.147	.287	.062	.003	.408	.408	-.118	-.266	-.159	0.582	0.122	-1.4	1.0	-1.3	0.9	A+	
1535	617379	Bio	307	.303	.225	.202	.270	.303	.000	.233	-.308	.029	.022	.233	1.540	0.132	1.6	1.1	1.0	1.1	B+	

Table B-4 (continued). Science Multiple-Choice Item Statistics

Ref	ID	FT Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
1536	617425	Bio	307	.642	.104	.137	.642	.114	.003	.421	-.202	-.274	.421	-.131	-0.073	0.126	-1.5	0.9	-1.9	0.9	A+	
1537	617847	Bio	307	.375	.169	.309	.143	.375	.003	.470	-.249	-.160	-.159	.470	1.170	0.126	-2.1	0.9	-2.2	0.9	A+	
1538	617410	Bio	307	.349	.251	.186	.349	.205	.010	.051	.084	-.128	.051	.001	1.289	0.128	4.5	1.3	4.3	1.3	A-	
1539	617852	Bio	307	.472	.104	.218	.472	.199	.007	.246	-.140	-.135	.246	-.028	0.710	0.122	2.3	1.1	2.2	1.1	A+	
1540	617848	Bio	298	.279	.299	.222	.279	.198	.003	.216	.091	-.124	.216	-.166	1.611	0.135	0.9	1.1	1.0	1.1	A-	
1541	620372	Bio	298	.138	.171	.560	.138	.128	.003	.134	.200	-.184	.134	-.029	2.574	0.174	0.4	1.0	2.2	1.4	A-	
1542	617866	Bio	298	.386	.121	.222	.269	.386	.003	.268	-.072	-.073	-.127	.268	1.075	0.125	0.7	1.0	0.7	1.0	A-	
1543	617380	Bio	298	.322	.124	.322	.326	.225	.003	.178	.056	.178	-.152	-.024	1.383	0.130	1.7	1.1	1.7	1.1	A-	
1544	617882	Bio	298	.349	.383	.131	.131	.349	.007	.319	-.043	-.124	-.197	.319	1.246	0.128	-0.3	1.0	-0.5	1.0	A+	
1545	617411	Bio	298	.329	.269	.245	.329	.154	.003	.202	.069	-.172	.202	-.086	1.349	0.129	1.4	1.1	1.3	1.1	B+	
1546	617427	Bio	298	.540	.104	.225	.540	.128	.003	.387	-.203	-.108	.387	-.196	0.384	0.122	-1.9	0.9	-1.9	0.9	A+	
1547	617883	Bio	298	.366	.168	.215	.248	.366	.003	.403	-.087	-.246	-.094	.403	1.169	0.126	-1.9	0.9	-1.7	0.9	A-	
1548	617849	Bio	313	.393	.393	.137	.304	.157	.010	.347	.347	-.134	-.153	-.080	1.056	0.122	-0.7	1.0	-0.9	1.0	A+	
1549	617877	Bio	313	.540	.214	.090	.150	.540	.006	.422	-.193	-.212	-.147	.422	0.396	0.120	-2.4	0.9	-2.6	0.9	A+	
1550	620373	Bio	313	.157	.157	.077	.476	.281	.010	.114	.114	-.159	.311	-.271	2.427	0.161	0.8	1.1	2.0	1.3	A-	
1551	617867	Bio	313	.543	.035	.265	.543	.150	.006	.331	-.122	-.275	.331	.035	0.390	0.120	-0.3	1.0	-0.4	1.0	A+	
1552	617381	Bio	313	.377	.208	.377	.243	.163	.010	.275	-.068	.275	-.096	-.087	1.132	0.123	0.5	1.0	0.8	1.0	A-	
1553	617412	Bio	313	.313	.313	.294	.217	.166	.010	.166	.166	.016	-.128	.003	1.447	0.128	1.9	1.1	2.0	1.2	A+	
1554	617891	Bio	313	.348	.195	.348	.348	.102	.006	.216	-.045	.216	-.032	-.119	1.280	0.125	1.5	1.1	1.3	1.1	B-	
1555	617468	Bio	313	.342	.105	.304	.342	.236	.013	.255	-.162	.056	.255	-.139	1.299	0.125	1.0	1.1	0.4	1.0	A-	
1556	620374	Bio	317	.278	.164	.278	.114	.439	.006	-.025	-.011	-.025	-.220	.191	1.621	0.133	3.7	1.3	4.0	1.4	A+	
1557	617884	Bio	317	.549	.549	.237	.082	.123	.010	.396	.396	-.180	-.238	-.097	0.300	0.121	-1.1	1.0	-1.1	0.9	A+	
1558	617382	Bio	317	.347	.155	.347	.297	.189	.013	.257	-.161	.257	-.012	-.071	1.238	0.126	1.3	1.1	1.4	1.1	A-	
1559	617850	Bio	317	.420	.262	.420	.145	.164	.010	.102	.024	.102	-.118	.013	0.914	0.122	4.5	1.2	4.1	1.3	A-	
1560	617396	Bio	317	.256	.129	.202	.256	.401	.013	.188	-.035	-.149	.188	.027	1.740	0.137	1.3	1.1	1.7	1.2	A-	
1561	617886	Bio	311	.203	.203	.334	.232	.225	.006	.110	.110	.071	-.134	.039	2.056	0.147	1.2	1.1	2.1	1.3	A+	
1562	620375	Bio	311	.267	.261	.351	.267	.116	.006	.062	.056	-.029	.062	-.003	1.664	0.134	2.4	1.2	3.0	1.3	A+	
1563	617383	Bio	311	.351	.170	.254	.219	.351	.006	.254	-.078	-.061	-.067	.254	1.232	0.125	0.8	1.0	0.5	1.0	A+	
1564	617869	Bio	311	.251	.228	.244	.270	.251	.006	.373	-.136	.000	-.151	.373	1.756	0.137	-1.0	0.9	-1.7	0.9	A+	
1565	617398	Bio	300	.477	.477	.073	.070	.370	.010	.437	.437	-.207	-.226	-.125	0.699	0.123	-2.3	0.9	-2.5	0.9	A+	
1566	617870	Bio	300	.423	.120	.207	.423	.240	.010	.192	-.074	.078	.192	-.131	0.944	0.124	2.9	1.1	3.0	1.2	A+	
1567	617887	Bio	300	.157	.157	.103	.227	.497	.017	.273	.273	-.179	-.161	.139	2.462	0.166	-0.2	1.0	-0.1	1.0	A+	
1568	617415	Bio	300	.383	.207	.150	.243	.383	.017	.326	-.014	-.165	-.111	.326	1.115	0.126	0.0	1.0	0.2	1.0	B+	
1569	617888	Bio	298	.289	.134	.466	.104	.289	.007	.239	.008	-.095	-.205	.239	1.577	0.135	0.5	1.0	1.0	1.1	C-	
1570	620385	Bio	298	.349	.242	.104	.349	.299	.007	.399	-.136	-.198	.399	-.120	1.253	0.128	-1.1	1.0	-1.5	0.9	B+	

Table B-4 (continued). Science Multiple-Choice Item Statistics

Ref	ID	FT Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
1571	617385	Bio	298	.295	.295	.386	.161	.151	.007	.245	.245	-.019	-.109	-.128	1.527	0.134	0.7	1.0	1.2	1.1	A-	
1572	617853	Bio	298	.406	.178	.238	.406	.171	.007	.269	-.098	-.063	.269	-.135	0.981	0.124	1.0	1.0	1.1	1.1	A-	
1573	617416	Bio	298	.295	.295	.289	.118	.292	.007	.146	.146	.140	-.099	-.178	1.527	0.134	1.9	1.1	2.5	1.2	A+	
1574	617399	Bio	298	.285	.285	.349	.175	.185	.007	.206	.206	-.152	-.243	.229	1.581	0.135	1.3	1.1	1.2	1.1	A+	
1575	617871	Bio	298	.322	.211	.309	.322	.151	.007	.241	-.112	-.191	.241	.106	1.387	0.131	0.9	1.1	1.4	1.1	B-	
1576	617872	Bio	311	.560	.238	.132	.560	.071	.000	.273	-.262	-.062	.273	-.012	0.370	0.120	0.9	1.0	0.9	1.0	A-	
1577	617854	Bio	311	.248	.341	.174	.248	.238	.000	.188	-.002	-.171	.188	-.037	1.867	0.137	0.9	1.1	1.7	1.2	A-	
1578	617889	Bio	311	.254	.064	.122	.560	.254	.000	.250	-.233	-.065	-.061	.250	1.830	0.136	0.5	1.0	0.4	1.0	A+	
1579	617417	Bio	311	.550	.550	.212	.125	.113	.000	.362	.362	-.162	-.170	-.182	0.413	0.120	-0.9	1.0	-1.0	1.0	A+	
1580	617400	Bio	311	.325	.138	.148	.386	.325	.003	.288	-.031	-.166	-.125	.288	1.446	0.127	0.3	1.0	0.5	1.0	A+	
1581	617565	Bio	311	.698	.698	.215	.048	.039	.000	.519	.519	-.369	-.245	-.178	-0.290	0.129	-3.1	0.8	-3.4	0.8	C-	
1582	617430	Bio	311	.637	.039	.190	.129	.637	.006	.397	-.099	-.133	-.247	.397	-0.074	0.124	-1.6	0.9	-1.6	0.9	A-	
1583	617444	Bio	313	.773	.112	.773	.045	.064	.006	.461	-.277	.461	-.182	-.141	-0.778	0.141	-1.6	0.9	-2.2	0.8	B+	
1584	617458	Bio	297	.451	.162	.229	.152	.451	.007	.410	-.158	-.230	-.067	.410	0.710	0.123	-2.1	0.9	-2.0	0.9	A-	
1585	617449	Bio	311	.572	.174	.572	.097	.158	.000	.368	-.093	.368	-.170	-.265	0.312	0.121	-1.0	1.0	-0.7	1.0	A+	
1586	617462	Bio	298	.812	.024	.812	.034	.128	.003	.359	-.123	.359	-.203	-.194	-1.033	0.153	-0.7	0.9	-1.4	0.8	A+	
1587	617457	Bio	4897	.485	.485	.387	.063	.060	.006	.409	.409	-.219	-.145	-.165	0.625	0.030	-8.2	0.9	-7.6	0.9	A-	A+
1588	617454	Bio	311	.537	.537	.116	.180	.164	.003	.365	.365	-.197	-.217	-.083	0.465	0.120	-0.8	1.0	-1.0	1.0	A+	
1589	617451	Bio	300	.577	.577	.110	.273	.033	.007	.402	.402	-.140	-.179	-.218	0.274	0.125	-1.2	1.0	-0.9	1.0	A+	
1590	620393	Bio	307	.264	.368	.264	.319	.033	.016	.167	-.051	.167	-.026	-.067	1.635	0.137	1.0	1.1	1.4	1.1	A+	
1591	617925	Bio	307	.397	.134	.397	.231	.231	.007	.231	-.053	.231	-.141	-.043	0.954	0.124	1.8	1.1	1.2	1.1	A-	
1592	617550	Bio	307	.391	.222	.274	.111	.391	.003	.408	-.210	-.058	-.212	.408	0.996	0.124	-2.5	0.9	-1.6	0.9	A-	
1593	617453	Bio	307	.355	.355	.163	.166	.313	.003	.233	.233	-.089	.004	-.131	1.170	0.127	1.9	1.1	1.8	1.1	A-	
1594	617549	Bio	4897	.353	.066	.234	.344	.353	.004	.380	-.187	-.199	-.062	.380	1.239	0.032	-4.9	0.9	-4.3	0.9	A+	A-
1595	617450	Bio	307	.270	.095	.134	.270	.495	.007	.233	-.020	-.210	.233	-.003	1.613	0.136	1.2	1.1	1.3	1.1	A-	
1596	617893	Bio	4897	.288	.122	.288	.317	.268	.005	.308	-.190	.308	-.090	-.029	1.570	0.033	-0.6	1.0	0.4	1.0	A+	A-
1597	617434	Bio	307	.678	.678	.095	.189	.036	.003	.276	.276	-.282	.009	-.164	-0.349	0.129	0.7	1.0	2.2	1.2	A+	
1598	617566	Bio	307	.466	.130	.466	.244	.153	.007	.317	-.087	.317	-.165	-.097	0.642	0.122	0.6	1.0	0.6	1.0	A+	
1599	617898	Bio	4897	.489	.051	.050	.489	.402	.008	.292	-.166	-.173	.292	-.095	0.599	0.030	2.9	1.0	2.7	1.0	A-	A-
1600	620048	Bio	300	.160	.340	.160	.380	.103	.017	.089	-.087	.089	.174	-.084	2.500	0.165	1.3	1.1	1.5	1.2	B-	
1601	617435	Bio	300	.313	.467	.150	.313	.063	.007	.280	-.221	.038	.280	.012	1.522	0.132	0.4	1.0	0.6	1.1	A-	
1602	617567	Bio	300	.703	.023	.113	.153	.703	.007	.408	-.170	-.170	-.197	.408	-0.355	0.134	-1.4	0.9	-1.0	0.9	A-	
1603	617910	Bio	300	.590	.590	.083	.237	.083	.007	.242	.242	-.063	-.112	-.065	0.211	0.125	1.8	1.1	1.5	1.1	A+	
1604	617551	Bio	300	.610	.610	.147	.080	.157	.007	.462	.462	-.254	-.193	-.130	0.116	0.126	-2.4	0.9	-2.6	0.8	A+	
1605	617452	Bio	312	.212	.202	.067	.212	.519	.000	.285	-.038	-.245	.285	-.079	1.967	0.144	-0.2	1.0	-0.1	1.0	A-	

Table B-4 (continued). Science Multiple-Choice Item Statistics

Ref	ID	FT Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
1606	617927	Bio	312	.135	.042	.692	.128	.135	.003	.133	-.143	.100	-.180	.133	2.549	0.171	0.5	1.1	1.1	1.2	A-	
1607	617573	Bio	312	.289	.250	.208	.253	.289	.000	.159	-.184	-.040	.055	.159	1.520	0.130	1.5	1.1	1.3	1.1	A+	
1608	617436	Bio	312	.734	.064	.103	.099	.734	.000	.463	-.158	-.233	-.318	.463	-0.562	0.132	-2.2	0.9	-2.7	0.8	A+	
1609	617552	Bio	312	.821	.821	.071	.051	.058	.000	.333	.333	-.177	-.201	-.164	-1.097	0.151	-0.6	0.9	-1.6	0.8	A+	
1610	620049	Bio	312	.308	.446	.308	.189	.058	.000	.168	-.015	.168	-.152	-.046	1.420	0.128	1.2	1.1	2.0	1.1	A-	
1611	617437	Bio	306	.516	.212	.124	.141	.516	.007	.369	-.072	-.236	-.115	.369	0.498	0.120	-1.3	1.0	-1.4	0.9	A+	
1612	618554	Bio	306	.565	.062	.311	.565	.056	.007	.338	-.243	-.100	.338	-.113	0.279	0.121	-0.6	1.0	-0.5	1.0	A+	
1613	617455	Bio	306	.480	.180	.209	.121	.480	.010	.253	.003	-.029	-.211	.253	0.654	0.121	1.3	1.1	1.1	1.1	A+	
1614	620050	Bio	306	.350	.350	.141	.177	.324	.010	.272	.272	.002	-.143	-.061	1.256	0.126	0.2	1.0	0.8	1.1	A+	
1615	617912	Bio	306	.428	.128	.428	.304	.124	.016	.422	-.172	.422	-.143	-.094	0.880	0.122	-2.6	0.9	-2.1	0.9	A-	
1616	617553	Bio	306	.526	.180	.526	.114	.163	.016	.411	-.147	.411	-.195	-.087	0.439	0.121	-2.2	0.9	-2.2	0.9	A+	
1617	617554	Bio	301	.492	.053	.163	.289	.492	.003	.339	-.151	-.203	-.126	.339	0.597	0.122	-0.3	1.0	0.2	1.0	A+	
1618	620051	Bio	301	.249	.249	.169	.452	.123	.007	.326	.326	-.067	-.162	-.049	1.796	0.140	-0.2	1.0	0.0	1.0	A-	
1619	617438	Bio	301	.419	.213	.419	.256	.103	.010	.252	-.108	.252	-.057	-.106	0.920	0.124	1.8	1.1	1.7	1.1	A+	
1620	617895	Bio	301	.296	.226	.103	.365	.296	.010	.177	.047	-.116	-.088	.177	1.529	0.134	1.9	1.1	2.4	1.2	A-	
1621	618555	Bio	301	.711	.070	.096	.110	.711	.013	.418	-.158	-.291	-.132	.418	-0.486	0.135	-1.5	0.9	-1.4	0.9	A+	
1622	617913	Bio	301	.708	.708	.120	.100	.063	.010	.412	.412	-.137	-.251	-.184	-0.453	0.134	-1.5	0.9	-0.9	0.9	A+	
1623	617456	Bio	301	.199	.080	.216	.495	.199	.010	.269	-.056	.030	-.163	.269	2.111	0.152	0.1	1.0	0.8	1.1	B-	
1624	618556	Bio	297	.428	.108	.428	.323	.138	.003	.204	-.046	.204	-.110	-.045	0.820	0.123	2.0	1.1	2.1	1.1	A+	
1625	620053	Bio	297	.306	.451	.111	.128	.306	.003	.251	-.073	-.092	-.091	.251	1.403	0.132	0.9	1.1	0.4	1.0	A-	
1626	617914	Bio	297	.596	.596	.162	.091	.148	.003	.284	.284	-.119	-.237	-.021	0.065	0.124	0.3	1.0	0.6	1.0	A+	
1627	617896	Bio	297	.300	.306	.300	.145	.246	.003	.235	-.110	.235	-.111	.004	1.438	0.133	0.7	1.0	1.1	1.1	A-	
1628	617555	Bio	297	.822	.094	.034	.822	.047	.003	.371	-.239	-.143	.371	-.124	-1.177	0.157	-0.7	0.9	-1.6	0.8	A+	
1629	617439	Bio	297	.286	.286	.212	.330	.162	.010	.306	.306	-.146	-.100	-.014	1.499	0.135	-0.3	1.0	0.4	1.0	A-	
1630	617915	Bio	308	.425	.062	.425	.481	.029	.003	.387	-.079	.387	-.272	-.092	0.792	0.121	-2.0	0.9	-1.8	0.9	B-	
1631	617899	Bio	308	.620	.114	.033	.227	.620	.007	.213	-.102	-.180	-.038	.213	-0.084	0.123	1.3	1.1	1.4	1.1	A+	
1632	617459	Bio	308	.296	.198	.244	.257	.296	.007	.197	-.007	-.115	-.036	.197	1.408	0.130	1.0	1.1	0.8	1.1	A+	
1633	618557	Bio	308	.062	.494	.308	.133	.062	.003	-.016	.084	.012	-.069	-.016	3.431	0.246	0.4	1.1	1.3	1.4	A+	
1634	617556	Bio	308	.224	.224	.273	.338	.159	.007	.150	.150	-.057	.035	-.087	1.812	0.142	1.0	1.1	1.0	1.1	A-	
1635	620054	Bio	308	.477	.153	.214	.477	.153	.003	.358	-.070	-.231	.358	-.106	0.561	0.119	-1.3	1.0	-1.4	1.0	A-	
1636	617440	Bio	308	.412	.412	.149	.169	.263	.007	.342	.342	-.154	-.159	-.072	0.844	0.121	-1.0	1.0	-0.7	1.0	A+	
1637	618558	Bio	311	.704	.174	.045	.704	.077	.000	.318	-.135	-.276	.318	-.138	-0.348	0.129	-0.8	1.0	-0.2	1.0	C-	
1638	617460	Bio	311	.752	.113	.084	.752	.051	.000	.351	-.209	-.194	.351	-.144	-0.612	0.136	-1.0	0.9	-1.1	0.9	A-	
1639	617443	Bio	311	.601	.167	.601	.154	.077	.000	.407	-.179	.407	-.219	-.199	0.150	0.121	-2.1	0.9	-1.9	0.9	A-	
1640	617916	Bio	311	.463	.064	.212	.261	.463	.000	.444	-.167	-.074	-.342	.444	0.768	0.120	-2.6	0.9	-2.6	0.9	A+	

Table B-4 (continued). Science Multiple-Choice Item Statistics

Ref	ID	FT Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
1641	617441	Bio	311	.408	.106	.408	.338	.148	.000	.367	-.175	.367	-.190	-.104	1.014	0.121	-1.1	1.0	-0.8	1.0	B-	
1642	620055	Bio	311	.289	.145	.261	.302	.289	.003	.198	.049	-.150	-.085	.198	1.593	0.131	1.5	1.1	1.0	1.1	A-	
1643	620646	Bio	311	.283	.196	.283	.219	.293	.010	.197	.016	.197	-.137	-.063	1.622	0.132	1.2	1.1	1.8	1.1	A+	
1644	617901	Bio	307	.655	.166	.052	.655	.124	.003	.156	-.051	-.116	.156	-.087	-0.137	0.127	2.2	1.1	2.9	1.2	A+	
1645	617442	Bio	307	.485	.485	.104	.121	.290	.000	.423	.423	-.167	-.237	-.183	0.660	0.121	-1.7	0.9	-1.3	0.9	A+	
1646	618559	Bio	307	.306	.169	.306	.482	.042	.000	.321	-.091	.321	-.201	-.066	1.523	0.132	0.2	1.0	0.6	1.1	A-	
1647	620056	Bio	307	.235	.235	.345	.290	.124	.007	.152	.152	-.059	.030	-.145	1.922	0.143	1.5	1.1	2.7	1.3	B-	
1648	617558	Bio	307	.407	.104	.326	.407	.156	.007	.218	-.204	.066	.218	-.172	1.012	0.124	2.7	1.1	2.1	1.1	A+	
1649	617917	Bio	307	.508	.104	.508	.199	.182	.007	.506	-.206	.506	-.341	-.106	0.546	0.122	-3.6	0.9	-3.3	0.8	A-	
1650	618560	Bio	298	.258	.013	.027	.258	.698	.003	-.067	-.034	-.083	-.067	.146	1.724	0.138	3.5	1.3	4.1	1.4	A-	
1651	617564	Bio	298	.322	.352	.258	.322	.064	.003	.241	-.054	-.082	.241	-.125	1.383	0.130	0.8	1.0	1.0	1.1	A+	
1652	617902	Bio	298	.571	.205	.571	.104	.118	.003	.398	-.214	.398	-.190	-.101	0.249	0.123	-2.3	0.9	-1.6	0.9	A+	
1653	617918	Bio	298	.473	.074	.289	.161	.473	.003	.318	-.046	-.149	-.160	.318	0.681	0.122	-0.5	1.0	-0.2	1.0	A+	
1654	617559	Bio	298	.591	.144	.591	.161	.101	.003	.399	-.207	.399	-.143	-.168	0.159	0.123	-2.1	0.9	-2.0	0.9	A-	
1655	617919	Bio	313	.470	.067	.147	.470	.310	.006	.383	-.068	-.219	.383	-.166	0.715	0.120	-1.6	0.9	-1.4	0.9	B-	
1656	617561	Bio	313	.412	.067	.169	.345	.412	.006	.432	-.151	-.100	-.219	.432	0.979	0.121	-2.6	0.9	-2.4	0.9	A-	
1657	617548	Bio	313	.661	.661	.090	.141	.099	.010	.372	.372	-.075	-.202	-.151	-0.171	0.126	-0.9	1.0	-1.1	0.9	A+	
1658	618561	Bio	313	.703	.048	.176	.064	.703	.010	.387	-.163	-.185	-.134	.387	-0.384	0.130	-0.9	1.0	-1.4	0.9	A-	
1659	617903	Bio	313	.566	.115	.224	.566	.086	.010	.459	-.179	-.190	.459	-.184	0.283	0.120	-3.1	0.9	-3.0	0.9	A-	
1660	617900	Bio	317	.483	.057	.483	.284	.177	.000	.441	-.228	.441	-.093	-.329	0.618	0.120	-2.7	0.9	-2.6	0.9	B+	
1661	617560	Bio	317	.492	.492	.237	.114	.158	.000	.430	.430	-.205	-.261	-.123	0.575	0.120	-2.1	0.9	-1.9	0.9	A-	
1662	617894	Bio	317	.073	.678	.060	.186	.073	.003	-.024	.178	-.224	-.033	-.024	3.434	0.231	0.6	1.1	2.1	1.6	A-	
1663	617445	Bio	317	.622	.076	.085	.622	.205	.013	.387	-.058	-.321	.387	-.142	-0.055	0.125	-0.8	1.0	-0.5	1.0	A+	
1664	617920	Bio	317	.685	.057	.129	.123	.685	.006	.442	-.052	-.132	-.379	.442	-0.373	0.130	-1.7	0.9	-1.0	0.9	A+	
1665	618563	Bio	317	.634	.054	.233	.073	.634	.006	.398	-.152	-.228	-.140	.398	-0.113	0.125	-0.7	1.0	-0.6	1.0	A-	
1666	617429	Bio	317	.483	.189	.211	.107	.483	.010	.441	-.182	-.181	-.172	.441	0.591	0.121	-2.1	0.9	-2.1	0.9	A+	
1667	617904	Bio	317	.416	.142	.183	.416	.249	.010	.422	-.157	-.226	.422	-.097	0.914	0.122	-2.2	0.9	-1.1	0.9	A-	
1668	617544	Bio	317	.618	.114	.110	.148	.618	.010	.506	-.206	-.216	-.251	.506	-0.048	0.124	-3.3	0.9	-2.7	0.8	A+	
1669	617905	Bio	311	.534	.151	.219	.534	.090	.006	.344	-.095	-.148	.344	-.135	0.398	0.120	-0.8	1.0	-0.9	1.0	B+	
1670	617911	Bio	311	.550	.055	.113	.550	.277	.006	.345	-.134	-.132	.345	-.139	0.326	0.120	-0.8	1.0	-0.7	1.0	B-	
1671	618564	Bio	311	.740	.093	.103	.058	.740	.006	.324	-.074	-.087	-.243	.324	-0.608	0.136	-0.4	1.0	0.0	1.0	A-	
1672	617909	Bio	311	.219	.363	.238	.174	.219	.006	.227	.012	-.143	-.004	.227	1.951	0.143	0.3	1.0	0.8	1.1	A-	
1673	617545	Bio	311	.762	.097	.077	.058	.762	.006	.351	-.119	-.164	-.142	.351	-0.741	0.140	-0.4	1.0	-1.0	0.9	A-	
1674	617446	Bio	311	.611	.611	.151	.125	.106	.006	.446	.446	-.194	-.226	-.116	0.048	0.122	-3.0	0.9	-2.2	0.9	A+	
1675	617557	Bio	311	.560	.058	.232	.560	.145	.006	.253	-.161	-.106	.253	-.018	0.283	0.120	1.1	1.0	2.0	1.1	A-	

Table B-4 (continued). Science Multiple-Choice Item Statistics

Ref	ID	FT Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
1676	617921	Bio	311	.457	.097	.129	.457	.312	.006	.064	-.055	-.071	.064	.098	0.742	0.120	5.1	1.2	5.9	1.3	A-	
1677	617562	Bio	311	.656	.119	.109	.656	.109	.006	.418	-.129	-.207	.418	-.176	-0.168	0.125	-1.9	0.9	-2.0	0.9	A+	
1678	620389	Bio	311	.183	.183	.286	.302	.222	.006	.158	.158	-.134	-.010	.100	2.190	0.152	0.5	1.0	2.0	1.3	A-	
1679	620392	Bio	300	.737	.060	.090	.737	.107	.007	.245	-.059	-.138	.245	-.059	-0.564	0.138	0.5	1.0	1.9	1.2	A-	
1680	618565	Bio	300	.647	.647	.083	.190	.073	.007	.459	.459	-.186	-.228	-.162	-0.087	0.128	-2.5	0.9	-2.8	0.8	A-	
1681	617563	Bio	300	.643	.110	.157	.643	.083	.007	.400	-.190	-.058	.400	-.271	-0.071	0.128	-1.2	0.9	-1.4	0.9	A-	
1682	620386	Bio	300	.670	.147	.100	.670	.073	.010	.466	-.260	-.175	.466	-.108	-0.212	0.130	-2.2	0.9	-2.2	0.8	A+	
1683	617546	Bio	300	.600	.113	.600	.083	.193	.010	.365	-.113	.365	-.061	-.201	0.132	0.125	-0.5	1.0	-0.5	1.0	A+	
1684	617906	Bio	300	.567	.567	.147	.150	.127	.010	.444	.444	-.141	-.254	-.098	0.287	0.124	-2.4	0.9	-2.0	0.9	A+	
1685	617447	Bio	300	.783	.783	.053	.057	.093	.013	.477	.477	-.205	-.264	-.152	-0.883	0.149	-1.8	0.9	-1.6	0.8	A+	
1686	617922	Bio	300	.667	.123	.077	.667	.117	.017	.484	-.181	-.197	.484	-.217	-0.221	0.131	-2.6	0.9	-2.6	0.8	B-	
1687	617431	Bio	300	.170	.360	.217	.237	.170	.017	.050	.118	-.095	.024	.050	2.355	0.160	1.5	1.2	2.9	1.5	B-	
1688	617428	Bio	300	.397	.153	.263	.170	.397	.017	.424	-.051	-.169	-.179	.424	1.052	0.126	-2.1	0.9	-1.7	0.9	A+	
1689	617448	Bio	298	.128	.292	.466	.128	.111	.003	.081	-.214	.112	.081	.074	2.686	0.180	0.9	1.1	2.0	1.4	A-	
1690	617547	Bio	298	.366	.228	.091	.309	.366	.007	.455	-.109	-.168	-.234	.455	1.171	0.127	-2.3	0.9	-2.0	0.9	B-	
1691	618566	Bio	298	.430	.185	.201	.178	.430	.007	.425	-.131	-.165	-.199	.425	0.873	0.123	-2.0	0.9	-1.9	0.9	A-	
1692	617432	Bio	298	.352	.346	.121	.352	.175	.007	.307	-.115	-.207	.307	-.020	1.236	0.128	0.3	1.0	0.0	1.0	A-	
1693	617923	Bio	298	.362	.185	.218	.228	.362	.007	.237	-.150	.000	-.092	.237	1.187	0.127	1.3	1.1	1.5	1.1	A-	
1694	617926	Bio	298	.493	.151	.097	.493	.252	.007	.391	-.107	-.182	.391	-.198	0.586	0.122	-1.5	1.0	-1.2	1.0	A+	
1695	617907	Bio	298	.493	.299	.101	.493	.101	.007	.085	-.033	.002	.085	-.036	0.586	0.122	4.8	1.2	5.0	1.3	A+	
1696	620391	Bio	298	.205	.205	.305	.242	.242	.007	.323	.323	.084	-.220	-.135	2.066	0.150	-0.3	1.0	-0.2	1.0	A-	
1697	617924	Bio	311	.556	.238	.080	.556	.122	.003	.390	-.335	-.033	.390	-.108	0.381	0.120	-1.4	1.0	-1.2	0.9	A-	
1698	618568	Bio	311	.617	.228	.071	.080	.617	.003	.214	.004	-.178	-.197	.214	0.100	0.123	1.7	1.1	1.8	1.1	A+	
1699	620047	Bio	311	.479	.379	.100	.479	.042	.000	.383	-.180	-.238	.383	-.162	0.729	0.120	-1.2	1.0	-1.2	1.0	A-	
1700	620388	Bio	311	.740	.039	.740	.100	.122	.000	.420	-.236	.420	-.191	-.249	-0.516	0.135	-1.6	0.9	-1.7	0.9	A-	
1701	617908	Bio	311	.682	.682	.029	.055	.235	.000	.437	.437	-.165	-.290	-.260	-0.207	0.127	-2.0	0.9	-2.2	0.9	A-	
1702	620390	Bio	311	.338	.232	.322	.106	.338	.003	.348	-.251	.006	-.184	.348	1.382	0.126	-0.5	1.0	-0.5	1.0	A-	
1703	617433	Bio	311	.183	.463	.183	.254	.097	.003	.198	.068	.198	-.223	-.029	2.282	0.152	0.4	1.0	1.2	1.2	A-	
1704	616406	Chem	307	.482	.166	.182	.482	.163	.007	.389	-.078	-.181	.389	-.173	0.658	0.119	-2.5	0.9	-2.6	0.9	A-	
1705	616376	Chem	307	.505	.072	.098	.505	.316	.010	.324	-.065	-.086	.324	-.190	0.549	0.119	-1.1	1.0	-0.9	1.0	A+	
1706	616533	Chem	307	.485	.485	.388	.091	.033	.003	.345	.345	-.179	-.185	-.126	0.706	0.120	-1.4	1.0	-1.4	0.9	A-	
1707	616409	Chem	4315	.434	.137	.215	.434	.205	.009	.367	-.136	-.128	.367	-.161	0.870	0.032	-6.6	0.9	-6.3	0.9	A+	A-
1708	616503	Chem	309	.240	.291	.240	.278	.181	.010	.118	-.123	.118	-.002	.086	1.800	0.139	1.3	1.1	1.6	1.2	A-	
1709	616372	Chem	4315	.324	.273	.130	.262	.325	.010	.374	-.117	-.160	-.106	.374	1.378	0.034	-5.0	0.9	-4.3	0.9	A-	A-
1710	616532	Chem	309	.256	.107	.249	.382	.256	.007	.309	-.146	-.089	-.056	.309	1.710	0.136	-0.8	1.0	-0.8	0.9	A-	

Table B-4 (continued). Science Multiple-Choice Item Statistics

Ref	ID	FT Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
1711	618721	Chem	309	.288	.152	.447	.288	.107	.007	.089	.073	-.055	.089	-.050	1.532	0.131	2.0	1.1	1.9	1.2	A-	
1712	618751	Chem	309	.207	.207	.269	.295	.217	.013	.180	.180	.022	-.129	.002	1.996	0.146	0.6	1.1	0.8	1.1	A+	
1713	616514	Chem	307	.485	.235	.485	.176	.101	.003	.315	-.114	.315	-.114	-.187	0.706	0.120	-1.0	1.0	-0.8	1.0	B-	
1714	616566	Chem	307	.446	.179	.192	.446	.179	.003	.363	-.191	-.089	.363	-.163	0.879	0.120	-1.5	1.0	-1.6	0.9	A+	
1715	618752	Chem	307	.199	.199	.235	.371	.179	.016	.128	.128	-.139	.068	-.052	2.139	0.149	1.0	1.1	0.8	1.1	A+	
1716	618717	Chem	616	.333	.333	.395	.221	.047	.005	.313	.313	-.096	-.181	-.097	1.378	0.089	-1.1	1.0	-0.9	1.0	A-	
1717	620454	Chem	308	.308	.198	.325	.162	.308	.007	.257	-.072	-.120	-.037	.257	1.478	0.128	0.1	1.0	0.3	1.0	A-	
1718	616534	Chem	308	.283	.166	.370	.283	.166	.016	.296	-.010	-.108	.296	-.127	1.600	0.131	-0.5	1.0	0.3	1.0	A-	
1719	616567	Chem	308	.292	.156	.224	.312	.292	.016	.304	-.106	-.071	-.083	.304	1.552	0.130	-0.5	1.0	-0.1	1.0	A+	
1720	620455	Chem	309	.259	.359	.288	.259	.087	.007	.281	-.056	-.148	.281	-.075	1.709	0.135	-0.3	1.0	-0.1	1.0	A-	
1721	618684	Chem	309	.340	.178	.333	.142	.340	.007	.235	.037	-.145	-.139	.235	1.293	0.125	0.7	1.0	1.7	1.1	A-	
1722	616568	Chem	309	.372	.372	.136	.301	.168	.023	.404	.404	-.211	-.131	-.131	1.101	0.124	-1.8	0.9	-1.6	0.9	A-	
1723	616535	Chem	309	.437	.142	.437	.230	.168	.023	.232	-.055	.232	-.268	.059	0.797	0.120	0.8	1.0	1.3	1.1	A-	
1724	616371	Chem	309	.427	.185	.178	.191	.427	.019	.373	-.098	-.204	-.138	.373	0.853	0.121	-1.4	1.0	-1.3	0.9	A+	
1725	616430	Chem	309	.450	.133	.320	.450	.078	.019	.370	-.142	-.176	.370	-.148	0.752	0.120	-1.5	1.0	-1.3	1.0	A-	
1726	616565	Chem	309	.188	.188	.223	.375	.191	.023	.105	.105	.013	.000	-.084	2.129	0.151	0.9	1.1	1.6	1.2	A-	
1727	616536	Chem	308	.208	.240	.250	.299	.208	.003	.242	-.071	-.148	-.010	.242	1.969	0.145	-0.4	1.0	-0.6	0.9	A+	
1728	616373	Chem	616	.183	.183	.188	.481	.136	.011	.108	.108	-.149	.131	-.042	2.139	0.108	1.1	1.1	1.9	1.2	A+	
1729	620456	Chem	308	.250	.234	.250	.328	.175	.013	.002	.040	.002	.110	-.073	1.690	0.136	2.0	1.1	2.7	1.2	B+	
1730	616374	Chem	318	.280	.255	.280	.333	.132	.000	.252	.026	.252	-.247	-.022	1.670	0.130	0.3	1.0	0.3	1.0	B-	
1731	619959	Chem	318	.491	.085	.236	.186	.491	.003	.387	-.125	-.169	-.220	.387	0.679	0.117	-2.3	0.9	-1.9	0.9	A-	
1732	620457	Chem	318	.248	.286	.293	.248	.167	.006	.127	.032	-.057	.127	-.111	1.827	0.135	1.4	1.1	1.4	1.1	B+	
1733	616537	Chem	318	.346	.173	.151	.327	.346	.003	.350	-.090	-.154	-.157	.350	1.328	0.123	-1.0	1.0	-1.1	0.9	A-	
1734	619929	Chem	306	.471	.163	.471	.144	.222	.000	.398	-.127	.398	-.220	-.179	0.718	0.119	-2.4	0.9	-2.3	0.9	A-	
1735	619960	Chem	306	.281	.190	.121	.281	.405	.003	.164	-.130	-.132	.164	.040	1.597	0.132	0.4	1.0	1.2	1.1	A-	
1736	616375	Chem	306	.144	.144	.196	.405	.245	.010	.176	.176	-.038	.023	-.087	2.488	0.167	0.3	1.0	0.2	1.0	A+	
1737	616403	Chem	613	.406	.113	.194	.406	.277	.010	.153	-.051	-.119	.153	.004	0.973	0.086	3.2	1.1	3.2	1.1	A-	B+
1738	620458	Chem	306	.369	.177	.369	.294	.150	.010	.382	-.129	.382	-.141	-.133	1.151	0.123	-1.9	0.9	-1.7	0.9	A+	
1739	618757	Chem	307	.332	.332	.222	.371	.065	.010	.237	.237	-.003	-.199	.024	1.331	0.126	0.2	1.0	1.0	1.1	A-	
1740	618714	Chem	307	.283	.244	.251	.205	.283	.016	.126	.014	-.059	-.015	.126	1.570	0.132	1.5	1.1	1.6	1.1	A+	
1741	619930	Chem	307	.518	.192	.104	.518	.179	.007	.304	-.148	-.163	.304	-.032	0.502	0.119	-0.8	1.0	-0.3	1.0	B+	
1742	619961	Chem	307	.378	.160	.378	.313	.124	.026	.367	-.091	.367	-.193	-.026	1.087	0.123	-1.5	0.9	-1.3	0.9	A-	
1743	619931	Chem	305	.328	.144	.328	.357	.148	.023	.161	-.060	.161	.095	-.220	1.265	0.127	1.2	1.1	0.9	1.1	A+	
1744	618715	Chem	305	.249	.321	.184	.230	.249	.016	.275	-.065	-.085	-.056	.275	1.698	0.137	-0.3	1.0	0.2	1.0	A-	
1745	616377	Chem	305	.213	.285	.256	.213	.233	.013	.099	-.078	.054	.099	-.009	1.921	0.144	1.4	1.1	1.3	1.1	A-	

Table B-4 (continued). Science Multiple-Choice Item Statistics

Ref	ID	FT Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
1746	619962	Chem	305	.377	.259	.138	.377	.223	.003	.286	-.101	.012	.286	-.221	1.075	0.122	-0.7	1.0	-0.4	1.0	A-	
1747	616497	Chem	305	.292	.184	.292	.341	.157	.026	.073	.054	.073	.020	-.093	1.437	0.131	2.1	1.1	2.3	1.2	A-	
1748	618685	Chem	305	.216	.216	.207	.367	.180	.030	.128	.128	.059	.022	-.148	1.863	0.144	0.9	1.1	1.5	1.2	A-	
1749	616407	Chem	305	.239	.285	.239	.325	.112	.039	.223	-.058	.223	-.016	-.122	1.700	0.139	0.2	1.0	0.7	1.1	B-	
1750	618746	Chem	308	.396	.396	.107	.234	.260	.003	.267	.267	-.148	-.158	-.041	1.093	0.121	-0.1	1.0	-0.2	1.0	A+	
1751	616380	Chem	308	.234	.218	.247	.234	.292	.010	.193	-.034	-.022	.193	-.085	1.924	0.140	0.6	1.1	0.8	1.1	A+	
1752	618716	Chem	308	.458	.104	.458	.283	.146	.010	.424	-.144	.424	-.205	-.172	0.809	0.119	-3.0	0.9	-2.9	0.9	A+	
1753	619932	Chem	308	.591	.292	.091	.591	.020	.007	.256	-.190	-.034	.256	-.104	0.237	0.121	0.0	1.0	1.4	1.1	B-	
1754	618686	Chem	308	.318	.367	.188	.318	.114	.013	.102	.061	-.212	.102	.097	1.457	0.128	2.5	1.1	2.7	1.2	A-	
1755	616498	Chem	308	.169	.143	.205	.468	.169	.016	.364	-.068	-.224	.006	.364	2.356	0.158	-0.8	0.9	-0.6	0.9	B-	
1756	619963	Chem	308	.240	.234	.276	.224	.240	.026	.247	-.078	-.086	-.013	.247	1.853	0.139	0.3	1.0	0.3	1.0	A-	
1757	616408	Chem	308	.279	.279	.218	.211	.273	.020	.231	.231	-.057	-.032	-.108	1.640	0.132	0.4	1.0	0.5	1.0	A+	
1758	618747	Chem	308	.682	.013	.075	.682	.231	.000	.410	-.095	-.179	.410	-.316	-0.199	0.127	-1.7	0.9	-1.9	0.9	A-	
1759	619964	Chem	308	.266	.266	.273	.289	.162	.010	.244	.244	-.147	-.088	.037	1.725	0.134	0.4	1.0	0.5	1.0	A-	
1760	616499	Chem	308	.396	.305	.179	.396	.117	.003	.224	.033	-.202	.224	-.130	1.083	0.122	1.3	1.1	1.2	1.1	A-	
1761	619933	Chem	308	.331	.331	.156	.386	.123	.003	.295	.295	-.102	-.081	-.172	1.391	0.126	-0.2	1.0	0.4	1.0	A+	
1762	618687	Chem	308	.357	.146	.247	.357	.244	.007	.196	-.116	-.104	.196	.013	1.263	0.124	1.5	1.1	1.5	1.1	A-	
1763	616410	Chem	308	.296	.104	.344	.296	.250	.007	.069	-.112	-.034	.069	.076	1.570	0.130	2.5	1.2	2.6	1.2	A-	
1764	618748	Chem	308	.198	.198	.442	.283	.058	.020	.238	.238	-.011	-.115	-.009	2.049	0.149	0.5	1.0	0.1	1.0	B+	
1765	616411	Chem	308	.117	.136	.117	.130	.597	.020	.149	-.080	.149	-.078	.091	2.721	0.183	0.5	1.1	0.9	1.2	B-	
1766	618718	Chem	308	.334	.244	.257	.146	.334	.020	.419	-.073	-.204	-.102	.419	1.270	0.127	-2.0	0.9	-1.8	0.9	A+	
1767	619965	Chem	308	.205	.205	.338	.302	.127	.029	.226	.226	-.009	-.075	-.058	1.970	0.147	0.3	1.0	0.4	1.0	A-	
1768	620451	Chem	308	.273	.273	.247	.279	.179	.023	.276	.276	.009	-.107	-.113	1.574	0.134	0.3	1.0	0.1	1.0	A+	
1769	619926	Chem	308	.299	.299	.318	.247	.117	.020	.163	.163	.044	-.136	-.030	1.437	0.130	1.5	1.1	1.5	1.1	A-	
1770	616500	Chem	308	.364	.172	.211	.224	.364	.029	.345	-.040	-.036	-.247	.345	1.096	0.125	-0.8	1.0	-0.9	1.0	A-	
1771	620452	Chem	307	.313	.300	.166	.313	.215	.007	.082	-.054	-.155	.082	.164	1.532	0.127	1.8	1.1	1.9	1.1	A-	
1772	618719	Chem	307	.345	.088	.267	.293	.345	.007	.174	-.058	-.031	-.050	.174	1.379	0.123	0.8	1.0	0.8	1.0	A+	
1773	619966	Chem	307	.280	.235	.280	.264	.218	.003	.140	.004	.140	-.097	.003	1.704	0.130	0.8	1.1	0.6	1.0	A-	
1774	618749	Chem	307	.407	.104	.407	.355	.130	.003	.170	-.033	.170	-.020	-.120	1.101	0.120	1.3	1.0	1.4	1.1	B+	
1775	616530	Chem	307	.189	.209	.238	.358	.189	.007	.151	-.057	-.125	.088	.151	2.238	0.149	0.2	1.0	0.2	1.0	A-	
1776	619927	Chem	307	.339	.218	.251	.182	.339	.010	.353	-.192	-.071	-.091	.353	1.396	0.124	-1.6	0.9	-1.8	0.9	A-	
1777	616501	Chem	307	.238	.179	.238	.397	.173	.013	.176	.029	.176	-.016	-.144	1.917	0.137	0.4	1.0	0.2	1.0	A-	
1778	618750	Chem	307	.674	.163	.055	.674	.104	.003	.355	-.175	-.112	.355	-.247	-0.227	0.126	-1.6	0.9	-1.3	0.9	A+	
1779	618720	Chem	307	.424	.424	.195	.156	.218	.007	.360	.360	-.183	-.150	-.115	0.890	0.120	-1.5	1.0	-1.6	0.9	A+	
1780	620066	Chem	307	.254	.153	.267	.316	.254	.010	.295	-.137	-.113	-.043	.295	1.724	0.136	-0.2	1.0	-0.1	1.0	A-	

Table B-4 (continued). Science Multiple-Choice Item Statistics

Ref	ID	FT Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
1781	616531	Chem	307	.202	.202	.228	.309	.241	.020	.093	.093	-.023	-.131	.101	2.029	0.148	1.3	1.1	1.8	1.2	A+	
1782	620453	Chem	307	.205	.127	.336	.323	.205	.010	.206	-.060	-.082	-.033	.206	2.022	0.147	0.3	1.0	1.1	1.1	A-	
1783	616502	Chem	307	.117	.117	.209	.108	.557	.010	.274	.274	-.062	.024	-.132	2.728	0.183	-0.1	1.0	-0.6	0.9	B+	
1784	618699	Chem	307	.414	.127	.195	.248	.414	.016	.348	-.104	-.079	-.142	.348	0.942	0.121	-1.4	1.0	-0.9	1.0	A+	
1785	618734	Chem	308	.503	.175	.503	.208	.110	.003	.382	-.151	.382	-.164	-.199	0.610	0.119	-2.0	0.9	-1.9	0.9	A-	
1786	616518	Chem	306	.572	.059	.572	.190	.173	.007	.310	-.116	.310	-.175	-.093	0.263	0.120	-0.8	1.0	-0.2	1.0	A+	
1787	616516	Chem	308	.471	.338	.123	.471	.062	.007	.373	-.105	-.213	.373	-.125	0.646	0.118	-2.5	0.9	-2.5	0.9	A+	
1788	618733	Chem	308	.471	.234	.208	.471	.084	.003	.407	-.174	-.180	.407	-.160	0.768	0.119	-2.6	0.9	-2.5	0.9	A+	
1789	620468	Chem	318	.418	.214	.245	.418	.113	.009	.393	-.203	-.125	.393	-.150	0.985	0.119	-2.0	0.9	-2.1	0.9	A+	
1790	618698	Chem	306	.781	.036	.065	.105	.781	.013	.280	-.033	-.140	-.157	.280	-0.839	0.146	-0.2	1.0	0.3	1.0	A+	
1791	619946	Chem	309	.430	.152	.204	.207	.430	.007	.383	-.161	-.094	-.166	.383	0.853	0.121	-1.7	0.9	-1.4	0.9	A+	
1792	618695	Chem	4315	.436	.436	.255	.186	.117	.006	.270	.270	-.089	-.092	-.142	0.866	0.032	0.6	1.0	0.7	1.0	A-	A+
1793	620435	Chem	309	.204	.214	.243	.324	.204	.016	.308	-.010	-.178	-.023	.308	2.017	0.146	-0.8	0.9	-0.9	0.9	A-	
1794	616519	Chem	4315	.235	.248	.447	.235	.057	.013	.185	-.067	-.017	.185	-.082	1.858	0.037	2.0	1.0	3.1	1.1	A-	A+
1795	616553	Chem	4315	.288	.549	.288	.084	.071	.009	.058	.121	.058	-.126	-.124	1.567	0.035	8.4	1.1	8.9	1.2	A+	B+
1796	616424	Chem	4315	.391	.189	.239	.391	.165	.016	.318	-.085	-.144	.318	-.097	1.048	0.033	-3.0	1.0	-2.8	1.0	A-	A+
1797	618701	Chem	4315	.304	.235	.341	.304	.100	.020	.219	-.036	-.101	.219	-.048	1.461	0.035	1.9	1.0	2.2	1.0	A-	A+
1798	620469	Chem	309	.353	.168	.353	.265	.197	.016	.284	.025	.284	-.115	-.170	1.191	0.125	-0.8	1.0	0.1	1.0	A+	
1799	620436	Chem	307	.365	.251	.365	.192	.189	.003	.291	-.118	.291	-.187	-.029	1.246	0.124	-0.3	1.0	-0.6	1.0	A+	
1800	620470	Chem	307	.388	.222	.388	.202	.182	.007	.372	-.161	.372	-.147	-.130	1.132	0.123	-1.9	0.9	-2.1	0.9	A-	
1801	619947	Chem	307	.319	.319	.228	.267	.179	.007	.213	.213	-.153	-.049	.000	1.465	0.128	1.3	1.1	0.9	1.1	A+	
1802	620471	Chem	308	.097	.049	.097	.776	.075	.003	.186	-.080	.186	.040	-.161	3.002	0.197	0.2	1.0	0.1	1.0	A-	
1803	618755	Chem	308	.474	.296	.474	.149	.071	.010	.249	-.029	.249	-.185	-.097	0.709	0.119	0.5	1.0	0.2	1.0	A+	
1804	619948	Chem	308	.315	.231	.386	.315	.055	.013	.140	-.034	-.086	.140	.025	1.427	0.127	1.5	1.1	1.6	1.1	A+	
1805	616513	Chem	308	.351	.153	.296	.351	.188	.013	.281	-.079	-.127	.281	-.081	1.255	0.124	-0.1	1.0	-0.2	1.0	A+	
1806	616423	Chem	308	.649	.071	.649	.195	.078	.007	.349	-.165	.349	-.164	-.146	-0.060	0.124	-1.2	1.0	-1.6	0.9	A-	
1807	620437	Chem	308	.305	.201	.273	.205	.305	.016	.337	-.146	-.042	-.147	.337	1.472	0.128	-0.9	1.0	-0.9	0.9	A+	
1808	620438	Chem	309	.346	.146	.430	.346	.074	.003	.363	-.057	-.252	.363	-.095	1.264	0.125	-1.3	0.9	-1.3	0.9	A+	
1809	620472	Chem	309	.440	.252	.139	.168	.440	.000	.517	-.248	-.192	-.221	.517	0.840	0.119	-4.7	0.9	-4.3	0.8	A+	
1810	616515	Chem	309	.388	.152	.337	.388	.117	.007	.255	-.100	-.166	.255	-.027	1.057	0.122	0.6	1.0	0.5	1.0	A-	
1811	616425	Chem	308	.227	.360	.276	.227	.123	.013	.239	-.001	-.052	.239	-.113	1.821	0.140	0.0	1.0	-0.1	1.0	A+	
1812	618696	Chem	308	.344	.140	.344	.299	.201	.016	.161	-.099	.161	-.108	.115	1.194	0.124	1.3	1.1	1.5	1.1	A-	
1813	616548	Chem	308	.386	.240	.386	.244	.114	.016	.237	-.116	.237	-.078	.031	1.000	0.122	0.4	1.0	0.4	1.0	A+	
1814	620439	Chem	308	.679	.049	.156	.679	.104	.013	.244	-.102	-.219	.244	.089	-0.308	0.127	0.1	1.0	0.6	1.0	A+	
1815	620473	Chem	308	.214	.156	.338	.283	.214	.010	.068	-.018	.050	-.012	.068	1.908	0.143	1.2	1.1	1.6	1.2	A-	

Table B-4 (continued). Science Multiple-Choice Item Statistics

Ref	ID	FT Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
1816	620440	Chem	318	.522	.094	.522	.308	.072	.003	.256	-.086	.256	-.162	-.104	0.541	0.117	0.3	1.0	-0.1	1.0	A-	
1817	616549	Chem	318	.280	.192	.315	.211	.280	.003	.359	-.062	-.169	-.135	.359	1.664	0.130	-0.9	1.0	-1.1	0.9	C+	
1818	616426	Chem	318	.217	.217	.346	.245	.179	.013	.175	.175	-.014	-.204	.069	2.011	0.141	0.8	1.1	0.8	1.1	A+	
1819	620474	Chem	318	.264	.264	.333	.267	.123	.013	.340	.340	-.188	-.023	-.135	1.731	0.132	-0.6	1.0	-0.7	0.9	A-	
1820	616517	Chem	318	.255	.217	.236	.283	.255	.009	.139	-.132	-.007	.004	.139	1.788	0.134	1.2	1.1	2.0	1.2	A-	
1821	618697	Chem	318	.252	.252	.274	.308	.151	.016	.189	.189	-.138	-.081	.038	1.789	0.134	0.6	1.0	1.2	1.1	A+	
1822	616550	Chem	306	.284	.150	.317	.239	.284	.010	.188	-.199	-.044	.072	.188	1.570	0.131	0.9	1.1	0.8	1.1	A+	
1823	616551	Chem	307	.743	.114	.088	.743	.046	.010	.391	-.215	-.165	.391	-.115	-0.583	0.136	-1.2	0.9	-1.2	0.9	A+	
1824	616386	Chem	307	.511	.140	.511	.212	.130	.007	.347	-.168	.347	-.094	-.134	0.531	0.119	-1.8	1.0	-1.7	0.9	A-	
1825	618731	Chem	307	.241	.176	.241	.407	.156	.020	.208	-.099	.208	.056	-.091	1.808	0.139	0.5	1.0	0.7	1.1	A-	
1826	619912	Chem	307	.225	.202	.277	.274	.225	.023	.194	-.084	-.022	.020	.194	1.900	0.142	0.6	1.1	0.7	1.1	A+	
1827	616552	Chem	305	.315	.203	.197	.275	.315	.010	.323	-.039	-.043	-.241	.323	1.357	0.128	-1.2	0.9	-0.9	0.9	A+	
1828	616539	Chem	305	.433	.433	.226	.256	.069	.016	.328	.328	-.194	-.141	.015	0.794	0.120	-1.5	1.0	-1.5	0.9	A+	
1829	618732	Chem	305	.403	.249	.403	.177	.151	.020	.311	.006	.311	-.197	-.122	0.926	0.122	-0.5	1.0	-0.7	1.0	A-	
1830	619911	Chem	305	.246	.246	.269	.331	.138	.016	.351	.351	-.101	-.104	-.082	1.715	0.138	-0.8	0.9	-0.7	0.9	A-	
1831	618700	Chem	305	.364	.134	.364	.371	.112	.020	.195	-.058	.195	-.103	-.025	1.097	0.124	1.1	1.1	1.1	1.1	A-	
1832	616387	Chem	305	.371	.154	.371	.295	.144	.036	.229	-.116	.229	-.040	-.046	1.034	0.124	0.8	1.0	0.4	1.0	A-	
1833	619913	Chem	308	.526	.127	.107	.234	.526	.007	.298	-.159	-.097	-.137	.298	0.529	0.119	-0.8	1.0	-1.1	1.0	A-	
1834	616554	Chem	308	.367	.283	.244	.367	.094	.013	.392	-.046	-.283	.392	-.089	1.216	0.124	-1.7	0.9	-1.6	0.9	A-	
1835	616388	Chem	308	.250	.149	.351	.250	.231	.020	.238	-.003	.065	.238	-.274	1.800	0.137	0.3	1.0	0.5	1.0	A-	
1836	619914	Chem	308	.614	.091	.192	.614	.104	.000	.439	-.168	-.312	.439	-.141	0.125	0.122	-2.7	0.9	-2.7	0.9	A+	
1837	618688	Chem	308	.231	.127	.234	.406	.231	.003	.370	-.216	-.068	-.101	.370	1.937	0.141	-0.9	0.9	-0.7	0.9	A+	
1838	616389	Chem	308	.412	.088	.412	.354	.140	.007	.381	-.196	.381	-.201	-.063	1.007	0.121	-1.4	1.0	-1.4	0.9	C-	
1839	619942	Chem	308	.159	.286	.315	.234	.159	.007	.089	.121	-.091	-.073	.089	2.431	0.161	0.9	1.1	1.5	1.2	A-	
1840	618735	Chem	308	.240	.201	.240	.338	.205	.016	.164	-.153	.164	-.011	.068	1.784	0.139	1.1	1.1	1.9	1.2	A-	
1841	619943	Chem	308	.321	.321	.471	.140	.042	.026	.323	.323	-.066	-.199	-.045	1.316	0.128	-0.6	1.0	-0.3	1.0	B-	
1842	616390	Chem	308	.546	.127	.546	.224	.084	.020	.386	-.118	.386	-.218	-.071	0.298	0.121	-1.9	0.9	-1.7	0.9	A+	
1843	616420	Chem	308	.308	.185	.312	.308	.162	.033	.175	-.125	.047	.175	-.043	1.362	0.130	1.5	1.1	1.6	1.1	A-	
1844	619915	Chem	308	.406	.162	.169	.237	.406	.026	.444	-.175	-.105	-.180	.444	0.905	0.122	-3.1	0.9	-2.1	0.9	A+	
1845	619944	Chem	307	.511	.182	.511	.160	.134	.013	.301	-.146	.301	-.102	-.090	0.628	0.118	-1.2	1.0	-1.3	1.0	A+	
1846	618736	Chem	307	.261	.261	.508	.173	.046	.013	.254	.254	-.046	-.110	-.116	1.787	0.133	-0.4	1.0	-0.1	1.0	A+	
1847	619916	Chem	307	.313	.212	.313	.209	.251	.016	.146	-.044	.146	-.062	.012	1.514	0.127	0.9	1.0	1.0	1.1	B-	
1848	616391	Chem	307	.254	.153	.176	.410	.254	.007	.272	-.043	-.164	-.021	.272	1.842	0.134	-0.5	1.0	-0.7	0.9	A-	
1849	616421	Chem	307	.134	.130	.313	.414	.134	.010	.135	-.052	.060	-.060	.135	2.665	0.171	0.0	1.0	0.8	1.1	A+	
1850	620434	Chem	307	.186	.127	.388	.283	.186	.016	.275	-.047	.036	-.222	.275	2.147	0.152	-0.1	1.0	-0.1	1.0	A-	

Table B-4 (continued). Science Multiple-Choice Item Statistics

Ref	ID	FT Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
1851	619917	Chem	307	.257	.218	.241	.270	.257	.013	.251	-.057	-.073	-.130	.251	1.692	0.136	0.3	1.0	0.3	1.0	B+	
1852	619945	Chem	307	.502	.101	.195	.195	.502	.007	.433	-.158	-.204	-.201	.433	0.549	0.119	-3.3	0.9	-3.1	0.9	A+	
1853	616422	Chem	307	.489	.124	.218	.489	.163	.007	.354	-.112	-.218	.354	-.138	0.603	0.119	-1.7	1.0	-1.7	0.9	A-	
1854	616392	Chem	307	.163	.202	.326	.287	.163	.023	.260	-.093	-.068	-.054	.260	2.297	0.160	-0.1	1.0	0.0	1.0	A-	
1855	616511	Chem	305	.712	.712	.089	.102	.079	.020	.379	.379	-.237	-.176	-.101	-0.505	0.133	-1.4	0.9	-1.7	0.9	A+	
1856	619910	Chem	308	.331	.419	.331	.166	.078	.007	.320	-.070	.320	-.176	-.122	1.402	0.126	-0.4	1.0	-0.5	1.0	A+	
1857	618726	Chem	309	.343	.188	.311	.159	.343	.000	.233	-.126	-.073	-.075	.233	1.286	0.125	0.7	1.0	0.8	1.1	A+	
1858	616505	Chem	4315	.610	.075	.201	.610	.108	.007	.332	-.136	-.173	.332	-.139	0.101	0.032	-4.3	1.0	-4.3	0.9	A+	A-
1859	616543	Chem	4315	.506	.506	.171	.168	.149	.007	.417	.417	-.166	-.200	-.148	0.562	0.032	-9.9	0.9	-9.9	0.9	A+	A+
1860	620467	Chem	309	.210	.110	.275	.210	.398	.007	.115	-.206	-.087	.115	.164	1.985	0.145	1.1	1.1	1.2	1.1	A+	
1861	618728	Chem	4315	.217	.147	.290	.325	.217	.021	.307	-.112	-.094	-.042	.307	1.955	0.038	-1.9	1.0	-1.9	1.0	A+	A-
1862	616379	Chem	309	.282	.201	.282	.256	.246	.016	.187	-.098	.187	.032	-.059	1.552	0.132	0.2	1.0	0.4	1.0	A+	
1863	616381	Chem	307	.391	.153	.391	.231	.209	.016	.238	-.010	.238	-.147	-.086	1.097	0.123	1.1	1.0	0.7	1.0	A+	
1864	616404	Chem	308	.364	.364	.221	.101	.305	.010	.289	.289	-.147	-.144	-.022	1.207	0.123	-0.2	1.0	-0.1	1.0	A-	
1865	618725	Chem	308	.370	.104	.136	.383	.370	.007	.405	-.084	-.185	-.177	.405	1.180	0.123	-2.0	0.9	-2.1	0.9	A+	
1866	616378	Chem	308	.481	.120	.244	.481	.143	.013	.228	-.090	-.171	.228	.002	0.667	0.119	0.7	1.0	0.8	1.0	A+	
1867	618693	Chem	308	.338	.286	.127	.240	.338	.010	.312	-.128	-.054	-.107	.312	1.331	0.125	-0.4	1.0	0.2	1.0	A-	
1868	619934	Chem	308	.328	.156	.328	.406	.094	.016	.108	-.059	.108	.031	-.093	1.357	0.126	1.9	1.1	2.1	1.1	A-	
1869	616546	Chem	308	.539	.208	.117	.539	.123	.013	.379	-.179	-.150	.379	-.143	0.418	0.119	-2.4	0.9	-2.3	0.9	A-	
1870	616382	Chem	309	.269	.126	.269	.453	.146	.007	.198	-.013	.198	-.087	-.101	1.656	0.133	0.7	1.1	0.9	1.1	A+	
1871	619935	Chem	309	.385	.240	.256	.385	.107	.013	.373	-.104	-.227	.373	-.097	1.059	0.122	-1.3	1.0	-1.4	0.9	A-	
1872	616547	Chem	309	.311	.311	.388	.110	.181	.010	.341	.341	-.176	-.048	-.129	1.429	0.128	-0.7	1.0	-0.7	1.0	A+	
1873	618758	Chem	309	.243	.227	.084	.447	.243	.000	.227	-.018	-.201	-.068	.227	1.814	0.138	0.4	1.0	0.3	1.0	B+	
1874	618694	Chem	309	.450	.450	.087	.307	.152	.003	.236	.236	-.171	-.006	-.167	0.792	0.119	1.1	1.0	1.0	1.0	B+	
1875	616405	Chem	309	.418	.418	.207	.298	.062	.016	.208	.208	.017	-.153	-.108	0.906	0.121	1.7	1.1	1.6	1.1	A+	
1876	619967	Chem	309	.291	.188	.291	.333	.159	.029	.180	-.071	.180	-.085	-.014	1.487	0.131	1.0	1.1	1.4	1.1	A-	
1877	619905	Chem	308	.562	.562	.146	.227	.058	.007	.329	.329	-.089	-.083	-.256	0.253	0.119	-1.2	1.0	-1.1	1.0	A+	
1878	619936	Chem	308	.432	.143	.240	.179	.432	.007	.222	-.107	.022	-.117	.222	0.816	0.119	0.9	1.0	0.6	1.0	A-	
1879	618727	Chem	308	.247	.257	.247	.328	.156	.013	.294	.062	.294	-.109	-.163	1.709	0.136	-0.6	1.0	-0.4	1.0	A+	
1880	616412	Chem	308	.438	.257	.195	.438	.104	.007	.333	-.149	-.151	.333	-.011	0.787	0.119	-1.6	1.0	-1.3	1.0	A-	
1881	616383	Chem	308	.318	.318	.149	.344	.175	.013	.210	.210	-.037	-.055	-.042	1.331	0.127	0.5	1.0	0.7	1.0	A-	
1882	619968	Chem	308	.520	.104	.149	.520	.214	.013	.243	-.079	-.034	.243	-.128	0.418	0.119	0.5	1.0	0.2	1.0	A-	
1883	616384	Chem	318	.519	.085	.519	.302	.091	.003	.403	-.144	.403	-.249	-.160	0.555	0.117	-2.6	0.9	-2.5	0.9	A-	
1884	618729	Chem	318	.274	.274	.270	.248	.198	.009	.236	.236	-.177	-.085	.035	1.682	0.131	0.4	1.0	0.9	1.1	A+	
1885	619906	Chem	318	.179	.201	.267	.346	.179	.006	.182	-.077	.050	-.123	.182	2.275	0.151	0.6	1.1	0.6	1.1	A-	

Table B-4 (continued). Science Multiple-Choice Item Statistics

Ref	ID	FT Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
1886	619969	Chem	318	.223	.223	.352	.264	.151	.009	.194	.194	-.026	-.079	-.100	1.968	0.140	0.4	1.0	1.0	1.1	A+	
1887	616413	Chem	318	.154	.154	.085	.503	.248	.009	.327	.327	-.168	-.187	.046	2.460	0.160	-0.5	1.0	-0.7	0.9	B-	
1888	619937	Chem	318	.377	.233	.280	.377	.101	.009	.384	-.141	-.153	.384	-.201	1.158	0.121	-1.7	0.9	-1.8	0.9	A+	
1889	616385	Chem	306	.232	.023	.105	.641	.232	.000	.258	-.010	-.121	-.147	.258	1.879	0.140	-0.6	1.0	-0.1	1.0	A+	
1890	618730	Chem	306	.428	.075	.389	.105	.428	.003	.265	-.093	-.207	-.007	.265	0.900	0.120	0.2	1.0	0.5	1.0	A+	
1891	620647	Chem	306	.278	.147	.474	.278	.095	.007	.286	-.110	-.135	.286	-.053	1.606	0.132	-0.3	1.0	-0.4	1.0	A-	
1892	616431	Chem	306	.392	.167	.327	.111	.392	.003	.218	-.193	-.041	-.027	.218	1.055	0.122	1.0	1.0	1.0	1.1	A-	
1893	619907	Chem	306	.265	.271	.317	.134	.265	.013	.172	-.005	-.076	-.068	.172	1.666	0.134	1.0	1.1	0.7	1.1	A-	
1894	619970	Chem	306	.343	.170	.248	.226	.343	.013	.328	-.062	-.165	-.092	.328	1.268	0.125	-0.9	1.0	-0.9	1.0	A-	
1895	616414	Chem	306	.242	.173	.438	.242	.137	.010	.177	-.112	.077	.177	-.142	1.805	0.138	0.6	1.0	1.3	1.1	A-	
1896	620459	Chem	306	.258	.167	.409	.258	.150	.016	.162	-.220	.077	.162	-.010	1.700	0.135	1.0	1.1	0.9	1.1	A-	
1897	619938	Chem	306	.409	.206	.409	.255	.118	.013	.308	-.206	.308	-.061	-.055	0.964	0.121	-0.4	1.0	-0.7	1.0	A+	
1898	619971	Chem	307	.713	.085	.078	.713	.121	.003	.320	-.218	-.172	.320	-.055	-0.402	0.131	-0.4	1.0	-0.6	1.0	A+	
1899	616538	Chem	307	.303	.147	.394	.303	.137	.020	.127	-.049	.016	.127	-.050	1.462	0.130	1.9	1.1	1.9	1.1	A-	
1900	618753	Chem	307	.251	.140	.469	.251	.130	.010	.137	-.177	.125	.137	-.089	1.762	0.137	1.4	1.1	1.3	1.1	A+	
1901	616415	Chem	307	.215	.117	.215	.241	.420	.007	.250	-.193	.250	-.078	.049	1.985	0.144	0.0	1.0	0.3	1.0	A-	
1902	616504	Chem	307	.222	.296	.251	.212	.222	.020	.204	-.035	.033	-.095	.204	1.925	0.143	0.5	1.0	0.5	1.1	A+	
1903	620460	Chem	307	.254	.417	.205	.254	.111	.013	.336	-.079	-.060	.336	-.130	1.740	0.136	-0.8	0.9	-0.8	0.9	A-	
1904	619908	Chem	307	.267	.267	.296	.267	.153	.016	.289	.289	-.030	-.104	-.064	1.663	0.134	-0.4	1.0	0.1	1.0	C-	
1905	619939	Chem	307	.189	.205	.254	.332	.189	.020	.269	-.163	-.024	.035	.269	2.142	0.151	-0.1	1.0	-0.4	1.0	A-	
1906	616512	Chem	305	.213	.400	.223	.213	.157	.007	.125	-.013	-.146	.125	.067	1.931	0.144	1.0	1.1	1.1	1.1	A-	
1907	620071	Chem	305	.161	.161	.236	.236	.354	.013	.198	.198	.046	-.223	.056	2.295	0.161	0.3	1.0	0.3	1.0	A+	
1908	619940	Chem	305	.161	.226	.305	.302	.161	.007	.156	.019	.002	-.107	.156	2.303	0.160	0.4	1.0	1.3	1.2	A+	
1909	620461	Chem	305	.528	.062	.528	.236	.161	.013	.365	-.082	.365	-.236	-.136	0.387	0.119	-2.6	0.9	-2.4	0.9	A+	
1910	616416	Chem	305	.338	.272	.338	.148	.223	.020	.349	-.140	.349	-.139	-.088	1.219	0.126	-1.1	1.0	-0.7	1.0	A-	
1911	620462	Chem	308	.367	.149	.218	.367	.257	.010	.182	-.065	-.120	.182	.008	1.224	0.123	1.4	1.1	2.0	1.1	A+	
1912	616506	Chem	308	.224	.133	.224	.484	.149	.010	.146	-.198	.146	.098	-.069	1.984	0.142	1.0	1.1	1.8	1.2	A-	
1913	618706	Chem	308	.549	.088	.263	.549	.094	.007	.414	-.130	-.228	.414	-.174	0.423	0.119	-3.3	0.9	-2.7	0.9	B-	
1914	619941	Chem	308	.240	.533	.097	.114	.240	.016	.096	.046	-.086	-.043	.096	1.876	0.139	1.6	1.1	2.2	1.2	A+	
1915	616540	Chem	308	.565	.565	.198	.110	.114	.013	.331	.331	-.168	-.105	-.134	0.333	0.120	-1.0	1.0	-1.2	0.9	A+	
1916	620430	Chem	308	.321	.153	.260	.321	.247	.020	.321	-.188	-.058	.321	-.093	1.419	0.127	-0.5	1.0	-0.6	1.0	B-	
1917	616418	Chem	308	.312	.169	.312	.321	.175	.023	.155	-.017	.155	-.139	.066	1.467	0.128	1.6	1.1	1.8	1.1	A-	
1918	616541	Chem	308	.234	.231	.234	.321	.214	.000	-.032	.023	-.032	-.141	.169	1.922	0.140	2.5	1.2	3.0	1.3	A-	
1919	616419	Chem	308	.458	.458	.114	.367	.058	.003	.273	.273	-.111	-.131	-.136	0.806	0.120	0.5	1.0	0.7	1.0	A+	
1920	620463	Chem	308	.565	.149	.081	.201	.565	.003	.393	-.228	-.209	-.127	.393	0.335	0.120	-2.2	0.9	-1.4	0.9	A+	

Table B-4 (continued). Science Multiple-Choice Item Statistics

Ref	ID	FT Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
1921	618707	Chem	308	.286	.312	.286	.201	.195	.007	.292	-.119	.292	-.181	.025	1.622	0.131	-0.1	1.0	0.1	1.0	A+	
1922	616507	Chem	308	.575	.169	.575	.185	.062	.010	.301	-.075	.301	-.163	-.161	0.282	0.121	0.0	1.0	-0.3	1.0	A+	
1923	620431	Chem	308	.198	.166	.260	.360	.198	.016	.177	.063	-.029	-.159	.177	2.123	0.148	0.6	1.1	0.8	1.1	A-	
1924	620464	Chem	308	.334	.104	.461	.334	.065	.036	.103	.055	-.095	-.103	-.013	1.223	0.127	2.2	1.1	2.2	1.1	A-	
1925	618722	Chem	308	.318	.133	.318	.162	.367	.020	.273	.036	.273	-.122	-.136	1.345	0.128	0.4	1.0	0.4	1.0	A+	
1926	616508	Chem	308	.312	.312	.101	.123	.451	.013	.317	.317	-.157	-.185	-.019	1.396	0.129	-0.4	1.0	-0.4	1.0	A-	
1927	618689	Chem	308	.289	.289	.195	.357	.140	.020	.067	.067	.221	-.050	-.168	1.501	0.132	2.7	1.2	2.5	1.2	A+	
1928	616542	Chem	308	.412	.412	.169	.279	.114	.026	.468	.468	-.094	-.233	-.157	0.878	0.122	-3.6	0.9	-3.4	0.9	A+	
1929	620432	Chem	308	.084	.227	.370	.286	.084	.033	.182	-.003	.039	-.067	.182	3.064	0.210	0.0	1.0	0.4	1.1	A-	
1930	620465	Chem	307	.147	.306	.290	.241	.147	.016	.269	.079	-.109	-.131	.269	2.541	0.164	-0.4	1.0	-0.6	0.9	A-	
1931	618723	Chem	307	.290	.280	.290	.261	.163	.007	.125	.078	.125	-.087	-.064	1.651	0.129	1.2	1.1	1.2	1.1	A-	
1932	620433	Chem	307	.231	.231	.251	.231	.277	.010	.124	-.111	-.046	.124	.091	1.964	0.139	0.6	1.0	1.2	1.1	A+	
1933	616509	Chem	307	.241	.287	.241	.283	.173	.016	.128	.114	.128	-.112	-.075	1.896	0.137	0.7	1.1	1.0	1.1	B-	
1934	616544	Chem	307	.303	.277	.303	.264	.150	.007	.232	-.006	.232	-.122	-.071	1.581	0.128	0.0	1.0	-0.1	1.0	A+	
1935	618691	Chem	307	.371	.225	.371	.261	.134	.010	.270	-.027	.270	-.115	-.138	1.245	0.122	-0.7	1.0	-0.8	1.0	A+	
1936	618754	Chem	307	.492	.179	.492	.160	.153	.016	.236	-.129	.236	-.137	-.046	0.565	0.120	1.0	1.0	0.5	1.0	A-	
1937	616545	Chem	307	.212	.212	.156	.290	.329	.013	.260	.260	-.199	-.082	.024	1.974	0.145	0.0	1.0	0.2	1.0	B-	
1938	618692	Chem	307	.345	.332	.345	.222	.091	.010	.234	-.073	.234	-.123	-.070	1.246	0.125	0.7	1.0	1.3	1.1	A-	
1939	618724	Chem	307	.375	.140	.332	.147	.375	.007	.324	-.223	-.013	-.183	.324	1.116	0.123	-0.5	1.0	-0.5	1.0	B-	
1940	620466	Chem	307	.772	.062	.104	.062	.772	.000	.364	-.275	-.139	-.182	.364	-0.738	0.140	-1.3	0.9	-1.6	0.9	A-	
1941	616510	Chem	307	.241	.205	.355	.192	.241	.007	.175	-.088	-.012	-.068	.175	1.804	0.139	1.0	1.1	0.9	1.1	A+	
1942	616362	Chem	305	.702	.141	.092	.702	.059	.007	.356	-.241	-.138	.356	-.153	-0.395	0.130	-1.2	0.9	-1.4	0.9	A-	
1943	616367	Chem	615	.670	.096	.114	.120	.670	.000	.332	-.118	-.225	-.154	.332	-0.167	0.089	-1.7	1.0	-0.7	1.0	A+	
1944	616559	Chem	308	.610	.610	.133	.114	.133	.010	.407	.407	-.164	-.145	-.217	0.141	0.122	-2.3	0.9	-2.1	0.9	C+	
1945	616494	Chem	307	.831	.055	.055	.831	.052	.007	.328	-.142	-.157	.328	-.195	-1.101	0.158	-0.6	0.9	-1.5	0.8	B+	
1946	616427	Chem	307	.694	.209	.039	.694	.055	.003	.207	-.086	-.079	.207	-.095	-0.169	0.127	0.3	1.0	1.0	1.1	A+	
1947	616365	Chem	308	.581	.143	.581	.117	.136	.023	.361	-.202	.361	-.138	-.084	0.122	0.122	-1.1	1.0	-1.3	0.9	B+	
1948	616561	Chem	308	.695	.046	.123	.133	.695	.003	.399	-.149	-.192	-.208	.399	-0.355	0.129	-1.5	0.9	-1.7	0.9	A+	
1949	616397	Chem	309	.295	.295	.168	.227	.307	.003	.359	.359	-.126	-.141	-.077	1.512	0.130	-1.3	0.9	-1.5	0.9	A+	
1950	616492	Chem	617	.449	.191	.449	.214	.130	.016	.300	-.179	.300	-.073	-.064	0.777	0.085	-0.7	1.0	-1.0	1.0	A+	A+
1951	618705	Chem	309	.262	.181	.262	.392	.155	.010	.259	.006	.259	-.130	-.075	1.671	0.135	0.0	1.0	-0.1	1.0	A+	
1952	616564	Chem	309	.246	.117	.220	.411	.246	.007	.229	.008	.099	-.238	.229	1.777	0.137	0.4	1.0	-0.3	1.0	A-	
1953	619953	Chem	309	.191	.191	.450	.168	.185	.007	.302	.302	-.085	-.090	-.049	2.115	0.150	-0.7	0.9	-0.8	0.9	A+	
1954	616368	Chem	309	.204	.165	.440	.181	.204	.010	.090	-.142	.134	-.059	.090	2.024	0.146	1.1	1.1	1.5	1.2	A+	
1955	618708	Chem	307	.267	.134	.182	.417	.267	.000	.406	-.234	-.165	-.074	.406	1.755	0.135	-1.6	0.9	-1.5	0.9	A+	

Table B-4 (continued). Science Multiple-Choice Item Statistics

Ref	ID	FT Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
1956	619954	Chem	307	.202	.202	.241	.358	.182	.016	.101	.101	-.083	.039	-.065	2.121	0.149	1.3	1.1	1.9	1.2	A-	
1957	618737	Chem	307	.336	.251	.195	.209	.336	.010	.296	-.055	-.112	-.138	.296	1.378	0.127	0.1	1.0	-0.1	1.0	B+	
1958	616369	Chem	307	.257	.257	.257	.326	.150	.010	.350	.350	-.167	-.119	-.033	1.790	0.137	-0.7	1.0	-0.2	1.0	A-	
1959	616398	Chem	307	.228	.440	.205	.228	.124	.003	-.150	.080	-.046	-.150	.155	1.982	0.142	3.1	1.3	4.3	1.5	A-	
1960	620441	Chem	307	.443	.443	.248	.199	.101	.010	.260	.260	-.046	-.113	-.171	0.874	0.121	0.4	1.0	0.3	1.0	A+	
1961	616429	Chem	308	.276	.536	.149	.276	.036	.003	.099	-.149	.152	.099	-.096	1.655	0.132	1.7	1.1	1.9	1.2	A+	
1962	618738	Chem	308	.351	.156	.435	.351	.058	.000	.305	-.208	-.068	.305	-.155	1.281	0.124	-0.7	1.0	-1.0	1.0	A-	
1963	620442	Chem	308	.279	.279	.338	.237	.143	.003	.266	.266	-.270	.036	.015	1.639	0.132	0.3	1.0	0.2	1.0	A+	
1964	616520	Chem	308	.607	.127	.195	.607	.068	.003	.120	-.056	-.010	.120	-.095	0.147	0.121	2.2	1.1	2.4	1.1	A+	
1965	616370	Chem	308	.354	.143	.354	.153	.341	.010	.194	-.191	.194	-.025	-.014	1.260	0.124	0.8	1.0	0.5	1.0	A+	
1966	616399	Chem	308	.250	.558	.088	.094	.250	.010	.281	-.156	-.100	.030	.281	1.790	0.136	0.1	1.0	-0.5	1.0	A+	
1967	619955	Chem	308	.390	.146	.390	.257	.195	.013	.263	-.128	.263	-.151	.016	1.078	0.122	0.3	1.0	0.3	1.0	A-	
1968	618709	Chem	308	.208	.110	.331	.331	.208	.020	.140	-.152	.041	-.009	.140	2.029	0.145	0.9	1.1	1.0	1.1	A-	
1969	616400	Chem	309	.372	.379	.172	.372	.078	.000	.220	.020	-.207	.220	-.142	1.148	0.123	0.8	1.0	0.6	1.0	A-	
1970	618739	Chem	309	.262	.191	.165	.379	.262	.003	.206	.028	-.173	-.074	.206	1.695	0.134	0.8	1.1	0.7	1.1	B-	
1971	619957	Chem	309	.252	.252	.256	.414	.074	.003	.259	.259	-.101	-.068	-.127	1.749	0.136	0.2	1.0	0.0	1.0	A-	
1972	619918	Chem	309	.502	.185	.120	.502	.194	.000	.374	-.199	-.163	.374	-.143	0.571	0.119	-2.1	0.9	-2.2	0.9	A-	
1973	620443	Chem	309	.476	.476	.175	.133	.217	.000	.283	.283	-.205	-.103	-.070	0.684	0.119	0.0	1.0	0.0	1.0	A-	
1974	618710	Chem	309	.288	.288	.188	.327	.188	.010	.122	.122	-.060	.062	-.135	1.546	0.131	1.8	1.1	1.8	1.1	A+	
1975	616521	Chem	309	.505	.175	.217	.505	.087	.016	.433	-.171	-.242	.433	-.140	0.518	0.120	-3.1	0.9	-3.0	0.9	A-	
1976	616522	Chem	308	.292	.250	.292	.257	.188	.013	.220	.017	.220	-.166	.013	1.458	0.130	0.3	1.0	0.6	1.0	A+	
1977	618711	Chem	308	.627	.188	.068	.107	.627	.010	.388	-.210	-.070	-.154	.388	-0.046	0.122	-2.1	0.9	-1.5	0.9	A+	
1978	618740	Chem	308	.231	.231	.205	.354	.201	.010	.179	.179	-.049	.011	-.060	1.805	0.139	0.3	1.0	0.7	1.1	A+	
1979	616401	Chem	308	.481	.231	.117	.481	.166	.007	.355	-.131	-.195	.355	-.061	0.604	0.118	-1.9	1.0	-1.8	0.9	B-	
1980	616490	Chem	308	.487	.071	.159	.270	.487	.013	.272	-.139	-.186	.010	.272	0.560	0.118	-0.6	1.0	0.6	1.0	A+	
1981	619958	Chem	308	.321	.321	.253	.244	.172	.010	.174	.174	-.042	-.062	.010	1.318	0.126	1.1	1.1	0.8	1.1	A+	
1982	620444	Chem	308	.260	.260	.201	.302	.231	.007	.256	.256	-.118	-.080	.021	1.644	0.134	-0.1	1.0	0.2	1.0	A+	
1983	619919	Chem	308	.162	.153	.305	.370	.162	.010	.078	.076	.104	-.132	.078	2.268	0.158	0.7	1.1	1.6	1.2	A-	
1984	618745	Chem	308	.377	.253	.377	.179	.179	.013	.254	-.059	.254	-.070	-.071	1.052	0.122	0.0	1.0	0.4	1.0	A+	
1985	618569	Chem	308	.315	.315	.451	.114	.110	.010	.205	.205	.009	-.024	-.167	1.351	0.127	0.6	1.0	0.6	1.0	A-	
1986	616523	Chem	318	.708	.142	.708	.085	.066	.000	.132	-.126	.132	-.127	.077	-0.305	0.127	0.9	1.1	2.5	1.2	A+	
1987	620445	Chem	318	.330	.192	.283	.330	.192	.003	.320	-.093	-.170	.320	-.090	1.408	0.124	-0.5	1.0	-0.6	1.0	A+	
1988	618712	Chem	318	.296	.296	.299	.274	.126	.006	.193	.193	-.115	.001	-.105	1.572	0.128	1.0	1.1	1.0	1.1	A+	
1989	618570	Chem	318	.660	.072	.660	.110	.157	.000	.364	-.144	.364	-.175	-.221	-0.072	0.122	-1.6	0.9	-1.9	0.9	A+	
1990	616491	Chem	318	.399	.113	.399	.204	.280	.003	.289	-.081	.289	-.149	-.120	1.082	0.119	-0.1	1.0	-0.1	1.0	A-	

Table B-4 (continued). Science Multiple-Choice Item Statistics

Ref	ID	FT Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
1991	618756	Chem	318	.293	.211	.264	.293	.226	.006	.084	-.153	-.171	.084	.250	1.593	0.128	2.3	1.1	2.1	1.2	A-	
1992	618741	Chem	318	.481	.151	.267	.481	.091	.009	.277	-.056	-.184	.277	-.112	0.700	0.117	0.1	1.0	0.3	1.0	B+	
1993	619920	Chem	318	.318	.318	.340	.204	.129	.009	.337	.337	-.147	-.027	-.214	1.452	0.126	-0.6	1.0	-0.9	0.9	A+	
1994	620446	Chem	306	.248	.180	.248	.203	.360	.010	.084	.014	.084	-.007	-.077	1.770	0.137	1.4	1.1	1.5	1.1	A-	
1995	618713	Chem	306	.418	.121	.418	.314	.137	.010	.189	-.112	.189	-.027	-.062	0.930	0.121	1.6	1.1	1.8	1.1	A-	
1996	616556	Chem	306	.549	.088	.232	.549	.124	.007	.418	-.134	-.221	.418	-.165	0.364	0.120	-2.9	0.9	-2.7	0.9	A-	
1997	616524	Chem	306	.373	.131	.373	.209	.281	.007	.268	.036	.268	-.244	-.045	1.143	0.123	0.3	1.0	-0.1	1.0	A+	
1998	618572	Chem	306	.111	.141	.111	.346	.395	.007	.090	-.072	.090	.156	-.113	2.804	0.186	0.5	1.1	1.1	1.2	A-	
1999	618742	Chem	306	.467	.131	.467	.258	.134	.010	.218	-.225	.218	-.028	.006	0.712	0.119	1.6	1.1	1.1	1.1	A+	
2000	619921	Chem	306	.513	.131	.216	.513	.124	.016	.237	-.182	-.047	.237	-.033	0.498	0.120	1.1	1.0	1.0	1.0	A+	
2001	616495	Chem	306	.435	.180	.219	.435	.157	.010	.349	-.068	-.109	.349	-.216	0.855	0.120	-1.4	1.0	-0.8	1.0	A+	
2002	620447	Chem	307	.430	.108	.209	.244	.430	.010	.359	-.226	-.094	-.086	.359	0.881	0.120	-1.9	0.9	-1.8	0.9	B+	
2003	616496	Chem	307	.150	.150	.235	.209	.391	.016	.090	.090	-.002	-.029	.033	2.446	0.165	0.9	1.1	0.9	1.1	A+	
2004	618743	Chem	307	.300	.309	.287	.300	.088	.016	.245	-.044	-.072	.245	-.056	1.489	0.130	0.3	1.0	0.3	1.0	A+	
2005	619922	Chem	307	.309	.251	.309	.212	.215	.013	.158	-.084	.158	-.043	.058	1.447	0.129	1.2	1.1	1.6	1.1	B-	
2006	616557	Chem	307	.358	.235	.358	.270	.121	.016	.196	-.007	.196	-.072	-.042	1.199	0.124	1.3	1.1	1.5	1.1	A-	
2007	616525	Chem	307	.231	.192	.225	.231	.339	.013	.186	-.049	-.032	.186	-.007	1.874	0.140	0.6	1.0	1.0	1.1	A+	
2008	616558	Chem	305	.564	.046	.564	.164	.226	.000	.196	-.124	.196	-.201	.007	0.265	0.119	-0.1	1.0	0.2	1.0	A+	
2009	619923	Chem	305	.341	.138	.298	.210	.341	.013	.334	-.117	-.046	-.164	.334	1.226	0.125	-0.8	1.0	-0.9	1.0	A-	
2010	620448	Chem	305	.226	.226	.197	.282	.275	.020	.247	.247	-.102	-.006	-.066	1.822	0.142	0.2	1.0	0.1	1.0	A+	
2011	618744	Chem	305	.328	.259	.259	.328	.134	.020	.101	.102	.000	.101	-.222	1.267	0.127	2.4	1.1	2.0	1.1	A-	
2012	616526	Chem	305	.492	.092	.233	.167	.492	.016	.376	-.163	-.201	-.133	.376	0.528	0.119	-2.4	0.9	-2.1	0.9	A-	
2013	616527	Chem	308	.296	.133	.419	.149	.296	.003	.346	-.023	-.207	-.102	.346	1.586	0.130	-0.7	1.0	-0.5	1.0	A-	
2014	616363	Chem	308	.257	.211	.445	.257	.081	.007	.188	-.109	-.041	.188	.004	1.795	0.136	1.0	1.1	1.2	1.1	B-	
2015	619924	Chem	308	.406	.172	.406	.257	.146	.020	.278	-.087	.278	-.112	-.080	1.025	0.122	0.2	1.0	0.1	1.0	A+	
2016	620449	Chem	308	.260	.292	.266	.260	.156	.026	.065	.177	-.087	.065	-.141	1.734	0.136	2.1	1.1	2.3	1.2	B-	
2017	620450	Chem	308	.419	.419	.133	.351	.097	.000	.212	.212	-.179	-.145	.086	0.986	0.121	1.6	1.1	1.5	1.1	B+	
2018	616364	Chem	308	.373	.325	.373	.218	.081	.003	.299	-.160	.299	-.113	-.101	1.185	0.123	-0.4	1.0	-0.1	1.0	A+	
2019	616393	Chem	308	.315	.321	.237	.315	.127	.000	.247	-.117	.026	.247	-.213	1.477	0.128	0.4	1.0	0.3	1.0	A+	
2020	616560	Chem	308	.455	.149	.455	.270	.123	.003	.376	-.135	.376	-.210	-.121	0.821	0.120	-1.7	0.9	-1.5	0.9	B-	
2021	619925	Chem	308	.377	.172	.159	.292	.377	.000	.170	-.076	-.114	-.026	.170	1.179	0.123	1.9	1.1	1.6	1.1	A-	
2022	616528	Chem	308	.140	.179	.136	.140	.539	.007	.217	.037	-.066	.217	-.106	2.595	0.169	0.1	1.0	0.4	1.1	C-	
2023	618702	Chem	308	.250	.250	.315	.244	.179	.013	.322	.322	-.114	-.055	-.093	1.732	0.137	-0.9	0.9	-0.9	0.9	A+	
2024	619950	Chem	308	.438	.110	.438	.149	.289	.013	.212	-.101	.212	-.138	.014	0.794	0.121	1.4	1.1	1.5	1.1	A-	
2025	616529	Chem	308	.279	.347	.146	.211	.279	.016	.330	-.111	-.121	-.053	.330	1.553	0.133	-0.7	1.0	-0.2	1.0	A-	

Table B-4 (continued). Science Multiple-Choice Item Statistics

Ref	ID	FT Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
2026	616394	Chem	308	.539	.104	.175	.539	.169	.013	.397	-.116	-.221	.397	-.119	0.349	0.120	-1.9	0.9	-1.8	0.9	A-	
2027	618703	Chem	307	.603	.091	.140	.156	.603	.010	.433	-.223	-.092	-.239	.433	0.243	0.121	-3.1	0.9	-3.0	0.9	A-	
2028	616402	Chem	307	.401	.130	.401	.277	.186	.007	.261	-.043	.261	-.113	-.084	1.127	0.120	-0.3	1.0	-0.5	1.0	A+	
2029	616562	Chem	307	.254	.388	.212	.254	.143	.003	-.027	.200	-.098	-.027	-.064	1.844	0.134	1.9	1.1	2.9	1.2	A-	
2030	619951	Chem	307	.381	.381	.088	.274	.251	.007	.360	.360	-.174	-.087	-.147	1.211	0.121	-2.0	0.9	-1.9	0.9	C-	
2031	616395	Chem	307	.218	.218	.192	.404	.179	.007	.193	.193	-.041	-.072	-.010	2.048	0.141	0.0	1.0	0.3	1.0	A-	
2032	616366	Chem	307	.264	.274	.134	.316	.264	.013	.227	-.024	-.091	-.078	.227	1.769	0.133	-0.3	1.0	0.2	1.0	A-	
2033	616428	Chem	307	.531	.147	.531	.205	.114	.003	.311	-.116	.311	-.141	-.185	0.427	0.119	-1.2	1.0	-0.9	1.0	B+	
2034	616396	Chem	307	.590	.062	.235	.590	.114	.000	.284	-.307	-.119	.284	-.048	0.178	0.120	-0.5	1.0	-0.1	1.0	A-	
2035	619928	Chem	307	.511	.075	.143	.270	.511	.000	.292	-.129	-.177	-.113	.292	0.521	0.119	-0.2	1.0	-0.4	1.0	B+	
2036	616563	Chem	307	.394	.153	.319	.394	.104	.029	.067	-.023	-.077	.067	.053	0.970	0.123	3.4	1.1	3.9	1.2	A-	
2037	618704	Chem	307	.365	.365	.218	.303	.108	.007	.356	.356	-.241	-.220	.117	1.160	0.124	-1.4	0.9	-0.5	1.0	A-	
2038	619952	Chem	307	.329	.329	.254	.261	.140	.016	.184	.184	-.150	-.014	-.018	1.313	0.127	1.4	1.1	1.6	1.1	B-	
2039	682635	K-2	112	.786	.786	.054	.089	.071	.000	.464	.464	-.192	-.325	-.212	-3.264	0.255	-0.2	1.0	-0.8	0.8	A+	
2040	684579	K-2	112	.732	.732	.116	.071	.071	.009	.458	.458	-.375	-.085	-.197	-2.900	0.239	-0.1	1.0	1.7	1.4	A-	
2041	684749	K-2	112	.696	.089	.116	.089	.696	.009	.486	-.197	-.303	-.204	.486	-2.679	0.231	-0.3	1.0	-0.6	0.9	A+	
2042	683994	K-2	112	.795	.795	.045	.098	.063	.000	.455	.455	-.449	-.185	-.150	-3.330	0.258	-0.3	1.0	-0.3	0.9	A+	
2043	684434	K-2	112	.625	.625	.170	.089	.107	.009	.535	.535	-.292	-.271	-.193	-2.270	0.222	-0.8	0.9	-1.0	0.8	B+	
2044	684809	K-2	112	.741	.116	.741	.063	.080	.000	.629	-.315	.629	-.198	-.466	-2.957	0.241	-2.0	0.8	-1.8	0.6	A-	
2045	682430	K-2	112	.830	.125	.830	.018	.018	.009	.528	-.366	.528	-.172	-.172	-3.614	0.275	-0.8	0.9	-1.2	0.6	A+	
2046	684712	K-2	112	.911	.009	.009	.063	.911	.009	.325	-.131	-.070	-.174	.325	-4.478	0.356	0.0	1.0	0.6	1.2	A-	
2047	684735	K-2	112	.616	.214	.152	.616	.009	.009	.514	-.324	-.209	.514	-.111	-2.220	0.221	-0.6	0.9	-0.8	0.9	A+	
2048	684487	K-2	112	.920	.920	.009	.009	.054	.009	.388	.388	-.152	-.131	-.209	-4.612	0.374	-0.1	1.0	-0.8	0.5	A-	
2049	683718	K-2	112	.830	.071	.036	.830	.054	.009	.513	-.287	-.194	.513	-.227	-3.614	0.275	-0.7	0.9	-1.2	0.6	A+	
2050	684716	K-2	112	.554	.080	.241	.116	.554	.009	.215	-.331	.040	-.008	.215	-1.885	0.217	3.3	1.3	2.2	1.4	A+	
2051	683982	K-2	112	.357	.143	.357	.277	.205	.018	.199	-.157	.199	.053	-.055	-0.840	0.224	3.2	1.3	2.1	1.5	A+	
2052	684794	K-2	112	.438	.268	.161	.125	.438	.009	.314	-.167	-.055	-.092	.314	-1.276	0.217	1.7	1.2	1.1	1.2	B-	
2053	684871	K-2	112	.518	.241	.107	.518	.116	.018	.502	-.199	-.205	.502	-.213	-1.697	0.216	-0.4	1.0	0.1	1.0	A+	
2054	684493	K-2	112	.714	.161	.071	.714	.045	.009	.470	-.144	-.354	.470	-.178	-2.788	0.235	-0.2	1.0	-0.3	0.9	A+	
2055	684860	K-2	112	.857	.857	.027	.009	.098	.009	.400	.400	-.110	.012	-.308	-3.857	0.294	0.0	1.0	-0.6	0.7	A+	
2056	684280	K-2	112	.786	.786	.098	.054	.054	.009	.441	.441	-.282	-.192	-.098	-3.264	0.255	-0.1	1.0	-0.7	0.8	A-	
2057	684463	K-2	112	.313	.152	.259	.313	.259	.018	.181	-.231	.000	.181	.093	-0.584	0.230	2.8	1.3	2.2	1.6	A-	
2058	684290	K-2	112	.911	.063	.911	.009	.009	.009	.521	-.365	.521	-.152	-.152	-4.478	0.356	-0.7	0.8	-1.4	0.4	A-	
2059	683995	K-2	115	.478	.139	.330	.052	.478	.000	.383	-.404	-.025	-.178	.383	-1.207	0.204	0.4	1.0	-0.1	1.0	A-	
2060	682636	K-2	115	.426	.078	.235	.261	.426	.000	.393	-.130	-.081	-.286	.393	-0.956	0.206	0.1	1.0	1.0	1.1	A+	

Table B-4 (continued). Science Multiple-Choice Item Statistics

Ref	ID	FT Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
2061	684580	K-2	115	.826	.026	.078	.070	.826	.000	.427	-.051	-.408	-.174	.427	-3.134	0.262	-0.5	0.9	-0.6	0.8	A-	
2062	684870	K-2	115	.061	.130	.052	.061	.757	.000	.043	-.069	-.457	.043	.267	1.864	0.409	0.2	1.0	2.4	2.8	A+	
2063	684436	K-2	115	.644	.643	.078	.157	.122	.000	.291	.291	-.162	-.174	-.100	-2.011	0.212	1.1	1.1	0.4	1.1	B+	
2064	684750	K-2	115	.696	.078	.139	.696	.087	.000	.342	-.337	-.188	.342	-.007	-2.289	0.220	0.4	1.0	0.6	1.1	A+	
2065	684810	K-2	115	.704	.200	.096	.704	.000	.000	.529	-.446	-.214	.529	.000	-2.337	0.221	-1.4	0.9	-1.4	0.8	A+	
2066	682432	K-2	115	.730	.061	.148	.061	.730	.000	.493	-.144	-.259	-.385	.493	-2.488	0.227	-1.0	0.9	-1.2	0.8	A-	
2067	684713	K-2	115	.930	.026	.009	.930	.035	.000	.334	-.144	.009	.334	-.342	-4.276	0.380	-0.2	0.9	-0.5	0.7	A-	
2068	684736	K-2	115	.400	.400	.087	.270	.243	.000	.283	.283	.054	.027	-.386	-0.828	0.208	1.1	1.1	1.3	1.2	A+	
2069	684488	K-2	115	.939	.939	.017	.009	.035	.000	.251	.251	-.052	-.198	-.191	-4.429	0.403	-0.1	0.9	2.3	2.7	A+	
2070	683719	K-2	115	.696	.157	.696	.061	.087	.000	.170	.014	.170	-.153	-.166	-2.289	0.220	1.9	1.2	2.2	1.4	A+	
2071	684717	K-2	115	.765	.096	.765	.035	.104	.000	.448	-.251	.448	-.237	-.238	-2.702	0.237	-0.7	0.9	-0.1	1.0	A-	
2072	684728	K-2	115	.452	.052	.078	.452	.417	.000	.289	-.149	-.360	.289	-.028	-1.082	0.204	1.3	1.1	1.0	1.1	A+	
2073	684768	K-2	115	.652	.104	.652	.139	.104	.000	.635	-.308	.635	-.349	-.287	-2.056	0.213	-2.9	0.8	-2.4	0.7	A-	
2074	684872	K-2	115	.600	.270	.052	.070	.600	.009	.507	-.209	-.466	-.182	.507	-1.792	0.207	-1.4	0.9	-1.5	0.8	B-	
2075	684494	K-2	115	.548	.087	.104	.261	.548	.000	.518	-.280	-.189	-.276	.518	-1.539	0.204	-1.7	0.9	-1.6	0.8	A-	
2076	684861	K-2	115	.713	.078	.096	.713	.113	.000	.479	-.329	-.193	.479	-.227	-2.387	0.223	-0.8	0.9	-1.3	0.8	B-	
2077	684281	K-2	115	.600	.600	.113	.157	.130	.000	.515	.515	-.248	-.357	-.132	-1.792	0.207	-1.5	0.9	-1.2	0.9	A+	
2078	684464	K-2	115	.826	.087	.826	.061	.026	.000	.478	-.280	.478	-.314	-.171	-3.134	0.262	-0.7	0.9	-1.1	0.7	A-	
2079	683983	K-2	113	.885	.062	.018	.885	.035	.000	.470	-.424	-.075	.470	-.205	-4.136	0.318	-0.7	0.8	-0.1	0.9	A-	
2080	684729	K-2	113	.726	.726	.142	.062	.071	.000	.506	.506	-.335	-.357	-.090	-2.852	0.235	-0.5	0.9	-1.2	0.8	A+	
2081	682637	K-2	113	.522	.150	.522	.027	.301	.000	.420	-.181	.420	-.019	-.310	-1.733	0.213	0.6	1.1	0.0	1.0	A+	
2082	684581	K-2	113	.858	.027	.027	.858	.088	.000	.548	-.255	-.154	.548	-.441	-3.857	0.293	-1.2	0.8	-1.2	0.6	A+	
2083	684291	K-2	113	.726	.142	.035	.726	.097	.000	.405	-.278	-.224	.405	-.143	-2.852	0.235	0.4	1.0	0.6	1.1	A+	
2084	683725	K-2	113	.531	.159	.186	.124	.531	.000	.358	-.168	-.203	-.116	.358	-1.779	0.213	1.3	1.1	1.2	1.1	C+	
2085	684873	K-2	113	.646	.088	.062	.646	.195	.009	.453	-.333	-.252	.453	-.141	-2.386	0.221	0.1	1.0	0.2	1.0	A-	
2086	683720	K-2	113	.770	.088	.053	.770	.088	.000	.528	-.269	-.277	.528	-.294	-3.142	0.247	-0.9	0.9	-1.0	0.8	A-	
2087	682433	K-2	113	.425	.124	.071	.425	.381	.000	.338	-.253	-.422	.338	.050	-1.235	0.214	1.5	1.1	1.2	1.2	A-	
2088	684714	K-2	113	.549	.381	.549	.035	.035	.000	.216	-.173	.216	-.058	-.067	-1.870	0.214	3.0	1.3	3.9	1.6	A-	
2089	684737	K-2	113	.797	.035	.062	.106	.796	.000	.580	-.097	-.409	-.380	.580	-3.333	0.257	-1.4	0.8	-1.7	0.6	A-	
2090	684489	K-2	113	.363	.363	.133	.221	.274	.009	.414	.414	-.140	-.033	-.291	-0.907	0.219	0.0	1.0	0.4	1.1	A-	
2091	682628	K-2	113	.743	.106	.743	.097	.044	.009	.478	-.391	.478	-.204	-.098	-2.965	0.239	-0.4	1.0	-0.6	0.9	B-	
2092	684444	K-2	113	.513	.513	.301	.071	.097	.018	.279	.279	.022	-.344	-.216	-1.688	0.213	2.2	1.2	2.5	1.3	A+	
2093	683726	K-2	113	.460	.159	.265	.106	.460	.009	.557	-.351	-.261	-.086	.557	-1.417	0.213	-1.4	0.9	-1.6	0.8	A-	
2094	683727	K-2	113	.602	.602	.097	.106	.186	.009	.388	.388	-.229	-.204	-.133	-2.147	0.217	0.9	1.1	1.8	1.3	A+	
2095	684751	K-2	113	.620	.168	.619	.133	.062	.018	.553	-.291	.553	-.274	-.282	-2.241	0.218	-1.2	0.9	-0.8	0.9	A-	

Table B-4 (continued). Science Multiple-Choice Item Statistics

Ref	ID	FT Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
2096	682627	K-2	113	.345	.177	.327	.142	.345	.009	.340	-.163	-.001	-.262	.340	-0.810	0.221	0.4	1.0	2.2	1.4	A+	
2097	684862	K-2	113	.797	.796	.097	.053	.044	.009	.472	.472	-.406	-.188	-.098	-3.333	0.257	-0.4	0.9	-0.9	0.8	A-	
2098	684282	K-2	113	.699	.124	.699	.088	.080	.009	.570	-.270	.570	-.212	-.388	-2.690	0.229	-1.4	0.9	-1.3	0.8	A-	
2099	684465	K-2	109	.450	.183	.450	.092	.257	.018	.372	-.303	.372	-.264	.040	-1.528	0.215	0.9	1.1	1.0	1.1	A-	
2100	683984	K-2	109	.395	.477	.083	.037	.394	.009	.300	.007	-.378	-.175	.300	-1.248	0.218	1.8	1.2	1.4	1.2	A+	
2101	684874	K-2	109	.284	.450	.284	.147	.119	.000	.332	-.133	.332	-.041	-.212	-0.643	0.234	0.3	1.0	1.3	1.3	A+	
2102	684445	K-2	109	.908	.037	.046	.009	.908	.000	.359	-.133	-.303	-.158	.359	-4.486	0.346	-0.2	0.9	-0.6	0.7	A+	
2103	684582	K-2	109	.780	.055	.138	.780	.028	.000	.466	-.139	-.417	.466	-.109	-3.323	0.251	-0.6	0.9	-0.8	0.8	A+	
2104	684730	K-2	109	.734	.083	.734	.028	.156	.000	.466	-.406	.466	-.049	-.237	-3.026	0.237	-0.7	0.9	0.6	1.1	A-	
2105	684708	K-2	109	.239	.284	.266	.239	.211	.000	.143	.060	-.175	.143	-.026	-0.356	0.246	1.3	1.2	2.8	1.7	A+	
2106	684385	K-2	109	.651	.651	.101	.165	.083	.000	.438	.438	-.232	-.172	-.272	-2.554	0.223	0.0	1.0	-0.2	1.0	A+	
2107	683734	K-2	109	.734	.734	.046	.101	.119	.000	.470	.470	-.210	-.348	-.182	-3.026	0.237	-0.8	0.9	-0.2	1.0	A+	
2108	682434	K-2	109	.569	.138	.110	.569	.183	.000	.537	-.343	-.047	.537	-.344	-2.124	0.215	-1.3	0.9	-1.0	0.9	A+	
2109	684702	K-2	109	.450	.266	.147	.450	.128	.009	.192	-.078	-.069	.192	-.122	-1.528	0.215	3.1	1.3	2.9	1.4	B-	
2110	684283	K-2	109	.505	.165	.101	.229	.505	.000	.633	-.272	-.251	-.333	.633	-1.803	0.214	-2.8	0.8	-2.6	0.7	A+	
2111	684490	K-2	109	.872	.073	.009	.037	.872	.009	.559	-.394	-.178	-.289	.559	-4.069	0.303	-1.3	0.8	-1.8	0.4	A+	
2112	682634	K-2	109	.505	.119	.211	.505	.165	.000	.334	-.254	-.160	.334	-.052	-1.803	0.214	1.5	1.1	0.9	1.1	A+	
2113	684738	K-2	109	.615	.101	.174	.615	.110	.000	.476	-.167	-.260	.476	-.265	-2.359	0.219	-0.5	1.0	0.0	1.0	A+	
2114	682638	K-2	109	.725	.183	.037	.055	.725	.000	.521	-.389	-.278	-.131	.521	-2.971	0.235	-1.2	0.9	-1.0	0.8	A+	
2115	683737	K-2	109	.486	.193	.174	.147	.486	.000	.433	-.222	-.013	-.349	.433	-1.711	0.214	0.0	1.0	0.0	1.0	A-	
2116	684752	K-2	109	.661	.138	.092	.661	.101	.009	.454	-.287	-.210	.454	-.200	-2.604	0.224	-0.1	1.0	-0.8	0.9	A+	
2117	682629	K-2	109	.339	.257	.138	.266	.339	.000	.459	-.227	-.157	-.144	.459	-0.956	0.224	-0.6	0.9	-0.5	0.9	A+	
2118	684863	K-2	109	.413	.183	.083	.413	.321	.000	.229	-.218	-.215	.229	.067	-1.342	0.216	2.3	1.2	2.3	1.3	A+	
2119	684864	K-2	114	.360	.307	.167	.158	.360	.009	.241	-.101	-.230	.057	.241	-0.851	0.211	1.3	1.1	1.8	1.3	A-	
2120	684446	K-2	114	.807	.088	.026	.807	.079	.000	.507	-.253	-.124	.507	-.403	-3.248	0.258	-0.7	0.9	-0.9	0.8	A+	
2121	683985	K-2	114	.658	.658	.070	.035	.237	.000	.221	.221	-.209	-.011	-.116	-2.322	0.217	2.1	1.2	1.7	1.2	A+	
2122	684703	K-2	114	.246	.360	.237	.149	.246	.009	.092	-.140	.086	-.015	.092	-0.222	0.232	1.4	1.2	2.6	1.6	A-	
2123	684753	K-2	114	.316	.298	.123	.316	.263	.000	.298	-.249	-.290	.298	.160	-0.623	0.217	0.7	1.1	1.2	1.2	A+	
2124	683714	K-2	114	.140	.140	.140	.035	.684	.000	.298	-.258	.298	-.058	-.007	0.548	0.282	-0.2	1.0	-0.3	0.9	A-	
2125	684799	K-2	114	.798	.096	.798	.053	.044	.009	.572	-.306	.572	-.350	-.196	-3.183	0.254	-1.4	0.8	-1.8	0.6	B-	
2126	684467	K-2	114	.746	.746	.026	.070	.149	.009	.421	.421	-.097	-.226	-.250	-2.827	0.235	-0.2	1.0	-0.3	0.9	A+	
2127	684709	K-2	114	.588	.149	.175	.079	.588	.009	.652	-.377	-.275	-.228	.652	-1.961	0.209	-3.3	0.8	-3.1	0.7	A-	
2128	683735	K-2	114	.825	.053	.061	.053	.825	.009	.535	-.273	-.261	-.264	.535	-3.385	0.267	-1.1	0.8	-1.4	0.7	A-	
2129	684764	K-2	114	.465	.465	.114	.123	.289	.009	.292	.292	-.119	-.166	-.073	-1.367	0.205	1.4	1.1	0.9	1.1	A-	
2130	684691	K-2	114	.886	.886	.018	.035	.044	.018	.531	.531	-.204	-.268	-.395	-3.967	0.315	-1.2	0.8	-1.0	0.6	A+	

Table B-4 (continued). Science Multiple-Choice Item Statistics

Ref	ID	FT Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
2131	684710	K-2	114	.746	.061	.061	.746	.123	.009	.574	-.386	-.216	.574	-.257	-2.827	0.235	-1.5	0.8	-1.7	0.7	A+	
2132	684455	K-2	114	.904	.061	.904	.009	.018	.009	.502	-.368	.502	-.109	-.220	-4.178	0.337	-0.6	0.8	-1.6	0.5	A+	
2133	684811	K-2	114	.483	.079	.079	.482	.351	.009	.393	-.379	-.331	.393	.034	-1.451	0.205	0.2	1.0	-0.2	1.0	A+	
2134	684740	K-2	114	.649	.649	.105	.123	.114	.009	.425	.425	-.188	-.257	-.126	-2.275	0.215	0.0	1.0	-0.6	0.9	A-	
2135	684466	K-2	114	.632	.167	.105	.088	.632	.009	.512	-.363	-.153	-.155	.512	-2.183	0.213	-1.2	0.9	-0.8	0.9	A+	
2136	683738	K-2	114	.404	.035	.360	.404	.193	.009	.202	-.256	-.064	.202	-.001	-1.070	0.207	2.0	1.2	3.1	1.4	A+	
2137	684454	K-2	114	.061	.789	.061	.061	.079	.009	-.064	.341	-.180	-.064	-.220	1.527	0.399	0.5	1.1	1.9	2.3	A+	
2138	682632	K-2	114	.342	.202	.237	.342	.202	.018	.332	-.192	-.217	.332	.070	-0.761	0.213	0.2	1.0	1.0	1.1	A+	
2139	682633	K-2	118	.559	.229	.559	.136	.076	.000	.375	-.209	.375	-.151	-.175	-1.849	0.204	0.6	1.1	1.0	1.1	A-	
2140	684865	K-2	118	.271	.280	.331	.271	.119	.000	.204	.024	.005	.204	-.321	-0.376	0.224	1.1	1.1	2.4	1.5	A-	
2141	684723	K-2	118	.856	.051	.085	.008	.856	.000	.466	-.364	-.291	-.030	.466	-3.683	0.280	-0.5	0.9	-1.1	0.7	A+	
2142	683986	K-2	118	.390	.136	.390	.195	.280	.000	.258	-.093	.258	.086	-.285	-1.018	0.207	1.6	1.1	1.8	1.2	A+	
2143	684704	K-2	118	.559	.559	.161	.136	.144	.000	.263	.263	-.196	-.134	-.037	-1.849	0.204	2.0	1.2	1.1	1.1	A+	
2144	684471	K-2	118	.466	.119	.466	.119	.297	.000	.322	-.211	.322	-.284	-.002	-1.395	0.203	1.0	1.1	1.3	1.1	A+	
2145	683715	K-2	118	.636	.119	.110	.136	.636	.000	.669	-.223	-.336	-.424	.669	-2.235	0.210	-3.2	0.7	-3.0	0.7	B+	
2146	684800	K-2	118	.475	.398	.475	.068	.059	.000	.241	-.044	.241	-.285	-.115	-1.436	0.203	2.5	1.2	2.1	1.2	A-	
2147	684468	K-2	118	.602	.144	.186	.068	.602	.000	.470	-.116	-.328	-.245	.470	-2.060	0.207	-0.7	0.9	-0.2	1.0	A+	
2148	684284	K-2	118	.475	.059	.475	.339	.127	.000	.293	-.081	.293	-.152	-.165	-1.436	0.203	1.4	1.1	1.5	1.2	A-	
2149	683736	K-2	118	.949	.008	.017	.025	.949	.000	.517	-.181	-.273	-.393	.517	-4.944	0.432	-0.7	0.7	-1.7	0.2	A-	
2150	684765	K-2	118	.576	.178	.576	.119	.127	.000	.458	-.109	.458	-.309	-.254	-1.933	0.205	-0.5	1.0	-0.2	1.0	A-	
2151	684692	K-2	118	.754	.754	.119	.102	.025	.000	.240	.240	-.174	-.030	-.241	-2.913	0.233	1.4	1.2	0.6	1.1	A+	
2152	684741	K-2	118	.576	.237	.127	.576	.059	.000	.325	-.152	-.153	.325	-.190	-1.933	0.205	1.1	1.1	1.7	1.2	A-	
2153	684456	K-2	118	.771	.771	.144	.034	.051	.000	.507	.507	-.364	-.280	-.156	-3.024	0.238	-0.9	0.9	-1.2	0.8	A-	
2154	684812	K-2	118	.610	.195	.127	.059	.610	.008	.324	-.104	-.195	-.241	.324	-2.103	0.208	1.2	1.1	1.2	1.1	A-	
2155	684451	K-2	118	.788	.788	.025	.076	.110	.000	.396	.396	-.115	-.302	-.203	-3.140	0.244	0.0	1.0	-0.4	0.9	A-	
2156	684321	K-2	118	.915	.915	.051	.025	.008	.000	.362	.362	-.183	-.254	-.225	-4.352	0.346	-0.2	0.9	-0.5	0.7	A-	
2157	683739	K-2	118	.848	.847	.051	.076	.017	.008	.557	.557	-.382	-.295	-.135	-3.606	0.274	-1.3	0.8	-1.5	0.6	A+	
2158	684754	K-2	118	.559	.093	.559	.153	.186	.008	.431	-.274	.431	-.187	-.119	-1.849	0.204	-0.2	1.0	-0.5	0.9	A+	
2159	684755	K-2	111	.180	.207	.180	.351	.261	.000	.176	-.199	.176	.079	-.056	0.008	0.263	0.2	1.0	3.3	2.3	A-	
2160	682630	K-2	111	.405	.378	.126	.090	.405	.000	.260	-.116	-.147	-.079	.260	-1.328	0.214	1.8	1.2	2.4	1.3	A+	
2161	684866	K-2	111	.514	.514	.234	.144	.108	.000	.474	.474	-.191	-.219	-.254	-1.868	0.212	-0.4	1.0	-0.4	1.0	A+	
2162	684452	K-2	111	.333	.126	.333	.378	.162	.000	.255	-.096	.255	-.128	-.071	-0.952	0.221	1.0	1.1	2.7	1.5	A-	
2163	683987	K-2	111	.748	.072	.117	.748	.063	.000	.506	-.189	-.362	.506	-.224	-3.154	0.242	-0.5	0.9	-0.9	0.8	A+	
2164	684705	K-2	111	.802	.802	.072	.090	.036	.000	.594	.594	-.320	-.361	-.272	-3.532	0.261	-1.6	0.8	-1.8	0.6	A+	
2165	684472	K-2	111	.234	.189	.216	.360	.234	.000	.315	-.187	-.082	-.055	.315	-0.371	0.241	-0.2	1.0	1.9	1.5	A+	

Table B-4 (continued). Science Multiple-Choice Item Statistics

Ref	ID	FT Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
2166	683716	K-2	111	.775	.126	.775	.063	.036	.000	.454	-.243	.454	-.232	-.282	-3.336	0.251	-0.4	0.9	-0.5	0.9	A-	
2167	684801	K-2	111	.324	.324	.099	.036	.541	.000	.197	.197	-.245	-.252	.057	-0.903	0.222	2.6	1.3	1.3	1.2	B+	
2168	684469	K-2	111	.378	.270	.198	.378	.144	.009	.182	-.064	-.184	.182	.000	-1.190	0.216	2.6	1.2	3.0	1.5	A-	
2169	684285	K-2	111	.604	.099	.189	.604	.108	.000	.415	-.289	-.206	.415	-.115	-2.326	0.217	0.5	1.0	0.2	1.0	A-	
2170	684583	K-2	111	.811	.054	.811	.054	.081	.000	.552	-.241	.552	-.432	-.234	-3.601	0.265	-1.2	0.8	-1.3	0.7	A-	
2171	684766	K-2	111	.288	.162	.306	.243	.288	.000	-.062	-.066	-.045	.171	-.062	-0.701	0.228	3.8	1.4	4.8	2.2	A-	
2172	684693	K-2	111	.613	.090	.613	.180	.117	.000	.552	-.328	.552	-.240	-.257	-2.373	0.218	-1.3	0.9	-1.2	0.9	A+	
2173	684743	K-2	111	.451	.450	.180	.126	.243	.000	.332	.332	-.073	-.130	-.219	-1.554	0.212	1.3	1.1	1.5	1.2	B+	
2174	684457	K-2	111	.541	.261	.117	.541	.081	.000	.543	-.342	-.187	.543	-.220	-2.003	0.213	-1.4	0.9	-1.2	0.9	A-	
2175	684813	K-2	111	.685	.054	.144	.685	.117	.000	.538	-.366	-.144	.538	-.362	-2.769	0.228	-1.1	0.9	-0.4	0.9	A+	
2176	684322	K-2	111	.775	.099	.063	.775	.063	.000	.607	-.371	-.325	.607	-.263	-3.336	0.251	-1.7	0.8	-1.6	0.7	B+	
2177	684724	K-2	111	.550	.550	.306	.081	.063	.000	.480	.480	-.130	-.427	-.255	-2.049	0.213	-0.4	1.0	-0.4	1.0	A-	
2178	683728	K-2	111	.604	.171	.090	.135	.604	.000	.434	-.389	-.059	-.143	.434	-2.326	0.217	0.2	1.0	0.3	1.0	A-	
2179	683729	K-2	111	.622	.054	.622	.261	.063	.000	.430	-.125	.430	-.340	-.128	-2.029	0.212	-0.4	1.0	-0.8	0.9	B-	
2180	684795	K-2	111	.883	.090	.009	.018	.883	.000	.385	-.365	.060	-.189	.385	-3.747	0.308	-0.4	0.9	-0.8	0.7	A+	
2181	682631	K-2	111	.613	.180	.135	.613	.072	.000	.443	-.297	-.222	.443	-.099	-1.984	0.211	-0.7	1.0	-0.9	0.9	A+	
2182	684875	K-2	111	.523	.225	.090	.523	.162	.000	.387	-.154	-.245	.387	-.160	-1.552	0.206	0.1	1.0	-0.2	1.0	B-	
2183	684323	K-2	111	.541	.279	.541	.054	.126	.000	.527	-.393	.527	-.163	-.149	-1.637	0.207	-1.9	0.9	-1.6	0.8	A+	
2184	684756	K-2	111	.252	.009	.018	.252	.721	.000	.272	-.054	.053	.272	-.267	-0.170	0.235	0.5	1.1	1.1	1.2	A-	
2185	684706	K-2	111	.234	.468	.090	.207	.234	.000	.389	-.098	-.275	-.092	.389	-0.056	0.241	-0.4	1.0	-0.4	0.9	A-	
2186	684473	K-2	111	.613	.126	.613	.072	.189	.000	.443	-.421	.443	-.066	-.151	-1.984	0.211	-0.7	0.9	-0.8	0.9	A+	
2187	684814	K-2	111	.883	.045	.045	.027	.883	.000	.345	-.257	-.153	-.160	.345	-3.747	0.308	-0.3	0.9	-0.4	0.8	A-	
2188	684802	K-2	111	.189	.505	.090	.216	.189	.000	.244	.055	-.252	-.123	.244	0.255	0.259	0.4	1.1	1.5	1.4	A-	
2189	684470	K-2	111	.550	.072	.550	.216	.162	.000	.324	-.165	.324	-.118	-.189	-1.680	0.207	0.8	1.1	0.6	1.1	B-	
2190	684286	K-2	111	.487	.180	.153	.486	.180	.000	.389	-.146	-.323	.389	-.057	-1.382	0.206	0.0	1.0	-0.2	1.0	A-	
2191	684584	K-2	111	.694	.694	.144	.090	.072	.000	.341	.341	-.213	-.102	-.207	-2.401	0.221	0.1	1.0	0.6	1.1	B+	
2192	684767	K-2	111	.414	.216	.117	.414	.252	.000	.168	-.040	.042	.168	-.183	-1.038	0.209	2.5	1.2	2.2	1.3	A-	
2193	684694	K-2	111	.523	.153	.207	.523	.117	.000	.551	-.114	-.388	.551	-.238	-1.552	0.206	-2.3	0.9	-2.0	0.8	A-	
2194	684744	K-2	111	.631	.631	.153	.108	.108	.000	.560	.560	-.365	-.196	-.251	-2.074	0.212	-2.1	0.8	-1.8	0.8	A+	
2195	684458	K-2	111	.793	.045	.081	.072	.793	.009	.357	-.112	-.254	-.207	.357	-2.999	0.249	-0.3	1.0	0.1	1.0	A-	
2196	683717	K-2	111	.514	.243	.036	.514	.207	.000	.311	-.199	-.120	.311	-.118	-1.510	0.206	1.0	1.1	3.1	1.4	A+	
2197	684453	K-2	111	.288	.180	.414	.117	.288	.000	.306	-.219	-.037	-.111	.306	-0.383	0.226	0.6	1.1	0.5	1.1	A-	
2198	684687	K-2	111	.306	.207	.270	.306	.216	.000	.222	-.108	-.081	.222	-.056	-0.484	0.223	1.1	1.1	1.6	1.3	A+	
2199	684757	K-2	111	.865	.036	.045	.054	.865	.000	.465	-.220	-.197	-.340	.465	-3.808	0.307	-0.3	0.9	0.4	1.1	A-	
2200	683730	K-2	111	.802	.802	.108	.027	.063	.000	.492	.492	-.251	-.265	-.309	-3.235	0.269	-0.2	1.0	-0.4	0.8	A-	

Table B-4 (continued). Science Multiple-Choice Item Statistics

Ref	ID	FT Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
2201	684796	K-2	111	.730	.730	.117	.054	.090	.009	.545	.545	-.344	-.356	-.097	-2.713	0.244	-0.7	0.9	-0.2	1.0	A-	
2202	683723	K-2	111	.432	.189	.117	.432	.261	.000	.259	-.100	-.282	.259	.003	-1.042	0.219	2.3	1.2	3.8	1.7	A+	
2203	684683	K-2	111	.550	.162	.550	.234	.054	.000	.566	-.313	.566	-.304	-.165	-1.663	0.220	-1.3	0.9	-1.2	0.8	A-	
2204	684326	K-2	111	.451	.252	.198	.450	.099	.000	.461	-.209	-.107	.461	-.322	-1.138	0.219	0.1	1.0	0.2	1.0	A-	
2205	684688	K-2	111	.739	.036	.739	.063	.153	.009	.465	-.211	.465	-.316	-.245	-2.773	0.247	0.1	1.0	0.6	1.1	A+	
2206	684272	K-2	111	.640	.640	.207	.108	.045	.000	.397	.397	-.158	-.275	-.197	-2.160	0.227	1.1	1.1	0.3	1.1	A+	
2207	684483	K-2	111	.775	.171	.775	.000	.036	.018	.408	-.220	.408	.000	-.375	-3.027	0.258	0.6	1.1	0.0	1.0	A-	
2208	684803	K-2	111	.793	.063	.063	.793	.081	.000	.604	-.145	-.428	.604	-.386	-3.164	0.265	-1.5	0.8	-0.9	0.7	A-	
2209	684267	K-2	111	.820	.045	.820	.045	.081	.009	.544	-.171	.544	-.293	-.400	-3.384	0.277	-0.6	0.9	-1.0	0.7	B-	
2210	684575	K-2	111	.423	.288	.126	.162	.423	.000	.438	-.056	-.360	-.195	.438	-0.994	0.220	0.1	1.0	0.5	1.1	A+	
2211	684287	K-2	111	.631	.108	.631	.171	.090	.000	.480	-.170	.480	-.267	-.273	-2.109	0.226	0.1	1.0	-0.4	0.9	A-	
2212	684585	K-2	111	.946	.946	.036	.009	.000	.009	.364	.364	-.288	-.190	.000	-4.982	0.443	0.0	1.0	-0.7	0.4	A-	
2213	684769	K-2	111	.414	.270	.162	.414	.144	.009	.326	-.086	-.092	.326	-.221	-0.946	0.220	1.5	1.1	2.1	1.4	A-	
2214	683988	K-2	111	.838	.838	.081	.036	.036	.009	.587	.587	-.353	-.220	-.366	-3.544	0.288	-1.2	0.8	-1.0	0.6	A+	
2215	684745	K-2	111	.658	.658	.135	.126	.063	.018	.573	.573	-.391	-.289	-.041	-2.265	0.230	-1.0	0.9	-1.2	0.8	A+	
2216	684459	K-2	111	.595	.099	.595	.171	.126	.009	.335	-.225	.335	-.186	-.050	-1.907	0.223	2.2	1.2	1.9	1.3	A+	
2217	684788	K-2	111	.766	.108	.766	.063	.054	.009	.632	-.385	.632	-.324	-.260	-2.961	0.255	-1.5	0.8	-1.6	0.6	A+	
2218	684447	K-2	111	.297	.054	.261	.378	.297	.009	.206	-.221	-.223	.133	.206	-0.282	0.234	2.7	1.3	2.3	1.6	A-	
2219	684734	K-2	105	.933	.933	.019	.029	.019	.000	.432	.432	-.293	-.300	-.130	-4.501	0.408	-0.4	0.9	-0.8	0.5	A+	
2220	684725	K-2	105	.714	.086	.048	.152	.714	.000	.497	-.123	-.329	-.334	.497	-2.501	0.239	-0.6	0.9	-0.6	0.9	A-	
2221	683731	K-2	105	.752	.057	.752	.048	.143	.000	.324	-.191	.324	-.339	-.066	-2.739	0.249	0.9	1.1	0.0	1.0	A-	
2222	684797	K-2	105	.581	.581	.067	.029	.324	.000	.256	.256	-.129	-.314	-.090	-1.771	0.220	2.1	1.2	1.7	1.2	A+	
2223	683724	K-2	105	.667	.086	.057	.190	.667	.000	.511	-.337	-.182	-.266	.511	-2.226	0.230	-0.8	0.9	-0.6	0.9	A+	
2224	684684	K-2	105	.400	.219	.400	.048	.333	.000	.273	-.008	.273	.058	-.304	-0.864	0.221	1.7	1.2	2.0	1.3	A+	
2225	684328	K-2	105	.943	.943	.000	.029	.029	.000	.489	.489	.000	-.354	-.327	-4.680	0.437	-0.5	0.8	-1.3	0.3	A-	
2226	684689	K-2	105	.667	.067	.143	.124	.667	.000	.356	-.120	-.327	-.071	.356	-2.226	0.230	0.8	1.1	0.2	1.0	A+	
2227	684273	K-2	105	.819	.819	.019	.086	.067	.010	.586	.586	-.244	-.353	-.379	-3.218	0.276	-1.3	0.8	-1.4	0.6	A+	
2228	684484	K-2	105	.838	.838	.067	.057	.038	.000	.456	.456	-.397	-.201	-.116	-3.376	0.287	-0.4	0.9	-0.4	0.8	A+	
2229	684804	K-2	105	.971	.971	.019	.010	.000	.000	.314	.314	-.293	-.126	.000	-5.446	0.598	0.1	0.9	-0.8	0.3	A-	
2230	684268	K-2	105	.581	.181	.095	.143	.581	.000	.229	-.054	-.038	-.232	.229	-1.771	0.220	2.4	1.2	1.5	1.2	A+	
2231	684576	K-2	105	.200	.248	.448	.200	.105	.000	.009	-.133	.231	.009	-.199	0.323	0.266	1.8	1.3	3.3	2.2	A-	
2232	684288	K-2	105	.771	.086	.095	.048	.771	.000	.482	-.194	-.227	-.381	.482	-2.866	0.255	-0.5	0.9	1.0	1.2	A+	
2233	684586	K-2	105	.629	.629	.286	.019	.067	.000	.361	.361	-.157	-.228	-.290	-2.019	0.225	0.9	1.1	0.3	1.0	A+	
2234	684784	K-2	105	.743	.095	.076	.743	.086	.000	.567	-.348	-.084	.567	-.441	-2.678	0.246	-1.3	0.8	-1.1	0.8	A-	
2235	683989	K-2	105	.667	.048	.086	.190	.667	.010	.544	-.277	-.369	-.243	.544	-2.226	0.230	-1.1	0.9	-1.2	0.8	A+	

Table B-4 (continued). Science Multiple-Choice Item Statistics

Ref	ID	FT Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
2236	684718	K-2	105	.619	.619	.067	.010	.305	.000	.334	.334	-.174	-.195	-.217	-1.969	0.224	1.1	1.1	0.5	1.1	A-	
2237	684460	K-2	105	.533	.286	.533	.067	.114	.000	.380	-.433	.380	.014	.007	-1.531	0.218	0.7	1.1	0.5	1.1	A-	
2238	684789	K-2	105	.733	.733	.038	.076	.152	.000	.543	.543	-.256	-.494	-.167	-2.618	0.244	-1.0	0.9	-1.2	0.8	A+	
2239	684790	K-2	115	.626	.165	.626	.070	.139	.000	.467	-.387	.467	-.294	-.021	-2.223	0.215	-0.3	1.0	-0.6	0.9	A-	
2240	684448	K-2	115	.600	.130	.600	.052	.217	.000	.465	-.322	.465	-.143	-.212	-2.086	0.212	-0.3	1.0	-0.5	0.9	B-	
2241	684726	K-2	115	.687	.104	.687	.687	.130	.000	.382	-.171	-.167	.382	-.238	-2.559	0.224	0.6	1.1	0.4	1.1	B-	
2242	684699	K-2	115	.687	.687	.026	.052	.235	.000	.273	.273	-.340	-.286	-.021	-2.559	0.224	1.7	1.2	1.1	1.2	A+	
2243	684798	K-2	115	.774	.104	.774	.087	.035	.000	.469	-.208	.469	-.372	-.153	-3.104	0.245	-0.4	0.9	-0.7	0.8	A+	
2244	684571	K-2	115	.652	.139	.148	.652	.061	.000	.635	-.259	-.432	.635	-.250	-2.364	0.218	-2.4	0.8	-1.8	0.7	A+	
2245	684685	K-2	115	.417	.130	.417	.296	.157	.000	.332	-.294	.332	-.003	-.174	-1.169	0.210	1.2	1.1	1.1	1.2	A-	
2246	684330	K-2	115	.800	.800	.078	.070	.052	.000	.439	.439	-.202	-.360	-.134	-3.292	0.255	-0.5	0.9	0.0	1.0	A+	
2247	684690	K-2	115	.487	.174	.139	.487	.191	.009	.470	-.276	-.026	.470	-.304	-1.517	0.208	-0.6	1.0	-0.6	0.9	A+	
2248	684274	K-2	115	.713	.713	.122	.113	.052	.000	.624	.624	-.412	-.319	-.210	-2.712	0.229	-2.0	0.8	-2.0	0.7	A-	
2249	684485	K-2	115	.287	.235	.217	.243	.287	.017	.266	-.074	-.031	-.217	.266	-0.469	0.225	1.3	1.1	2.1	1.5	A-	
2250	684805	K-2	115	.878	.070	.035	.878	.017	.000	.520	-.522	-.143	.520	-.086	-3.987	0.306	-0.9	0.8	-0.8	0.7	A-	
2251	684269	K-2	115	.835	.070	.835	.061	.035	.000	.438	-.463	.438	-.180	-.010	-3.571	0.273	-0.5	0.9	1.0	1.3	A+	
2252	684577	K-2	115	.557	.200	.043	.200	.557	.000	.436	-.378	-.156	-.083	.436	-1.864	0.210	0.1	1.0	0.5	1.1	A+	
2253	684289	K-2	115	.739	.139	.043	.739	.070	.009	.400	-.129	-.266	.400	-.301	-2.874	0.235	0.3	1.0	0.0	1.0	A+	
2254	684695	K-2	115	.748	.122	.748	.087	.043	.000	.546	-.251	.546	-.318	-.321	-2.929	0.237	-1.1	0.9	-1.3	0.8	A+	
2255	682435	K-2	115	.957	.957	.009	.035	.000	.000	.349	.349	.081	-.429	.000	-5.228	0.474	-0.4	0.8	0.2	0.9	A+	
2256	683990	K-2	115	.513	.191	.513	.139	.157	.000	.496	-.237	.496	-.351	-.092	-1.646	0.208	-1.0	0.9	-0.4	1.0	A+	
2257	684719	K-2	115	.861	.861	.043	.026	.070	.000	.448	.448	-.339	-.270	-.169	-3.809	0.291	-0.6	0.9	-0.3	0.9	A+	
2258	684461	K-2	115	.574	.148	.183	.574	.096	.000	.441	-.099	-.348	.441	-.165	-1.952	0.211	-0.1	1.0	0.1	1.0	A+	
2259	684462	K-2	111	.757	.757	.117	.063	.063	.000	.277	.277	-.079	-.247	-.137	-2.629	0.233	0.4	1.0	-0.3	0.9	A-	
2260	684791	K-2	111	.775	.775	.036	.162	.027	.000	.432	.432	-.258	-.283	-.173	-2.741	0.239	-0.6	0.9	-1.2	0.8	A+	
2261	684449	K-2	111	.586	.216	.072	.586	.126	.000	.319	-.116	-.176	.319	-.193	-1.739	0.206	0.5	1.0	0.2	1.0	A+	
2262	684746	K-2	111	.514	.180	.514	.063	.234	.009	.309	-.264	.309	-.181	-.012	-1.404	0.204	0.7	1.0	0.6	1.1	A+	
2263	684700	K-2	111	.766	.108	.766	.090	.036	.000	.429	-.327	.429	-.159	-.186	-2.684	0.236	-0.8	0.9	-0.4	0.9	A+	
2264	684277	K-2	111	.460	.297	.090	.153	.459	.000	.417	-.119	-.308	-.182	.417	-1.153	0.205	-0.9	0.9	-0.6	1.0	A-	
2265	684572	K-2	111	.460	.243	.459	.063	.234	.000	.337	-.183	.337	-.071	-.170	-1.153	0.205	-0.4	1.0	0.4	1.0	A-	
2266	684686	K-2	111	.667	.667	.099	.144	.090	.000	.303	.303	-.309	-.030	-.140	-2.135	0.214	0.4	1.0	0.5	1.1	A+	
2267	684333	K-2	111	.919	.063	.018	.000	.919	.000	.358	-.336	-.121	.000	.358	-4.021	0.356	-0.3	0.9	-0.5	0.7	A+	
2268	684867	K-2	111	.559	.234	.559	.054	.153	.000	.352	-.227	.352	-.225	-.078	-1.612	0.205	0.1	1.0	-0.4	1.0	A-	
2269	684275	K-2	111	.613	.045	.144	.189	.613	.009	.353	-.368	-.167	-.085	.353	-1.868	0.208	0.0	1.0	-0.4	1.0	A-	
2270	684486	K-2	111	.775	.081	.775	.054	.081	.009	.470	-.367	.470	-.225	-.191	-2.741	0.239	-1.0	0.9	-1.0	0.8	A+	

Table B-4 (continued). Science Multiple-Choice Item Statistics

Ref	ID	FT Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
2271	684806	K-2	111	.838	.838	.081	.009	.072	.000	.137	.137	-.103	.014	-.093	-3.185	0.268	0.6	1.1	1.1	1.3	A+	
2272	684270	K-2	111	.748	.063	.081	.108	.748	.000	.351	-.137	-.230	-.181	.351	-2.576	0.231	-0.4	1.0	0.9	1.2	A-	
2273	684578	K-2	111	.135	.162	.550	.153	.135	.000	.145	-.065	.047	-.137	.145	0.794	0.294	0.3	1.0	2.2	1.8	A-	
2274	684731	K-2	111	.793	.054	.081	.793	.072	.000	.201	-.035	-.103	.201	-.176	-2.858	0.246	0.6	1.1	0.5	1.1	A+	
2275	684696	K-2	111	.369	.441	.027	.369	.162	.000	.231	-.055	-.206	.231	-.137	-0.722	0.212	1.0	1.1	1.3	1.2	A-	
2276	682436	K-2	111	.793	.117	.027	.793	.063	.000	.551	-.320	-.223	.551	-.347	-2.858	0.246	-1.5	0.8	-1.5	0.7	A+	
2277	683991	K-2	111	.216	.099	.468	.216	.216	.000	.248	-.282	.189	.248	-.272	0.147	0.247	0.5	1.1	0.7	1.1	A-	
2278	684720	K-2	111	.766	.216	.766	.018	.000	.000	.138	-.090	.138	-.161	.000	-2.684	0.236	1.0	1.1	1.1	1.2	B+	
2279	684721	K-2	109	.725	.725	.119	.064	.092	.000	.448	.448	-.250	-.141	-.293	-2.780	0.245	0.4	1.0	0.3	1.1	B-	
2280	684491	K-2	109	.422	.128	.422	.147	.303	.000	.338	-.179	.338	-.137	-.127	-1.079	0.223	1.2	1.1	3.6	1.7	A+	
2281	684792	K-2	109	.716	.110	.716	.138	.037	.000	.449	-.314	.449	-.218	-.155	-2.720	0.243	0.5	1.1	0.1	1.0	A+	
2282	684450	K-2	109	.817	.064	.064	.817	.055	.000	.470	-.250	-.272	.470	-.235	-3.450	0.277	-0.4	0.9	-0.3	0.9	A-	
2283	684747	K-2	109	.505	.147	.505	.138	.211	.000	.216	-.137	.216	-.150	-.019	-1.520	0.221	3.6	1.4	2.5	1.4	A-	
2284	684681	K-2	109	.697	.092	.110	.697	.083	.018	.681	-.293	-.377	.681	-.286	-2.605	0.239	-2.4	0.7	-2.0	0.6	A+	
2285	684278	K-2	109	.578	.578	.128	.156	.119	.018	.293	.293	-.169	-.210	.065	-1.916	0.224	2.7	1.3	2.3	1.4	A-	
2286	684573	K-2	109	.404	.110	.321	.404	.156	.009	.201	-.171	-.024	.201	-.027	-0.979	0.224	3.3	1.4	3.1	1.6	A+	
2287	683732	K-2	109	.716	.716	.073	.055	.138	.018	.532	.532	-.313	-.196	-.238	-2.720	0.243	-0.5	0.9	-0.6	0.9	A-	
2288	684359	K-2	109	.220	.661	.073	.037	.220	.009	.434	-.080	-.382	-.098	.434	0.136	0.257	-0.5	0.9	-0.7	0.8	A+	
2289	684868	K-2	109	.706	.193	.706	.064	.028	.009	.532	-.303	.532	-.236	-.252	-2.662	0.241	-0.5	0.9	-0.2	0.9	A-	
2290	684276	K-2	109	.541	.073	.064	.541	.312	.009	.497	-.299	-.163	.497	-.228	-1.717	0.222	-0.2	1.0	-0.1	1.0	A-	
2291	684678	K-2	109	.881	.881	.018	.046	.046	.009	.565	.565	-.262	-.262	-.331	-4.070	0.323	-1.0	0.8	-1.4	0.4	A-	
2292	684807	K-2	109	.908	.028	.018	.908	.037	.009	.535	-.295	-.236	.535	-.270	-4.417	0.358	-1.0	0.8	-1.3	0.4	A+	
2293	684271	K-2	109	.762	.156	.761	.018	.055	.009	.363	-.111	.363	-.289	-.227	-3.029	0.255	0.9	1.1	0.5	1.1	A-	
2294	683721	K-2	109	.670	.138	.128	.046	.670	.018	.692	-.462	-.233	-.245	.692	-2.437	0.234	-2.7	0.7	-1.6	0.7	A+	
2295	684732	K-2	109	.706	.119	.128	.037	.706	.009	.509	-.211	-.228	-.336	.509	-2.662	0.241	-0.3	1.0	1.4	1.3	A+	
2296	684697	K-2	109	.266	.239	.064	.422	.266	.009	.348	-.359	-.163	.128	.348	-0.175	0.243	0.1	1.0	1.6	1.5	A+	
2297	682437	K-2	109	.835	.835	.046	.073	.037	.009	.622	.622	-.348	-.313	-.279	-3.609	0.287	-1.4	0.8	-1.7	0.5	A+	
2298	683992	K-2	109	.679	.147	.679	.083	.083	.009	.565	-.355	.565	-.162	-.253	-2.492	0.235	-0.9	0.9	-1.0	0.8	A-	
2299	683993	K-2	108	.704	.093	.019	.704	.185	.000	.254	-.204	-.104	.254	-.110	-2.436	0.229	1.3	1.1	0.8	1.1		
2300	684722	K-2	108	.370	.361	.000	.370	.269	.000	.257	-.114	.000	.257	-.156	-0.768	0.217	1.8	1.2	1.4	1.2		
2301	684492	K-2	108	.556	.111	.148	.185	.556	.000	.494	-.308	-.163	-.232	.494	-1.670	0.212	-1.1	0.9	-0.5	0.9		
2302	684793	K-2	108	.611	.611	.130	.111	.139	.009	.324	.324	-.118	-.254	-.135	-1.944	0.216	0.9	1.1	0.9	1.1		
2303	684715	K-2	108	.352	.231	.157	.259	.352	.000	.153	-.113	.011	-.068	.153	-0.673	0.219	2.3	1.2	2.4	1.4		
2304	684748	K-2	108	.389	.389	.120	.204	.287	.000	.412	.412	.092	-.221	-.313	-0.862	0.215	-0.5	1.0	-0.1	1.0		
2305	684682	K-2	108	.787	.028	.787	.102	.083	.000	.541	-.220	.541	-.483	-.142	-2.951	0.252	-1.2	0.8	-1.6	0.7		

Table B-4 (continued). Science Multiple-Choice Item Statistics

Ref	ID	FT Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
2306	684279	K-2	108	.630	.111	.630	.204	.056	.000	.428	-.260	.428	-.205	-.183	-2.039	0.218	-0.2	1.0	-0.6	0.9		
2307	684574	K-2	108	.676	.676	.083	.120	.120	.000	.560	.560	-.447	-.253	-.173	-2.282	0.224	-1.7	0.8	-1.4	0.8		
2308	683733	K-2	108	.454	.093	.454	.194	.259	.000	.426	.042	.426	-.475	-.083	-1.179	0.211	-0.4	1.0	0.1	1.0		
2309	684368	K-2	108	.843	.046	.065	.037	.843	.009	.564	-.208	-.313	-.354	.564	-3.372	0.280	-1.3	0.8	-1.8	0.6		
2310	684869	K-2	108	.778	.046	.778	.074	.093	.009	.388	-.105	.388	-.288	-.160	-2.888	0.249	-0.2	1.0	0.2	1.0		
2311	684727	K-2	108	.324	.361	.241	.324	.065	.009	.372	-.069	-.254	.372	-.059	-0.527	0.223	-0.5	1.0	0.4	1.1		
2312	684711	K-2	108	.898	.019	.037	.898	.037	.009	.419	-.184	-.240	.419	-.205	-3.922	0.332	-0.4	0.9	-1.1	0.6		
2313	684808	K-2	108	.843	.074	.019	.843	.056	.009	.386	-.263	-.040	.386	-.212	-3.372	0.280	-0.2	1.0	-0.7	0.8		
2314	684707	K-2	108	.732	.157	.731	.074	.028	.009	.326	-.220	.326	-.131	-.075	-2.597	0.235	0.5	1.1	0.1	1.0		
2315	683722	K-2	108	.352	.204	.352	.241	.185	.019	.221	.100	.221	-.178	-.088	-0.673	0.219	1.8	1.2	1.7	1.2		
2316	684733	K-2	108	.778	.120	.065	.778	.019	.019	.404	-.180	-.392	.404	-.024	-2.888	0.249	-0.4	1.0	0.0	1.0		
2317	684698	K-2	108	.750	.037	.750	.074	.120	.019	.446	-.125	.446	-.107	-.346	-2.710	0.240	-0.7	0.9	-0.3	0.9		
2318	682438	K-2	108	.602	.139	.194	.602	.056	.009	.412	-.210	-.164	.412	-.202	-1.898	0.215	0.0	1.0	-0.5	0.9		
2319	684335	3	434	.866	.048	.025	.058	.866	.002	.473	-.322	-.156	-.276	.473	-3.260	0.151	-1.1	0.9	-2.4	0.6	B+	
2320	684409	3	434	.461	.067	.461	.157	.313	.002	.339	-.129	.339	-.187	-.142	-0.847	0.106	1.3	1.1	2.5	1.2	A-	
2321	682891	3	434	.975	.009	.975	.000	.014	.002	.153	-.142	.153	.000	-.065	-5.215	0.313	0.3	1.1	0.5	1.2	A-	
2322	684402	3	434	.265	.067	.424	.242	.265	.002	.140	-.212	.072	-.104	.140	0.188	0.118	3.2	1.2	4.5	1.5	A-	
2323	684334	3	434	.666	.122	.150	.060	.666	.002	.547	-.361	-.226	-.218	.547	-1.870	0.112	-3.1	0.9	-2.7	0.8	A-	
2324	682883	3	434	.807	.032	.134	.806	.025	.002	.411	-.310	-.198	.411	-.210	-2.747	0.131	-0.6	1.0	-0.2	1.0	A+	
2325	692123	3	434	.903	.023	.051	.903	.018	.005	.496	-.189	-.318	.496	-.252	-3.674	0.172	-1.5	0.8	-2.5	0.5	A+	
2326	689230	3	434	.751	.751	.120	.085	.039	.005	.501	.501	-.308	-.245	-.174	-2.366	0.121	-1.9	0.9	-1.8	0.8	B-	
2327	684354	3	434	.788	.788	.069	.104	.035	.005	.562	.562	-.281	-.387	-.142	-2.613	0.127	-2.6	0.8	-3.0	0.7	A-	
2328	684392	3	434	.836	.028	.046	.836	.085	.005	.473	-.222	-.359	.473	-.175	-2.986	0.140	-1.4	0.9	-1.9	0.7	A-	
2329	684376	3	434	.380	.171	.380	.336	.106	.007	.363	-.161	.363	-.110	-.161	-0.447	0.108	0.2	1.0	1.8	1.1	A-	
2330	692118	3	434	.825	.058	.035	.825	.078	.005	.511	-.255	-.303	.511	-.241	-2.890	0.136	-1.8	0.9	-2.1	0.7	A-	
2331	684415	3	434	.666	.666	.039	.090	.200	.005	.497	.497	-.275	-.277	-.218	-1.870	0.112	-1.9	0.9	-1.8	0.9	A+	
2332	682833	3	434	.795	.046	.795	.090	.062	.007	.447	-.186	.447	-.294	-.177	-2.662	0.129	-1.1	0.9	-0.5	0.9	B+	
2333	682903	3	434	.399	.127	.399	.270	.191	.014	.223	-.162	.223	.036	-.145	-0.540	0.108	3.3	1.1	5.1	1.4	A+	
2334	684422	3	434	.489	.488	.134	.288	.076	.014	.293	.293	-.046	-.122	-.232	-0.981	0.106	2.8	1.1	3.0	1.2	A+	
2335	682869	3	434	.636	.636	.111	.187	.053	.014	.309	.309	-.234	-.124	-.058	-1.711	0.110	2.3	1.1	2.0	1.1	A+	
2336	684399	3	434	.726	.141	.037	.726	.081	.016	.335	-.071	-.209	.335	-.259	-2.210	0.117	1.2	1.1	0.8	1.1	A-	
2337	684382	3	434	.221	.058	.514	.221	.194	.014	.208	-.099	-.044	.208	-.069	0.469	0.126	1.8	1.1	3.2	1.5	A-	
2338	684365	3	434	.516	.154	.516	.152	.164	.014	.283	-.108	.283	-.166	-.077	-1.114	0.106	3.3	1.1	2.6	1.2	A+	
2339	684367	3	436	.278	.278	.046	.573	.103	.000	.095	.095	-.168	.098	-.183	0.298	0.117	4.9	1.3	5.3	1.6	A+	
2340	684336	3	436	.814	.814	.087	.044	.053	.002	.423	.423	-.203	-.243	-.236	-2.665	0.133	-0.7	1.0	-0.7	0.9	A+	

Table B-4 (continued). Science Multiple-Choice Item Statistics

Ref	ID	FT Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
2341	684410	3	436	.729	.039	.729	.108	.124	.000	.334	-.214	.334	-.213	-.124	-2.086	0.118	1.5	1.1	0.7	1.1	A+	
2342	682892	3	436	.828	.046	.828	.057	.069	.000	.392	-.191	.392	-.292	-.158	-2.774	0.137	-0.5	1.0	-0.1	1.0	A+	
2343	684427	3	436	.461	.197	.156	.186	.461	.000	.388	-.142	-.186	-.179	.388	-0.675	0.107	0.6	1.0	1.2	1.1	A+	
2344	688906	3	436	.890	.025	.034	.050	.890	.000	.411	-.219	-.330	-.156	.411	-3.367	0.162	-0.9	0.9	-1.2	0.8	A+	
2345	682884	3	436	.684	.683	.039	.083	.190	.005	.566	.566	-.239	-.263	-.345	-1.817	0.114	-3.0	0.9	-3.3	0.8	B-	
2346	684341	3	436	.805	.149	.021	.023	.805	.002	.490	-.348	-.246	-.194	.490	-2.595	0.131	-1.5	0.9	-1.6	0.8	A+	
2347	684342	3	436	.794	.099	.794	.048	.057	.002	.477	-.279	.477	-.251	-.216	-2.511	0.129	-1.4	0.9	-1.3	0.8	A-	
2348	684355	3	436	.755	.071	.028	.144	.755	.002	.419	-.127	-.237	-.293	.419	-2.244	0.122	-0.1	1.0	-1.0	0.9	A-	
2349	684393	3	436	.817	.050	.817	.053	.078	.002	.527	-.300	.527	-.255	-.281	-2.683	0.134	-2.2	0.8	-2.1	0.7	A-	
2350	684377	3	436	.404	.404	.135	.252	.204	.005	.394	.394	-.068	-.327	-.043	-0.387	0.108	0.6	1.0	1.0	1.1	A-	
2351	682890	3	436	.895	.028	.057	.894	.011	.009	.417	-.175	-.294	.417	-.162	-3.421	0.165	-0.8	0.9	-1.5	0.7	C+	
2352	684416	3	436	.823	.057	.053	.060	.823	.007	.545	-.232	-.313	-.309	.545	-2.737	0.136	-2.3	0.8	-2.7	0.7	A-	
2353	688901	3	436	.250	.266	.163	.250	.312	.009	.079	-.065	-.180	.079	.158	0.466	0.120	3.3	1.2	7.2	2.0	A+	
2354	682904	3	436	.819	.062	.037	.073	.819	.009	.542	-.335	-.235	-.281	.542	-2.701	0.134	-2.2	0.8	-2.8	0.7	A+	
2355	684423	3	436	.200	.200	.523	.165	.106	.007	.120	.120	.139	-.196	-.110	0.806	0.129	1.9	1.1	5.2	1.8	B+	
2356	684374	3	436	.784	.784	.057	.128	.021	.009	.428	.428	-.310	-.182	-.204	-2.445	0.127	-0.5	1.0	-0.4	1.0	A-	
2357	684386	3	436	.473	.204	.156	.472	.158	.009	.342	-.164	-.184	.342	-.068	-0.732	0.107	1.9	1.1	2.9	1.2	A-	
2358	684383	3	436	.654	.654	.092	.112	.133	.009	.468	.468	-.254	-.296	-.124	-1.652	0.111	-0.8	1.0	-1.0	0.9	A+	
2359	684400	3	430	.412	.412	.256	.030	.302	.000	.357	.357	-.280	-.104	-.077	-0.409	0.107	0.6	1.0	1.3	1.1	A-	
2360	684384	3	430	.249	.072	.249	.147	.530	.002	.151	-.131	.151	-.114	.015	0.470	0.120	3.1	1.2	2.9	1.3	A-	
2361	684337	3	430	.656	.063	.656	.063	.219	.000	.533	-.200	.533	-.247	-.351	-1.597	0.110	-3.1	0.9	-3.0	0.8	A+	
2362	684411	3	430	.840	.023	.840	.109	.028	.000	.336	-.117	.336	-.211	-.241	-2.763	0.140	-0.2	1.0	-0.1	1.0	A-	
2363	689229	3	430	.598	.077	.151	.174	.598	.000	.411	-.278	-.204	-.144	.411	-1.303	0.107	-0.4	1.0	-0.5	1.0	A+	
2364	684403	3	430	.572	.153	.121	.572	.151	.002	.466	-.176	-.257	.466	-.218	-1.178	0.106	-1.8	0.9	-1.6	0.9	A-	
2365	684348	3	430	.628	.067	.058	.628	.244	.002	.288	-.102	-.264	.288	-.108	-1.454	0.108	2.2	1.1	2.5	1.2	A+	
2366	682909	3	430	.430	.430	.163	.260	.142	.005	.304	.304	-.073	-.207	-.068	-0.499	0.106	2.2	1.1	2.0	1.1	A-	
2367	682870	3	430	.279	.114	.321	.279	.277	.009	.299	-.086	-.160	.299	-.043	0.288	0.116	0.9	1.1	0.9	1.1	A-	
2368	684343	3	430	.719	.119	.056	.102	.719	.005	.432	-.289	-.248	-.114	.432	-1.940	0.116	-1.1	0.9	-1.3	0.9	A-	
2369	684356	3	430	.914	.044	.014	.914	.016	.012	.382	-.276	-.153	.382	-.164	-3.550	0.180	-0.6	0.9	-1.6	0.7	A-	
2370	684394	3	430	.772	.026	.021	.772	.172	.009	.318	-.160	-.176	.318	-.191	-2.267	0.124	0.5	1.0	0.6	1.1	A-	
2371	684378	3	430	.458	.167	.181	.458	.179	.014	.406	-.226	-.167	.406	-.086	-0.634	0.105	-0.3	1.0	-0.4	1.0	A-	
2372	682885	3	430	.544	.321	.060	.544	.060	.014	.529	-.305	-.219	.529	-.201	-1.044	0.106	-3.5	0.9	-3.0	0.8	A+	
2373	684417	3	430	.470	.137	.251	.128	.470	.014	.522	-.364	-.210	-.080	.522	-0.689	0.105	-3.5	0.9	-3.1	0.8	A-	
2374	682880	3	430	.554	.279	.063	.553	.091	.014	.549	-.330	-.284	.549	-.134	-1.088	0.106	-4.1	0.9	-3.7	0.8	A-	
2375	682905	3	430	.540	.079	.063	.540	.300	.019	.317	-.301	-.150	.317	-.052	-1.021	0.105	2.1	1.1	1.6	1.1	A-	

Table B–4 (continued). Science Multiple-Choice Item Statistics

Ref	ID	FT Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
2376	684424	3	430	.247	.240	.247	.400	.086	.028	.195	-.163	.195	.110	-.202	0.484	0.120	1.7	1.1	3.0	1.3	A+	
2377	692122	3	430	.874	.023	.051	.033	.874	.019	.419	-.199	-.256	-.203	.419	-3.084	0.154	-0.7	0.9	-2.0	0.7	B+	
2378	684369	3	430	.588	.209	.588	.081	.102	.019	.405	-.139	.405	-.215	-.224	-1.257	0.107	-0.3	1.0	-0.1	1.0	A+	
2379	682871	3	430	.235	.523	.142	.235	.100	.000	.301	-.191	.055	.301	-.171	0.424	0.125	1.0	1.1	1.7	1.2	A+	
2380	684401	3	430	.905	.028	.035	.033	.905	.000	.486	-.242	-.356	-.212	.486	-3.721	0.173	-1.5	0.8	-2.1	0.6	A+	
2381	684360	3	430	.774	.774	.040	.077	.107	.002	.403	.403	-.264	-.221	-.175	-2.543	0.126	0.0	1.0	0.6	1.1	B-	
2382	684338	3	430	.898	.026	.051	.898	.023	.002	.471	-.256	-.234	.471	-.312	-3.633	0.168	-1.1	0.9	-2.4	0.5	A+	
2383	684412	3	430	.781	.044	.781	.144	.030	.000	.428	-.210	.428	-.266	-.236	-2.591	0.127	-0.3	1.0	-1.3	0.8	A+	
2384	692119	3	430	.942	.040	.942	.009	.009	.000	.336	-.185	.336	-.236	-.207	-4.309	0.214	-0.4	0.9	-1.1	0.7	A+	
2385	684431	3	430	.600	.174	.600	.100	.121	.005	.437	-.116	.437	-.217	-.281	-1.532	0.110	-0.2	1.0	-0.4	1.0	A+	
2386	684349	3	430	.679	.679	.165	.098	.056	.002	.298	.298	-.148	-.189	-.093	-1.956	0.114	2.6	1.1	1.8	1.2	A-	
2387	682886	3	430	.828	.098	.030	.037	.828	.007	.585	-.403	-.259	-.252	.585	-2.943	0.138	-2.7	0.8	-3.1	0.6	A+	
2388	682876	3	430	.554	.553	.347	.063	.033	.005	.282	.282	-.083	-.231	-.187	-1.295	0.108	3.9	1.2	2.9	1.2	A+	
2389	684344	3	430	.300	.300	.195	.200	.300	.005	.291	-.201	.056	-.130	.291	0.018	0.116	1.7	1.1	2.7	1.3	A+	
2390	682898	3	430	.802	.067	.091	.030	.802	.009	.507	-.254	-.311	-.217	.507	-2.743	0.132	-1.6	0.9	-1.9	0.8	A-	
2391	684395	3	430	.733	.044	.733	.040	.177	.007	.292	-.243	.292	-.210	-.071	-2.271	0.120	2.1	1.1	1.4	1.2	A-	
2392	688907	3	430	.372	.235	.244	.372	.137	.012	.298	-.099	-.106	.298	-.106	-0.380	0.111	1.9	1.1	3.8	1.3	A-	
2393	682910	3	430	.770	.040	.030	.770	.147	.014	.439	-.208	-.278	.439	-.196	-2.511	0.125	-0.7	1.0	-0.5	0.9	A-	
2394	684418	3	430	.563	.184	.165	.563	.072	.016	.459	-.198	-.148	.459	-.296	-1.342	0.108	-0.5	1.0	-0.3	1.0	A-	
2395	682881	3	430	.733	.151	.053	.733	.047	.016	.523	-.342	-.222	.523	-.174	-2.271	0.120	-1.9	0.9	-2.3	0.8	A+	
2396	682906	3	430	.909	.019	.035	.023	.909	.014	.414	-.144	-.223	-.268	.414	-3.782	0.177	-0.8	0.9	-1.2	0.7	A-	
2397	684425	3	430	.821	.821	.079	.044	.042	.014	.522	.522	-.314	-.267	-.210	-2.886	0.136	-1.9	0.9	-2.2	0.7	A+	
2398	684404	3	430	.719	.719	.028	.165	.074	.014	.225	.225	-.175	-.115	-.044	-2.186	0.118	3.4	1.2	3.3	1.4	A+	
2399	684405	3	427	.916	.030	.916	.035	.019	.000	.316	-.187	.316	-.207	-.130	-3.718	0.187	0.1	1.0	-0.3	0.9	B+	
2400	682872	3	427	.445	.164	.075	.445	.311	.005	.271	-.180	-.281	.271	.021	-0.507	0.109	4.4	1.2	3.9	1.3	A+	
2401	688908	3	427	.794	.108	.794	.030	.068	.000	.469	-.272	.469	-.321	-.200	-2.479	0.133	-0.6	1.0	-0.5	0.9	A+	
2402	684361	3	427	.391	.391	.073	.450	.084	.002	.298	.298	-.252	-.079	-.118	-0.230	0.111	2.5	1.1	2.8	1.3	C-	
2403	684339	3	427	.853	.056	.852	.044	.044	.002	.539	-.297	.539	-.308	-.269	-2.973	0.150	-1.6	0.9	-2.4	0.6	A+	
2404	684388	3	427	.794	.794	.037	.023	.143	.002	.381	.381	-.231	-.205	-.226	-2.479	0.133	0.8	1.1	0.1	1.0	A+	
2405	682894	3	427	.810	.033	.810	.119	.037	.000	.517	-.275	.517	-.333	-.241	-2.606	0.137	-1.3	0.9	-1.9	0.8	A-	
2406	684432	3	427	.597	.066	.260	.597	.075	.002	.478	-.197	-.233	.478	-.323	-1.282	0.111	-0.9	1.0	-1.1	0.9	A+	
2407	684350	3	427	.831	.026	.080	.831	.061	.002	.495	-.185	-.358	.495	-.256	-2.782	0.142	-1.1	0.9	-0.7	0.9	A+	
2408	682887	3	427	.768	.023	.105	.094	.768	.009	.574	-.205	-.338	-.325	.574	-2.293	0.128	-2.4	0.8	-1.7	0.8	A-	
2409	682877	3	427	.735	.131	.084	.042	.735	.007	.426	-.149	-.289	-.210	.426	-2.074	0.123	0.3	1.0	1.8	1.2	A+	
2410	684345	3	427	.600	.054	.600	.237	.101	.009	.452	-.222	.452	-.226	-.187	-1.295	0.111	0.0	1.0	-0.8	0.9	A-	

Table B-4 (continued). Science Multiple-Choice Item Statistics

Ref	ID	FT Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
2411	682899	3	427	.775	.136	.037	.044	.775	.007	.442	-.285	-.178	-.184	.442	-2.342	0.129	0.0	1.0	-1.1	0.9	A-	
2412	684396	3	427	.667	.068	.096	.667	.162	.007	.414	-.200	-.330	.414	-.087	-1.665	0.115	0.9	1.1	0.5	1.0	A+	
2413	684379	3	427	.705	.105	.705	.070	.110	.009	.435	-.285	.435	-.270	-.068	-1.884	0.119	0.3	1.0	0.2	1.0	A-	
2414	682830	3	427	.841	.061	.047	.841	.040	.012	.529	-.374	-.232	.529	-.207	-2.865	0.145	-1.6	0.9	-2.0	0.7	A+	
2415	684419	3	427	.452	.452	.077	.185	.276	.009	.246	.246	-.130	-.125	-.052	-0.543	0.109	4.3	1.2	5.8	1.5	A+	
2416	682882	3	427	.728	.728	.087	.084	.084	.016	.500	.500	-.461	-.127	-.147	-2.029	0.122	-1.1	0.9	-0.2	1.0	A-	
2417	682907	3	427	.869	.066	.026	.869	.021	.019	.505	-.243	-.337	.505	-.253	-3.137	0.156	-1.2	0.9	-2.1	0.6	A+	
2418	684426	3	427	.888	.047	.026	.026	.888	.014	.519	-.313	-.289	-.223	.519	-3.346	0.166	-1.4	0.9	-2.2	0.6	C+	
2419	688909	3	439	.581	.264	.096	.059	.581	.000	.341	-.086	-.265	-.222	.341	-1.092	0.107	2.1	1.1	3.1	1.2	A+	
2420	684406	3	439	.811	.025	.103	.811	.062	.000	.359	-.146	-.308	.359	-.101	-2.470	0.133	0.8	1.1	1.0	1.1	B+	
2421	682873	3	439	.296	.109	.137	.458	.296	.000	.129	-.139	-.039	-.005	.129	0.365	0.114	4.3	1.2	7.5	2.0	A-	
2422	684428	3	439	.693	.112	.071	.692	.121	.005	.435	-.164	-.289	.435	-.196	-1.689	0.114	-0.1	1.0	-0.4	1.0	A-	
2423	684362	3	439	.403	.139	.169	.287	.403	.002	.306	-.108	-.241	-.041	.306	-0.208	0.107	2.9	1.1	2.1	1.2	A-	
2424	684340	3	439	.861	.036	.021	.077	.861	.005	.244	-.128	-.069	-.141	.244	-2.907	0.150	1.5	1.2	1.0	1.2	A+	
2425	684389	3	439	.959	.959	.007	.009	.016	.009	.475	.475	-.182	-.195	-.264	-4.419	0.252	-1.3	0.8	-2.9	0.2	A-	
2426	682895	3	439	.875	.023	.875	.048	.043	.011	.405	-.182	.405	-.234	-.118	-3.047	0.156	-0.4	1.0	-1.2	0.8	A+	
2427	684433	3	439	.513	.513	.084	.210	.180	.014	.492	.492	-.218	-.176	-.198	-0.751	0.106	-2.0	0.9	-1.7	0.9	A-	
2428	684351	3	439	.494	.494	.080	.123	.289	.014	.418	.418	-.152	-.155	-.175	-0.661	0.106	0.0	1.0	-0.2	1.0	A-	
2429	682888	3	439	.715	.068	.046	.153	.715	.018	.500	-.302	-.248	-.144	.500	-1.822	0.117	-1.5	0.9	-1.6	0.9	A+	
2430	682878	3	439	.854	.043	.039	.854	.043	.021	.586	-.258	-.265	.586	-.258	-2.841	0.147	-2.6	0.8	-3.3	0.5	A+	
2431	684346	3	439	.688	.025	.178	.688	.089	.021	.443	-.118	-.169	.443	-.251	-1.663	0.114	-0.3	1.0	-0.7	0.9	A-	
2432	682900	3	439	.797	.084	.041	.055	.797	.023	.609	-.224	-.284	-.321	.609	-2.366	0.130	-3.2	0.8	-3.4	0.6	A-	
2433	684413	3	439	.886	.043	.032	.014	.886	.025	.615	-.329	-.294	-.226	.615	-3.173	0.162	-2.8	0.7	-3.8	0.4	A+	
2434	684380	3	439	.503	.134	.189	.503	.153	.021	.453	-.239	-.176	.453	-.073	-0.706	0.106	-0.9	1.0	-0.4	1.0	A-	
2435	682831	3	439	.877	.021	.059	.021	.877	.023	.550	-.186	-.285	-.261	.550	-3.071	0.157	-2.1	0.8	-2.9	0.5	A-	
2436	684420	3	439	.396	.146	.210	.223	.396	.025	.291	-.152	-.058	-.021	.291	-0.173	0.108	2.6	1.1	2.9	1.2	A+	
2437	682867	3	439	.667	.667	.107	.064	.137	.025	.511	.511	-.139	-.335	-.173	-1.547	0.112	-1.8	0.9	-1.0	0.9	A-	
2438	682908	3	439	.959	.007	.959	.005	.009	.021	.397	-.163	.397	-.003	-.162	-4.419	0.252	-0.8	0.8	-1.5	0.5	A-	
2439	682875	3	427	.883	.061	.033	.883	.021	.002	.404	-.292	-.183	.404	-.150	-3.237	0.159	-0.8	0.9	-1.3	0.8	A+	
2440	684397	3	427	.700	.101	.143	.700	.056	.000	.481	-.240	-.296	.481	-.194	-1.891	0.115	-1.7	0.9	-1.8	0.9	A+	
2441	682896	3	427	.831	.073	.831	.059	.037	.000	.288	-.227	.288	-.168	-.050	-2.758	0.138	0.5	1.0	0.7	1.1	B+	
2442	682879	3	427	.801	.098	.801	.012	.089	.000	.439	-.296	.439	-.103	-.267	-2.525	0.130	-0.9	0.9	-1.5	0.8	A-	
2443	684429	3	427	.279	.237	.330	.155	.279	.000	.252	-.178	.008	-.115	.252	0.247	0.117	1.5	1.1	2.4	1.2	A-	
2444	684363	3	427	.244	.560	.082	.244	.112	.002	.282	-.048	-.181	.282	-.127	0.459	0.121	1.0	1.1	1.5	1.2	B-	
2445	684352	3	427	.258	.089	.417	.234	.258	.002	.210	-.161	.024	-.119	.210	0.372	0.119	2.0	1.1	3.0	1.3	A+	

Table B-4 (continued). Science Multiple-Choice Item Statistics

Ref	ID	FT Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
2446	684390	3	427	.766	.766	.117	.082	.033	.002	.336	.336	-.228	-.194	-.046	-2.285	0.123	0.4	1.0	1.6	1.2	A-	
2447	684407	3	427	.930	.047	.007	.930	.014	.002	.437	-.365	-.117	.437	-.150	-3.855	0.197	-1.0	0.8	-2.3	0.5	A+	
2448	684370	3	427	.290	.290	.361	.215	.131	.002	.102	.102	.089	-.143	-.068	0.179	0.115	3.8	1.2	6.5	1.7	A-	
2449	684357	3	427	.527	.056	.117	.527	.297	.002	.329	-.132	-.193	.329	-.141	-1.010	0.106	1.7	1.1	1.5	1.1	A-	
2450	682889	3	427	.738	.030	.185	.040	.738	.007	.481	-.210	-.298	-.232	.481	-2.109	0.119	-1.7	0.9	-2.0	0.8	B+	
2451	684372	3	427	.529	.059	.143	.529	.258	.012	.374	-.137	-.122	.374	-.217	-1.021	0.106	0.8	1.0	0.5	1.0	A+	
2452	684347	3	427	.323	.094	.323	.335	.237	.012	.249	-.270	.249	-.029	-.009	-0.002	0.112	2.0	1.1	2.5	1.2	A-	
2453	682901	3	427	.508	.028	.356	.508	.096	.012	.450	-.139	-.310	.450	-.112	-0.920	0.106	-1.3	1.0	-1.7	0.9	A-	
2454	684414	3	858	.776	.031	.069	.108	.776	.015	.511	-.228	-.280	-.252	.511	-2.377	0.088	-3.2	0.9	-3.7	0.7	A+	A-
2455	684381	3	858	.780	.780	.070	.080	.055	.015	.450	.450	-.178	-.220	-.252	-2.400	0.088	-1.8	0.9	-2.1	0.8	A+	A-
2456	682832	3	858	.921	.023	.921	.033	.009	.014	.358	-.196	.358	-.160	-.161	-3.724	0.132	-0.8	0.9	-2.5	0.6	A+	A+
2457	684421	3	858	.377	.104	.164	.340	.376	.015	.270	-.128	-.217	.027	.270	-0.316	0.077	3.6	1.1	3.6	1.2	A-	A+
2458	682868	3	858	.322	.322	.174	.263	.226	.015	.342	.342	-.146	-.237	.059	-0.030	0.079	0.4	1.0	1.6	1.1	A+	A+
2459	682902	3	431	.323	.318	.323	.169	.190	.000	.266	-.080	.266	-.056	-.169	-0.071	0.112	1.6	1.1	2.8	1.2	A+	
2460	682874	3	431	.450	.039	.255	.450	.251	.005	.450	-.167	-.251	.450	-.183	-0.711	0.105	-1.5	1.0	-1.1	0.9	A-	
2461	684398	3	431	.659	.065	.070	.204	.659	.002	.387	-.199	-.173	-.221	.387	-1.723	0.110	-0.2	1.0	-0.3	1.0	A+	
2462	684408	3	431	.381	.193	.056	.381	.371	.000	.348	-.157	-.102	.348	-.173	-0.372	0.108	0.5	1.0	2.3	1.1	A-	
2463	684366	3	431	.234	.234	.186	.478	.097	.005	.199	.199	-.138	.056	-.168	0.446	0.123	2.0	1.1	3.0	1.3	A-	
2464	684430	3	431	.508	.237	.167	.079	.508	.009	.355	-.242	-.050	-.150	.355	-0.987	0.105	1.0	1.0	1.0	1.1	A-	
2465	684364	3	431	.362	.362	.244	.121	.269	.005	.284	.284	-.234	-.115	.028	-0.278	0.109	1.9	1.1	1.9	1.1	A+	
2466	684358	3	431	.601	.601	.107	.202	.088	.002	.391	.391	-.136	-.187	-.241	-1.431	0.107	-0.1	1.0	-0.3	1.0	A-	
2467	684391	3	431	.935	.016	.028	.014	.935	.007	.379	-.135	-.296	-.122	.379	-3.963	0.202	-0.8	0.9	-2.2	0.5	B+	
2468	682897	3	431	.882	.005	.100	.882	.009	.005	.209	-.130	-.144	.209	-.063	-3.253	0.156	0.2	1.0	1.9	1.4	A-	
2469	684371	3	431	.443	.443	.146	.209	.197	.005	.315	.315	-.063	-.123	-.188	-0.678	0.105	1.7	1.1	2.4	1.1	A+	
2470	684353	3	431	.566	.049	.028	.566	.350	.007	.405	-.220	-.188	.405	-.230	-1.263	0.106	-0.4	1.0	-0.4	1.0	A+	
2471	692120	3	431	.738	.738	.072	.051	.130	.009	.472	.472	-.207	-.286	-.219	-2.159	0.118	-2.0	0.9	-2.1	0.8	A+	
2472	684373	3	431	.355	.204	.125	.304	.355	.012	.387	-.170	-.259	-.025	.387	-0.242	0.109	-0.5	1.0	0.6	1.0	A-	
2473	684375	3	431	.531	.531	.116	.179	.155	.019	.384	.384	-.256	-.156	-.086	-1.097	0.105	0.2	1.0	0.9	1.0	A+	
2474	680939	4	136	.581	.037	.581	.081	.301	.000	.282	-.058	.282	-.143	-.195	-0.929	0.194	2.2	1.2	1.9	1.3	A+	
2475	681647	4	136	.640	.132	.022	.206	.640	.000	.505	-.427	-.173	-.179	.505	-1.237	0.199	-0.9	0.9	-0.7	0.9	A-	
2476	685339	4	136	.831	.831	.000	.022	.147	.000	.306	.306	.000	-.204	-.239	-2.464	0.247	0.5	1.1	0.2	1.0	A+	
2477	684171	4	136	.529	.301	.044	.125	.529	.000	.293	-.201	-.040	-.138	.293	-0.670	0.192	2.2	1.2	1.7	1.2	B+	
2478	681653	4	136	.449	.360	.449	.081	.110	.000	.400	-.164	.400	-.159	-.245	-0.266	0.192	0.5	1.0	1.3	1.2	A-	
2479	682341	4	136	.522	.213	.154	.103	.522	.007	.248	-.126	-.059	-.112	.248	-0.633	0.192	2.8	1.2	2.2	1.3	A+	
2480	681620	4	136	.493	.110	.493	.118	.272	.007	.245	-.139	.245	-.192	.000	-0.486	0.191	2.9	1.2	2.9	1.4	B+	

Table B-4 (continued). Science Multiple-Choice Item Statistics

Ref	ID	FT Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
2481	683898	4	136	.860	.029	.860	.059	.044	.007	.383	-.224	.383	-.335	.004	-2.726	0.265	-0.2	1.0	-0.1	0.9	A+	
2482	682321	4	136	.596	.066	.596	.257	.074	.007	.356	-.245	.356	-.134	-.148	-1.005	0.195	1.2	1.1	2.3	1.3	A-	
2483	680967	4	136	.846	.029	.846	.044	.074	.007	.420	-.260	.420	-.195	-.194	-2.590	0.255	-0.5	0.9	-0.5	0.8	A+	
2484	684159	4	136	.919	.044	.022	.919	.007	.007	.404	-.328	-.142	.404	-.058	-3.416	0.330	-0.6	0.8	-0.7	0.6	A-	
2485	682350	4	136	.404	.404	.206	.213	.169	.007	.453	.453	-.119	-.167	-.237	-0.041	0.195	-0.3	1.0	-0.7	0.9	A-	
2486	680974	4	136	.596	.162	.596	.118	.118	.007	.539	-.331	.539	-.169	-.221	-1.005	0.195	-1.4	0.9	-1.2	0.9	A-	
2487	681665	4	136	.544	.132	.110	.206	.544	.007	.551	-.243	-.235	-.250	.551	-0.743	0.192	-1.7	0.9	-1.5	0.8	A-	
2488	682333	4	136	.507	.029	.507	.404	.051	.007	.547	-.269	.547	-.322	-.238	-0.560	0.191	-1.7	0.9	-1.8	0.8	A-	
2489	680985	4	136	.662	.662	.118	.147	.066	.007	.590	.590	-.164	-.470	-.172	-1.356	0.201	-2.0	0.8	-1.7	0.8	A-	
2490	683903	4	136	.368	.140	.279	.206	.368	.007	.468	-.156	-.322	-.026	.468	0.151	0.198	-0.7	0.9	-0.6	0.9	A-	
2491	682325	4	136	.463	.110	.184	.235	.463	.007	.419	-.294	-.094	-.149	.419	-0.339	0.192	0.2	1.0	0.1	1.0	A-	
2492	682339	4	136	.831	.051	.831	.059	.051	.007	.565	-.300	.565	-.277	-.286	-2.464	0.247	-1.5	0.8	-1.7	0.6	A+	
2493	684173	4	136	.772	.772	.088	.066	.059	.015	.515	.515	-.213	-.331	-.212	-2.024	0.224	-1.2	0.9	-0.9	0.8	B-	
2494	683246	4	138	.420	.152	.420	.333	.094	.000	.259	-.245	.259	.037	-.197	-0.120	0.189	2.0	1.2	1.4	1.2	A-	
2495	680941	4	138	1.000	.000	1.00	.000	.000	.000	1.000	.000	1.000	.000	.000	-7.111	1.835	0.0	1.0	0.0	1.0	A-	
2496	681648	4	138	.935	.935	.036	.014	.014	.000	.253	.253	-.311	-.094	.058	-3.562	0.357	-0.1	1.0	0.0	0.9	A+	
2497	685340	4	138	.609	.609	.029	.181	.181	.000	.413	.413	-.231	-.164	-.259	-1.038	0.191	0.0	1.0	-0.4	1.0	A-	
2498	680950	4	138	.732	.181	.014	.732	.072	.000	.303	-.183	-.140	.303	-.182	-1.706	0.208	0.7	1.1	1.0	1.2	A+	
2499	681630	4	138	.732	.036	.087	.732	.138	.007	.488	-.165	-.336	.488	-.228	-1.706	0.208	-1.0	0.9	-1.2	0.8	A+	
2500	684168	4	138	.333	.304	.333	.152	.203	.007	.122	.095	.122	-.083	-.147	0.325	0.197	2.8	1.3	3.0	1.4	A-	
2501	680959	4	138	.652	.652	.130	.123	.094	.000	.406	.406	-.187	-.255	-.160	-1.262	0.195	0.1	1.0	-0.4	1.0	B-	
2502	681666	4	138	.319	.043	.043	.319	.594	.000	.319	-.228	-.219	.319	-.117	0.403	0.199	0.6	1.1	0.6	1.1	A-	
2503	682322	4	138	.623	.094	.623	.101	.174	.007	.464	-.185	.464	-.170	-.289	-1.112	0.192	-0.7	1.0	-1.0	0.9	A-	
2504	680988	4	138	.493	.159	.493	.232	.101	.014	.307	-.144	.307	-.086	-.140	-0.472	0.187	1.4	1.1	1.9	1.2	B+	
2505	683261	4	138	.833	.058	.094	.833	.014	.000	.524	-.355	-.334	.524	-.124	-2.404	0.243	-1.1	0.8	-1.6	0.6	B+	
2506	682351	4	138	.355	.196	.355	.290	.159	.000	.394	-.037	.394	-.155	-.283	0.210	0.194	-0.1	1.0	0.4	1.0	A+	
2507	684172	4	138	.949	.036	.007	.949	.007	.000	.349	-.330	-.120	.349	-.056	-3.846	0.400	-0.2	0.9	-1.1	0.5	A-	
2508	683899	4	138	.710	.710	.101	.152	.036	.000	.463	.463	-.327	-.270	-.077	-1.579	0.204	-0.7	0.9	-1.1	0.8	B-	
2509	682335	4	138	.341	.312	.341	.145	.196	.007	.261	-.096	.261	-.108	-.105	0.286	0.196	1.3	1.1	1.4	1.2	A-	
2510	680986	4	138	.413	.413	.051	.370	.159	.007	.303	.303	-.258	-.039	-.209	-0.084	0.189	1.3	1.1	1.0	1.1	A+	
2511	683904	4	138	.935	.014	.935	.022	.022	.007	.385	-.200	.385	-.196	-.321	-3.562	0.357	-0.5	0.9	-0.9	0.6	A+	
2512	682326	4	138	.384	.297	.145	.384	.167	.007	.345	-.168	-.201	.345	-.023	0.061	0.191	0.7	1.1	1.3	1.2	A+	
2513	682340	4	138	.529	.167	.188	.529	.101	.014	.548	-.101	-.420	.548	-.134	-0.647	0.187	-2.1	0.9	-2.2	0.8	A-	
2514	683883	4	138	.775	.036	.775	.080	.109	.000	.390	-.147	.390	-.229	-.236	-2.160	0.220	0.1	1.0	-0.7	0.8	A+	
2515	683247	4	138	.283	.094	.370	.283	.254	.000	.147	-.124	.105	.147	-.185	0.466	0.207	1.9	1.2	3.1	1.6	A+	

Table B-4 (continued). Science Multiple-Choice Item Statistics

Ref	ID	FT Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
2516	681613	4	138	.406	.101	.384	.109	.406	.000	.466	-.087	-.265	-.236	.466	-0.200	0.192	-0.8	0.9	-0.2	1.0	A+	
2517	682308	4	138	.659	.203	.659	.065	.072	.000	.584	-.406	.584	-.232	-.218	-1.473	0.197	-2.3	0.8	-1.8	0.8	B+	
2518	681658	4	138	.848	.848	.087	.043	.022	.000	.420	.420	-.245	-.245	-.218	-2.710	0.252	-0.6	0.9	-0.7	0.8	A-	
2519	680951	4	138	.732	.022	.732	.072	.167	.007	.432	-.134	.432	-.212	-.278	-1.884	0.209	-0.2	1.0	-0.7	0.9	B-	
2520	684169	4	138	.362	.362	.290	.152	.188	.007	.261	.261	-.012	-.364	.062	0.024	0.195	1.9	1.2	1.7	1.2	B-	
2521	683262	4	138	.268	.268	.130	.225	.362	.014	.198	.198	-.294	-.199	.254	0.553	0.210	1.7	1.2	1.9	1.3	A-	
2522	680960	4	138	.500	.138	.500	.246	.101	.014	.492	-.192	.492	-.164	-.270	-0.667	0.189	-1.0	0.9	-0.9	0.9	A+	
2523	685345	4	138	.638	.638	.101	.109	.138	.014	.441	.441	-.037	-.221	-.303	-1.357	0.195	-0.3	1.0	-0.3	1.0	A+	
2524	681635	4	138	.623	.623	.246	.072	.043	.014	.480	.480	-.256	-.171	-.245	-1.282	0.194	-0.9	0.9	-0.4	0.9	A+	
2525	680968	4	138	.580	.580	.210	.123	.072	.014	.485	.485	-.316	-.093	-.200	-1.061	0.191	-0.8	0.9	-1.0	0.9	A-	
2526	683238	4	138	.420	.399	.080	.087	.420	.014	.314	.059	-.263	-.300	.314	-0.273	0.191	1.6	1.1	1.1	1.1	A-	
2527	682353	4	138	.674	.123	.145	.674	.043	.014	.522	-.159	-.330	.522	-.237	-1.551	0.199	-1.5	0.9	-1.1	0.8	A-	
2528	681604	4	138	.775	.036	.087	.775	.087	.014	.530	-.213	-.365	.530	-.180	-2.160	0.220	-1.4	0.9	-1.5	0.7	A-	
2529	683900	4	138	.710	.138	.080	.710	.058	.014	.570	-.268	-.274	.570	-.274	-1.755	0.205	-2.0	0.8	-1.9	0.7	A+	
2530	681673	4	138	.587	.587	.109	.239	.051	.014	.310	.310	-.206	-.001	-.273	-1.097	0.191	1.5	1.1	1.3	1.2	A+	
2531	680987	4	138	.428	.217	.196	.428	.145	.014	.395	.054	-.463	.395	-.016	-0.309	0.190	0.6	1.0	1.0	1.1	A-	
2532	683250	4	138	.203	.203	.188	.377	.217	.014	.040	.040	-.150	.131	.016	0.985	0.230	1.9	1.3	3.1	1.9	A-	
2533	682327	4	138	.529	.181	.123	.529	.145	.022	.489	-.202	-.229	.489	-.138	-0.809	0.189	-0.9	0.9	-0.8	0.9	A+	
2534	682328	4	133	.511	.263	.150	.075	.511	.000	.381	-.170	-.309	-.020	.381	-0.664	0.189	0.3	1.0	-0.1	1.0	A+	
2535	683248	4	133	.353	.256	.233	.158	.353	.000	.381	-.235	-.050	-.161	.381	0.109	0.198	-0.1	1.0	0.1	1.0	A+	
2536	683239	4	133	.218	.714	.038	.218	.030	.000	.114	-.023	.059	.114	-.281	0.908	0.228	1.5	1.2	2.6	1.6	A+	
2537	683244	4	133	.820	.820	.045	.053	.083	.000	.311	.311	-.177	-.223	-.120	-2.369	0.239	0.1	1.0	-0.1	1.0	B+	
2538	682310	4	133	.880	.008	.083	.880	.030	.000	.214	-.064	-.153	.214	-.129	-2.899	0.279	0.0	1.0	1.4	1.5	A-	
2539	681659	4	133	.932	.932	.023	.030	.008	.008	.323	.323	-.161	-.237	-.192	-3.584	0.356	-0.1	1.0	-0.8	0.6	A-	
2540	681617	4	133	.549	.060	.083	.308	.549	.000	.442	-.046	-.106	-.390	.442	-0.843	0.190	-0.7	1.0	-0.8	0.9	A-	
2541	682316	4	133	.617	.098	.165	.120	.617	.000	.658	-.297	-.396	-.260	.658	-1.172	0.193	-3.9	0.7	-3.4	0.7	A+	
2542	684175	4	133	.541	.150	.135	.541	.173	.000	.560	-.262	-.182	.560	-.326	-0.807	0.189	-2.6	0.8	-2.4	0.8	A-	
2543	680961	4	133	.594	.068	.233	.105	.594	.000	.377	-.051	-.330	-.107	.377	-1.061	0.192	0.2	1.0	0.0	1.0	A+	
2544	685346	4	133	.451	.218	.451	.083	.248	.000	.337	-.226	.337	-.214	-.036	-0.377	0.190	1.0	1.1	0.5	1.1	A-	
2545	681637	4	133	.977	.977	.008	.008	.008	.000	.273	.273	-.149	-.085	-.235	-4.780	0.592	0.0	0.9	-0.8	0.4	A-	
2546	684163	4	133	.233	.233	.271	.188	.308	.000	.111	.111	.015	-.083	-.046	0.806	0.223	1.7	1.2	3.5	1.8	A-	
2547	683251	4	133	.609	.045	.609	.143	.203	.000	.402	-.186	.402	-.262	-.163	-1.135	0.193	-0.1	1.0	-0.6	0.9	A+	
2548	681669	4	133	.774	.060	.068	.774	.098	.000	.431	-.131	-.374	.431	-.185	-2.052	0.222	-0.7	0.9	-0.8	0.8	A+	
2549	680980	4	133	.421	.421	.226	.135	.218	.000	.243	.243	-.131	-.074	-.097	-0.231	0.192	2.1	1.2	1.7	1.2	A-	
2550	685324	4	133	.790	.789	.068	.068	.068	.008	.361	.361	-.183	-.161	-.220	-2.152	0.227	0.1	1.0	-0.7	0.9	B-	

Table B-4 (continued). Science Multiple-Choice Item Statistics

Ref	ID	FT Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
2551	681674	4	133	.707	.173	.075	.707	.045	.000	.391	-.218	-.237	.391	-.159	-1.645	0.205	-0.3	1.0	0.6	1.1	A-	
2552	681610	4	133	.759	.068	.759	.068	.105	.000	.560	-.381	.560	-.278	-.240	-1.956	0.217	-2.0	0.8	-1.8	0.7	A-	
2553	683256	4	133	.481	.481	.128	.256	.135	.000	.244	.244	-.126	-.146	-.047	-0.521	0.189	2.0	1.1	2.2	1.2	A-	
2554	683249	4	127	.291	.197	.291	.039	.472	.000	.118	-.203	.118	-.116	.100	0.302	0.207	1.5	1.1	2.5	1.4	A-	
2555	682329	4	127	.638	.047	.197	.638	.110	.008	.493	-.177	-.385	.493	-.093	-1.346	0.196	-1.7	0.9	-1.8	0.8	A+	
2556	683240	4	127	.260	.173	.039	.260	.512	.016	.226	-.083	-.072	.226	-.052	0.479	0.213	0.6	1.1	0.8	1.1	B-	
2557	684176	4	127	.669	.669	.039	.126	.157	.008	.254	.254	-.127	-.038	-.230	-1.503	0.200	0.7	1.1	0.9	1.1	A+	
2558	680942	4	127	.701	.071	.118	.102	.701	.008	.494	-.332	-.144	-.256	.494	-1.666	0.205	-1.5	0.9	-1.7	0.8	A+	
2559	681649	4	127	.669	.157	.669	.126	.039	.008	.402	-.288	.402	-.115	-.149	-1.503	0.200	-0.7	1.0	-0.8	0.9	A-	
2560	681660	4	127	.795	.795	.094	.016	.087	.008	.264	.264	-.076	-.038	-.222	-2.227	0.231	0.2	1.0	0.1	1.0	A+	
2561	681618	4	127	.614	.165	.110	.102	.614	.008	.441	-.209	-.053	-.340	.441	-1.232	0.194	-1.1	0.9	-1.3	0.9	A-	
2562	682317	4	127	.236	.677	.031	.236	.055	.000	.156	-.072	-.043	.156	-.110	0.620	0.220	0.8	1.1	1.9	1.3	A+	
2563	683252	4	127	.409	.205	.197	.181	.409	.008	.166	-.096	.031	-.099	.166	-0.288	0.192	2.0	1.1	1.9	1.2	A+	
2564	680962	4	127	.244	.244	.173	.323	.252	.008	.489	.489	-.380	.013	-.127	0.572	0.218	-1.5	0.8	-1.5	0.8	A-	
2565	685347	4	127	.252	.228	.291	.213	.252	.016	.312	.047	-.255	-.038	.312	0.525	0.215	-0.2	1.0	0.2	1.0	A+	
2566	681638	4	127	.803	.803	.008	.118	.063	.008	.369	.369	-.195	-.137	-.279	-2.280	0.234	-0.4	0.9	-0.6	0.9	A+	
2567	681623	4	127	.457	.087	.165	.457	.283	.008	.309	-.259	-.221	.309	.040	-0.506	0.190	0.5	1.0	0.3	1.0	A-	
2568	684166	4	127	.756	.205	.756	.016	.016	.008	.153	-.070	.153	-.072	-.089	-1.977	0.218	1.0	1.1	1.3	1.2	B+	
2569	681643	4	127	.409	.409	.157	.228	.197	.008	.291	.291	-.085	-.180	-.049	-0.288	0.192	0.6	1.0	0.9	1.1	A+	
2570	680981	4	127	.449	.449	.055	.323	.165	.008	.178	.178	-.222	.058	-.129	-0.470	0.190	2.2	1.1	1.7	1.1	A+	
2571	685325	4	127	.465	.110	.110	.307	.465	.008	.368	-.154	-.357	-.013	.368	-0.542	0.190	-0.3	1.0	-0.2	1.0	B-	
2572	682336	4	127	.213	.126	.213	.220	.433	.008	.076	-.237	.076	-.115	.227	0.771	0.228	1.4	1.2	1.4	1.3	A-	
2573	681611	4	127	.630	.283	.630	.039	.039	.008	.434	-.290	.434	-.214	-.105	-1.307	0.195	-1.1	0.9	-1.0	0.9	A-	
2574	680975	4	132	.636	.091	.053	.220	.636	.000	.328	-.261	-.220	-.081	.328	-1.447	0.194	0.3	1.0	0.2	1.0	A+	
2575	682343	4	132	.849	.068	.038	.848	.045	.000	.472	-.338	-.222	.472	-.200	-2.754	0.254	-0.9	0.9	-1.6	0.6	A+	
2576	682315	4	132	.811	.121	.015	.053	.811	.000	.303	-.292	-.142	-.027	.303	-2.458	0.234	0.0	1.0	-0.2	0.9	A-	
2577	683265	4	132	.356	.091	.356	.106	.439	.008	.299	-.067	.299	-.260	-.081	-0.117	0.195	0.5	1.0	1.1	1.1	A+	
2578	684178	4	132	.636	.121	.121	.636	.106	.015	.311	-.147	-.128	.311	-.173	-1.447	0.194	0.6	1.0	0.3	1.0	A+	
2579	680943	4	132	.788	.136	.045	.788	.030	.000	.387	-.304	-.161	.387	-.118	-2.300	0.225	-0.6	0.9	-0.6	0.9	A-	
2580	681650	4	132	.447	.348	.091	.114	.447	.000	.253	-.139	-.110	-.088	.253	-0.555	0.188	1.3	1.1	2.7	1.3	A-	
2581	681662	4	132	.864	.030	.864	.030	.076	.000	.340	-.094	.340	-.226	-.234	-2.888	0.264	-0.4	0.9	-0.3	0.9	A-	
2582	680953	4	132	.492	.492	.250	.144	.114	.000	.536	.536	-.286	-.243	-.185	-0.766	0.187	-2.5	0.9	-2.3	0.8	B+	
2583	682318	4	132	.349	.182	.288	.348	.182	.000	.125	-.025	-.066	.125	-.052	-0.079	0.196	2.4	1.2	2.1	1.3	A+	
2584	684179	4	132	.470	.333	.068	.470	.129	.000	.463	-.288	-.133	.463	-.184	-0.661	0.188	-1.3	0.9	-1.4	0.9	A-	
2585	680964	4	132	.462	.462	.227	.152	.159	.000	.321	.321	-.128	-.253	-.043	-0.626	0.188	0.7	1.0	0.4	1.0	A+	

Table B-4 (continued). Science Multiple-Choice Item Statistics

Ref	ID	FT Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
2586	685348	4	132	.099	.326	.098	.424	.152	.000	.131	-.026	.131	.117	-.236	1.689	0.303	0.5	1.1	0.9	1.3	A-	
2587	682324	4	132	.796	.795	.083	.083	.038	.000	.373	.373	-.117	-.282	-.211	-2.351	0.228	-0.3	1.0	-0.6	0.9	A+	
2588	681624	4	132	.530	.530	.326	.114	.030	.000	.473	.473	-.216	-.270	-.287	-0.942	0.188	-1.5	0.9	-1.6	0.9	B+	
2589	683259	4	132	.242	.220	.205	.326	.242	.008	.037	-.041	-.178	.163	.037	0.505	0.216	1.7	1.2	3.6	1.7	A-	
2590	681644	4	132	.962	.023	.962	.000	.008	.008	.189	-.084	.189	.000	-.231	-4.359	0.463	0.0	1.0	0.0	0.9	A-	
2591	680982	4	132	.333	.144	.333	.333	.182	.008	.247	-.113	.247	.010	-.202	-0.002	0.198	1.0	1.1	1.0	1.1	A+	
2592	683901	4	132	.856	.038	.008	.091	.856	.008	.355	-.319	.055	-.225	.355	-2.820	0.259	-0.3	0.9	-0.7	0.8	A+	
2593	682337	4	132	.296	.098	.174	.424	.295	.008	.284	-.160	.049	-.197	.284	0.199	0.204	0.5	1.1	1.6	1.2	A-	
2594	681654	4	138	.188	.283	.065	.464	.188	.000	.172	.058	-.108	-.133	.172	0.771	0.229	0.7	1.1	1.3	1.3	A+	
2595	680976	4	138	.362	.304	.152	.362	.181	.000	.450	-.129	-.154	.450	-.265	-0.239	0.189	-1.1	0.9	-1.1	0.9	A+	
2596	682345	4	138	.188	.188	.109	.507	.196	.000	-.022	-.022	-.043	.052	-.011	0.771	0.229	1.6	1.2	2.8	1.7	A-	
2597	684170	4	138	.275	.203	.283	.239	.275	.000	.303	-.112	-.127	-.077	.303	0.219	0.203	0.3	1.0	0.1	1.0	B-	
2598	680983	4	138	.601	.601	.116	.167	.116	.000	.434	.434	-.271	-.150	-.218	-1.360	0.186	-0.9	0.9	-1.2	0.9	A-	
2599	684160	4	138	.420	.152	.304	.123	.420	.000	.303	-.148	-.187	-.031	.303	-0.518	0.185	0.8	1.1	0.6	1.1	A+	
2600	680945	4	138	.428	.101	.355	.428	.116	.000	.479	-.160	-.348	.479	-.070	-0.552	0.184	-1.6	0.9	-1.6	0.9	A-	
2601	681670	4	138	.565	.159	.565	.159	.116	.000	.323	-.237	.323	-.134	-.076	-1.190	0.184	0.5	1.0	0.5	1.0	A-	
2602	685341	4	138	.659	.080	.159	.659	.101	.000	.494	-.283	-.372	.494	-.072	-1.645	0.192	-1.7	0.9	-1.8	0.8	A+	
2603	680955	4	138	.587	.087	.101	.225	.587	.000	.217	-.196	-.147	-.018	.217	-1.292	0.185	1.7	1.1	1.7	1.2	A-	
2604	681633	4	138	.326	.036	.326	.188	.449	.000	.330	-.136	.330	-.129	-.159	-0.055	0.194	0.1	1.0	0.3	1.0	A+	
2605	684164	4	138	.594	.029	.594	.239	.138	.000	.381	-.132	.381	-.263	-.153	-1.326	0.186	-0.3	1.0	-0.5	1.0	C-	
2606	680965	4	138	.362	.246	.297	.094	.362	.000	.474	-.312	-.094	-.174	.474	-0.239	0.189	-1.5	0.9	-1.3	0.9	A+	
2607	681667	4	138	.196	.486	.203	.196	.116	.000	.147	.022	-.160	.147	-.017	0.720	0.226	0.7	1.1	1.5	1.3	A+	
2608	682348	4	138	.384	.101	.449	.384	.058	.007	.379	-.172	-.254	.379	.005	-0.345	0.187	-0.3	1.0	0.0	1.0	B+	
2609	681625	4	138	.855	.022	.087	.036	.855	.000	.395	-.286	-.202	-.217	.395	-2.886	0.253	-0.7	0.9	-1.1	0.7	A+	
2610	684180	4	138	.130	.420	.130	.210	.239	.000	-.006	.230	-.006	.044	-.303	1.250	0.263	1.0	1.2	2.7	1.9	A-	
2611	681651	4	138	.754	.087	.058	.754	.101	.000	.347	-.229	-.165	.347	-.153	-2.161	0.209	-0.2	1.0	-0.2	1.0	A+	
2612	684496	4	138	.377	.152	.181	.283	.377	.007	.481	-.196	-.260	-.123	.481	-0.310	0.188	-1.6	0.9	-1.3	0.9	B-	
2613	683902	4	138	.906	.022	.029	.906	.043	.000	.316	-.208	-.087	.316	-.233	-3.413	0.301	-0.2	1.0	-0.7	0.8	A+	
2614	685342	4	141	.759	.106	.092	.043	.759	.000	.397	-.268	-.161	-.203	.397	-1.843	0.211	-0.3	1.0	-0.6	0.9	A+	
2615	681655	4	141	.475	.475	.121	.199	.206	.000	.278	.278	-.300	-.026	-.076	-0.382	0.184	1.7	1.1	1.9	1.2	A+	
2616	680977	4	141	.695	.121	.113	.695	.071	.000	.390	-.291	-.087	.390	-.223	-1.472	0.197	-0.1	1.0	-0.1	1.0	A+	
2617	684181	4	141	.709	.099	.064	.709	.128	.000	.457	-.245	-.176	.457	-.273	-1.550	0.200	-0.7	0.9	-1.3	0.8	A-	
2618	680948	4	141	.794	.106	.035	.794	.064	.000	.338	-.226	-.293	.338	-.052	-2.075	0.222	-0.1	1.0	2.1	1.5	A+	
2619	684161	4	141	.497	.128	.496	.121	.248	.007	.335	-.110	.335	-.133	-.211	-0.484	0.184	1.0	1.1	0.3	1.0	A-	
2620	684165	4	141	.723	.099	.092	.723	.085	.000	.390	-.315	-.144	.390	-.139	-1.631	0.202	-0.1	1.0	-0.8	0.9	A-	

Table B-4 (continued). Science Multiple-Choice Item Statistics

Ref	ID	FT Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
2621	680946	4	141	.497	.128	.496	.355	.021	.000	.348	-.013	.348	-.343	-.037	-0.484	0.184	0.8	1.1	0.6	1.1	A+	
2622	682311	4	141	.624	.128	.177	.071	.624	.000	.270	-.028	-.139	-.266	.270	-1.101	0.189	1.5	1.1	1.4	1.2	A+	
2623	685306	4	141	.731	.730	.064	.064	.142	.000	.423	.423	-.242	-.229	-.208	-1.672	0.204	-0.5	1.0	-1.0	0.8	A-	
2624	680956	4	141	.404	.199	.184	.213	.404	.000	.468	-.118	-.202	-.255	.468	-0.039	0.187	-1.0	0.9	-1.2	0.9	A+	
2625	681634	4	141	.766	.092	.064	.766	.078	.000	.421	-.277	-.196	.421	-.188	-1.888	0.213	-0.4	1.0	-1.2	0.8	A+	
2626	682346	4	141	.411	.092	.213	.284	.411	.000	.439	-.177	-.286	-.105	.439	-0.074	0.187	-0.6	1.0	-0.4	1.0	A-	
2627	681621	4	141	.312	.092	.227	.312	.369	.000	.306	-.238	-.013	.306	-.139	0.439	0.197	0.8	1.1	1.0	1.1	A+	
2628	685349	4	141	.567	.071	.121	.241	.567	.000	.313	.127	-.389	-.143	.313	-0.823	0.185	1.2	1.1	1.4	1.1	A-	
2629	682349	4	141	.489	.227	.057	.489	.227	.000	.324	-.297	-.001	.324	-.090	-0.450	0.184	0.8	1.1	1.0	1.1	A+	
2630	680971	4	141	.631	.113	.248	.007	.631	.000	.289	-.254	-.114	-.110	.289	-1.137	0.189	1.2	1.1	1.2	1.1	A+	
2631	683260	4	141	.355	.440	.099	.355	.106	.000	.411	-.118	-.202	.411	-.252	0.212	0.192	-0.3	1.0	-0.4	1.0	A+	
2632	682354	4	141	.546	.170	.121	.163	.546	.000	.338	.024	-.296	-.220	.338	-0.720	0.184	0.9	1.1	1.2	1.1	A+	
2633	681605	4	141	.447	.170	.199	.184	.447	.000	.460	-.202	-.372	-.012	.460	-0.246	0.185	-0.9	0.9	-1.1	0.9	A+	
2634	680978	4	140	.600	.600	.043	.171	.186	.000	.178	.178	-.128	.049	-.205	-1.185	0.187	2.6	1.2	2.3	1.3	A-	
2635	685307	4	140	.914	.043	.014	.914	.029	.000	.314	-.208	-.159	.314	-.162	-3.409	0.313	-0.2	0.9	-0.6	0.8	A-	
2636	681639	4	140	.643	.121	.121	.643	.114	.000	.507	-.191	-.251	.507	-.310	-1.399	0.191	-1.5	0.9	-1.5	0.8	A-	
2637	681606	4	140	.936	.936	.036	.014	.014	.000	.342	.342	-.220	-.129	-.235	-3.741	0.354	-0.3	0.9	-0.8	0.6	A-	
2638	683234	4	140	.364	.207	.150	.364	.279	.000	.318	-.184	-.089	.318	-.104	-0.052	0.190	0.5	1.0	1.5	1.2	B+	
2639	681626	4	140	.929	.929	.029	.021	.021	.000	.394	.394	-.226	-.189	-.251	-3.621	0.338	-0.4	0.9	-1.3	0.5	A+	
2640	684162	4	140	.329	.186	.329	.150	.329	.007	.168	-.094	.168	-.018	-.050	0.133	0.194	2.0	1.2	2.5	1.3	A+	
2641	683253	4	140	.643	.250	.064	.043	.643	.000	.349	-.158	-.174	-.279	.349	-1.399	0.191	0.4	1.0	0.4	1.1	B-	
2642	681615	4	140	.921	.921	.043	.021	.014	.000	.382	.382	-.288	-.127	-.219	-3.511	0.325	-0.3	0.9	-1.2	0.5	A+	
2643	682312	4	140	.879	.879	.064	.043	.007	.007	.372	.372	-.269	-.208	-.016	-2.987	0.271	-0.4	0.9	-0.6	0.8	A-	
2644	685344	4	140	.393	.107	.457	.393	.036	.007	.243	-.164	-.031	.243	-.220	-0.194	0.188	2.0	1.1	1.1	1.1	A-	
2645	680957	4	140	.400	.271	.200	.400	.107	.021	.332	-.118	-.076	.332	-.175	-0.229	0.187	0.5	1.0	1.0	1.1	A-	
2646	682319	4	140	.771	.771	.064	.036	.121	.007	.393	.393	-.210	-.249	-.169	-2.129	0.215	-0.5	0.9	-0.1	1.0	A-	
2647	683257	4	140	.386	.236	.386	.250	.121	.007	.413	-.311	.413	-.058	-.097	-0.159	0.188	-0.6	1.0	-0.3	1.0	A-	
2648	681622	4	140	.479	.314	.479	.029	.171	.007	.425	-.227	.425	-.183	-.171	-0.605	0.184	-0.5	1.0	-0.9	0.9	A+	
2649	685350	4	140	.379	.400	.107	.107	.379	.007	.369	-.105	-.082	-.291	.369	-0.123	0.189	0.1	1.0	0.0	1.0	A+	
2650	681656	4	140	.471	.064	.207	.243	.471	.014	.306	-.130	-.184	-.077	.306	-0.572	0.184	1.2	1.1	1.0	1.1	A+	
2651	682865	4	140	.729	.114	.107	.729	.043	.007	.421	-.271	-.239	.421	-.075	-1.865	0.204	-0.5	1.0	-0.7	0.9	A+	
2652	684182	4	140	.450	.229	.221	.450	.093	.007	.344	-.397	.035	.344	-.023	-0.470	0.184	0.6	1.0	0.9	1.1	A+	
2653	682355	4	140	.607	.164	.143	.607	.079	.007	.493	-.325	-.117	.493	-.248	-1.220	0.188	-1.5	0.9	-1.1	0.9	C+	
2654	681672	4	139	.554	.022	.554	.259	.165	.000	.148	-.073	.148	-.093	-.059	-0.865	0.184	3.1	1.2	2.6	1.2	A-	
2655	680979	4	139	.324	.324	.165	.230	.281	.000	.339	.339	-.245	-.015	-.136	0.239	0.194	-0.1	1.0	0.1	1.0	A-	

Table B-4 (continued). Science Multiple-Choice Item Statistics

Ref	ID	FT Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M /F	W /B
2656	685308	4	139	.532	.532	.151	.288	.029	.000	.454	.454	-.409	-.141	-.098	-0.764	0.184	-1.1	0.9	-1.0	0.9	A-	
2657	682338	4	139	.655	.655	.201	.108	.036	.000	.406	.406	-.331	-.187	-.013	-1.359	0.193	-0.3	1.0	-0.6	0.9	B+	
2658	681607	4	139	.878	.022	.072	.022	.878	.007	.368	-.299	-.222	-.085	.368	-2.874	0.272	-0.3	0.9	-0.4	0.9	A-	
2659	683237	4	139	.453	.453	.072	.129	.345	.000	.049	.049	.108	-.298	.101	-0.394	0.184	4.2	1.3	4.1	1.4	A+	
2660	683242	4	139	.791	.029	.108	.072	.791	.000	.526	-.186	-.462	-.152	.526	-2.159	0.223	-1.4	0.8	-1.4	0.8	A-	
2661	680969	4	139	.619	.266	.619	.043	.065	.007	.200	-.165	.200	.008	-.090	-1.178	0.189	2.1	1.2	2.0	1.2	A+	
2662	683254	4	139	.554	.554	.129	.036	.281	.000	.375	.375	-.351	-.268	-.042	-0.865	0.184	0.1	1.0	-0.1	1.0	A-	
2663	681616	4	139	.453	.036	.496	.453	.014	.000	.424	-.233	-.368	.424	.138	-0.394	0.184	-0.8	1.0	-0.8	0.9	A+	
2664	682313	4	139	.626	.626	.151	.165	.058	.000	.413	.413	-.258	-.192	-.155	-1.213	0.189	-0.3	1.0	-0.6	0.9	A+	
2665	681663	4	139	.727	.727	.058	.201	.014	.000	.316	.316	-.267	-.159	-.124	-1.751	0.205	0.3	1.0	0.8	1.1	A-	
2666	681619	4	139	.432	.338	.108	.432	.122	.000	.312	-.122	-.293	.312	-.017	-0.292	0.184	0.6	1.0	0.6	1.1	A+	
2667	683882	4	275	.622	.622	.156	.091	.127	.004	.470	.470	-.197	-.395	-.128	-1.129	0.136	-1.2	0.9	-0.8	0.9	A+	
2668	683258	4	275	.556	.204	.556	.145	.091	.004	.464	-.224	.464	-.235	-.208	-0.803	0.133	-1.2	1.0	-1.5	0.9	A-	
2669	680966	4	275	.615	.113	.098	.175	.615	.000	.187	-.180	-.203	.069	.187	-1.092	0.136	3.9	1.2	4.5	1.4	B-	
2670	683897	4	275	.753	.753	.033	.055	.153	.007	.458	.458	-.294	-.349	-.169	-1.862	0.152	-1.0	0.9	-1.0	0.9	A+	
2671	681642	4	275	.589	.095	.589	.131	.178	.007	.460	-.279	.460	-.087	-.280	-0.964	0.134	-1.0	1.0	-1.1	0.9	A-	
2672	680973	4	275	.651	.171	.651	.076	.102	.000	.343	-.049	.343	-.253	-.259	-1.280	0.138	1.0	1.1	0.9	1.1	A+	
2673	684183	4	275	.426	.287	.204	.084	.425	.000	.259	-.018	-.180	-.171	.259	-0.168	0.134	2.7	1.1	2.4	1.2	A+	
2674	683255	4	136	.427	.426	.103	.265	.199	.007	.353	.353	-.136	-.132	-.172	-0.070	0.194	1.2	1.1	1.8	1.2	A-	
2675	682332	4	136	.544	.147	.544	.066	.243	.000	.444	-.320	.444	-.114	-.185	-0.661	0.192	0.0	1.0	0.7	1.1	A-	
2676	681612	4	136	.265	.265	.088	.353	.294	.000	.178	.178	-.317	-.046	.073	0.837	0.217	1.6	1.2	2.4	1.5	A+	
2677	685309	4	136	.368	.162	.162	.368	.309	.000	.411	-.151	-.229	.411	-.125	0.238	0.199	0.0	1.0	1.4	1.2	A+	
2678	682356	4	136	.691	.059	.051	.691	.199	.000	.311	-.157	-.396	.311	-.048	-1.438	0.205	1.2	1.1	2.3	1.4	A-	
2679	681608	4	136	.552	.257	.147	.044	.551	.000	.446	-.190	-.278	-.197	.446	-0.698	0.192	0.0	1.0	-0.6	0.9	A-	
2680	682347	4	136	.765	.125	.051	.059	.765	.000	.479	-.370	-.165	-.189	.479	-1.891	0.222	-0.5	0.9	-1.0	0.8	A+	
2681	681646	4	136	.566	.566	.243	.103	.088	.000	.470	.470	-.178	-.309	-.222	-0.772	0.193	-0.4	1.0	-0.9	0.9	A-	
2682	681614	4	136	.765	.088	.081	.765	.066	.000	.423	-.137	-.312	.423	-.223	-1.891	0.222	-0.1	1.0	-0.4	0.9	A-	
2683	683266	4	136	.691	.088	.088	.132	.691	.000	.467	-.285	-.179	-.247	.467	-1.438	0.205	-0.5	1.0	-0.5	0.9	A+	
2684	680947	4	136	.860	.066	.044	.029	.860	.000	.612	-.320	-.431	-.260	.612	-2.644	0.266	-1.9	0.7	-1.8	0.5	A+	
2685	682314	4	136	.779	.059	.779	.029	.132	.000	.481	-.234	.481	-.287	-.283	-1.991	0.226	-0.6	0.9	-1.0	0.8	A-	
2686	681664	4	136	.427	.426	.015	.176	.382	.000	.426	.426	-.120	-.074	-.346	-0.070	0.194	-0.2	1.0	0.1	1.0	A-	
2687	683818	5	91	.396	.209	.396	.330	.066	.000	.052	.003	.052	-.012	-.085	-0.444	0.232	2.8	1.3	2.8	1.4	A-	
2688	683819	5	87	.529	.138	.218	.529	.115	.000	.311	-.089	-.136	.311	-.215	-1.084	0.231	-0.1	1.0	-0.1	1.0	B+	
2689	683820	5	83	.651	.181	.072	.651	.096	.000	.584	-.418	-.371	.584	-.072	-1.731	0.249	-2.4	0.8	-2.1	0.7	A-	
2690	683821	5	89	.303	.247	.202	.247	.303	.000	.209	.077	-.318	-.003	.209	-0.006	0.248	1.0	1.1	1.3	1.2	A-	

Table B-4 (continued). Science Multiple-Choice Item Statistics

Ref	ID	FT Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
2691	683822	5	88	.705	.125	.125	.705	.045	.000	.394	-.217	-.248	.394	-.124	-2.140	0.256	-0.3	1.0	0.1	1.0	A-	
2692	683823	5	95	.632	.632	.137	.095	.137	.000	.441	.441	-.168	-.347	-.156	-1.649	0.230	-0.9	0.9	-1.0	0.9	A+	
2693	683824	5	96	.531	.073	.208	.531	.188	.000	.096	-.240	.134	.096	-.102	-1.231	0.226	3.2	1.3	2.9	1.4	A-	
2694	683825	5	95	.295	.200	.189	.316	.295	.000	.194	-.160	-.158	.081	.194	0.138	0.241	0.7	1.1	1.2	1.2	A-	
2695	683826	5	83	.313	.313	.313	.265	.108	.000	-.076	-.076	.108	-.077	.062	-0.065	0.253	2.5	1.3	3.3	1.6	A-	
2696	683827	5	75	.520	.120	.093	.520	.267	.000	.287	-.229	-.297	.287	.039	-0.872	0.252	0.8	1.1	0.7	1.1		
2697	683828	5	92	.511	.174	.141	.511	.174	.000	.494	-.149	-.352	.494	-.179	-0.877	0.231	-1.2	0.9	-1.0	0.9	A-	
2698	683829	5	94	.479	.479	.191	.170	.160	.000	.158	.158	-.040	-.166	-.002	-0.695	0.222	1.8	1.1	2.0	1.2	B-	
2699	683830	5	96	.385	.250	.135	.385	.229	.000	.305	-.184	-.179	.305	-.018	-0.299	0.225	0.1	1.0	0.5	1.1	A+	
2700	683831	5	91	.275	.451	.154	.121	.275	.000	.269	-.006	-.075	-.277	.269	0.264	0.253	0.2	1.0	0.8	1.2	A-	
2701	683832	5	113	.460	.080	.097	.363	.460	.000	.158	-.210	-.192	.073	.158	-0.669	0.204	1.9	1.1	2.0	1.2	A+	
2702	683833	5	78	.526	.103	.526	.333	.038	.000	.209	-.217	.209	-.038	-.106	-1.183	0.248	1.7	1.2	1.3	1.2	B-	
2703	683834	5	85	.612	.612	.106	.094	.188	.000	.450	.450	-.368	-.280	-.062	-1.314	0.243	-0.8	0.9	-1.1	0.9	A+	
2704	683835	5	60	.550	.083	.200	.167	.550	.000	.592	-.193	-.303	-.322	.592	-1.040	0.279	-2.4	0.8	-2.4	0.7	A+	
2705	683836	5	80	.400	.325	.213	.400	.063	.000	.442	-.105	-.298	.442	-.189	-0.530	0.244	-1.8	0.9	-0.8	0.9	A-	
2706	683837	5	95	.421	.147	.421	.284	.147	.000	.407	-.168	.407	-.159	-.196	-0.610	0.228	-0.8	0.9	0.4	1.0	A+	
2707	683838	5	82	.732	.134	.732	.085	.049	.000	.209	-.093	.209	-.171	-.062	-2.017	0.269	1.0	1.1	0.9	1.2	A-	
2708	683839	5	83	.265	.265	.265	.217	.253	.000	.080	.080	-.337	.033	.229	0.394	0.270	1.7	1.2	2.4	1.6	A-	
2709	683840	5	106	.274	.274	.198	.189	.340	.000	-.165	-.165	-.099	.071	.180	0.200	0.233	3.2	1.4	3.9	1.8	B-	
2710	683841	5	78	.359	.231	.269	.141	.359	.000	.281	.013	-.208	-.138	.281	-0.354	0.253	0.1	1.0	0.4	1.1	B+	
2711	683866	5	93	.495	.237	.172	.495	.097	.000	.398	-.168	-.210	.398	-.165	-0.846	0.225	-0.5	1.0	-0.5	1.0	A+	
2712	683867	5	101	.455	.228	.455	.149	.168	.000	.305	-.113	.305	-.131	-.155	-0.829	0.220	0.8	1.1	1.0	1.1	A+	
2713	683868	5	89	.573	.180	.191	.056	.573	.000	.277	-.002	-.183	-.279	.277	-1.263	0.233	0.7	1.1	0.8	1.1	A+	
2714	683869	5	96	.417	.125	.417	.219	.240	.000	.478	-.219	.478	-.084	-.301	-0.411	0.226	-1.5	0.9	-1.5	0.8	A-	
2715	683870	5	87	.414	.414	.230	.069	.287	.000	-.143	-.143	.122	-.236	.174	-0.556	0.236	4.5	1.4	4.1	1.5		
2716	683871	5	91	.363	.297	.231	.363	.110	.000	.188	-.046	-.240	.188	.101	-0.364	0.242	2.0	1.2	2.4	1.4	A+	
2717	683872	5	88	.182	.386	.193	.239	.182	.000	-.078	.308	-.023	-.260	-.078	0.988	0.289	1.4	1.2	2.8	1.9	A+	
2718	683873	5	89	.596	.135	.180	.596	.090	.000	.372	-.212	-.276	.372	-.015	-1.320	0.232	-0.6	1.0	-0.6	0.9	B+	
2719	683874	5	86	.430	.163	.430	.163	.244	.000	.254	-.228	.254	-.022	-.079	-0.587	0.240	1.2	1.1	1.7	1.2	A+	
2720	683875	5	78	.423	.115	.410	.423	.051	.000	.109	-.170	.122	.109	-.270	-0.561	0.246	2.1	1.2	1.7	1.2	A+	
2721	683876	5	94	.330	.330	.309	.106	.255	.000	.197	.197	-.199	.024	-.019	-0.008	0.238	1.6	1.2	0.8	1.1	A+	
2722	683877	5	90	.300	.233	.278	.300	.189	.000	-.041	-.097	.176	-.041	-.049	0.231	0.247	2.5	1.3	3.3	1.7	A+	
2723	683879	5	96	.500	.219	.500	.146	.135	.000	.399	-.235	.399	-.122	-.173	-0.963	0.224	-0.3	1.0	-0.2	1.0	A-	
2724	683880	5	72	.264	.264	.236	.181	.319	.000	.157	.157	-.282	-.047	.147	0.145	0.289	1.1	1.2	1.2	1.3		
2725	683881	5	95	.284	.147	.284	.421	.147	.000	.041	-.165	.041	-.061	.197	0.248	0.242	1.9	1.2	2.2	1.4	A-	

Table B-4 (continued). Science Multiple-Choice Item Statistics

Ref	ID	FT Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
2726	683884	5	96	.521	.521	.188	.156	.135	.000	.526	.526	-.214	-.316	-.188	-1.090	0.221	-2.1	0.9	-2.0	0.8	A+	
2727	683885	5	83	.518	.518	.265	.120	.096	.000	.081	.081	.237	-.201	-.270	-0.848	0.237	2.7	1.2	2.4	1.3		
2728	683886	5	90	.344	.211	.344	.156	.289	.000	-.022	-.176	-.022	.124	.083	-0.135	0.236	2.9	1.3	2.4	1.4	A-	
2729	683887	5	100	.340	.340	.190	.330	.140	.000	.245	.245	-.048	-.125	-.110	-0.205	0.230	1.3	1.1	1.1	1.2	A+	
2730	683888	5	104	.365	.250	.192	.192	.365	.000	.086	-.100	-.023	.028	.086	-0.407	0.220	2.6	1.2	2.4	1.3	A-	
2731	683889	5	99	.313	.202	.283	.313	.202	.000	-.024	-.038	-.052	-.024	.124	-0.024	0.234	3.0	1.3	2.8	1.5	A+	
2732	683890	5	96	.583	.583	.104	.125	.188	.000	.330	.330	-.275	-.205	-.027	-1.283	0.224	0.0	1.0	0.3	1.0	A+	
2733	683891	5	84	.452	.167	.238	.452	.143	.000	.082	.101	-.135	.082	-.059	-0.661	0.240	2.7	1.3	3.1	1.4		
2734	683892	5	73	.425	.137	.425	.178	.260	.000	.451	-.084	.451	-.285	-.194	-0.670	0.256	-1.0	0.9	-0.8	0.9	A-	
2735	683893	5	79	.557	.266	.076	.557	.101	.000	.379	-.166	-.299	.379	-.118	-1.200	0.247	0.0	1.0	-0.3	1.0	B-	
2736	683894	5	94	.298	.298	.160	.415	.128	.000	.111	.111	-.133	.080	-.124	0.015	0.242	1.4	1.2	2.1	1.4	A+	
2737	683895	5	91	.681	.121	.132	.681	.066	.000	.296	.013	-.425	.296	.006	-1.721	0.242	0.4	1.0	0.3	1.0	A+	
2738	683896	5	83	.615	.614	.108	.120	.157	.000	.500	.500	-.313	-.256	-.173	-1.277	0.248	-1.2	0.9	-1.4	0.8	A-	
2739	683905	5	85	.612	.118	.612	.082	.188	.000	.502	-.173	.502	-.244	-.311	-1.383	0.241	-1.6	0.9	-1.6	0.8	A-	
2740	683906	5	110	.646	.645	.082	.118	.155	.000	.349	.349	-.167	-.252	-.110	-1.642	0.215	-0.2	1.0	-0.6	0.9	A+	
2741	683908	5	101	.406	.257	.198	.406	.139	.000	.400	-.163	-.120	.400	-.223	-0.805	0.220	-0.7	0.9	-0.2	1.0		
2742	683909	5	91	.407	.407	.341	.154	.099	.000	.400	.400	-.086	-.377	-.065	-0.592	0.232	-0.8	0.9	0.3	1.0	A+	
2743	683910	5	66	.288	.348	.288	.242	.121	.000	.200	.164	.200	-.186	-.272	-0.030	0.289	0.7	1.1	0.7	1.1		
2744	683911	5	99	.303	.222	.333	.303	.141	.000	.228	-.052	-.283	.228	.144	-0.029	0.233	0.7	1.1	0.6	1.1	A+	
2745	683912	5	94	.192	.287	.277	.245	.191	.000	.139	.077	-.225	.026	.139	0.564	0.279	0.8	1.1	1.5	1.4	A-	
2746	683913	5	92	.489	.141	.489	.207	.163	.000	.305	-.199	.305	-.003	-.223	-1.033	0.228	0.5	1.0	0.8	1.1	A+	
2747	683915	5	91	.352	.220	.176	.352	.253	.000	.092	.199	-.282	.092	-.044	-0.231	0.237	2.0	1.2	2.3	1.3	A-	
2748	683916	5	67	.373	.299	.373	.209	.119	.000	.319	-.121	.319	-.187	-.071	-0.358	0.275	0.5	1.1	0.2	1.0	A-	
2749	683918	5	78	.282	.231	.333	.282	.154	.000	-.137	.183	.137	-.137	-.221	0.216	0.272	2.9	1.4	3.3	1.8		
2750	683920	5	82	.524	.207	.159	.524	.110	.000	.096	-.171	.162	.096	-.121	-1.173	0.238	2.3	1.2	2.5	1.3	A-	
2751	683921	5	72	.444	.153	.278	.444	.125	.000	.365	-.218	-.246	.365	.021	-0.637	0.254	-0.4	1.0	-0.5	0.9	A-	
2752	683922	5	91	.341	.165	.275	.220	.341	.000	.505	-.088	-.349	-.123	.505	-0.176	0.245	-1.1	0.9	-0.9	0.9	B-	
2753	683923	5	83	.337	.217	.301	.145	.337	.000	.365	-.202	-.091	-.136	.365	-0.357	0.249	-0.4	1.0	-0.3	1.0	A-	
2754	683924	5	74	.487	.486	.162	.189	.162	.000	.329	.329	-.274	-.181	.020	-0.954	0.250	0.0	1.0	-0.1	1.0	A-	
2755	683925	5	82	.402	.402	.110	.037	.451	.000	.439	.439	-.269	-.228	-.177	-0.467	0.243	-1.0	0.9	-0.8	0.9	A-	
2756	683926	5	86	.581	.081	.581	.186	.151	.000	.371	-.339	.371	-.055	-.192	-1.369	0.244	0.6	1.1	0.4	1.1	A-	
2757	683927	5	96	.781	.031	.781	.083	.104	.000	.340	-.242	.340	-.141	-.194	-2.258	0.263	-0.2	1.0	-0.5	0.9	A-	
2758	683928	5	97	.742	.093	.052	.742	.113	.000	.260	-.183	-.086	.260	-.132	-2.196	0.246	0.4	1.0	0.0	1.0	A+	
2759	683929	5	87	.379	.172	.391	.379	.057	.000	.440	-.237	-.186	.440	-.142	-0.352	0.238	-1.3	0.9	-0.6	0.9	A-	
2760	683930	5	94	.564	.117	.106	.564	.213	.000	.437	-.103	-.254	.437	-.257	-1.283	0.228	-0.7	0.9	-1.0	0.9	A+	

Table B-4 (continued). Science Multiple-Choice Item Statistics

Ref	ID	FT Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
2761	683931	5	90	.522	.200	.522	.122	.156	.000	.157	-.095	.157	.054	-.160	-0.995	0.230	2.1	1.2	2.7	1.3	A-	
2762	684184	5	94	.394	.394	.160	.213	.234	.000	.411	.411	-.257	-.249	-.011	-0.494	0.228	-0.8	0.9	-0.6	0.9	A+	
2763	684185	5	72	.375	.167	.250	.375	.208	.000	.136	.083	-.350	.136	.136	-0.297	0.260	1.1	1.1	1.7	1.2		
2764	684186	5	92	.424	.207	.174	.424	.196	.000	.390	-.115	-.151	.390	-.224	-0.453	0.230	-0.4	1.0	-0.2	1.0	B-	
2765	684188	5	72	.417	.292	.139	.417	.153	.000	.176	.060	-.285	.176	-.044	-0.448	0.257	1.1	1.1	1.3	1.2	A+	
2766	684189	5	89	.517	.169	.517	.112	.202	.000	.301	-.071	.301	-.283	-.085	-1.074	0.233	1.0	1.1	1.2	1.1	A+	
2767	684190	5	111	.180	.180	.333	.207	.279	.000	-.010	-.010	.288	-.391	.059	0.967	0.262	1.2	1.2	3.0	2.0	A-	
2768	684192	5	77	.351	.351	.338	.117	.195	.000	-.036	-.036	.147	-.189	.021	-0.256	0.261	3.1	1.4	3.0	1.5		
2769	684193	5	100	.340	.240	.270	.340	.150	.000	.056	.128	-.114	.056	-.085	-0.237	0.227	2.2	1.2	2.6	1.4	A+	
2770	684194	5	85	.282	.200	.271	.247	.282	.000	.436	-.145	-.003	-.323	.436	0.077	0.262	-0.6	0.9	-0.5	0.9	A+	
2771	684195	5	93	.419	.161	.204	.215	.419	.000	.331	.062	-.124	-.332	.331	-0.480	0.229	0.1	1.0	0.9	1.1	A-	
2772	684197	5	83	.217	.217	.145	.325	.313	.000	.280	.280	-.218	.086	-.170	0.598	0.280	-0.1	1.0	-0.1	1.0	A-	
2773	684198	5	84	.476	.214	.131	.476	.179	.000	.306	-.038	-.249	.306	-.138	-0.971	0.235	0.3	1.0	-0.1	1.0	A+	
2774	684199	5	79	.443	.241	.215	.443	.101	.000	.301	-.117	-.307	.301	.088	-0.833	0.247	0.6	1.1	1.0	1.1	A+	
2775	684200	5	94	.426	.234	.202	.426	.138	.000	.196	.056	-.230	.196	-.082	-0.477	0.225	1.2	1.1	1.9	1.2	A+	
2776	684202	5	82	.317	.268	.232	.317	.183	.000	.327	-.272	-.266	.327	.208	-0.111	0.257	0.2	1.0	0.0	1.0	B+	
2777	685310	5	90	.578	.578	.233	.156	.033	.000	.377	.377	-.348	-.075	-.065	-1.212	0.232	-0.1	1.0	-0.1	1.0	A-	
2778	685311	5	67	.806	.090	.075	.806	.030	.000	.664	-.422	-.385	.664	-.239	-2.256	0.330	-1.7	0.7	-2.1	0.5		
2779	685312	5	101	.574	.168	.089	.574	.168	.000	.334	-.133	-.134	.334	-.206	-1.289	0.218	0.1	1.0	-0.1	1.0	A+	
2780	685314	5	84	.571	.143	.571	.167	.119	.000	.506	-.253	.506	-.241	-.222	-1.201	0.241	-1.6	0.9	-1.1	0.9	A-	
2781	685315	5	95	.495	.179	.189	.137	.495	.000	.463	-.209	-.265	-.139	.463	-0.952	0.223	-1.4	0.9	-1.4	0.9	A-	
2782	685316	5	88	.227	.216	.330	.227	.227	.000	.309	-.142	-.147	-.005	.309	0.483	0.273	0.1	1.0	0.6	1.1	A-	
2783	685317	5	100	.250	.250	.250	.290	.210	.000	-.121	-.010	-.121	.008	.130	0.407	0.248	2.8	1.4	3.2	1.7	A-	
2784	685318	5	84	.595	.250	.595	.083	.071	.000	.388	-.380	.388	.052	-.157	-1.285	0.244	-0.1	1.0	-0.2	1.0	A-	
2785	685319	5	80	.263	.213	.438	.263	.088	.000	.338	-.123	-.039	.338	-.280	0.398	0.272	0.0	1.0	-0.3	0.9	A-	
2786	685320	5	90	.244	.289	.167	.300	.244	.000	.371	.157	-.378	-.196	.371	0.320	0.263	-0.2	1.0	-0.7	0.9	A+	
2787	685321	5	98	.306	.143	.306	.286	.265	.000	.180	-.068	.180	.079	-.214	0.135	0.234	1.1	1.1	0.8	1.1	A+	A+
2788	685322	5	109	.266	.339	.330	.266	.064	.000	.061	-.171	.141	.061	-.050	0.411	0.230	1.8	1.2	2.0	1.4	B-	
2789	685323	5	67	.567	.567	.164	.075	.194	.000	.355	.355	-.368	-.038	-.074	-1.364	0.267	-0.1	1.0	0.2	1.0	A-	
2790	685326	5	87	.356	.414	.356	.149	.080	.000	.093	.091	.093	-.139	-.146	-0.412	0.242	2.2	1.2	2.0	1.3		
2791	685327	5	87	.172	.080	.172	.069	.678	.000	.088	-.260	.088	-.327	.258	0.949	0.299	0.6	1.1	1.9	1.6	A+	
2792	685328	5	95	.347	.505	.347	.074	.074	.000	.058	.158	.058	-.341	-.068	-0.271	0.230	2.3	1.2	2.0	1.3	A+	
2793	685329	5	70	.486	.357	.057	.100	.486	.000	.250	.074	-.390	-.234	.250	-0.866	0.261	1.2	1.1	1.2	1.1	A+	
2794	685330	5	82	.573	.573	.220	.073	.134	.000	.422	.422	-.190	-.173	-.249	-1.458	0.244	-0.5	1.0	-0.5	0.9	A-	
2795	685331	5	91	.560	.187	.132	.560	.121	.000	.417	-.243	-.202	.417	-.135	-1.293	0.228	-1.0	0.9	-1.3	0.9	B+	

Table B-4 (continued). Science Multiple-Choice Item Statistics

Ref	ID	FT Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
2796	685332	5	84	.310	.214	.262	.214	.310	.000	.494	-.176	-.221	-.144	.494	0.100	0.254	-1.4	0.9	-1.1	0.8	A+	
2797	685333	5	86	.593	.593	.174	.093	.140	.000	.257	.257	-.201	-.231	.049	-1.203	0.237	0.8	1.1	0.6	1.1	A-	
2798	685334	5	81	.457	.309	.457	.160	.074	.000	.132	.226	.132	-.424	-.056	-0.592	0.248	2.8	1.3	2.5	1.3	A-	
2799	685335	5	109	.615	.174	.615	.165	.046	.000	.150	-.004	.150	-.152	-.073	-1.509	0.212	2.0	1.2	1.4	1.2	A+	
2800	685336	5	86	.302	.256	.151	.302	.291	.000	-.055	.070	-.053	-.055	.030	0.050	0.250	2.3	1.3	2.5	1.4	A-	
2801	685337	5	97	.454	.371	.454	.124	.052	.000	-.271	.305	-.271	.047	-.124	-0.618	0.222	6.3	1.6	6.0	1.8		
2802	685338	5	85	.153	.153	.118	.588	.141	.000	.070	.070	-.239	.299	-.273	0.762	0.316	0.5	1.1	1.3	1.4		
2803	685351	5	84	.560	.143	.560	.214	.083	.000	.416	-.151	.416	-.146	-.338	-1.189	0.240	-0.5	1.0	-0.9	0.9	B-	
2804	685353	5	80	.475	.200	.200	.125	.475	.000	.449	-.233	-.232	-.114	.449	-0.737	0.244	-0.9	0.9	-0.6	0.9	A-	
2805	685354	5	67	.179	.433	.090	.299	.179	.000	.125	-.067	-.208	.098	.125	0.889	0.332	0.5	1.1	0.6	1.2		
2806	685356	5	88	.557	.159	.091	.557	.193	.000	.362	-.220	-.307	.362	-.027	-1.030	0.232	-0.2	1.0	-0.2	1.0	A+	
2807	685357	5	90	.178	.556	.122	.144	.178	.000	.179	.209	-.238	-.268	.179	0.788	0.288	0.2	1.0	0.5	1.1	A+	
2808	685358	5	88	.568	.273	.045	.568	.114	.000	.493	-.248	-.050	.493	-.389	-1.227	0.232	-1.8	0.9	-1.8	0.8	B+	
2809	685359	5	84	.714	.048	.714	.107	.131	.000	.349	-.097	.349	-.311	-.121	-1.936	0.260	-0.1	1.0	0.0	1.0	A+	
2810	685360	5	85	.259	.212	.400	.129	.259	.000	.170	-.126	-.029	-.027	.170	0.066	0.270	0.9	1.1	2.2	1.5		
2811	685361	5	78	.769	.090	.064	.769	.077	.000	.247	-.230	-.209	.247	.048	-2.354	0.286	0.3	1.0	0.4	1.1	A+	
2812	685363	5	72	.653	.181	.653	.056	.111	.000	.293	-.109	.293	-.187	-.174	-1.610	0.267	0.5	1.1	0.1	1.0		
2813	685364	5	76	.329	.197	.289	.329	.184	.000	.062	-.162	-.163	.062	.282	-0.117	0.266	2.2	1.3	2.4	1.4	A+	
2814	685365	5	79	.519	.177	.190	.114	.519	.000	.430	-.193	-.233	-.157	.430	-0.947	0.246	-0.7	0.9	-0.5	0.9	A+	
2815	685366	5	87	.356	.287	.034	.356	.322	.000	.147	-.015	-.375	.147	.011	-0.190	0.237	0.7	1.1	1.7	1.2	A-	
2816	685367	5	96	.344	.219	.188	.344	.250	.000	.141	-.147	-.091	.141	.068	-0.103	0.233	1.9	1.2	2.0	1.3	A-	
2817	685368	5	72	.500	.250	.500	.181	.069	.000	.211	.066	.211	-.298	-.077	-0.826	0.252	0.9	1.1	0.8	1.1	A+	
2818	685369	5	74	.392	.365	.149	.392	.095	.000	.225	-.101	-.171	.225	.000	-0.483	0.257	1.0	1.1	1.0	1.1	A-	
2819	685370	5	105	.257	.257	.438	.162	.143	.000	.149	.149	.250	-.344	-.179	0.483	0.237	1.1	1.1	1.0	1.2	A-	
2820	685371	5	88	.489	.489	.011	.114	.386	.000	.461	.461	-.200	-.334	-.212	-0.860	0.231	-1.1	0.9	-1.3	0.9	A+	
2821	685372	5	91	.297	.154	.297	.121	.429	.000	-.045	-.266	-.045	-.260	.407	-0.001	0.246	2.6	1.3	2.8	1.5	A-	
2822	685373	5	98	.388	.327	.092	.194	.388	.000	.275	-.132	-.195	-.041	.275	-0.127	0.227	0.7	1.1	1.4	1.2	A-	
2823	685374	5	77	.169	.195	.390	.247	.169	.000	.239	.011	-.041	-.171	.239	0.967	0.323	0.2	1.0	0.6	1.2	A+	
2824	685375	5	95	.221	.221	.253	.305	.221	.000	.157	-.243	.240	-.148	.157	0.398	0.262	0.7	1.1	1.6	1.4		
2825	685376	5	94	.330	.330	.191	.245	.234	.000	.006	.006	-.177	.096	.061	0.007	0.236	2.8	1.3	2.6	1.5	A+	
2826	685378	5	102	.128	.127	.392	.255	.225	.000	.004	.004	.128	-.257	.115	1.308	0.309	0.7	1.1	2.2	1.9	A+	
2827	685379	5	85	.506	.106	.188	.200	.506	.000	.386	-.146	-.150	-.224	.386	-0.879	0.238	-0.2	1.0	-0.2	1.0	A-	
2828	685380	5	97	.464	.103	.464	.320	.113	.000	.178	-.187	.178	-.129	.090	-0.890	0.218	1.6	1.1	1.4	1.1	A+	
2829	685381	5	85	.353	.353	.176	.259	.212	.000	.395	.395	-.078	-.114	-.267	-0.116	0.249	-0.2	1.0	-0.2	1.0	A-	
2830	685382	5	91	.429	.209	.077	.429	.286	.000	.272	-.164	-.157	.272	-.059	-0.646	0.232	0.9	1.1	1.1	1.1	A-	

Table B-4 (continued). Science Multiple-Choice Item Statistics

Ref	ID	FT Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
2831	685383	5	94	.351	.149	.202	.351	.298	.000	.241	-.305	.139	.241	-.136	-0.102	0.232	0.7	1.1	0.6	1.1	A-	
2832	685384	5	85	.094	.282	.282	.341	.094	.000	.040	-.058	-.141	.165	.040	1.721	0.383	0.3	1.1	1.5	1.8	A+	
2833	685385	5	93	.366	.247	.366	.301	.086	.000	-.170	.278	-.170	-.015	-.112	-0.153	0.231	4.1	1.4	4.4	1.7	A+	
2834	685386	5	92	.478	.196	.478	.174	.152	.000	.063	-.066	.063	-.052	.040	-0.785	0.226	2.9	1.2	3.2	1.4	A-	
2835	685387	5	81	.161	.309	.160	.346	.185	.000	-.179	.115	-.179	-.027	.065	0.784	0.321	1.8	1.4	3.2	2.4		
2836	685388	5	100	.600	.600	.220	.100	.080	.000	.519	.519	-.356	-.232	-.136	-1.464	0.218	-2.3	0.8	-2.2	0.8	A+	
2837	685389	5	95	.316	.316	.253	.274	.158	.000	-.182	-.182	-.175	.215	.178	0.019	0.240	4.1	1.5	4.6	2.0	A-	
2838	685390	5	82	.317	.244	.207	.232	.317	.000	.274	-.180	-.073	-.049	.274	0.107	0.257	0.6	1.1	0.1	1.0	A-	
2839	729935	6	904	.413	.181	.187	.219	.413	.000	.183	-.204	-.034	.005	.183	-0.061	0.073	5.4	1.1	5.5	1.2	A+	
2840	729936	6	927	.634	.176	.094	.096	.634	.000	.491	-.244	-.298	-.193	.491	-1.148	0.075	-3.5	0.9	-3.5	0.9	A+	A-
2841	729980	6	872	.595	.148	.149	.595	.108	.000	.305	-.129	-.203	.305	-.101	-0.875	0.076	2.4	1.1	2.2	1.1	A+	
2842	729981	6	939	.649	.109	.169	.073	.649	.000	.418	-.209	-.175	-.264	.418	-1.189	0.075	-1.9	0.9	-1.9	0.9	B+	B-
2843	729982	6	933	.861	.041	.861	.045	.054	.000	.445	-.263	.445	-.292	-.185	-2.723	0.102	-2.0	0.9	-2.7	0.7	B+	A-
2844	729983	6	841	.467	.181	.228	.467	.124	.000	.433	-.201	-.143	.433	-.240	-0.340	0.076	-3.0	0.9	-1.7	0.9	A+	
2845	729984	6	891	.562	.223	.123	.091	.562	.000	.363	-.154	-.089	-.300	.363	-0.834	0.074	0.0	1.0	-0.1	1.0	A+	A+
2846	729985	6	847	.829	.043	.063	.066	.829	.000	.365	-.167	-.146	-.275	.365	-2.329	0.099	-0.6	1.0	-0.5	1.0	A+	A+
2847	730041	6	863	.628	.110	.098	.163	.628	.000	.319	-.230	-.193	-.067	.319	-1.087	0.077	1.3	1.0	0.7	1.0	A+	B-
2848	730042	6	875	.355	.342	.137	.166	.355	.000	.234	-.057	-.107	-.130	.234	0.218	0.076	2.5	1.1	3.7	1.2	A-	B-
2849	730043	6	913	.777	.054	.083	.087	.777	.000	.493	-.241	-.224	-.317	.493	-1.962	0.086	-2.7	0.9	-4.1	0.7	A-	A-
2850	730044	6	875	.296	.173	.296	.064	.467	.000	.185	-.024	.185	-.120	-.092	0.526	0.080	2.9	1.1	5.4	1.4	A-	A-
2851	730045	6	920	.353	.171	.116	.353	.360	.000	.292	-.183	-.229	.292	.006	0.250	0.075	0.7	1.0	3.4	1.2	A+	A-
2852	730046	6	851	.515	.150	.219	.515	.116	.000	.335	-.140	-.118	.335	-.213	-0.522	0.075	1.0	1.0	1.2	1.0	A-	B-
2853	730175	6	943	.428	.245	.123	.204	.428	.000	.320	-.106	-.147	-.160	.320	-0.145	0.071	0.5	1.0	2.3	1.1	A+	A-
2854	730176	6	936	.579	.579	.185	.146	.090	.000	.405	.405	-.093	-.333	-.162	-0.850	0.073	-0.7	1.0	-0.8	1.0	A+	B+
2855	730177	6	910	.455	.226	.455	.179	.140	.000	.321	-.127	.321	-.217	-.066	-0.279	0.072	0.6	1.0	2.7	1.1	A+	A+
2856	730178	6	919	.585	.108	.176	.131	.585	.000	.366	-.206	-.128	-.201	.366	-0.912	0.074	0.5	1.0	0.7	1.0	A+	A+
2857	730265	6	950	.532	.147	.115	.206	.532	.000	.405	-.151	-.215	-.198	.405	-0.669	0.072	-0.7	1.0	-1.0	1.0	A+	
2858	730266	6	901	.248	.248	.080	.303	.370	.000	-.050	-.050	-.227	.009	.164	0.800	0.082	6.7	1.3	8.8	1.8	A+	A-
2859	730267	6	905	.356	.190	.179	.356	.275	.000	.193	-.118	-.260	.193	.121	0.138	0.075	3.7	1.1	6.7	1.4	A-	A-
2860	730268	6	889	.363	.363	.304	.183	.150	.000	.262	.262	-.151	-.155	.009	0.165	0.075	1.7	1.1	3.1	1.2	A-	A-
2861	730269	6	933	.421	.323	.070	.421	.186	.000	.231	-.091	-.239	.231	-.028	-0.101	0.072	3.3	1.1	5.1	1.2	A-	A-
2862	730270	6	926	.353	.254	.218	.175	.353	.000	.179	-.073	-.026	-.113	.179	0.261	0.074	4.0	1.1	6.6	1.4	A-	A-
2863	730271	6	915	.537	.537	.191	.110	.162	.000	.378	.378	-.110	-.243	-.188	-0.641	0.073	0.0	1.0	0.6	1.0	A-	A-
2864	730272	6	865	.177	.177	.182	.484	.157	.000	-.074	-.074	-.094	.172	-.059	1.282	0.093	3.5	1.2	9.0	2.1	A-	
2865	730273	6	892	.651	.159	.120	.651	.070	.000	.436	-.197	-.231	.436	-.239	-1.215	0.077	-1.8	0.9	-1.8	0.9	A+	

Table B-4 (continued). Science Multiple-Choice Item Statistics

Ref	ID	FT Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
2866	730274	6	871	.340	.305	.122	.340	.233	.000	.305	-.101	-.144	.305	-.121	0.310	0.077	-0.2	1.0	2.1	1.1	A-	A+
2867	730275	6	903	.146	.176	.505	.173	.146	.000	-.047	-.091	.260	-.208	-.047	1.542	0.098	2.7	1.2	7.8	2.1	A-	A+
2868	730276	6	935	.359	.174	.334	.133	.359	.000	.212	-.082	.064	-.298	.212	0.175	0.073	3.4	1.1	5.3	1.3	A+	
2869	730277	6	932	.256	.150	.442	.151	.256	.000	.141	-.064	.094	-.238	.141	0.777	0.080	2.8	1.1	6.0	1.5	A+	A-
2870	730278	6	927	.606	.132	.606	.136	.126	.000	.369	-.110	.369	-.213	-.212	-0.914	0.074	0.3	1.0	-0.1	1.0	A+	A-
2871	730279	6	901	.493	.211	.194	.102	.493	.000	.401	-.123	-.151	-.299	.401	-0.413	0.073	-1.6	1.0	-0.8	1.0	A+	A-
2872	730280	6	885	.516	.227	.174	.516	.082	.000	.232	-.043	-.089	.232	-.234	-0.565	0.074	4.6	1.1	5.3	1.2	A-	A-
2873	730281	6	897	.294	.149	.294	.294	.262	.000	.107	-.218	.107	-.013	.079	0.562	0.078	3.8	1.1	7.1	1.5	A+	A+
2874	730282	6	950	.462	.462	.186	.242	.109	.000	.290	.290	-.135	-.138	-.105	-0.317	0.071	1.8	1.0	3.9	1.2	A+	A-
2875	730283	6	931	.405	.405	.205	.252	.137	.000	.275	.275	-.121	-.057	-.180	-0.045	0.073	1.8	1.1	4.0	1.2	A-	B+
2876	730284	6	925	.442	.133	.147	.278	.442	.000	.353	-.270	-.181	-.043	.353	-0.171	0.072	-0.7	1.0	1.2	1.1	A+	A-
2877	730285	6	903	.309	.225	.309	.158	.308	.000	.027	-.115	.027	-.221	.252	0.467	0.077	6.6	1.2	8.6	1.6	A-	
2878	730286	6	918	.611	.611	.142	.168	.080	.000	.485	.485	-.183	-.288	-.241	-0.980	0.074	-3.8	0.9	-3.7	0.9	A-	A+
2879	730287	6	919	.275	.201	.275	.201	.322	.000	.165	-.244	.165	-.026	.074	0.612	0.079	3.0	1.1	6.2	1.5	A-	A+
2880	730288	6	868	.229	.194	.160	.417	.229	.000	-.043	-.048	-.100	.149	-.043	0.983	0.085	5.1	1.2	8.3	1.8	A-	A-
2881	730318	6	877	.599	.162	.120	.599	.120	.000	.381	-.181	-.165	.381	-.204	-0.979	0.076	-0.2	1.0	-0.2	1.0	A+	A+
2882	735055	6	894	.518	.130	.163	.518	.189	.000	.297	-.180	-.199	.297	-.037	-0.522	0.073	2.6	1.1	3.1	1.1	A-	
2883	735056	6	912	.427	.200	.235	.427	.139	.000	.270	-.231	.010	.270	-.132	-0.124	0.073	2.6	1.1	3.8	1.2	A-	A-
2884	735057	6	892	.298	.289	.169	.298	.243	.000	.190	.030	-.073	.190	-.171	0.570	0.078	2.7	1.1	5.0	1.3	B-	A+
2885	735058	6	898	.631	.110	.631	.133	.126	.000	.304	-.213	.304	-.150	-.088	-1.133	0.076	2.3	1.1	2.3	1.1	A+	A-
2886	735059	6	877	.341	.274	.140	.341	.245	.000	.093	.110	-.195	.093	-.059	0.265	0.077	6.3	1.2	7.7	1.5	A-	A-
2887	735060	6	894	.530	.133	.239	.097	.530	.000	.210	-.095	.070	-.345	.210	-0.570	0.073	4.8	1.1	5.1	1.2	A+	
2888	735061	6	910	.341	.314	.341	.119	.226	.000	.176	.005	.176	-.307	.032	0.347	0.075	4.0	1.1	6.0	1.4	A-	A+
2889	735062	6	889	.475	.143	.170	.213	.475	.000	.345	-.225	-.133	-.108	.345	-0.323	0.073	-0.1	1.0	0.8	1.0	A+	
2890	737370	6	942	.607	.199	.125	.607	.069	.000	.340	-.100	-.203	.340	-.232	-1.000	0.073	1.4	1.0	0.9	1.0	A+	A-
2891	739886	6	937	.218	.321	.218	.336	.125	.000	-.102	.062	-.102	.073	-.064	1.020	0.084	6.0	1.3	9.9	2.0	A-	A+
2892	739887	6	912	.258	.252	.268	.223	.258	.000	.171	.008	-.077	-.106	.171	0.698	0.081	2.5	1.1	4.8	1.4	A+	A-
2893	739888	6	895	.447	.178	.447	.282	.094	.000	.295	-.183	.295	-.077	-.145	-0.197	0.073	2.2	1.1	2.8	1.1	A-	B-
2894	739889	6	920	.463	.222	.145	.463	.171	.000	.201	-.084	-.114	.201	-.067	-0.332	0.072	5.4	1.1	5.7	1.2	A+	A+
2895	739890	6	878	.410	.182	.271	.137	.410	.000	.436	-.192	-.175	-.181	.436	-0.097	0.075	-2.9	0.9	-0.7	1.0	A-	
2896	739891	6	934	.253	.203	.282	.262	.253	.000	.123	-.133	.108	-.110	.123	0.801	0.080	3.3	1.1	5.6	1.4	A+	
2897	739892	6	882	.335	.334	.227	.248	.190	.000	.170	.170	-.176	.063	-.084	0.362	0.077	3.9	1.1	5.4	1.3	A+	A-
2898	739893	6	877	.381	.230	.381	.178	.211	.000	.103	-.107	.103	-.071	.054	0.103	0.075	7.5	1.2	6.7	1.3	A-	
2899	739894	6	915	.320	.320	.212	.215	.252	.000	.143	.143	-.158	-.130	.118	0.419	0.076	4.2	1.1	7.0	1.4	A+	
2900	739895	6	887	.184	.184	.203	.186	.427	.000	-.136	-.136	-.056	-.106	.235	1.232	0.091	4.5	1.3	9.9	2.4	A-	B-

Table B-4 (continued). Science Multiple-Choice Item Statistics

Ref	ID	FT Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
2901	739896	6	889	.465	.097	.465	.173	.265	.000	.251	-.246	.251	-.185	.040	-0.310	0.073	3.3	1.1	3.9	1.2	A-	A-
2902	739897	6	916	.181	.181	.222	.269	.329	.000	-.030	-.030	-.205	-.043	.246	1.333	0.090	3.2	1.2	8.3	1.9	B-	A-
2903	739898	6	828	.730	.089	.064	.729	.117	.000	.256	-.125	-.158	.256	-.123	-1.657	0.086	2.3	1.1	3.7	1.3	A+	A+
2904	739899	6	925	.221	.201	.255	.323	.221	.000	.081	-.075	-.030	.020	.081	1.007	0.084	2.7	1.1	7.5	1.7	A+	A-
2905	739908	6	921	.465	.206	.135	.465	.194	.000	.234	-.074	-.095	.234	-.138	-0.302	0.072	3.9	1.1	4.8	1.2	A-	A+
2906	739909	6	943	.151	.088	.493	.268	.151	.000	-.096	-.137	.195	-.056	-.096	1.536	0.095	3.8	1.2	8.5	2.2	A+	A+
2907	739910	6	941	.363	.191	.363	.307	.138	.000	.197	-.112	.197	-.057	-.070	0.182	0.073	4.1	1.1	6.0	1.3	A+	A-
2908	739911	6	960	.399	.199	.227	.399	.175	.000	.172	-.122	-.080	.172	-.005	-0.041	0.072	6.0	1.2	7.1	1.3	A+	A+
2909	739912	6	944	.336	.300	.174	.191	.336	.000	.209	.093	-.160	-.205	.209	0.341	0.074	2.9	1.1	3.7	1.2	A-	A+
2910	740627	6	916	.294	.206	.329	.294	.171	.000	-.045	.019	-.001	-.045	.036	0.601	0.078	8.4	1.3	9.9	1.8	A-	A-
2911	734701	7	761	.247	.188	.247	.359	.206	.000	.102	-.132	.102	.040	-.029	1.047	0.089	2.5	1.1	6.2	1.6	A-	
2912	734810	7	771	.537	.537	.091	.307	.065	.000	.234	.234	-.277	.013	-.175	-0.449	0.080	4.9	1.2	4.4	1.2	B-	
2913	734814	7	762	.407	.112	.407	.106	.375	.000	.099	-.136	.099	-.278	.165	0.244	0.080	7.5	1.2	8.1	1.4	A-	
2914	734815	7	749	.379	.379	.188	.250	.183	.000	.246	.246	-.133	-.105	-.057	0.374	0.081	1.8	1.1	4.9	1.3	A-	
2915	734816	7	768	.439	.086	.439	.260	.215	.000	.057	-.196	.057	.070	-.010	0.029	0.079	9.4	1.3	9.6	1.5	B+	
2916	734817	7	772	.668	.668	.052	.058	.222	.000	.276	.276	-.274	-.262	-.019	-1.096	0.085	2.8	1.1	3.6	1.2	B+	
2917	734818	7	812	.461	.089	.175	.276	.461	.000	.368	-.229	-.192	-.101	.368	-0.032	0.077	-0.7	1.0	2.1	1.1	A-	A+
2918	734819	7	764	.399	.168	.208	.225	.399	.000	.243	-.275	-.037	-.002	.243	0.218	0.080	3.6	1.1	3.4	1.2	A+	A-
2919	734821	7	769	.349	.349	.312	.140	.199	.000	.096	.096	.124	-.186	-.097	0.487	0.081	6.4	1.2	7.1	1.5	A+	A-
2920	734822	7	748	.687	.100	.098	.687	.115	.000	.415	-.125	-.269	.415	-.235	-1.213	0.087	-0.3	1.0	-1.2	0.9	A+	A-
2921	734823	7	787	.485	.172	.130	.485	.213	.000	.271	-.154	-.278	.271	.038	-0.266	0.078	2.7	1.1	3.9	1.2	A-	A+
2922	734824	7	789	.683	.067	.061	.683	.189	.000	.326	-.276	-.274	.326	-.043	-1.147	0.084	1.2	1.1	1.3	1.1	A+	A+
2923	734825	7	775	.363	.382	.363	.175	.080	.000	.248	-.055	.248	-.177	-.093	0.447	0.080	1.2	1.0	4.8	1.3	A+	A-
2924	734826	7	755	.551	.139	.180	.130	.551	.000	.427	-.195	-.227	-.172	.427	-0.407	0.080	-2.0	0.9	-1.1	1.0	A+	A-
2925	734827	7	725	.393	.226	.251	.393	.130	.000	.157	-.088	-.050	.157	-.054	0.262	0.083	5.9	1.2	5.7	1.3	A+	
2926	734833	7	767	.363	.180	.151	.362	.306	.000	.045	-.038	-.016	.045	-.003	0.443	0.081	7.4	1.2	9.2	1.6	A+	A-
2927	734834	7	727	.371	.224	.259	.146	.371	.000	.280	-.034	-.123	-.190	.280	0.425	0.083	1.6	1.1	2.2	1.1	A+	A-
2928	734838	7	801	.348	.348	.301	.260	.091	.000	.126	.126	-.107	.069	-.142	0.459	0.080	4.9	1.2	7.1	1.4	A+	A-
2929	734849	7	756	.451	.188	.221	.140	.451	.000	.383	-.186	-.079	-.245	.383	-0.047	0.080	-1.0	1.0	0.4	1.0	A+	A-
2930	734856	7	772	.294	.342	.206	.158	.294	.000	.197	.032	-.090	-.189	.197	0.791	0.085	1.8	1.1	5.1	1.4	A+	A-
2931	734857	7	768	.574	.044	.283	.099	.574	.000	.303	-.314	-.118	-.108	.303	-0.629	0.081	2.7	1.1	2.2	1.1	A+	
2932	734858	7	775	.377	.285	.377	.205	.133	.000	.340	-.118	.340	-.228	-.058	0.357	0.080	-0.7	1.0	1.9	1.1	A-	A-
2933	734862	7	762	.652	.196	.652	.062	.091	.000	.287	-.155	.287	-.195	-.099	-0.965	0.084	3.1	1.1	2.6	1.1	A+	A-
2934	734863	7	731	.635	.231	.059	.075	.635	.000	.378	-.121	-.241	-.282	.378	-0.885	0.084	0.0	1.0	-0.1	1.0	A+	
2935	734864	7	775	.761	.075	.074	.090	.761	.000	.507	-.257	-.282	-.261	.507	-1.621	0.092	-2.6	0.9	-3.8	0.8	A+	A-

Table B-4 (continued). Science Multiple-Choice Item Statistics

Ref	ID	FT Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
2936	734867	7	750	.740	.085	.740	.129	.045	.000	.428	-.234	.428	-.211	-.249	-1.541	0.092	-0.8	1.0	-1.2	0.9	A-	B-
2937	734868	7	754	.804	.023	.031	.804	.143	.000	.308	-.175	-.225	.308	-.164	-1.957	0.100	0.9	1.1	0.6	1.1	A+	
2938	734869	7	809	.834	.047	.080	.038	.834	.000	.537	-.328	-.289	-.269	.537	-2.109	0.103	-3.0	0.8	-4.2	0.6	A+	
2939	734877	7	775	.281	.523	.076	.281	.120	.000	.198	.122	-.317	.198	-.202	0.811	0.085	1.7	1.1	4.6	1.4	A-	A+
2940	734879	7	734	.282	.290	.282	.210	.218	.000	-.058	.082	-.058	-.105	.076	0.890	0.087	6.2	1.3	9.8	1.9	A+	A+
2941	734882	7	723	.539	.079	.242	.539	.140	.000	.405	-.270	-.146	.405	-.192	-0.436	0.082	-0.8	1.0	-0.4	1.0	A+	B-
2942	734883	7	792	.582	.230	.102	.582	.086	.000	.374	-.148	-.188	.374	-.234	-0.640	0.079	0.2	1.0	0.0	1.0	A-	
2943	734884	7	757	.678	.678	.082	.144	.096	.000	.509	.509	-.269	-.256	-.252	-1.174	0.086	-3.0	0.9	-3.7	0.8	A+	A-
2944	734914	7	761	.342	.158	.269	.231	.342	.000	.283	-.152	-.042	-.143	.283	0.526	0.082	0.9	1.0	2.5	1.2	A+	A-
2945	734917	7	744	.387	.387	.133	.167	.313	.000	.127	.127	-.162	-.151	.106	0.287	0.081	6.1	1.2	6.0	1.3	A-	
2946	735063	7	808	.451	.450	.223	.124	.203	.000	.218	.218	-.112	-.180	-.006	0.072	0.077	4.4	1.1	4.5	1.2	A+	A-
2947	735064	7	815	.741	.741	.067	.126	.065	.000	.371	.371	-.236	-.175	-.184	-1.468	0.089	0.9	1.0	-0.5	1.0	B+	
2948	735069	7	733	.458	.209	.188	.145	.458	.000	.314	-.158	-.055	-.201	.314	-0.036	0.081	0.8	1.0	2.1	1.1	A+	
2949	735070	7	784	.256	.352	.092	.300	.256	.000	.106	.038	-.138	-.054	.106	0.991	0.087	3.4	1.1	6.1	1.5	A+	A+
2950	735071	7	729	.292	.230	.237	.292	.240	.000	-.011	-.021	-.011	-.011	.044	0.834	0.087	5.9	1.2	9.9	1.9	A+	
2951	735072	7	800	.659	.659	.095	.105	.141	.000	.445	.445	-.227	-.237	-.206	-1.071	0.082	-1.8	0.9	-2.2	0.9	A+	A-
2952	735073	7	769	.507	.261	.103	.507	.129	.000	.279	-.086	-.162	.279	-.158	-0.240	0.079	2.6	1.1	4.1	1.2	A+	
2953	735324	7	755	.499	.150	.499	.228	.123	.000	.286	-.014	.286	-.195	-.171	-0.202	0.079	2.3	1.1	2.5	1.1	A+	
2954	735325	7	754	.348	.347	.113	.280	.260	.000	.055	.055	-.269	.054	.080	0.552	0.082	6.4	1.2	9.5	1.7	B-	
2955	735326	7	783	.444	.444	.119	.373	.064	.000	.209	.209	-.325	.079	-.152	0.063	0.078	4.5	1.1	4.7	1.2	A-	A-
2956	735327	7	721	.519	.200	.139	.143	.519	.000	.308	-.095	-.201	-.133	.308	-0.255	0.081	0.6	1.0	1.6	1.1	A-	A+
2957	735328	7	796	.573	.119	.104	.204	.573	.000	.269	-.095	-.119	-.163	.269	-0.578	0.079	3.7	1.1	3.3	1.1	A+	
2958	735329	7	781	.718	.718	.143	.060	.078	.000	.420	.420	-.199	-.198	-.269	-1.351	0.087	-0.9	1.0	-1.5	0.9	A+	B-
2959	735330	7	732	.701	.701	.123	.086	.090	.000	.344	.344	-.290	-.236	.014	-1.145	0.089	0.8	1.0	0.9	1.1	A+	A-
2960	736004	7	735	.412	.106	.297	.185	.412	.000	.285	-.139	-.088	-.148	.285	0.148	0.082	1.8	1.1	3.3	1.2	A+	
2961	736005	7	798	.629	.629	.079	.122	.170	.000	.355	.355	-.330	-.258	.004	-0.877	0.081	0.6	1.0	0.9	1.0	A-	A-
2962	736006	7	788	.580	.105	.175	.580	.140	.000	.341	-.187	-.176	.341	-.127	-0.608	0.079	0.6	1.0	1.6	1.1	A-	
2963	736007	7	797	.550	.550	.143	.142	.166	.000	.428	.428	-.224	-.275	-.104	-0.429	0.078	-2.3	0.9	-1.7	0.9	A+	
2964	736008	7	770	.409	.134	.142	.316	.409	.000	.192	-.095	-.202	.018	.192	0.206	0.079	4.8	1.1	4.7	1.2	A+	A-
2965	736009	7	740	.815	.082	.047	.815	.055	.000	.451	-.304	-.189	.451	-.226	-2.019	0.103	-1.8	0.9	-2.1	0.8	A+	A-
2966	736010	7	789	.472	.163	.471	.221	.144	.000	.292	-.193	.292	-.093	-.102	-0.142	0.078	1.8	1.1	3.2	1.1	A-	A-
2967	736011	7	772	.390	.234	.390	.205	.171	.000	.243	-.021	.243	-.170	-.108	0.299	0.080	3.1	1.1	4.3	1.2	A-	A-
2968	736012	7	809	.338	.110	.257	.337	.295	.000	.127	-.153	-.091	.127	.060	0.573	0.080	4.2	1.1	7.3	1.5	A-	A-
2969	736013	7	791	.309	.308	.440	.153	.099	.000	.119	.119	.095	-.189	-.115	0.673	0.082	3.7	1.1	6.9	1.5	A-	B-
2970	736014	7	783	.545	.160	.545	.123	.172	.000	.149	-.113	.149	-.151	.045	-0.418	0.079	6.8	1.2	7.7	1.3	A+	B-

Table B-4 (continued). Science Multiple-Choice Item Statistics

Ref	ID	FT Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
2971	736015	7	823	.462	.305	.102	.462	.131	.000	.170	.058	-.252	.170	-.105	-0.077	0.076	6.8	1.2	7.2	1.3	A-	A-
2972	736016	7	816	.556	.273	.082	.556	.088	.000	.390	-.103	-.253	.390	-.277	-0.502	0.077	-0.7	1.0	-0.2	1.0	A-	
2973	736017	7	785	.494	.494	.162	.201	.143	.000	.313	.313	-.122	-.145	-.153	-0.244	0.078	1.9	1.1	2.8	1.1	A-	
2974	736018	7	712	.541	.139	.149	.541	.171	.000	.332	-.171	-.189	.332	-.105	-0.472	0.082	1.2	1.0	1.1	1.1	A+	A+
2975	736019	7	769	.466	.228	.466	.235	.072	.000	.303	-.104	.303	-.113	-.232	-0.011	0.078	1.1	1.0	1.7	1.1	A+	A+
2976	736859	7	775	.508	.123	.508	.302	.067	.000	.155	-.052	.155	-.062	-.127	-0.313	0.079	7.2	1.2	7.3	1.3	A-	B+
2977	736860	7	743	.353	.334	.353	.140	.174	.000	.125	.081	.125	-.198	-.077	0.506	0.083	5.3	1.2	6.7	1.4	A+	
2978	737374	7	807	.439	.191	.275	.439	.095	.000	.011	.021	.028	.011	-.089	0.025	0.077	9.9	1.3	9.9	1.5	A+	A+
2979	739496	7	786	.377	.225	.168	.230	.377	.000	.058	.043	-.157	.030	.058	0.301	0.079	8.2	1.3	8.7	1.5	A+	A+
2980	739497	7	693	.636	.081	.134	.636	.149	.000	.178	-.063	-.105	.178	-.092	-0.892	0.087	4.9	1.2	4.7	1.2	A-	
2981	739498	7	738	.312	.121	.385	.312	.183	.000	.120	-.099	.032	.120	-.100	0.718	0.085	3.3	1.1	7.0	1.5	A+	A+
2982	739499	7	775	.545	.151	.128	.545	.177	.000	.276	-.138	-.267	.276	.002	-0.502	0.079	3.4	1.1	3.3	1.1	B+	
2983	739500	7	783	.447	.447	.175	.171	.207	.000	.344	.344	-.132	-.165	-.145	0.037	0.078	-0.3	1.0	1.1	1.0	A-	
2984	739502	7	785	.357	.357	.215	.209	.219	.000	.198	.198	-.222	-.090	.079	0.442	0.081	3.9	1.1	5.8	1.4	A-	A+
2985	739503	7	771	.287	.263	.200	.250	.287	.000	.171	.035	-.021	-.195	.171	0.853	0.085	2.1	1.1	6.8	1.6	A+	
2986	739504	7	765	.161	.256	.237	.346	.161	.000	.017	.031	-.125	.070	.017	1.621	0.103	1.5	1.1	8.3	2.3	A+	A+
2987	739505	7	780	.314	.149	.283	.314	.254	.000	.163	-.185	-.059	.163	.038	0.735	0.083	2.8	1.1	6.5	1.5	A+	A-
2988	739506	7	815	.556	.556	.245	.079	.120	.000	.329	.329	-.164	-.253	-.077	-0.513	0.077	1.7	1.1	1.4	1.1	A-	B-
2989	739507	7	774	.287	.287	.335	.124	.255	.000	.130	.130	-.023	-.199	.041	0.867	0.085	2.7	1.1	8.2	1.7	B-	A+
2990	739508	7	728	.254	.141	.183	.254	.422	.000	.067	-.226	-.205	.067	.261	1.071	0.091	3.5	1.2	7.8	1.8	B-	
2991	739509	7	778	.681	.089	.681	.143	.087	.000	.377	-.220	.377	-.254	-.085	-1.143	0.084	0.0	1.0	-0.4	1.0	A+	
2992	739510	7	748	.459	.225	.087	.459	.230	.000	.279	-.028	-.230	.279	-.149	-0.009	0.080	2.6	1.1	3.5	1.2	A+	B-
2993	739511	7	748	.332	.332	.206	.206	.257	.000	.067	.067	-.100	-.057	.073	0.600	0.083	6.2	1.2	7.3	1.5	A-	
2994	739512	7	830	.323	.225	.323	.299	.153	.000	.029	-.046	.029	.093	-.102	0.613	0.079	7.2	1.2	7.9	1.5	A-	A-
2995	739513	7	725	.143	.192	.356	.309	.143	.000	.036	-.163	.090	.018	.036	1.791	0.110	1.5	1.1	6.0	2.0	A+	A+
2996	739514	7	754	.296	.407	.296	.129	.168	.000	.181	.063	.181	-.259	-.071	0.783	0.085	1.5	1.1	7.2	1.6	A+	A+
2997	739571	7	828	.216	.114	.192	.216	.478	.000	.080	-.133	-.067	.080	.072	1.275	0.088	1.9	1.1	6.6	1.7	A-	A+
2998	739583	7	777	.458	.458	.093	.355	.094	.000	.236	.236	-.160	-.153	.008	-0.026	0.078	4.3	1.1	3.9	1.2	A-	A-
2999	739787	7	713	.502	.107	.191	.502	.201	.000	.197	-.060	-.054	.197	-.148	-0.181	0.081	4.5	1.1	6.5	1.3	A+	A+
3000	739788	7	732	.279	.171	.279	.410	.141	.000	.168	-.136	.168	.068	-.166	0.873	0.088	1.6	1.1	6.7	1.6	A-	
3001	739789	7	784	.259	.259	.520	.162	.059	.000	.127	.127	.066	-.150	-.140	0.962	0.086	2.1	1.1	7.3	1.7	C-	B-
3002	739790	7	812	.176	.266	.426	.132	.176	.000	.124	-.155	.095	-.077	.124	1.558	0.097	1.3	1.1	5.1	1.7	A-	A-
3003	739791	7	761	.247	.247	.309	.218	.226	.000	-.059	-.059	.000	-.060	.120	1.067	0.089	5.8	1.3	8.8	1.9	A-	B-
3004	739792	7	793	.496	.178	.207	.496	.120	.000	.244	-.201	-.029	.244	-.102	-0.225	0.078	4.5	1.1	4.4	1.2	A+	
3005	739793	7	801	.365	.365	.210	.305	.121	.000	.250	.250	-.075	-.158	-.052	0.450	0.079	1.6	1.0	4.4	1.3	A+	A-

Table B-4 (continued). Science Multiple-Choice Item Statistics

Ref	ID	FT Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
3006	739794	7	777	.556	.112	.104	.556	.228	.000	.362	-.262	-.254	.362	-.047	-0.498	0.079	0.6	1.0	0.6	1.0	A+	A-
3007	739900	7	721	.677	.148	.104	.677	.071	.000	.468	-.234	-.291	.468	-.183	-1.107	0.088	-2.3	0.9	-2.7	0.9	A+	
3008	739901	7	792	.365	.196	.197	.365	.242	.000	.160	-.220	-.002	.160	.025	0.402	0.080	4.8	1.1	4.7	1.3	B-	B-
3009	739902	7	781	.319	.319	.289	.138	.254	.000	.049	.049	-.028	-.150	.096	0.651	0.082	5.9	1.2	8.6	1.6	A-	
3010	739903	7	735	.404	.098	.329	.169	.404	.000	.218	-.183	.061	-.217	.218	0.262	0.082	4.0	1.1	4.6	1.3	A+	
3011	739904	7	778	.345	.144	.344	.180	.332	.000	.205	-.135	.205	-.145	.013	0.480	0.081	3.1	1.1	4.7	1.3	A-	
3012	739905	7	798	.390	.222	.203	.185	.390	.000	.213	-.113	-.093	-.050	.213	0.303	0.079	3.7	1.1	4.6	1.2	A-	
3013	739906	7	773	.228	.269	.273	.230	.228	.000	.088	.209	-.081	-.222	.088	1.197	0.091	2.8	1.1	6.2	1.6	A+	A-
3014	739907	7	730	.323	.111	.174	.392	.323	.000	.236	-.114	-.323	.097	.236	0.599	0.085	1.8	1.1	4.6	1.3	A+	
3015	739913	7	769	.245	.225	.165	.244	.365	.000	-.031	-.042	-.107	-.031	.146	1.095	0.089	5.2	1.2	9.0	1.9	A-	A-
3016	739914	7	784	.189	.189	.189	.292	.330	.000	-.037	-.037	-.086	.035	.068	1.437	0.096	3.1	1.2	9.4	2.3	A-	A+
3017	739973	7	765	.374	.322	.220	.374	.085	.000	.088	.088	-.152	.088	-.073	0.354	0.080	7.1	1.2	7.0	1.4	A-	
3018	740218	7	769	.278	.278	.166	.198	.358	.000	.158	.158	-.123	-.166	.085	0.855	0.086	3.0	1.1	4.7	1.4	B-	
3019	740219	7	766	.691	.691	.085	.106	.119	.000	.276	.276	-.115	-.204	-.102	-1.190	0.087	2.9	1.1	2.5	1.2	B-	
3020	740220	7	787	.424	.424	.337	.075	.164	.000	.236	.236	-.065	-.173	-.109	0.125	0.079	3.4	1.1	5.4	1.3	A-	A-
3021	740221	7	734	.375	.354	.136	.375	.135	.000	.216	.065	-.260	.216	-.136	0.359	0.083	3.8	1.1	3.6	1.2	A-	A-
3022	740222	7	789	.279	.215	.279	.274	.232	.000	.089	-.118	.089	.006	.014	0.908	0.085	3.8	1.2	9.0	1.8	A-	
3023	740223	7	727	.380	.217	.380	.252	.151	.000	.181	-.053	.181	-.076	-.092	0.407	0.082	3.5	1.1	6.4	1.4	A+	
3024	740224	7	819	.353	.353	.165	.293	.189	.000	.235	.235	-.124	-.084	-.072	0.443	0.079	2.5	1.1	4.6	1.3	A+	A+
3025	740276	7	744	.226	.069	.309	.397	.226	.000	-.020	-.238	.214	-.063	-.020	1.188	0.093	4.7	1.2	7.7	1.9	A-	
3026	740417	7	778	.255	.230	.254	.312	.203	.000	.058	-.004	.058	-.106	.062	1.054	0.087	3.9	1.2	6.4	1.6	A-	B+
3027	740418	7	773	.220	.247	.220	.330	.203	.000	-.068	.054	-.068	-.025	.042	1.226	0.092	4.8	1.2	9.9	2.2	A-	A+
3028	740419	7	752	.686	.686	.066	.189	.059	.000	.271	.271	-.248	-.065	-.164	-1.110	0.086	2.3	1.1	2.4	1.1	C-	A+
3029	740420	7	801	.225	.291	.351	.225	.134	.000	-.001	-.005	.080	-.001	-.105	1.225	0.089	3.5	1.2	9.1	2.0	A-	B-
3030	740421	7	758	.309	.153	.112	.309	.426	.000	.001	-.173	-.222	.001	.267	0.705	0.084	6.9	1.3	9.1	1.7	A+	A-
3031	740422	7	741	.468	.468	.260	.155	.116	.000	.225	.225	.033	-.181	-.192	-0.032	0.079	3.3	1.1	4.4	1.2	A-	
3032	740423	7	775	.640	.640	.177	.123	.061	.000	.392	.392	-.147	-.280	-.170	-0.941	0.082	-0.3	1.0	-0.7	1.0	A+	
3033	740425	7	772	.171	.171	.152	.280	.398	.000	.035	.035	-.106	-.089	.133	1.582	0.100	1.8	1.1	8.1	2.2	B-	A-
3034	740426	7	793	.371	.153	.303	.371	.174	.000	.173	-.105	-.164	.173	.079	0.430	0.079	4.3	1.1	5.1	1.3	B-	
3035	740839	7	766	.389	.155	.389	.103	.352	.000	.134	-.113	.134	-.235	.098	0.254	0.080	5.8	1.2	8.4	1.5	A-	A-
3036	740868	7	734	.574	.574	.204	.099	.123	.000	.351	.351	-.180	-.263	-.069	-0.586	0.082	0.8	1.0	1.5	1.1	A+	
3037	740869	7	752	.457	.457	.156	.195	.191	.000	.123	.123	-.003	-.136	-.015	-0.032	0.080	7.6	1.2	6.9	1.3	A-	
3038	740870	7	770	.604	.171	.604	.143	.082	.000	.418	-.270	.418	-.155	-.177	-0.765	0.081	-1.0	1.0	-0.7	1.0	A-	
3039	740871	7	796	.363	.182	.092	.363	.363	.000	.113	-.174	-.314	.113	.216	0.436	0.079	6.4	1.2	5.2	1.3	B+	A-
3040	740873	7	789	.363	.274	.362	.176	.188	.000	.185	-.083	.185	-.055	-.080	0.432	0.080	3.3	1.1	6.2	1.4	A-	

Table B–4 (continued). Science Multiple-Choice Item Statistics

Ref	ID	FT Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M /F	W /B
3041	740874	7	759	.490	.117	.182	.490	.211	.000	.200	-.132	-.204	.200	.052	-0.140	0.079	4.8	1.1	4.7	1.2	A+	A+
3042	740875	7	827	.470	.139	.470	.167	.224	.000	.403	-.225	.403	-.137	-.173	-0.133	0.076	-1.4	1.0	-0.9	1.0	A-	A+
3043	740876	7	761	.456	.456	.159	.258	.127	.000	.304	.304	-.133	-.056	-.235	-0.058	0.080	1.7	1.1	3.2	1.1	A+	A-
3044	740878	7	717	.513	.068	.298	.120	.513	.000	.348	-.174	-.134	-.212	.348	-0.263	0.081	-0.1	1.0	0.4	1.0	A+	A-
3045	741005	7	801	.449	.381	.091	.079	.449	.000	.240	.115	-.316	-.311	.240	0.077	0.077	4.0	1.1	4.6	1.2	A+	
3046	741006	7	807	.570	.169	.570	.156	.105	.000	.382	-.066	.382	-.286	-.197	-0.593	0.078	-0.1	1.0	-0.2	1.0	A+	A+
3047	741007	7	738	.782	.050	.099	.782	.069	.000	.427	-.219	-.252	.427	-.210	-1.707	0.098	-1.1	0.9	-1.4	0.9	A+	A-
3048	741008	7	771	.541	.541	.240	.135	.084	.000	.338	.338	-.088	-.199	-.225	-0.362	0.079	0.8	1.0	3.5	1.2	A+	A-
3049	741009	7	799	.552	.552	.145	.139	.164	.000	.255	.255	-.226	-.099	-.035	-0.427	0.078	3.5	1.1	4.5	1.2	A+	A+
3050	741010	7	787	.241	.080	.241	.413	.266	.000	.042	-.207	-.042	.091	-.015	1.079	0.088	3.6	1.2	7.1	1.7	A-	A+
3051	741101	7	728	.526	.526	.115	.169	.190	.000	.310	.310	-.194	-.191	-.055	-0.311	0.081	1.7	1.1	2.0	1.1	B-	A+
3052	741102	7	787	.507	.117	.264	.112	.507	.000	.309	-.131	-.093	-.226	.309	-0.289	0.078	1.6	1.1	3.1	1.1	A+	A+
3053	741103	7	786	.426	.426	.281	.102	.191	.000	.192	.192	-.015	-.242	-.039	0.106	0.078	4.8	1.1	5.9	1.3	A+	A-
3054	741104	7	738	.202	.081	.423	.294	.202	.000	.085	-.121	.028	-.032	.085	1.339	0.097	2.2	1.1	6.6	1.8	A-	A-
3055	741105	7	741	.298	.185	.233	.283	.298	.000	.167	-.155	-.177	.130	.167	0.806	0.085	2.6	1.1	4.2	1.3	A-	A-
3056	741106	7	773	.602	.107	.151	.140	.602	.000	.525	-.294	-.238	-.232	.525	-0.711	0.081	-4.4	0.9	-4.6	0.8	A+	A-
3057	741107	7	774	.605	.072	.605	.186	.137	.000	.454	-.260	.454	-.220	-.201	-0.760	0.081	-1.9	0.9	-2.1	0.9	A-	
3058	741108	7	798	.218	.218	.203	.410	.169	.000	.066	.066	.004	-.023	-.046	1.222	0.090	2.5	1.1	6.7	1.7	A-	A-
3059	741141	7	770	.582	.182	.582	.138	.099	.000	.409	-.184	.409	-.179	-.231	-0.564	0.080	-1.1	1.0	-0.6	1.0	A-	C-
3060	741142	7	758	.492	.492	.156	.215	.137	.000	.359	.359	-.292	-.067	-.134	-0.170	0.079	-0.4	1.0	1.0	1.0	A-	B-
3061	741143	7	771	.507	.227	.125	.507	.141	.000	.332	-.116	-.255	.332	-.096	-0.261	0.079	1.4	1.0	2.4	1.1	A-	
3062	741144	7	725	.706	.088	.706	.123	.083	.000	.490	-.198	.490	-.299	-.250	-1.229	0.089	-2.7	0.9	-3.4	0.8	A-	A-
3063	741145	7	753	.535	.106	.135	.535	.223	.000	.455	-.271	-.194	.455	-.185	-0.422	0.081	-2.5	0.9	-1.1	1.0	A-	A-
3064	741146	7	778	.541	.212	.118	.541	.129	.000	.173	-.185	-.081	.173	.047	-0.442	0.079	6.2	1.2	6.4	1.3	A+	
3065	741147	7	793	.522	.144	.262	.522	.072	.000	.392	-.164	-.219	.392	-.164	-0.428	0.079	0.0	1.0	-0.2	1.0	A+	A-
3066	741148	7	777	.480	.181	.138	.201	.480	.000	.391	-.209	-.173	-.139	.391	-0.161	0.079	-1.3	1.0	-0.2	1.0	A-	A-
3067	741149	7	818	.289	.441	.289	.164	.106	.000	.120	.049	.120	-.147	-.080	0.793	0.083	3.7	1.1	7.3	1.6	A-	B-
3068	741150	7	749	.471	.471	.160	.210	.159	.000	.274	.274	-.118	-.113	-.130	-0.141	0.079	2.3	1.1	2.8	1.1	A+	A-
3069	741151	7	789	.333	.355	.215	.096	.333	.000	.248	.032	-.122	-.280	.248	0.581	0.082	2.0	1.1	3.9	1.3	A-	A+
3070	719408	8	534	.594	.594	.105	.140	.161	.000	.420	.420	-.267	-.300	-.056	-0.711	0.097	-0.8	1.0	-0.6	1.0	A+	A-
3071	719410	8	551	.490	.263	.156	.490	.091	.000	.333	-.081	-.145	.333	-.271	-0.122	0.093	0.8	1.0	1.8	1.1	A-	A-
3072	719411	8	580	.628	.628	.150	.119	.103	.000	.439	.439	-.173	-.254	-.224	-0.862	0.094	-1.7	0.9	-1.8	0.9	C+	
3073	719412	8	575	.430	.230	.170	.430	.170	.000	.251	-.045	-.159	.251	-.121	0.188	0.091	2.0	1.1	3.1	1.2	A-	A+
3074	719414	8	567	.247	.517	.157	.079	.247	.000	.109	.237	-.260	-.262	.109	1.136	0.103	2.2	1.1	6.2	1.7	A-	
3075	719415	8	562	.150	.149	.253	.395	.203	.000	.027	.027	-.089	-.024	.100	1.850	0.122	0.9	1.1	6.5	2.2	A-	

Table B-4 (continued). Science Multiple-Choice Item Statistics

Ref	ID	FT Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
3076	719416	8	581	.565	.148	.565	.213	.074	.000	.353	-.056	.353	-.237	-.221	-0.471	0.092	0.3	1.0	0.8	1.0	B-	B-
3077	719417	8	552	.489	.489	.185	.194	.132	.000	.324	.324	-.076	-.229	-.123	-0.147	0.093	0.8	1.0	1.9	1.1	A+	A-
3078	719419	8	519	.410	.310	.410	.135	.145	.000	.202	.004	.202	-.253	-.042	0.178	0.096	2.9	1.1	4.3	1.3	A+	
3079	719420	8	614	.481	.121	.480	.290	.109	.000	.371	-.254	.371	-.136	-.132	-0.133	0.088	-0.3	1.0	-0.1	1.0	A+	A+
3080	719423	8	568	.741	.741	.065	.088	.106	.000	.506	.506	-.246	-.333	-.217	-1.457	0.105	-2.4	0.9	-2.5	0.8	A+	
3081	719424	8	554	.455	.072	.162	.310	.455	.000	.320	-.242	-.194	-.054	.320	0.012	0.093	0.4	1.0	1.4	1.1	A+	A-
3082	719425	8	583	.530	.530	.300	.091	.079	.000	.323	.323	-.106	-.237	-.166	-0.304	0.090	0.9	1.0	1.5	1.1	A-	A+
3083	719426	8	544	.500	.500	.114	.261	.125	.000	.382	.382	-.252	-.108	-.192	-0.117	0.093	-1.2	1.0	0.1	1.0	A-	
3084	719430	8	556	.290	.183	.228	.299	.290	.000	.115	-.160	-.068	.084	.115	0.866	0.100	3.2	1.1	5.7	1.5	A-	A-
3085	719432	8	554	.294	.119	.330	.256	.294	.000	.209	-.065	-.124	-.036	.209	0.843	0.099	1.6	1.1	2.5	1.2	A-	A-
3086	719433	8	576	.290	.210	.290	.300	.200	.000	.077	-.086	.077	-.029	.033	0.852	0.098	4.0	1.2	5.6	1.5	A-	
3087	719434	8	568	.308	.099	.164	.430	.308	.000	.023	-.223	-.113	.198	.023	0.742	0.097	5.5	1.2	6.9	1.6	A+	
3088	719435	8	549	.432	.432	.095	.284	.189	.000	.095	.095	-.313	.012	.100	0.144	0.093	6.8	1.2	7.2	1.5	A-	A-
3089	719437	8	604	.298	.108	.409	.298	.185	.000	.180	-.218	-.014	.180	-.020	0.857	0.096	2.0	1.1	6.2	1.6	A+	
3090	719438	8	586	.526	.181	.130	.526	.164	.000	.343	-.197	-.177	.343	-.097	-0.261	0.090	0.4	1.0	0.7	1.0	A-	
3091	719439	8	555	.559	.121	.178	.142	.559	.000	.465	-.180	-.152	-.326	.465	-0.459	0.093	-3.1	0.9	-2.3	0.9	A+	
3092	719441	8	571	.420	.226	.233	.121	.420	.000	.269	-.020	-.080	-.279	.269	0.152	0.092	2.4	1.1	2.7	1.2	A+	A+
3093	719442	8	588	.441	.440	.289	.112	.158	.000	.109	.109	.069	-.204	-.057	0.069	0.090	6.6	1.2	8.5	1.5	A+	
3094	719443	8	551	.837	.837	.051	.053	.060	.000	.542	.542	-.284	-.346	-.256	-2.203	0.126	-2.5	0.8	-3.7	0.6	A+	
3095	719445	8	595	.632	.109	.138	.121	.632	.000	.395	-.171	-.121	-.293	.395	-0.811	0.093	-0.8	1.0	-0.9	1.0	B+	
3096	719446	8	560	.332	.332	.193	.189	.286	.000	-.027	-.027	-.066	-.025	.107	0.658	0.096	7.3	1.3	7.4	1.6	A+	A+
3097	719447	8	568	.416	.180	.415	.125	.280	.000	.221	-.111	.221	-.155	-.033	0.188	0.092	2.9	1.1	3.6	1.2	A+	A+
3098	719448	8	591	.574	.574	.120	.108	.198	.000	.193	.193	-.167	-.128	-.004	-0.509	0.091	4.4	1.2	4.2	1.2	A-	A+
3099	719450	8	568	.579	.095	.579	.185	.141	.000	.345	-.137	.345	-.225	-.123	-0.576	0.094	1.0	1.0	1.0	1.1	A-	
3100	719451	8	574	.476	.169	.159	.197	.476	.000	.427	-.140	-.163	-.254	.427	-0.141	0.092	-2.0	0.9	-0.6	1.0	A+	
3101	719453	8	548	.630	.082	.172	.630	.117	.000	.437	-.246	-.220	.437	-.189	-0.770	0.097	-1.4	0.9	-1.7	0.9	A+	A-
3102	719454	8	600	.562	.180	.210	.562	.048	.000	.323	-.006	-.260	.323	-.244	-0.516	0.090	1.3	1.0	1.8	1.1	B+	
3103	729938	8	612	.502	.147	.142	.502	.209	.000	.274	-.110	-.274	.274	-.006	-0.187	0.089	2.9	1.1	3.2	1.2	C+	B-
3104	729939	8	593	.125	.093	.410	.373	.125	.000	-.060	-.200	.143	.016	-.060	2.008	0.129	1.4	1.1	7.4	2.7	A-	
3105	729940	8	536	.157	.157	.392	.207	.244	.000	.044	.044	.205	-.232	-.051	1.654	0.124	1.4	1.1	4.9	1.8	B-	A+
3106	729941	8	556	.538	.201	.122	.138	.538	.000	.381	-.214	-.191	-.121	.381	-0.366	0.094	-0.4	1.0	0.7	1.0	A+	A+
3107	729942	8	558	.747	.747	.059	.081	.113	.000	.452	.452	-.237	-.251	-.229	-1.496	0.106	-1.4	0.9	-2.0	0.8	A+	
3108	729943	8	558	.493	.158	.493	.152	.197	.000	.312	-.071	.312	-.249	-.102	-0.171	0.092	1.2	1.0	1.8	1.1	A-	A-
3109	729944	8	522	.559	.132	.559	.119	.190	.000	.390	-.219	.390	-.241	-.106	-0.542	0.098	0.2	1.0	0.0	1.0	A+	A-
3110	729945	8	557	.575	.575	.178	.167	.081	.000	.458	.458	-.199	-.181	-.304	-0.556	0.094	-2.2	0.9	-2.5	0.9	A+	

Table B-4 (continued). Science Multiple-Choice Item Statistics

Ref	ID	FT Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
3111	729946	8	560	.684	.075	.125	.116	.684	.000	.505	-.323	-.170	-.292	.505	-1.068	0.100	-2.6	0.9	-2.8	0.8	A+	A-
3112	729947	8	595	.459	.076	.309	.459	.156	.000	.223	-.277	-.071	.223	-.013	0.078	0.089	3.0	1.1	5.1	1.3	A-	A+
3113	729948	8	560	.688	.688	.043	.239	.030	.000	.371	.371	-.287	-.156	-.274	-1.176	0.101	0.4	1.0	0.2	1.0	A+	A-
3114	729949	8	545	.673	.119	.106	.101	.673	.000	.462	-.209	-.243	-.247	.462	-1.011	0.101	-1.6	0.9	-2.2	0.9	A+	B-
3115	729950	8	537	.736	.061	.736	.104	.099	.000	.381	-.196	.381	-.122	-.280	-1.438	0.108	0.2	1.0	-0.5	1.0	A+	
3116	729951	8	592	.449	.253	.206	.091	.449	.000	.317	-.044	-.188	-.218	.317	0.021	0.090	0.9	1.0	1.5	1.1	A+	
3117	729952	8	629	.262	.409	.262	.111	.218	.000	.054	-.020	.054	-.152	.082	0.990	0.097	4.2	1.2	5.8	1.6	A-	
3118	729953	8	530	.447	.092	.447	.408	.053	.000	.204	-.166	.204	-.001	-.238	0.025	0.095	3.6	1.1	4.8	1.3	B-	
3119	729954	8	538	.500	.500	.112	.240	.149	.000	.350	.350	-.269	-.063	-.179	-0.174	0.094	0.0	1.0	0.9	1.0	A+	A+
3120	729955	8	583	.341	.245	.184	.341	.230	.000	.183	-.178	-.115	.183	.082	0.613	0.094	2.4	1.1	5.0	1.4	A-	
3121	729956	8	601	.263	.241	.263	.304	.191	.000	.146	-.040	.146	-.047	-.066	0.997	0.098	1.8	1.1	4.8	1.5	A+	A+
3122	729957	8	574	.645	.645	.066	.181	.108	.000	.362	.362	-.308	-.182	-.087	-0.916	0.095	0.1	1.0	0.3	1.0	A+	
3123	729958	8	600	.488	.160	.298	.488	.053	.000	.247	-.262	-.003	.247	-.116	-0.111	0.089	3.2	1.1	3.4	1.2	A+	
3124	729959	8	530	.636	.051	.636	.202	.111	.000	.389	-.180	.389	-.282	-.110	-0.834	0.100	0.1	1.0	-0.3	1.0	A+	A-
3125	729960	8	566	.610	.177	.610	.102	.111	.000	.408	-.376	.408	-.051	-.127	-0.759	0.096	-0.4	1.0	0.0	1.0	A+	A-
3126	729961	8	580	.435	.259	.434	.116	.191	.000	.308	-.099	.308	-.260	-.067	0.088	0.091	1.4	1.0	0.8	1.0	A-	A-
3127	729962	8	597	.392	.216	.151	.241	.392	.000	.256	-.024	-.268	-.046	.256	0.309	0.091	2.4	1.1	3.4	1.2	A+	
3128	729963	8	570	.435	.435	.258	.246	.061	.000	.280	.280	-.126	-.149	-.082	0.099	0.091	0.7	1.0	2.9	1.2	A+	
3129	729964	8	529	.614	.208	.614	.102	.076	.000	.258	-.076	.258	-.226	-.099	-0.775	0.098	2.6	1.1	2.0	1.1	A+	
3130	729965	8	592	.527	.236	.527	.108	.128	.000	.272	-.075	.272	-.142	-.179	-0.209	0.089	1.6	1.1	3.3	1.2	A+	
3131	729966	8	609	.627	.080	.627	.220	.072	.000	.351	-.213	.351	-.181	-.142	-0.781	0.092	0.4	1.0	0.7	1.0	A-	
3132	729967	8	552	.371	.183	.322	.371	.123	.000	.238	-.103	-.025	.238	-.192	0.373	0.095	1.6	1.1	3.7	1.2	A+	
3133	729968	8	612	.802	.080	.052	.802	.065	.000	.467	-.252	-.315	.467	-.192	-1.875	0.111	-1.6	0.9	-1.8	0.8	A+	A-
3134	729969	8	530	.264	.268	.264	.374	.094	.000	-.057	-.021	-.057	.126	-.090	1.027	0.104	5.0	1.3	6.9	1.7	B+	
3135	729970	8	586	.130	.130	.160	.572	.138	.000	.093	.093	-.251	.215	-.132	1.898	0.128	0.4	1.0	4.4	1.9	B-	A+
3136	729971	8	547	.706	.112	.110	.073	.706	.000	.379	-.135	-.147	-.325	.379	-1.229	0.103	0.1	1.0	0.1	1.0	B+	
3137	729972	8	561	.405	.258	.196	.405	.141	.000	.056	.017	-.020	.056	-.078	0.214	0.094	7.9	1.3	7.5	1.5	A-	A+
3138	729973	8	581	.351	.143	.227	.279	.351	.000	.194	-.069	-.069	-.088	.194	0.532	0.093	2.4	1.1	4.6	1.3	A-	
3139	729974	8	578	.580	.112	.145	.580	.163	.000	.414	-.262	-.209	.414	-.130	-0.603	0.092	-1.7	0.9	-0.5	1.0	A+	
3140	729975	8	602	.628	.045	.221	.106	.628	.000	.405	-.175	-.213	-.230	.405	-0.763	0.093	-0.9	1.0	-0.2	1.0	A-	
3141	729976	8	578	.509	.509	.035	.071	.386	.000	.203	.203	-.217	-.333	.049	-0.196	0.091	4.5	1.2	4.7	1.2	A-	
3142	729977	8	588	.553	.267	.553	.058	.122	.000	.307	-.184	.307	-.306	.000	-0.379	0.091	1.6	1.1	2.1	1.1	A-	
3143	729978	8	533	.454	.311	.454	.129	.105	.000	.127	-.001	.127	-.103	-.092	0.033	0.094	4.8	1.2	7.6	1.4	A-	
3144	729979	8	572	.745	.745	.086	.093	.077	.000	.429	.429	-.307	-.179	-.184	-1.410	0.105	-1.1	0.9	-1.7	0.9	A-	
3145	734806	8	562	.621	.621	.157	.128	.094	.000	.385	.385	-.189	-.252	-.117	-0.770	0.095	-0.3	1.0	-0.6	1.0	A+	A-

Table B-4 (continued). Science Multiple-Choice Item Statistics

Ref	ID	FT Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
3146	734807	8	560	.866	.039	.032	.063	.866	.000	.572	-.296	-.292	-.354	.572	-2.413	0.134	-2.8	0.8	-4.4	0.5	A+	A-
3147	734808	8	567	.601	.182	.601	.134	.083	.000	.345	-.196	.345	-.116	-.195	-0.737	0.095	1.5	1.1	1.1	1.1	A-	A-
3148	734809	8	600	.585	.585	.140	.175	.100	.000	.409	.409	-.141	-.259	-.180	-0.612	0.091	-1.1	1.0	-0.7	1.0	A-	A+
3149	734811	8	585	.576	.133	.171	.576	.120	.000	.246	-.188	-.089	.246	-.075	-0.507	0.092	3.2	1.1	3.0	1.1	A-	A-
3150	734812	8	564	.447	.080	.383	.090	.447	.000	.364	-.255	-.208	-.039	.364	0.044	0.092	-0.7	1.0	1.1	1.1	A+	
3151	734813	8	568	.477	.181	.477	.215	.127	.000	.245	-.086	.245	-.072	-.179	-0.073	0.091	2.9	1.1	3.1	1.1	A+	
3152	734820	8	571	.531	.531	.109	.096	.264	.000	.369	.369	-.318	-.154	-.091	-0.344	0.092	-0.1	1.0	-0.2	1.0	A+	A-
3153	734829	8	576	.344	.344	.151	.080	.425	.000	.037	.037	-.036	-.232	.118	0.586	0.094	5.9	1.2	7.4	1.5	A-	
3154	734830	8	592	.454	.171	.149	.454	.226	.000	.156	-.139	-.113	.156	.035	0.025	0.090	5.0	1.2	6.5	1.3	A+	A-
3155	734831	8	538	.496	.102	.175	.227	.496	.000	.358	-.156	-.284	-.057	.358	-0.128	0.094	-0.4	1.0	0.4	1.0	A-	
3156	734832	8	614	.318	.111	.257	.318	.314	.000	.013	-.066	-.047	.013	.075	0.705	0.092	5.6	1.2	8.2	1.6	A+	A-
3157	734835	8	615	.476	.218	.140	.476	.166	.000	.239	-.153	-.094	.239	-.064	-0.063	0.088	3.2	1.1	4.3	1.2	A+	A+
3158	734836	8	519	.418	.141	.129	.312	.418	.000	-.068	.069	-.044	.053	-.068	0.214	0.096	9.7	1.3	9.9	1.7	A+	
3159	734837	8	606	.297	.157	.460	.297	.086	.000	.080	-.200	.149	.080	-.135	0.822	0.095	4.5	1.2	6.2	1.6	A-	A-
3160	734839	8	566	.445	.445	.283	.219	.053	.000	.063	.063	.045	-.081	-.080	0.004	0.092	8.2	1.3	7.0	1.4	A-	A+
3161	734840	8	550	.449	.131	.305	.115	.449	.000	.248	-.154	.012	-.241	.248	0.110	0.093	2.6	1.1	3.2	1.2	A-	
3162	734841	8	525	.168	.284	.341	.208	.168	.000	.081	.019	-.124	.050	.081	1.660	0.122	1.0	1.1	4.6	1.7	B-	
3163	734842	8	564	.548	.259	.548	.101	.092	.000	.290	-.138	.290	-.140	-.145	-0.421	0.092	2.0	1.1	1.9	1.1	A+	B-
3164	734843	8	565	.414	.414	.179	.189	.218	.000	.198	.198	-.183	-.086	.015	0.204	0.093	4.1	1.1	3.9	1.3	A-	
3165	734844	8	614	.210	.060	.609	.210	.121	.000	-.027	-.208	.242	-.027	-.176	1.334	0.104	3.0	1.2	8.2	2.1	A+	
3166	734845	8	596	.815	.082	.047	.815	.055	.000	.463	-.256	-.249	.463	-.249	-1.941	0.115	-1.2	0.9	-2.6	0.8	B+	A-
3167	734846	8	566	.551	.203	.102	.143	.551	.000	.378	-.113	-.241	-.199	.378	-0.389	0.093	-0.3	1.0	-0.1	1.0	C-	
3168	734847	8	582	.777	.058	.095	.070	.777	.000	.505	-.255	-.334	-.206	.505	-1.664	0.109	-2.3	0.9	-2.9	0.8	A-	B-
3169	734848	8	575	.492	.099	.191	.217	.492	.000	.226	-.120	-.223	.026	.226	-0.121	0.091	3.7	1.1	4.0	1.2	A+	B-
3170	734850	8	579	.233	.247	.406	.233	.114	.000	.241	-.104	-.075	.241	-.064	1.184	0.104	0.3	1.0	1.7	1.2	A-	B-
3171	734851	8	547	.347	.161	.347	.298	.194	.000	.342	-.196	.342	-.114	-.098	0.546	0.097	-1.2	1.0	0.6	1.0	A-	
3172	734852	8	548	.611	.611	.117	.133	.139	.000	.396	.396	-.122	-.225	-.224	-0.745	0.096	-0.6	1.0	-0.7	1.0	A-	
3173	734853	8	574	.402	.402	.202	.242	.153	.000	.217	.217	-.143	-.097	-.022	0.291	0.092	2.5	1.1	4.4	1.3	A-	
3174	734854	8	551	.499	.261	.499	.172	.067	.000	.277	-.148	.277	-.195	.000	-0.191	0.093	2.3	1.1	3.5	1.2	A-	A+
3175	734855	8	600	.310	.173	.317	.310	.200	.000	.191	-.163	.047	.191	-.121	0.718	0.095	1.8	1.1	6.0	1.5	A-	A-
3176	734859	8	561	.544	.196	.230	.544	.030	.000	.292	-.303	-.027	.292	-.083	-0.383	0.093	2.4	1.1	2.1	1.1	A-	
3177	734860	8	578	.550	.140	.178	.131	.550	.000	.432	-.204	-.193	-.208	.432	-0.454	0.092	-2.0	0.9	-0.8	1.0	A+	
3178	734861	8	549	.636	.164	.636	.080	.120	.000	.326	-.183	.326	-.233	-.080	-0.797	0.096	0.6	1.0	0.4	1.0	A-	
3179	734865	8	572	.147	.094	.615	.147	.143	.000	-.003	-.227	.115	-.003	.033	1.807	0.122	1.4	1.1	5.9	2.1	A-	A-
3180	734866	8	609	.514	.092	.074	.514	.320	.000	.106	-.233	-.153	.106	.116	-0.288	0.088	6.8	1.2	6.8	1.3	A+	

Table B-4 (continued). Science Multiple-Choice Item Statistics

Ref	ID	FT Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
3181	734870	8	593	.444	.219	.189	.444	.148	.000	.272	-.106	-.112	.272	-.134	0.077	0.090	2.4	1.1	3.1	1.2	A+	A-
3182	734871	8	508	.339	.339	.195	.266	.201	.000	.090	.090	-.048	-.062	.009	0.620	0.100	4.0	1.2	7.8	1.7	A-	A+
3183	734872	8	585	.178	.109	.415	.297	.178	.000	.246	-.161	-.048	-.044	.246	1.522	0.113	-0.6	1.0	2.6	1.3	A-	
3184	734873	8	544	.428	.151	.094	.428	.327	.000	.207	-.127	-.258	.207	.039	0.191	0.094	3.9	1.1	4.1	1.2	A-	A-
3185	734874	8	542	.323	.100	.271	.306	.323	.000	.181	-.190	-.065	.002	.181	0.684	0.099	3.1	1.1	4.5	1.4	A-	
3186	734875	8	566	.410	.113	.235	.410	.242	.000	.191	-.121	-.170	.191	.039	0.261	0.092	3.1	1.1	7.1	1.5	B-	A+
3187	734876	8	590	.364	.364	.110	.205	.320	.000	.013	.013	-.243	-.009	.157	0.508	0.091	7.4	1.3	7.6	1.5	A-	A+
3188	734880	8	592	.637	.147	.100	.637	.117	.000	.385	-.224	-.186	.385	-.157	-0.773	0.093	-0.6	1.0	-1.0	1.0	A-	A-
3189	734881	8	581	.451	.258	.451	.165	.126	.000	.277	-.049	.277	-.113	-.224	0.029	0.091	1.5	1.1	4.0	1.2	A-	
3190	734885	8	560	.227	.179	.227	.473	.121	.000	.095	-.111	.095	.090	-.130	1.185	0.106	1.9	1.1	5.0	1.6	A+	
3191	734886	8	548	.420	.420	.230	.223	.128	.000	.080	.080	.004	-.013	-.107	0.207	0.093	7.3	1.2	5.2	1.3	A+	A+
3192	734887	8	557	.483	.483	.226	.192	.099	.000	.260	.260	-.078	-.081	-.219	-0.034	0.092	2.1	1.1	2.8	1.1	A-	
3193	734888	8	573	.449	.148	.230	.449	.173	.000	.147	-.117	-.024	.147	-.056	0.055	0.091	5.7	1.2	5.4	1.3	A-	A-
3194	734889	8	600	.268	.268	.373	.178	.180	.000	.182	.182	.002	-.131	-.082	0.984	0.098	0.8	1.0	5.9	1.6	A+	A-
3195	734890	8	560	.563	.248	.121	.563	.068	.000	.332	-.090	-.244	.332	-.182	-0.422	0.093	0.6	1.0	0.5	1.0	A-	
3196	734891	8	611	.777	.041	.119	.777	.062	.000	.389	-.279	-.268	.389	-.081	-1.717	0.107	-0.2	1.0	-0.1	1.0	B+	A-
3197	734892	8	575	.219	.400	.117	.264	.219	.000	.160	.159	-.100	-.254	.160	1.331	0.107	1.1	1.1	5.7	1.8	C-	A-
3198	734893	8	596	.574	.094	.144	.188	.574	.000	.468	-.257	-.273	-.156	.468	-0.575	0.091	-2.7	0.9	-2.2	0.9	A-	A-
3199	734894	8	585	.248	.311	.292	.248	.149	.000	.038	.074	-.063	.038	-.061	1.096	0.102	3.4	1.2	7.3	1.8	A+	A+
3200	734913	8	514	.426	.183	.329	.426	.062	.000	.144	-.193	.098	.144	-.177	0.197	0.097	5.1	1.2	7.0	1.5	A+	B-
3201	734916	8	590	.471	.259	.175	.471	.095	.000	.263	-.108	-.146	.263	-.097	-0.031	0.090	2.3	1.1	3.1	1.1	A+	
3202	735032	8	549	.355	.355	.350	.235	.060	.000	.217	.217	-.152	.022	-.170	0.476	0.096	1.9	1.1	5.1	1.4	B-	
3203	736853	8	583	.431	.136	.302	.431	.132	.000	.183	-.123	.029	.183	-.183	0.153	0.090	4.0	1.1	5.4	1.3	A+	A-
3204	736854	8	580	.509	.509	.272	.100	.119	.000	.292	.292	-.107	-.198	-.120	-0.181	0.090	1.4	1.0	2.8	1.1	A-	A-
3205	736855	8	555	.393	.393	.234	.205	.168	.000	.292	.292	-.072	-.193	-.091	0.262	0.094	0.5	1.0	2.4	1.2	A-	
3206	736857	8	604	.715	.091	.715	.134	.060	.000	.489	-.197	.489	-.340	-.205	-1.268	0.098	-2.6	0.9	-3.3	0.8	A+	
3207	736863	8	575	.282	.282	.310	.224	.184	.000	.240	.240	.036	-.198	-.109	0.901	0.099	0.3	1.0	4.7	1.5	A+	A-
3208	736864	8	571	.601	.116	.601	.144	.140	.000	.341	-.205	.341	-.214	-.077	-0.649	0.094	0.8	1.0	0.7	1.0	A-	A-
3209	736866	8	561	.201	.178	.135	.485	.201	.000	.114	-.214	-.016	.083	.114	1.396	0.110	1.1	1.1	5.2	1.7	A-	A+
3210	736867	8	616	.373	.373	.226	.276	.125	.000	.221	.221	-.084	-.036	-.169	0.402	0.090	3.0	1.1	3.6	1.2	A-	A+
3211	736868	8	538	.587	.149	.162	.102	.587	.000	.501	-.141	-.236	-.361	.501	-0.607	0.096	-3.4	0.9	-3.1	0.9	A+	A-
3212	736869	8	544	.388	.208	.388	.164	.241	.000	.174	-.108	.174	-.191	.070	0.330	0.095	4.4	1.2	4.1	1.3	A+	
3213	737371	8	528	.464	.464	.165	.208	.163	.000	.345	.345	-.202	-.130	-.120	0.001	0.095	0.1	1.0	1.0	1.1	A+	B+
3214	739584	8	574	.728	.096	.115	.061	.728	.000	.452	-.256	-.154	-.320	.452	-1.335	0.103	-1.6	0.9	-1.2	0.9	A+	
3215	739585	8	614	.723	.119	.090	.723	.068	.000	.433	-.259	-.259	.433	-.143	-1.297	0.099	-1.2	0.9	-1.9	0.9	B+	

Table B-4 (continued). Science Multiple-Choice Item Statistics

Ref	ID	FT Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
3216	739586	8	505	.618	.222	.069	.618	.091	.000	.358	-.153	-.279	.358	-.137	-0.769	0.100	0.4	1.0	0.2	1.0	A-	A+
3217	740014	8	566	.567	.567	.276	.064	.094	.000	.406	.406	-.148	-.200	-.295	-0.512	0.093	-0.8	1.0	-0.4	1.0	A-	A-
3218	740188	8	607	.438	.099	.250	.213	.438	.000	.315	-.246	-.057	-.143	.315	0.124	0.089	0.3	1.0	3.8	1.2	A+	B+
3219	740189	8	567	.693	.166	.693	.079	.062	.000	.374	-.135	.374	-.269	-.206	-1.114	0.099	-0.2	1.0	-0.7	1.0	B+	A-
3220	740190	8	590	.254	.254	.388	.193	.164	.000	.001	.001	.191	-.077	-.170	1.023	0.100	3.7	1.2	7.9	1.8	A-	
3221	740191	8	573	.351	.178	.084	.387	.351	.000	.313	-.122	-.170	-.115	.313	0.514	0.094	-0.6	1.0	2.8	1.2	A-	A-
3222	740192	8	551	.621	.162	.103	.114	.621	.000	.480	-.236	-.249	-.220	.480	-0.734	0.097	-2.7	0.9	-2.5	0.9	A+	A+
3223	740193	8	543	.551	.206	.145	.551	.098	.000	.315	-.076	-.232	.315	-.150	-0.440	0.095	1.5	1.1	1.5	1.1	A+	B-
3224	740194	8	578	.555	.555	.121	.256	.067	.000	.315	.315	-.315	.001	-.216	-0.417	0.092	1.4	1.1	2.3	1.1	A+	A-
3225	740195	8	544	.548	.548	.119	.107	.226	.000	.252	.252	-.105	-.216	-.060	-0.408	0.094	2.8	1.1	2.8	1.1	A-	A-
3226	740196	8	553	.349	.349	.190	.260	.201	.000	.162	.162	-.137	.033	-.096	0.616	0.095	2.8	1.1	4.7	1.3	A+	
3227	740203	8	551	.441	.441	.103	.303	.152	.000	.249	.249	-.270	.020	-.140	0.056	0.093	1.7	1.1	3.2	1.2	A-	
3228	740204	8	534	.603	.154	.603	.099	.144	.000	.363	-.197	.363	-.246	-.094	-0.676	0.097	0.4	1.0	0.3	1.0	A+	A-
3229	740205	8	553	.356	.369	.145	.130	.356	.000	.189	.182	-.245	-.273	.189	0.563	0.095	2.2	1.1	4.4	1.3	A+	A+
3230	740206	8	548	.464	.464	.285	.124	.128	.000	.309	.309	-.036	-.227	-.189	-0.006	0.094	1.2	1.0	2.0	1.1	A-	
3231	740207	8	584	.199	.199	.423	.137	.241	.000	.070	.070	.039	-.153	.013	1.370	0.109	2.0	1.1	5.4	1.7	A-	A+
3232	740208	8	554	.480	.168	.146	.206	.480	.000	.293	-.111	-.181	-.101	.293	-0.083	0.092	1.0	1.0	2.3	1.1	A+	
3233	740209	8	561	.601	.103	.194	.601	.102	.000	.283	-.317	-.023	.283	-.111	-0.657	0.094	2.1	1.1	2.2	1.1	B+	A-
3234	740210	8	536	.560	.125	.560	.196	.119	.000	.271	-.137	.271	-.146	-.097	-0.447	0.096	3.3	1.1	3.3	1.2	A-	
3235	740211	8	582	.723	.127	.089	.060	.723	.000	.451	-.251	-.251	-.197	.451	-1.376	0.103	-1.0	1.0	-1.4	0.9	A+	B-
3236	740212	8	584	.416	.137	.301	.416	.146	.000	.157	-.127	-.014	.157	-.079	0.248	0.091	4.6	1.2	6.1	1.4	A+	
3237	740213	8	531	.234	.234	.399	.186	.181	.000	-.167	-.167	.259	-.096	-.049	1.200	0.108	5.7	1.3	8.3	2.1	A+	A+
3238	740214	8	531	.194	.222	.390	.194	.194	.000	.050	-.008	-.027	.050	-.009	1.517	0.115	1.8	1.1	5.0	1.7	A+	A+
3239	740215	8	568	.433	.222	.176	.169	.433	.000	.236	.042	-.143	-.213	.236	0.112	0.092	2.7	1.1	4.8	1.3	A+	A-
3240	740216	8	567	.413	.159	.169	.259	.413	.000	.409	-.172	-.139	-.198	.409	0.216	0.092	-2.2	0.9	-1.4	0.9	A+	B-
3241	740217	8	563	.432	.128	.142	.432	.298	.000	.255	-.128	-.175	.255	-.050	0.133	0.092	2.3	1.1	2.4	1.1	C-	
3242	740267	8	556	.385	.173	.261	.385	.182	.000	.076	-.018	.006	.076	-.086	0.359	0.094	6.3	1.2	6.3	1.4	A+	
3243	740268	8	572	.243	.276	.243	.255	.226	.000	.052	.024	.052	-.082	.007	1.164	0.104	3.3	1.2	6.5	1.8	A-	A+
3244	740269	8	594	.439	.108	.140	.313	.439	.000	.297	-.202	-.027	-.163	.297	0.123	0.089	1.1	1.0	1.1	1.1	A-	
3245	740270	8	555	.395	.395	.369	.130	.106	.000	.085	.085	.063	-.083	-.143	0.318	0.094	6.8	1.3	6.9	1.5	A+	A-
3246	740271	8	495	.321	.321	.170	.315	.194	.000	.069	.069	-.071	.091	-.120	0.692	0.103	3.6	1.2	8.7	1.8	A-	
3247	740277	8	597	.256	.183	.260	.302	.256	.000	.287	-.189	-.107	-.011	.287	1.044	0.100	-0.6	1.0	2.6	1.3	A-	
3248	740278	8	615	.350	.167	.350	.306	.177	.000	.061	-.008	.061	-.045	-.014	0.552	0.090	5.6	1.2	7.3	1.5	A+	A-
3249	740279	8	579	.584	.584	.231	.100	.085	.000	.303	.303	-.017	-.266	-.223	-0.633	0.093	2.0	1.1	2.0	1.1	A+	B+
3250	740280	8	568	.447	.134	.048	.371	.447	.000	.126	-.026	-.316	.028	.126	0.112	0.091	6.1	1.2	4.6	1.2	A+	

Table B–4 (continued). Science Multiple-Choice Item Statistics

Ref	ID	FT Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
3251	740281	8	583	.254	.170	.065	.254	.511	.000	.075	-.237	-.310	.075	.267	1.084	0.100	2.8	1.1	4.8	1.5	A-	A-
3252	740282	8	549	.412	.144	.197	.248	.412	.000	.313	-.080	-.177	-.129	.313	0.207	0.094	0.4	1.0	1.1	1.1	A-	A-
3253	740283	8	569	.301	.272	.301	.225	.202	.000	.098	-.011	.098	-.132	.038	0.826	0.097	3.4	1.1	5.8	1.5	A+	
3254	740284	8	585	.320	.091	.450	.320	.140	.000	.084	-.362	.165	.084	-.050	0.690	0.095	5.0	1.2	5.7	1.5	A-	
3255	740285	8	596	.362	.315	.362	.210	.112	.000	.106	-.042	.106	-.005	-.092	0.527	0.091	4.9	1.2	6.7	1.5	A+	
3256	740286	8	551	.499	.499	.140	.276	.085	.000	.240	.240	-.115	-.022	-.252	-0.161	0.093	3.4	1.1	4.0	1.2	A+	
3257	740287	8	576	.392	.392	.214	.090	.304	.000	.276	.276	-.188	-.103	-.061	0.346	0.092	0.9	1.0	3.0	1.2	A-	
3258	740288	8	536	.285	.131	.285	.244	.340	.000	-.022	-.105	-.022	.019	.078	0.827	0.102	5.2	1.2	8.2	1.8	A-	A-
3259	740289	8	568	.109	.236	.109	.335	.320	.000	-.172	-.082	-.172	.062	.127	2.170	0.139	1.6	1.2	9.0	3.6	A-	
3260	740290	8	522	.582	.107	.167	.144	.582	.000	.441	-.204	-.176	-.253	.441	-0.549	0.097	-1.9	0.9	-1.8	0.9	A+	
3261	740291	8	556	.221	.371	.221	.228	.180	.000	.020	.077	.020	-.094	-.016	1.276	0.108	3.0	1.2	6.4	1.8	A-	A-
3262	740292	8	563	.403	.403	.290	.194	.114	.000	.162	.162	.007	-.177	-.040	0.278	0.093	5.1	1.2	4.6	1.3	A+	
3263	740293	8	592	.274	.274	.122	.446	.159	.000	-.002	-.002	-.125	.119	-.048	0.964	0.098	4.6	1.2	8.4	1.9	A-	B+
3264	740294	8	573	.461	.461	.173	.194	.173	.000	.222	.222	-.103	-.233	.055	-0.024	0.091	3.2	1.1	3.7	1.2	A-	
3265	740295	8	601	.228	.228	.334	.160	.278	.000	.039	.039	.055	-.140	.020	1.257	0.103	3.1	1.2	6.8	1.8	A-	A-
3266	740443	8	550	.409	.409	.273	.200	.118	.000	.272	.272	-.035	-.190	-.131	0.255	0.093	0.7	1.0	1.8	1.1	A+	A+
3267	740444	8	564	.335	.310	.282	.335	.073	.000	.008	.007	.070	.008	-.149	0.636	0.096	6.2	1.2	9.3	1.8	A-	B-
3268	740446	8	568	.412	.412	.164	.379	.046	.000	-.010	-.010	-.125	.160	-.126	0.211	0.092	9.0	1.3	9.9	1.6	A+	A-
3269	740447	8	545	.534	.090	.262	.114	.534	.000	.340	-.225	-.045	-.268	.340	-0.314	0.094	0.7	1.0	0.7	1.0	C+	A+
3270	740448	8	553	.394	.275	.394	.192	.139	.000	.167	.040	.167	-.151	-.115	0.295	0.095	4.5	1.2	5.9	1.4	A+	
3271	740449	8	535	.342	.325	.342	.133	.200	.000	.050	.210	.050	-.283	-.066	0.594	0.098	5.5	1.2	8.5	1.7	A-	A+
3272	740450	8	573	.414	.414	.164	.283	.140	.000	.259	.259	-.354	.030	-.027	0.256	0.092	2.1	1.1	3.5	1.2	A+	A-
3273	740451	8	604	.450	.450	.154	.215	.180	.000	.242	.242	-.188	-.023	-.112	0.043	0.089	2.9	1.1	4.3	1.2	A-	
3274	740452	8	533	.266	.266	.188	.178	.368	.000	.134	.134	-.091	-.129	.053	0.934	0.104	2.1	1.1	4.5	1.4	A-	
3275	740838	8	587	.354	.102	.354	.228	.315	.000	.212	-.166	.212	-.089	-.029	0.539	0.093	2.4	1.1	3.1	1.2	A-	A-
3276	741002	8	556	.468	.275	.468	.185	.072	.000	.263	.051	.263	-.230	-.250	-0.109	0.092	2.5	1.1	2.6	1.1	A+	
3277	741003	8	580	.214	.138	.543	.214	.105	.000	.113	-.235	.200	.113	-.211	1.301	0.107	1.6	1.1	4.7	1.6	A-	A-
3278	741004	8	564	.495	.124	.495	.161	.220	.000	.307	-.189	.307	-.152	-.085	-0.128	0.092	1.0	1.0	1.8	1.1	A+	
3279	741206	8	551	.376	.185	.245	.194	.376	.000	.352	-.144	-.046	-.240	.352	0.404	0.095	-0.2	1.0	0.2	1.0	A-	B-
3280	741207	8	574	.861	.861	.049	.052	.038	.000	.321	.321	-.251	-.131	-.145	-2.398	0.129	-0.1	1.0	0.1	1.0	B+	
3281	741208	8	627	.260	.185	.193	.362	.260	.000	.204	-.145	-.156	.059	.204	1.065	0.097	1.2	1.1	4.3	1.4	A-	A-
3282	741209	8	568	.616	.616	.188	.090	.106	.000	.298	.298	-.047	-.209	-.218	-0.731	0.094	1.3	1.1	1.3	1.1	A+	B-
3283	741210	8	540	.382	.381	.139	.196	.283	.000	.173	.173	-.138	-.125	.030	0.369	0.096	3.8	1.1	5.5	1.4	A-	
3284	741211	8	594	.574	.226	.114	.574	.086	.000	.360	-.133	-.263	.360	-.137	-0.522	0.090	-0.1	1.0	-0.4	1.0	C+	A-
3285	741212	8	551	.256	.330	.256	.327	.087	.000	.005	.134	.005	.001	-.233	1.067	0.104	4.5	1.2	7.6	1.9	A+	A-

Table B-4 (continued). Science Multiple-Choice Item Statistics

Ref	ID	FT Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
3286	741213	8	594	.369	.369	.091	.288	.253	.000	.200	.200	-.233	-.021	-.046	0.423	0.091	2.7	1.1	4.5	1.3	A+	A-
3287	741242	8	556	.446	.446	.241	.167	.146	.000	.268	.268	-.006	-.276	-.078	0.050	0.093	1.7	1.1	3.3	1.2	A+	
3288	741243	8	559	.528	.107	.528	.261	.104	.000	.400	-.256	.400	-.157	-.169	-0.369	0.093	-0.8	1.0	-0.6	1.0	A-	A-
3289	741244	8	561	.447	.169	.283	.447	.100	.000	.190	-.161	.012	.190	-.131	0.051	0.092	4.4	1.1	4.2	1.2	A+	
3290	741245	8	576	.627	.092	.627	.122	.160	.000	.283	-.197	.283	-.186	-.052	-0.780	0.095	2.5	1.1	2.2	1.1	A-	A-
3291	741246	8	556	.496	.126	.144	.234	.496	.000	.456	-.187	-.269	-.169	.456	-0.242	0.092	-3.3	0.9	-2.8	0.9	A+	A-
3292	741248	8	552	.794	.094	.056	.793	.056	.000	.494	-.195	-.327	.494	-.294	-1.806	0.116	-1.7	0.9	-2.3	0.8	B+	
3293	741307	8	589	.304	.261	.166	.304	.268	.000	.121	-.083	-.059	.121	.005	0.740	0.095	2.8	1.1	5.5	1.5	A-	B-
3294	741308	8	591	.283	.357	.191	.283	.169	.000	.009	.027	-.149	.009	.111	0.890	0.097	5.0	1.2	6.2	1.6	A-	A-
3295	741309	8	543	.144	.188	.429	.239	.144	.000	-.054	-.063	-.112	-.028	-.054	1.837	0.127	2.0	1.2	6.0	2.2	A-	
3296	741310	8	580	.395	.141	.334	.395	.129	.000	.087	-.007	-.017	.087	-.096	0.322	0.092	6.0	1.2	7.2	1.4	A-	
3297	741311	8	558	.337	.337	.168	.256	.238	.000	.010	.010	-.085	-.018	.083	0.588	0.096	6.6	1.3	7.4	1.6	A+	A-
3298	741312	8	593	.261	.128	.204	.261	.406	.000	-.007	-.162	-.154	-.007	.242	1.003	0.099	4.9	1.2	6.6	1.7	A-	B-
3299	741313	8	560	.214	.191	.214	.259	.336	.000	-.041	.009	-.041	-.132	.150	1.288	0.109	3.6	1.2	6.8	1.9	A-	A+
3300	741314	8	577	.305	.305	.444	.165	.087	.000	.097	.097	.143	-.224	-.116	0.768	0.097	4.9	1.2	4.6	1.4	A+	B-
3301	741315	8	574	.310	.310	.230	.096	.364	.000	.239	.239	-.115	-.194	-.011	0.746	0.097	0.9	1.0	3.8	1.3	B-	
3302	741316	8	580	.209	.209	.153	.302	.336	.000	-.036	-.036	-.148	-.056	.198	1.343	0.107	3.6	1.2	5.6	1.7	A-	
3303	741317	8	556	.317	.218	.324	.142	.317	.000	.153	-.171	.140	-.189	.153	0.726	0.097	2.3	1.1	5.4	1.4	A-	
3304	741384	8	555	.418	.418	.173	.157	.252	.000	.325	.325	-.283	-.193	.039	0.164	0.093	0.2	1.0	2.0	1.1	A+	
3305	741385	8	547	.143	.165	.554	.143	.139	.000	-.002	-.129	.078	-.002	.027	1.791	0.127	1.2	1.1	7.3	2.5	A-	
3306	741386	8	631	.303	.246	.246	.303	.206	.000	.081	-.015	-.061	.081	-.011	0.789	0.092	3.9	1.2	7.1	1.6	A+	A-
3307	741409	8	601	.376	.376	.295	.226	.103	.000	.153	.153	-.011	-.127	-.053	0.357	0.091	4.3	1.1	6.1	1.4	A-	
3308	716939	BIO	4553	.402	.402	.348	.111	.139	.000	.248	.248	.038	-.194	-.227	0.772	0.033	7.3	1.1	9.9	1.2	A-	A+
3309	716940	BIO	4685	.408	.260	.250	.408	.082	.000	.297	-.089	-.178	.297	-.109	0.727	0.032	3.5	1.0	9.7	1.2	A-	A-
3310	716941	BIO	4693	.525	.525	.286	.116	.073	.000	.321	.321	-.159	-.200	-.093	0.145	0.032	4.0	1.1	3.4	1.1	A-	A-
3311	716942	BIO	4704	.486	.266	.486	.132	.116	.000	.245	-.043	.245	-.219	-.092	0.364	0.032	9.1	1.1	9.9	1.2	A-	A-
3312	716943	BIO	4609	.550	.137	.187	.550	.127	.000	.128	-.134	.021	.128	-.077	0.058	0.032	9.9	1.2	9.9	1.3	A+	A+
3313	719251	BIO	4699	.668	.668	.091	.131	.110	.000	.358	.358	-.264	-.176	-.107	-0.549	0.034	0.9	1.0	0.7	1.0	A+	A+
3314	719252	BIO	4615	.400	.140	.282	.400	.178	.000	.228	-.176	-.068	.228	-.052	0.773	0.033	7.8	1.1	9.9	1.2	A-	A-
3315	719254	BIO	4721	.333	.189	.204	.333	.274	.000	.105	-.037	-.194	.105	.097	1.136	0.033	9.9	1.2	9.9	1.5	A+	A+
3316	719255	BIO	4697	.538	.193	.142	.127	.538	.000	.182	-.034	-.126	-.102	.182	0.095	0.032	9.9	1.2	9.9	1.3	A+	A+
3317	719256	BIO	4719	.334	.103	.272	.334	.291	.000	.075	-.174	-.038	.075	.076	1.104	0.033	9.9	1.2	9.9	1.5	A-	A-
3318	719259	BIO	4521	.473	.202	.157	.473	.169	.000	.298	-.115	-.254	.298	-.028	0.401	0.033	5.2	1.1	7.6	1.1	A+	A+
3319	719657	BIO	4574	.403	.403	.239	.207	.152	.000	.343	.343	-.155	-.179	-.083	0.748	0.033	-0.9	1.0	3.5	1.1	A-	A+
3320	721681	BIO	4837	.632	.072	.632	.096	.201	.000	.290	-.269	.290	-.253	.010	-0.370	0.033	5.7	1.1	6.7	1.1	A+	A-

Table B-4 (continued). Science Multiple-Choice Item Statistics

Ref	ID	FT Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
3321	721682	BIO	4758	.582	.228	.135	.055	.582	.000	.393	-.195	-.170	-.236	.393	-0.098	0.032	-2.0	1.0	-2.4	1.0	A+	A+
3322	721684	BIO	4674	.490	.163	.233	.490	.114	.000	.218	-.106	-.154	.218	-.014	0.347	0.032	9.9	1.1	9.9	1.3	A+	A-
3323	721685	BIO	4646	.342	.213	.210	.235	.342	.000	.194	.015	-.174	-.064	.194	1.059	0.033	8.9	1.1	9.9	1.4	A+	A+
3324	722444	BIO	4666	.471	.471	.247	.171	.111	.000	.210	.210	-.106	-.135	-.027	0.428	0.032	9.9	1.1	9.9	1.3	A+	A-
3325	722445	BIO	4547	.233	.133	.232	.344	.290	.000	.103	-.063	.103	-.095	.050	1.675	0.037	6.7	1.1	9.9	1.6	A-	A-
3326	722446	BIO	4656	.365	.365	.314	.176	.145	.000	.324	.324	-.061	-.116	-.238	0.917	0.033	0.3	1.0	5.4	1.1	A+	A+
3327	722447	BIO	4787	.183	.146	.364	.307	.183	.000	.253	-.112	-.071	-.052	.253	2.019	0.040	-0.6	1.0	7.1	1.3	A-	A+
3328	722449	BIO	4544	.357	.173	.294	.176	.357	.000	.206	-.073	-.082	-.088	.206	0.973	0.034	8.2	1.1	9.9	1.3	A+	A+
3329	722450	BIO	4601	.221	.221	.281	.292	.206	.000	.118	.118	-.099	-.046	.040	1.747	0.038	5.8	1.1	9.9	1.7	A-	A-
3330	722451	BIO	4576	.274	.274	.240	.284	.202	.000	.060	.060	-.019	-.038	-.004	1.435	0.035	9.9	1.2	9.9	1.7	A-	A-
3331	724038	BIO	4715	.345	.091	.218	.346	.345	.000	.291	-.156	-.085	-.123	.291	1.038	0.033	1.7	1.0	7.7	1.2	A+	A+
3332	724040	BIO	4719	.385	.210	.385	.213	.193	.000	.258	-.055	.258	-.135	-.123	0.837	0.033	5.8	1.1	9.9	1.2	A-	A-
3333	724042	BIO	4688	.448	.448	.165	.233	.154	.000	.203	.203	-.179	.054	-.159	0.553	0.032	9.9	1.1	9.9	1.3	A-	A-
3334	724046	BIO	4524	.583	.069	.160	.188	.583	.000	.328	-.234	-.133	-.136	.328	-0.131	0.033	3.1	1.0	5.5	1.1	A-	A-
3335	724068	BIO	4593	.480	.480	.095	.078	.347	.000	.236	.236	-.126	-.163	-.079	0.405	0.032	9.9	1.1	9.9	1.2	A-	A-
3336	724069	BIO	4538	.696	.066	.117	.696	.120	.000	.371	-.181	-.230	.371	-.159	-0.668	0.035	0.2	1.0	-2.4	0.9	A+	A-
3337	724070	BIO	4686	.322	.198	.269	.211	.322	.000	.386	-.159	-.205	-.064	.386	1.164	0.034	-5.6	0.9	2.4	1.1	A-	A+
3338	724071	BIO	4572	.612	.105	.084	.612	.199	.000	.405	-.217	-.299	.405	-.120	-0.246	0.033	-2.6	1.0	-3.2	0.9	A+	A-
3339	724072	BIO	4647	.785	.056	.785	.077	.083	.000	.408	-.219	.408	-.245	-.190	-1.247	0.039	-2.7	0.9	-4.5	0.9	A-	A-
3340	724073	BIO	4602	.495	.239	.139	.128	.495	.000	.387	-.102	-.208	-.234	.387	0.315	0.032	-2.3	1.0	-0.2	1.0	A-	A-
3341	724074	BIO	4758	.155	.240	.266	.339	.155	.000	.147	-.204	.076	.001	.147	2.257	0.042	2.3	1.1	9.9	1.6	A-	A-
3342	730074	BIO	4552	.299	.299	.264	.241	.196	.000	.190	.190	-.047	-.182	.029	1.295	0.035	6.7	1.1	9.9	1.4	A-	A-
3343	730075	BIO	4729	.372	.196	.372	.284	.148	.000	.191	-.110	.191	-.031	-.098	0.900	0.033	9.1	1.1	9.9	1.3	A-	A+
3344	730076	BIO	4648	.478	.478	.129	.205	.189	.000	.381	.381	-.256	-.157	-.106	0.394	0.032	-2.6	1.0	2.0	1.0	A+	A+
3345	730077	BIO	4663	.397	.223	.198	.182	.397	.000	.290	-.049	-.193	-.116	.290	0.804	0.033	4.6	1.1	7.3	1.2	A+	A-
3346	730078	BIO	4588	.344	.117	.316	.223	.344	.000	.314	-.246	.025	-.197	.314	1.054	0.034	0.3	1.0	7.7	1.2	A-	A-
3347	730079	BIO	4662	.439	.166	.206	.439	.189	.000	.348	-.172	-.241	.348	-.030	0.568	0.032	-0.5	1.0	4.0	1.1	A+	A-
3348	730080	BIO	4657	.801	.052	.801	.069	.078	.000	.403	-.169	.403	-.301	-.176	-1.377	0.040	-2.7	0.9	-4.8	0.8	A-	A-
3349	730081	BIO	4596	.198	.198	.517	.179	.106	.000	.004	.004	.185	-.151	-.116	1.924	0.039	8.2	1.2	9.9	1.9	A-	A-
3350	730082	BIO	4570	.689	.147	.689	.099	.065	.000	.441	-.172	.441	-.305	-.213	-0.685	0.035	-4.9	0.9	-4.1	0.9	A+	A-
3351	730083	BIO	4650	.672	.180	.082	.672	.066	.000	.290	-.063	-.258	.290	-.167	-0.574	0.034	4.5	1.1	4.1	1.1	A-	A-
3352	730084	BIO	4594	.377	.254	.181	.377	.189	.000	.254	-.109	-.158	.254	-.038	0.915	0.033	5.2	1.1	9.9	1.3	A-	A-
3353	730085	BIO	4640	.429	.200	.156	.214	.429	.000	.375	-.160	-.160	-.155	.375	0.633	0.032	-2.6	1.0	1.3	1.0	A-	A-
3354	730086	BIO	4546	.482	.482	.163	.199	.156	.000	.373	.373	-.188	-.163	-.142	0.409	0.032	-2.4	1.0	0.1	1.0	A-	A-
3355	730087	BIO	4743	.465	.465	.116	.314	.106	.000	.172	.172	-.179	.020	-.123	0.463	0.032	9.9	1.2	9.9	1.3	A-	A-

Table B-4 (continued). Science Multiple-Choice Item Statistics

Ref	ID	FT Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
3356	730088	BIO	4709	.350	.194	.350	.218	.237	.000	.085	-.092	.085	.042	-.052	1.026	0.033	9.9	1.2	9.9	1.5	A+	A-
3357	730089	BIO	4626	.425	.050	.250	.425	.275	.000	.136	-.265	-.021	.136	-.002	0.640	0.032	9.9	1.2	9.9	1.4	A-	A-
3358	730090	BIO	4642	.462	.065	.462	.416	.057	.000	.201	-.214	.201	-.025	-.152	0.447	0.032	9.9	1.2	9.9	1.3	A-	A-
3359	730091	BIO	4631	.434	.434	.212	.168	.186	.000	.387	.387	-.134	-.243	-.118	0.610	0.032	-3.6	1.0	2.4	1.0	A-	A-
3360	730092	BIO	4671	.348	.337	.225	.348	.090	.000	.261	-.003	-.207	.261	-.129	1.040	0.033	3.1	1.0	9.9	1.3	A-	A-
3361	730093	BIO	4761	.332	.133	.337	.332	.198	.000	.076	-.139	.142	.076	-.140	1.120	0.033	9.9	1.2	9.9	1.5	A+	A+
3362	730094	BIO	4776	.537	.137	.537	.186	.140	.000	.370	-.167	.370	-.212	-.128	0.102	0.032	-1.4	1.0	0.3	1.0	A+	A-
3363	730095	BIO	4610	.313	.222	.262	.203	.313	.000	.354	-.186	-.146	-.056	.354	1.199	0.034	-3.9	0.9	4.0	1.1	A-	A-
3364	730096	BIO	4583	.350	.153	.350	.232	.265	.000	.133	-.058	.133	-.149	.046	1.003	0.034	9.9	1.2	9.9	1.4	A+	A+
3365	730097	BIO	4584	.449	.173	.449	.224	.154	.000	.189	-.027	.189	-.167	-.039	0.535	0.032	9.9	1.2	9.9	1.3	A+	A-
3366	730098	BIO	4609	.367	.367	.228	.271	.135	.000	.295	.295	-.114	-.133	-.104	0.936	0.033	0.4	1.0	9.6	1.2	A-	A-
3367	730099	BIO	4649	.627	.130	.138	.627	.105	.000	.401	-.252	-.226	.401	-.101	-0.337	0.033	-1.7	1.0	-3.4	0.9	A+	A-
3368	730100	BIO	4681	.395	.152	.228	.226	.395	.000	.260	-.111	-.049	-.161	.260	0.802	0.032	5.0	1.1	9.9	1.2	A+	A-
3369	730101	BIO	4569	.240	.213	.367	.180	.240	.000	.049	-.148	.185	-.129	.049	1.663	0.037	9.9	1.2	9.9	1.7	A-	A+
3370	735065	BIO	4546	.378	.225	.182	.378	.216	.000	.278	-.191	-.127	.278	-.015	0.884	0.033	3.4	1.0	9.9	1.3	A-	A-
3371	735066	BIO	4631	.504	.504	.183	.184	.128	.000	.386	.386	-.185	-.215	-.115	0.273	0.032	-2.5	1.0	0.9	1.0	A+	A-
3372	735067	BIO	4637	.424	.143	.235	.198	.424	.000	.370	-.220	-.163	-.092	.370	0.642	0.032	-2.4	1.0	1.9	1.0	A-	A-
3373	735068	BIO	4534	.297	.347	.173	.183	.297	.000	.233	.128	-.187	-.251	.233	1.294	0.035	3.8	1.1	9.9	1.3	A-	A-
3374	735074	BIO	4572	.332	.332	.188	.184	.297	.000	.201	.201	-.190	-.223	.145	1.118	0.034	7.2	1.1	9.9	1.3	A+	A-
3375	735075	BIO	4785	.159	.399	.167	.159	.275	.000	.152	.097	-.206	.152	-.059	2.217	0.042	1.0	1.0	9.9	1.9	A-	A-
3376	735076	BIO	4695	.272	.272	.216	.336	.176	.000	.123	.123	-.173	.096	-.077	1.436	0.035	8.2	1.1	9.9	1.6	A-	A-
3377	735078	BIO	4651	.256	.222	.155	.367	.256	.000	.147	-.078	-.183	.072	.147	1.544	0.036	6.7	1.1	9.9	1.5	A+	A+
3378	735079	BIO	4506	.340	.199	.340	.265	.196	.000	.209	-.083	.209	-.161	.013	1.092	0.034	6.3	1.1	9.9	1.4	A-	A-
3379	735080	BIO	4504	.498	.498	.121	.151	.230	.000	.387	.387	-.332	-.162	-.065	0.302	0.033	-2.9	1.0	-0.5	1.0	A-	A+
3380	735081	BIO	4659	.381	.163	.335	.381	.120	.000	.168	-.121	-.063	.168	-.023	0.873	0.033	9.9	1.2	9.9	1.4	A+	A-
3381	735084	BIO	4701	.392	.166	.186	.392	.256	.000	.222	-.099	-.234	.222	.046	0.808	0.032	8.8	1.1	9.9	1.3	A-	A-
3382	735085	BIO	4705	.308	.139	.177	.376	.308	.000	.226	-.140	-.143	-.003	.226	1.239	0.034	4.5	1.1	9.9	1.3	A+	A-
3383	735086	BIO	4479	.378	.378	.235	.268	.119	.000	.239	.239	-.156	-.050	-.084	0.885	0.033	6.6	1.1	9.9	1.3	A+	A+
3384	735087	BIO	4478	.533	.533	.163	.217	.087	.000	.422	.422	-.246	-.201	-.132	0.127	0.033	-5.0	0.9	-2.9	1.0	A+	A-
3385	735088	BIO	4622	.357	.357	.280	.203	.160	.000	.144	.144	-.085	-.090	.015	0.987	0.033	9.9	1.2	9.9	1.4	A-	A-
3386	737228	BIO	4539	.728	.728	.086	.086	.100	.000	.432	.432	-.251	-.219	-.200	-0.882	0.037	-3.2	0.9	-5.1	0.9	A-	A-
3387	737229	BIO	4637	.663	.122	.085	.663	.130	.000	.420	-.203	-.249	.420	-.186	-0.521	0.034	-3.3	1.0	-5.1	0.9	A+	A-
3388	737230	BIO	4576	.377	.089	.377	.257	.277	.000	.044	-.229	.044	.033	.066	0.895	0.033	9.9	1.3	9.9	1.5	A+	A+
3389	737231	BIO	4716	.407	.174	.051	.406	.368	.000	.211	-.122	-.235	.211	-.011	0.737	0.032	9.5	1.1	9.9	1.3	A+	A+
3390	737232	BIO	4639	.568	.150	.130	.568	.152	.000	.348	-.099	-.218	.348	-.178	-0.031	0.033	1.9	1.0	1.8	1.0	A+	A-

Table B-4 (continued). Science Multiple-Choice Item Statistics

Ref	ID	FT Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M /F	W /B
3391	737233	BIO	4652	.670	.670	.104	.185	.040	.000	.389	.389	-.254	-.166	-.207	-0.586	0.034	-1.2	1.0	-1.2	1.0	A+	A-
3392	737234	BIO	4702	.623	.110	.111	.623	.156	.000	.178	-.048	-.071	.178	-.135	-0.315	0.033	9.9	1.2	9.9	1.3	A+	A-
3393	737235	BIO	4602	.391	.164	.098	.346	.391	.000	.233	-.112	-.248	.003	.233	0.810	0.033	8.5	1.1	9.9	1.2	A+	A-
3394	737236	BIO	4693	.473	.089	.098	.473	.341	.000	.073	-.072	-.140	.073	.054	0.411	0.032	9.9	1.3	9.9	1.4	A+	A-
3395	737237	BIO	4628	.354	.038	.354	.486	.122	.000	-.206	-.140	-.206	.268	-.027	1.006	0.033	9.9	1.5	9.9	1.9	A-	A+
3396	737238	BIO	4567	.389	.152	.177	.389	.282	.000	.048	-.075	-.164	.048	.147	0.822	0.033	9.9	1.3	9.9	1.5	A-	A-
3397	737239	BIO	4691	.420	.107	.420	.305	.168	.000	.222	-.147	.222	-.031	-.134	0.662	0.032	9.7	1.1	9.9	1.2	A+	A-
3398	737240	BIO	4781	.259	.210	.229	.259	.302	.000	.053	-.043	-.072	.053	.054	1.512	0.035	9.9	1.2	9.9	1.8	A+	A-
3399	737241	BIO	4704	.390	.173	.158	.280	.390	.000	.328	-.099	-.160	-.142	.328	0.838	0.033	0.5	1.0	5.9	1.1	A+	A+
3400	737242	BIO	4672	.283	.168	.283	.160	.389	.000	.040	-.145	-.040	-.106	.154	1.350	0.035	9.9	1.2	9.9	1.7	A+	A+
3401	737243	BIO	4620	.238	.159	.228	.375	.238	.000	.129	-.094	-.103	.048	.129	1.652	0.037	6.1	1.1	9.9	1.6	A+	A-
3402	737244	BIO	4557	.300	.158	.255	.300	.287	.000	.058	-.155	-.144	.058	.206	1.272	0.035	9.9	1.2	9.9	1.6	A-	A-
3403	737245	BIO	4572	.475	.284	.475	.123	.118	.000	.212	-.093	.212	-.179	-.015	0.425	0.032	9.9	1.1	9.9	1.2	A+	A-
3404	737246	BIO	4647	.321	.182	.321	.315	.181	.000	.103	-.003	.103	-.032	-.083	1.180	0.034	9.9	1.2	9.9	1.5	A-	A+
3405	737247	BIO	4727	.655	.108	.055	.655	.182	.000	.284	-.150	-.234	.284	-.091	-0.485	0.033	5.3	1.1	4.7	1.1	A+	A-
3406	737248	BIO	4617	.675	.113	.674	.112	.100	.000	.415	-.191	.415	-.273	-.159	-0.584	0.034	-3.4	1.0	-3.3	0.9	A+	A-
3407	737249	BIO	4679	.302	.286	.302	.270	.142	.000	.110	.072	.110	-.165	-.029	1.301	0.034	9.9	1.2	9.9	1.6	A-	A+
3408	737250	BIO	4758	.389	.230	.389	.208	.174	.000	.233	-.001	.233	-.203	-.082	0.821	0.032	6.9	1.1	9.9	1.3	A-	A-
3409	737251	BIO	4687	.332	.230	.210	.332	.227	.000	.171	-.084	-.093	.171	-.017	1.097	0.034	9.7	1.1	9.9	1.4	A-	A-
3410	737252	BIO	4575	.654	.144	.069	.654	.133	.000	.353	-.201	-.230	.353	-.115	-0.511	0.034	1.9	1.0	1.8	1.0	B-	A-
3411	737253	BIO	4646	.549	.133	.549	.077	.241	.000	.261	-.167	.261	-.313	.024	0.064	0.032	8.9	1.1	8.6	1.2	A-	A-
3412	737254	BIO	4662	.644	.110	.105	.141	.644	.000	.500	-.240	-.267	-.237	.500	-0.416	0.034	-9.6	0.9	-8.6	0.8	A+	A+
3413	737255	BIO	4607	.412	.216	.412	.211	.160	.000	.211	-.023	.211	-.179	-.058	0.704	0.033	9.9	1.1	9.9	1.3	A-	A-
3414	737257	BIO	4741	.466	.190	.151	.466	.193	.000	.187	-.038	-.177	.187	-.038	0.458	0.032	9.9	1.2	9.9	1.3	A-	A-
3415	737258	BIO	4618	.487	.074	.159	.281	.487	.000	.376	-.254	-.189	-.117	.376	0.362	0.032	-2.1	1.0	0.9	1.0	A-	A-
3416	737259	BIO	4684	.678	.089	.151	.678	.082	.000	.370	-.253	-.145	.370	-.178	-0.590	0.034	-0.2	1.0	0.4	1.0	A-	A-
3417	737260	BIO	4651	.509	.144	.115	.232	.509	.000	.341	-.210	-.211	-.069	.341	0.244	0.032	1.7	1.0	3.5	1.1	A+	A-
3418	737261	BIO	4626	.334	.226	.334	.274	.166	.000	.102	-.066	.102	.065	-.133	1.099	0.034	9.9	1.2	9.9	1.5	A-	A-
3419	737262	BIO	4566	.662	.138	.098	.102	.662	.000	.450	-.138	-.272	-.279	.450	-0.529	0.034	-5.6	0.9	-4.7	0.9	B+	B-
3420	737263	BIO	4737	.616	.079	.096	.209	.616	.000	.411	-.272	-.239	-.138	.411	-0.266	0.033	-2.7	1.0	-2.3	1.0	A+	A-
3421	737264	BIO	4663	.439	.198	.439	.100	.263	.000	.349	-.125	.349	-.237	-.119	0.575	0.032	-0.5	1.0	3.6	1.1	A-	A-
3422	737265	BIO	4662	.729	.095	.729	.077	.100	.000	.280	-.115	.280	-.132	-.185	-0.898	0.036	3.5	1.1	4.1	1.1	A+	A+
3423	737266	BIO	4616	.494	.494	.207	.198	.102	.000	.289	.289	-.276	.059	-.185	0.309	0.032	6.1	1.1	7.5	1.1	A-	A-
3424	737267	BIO	4616	.408	.322	.407	.142	.129	.000	.336	-.114	.336	-.246	-.079	0.716	0.033	-0.7	1.0	5.9	1.1	A+	A-
3425	737268	BIO	4641	.255	.221	.228	.254	.296	.000	.095	-.046	-.104	.095	.047	1.561	0.036	7.8	1.1	9.9	1.8	A+	A-

Table B–4 (continued). Science Multiple-Choice Item Statistics

Ref	ID	FT Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M /F	W /B
3426	737269	BIO	4635	.527	.212	.527	.160	.101	.000	.250	-.141	.250	-.073	-.135	0.148	0.032	9.2	1.1	9.8	1.2	A-	A-
3427	737270	BIO	4595	.591	.203	.116	.090	.591	.000	.418	-.173	-.249	-.196	.418	-0.152	0.033	-4.3	1.0	-3.9	0.9	A+	A-
3428	737271	BIO	4641	.262	.262	.103	.416	.219	.000	.124	.124	-.228	.078	-.058	1.496	0.036	7.9	1.1	9.9	1.6	A-	A-
3429	737272	BIO	4717	.364	.295	.364	.125	.216	.000	.183	-.113	.183	-.095	-.013	0.960	0.033	9.9	1.1	9.9	1.3	A+	A-
3430	737273	BIO	4757	.496	.496	.171	.207	.126	.000	.365	.365	-.100	-.243	-.141	0.307	0.032	-1.0	1.0	1.8	1.0	A-	A-
3431	737274	BIO	4695	.275	.296	.269	.160	.275	.000	.218	.004	-.051	-.209	.218	1.427	0.035	3.3	1.1	9.9	1.5	A+	A-
3432	741615	BIO	4612	.371	.184	.371	.138	.307	.000	.190	-.028	.190	-.284	.037	0.935	0.033	9.9	1.1	9.9	1.3	A+	A+
3433	741616	BIO	4677	.333	.196	.333	.374	.097	.000	.137	-.086	.137	-.073	.017	1.099	0.034	9.9	1.2	9.9	1.5	A-	A-
3434	741624	BIO	4608	.576	.194	.576	.128	.102	.000	.339	-.155	.339	-.235	-.092	-0.066	0.033	2.2	1.0	1.7	1.0	A-	A-
3435	741631	BIO	4643	.634	.036	.133	.197	.634	.000	.394	-.202	-.152	-.252	.394	-0.375	0.033	-1.4	1.0	-0.6	1.0	A+	A+
3436	741633	BIO	4584	.451	.451	.247	.187	.116	.000	.284	.284	-.160	-.073	-.138	0.522	0.032	5.5	1.1	8.5	1.2	A+	A+
3437	741635	BIO	4676	.644	.173	.644	.111	.072	.000	.342	-.223	.342	-.195	-.070	-0.451	0.034	2.6	1.0	1.2	1.0	A+	A-
3438	741636	BIO	4671	.385	.385	.102	.307	.206	.000	.161	.161	-.161	-.021	-.050	0.836	0.033	9.9	1.2	9.9	1.4	A-	A-
3439	741637	BIO	4657	.451	.174	.201	.451	.174	.000	.275	-.104	-.181	.275	-.066	0.520	0.032	6.4	1.1	8.9	1.2	A+	A-
3440	741638	BIO	4565	.447	.208	.447	.214	.130	.000	.225	-.109	.225	-.149	-.019	0.547	0.032	9.8	1.1	9.9	1.2	A+	A-
3441	741639	BIO	4606	.303	.303	.220	.277	.200	.000	.165	.165	-.019	-.035	-.131	1.261	0.035	8.4	1.1	9.9	1.4	A-	A-
3442	741641	BIO	4759	.347	.220	.257	.347	.176	.000	.135	-.046	-.139	.135	.040	1.036	0.033	9.9	1.2	9.9	1.4	A-	A-
3443	741744	BIO	4640	.325	.275	.237	.325	.163	.000	.044	.103	-.120	.044	-.043	1.151	0.034	9.9	1.2	9.9	1.6	A-	A-

Items with reference line numbers 1-2038 were field tested during the stand-alone field test administered in fall 2010. Items with reference line numbers 2039-2838 were field tested during the field test administered in fall 2013. Items with reference line numbers 2839-3443 were field tested during the embedded field test administered during the 2015-2016 school year.

WRITING/ENGLISH COMPOSITION MULTIPLE-CHOICE ITEMS

Table B–5. Writing/English Composition Multiple-Choice Item Statistics

Table B–5. Writing/English Composition Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M /F	W /B
1	622443	3	3	2753	.769	.059	.056	.769	.113	.005	.448	-.243	-.226	.448	-.194	-2.331	0.050	-2.6	0.9	-2.1	0.9	A+	A-
2	621004	3	3	2753	.893	.038	.038	.893	.027	.005	.410	-.221	-.161	.410	-.224	-3.454	0.068	-1.9	0.9	-3.4	0.7	A+	A-
3	623134	3	3	2753	.317	.208	.173	.296	.317	.006	.332	-.124	-.158	-.054	.332	0.101	0.045	2.9	1.1	5.1	1.2	A+	A-
4	639851	3	3	2753	.375	.429	.085	.375	.105	.006	.308	-.029	-.204	.308	-.183	-0.206	0.044	5.4	1.1	5.9	1.2	A+	A-
5	622448	3	3	2753	.678	.118	.100	.097	.678	.007	.495	-.231	-.217	-.242	.495	-1.780	0.045	-4.9	0.9	-4.9	0.8	A+	A-
6	631022	3	3	2753	.680	.157	.680	.066	.091	.006	.449	-.220	.449	-.241	-.171	-1.787	0.045	-2.0	1.0	-1.4	1.0	A+	A-
7	622457	3	3	2753	.537	.179	.537	.085	.191	.008	.424	-.237	.424	-.195	-.111	-1.034	0.042	-0.2	1.0	0.1	1.0	A-	A+
8	626549	3	3	2753	.433	.433	.137	.201	.220	.009	.392	.392	-.201	-.168	-.083	-0.527	0.043	1.9	1.0	4.0	1.1	A+	A+
9	635457	3	3	2753	.310	.519	.310	.125	.036	.009	.384	-.152	.384	-.133	-.179	0.142	0.045	-0.4	1.0	3.3	1.1	A-	A+
10	620993	3	3	2753	.782	.782	.079	.088	.041	.010	.445	.445	-.249	-.215	-.153	-2.441	0.051	-2.3	0.9	-3.1	0.9	A-	A-
11	622447	3	3	274	.829	.110	.829	.033	.029	.000	.409	-.246	.409	-.199	-.248	-2.813	0.176	-0.6	0.9	-0.6	0.9	A-	
12	622445	3	3	274	.412	.256	.110	.219	.412	.004	.354	-.281	-.096	-.020	.354	-0.408	0.138	2.3	1.1	2.5	1.2	A+	
13	640135	3	3	274	.438	.438	.336	.150	.077	.000	.239	.239	-.109	-.086	-.137	-0.536	0.137	3.1	1.2	3.6	1.3	A+	
14	621011	3	3	274	.544	.544	.142	.164	.135	.015	.475	.475	-.190	-.159	-.268	-1.107	0.137	-0.8	1.0	-1.1	0.9	A+	
15	621018	3	3	274	.540	.274	.080	.540	.102	.004	.518	-.248	-.167	.518	-.296	-1.063	0.136	-1.7	0.9	-1.6	0.9	A-	
16	626766	3	3	275	.596	.596	.055	.062	.284	.004	.325	.325	-.233	-.150	-.121	-1.413	0.142	1.7	1.1	1.9	1.2	A+	A-
17	623059	3	3	275	.931	.931	.029	.018	.011	.011	.474	.474	-.256	-.167	-.127	-4.536	0.305	-0.1	1.0	-1.0	0.5	A+	A+
18	634165	3	3	275	.844	.051	.844	.062	.033	.011	.458	-.272	.458	-.203	-.092	-3.085	0.188	-0.9	0.9	-1.2	0.7	A-	B-
19	621013	3	3	275	.811	.124	.033	.811	.022	.011	.523	-.307	-.234	.523	-.139	-2.851	0.177	-1.3	0.9	-1.8	0.6	A+	A-
20	621019	3	3	275	.476	.178	.182	.476	.149	.015	.418	-.119	-.156	.418	-.175	-0.812	0.140	0.2	1.0	0.8	1.1	A-	A+
21	623098	3	5	274	.551	.186	.551	.197	.066	.000	.471	-.365	.471	-.097	-.217	-1.073	0.132	-1.6	0.9	-1.2	0.9	A+	A+
22	623014	3	3	274	.281	.131	.281	.266	.321	.000	.261	-.167	.261	-.133	-.004	0.281	0.144	1.5	1.1	2.7	1.3	A-	A-
23	626921	3	3	274	.686	.139	.066	.686	.110	.000	.519	-.341	-.250	.519	-.196	-1.754	0.140	-2.4	0.9	-2.5	0.8	A+	A-
24	635445	3	3	274	.485	.139	.485	.139	.237	.000	.410	-.242	.410	-.112	-.194	-0.760	0.131	-0.3	1.0	0.3	1.0	A+	A-
25	623127	3	3	274	.361	.157	.383	.099	.361	.000	.221	-.216	-.005	-.086	.221	-0.153	0.136	3.0	1.2	2.7	1.2	A-	A-
26	630803	3	3	274	.467	.256	.168	.467	.106	.004	.262	-.042	-.171	.262	-.153	-0.681	0.132	3.0	1.2	2.7	1.2	A+	A-
27	627410	3	3	274	.679	.679	.095	.102	.120	.004	.451	.451	-.307	-.201	-.180	-1.728	0.140	-0.9	0.9	-1.8	0.8	A-	A+
28	622459	3	3	274	.416	.128	.416	.256	.201	.000	.440	-.178	.440	-.149	-.232	-0.426	0.133	-0.8	1.0	-1.0	0.9	A+	A-
29	624759	3	3	274	.672	.672	.055	.062	.212	.000	.225	.225	-.290	-.149	-.009	-1.676	0.139	2.2	1.1	3.2	1.3	B-	A-
30	623024	3	3	274	.277	.310	.172	.237	.277	.004	.332	-.181	-.155	-.005	.332	0.300	0.145	0.5	1.0	1.2	1.1	B+	A+

Table B-5 (continued). Writing/English Composition Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
31	621399	3	3	274	.814	.814	.058	.066	.062	.000	.400	.400	-.216	-.206	-.225	-2.549	0.164	-0.6	0.9	-1.3	0.8	A+	A+
32	623137	3	3	274	.547	.102	.142	.204	.547	.004	.437	-.233	-.234	-.150	.437	-1.061	0.132	-0.7	1.0	-0.9	0.9	A+	B+
33	622456	3	3	276	.598	.598	.091	.101	.203	.007	.367	.367	-.189	-.180	-.127	-1.331	0.132	0.1	1.0	-0.3	1.0	A-	
34	635897	3	3	276	.565	.127	.178	.123	.565	.007	.405	-.178	-.183	-.121	.405	-1.170	0.131	-0.7	1.0	-0.3	1.0	A+	
35	635446	3	3	276	.837	.087	.837	.040	.029	.007	.472	-.240	.472	-.224	-.182	-2.750	0.173	-1.4	0.9	-1.6	0.7	A-	
36	635895	3	3	276	.714	.141	.094	.714	.044	.007	.442	-.199	-.276	.442	-.088	-1.925	0.142	-1.5	0.9	-1.4	0.9	A+	
37	630804	3	3	276	.540	.167	.540	.145	.138	.011	.302	-.133	.302	-.140	-.041	-1.064	0.130	1.3	1.1	1.8	1.1	A-	
38	621017	3	3	276	.388	.239	.388	.192	.167	.015	.257	-.018	.257	-.128	-.072	-0.358	0.133	1.9	1.1	3.1	1.2	A+	
39	623120	3	3	276	.380	.214	.199	.188	.380	.018	.342	-.031	-.093	-.187	.342	-0.335	0.133	0.4	1.0	1.0	1.1	A-	
40	625484	3	3	276	.826	.116	.022	.826	.015	.022	.414	-.225	-.211	.414	-.098	-2.774	0.175	-0.8	0.9	-0.8	0.9	A-	
41	634152	3	3	276	.333	.333	.185	.254	.207	.022	.136	.136	-.030	-.090	.058	-0.111	0.137	3.5	1.2	3.5	1.3	A-	
42	627784	3	3	276	.630	.120	.630	.210	.015	.025	.399	-.306	.399	-.070	-.085	-1.549	0.136	-0.3	1.0	-0.3	1.0	A+	
43	624772	3	3	276	.196	.312	.268	.196	.203	.022	.259	-.058	-.078	.259	.014	0.724	0.160	0.4	1.0	1.3	1.2	A-	
44	633542	3	3	276	.725	.112	.058	.076	.725	.029	.507	-.244	-.078	-.295	.507	-2.088	0.148	-1.8	0.9	-2.2	0.8	A+	
45	620994	3	3	277	.733	.733	.083	.079	.101	.004	.399	.399	-.116	-.270	-.176	-2.136	0.148	-0.1	1.0	0.8	1.1	A-	
46	635444	3	3	277	.347	.209	.209	.231	.347	.004	.390	-.196	-.141	-.071	.390	-0.171	0.137	-0.6	1.0	-0.5	1.0	A-	
47	626568	3	3	277	.585	.188	.101	.123	.585	.004	.443	-.249	-.151	-.174	.443	-1.334	0.134	-0.8	1.0	-0.7	0.9	A-	
48	623092	3	3	277	.874	.047	.874	.040	.033	.007	.333	-.115	.333	-.130	-.173	-3.247	0.195	-0.2	1.0	1.0	1.2	A-	
49	634153	3	3	277	.296	.220	.350	.112	.296	.022	.182	-.006	-.043	-.035	.182	0.112	0.143	2.7	1.2	4.5	1.6	A-	
50	634149	3	3	277	.801	.040	.123	.801	.025	.011	.418	-.306	-.115	.418	-.199	-2.632	0.165	-0.1	1.0	-0.7	0.9	A+	
51	639885	3	3	277	.617	.163	.617	.090	.116	.014	.522	-.267	.522	-.146	-.235	-1.527	0.137	-2.2	0.9	-1.7	0.9	A+	
52	628033	3	3	277	.913	.025	.036	.913	.014	.011	.427	-.128	-.295	.427	-.061	-3.849	0.240	-0.6	0.9	-1.5	0.6	A+	
53	622991	3	3	277	.769	.769	.108	.061	.047	.014	.418	.418	-.209	-.147	-.185	-2.421	0.157	-0.1	1.0	-0.8	0.9	A-	
54	622999	3	3	277	.354	.242	.137	.354	.246	.022	.456	-.154	-.163	.456	-.121	-0.219	0.138	-1.2	0.9	-1.3	0.9	A-	
55	621009	3	3	277	.780	.018	.040	.780	.144	.018	.393	-.202	-.327	.393	-.086	-2.514	0.161	-0.2	1.0	0.7	1.1	A-	
56	633543	3	3	277	.697	.108	.137	.043	.697	.014	.557	-.240	-.302	-.200	.557	-1.968	0.144	-2.5	0.8	-2.6	0.7	A+	
57	620995	3	3	275	.542	.222	.146	.087	.542	.004	.399	-.108	-.220	-.207	.399	-0.959	0.136	1.4	1.1	0.9	1.1	B+	
58	628317	3	3	275	.844	.022	.022	.106	.844	.007	.413	-.191	-.180	-.238	.413	-2.777	0.185	-0.6	0.9	-0.4	0.9	A+	
59	635878	3	3	275	.633	.124	.633	.066	.171	.007	.422	-.141	.422	-.216	-.228	-1.414	0.141	0.1	1.0	0.1	1.0	A-	
60	633544	3	3	275	.822	.051	.822	.036	.084	.007	.498	-.275	.498	-.226	-.235	-2.644	0.179	-1.5	0.8	-1.1	0.8	A+	
61	639886	3	3	275	.466	.222	.135	.175	.466	.004	.398	-.276	-.140	-.049	.398	-0.551	0.136	1.2	1.1	0.9	1.1	A-	
62	634150	3	3	275	.847	.087	.015	.847	.047	.004	.463	-.295	-.148	.463	-.224	-2.894	0.191	-1.0	0.9	-1.4	0.7	A+	
63	622461	3	3	275	.836	.836	.095	.047	.018	.004	.322	.322	-.297	.027	-.150	-2.753	0.183	-0.1	1.0	1.3	1.3	A-	
64	623007	3	3	275	.556	.233	.116	.091	.556	.004	.379	-.170	-.197	-.125	.379	-1.015	0.136	1.6	1.1	0.6	1.1	A+	
65	639446	3	3	275	.073	.651	.073	.076	.196	.004	-.057	-.063	-.057	-.061	.198	2.958	0.316	0.5	1.1	1.2	1.6	A-	

Table B-5 (continued). Writing/English Composition Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
66	639870	3	3	275	.411	.226	.258	.102	.411	.004	.396	-.206	-.140	-.098	.396	-0.211	0.138	0.1	1.0	0.5	1.0	C-	
67	622995	3	3	275	.520	.520	.138	.138	.200	.004	.423	.423	-.107	-.261	-.167	-0.828	0.136	0.5	1.0	0.5	1.0	A+	
68	634154	3	3	275	.578	.164	.578	.135	.120	.004	.390	-.222	.390	-.226	-.049	-1.071	0.137	0.8	1.0	0.6	1.1	A+	
69	623100	3	3	275	.738	.069	.087	.738	.098	.007	.426	-.179	-.236	.426	-.136	-2.015	0.152	-0.7	0.9	-0.7	0.9	A+	A-
70	639429	3	4	275	.887	.887	.022	.022	.058	.011	.526	.526	-.163	-.258	-.240	-3.403	0.218	-0.8	0.9	-1.6	0.6	A-	A-
71	620987	3	3	275	.298	.393	.298	.218	.080	.011	.195	.122	.195	-.119	-.190	0.263	0.143	3.0	1.2	2.8	1.4	A+	A+
72	634159	3	3	275	.487	.487	.302	.127	.069	.015	.395	.395	-.203	.010	-.225	-0.725	0.134	0.6	1.0	0.3	1.0	B-	A+
73	621007	3	3	275	.407	.200	.164	.407	.218	.011	.411	-.167	-.119	.411	-.103	-0.318	0.135	-0.4	1.0	-0.4	1.0	A-	A-
74	623084	3	3	275	.386	.196	.309	.095	.386	.015	.303	-.217	.083	-.157	.303	-0.227	0.136	2.4	1.1	1.9	1.2	A-	A+
75	623025	3	3	275	.807	.058	.807	.058	.066	.011	.489	-.189	.489	-.199	-.217	-2.531	0.170	-1.0	0.9	-1.7	0.7	A+	A-
76	626548	3	3	275	.407	.189	.124	.266	.407	.015	.323	-.155	-.196	.031	.323	-0.346	0.135	2.0	1.1	2.2	1.2	A+	A+
77	623094	3	4	275	.880	.066	.880	.026	.018	.011	.557	-.349	.557	-.173	-.140	-3.356	0.215	-0.9	0.9	-2.1	0.5	A+	A-
78	639871	3	3	275	.331	.196	.138	.324	.331	.011	.308	-.207	-.103	.046	.308	0.061	0.140	1.2	1.1	2.5	1.3	B-	A+
79	639887	3	3	275	.284	.207	.258	.284	.236	.015	.233	.042	-.090	.233	-.076	0.343	0.145	1.5	1.1	3.4	1.5	A-	A-
80	630795	3	3	275	.869	.047	.040	.869	.029	.015	.547	-.259	-.270	.547	-.155	-3.261	0.209	-0.9	0.9	-1.7	0.6	A+	A-
81	633545	3	3	275	.822	.073	.822	.040	.055	.011	.603	-.262	.603	-.268	-.271	-2.745	0.179	-2.0	0.8	-2.6	0.6	A+	A-
82	635896	3	3	277	.531	.357	.033	.531	.079	.000	.309	-.197	-.221	.309	-.077	-0.991	0.133	2.6	1.1	1.9	1.2	A-	
83	620998	3	3	277	.686	.242	.043	.022	.686	.007	.473	-.345	-.221	-.146	.473	-1.843	0.144	-1.2	0.9	-0.5	0.9	A+	
84	624841	3	4	277	.650	.108	.650	.076	.166	.000	.462	-.214	.462	-.168	-.294	-1.581	0.139	-1.3	0.9	-0.6	0.9	A-	
85	635898	3	3	277	.747	.747	.036	.079	.134	.004	.426	.426	-.226	-.139	-.297	-2.177	0.152	-0.6	1.0	-0.3	1.0	A+	
86	621010	3	3	277	.379	.379	.314	.246	.061	.000	.331	.331	-.071	-.223	-.132	-0.249	0.137	2.1	1.1	1.6	1.2	A-	
87	632331	3	3	277	.451	.144	.307	.098	.451	.000	.428	-.119	-.259	-.174	.428	-0.597	0.134	-0.4	1.0	0.4	1.0	A-	
88	624751	3	3	277	.404	.404	.177	.123	.296	.000	.341	.341	-.113	-.239	-.101	-0.379	0.135	1.7	1.1	2.3	1.2	B-	
89	630796	3	3	277	.830	.051	.076	.033	.830	.011	.394	-.290	-.158	-.227	.394	-2.868	0.179	-0.4	1.0	-0.9	0.8	A-	
90	620997	3	3	277	.177	.303	.177	.079	.440	.000	.108	-.068	.108	-.151	.063	1.068	0.173	2.0	1.2	3.2	1.7	A-	
91	627700	3	3	277	.502	.159	.148	.502	.181	.011	.492	-.280	-.164	.492	-.176	-0.876	0.134	-1.0	1.0	-1.2	0.9	A-	
92	623021	3	3	277	.386	.289	.123	.386	.199	.004	.439	-.093	-.242	.439	-.213	-0.288	0.136	-0.2	1.0	0.1	1.0	C+	
93	639850	3	3	277	.408	.123	.383	.408	.079	.007	.381	-.148	-.151	.381	-.223	-0.372	0.136	0.3	1.0	0.9	1.1	A+	
94	639881	3	3	277	.783	.069	.783	.076	.058	.014	.545	-.243	.545	-.298	-.301	-2.502	0.164	-2.2	0.8	-2.1	0.7	A+	
95	622444	3	3	276	.674	.116	.044	.167	.674	.000	.410	-.261	-.215	-.174	.410	-1.809	0.140	-0.1	1.0	-0.1	1.0	A-	A-
96	622449	3	3	276	.562	.188	.562	.163	.087	.000	.441	-.184	.441	-.175	-.292	-1.228	0.133	-0.2	1.0	-0.6	1.0	A+	A+
97	623010	3	3	276	.717	.717	.065	.130	.080	.007	.404	.404	-.093	-.264	-.228	-2.077	0.147	-0.1	1.0	-0.1	1.0	A+	A-
98	623031	3	3	276	.370	.344	.112	.170	.370	.004	.321	-.141	-.138	-.111	.321	-0.279	0.137	2.0	1.1	1.8	1.2	A-	A-
99	634028	3	3	276	.591	.116	.591	.141	.152	.000	.370	-.284	.370	-.054	-.201	-1.355	0.134	0.9	1.1	0.2	1.0	A+	A-
100	634163	3	3	276	.446	.083	.152	.315	.446	.004	.377	-.329	-.095	-.136	.377	-0.651	0.134	0.6	1.0	1.1	1.1	A+	A-

Table B-5 (continued). Writing/English Composition Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M /F	W /B
101	639883	3	3	276	.772	.069	.105	.772	.054	.000	.507	-.264	-.316	.507	-.215	-2.396	0.155	-1.8	0.9	-2.2	0.7	A+	A-
102	634151	3	3	276	.804	.029	.145	.804	.022	.000	.369	-.197	-.257	.369	-.157	-2.626	0.163	-0.3	1.0	0.5	1.1	A-	A-
103	620991	3	3	276	.725	.725	.058	.123	.094	.000	.408	.408	-.189	-.152	-.302	-2.099	0.147	-0.2	1.0	-0.5	0.9	A+	A+
104	628101	3	3	276	.380	.152	.254	.380	.214	.000	.493	-.170	-.216	.493	-.206	-0.331	0.136	-1.9	0.9	0.5	1.0	A+	A-
105	621002	3	3	276	.420	.073	.275	.232	.420	.000	.525	-.276	-.345	-.080	.525	-0.533	0.134	-2.1	0.9	-2.2	0.8	B+	A-
106	622462	3	N/A	276	.254	.308	.254	.370	.069	.000	-.045	-.176	-.045	.149	.116	0.404	0.151	4.9	1.4	5.7	2.0	A+	A-
107	621005	3	3	276	.848	.036	.848	.098	.015	.004	.354	-.317	.354	-.149	-.168	-3.005	0.181	-0.4	1.0	0.5	1.1	A+	B+
108	620990	3	3	274	.912	.040	.912	.037	.011	.000	.404	-.394	.404	-.124	-.132	-3.538	0.226	-1.0	0.8	-1.3	0.6	A+	A+
109	622450	3	3	274	.799	.033	.037	.799	.128	.004	.424	-.205	-.109	.424	-.308	-2.487	0.166	-0.5	1.0	0.1	1.0	A-	A-
110	634032	3	3	274	.745	.080	.069	.099	.745	.007	.503	-.249	-.269	-.224	.503	-2.112	0.154	-1.2	0.9	-1.8	0.8	A-	A-
111	635443	3	3	274	.693	.135	.077	.693	.095	.000	.442	-.300	-.174	.442	-.188	-1.768	0.144	-0.6	1.0	-1.2	0.9	A-	A+
112	622463	3	3	274	.602	.602	.146	.117	.131	.004	.414	.414	-.186	-.184	-.200	-1.297	0.137	0.2	1.0	0.7	1.1	A+	A+
113	623091	3	3	274	.679	.033	.259	.679	.026	.004	.381	-.220	-.212	.381	-.225	-1.709	0.143	0.4	1.0	1.4	1.2	A+	A+
114	625477	3	3	274	.934	.026	.934	.026	.015	.000	.408	-.253	.408	-.261	-.166	-3.955	0.262	-0.7	0.9	-1.9	0.4	A+	A-
115	622458	3	3	274	.485	.117	.146	.248	.485	.004	.417	-.217	-.192	-.141	.417	-0.713	0.134	0.5	1.0	0.2	1.0	A-	A-
116	639884	3	3	274	.715	.124	.073	.715	.084	.004	.447	-.168	-.284	.447	-.249	-1.930	0.148	-0.7	1.0	-0.7	0.9	A-	A+
117	621015	3	3	274	.307	.307	.358	.157	.175	.004	.181	.181	.019	-.139	-.084	0.236	0.144	3.4	1.2	4.3	1.6	A-	A-
118	626555	3	3	274	.383	.161	.193	.259	.383	.004	.396	-.173	-.238	-.073	.396	-0.205	0.137	0.5	1.0	0.8	1.1	A+	A-
119	620988	3	3	274	.639	.150	.084	.120	.639	.007	.516	-.194	-.241	-.299	.516	-1.500	0.140	-1.7	0.9	-2.1	0.8	A+	A+
120	634164	3	3	274	.628	.080	.150	.628	.131	.011	.377	-.227	-.220	.377	-.052	-1.443	0.139	0.9	1.1	2.0	1.2	A-	B-
121	626547	3	3	274	.420	.197	.226	.153	.420	.004	.169	-.062	-.052	-.092	.169	-0.448	0.133	4.3	1.2	4.6	1.4	B+	A-
122	621012	3	3	276	.482	.123	.188	.482	.203	.004	.315	-.226	-.055	.315	-.104	-0.777	0.129	0.1	1.0	0.7	1.0	A+	
123	634030	3	3	277	.386	.206	.386	.163	.231	.014	.386	-.123	.386	-.145	-.119	-0.369	0.135	0.2	1.0	-0.1	1.0	A-	
124	634160	3	3	275	.520	.207	.076	.520	.193	.004	.451	-.167	-.205	.451	-.217	-0.810	0.136	-0.5	1.0	-0.2	1.0	A+	
125	623056	3	3	275	.884	.884	.033	.026	.044	.015	.559	.559	-.266	-.106	-.320	-3.447	0.222	-1.0	0.8	-2.0	0.5	A-	A-
126	621006	3	3	277	.668	.065	.668	.166	.098	.004	.533	-.265	.533	-.278	-.268	-1.730	0.141	-2.2	0.9	-1.9	0.8	A+	
127	624801	3	3	276	.873	.044	.044	.873	.040	.000	.439	-.275	-.297	.439	-.151	-3.221	0.192	-0.9	0.9	-1.8	0.6	A-	A+
128	623023	3	3	274	.438	.120	.175	.263	.438	.004	.239	-.275	-.025	-.039	.239	-0.466	0.135	4.3	1.2	2.8	1.3	A-	B+
129	622985	3	3	274	.449	.153	.120	.277	.449	.000	.495	-.186	-.409	-.102	.495	-0.585	0.132	-2.2	0.9	-1.4	0.9	A-	B-
130	624847	3	3	277	.480	.480	.152	.090	.264	.014	.256	.256	-.082	-.111	-.067	-0.847	0.133	3.6	1.2	3.8	1.3	A+	
131	624849	3	3	276	.355	.254	.217	.170	.355	.004	.291	-.186	-.071	-.024	.291	-0.168	0.135	0.7	1.0	1.6	1.1	A-	
132	622465	3	3	277	.422	.209	.422	.148	.213	.007	.373	-.120	.373	-.189	-.122	-0.546	0.134	0.6	1.0	1.3	1.1	A-	
133	634029	3	3	275	.695	.095	.156	.695	.051	.004	.459	-.302	-.195	.459	-.158	-1.730	0.146	-0.7	1.0	-1.4	0.8	A+	
134	634162	3	3	275	.546	.116	.146	.182	.546	.011	.522	-.219	-.234	-.152	.522	-1.027	0.135	-2.2	0.9	-1.8	0.9	A+	B-
135	626574	3	3	277	.823	.058	.079	.040	.823	.000	.466	-.215	-.321	-.210	.466	-2.732	0.171	-1.3	0.9	-1.2	0.8	A-	

Table B–5 (continued). Writing/English Composition Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
136	636550	3	3	276	.645	.159	.091	.105	.645	.000	.519	-.315	-.224	-.223	.519	-1.653	0.138	-2.1	0.9	-2.3	0.8	A+	A-
137	622979	3	3	274	.752	.110	.752	.044	.091	.004	.392	-.204	.392	-.122	-.245	-2.152	0.154	0.5	1.0	-0.2	1.0	A+	A+
138	621008	3	3	274	.453	.117	.285	.453	.146	.000	.274	-.153	-.022	.274	-.219	-0.603	0.132	2.5	1.1	2.6	1.2	A-	A-
139	623107	3	3	276	.323	.323	.326	.188	.141	.022	.299	.299	-.069	-.094	-.068	-0.044	0.138	0.8	1.1	1.5	1.1	A+	
140	625516	3	3	275	.498	.498	.196	.189	.109	.007	.387	.387	-.134	-.109	-.257	-0.709	0.136	1.2	1.1	1.1	1.1	A+	
141	623113	4	3	233	.931	.034	.931	.009	.026	.000	.393	-.300	.393	-.082	-.235	-3.289	0.274	-0.6	0.9	-1.1	0.6	B+	
142	637175	4	4	232	.315	.315	.315	.306	.060	.004	.434	-.145	.434	-.230	-.048	0.431	0.153	-0.8	1.0	-0.4	1.0	A+	A-
143	633445	4	4	235	.843	.030	.102	.843	.026	.000	.404	-.288	-.226	.404	-.189	-2.327	0.194	-0.6	0.9	-0.7	0.8	A-	
144	635414	4	4	233	.794	.090	.043	.073	.794	.000	.589	-.352	-.291	-.302	.589	-1.892	0.176	-2.2	0.8	-2.4	0.7	A+	
145	639852	4	4	234	.543	.252	.111	.081	.543	.013	.498	-.208	-.128	-.255	.498	-0.601	0.143	-2.3	0.9	-1.9	0.9	A+	
146	623033	4	4	232	.341	.280	.211	.164	.341	.004	.308	-.131	-.190	-.005	.308	0.344	0.148	1.0	1.1	0.3	1.0	A+	A+
147	623013	4	4	233	.730	.730	.099	.073	.094	.004	.515	.515	-.355	-.235	-.139	-1.638	0.159	-2.5	0.8	-1.2	0.8	A-	
148	633852	4	4	233	.489	.120	.489	.155	.232	.004	.380	-.225	.380	-.194	-.060	-0.342	0.144	0.7	1.0	0.6	1.0	A+	
149	624765	4	4	233	.790	.052	.125	.790	.030	.004	.515	-.301	-.295	.515	-.272	-1.863	0.173	-1.8	0.8	-2.1	0.7	A+	
150	625527	4	3	232	.552	.194	.190	.052	.552	.013	.386	-.145	-.269	-.007	.386	-0.760	0.144	0.5	1.0	0.2	1.0	A-	A-
151	627004	4	3	232	.935	.935	.017	.013	.030	.004	.273	.273	-.121	-.205	-.168	-3.608	0.290	-0.1	1.0	-1.1	0.6	A+	A-
152	637177	4	4	235	.562	.149	.128	.562	.162	.000	.461	-.208	-.284	.461	-.162	-0.588	0.146	-0.4	1.0	-0.7	0.9	A-	
153	633432	4	4	233	.717	.107	.047	.129	.717	.000	.496	-.261	-.338	-.212	.496	-1.390	0.158	-1.3	0.9	-1.2	0.9	A+	
154	633464	4	4	234	.654	.086	.654	.115	.137	.009	.501	-.196	.501	-.218	-.214	-1.153	0.150	-2.0	0.9	-2.1	0.8	A+	
155	639854	4	4	232	.453	.319	.125	.453	.099	.004	.427	-.132	-.262	.427	-.189	-0.204	0.142	-1.2	0.9	-0.4	1.0	A+	A-
156	623136	4	4	233	.571	.167	.150	.107	.571	.004	.465	-.321	-.180	-.081	.465	-0.800	0.144	-1.6	0.9	-1.1	0.9	A-	
157	635900	4	4	233	.803	.133	.803	.026	.034	.004	.465	-.249	.465	-.247	-.219	-2.089	0.179	-1.0	0.9	-1.4	0.8	A-	
158	635412	4	4	233	.352	.172	.352	.378	.099	.000	.340	-.188	.340	-.082	-.173	0.404	0.147	0.1	1.0	0.9	1.1	A+	
159	630419	4	4	232	.375	.323	.151	.142	.375	.009	.306	-.092	-.151	-.064	.306	0.113	0.147	1.5	1.1	1.9	1.2	A-	A+
160	630295	4	3	235	.702	.209	.026	.055	.702	.009	.493	-.372	-.218	-.148	.493	-1.375	0.159	-1.1	0.9	-1.3	0.8	A+	
161	622466	4	4	2796	.729	.151	.729	.062	.055	.004	.471	-.271	.471	-.204	-.210	-1.565	0.046	-4.0	0.9	-4.5	0.8	A+	B+
162	633465	4	4	2796	.788	.066	.051	.092	.788	.004	.475	-.237	-.241	-.234	.475	-1.960	0.050	-4.2	0.9	-4.9	0.8	A+	A-
163	622994	4	4	2796	.748	.091	.088	.070	.748	.004	.473	-.249	-.246	-.195	.473	-1.686	0.048	-4.0	0.9	-4.9	0.8	A+	A-
164	622981	4	4	2796	.722	.722	.079	.081	.114	.005	.489	.489	-.224	-.232	-.246	-1.534	0.046	-4.2	0.9	-5.5	0.8	A+	B-
165	639855	4	4	2796	.330	.402	.141	.330	.123	.005	.319	-.075	-.168	.319	-.115	0.493	0.044	1.4	1.0	3.3	1.1	A+	A+
166	635475	4	4	2796	.315	.334	.109	.315	.238	.004	.205	-.074	-.191	.205	.039	0.567	0.044	7.1	1.1	8.4	1.3	A-	A-
167	623002	4	4	2796	.345	.182	.345	.341	.127	.006	.255	-.149	.255	-.054	-.058	0.393	0.043	6.7	1.1	6.8	1.2	A-	A-
168	635410	4	4	2796	.264	.291	.232	.264	.207	.007	.180	.003	-.092	.180	-.055	0.858	0.046	6.8	1.2	8.0	1.3	A+	A+
169	623118	4	3	2796	.548	.132	.155	.548	.157	.008	.448	-.202	-.189	.448	-.181	-0.620	0.042	-3.0	1.0	-2.1	1.0	A+	A-
170	633433	4	4	2796	.696	.696	.172	.061	.064	.007	.452	.452	-.225	-.215	-.210	-1.388	0.045	-2.7	0.9	-3.4	0.9	A+	A+

Table B–5 (continued). Writing/English Composition Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
171	622426	4	4	234	.457	.218	.457	.103	.218	.004	.225	-.078	.225	-.076	-.082	-0.060	0.145	2.8	1.2	2.9	1.3	A-	
172	622986	4	4	234	.786	.068	.064	.786	.077	.004	.499	-.225	-.296	.499	-.196	-1.902	0.176	-0.8	0.9	-1.2	0.8	A+	
173	637007	4	4	234	.603	.128	.603	.145	.115	.009	.481	-.134	.481	-.198	-.277	-0.815	0.149	-1.5	0.9	-1.2	0.9	A-	
174	626821	4	3	234	.380	.380	.184	.274	.154	.009	.284	.284	-.157	-.003	-.120	0.321	0.148	1.6	1.1	1.2	1.1	A-	
175	639853	4	4	467	.595	.161	.131	.595	.107	.006	.484	-.253	-.210	.484	-.152	-0.821	0.104	-1.6	0.9	-1.9	0.9	A-	A+
176	624798	4	4	232	.530	.147	.125	.530	.198	.000	.472	-.189	-.285	.472	-.185	-0.559	0.149	-1.2	0.9	-1.1	0.9	A-	A-
177	635447	4	4	232	.629	.629	.125	.099	.147	.000	.525	.525	-.329	-.237	-.209	-1.069	0.155	-1.6	0.9	-1.6	0.8	A-	A-
178	637015	4	4	232	.599	.052	.599	.323	.026	.000	.553	-.268	.553	-.389	-.188	-0.926	0.153	-2.3	0.9	-2.2	0.8	A+	A-
179	631096	4	3	232	.194	.254	.310	.233	.194	.009	.170	-.143	-.036	.043	.170	1.447	0.184	1.1	1.1	0.9	1.2	A+	A-
180	624770	4	4	232	.177	.427	.177	.207	.185	.004	.100	.211	.100	-.154	-.198	1.662	0.194	0.3	1.0	1.8	1.5	A+	A-
181	626571	4	4	233	.760	.150	.026	.760	.064	.000	.498	-.348	-.205	.498	-.229	-1.873	0.170	-1.3	0.9	-1.6	0.8	A+	
182	635901	4	4	233	.768	.077	.768	.090	.060	.004	.435	-.214	.435	-.256	-.127	-1.932	0.172	-0.4	1.0	-0.4	0.9	C+	
183	637147	4	3	233	.910	.034	.910	.013	.039	.004	.432	-.299	.432	-.148	-.154	-3.343	0.263	-0.2	0.9	-0.8	0.7	A+	
184	634143	4	3	233	.326	.245	.223	.326	.197	.009	.381	-.335	-.019	.381	-.005	0.454	0.153	-1.4	0.9	0.4	1.0	A+	
185	624845	4	4	233	.369	.155	.206	.262	.369	.009	.250	-.098	-.048	-.101	.250	0.217	0.149	1.1	1.1	1.6	1.2	A-	
186	633463	4	4	232	.470	.211	.280	.470	.039	.000	.077	-.026	.015	.077	-.179	-0.183	0.142	3.0	1.2	3.4	1.3	A+	
187	635471	4	4	232	.414	.224	.414	.194	.164	.004	.401	-.211	.401	-.112	-.115	0.064	0.144	-0.7	1.0	-0.3	1.0	A-	
188	622464	4	4	232	.823	.091	.823	.035	.047	.004	.421	-.264	.421	-.121	-.188	-2.149	0.185	-0.5	0.9	-1.0	0.8	A+	
189	623022	4	4	232	.599	.599	.091	.060	.241	.009	.123	.123	-.165	-.241	.176	-0.826	0.145	3.5	1.2	3.3	1.3	A-	
190	625493	4	4	232	.582	.276	.116	.582	.017	.009	.397	-.209	-.199	.397	-.106	-0.751	0.145	-0.6	1.0	0.4	1.0	A+	
191	623011	4	4	233	.781	.026	.120	.073	.781	.000	.314	-.240	-.119	-.205	.314	-1.778	0.169	0.5	1.1	-0.2	1.0	A+	
192	633855	4	4	233	.451	.270	.064	.215	.451	.000	.370	-.094	-.270	-.186	.370	-0.072	0.141	0.0	1.0	0.2	1.0	A-	
193	635442	4	4	233	.644	.056	.116	.644	.185	.000	.333	-.273	-.056	.333	-.203	-0.991	0.147	0.6	1.0	0.7	1.1	A-	
194	637142	4	3	233	.867	.034	.013	.867	.000	.000	.365	-.256	-.193	-.198	.365	-2.464	0.204	-0.3	1.0	-0.7	0.8	A-	
195	637146	4	3	233	.897	.056	.897	.013	.034	.000	.385	-.290	.385	-.199	-.155	-2.740	0.224	-0.6	0.9	-1.4	0.7	A+	
196	622997	4	4	233	.519	.077	.335	.519	.069	.000	.423	-.223	-.160	.423	-.303	-0.392	0.141	-0.9	1.0	-0.5	1.0	A-	
197	636253	4	4	233	.717	.146	.717	.116	.017	.004	.267	-.202	.267	-.040	-.280	-1.377	0.156	1.1	1.1	0.3	1.0	A-	
198	629829	4	4	233	.747	.747	.142	.034	.073	.004	.427	.427	-.201	-.270	-.252	-1.579	0.162	-0.7	0.9	-1.2	0.9	A-	
199	624818	4	4	233	.253	.253	.116	.189	.442	.000	.013	.013	.025	-.109	.059	0.967	0.160	3.0	1.3	3.2	1.5	A+	
200	627011	4	4	233	.421	.318	.421	.150	.112	.000	.371	-.265	.371	-.139	-.033	0.070	0.142	-0.3	1.0	1.1	1.1	A+	
201	623012	4	4	232	.190	.233	.384	.194	.190	.000	.211	-.013	-.055	-.129	.211	1.214	0.178	0.8	1.1	2.5	1.5	A-	A+
202	635473	4	4	232	.241	.216	.121	.241	.418	.004	.074	-.108	.014	.074	.052	0.888	0.166	2.6	1.2	3.5	1.5	A-	A-
203	637143	4	3	232	.759	.069	.039	.129	.759	.004	.493	-.230	-.132	-.328	.493	-1.850	0.165	-1.6	0.9	-1.8	0.8	A-	A-
204	623028	4	4	232	.448	.103	.448	.060	.384	.004	.432	-.139	.432	-.189	-.227	-0.226	0.144	-0.9	1.0	-1.2	0.9	A+	A+
205	622998	4	4	232	.737	.043	.078	.737	.138	.004	.447	-.134	-.273	.447	-.230	-1.717	0.161	-1.1	0.9	-0.9	0.9	A-	A+

Table B–5 (continued). Writing/English Composition Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
206	636254	4	4	232	.487	.207	.142	.487	.155	.009	.383	-.208	-.107	.383	-.114	-0.436	0.143	0.4	1.0	0.9	1.1	A+	B-
207	630294	4	4	232	.392	.108	.392	.237	.254	.009	.293	-.183	.293	-.104	-.032	0.026	0.146	1.8	1.1	2.4	1.2	A+	A+
208	632572	4	4	232	.651	.651	.116	.198	.022	.013	.336	.336	-.136	-.201	-.053	-1.258	0.150	1.1	1.1	0.9	1.1	A+	B+
209	627495	4	4	232	.565	.181	.151	.565	.095	.009	.527	-.276	-.173	.527	-.220	-0.810	0.144	-2.5	0.9	-2.1	0.9	A+	A+
210	624275	4	4	235	.702	.230	.038	.702	.030	.000	.501	-.337	-.255	.501	-.226	-1.341	0.157	-1.3	0.9	-1.7	0.8	A+	
211	635474	4	4	235	.315	.298	.315	.179	.209	.000	.288	-.148	.288	-.269	.092	0.686	0.155	2.2	1.2	2.4	1.3	B-	
212	626557	4	3	235	.860	.072	.051	.860	.013	.004	.453	-.262	-.323	.453	-.124	-2.521	0.205	-0.9	0.9	-1.3	0.7	A+	
213	637056	4	4	235	.817	.817	.077	.038	.068	.000	.456	.456	-.197	-.173	-.359	-2.113	0.183	-1.0	0.9	-1.0	0.8	B+	
214	636255	4	4	235	.723	.047	.162	.064	.723	.004	.431	-.172	-.294	-.189	.431	-1.486	0.161	-0.4	1.0	-0.4	0.9	A-	
215	636256	4	4	235	.677	.051	.677	.128	.136	.009	.365	-.178	.365	-.232	-.157	-1.229	0.155	1.0	1.1	0.7	1.1	A-	
216	622451	4	4	235	.660	.660	.085	.238	.017	.000	.474	.474	-.189	-.366	-.123	-1.100	0.152	-0.8	1.0	-1.0	0.9	A+	
217	623119	4	3	235	.740	.136	.740	.047	.077	.000	.401	-.253	.401	-.231	-.151	-1.574	0.163	-0.1	1.0	0.0	1.0	B+	
218	625521	4	3	235	.362	.345	.362	.238	.051	.004	.323	-.130	.323	-.120	-.171	0.423	0.151	1.9	1.1	2.9	1.3	A-	
219	635885	4	4	233	.640	.150	.103	.640	.107	.000	.408	-.155	-.287	.408	-.172	-0.968	0.148	-0.3	1.0	0.0	1.0	A-	
220	636257	4	4	233	.579	.155	.579	.155	.112	.000	.354	-.078	.354	-.218	-.215	-0.669	0.144	0.8	1.0	0.7	1.1	A-	
221	639432	4	4	233	.858	.060	.858	.022	.060	.000	.443	-.281	.443	-.208	-.243	-2.434	0.205	-0.6	0.9	-0.9	0.8	B+	
222	624771	4	N/A	233	.258	.258	.189	.197	.356	.000	.006	.006	-.161	-.161	.259	0.922	0.158	3.1	1.3	4.9	1.7	A+	
223	623116	4	4	233	.803	.129	.047	.022	.803	.000	.465	-.244	-.308	-.262	.465	-1.956	0.179	-0.6	0.9	-1.2	0.8	A-	
224	622452	4	4	233	.262	.103	.047	.262	.588	.000	.190	-.141	-.170	.190	-.009	0.922	0.158	0.6	1.0	3.2	1.5	A-	
225	623029	4	4	233	.652	.082	.064	.652	.197	.004	.371	-.253	-.195	.371	-.137	-1.022	0.150	0.2	1.0	-0.1	1.0	A+	
226	622992	4	4	233	.876	.077	.876	.026	.022	.000	.450	-.224	.450	-.311	-.272	-2.614	0.217	-0.6	0.9	-1.0	0.8	A+	
227	627417	4	4	233	.588	.588	.103	.137	.167	.004	.410	.410	-.192	-.248	-.143	-0.721	0.145	-0.2	1.0	-0.1	1.0	A-	
228	639370	4	4	234	.282	.449	.081	.180	.282	.009	.345	-.028	-.311	-.076	.345	0.704	0.156	0.1	1.0	0.1	1.0	B+	
229	633431	4	4	234	.752	.752	.064	.068	.107	.009	.449	.449	-.229	-.137	-.204	-1.691	0.164	-0.8	0.9	-0.6	0.9	A+	
230	635435	4	4	234	.415	.051	.415	.188	.333	.013	.436	-.169	.436	-.166	-.138	0.033	0.144	-1.3	0.9	-1.2	0.9	A-	
231	637144	4	3	234	.551	.197	.551	.120	.124	.009	.406	-.166	.406	-.210	-.083	-0.639	0.143	-0.2	1.0	-0.6	1.0	A-	
232	627048	4	4	234	.372	.372	.342	.167	.107	.013	.312	.312	-.088	-.123	-.051	0.225	0.146	1.2	1.1	0.9	1.1	A-	
233	622455	4	4	234	.808	.808	.081	.060	.039	.013	.516	.516	-.189	-.217	-.273	-2.130	0.183	-1.3	0.9	-1.5	0.8	A+	
234	623095	4	4	234	.222	.406	.133	.222	.227	.013	.089	-.020	-.133	.089	.157	1.070	0.167	2.3	1.2	3.7	1.7	A+	
235	635881	4	4	234	.607	.231	.607	.111	.039	.013	.415	-.210	.415	-.170	-.070	-0.921	0.146	-0.2	1.0	-0.3	1.0	A-	
236	626556	4	3	234	.201	.312	.201	.274	.201	.013	.178	.032	.178	-.086	-.001	1.246	0.174	0.7	1.1	2.7	1.5	A-	
237	622990	4	4	234	.483	.081	.214	.483	.209	.013	.463	-.224	-.176	.463	-.123	-0.318	0.143	-1.6	0.9	-1.4	0.9	A-	
238	635941	4	4	232	.599	.134	.129	.599	.138	.000	.317	-.294	-.090	.317	-.073	-0.884	0.144	0.9	1.1	1.0	1.1	A+	A-
239	623122	4	3	232	.466	.289	.172	.466	.073	.000	.480	-.331	-.130	.480	-.154	-0.253	0.142	-2.1	0.9	-1.9	0.9	A-	A-
240	635472	4	4	232	.341	.185	.237	.237	.341	.000	.349	-.256	-.039	-.116	.349	0.354	0.148	0.0	1.0	1.1	1.1	A+	B+

Table B–5 (continued). Writing/English Composition Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
241	635411	4	4	232	.746	.078	.746	.086	.086	.004	.462	-.282	.462	-.222	-.207	-1.678	0.162	-0.9	0.9	-1.5	0.8	A-	A-
242	631025	4	4	232	.672	.073	.151	.672	.095	.009	.364	-.202	-.179	.364	-.152	-1.286	0.151	0.4	1.0	0.0	1.0	B+	A-
243	623132	4	3	232	.427	.358	.134	.078	.427	.004	.464	-.208	-.335	-.032	.464	-0.082	0.143	-1.5	0.9	-1.3	0.9	A+	A-
244	625490	4	4	232	.358	.233	.147	.254	.358	.009	.215	-.062	-.138	-.044	.215	0.244	0.147	2.3	1.1	2.5	1.2	A+	A+
245	623018	4	4	232	.422	.125	.267	.177	.422	.009	.235	-.163	-.065	-.065	.235	-0.074	0.143	2.8	1.2	2.0	1.2	A+	A-
246	628102	4	3	232	.466	.466	.147	.168	.207	.013	.338	.338	-.243	-.042	-.118	-0.281	0.142	1.0	1.1	1.0	1.1	A+	A+
247	625496	4	4	232	.535	.211	.535	.086	.155	.013	.428	-.207	.428	-.221	-.132	-0.608	0.143	-0.7	1.0	-0.5	1.0	A+	A-
248	635899	4	4	232	.578	.578	.129	.091	.185	.017	.446	.446	-.260	-.092	-.190	-0.817	0.144	-0.8	1.0	-1.1	0.9	B-	A+
249	622431	4	4	233	.657	.176	.125	.657	.034	.009	.480	-.340	-.182	.480	-.079	-1.246	0.150	-1.6	0.9	-1.3	0.9	A-	
250	633434	4	4	233	.794	.077	.039	.086	.794	.004	.406	-.260	-.166	-.150	.406	-2.054	0.174	-0.8	0.9	0.1	1.0	A+	
251	624284	4	4	233	.777	.064	.077	.077	.777	.004	.449	-.270	-.171	-.204	.449	-1.935	0.169	-1.3	0.9	-1.0	0.8	A-	
252	623026	4	3	233	.609	.155	.129	.609	.103	.004	.327	-.115	-.224	.327	-.073	-0.990	0.146	1.3	1.1	0.9	1.1	B-	
253	622993	4	4	233	.494	.416	.069	.494	.017	.004	.260	-.088	-.185	.260	-.148	-0.429	0.143	2.8	1.2	2.1	1.2	A-	
254	628103	4	3	233	.665	.150	.665	.120	.060	.004	.404	-.293	.404	-.050	-.206	-1.277	0.151	-0.2	1.0	-0.6	0.9	A-	
255	635356	4	4	233	.322	.159	.373	.322	.142	.004	.418	-.336	.010	.418	-.162	0.424	0.152	-0.8	0.9	-0.4	1.0	A+	
256	624846	4	3	233	.232	.189	.232	.331	.240	.009	.328	-.064	.328	-.090	-.101	0.979	0.168	-0.2	1.0	0.6	1.1	A+	
257	634144	4	4	233	.712	.215	.004	.060	.712	.009	.464	-.346	-.087	-.147	.464	-1.550	0.157	-1.1	0.9	-1.3	0.8	A-	
258	627071	4	4	233	.434	.163	.434	.236	.150	.017	.340	-.098	.340	-.162	-.109	-0.172	0.144	1.1	1.1	1.2	1.1	A+	
259	636551	4	4	233	.494	.155	.163	.494	.172	.017	.352	-.194	-.134	.352	-.070	-0.457	0.143	1.2	1.1	0.6	1.0	A-	
260	624796	4	4	233	.129	.296	.438	.133	.129	.004	.135	-.041	.042	-.075	.135	1.895	0.211	0.8	1.1	2.0	1.6	A+	
261	624810	4	4	233	.640	.060	.094	.640	.202	.004	.377	-.071	-.220	.377	-.195	-1.090	0.150	0.6	1.0	0.4	1.0	A-	
262	635574	4	4	233	.313	.262	.228	.313	.193	.004	.151	-.126	.022	.151	-.004	0.547	0.153	3.3	1.2	4.6	1.6	A-	
263	637140	4	3	233	.901	.026	.901	.056	.013	.004	.317	-.093	.317	-.205	-.101	-3.051	0.239	0.2	1.0	0.1	1.0	B-	
264	637145	4	3	233	.880	.073	.880	.022	.022	.004	.477	-.269	.477	-.221	-.218	-2.741	0.215	-0.9	0.9	-2.2	0.5	A-	
265	634033	4	4	233	.322	.090	.502	.322	.082	.004	.273	-.036	-.114	.273	-.142	0.500	0.152	1.8	1.1	2.0	1.2	B-	
266	636252	4	4	233	.897	.897	.034	.013	.052	.004	.440	.440	-.232	-.107	-.262	-2.940	0.230	-0.8	0.9	-1.7	0.6	A+	
267	639431	4	4	233	.571	.137	.185	.103	.571	.004	.495	-.210	-.296	-.118	.495	-0.740	0.145	-1.9	0.9	-1.6	0.9	A-	
268	624766	4	4	233	.575	.077	.228	.575	.116	.004	.450	-.218	-.132	.450	-.273	-0.740	0.145	-1.1	0.9	-1.1	0.9	A+	
269	635582	4	4	233	.442	.442	.403	.107	.043	.004	.386	.386	-.210	-.131	-.130	-0.113	0.144	0.1	1.0	1.3	1.1	A+	
270	623017	4	4	235	.740	.119	.038	.740	.102	.000	.462	-.176	-.200	.462	-.354	-1.547	0.163	-1.2	0.9	-1.6	0.8	A-	
271	625455	4	4	233	.640	.142	.052	.167	.640	.000	.365	-.143	-.304	-.157	.365	-0.968	0.148	0.6	1.0	0.6	1.1	A-	
272	622453	4	4	234	.756	.073	.064	.756	.098	.009	.474	-.240	-.221	.474	-.156	-1.718	0.165	-1.1	0.9	-1.4	0.8	A-	
273	623135	4	4	232	.263	.112	.263	.353	.263	.009	.111	-.146	-.088	.093	.111	0.757	0.158	2.6	1.2	2.7	1.4	A+	A-
274	632573	4	4	233	.451	.451	.210	.167	.159	.013	.174	.174	-.149	-.094	.109	-0.236	0.144	4.6	1.3	4.1	1.3	A-	
275	623020	4	4	233	.790	.082	.094	.026	.790	.009	.474	-.303	-.179	-.212	.474	-2.017	0.177	-1.1	0.9	-1.4	0.8	A+	

Table B–5 (continued). Writing/English Composition Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
276	633435	4	4	233	.687	.219	.047	.047	.687	.000	.361	-.162	-.263	-.210	.361	-1.215	0.152	0.3	1.0	-0.2	1.0	A-	
277	623108	4	4	232	.591	.134	.147	.121	.591	.009	.535	-.272	-.196	-.224	.535	-0.915	0.145	-3.2	0.8	-2.7	0.8	A-	A+
278	633468	4	4	235	.745	.745	.051	.081	.119	.004	.490	.490	-.239	-.214	-.303	-1.620	0.165	-1.2	0.9	-0.9	0.9	A-	
279	627696	4	4	233	.236	.219	.236	.451	.090	.004	.035	-.137	.035	.109	-.026	1.074	0.163	2.4	1.2	3.1	1.5	A-	
280	623115	4	4	233	.730	.116	.730	.099	.056	.000	.426	-.314	.426	-.170	-.166	-1.441	0.160	-0.4	1.0	-1.3	0.9	A-	
281	622983	4	4	234	.727	.727	.073	.171	.021	.009	.375	.375	-.190	-.153	-.135	-1.560	0.160	0.3	1.0	0.0	1.0	A-	
282	622454	4	4	232	.379	.052	.379	.405	.164	.000	.279	-.185	.279	-.213	.028	0.159	0.145	1.2	1.1	2.0	1.2	A-	A-
283	621395	4	4	233	.249	.159	.142	.249	.446	.004	.220	-.079	-.117	.220	-.010	0.871	0.164	1.0	1.1	2.5	1.4	A+	
284	632587	4	4	233	.442	.155	.202	.197	.442	.004	.547	-.202	-.258	-.185	.547	-0.113	0.144	-3.3	0.8	-3.1	0.8	A+	
285	623019	4	4	233	.803	.803	.099	.073	.026	.000	.319	.319	-.192	-.158	-.181	-1.897	0.174	0.0	1.0	-0.1	1.0	A-	
286	634025	4	4	232	.724	.177	.724	.035	.056	.009	.434	-.254	.434	-.150	-.179	-1.648	0.159	-0.5	1.0	-1.1	0.9	A-	A-
287	626922	4	4	235	.494	.204	.494	.204	.098	.000	.446	-.255	.446	-.189	-.148	-0.247	0.145	-0.1	1.0	0.3	1.0	A+	
288	633469	4	4	233	.627	.219	.627	.060	.090	.004	.525	-.251	.525	-.295	-.262	-0.914	0.148	-2.0	0.9	-2.3	0.8	B+	
289	628471	4	4	234	.124	.419	.321	.124	.124	.013	.049	.114	.109	-.228	.049	1.899	0.210	1.0	1.1	2.5	1.7	A+	
290	637149	5	4	218	.913	.000	.913	.009	.078	.000	.298	.000	.298	-.068	-.289	-2.668	0.247	-0.1	1.0	-1.1	0.7	A+	
291	633440	5	5	221	.629	.177	.100	.629	.081	.014	.410	-.168	-.162	.410	-.129	-0.769	0.149	-0.7	1.0	-1.3	0.9	A+	
292	635884	5	5	221	.846	.846	.041	.045	.063	.005	.499	.499	-.327	-.200	-.202	-2.250	0.202	-1.0	0.9	-1.6	0.7	B-	
293	637062	5	5	218	.390	.115	.330	.390	.161	.005	.197	-.132	.072	.197	-.176	0.252	0.150	3.0	1.2	2.5	1.2	A+	
294	623027	5	5	220	.750	.055	.050	.141	.750	.005	.553	-.298	-.261	-.299	.553	-1.459	0.167	-2.5	0.8	-2.6	0.7	A+	
295	622469	5	4	221	.439	.213	.122	.439	.213	.014	.393	-.024	-.176	.393	-.239	0.188	0.148	0.0	1.0	0.5	1.0	A-	
296	639843	5	5	222	.788	.788	.045	.032	.131	.005	.372	.372	-.268	-.252	-.135	-1.669	0.177	0.0	1.0	-0.2	1.0	A+	
297	635417	5	5	221	.448	.448	.199	.154	.186	.014	.347	.347	-.087	-.098	-.134	0.019	0.147	0.9	1.1	0.4	1.0	A+	
298	620819	5	5	220	.486	.118	.177	.209	.486	.009	.449	-.258	-.088	-.219	.449	-0.205	0.147	-0.9	1.0	-0.2	1.0	A-	A-
299	635605	5	5	221	.285	.240	.104	.285	.362	.009	.187	-.020	-.190	.187	.063	0.895	0.157	1.1	1.1	2.7	1.3	A+	
300	637148	5	4	221	.833	.014	.018	.127	.833	.009	.431	-.149	-.177	-.217	.431	-1.982	0.191	-0.7	0.9	-1.1	0.8	A-	
301	633439	5	5	221	.448	.281	.154	.109	.448	.009	.321	-.142	-.064	-.131	.321	0.002	0.146	1.1	1.1	0.9	1.1	A-	
302	620820	5	5	218	.537	.197	.151	.106	.537	.009	.429	-.272	-.123	-.086	.429	-0.453	0.148	-0.8	1.0	-0.9	0.9	A+	
303	626566	5	5	220	.764	.764	.041	.123	.068	.005	.490	.490	-.212	-.279	-.253	-1.545	0.170	-1.7	0.9	-1.6	0.8	A+	
304	623129	5	5	221	.819	.072	.068	.819	.032	.009	.513	-.261	-.292	.513	-.176	-1.865	0.187	-1.6	0.8	-2.2	0.6	C+	
305	629858	5	4	222	.383	.140	.153	.315	.383	.009	.307	-.260	-.178	.027	.307	0.441	0.148	0.5	1.0	0.5	1.0	A-	
306	639864	5	5	221	.765	.167	.765	.050	.009	.009	.464	-.273	.464	-.209	-.061	-1.617	0.171	-1.2	0.9	-1.1	0.8	A-	
307	627291	5	5	220	.555	.127	.241	.073	.555	.005	.429	-.198	-.218	-.175	.429	-0.534	0.148	-0.5	1.0	-0.4	1.0	C+	A+
308	639349	5	5	218	.541	.541	.257	.087	.106	.009	.513	.513	-.290	-.213	-.202	-0.257	0.148	-2.0	0.9	-2.2	0.9	A-	
309	626818	5	5	221	.371	.190	.371	.050	.380	.009	.362	-.238	.362	-.189	-.017	0.371	0.149	-0.3	1.0	0.3	1.0	A-	
310	627692	5	5	2867	.523	.135	.523	.197	.141	.004	.394	-.167	.394	-.184	-.142	-0.273	0.040	-1.1	1.0	-1.1	1.0	A+	A+

Table B–5 (continued). Writing/English Composition Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M /F	W /B
311	633441	5	5	2867	.346	.112	.346	.181	.357	.005	.329	-.076	.329	-.144	-.120	0.581	0.042	1.4	1.0	2.0	1.1	A-	A+
312	626569	5	5	2867	.354	.200	.354	.296	.145	.006	.239	-.174	.239	-.024	-.035	0.542	0.042	6.7	1.1	7.5	1.2	B-	A+
313	635887	5	5	2867	.474	.241	.110	.474	.169	.005	.356	-.089	-.198	.356	-.149	-0.041	0.040	1.1	1.0	1.5	1.0	A-	A+
314	626554	5	5	2867	.608	.129	.102	.155	.608	.006	.408	-.157	-.218	-.159	.408	-0.685	0.041	-1.8	1.0	-2.0	1.0	A+	A-
315	628059	5	5	2867	.595	.116	.595	.155	.127	.007	.351	-.155	.351	-.103	-.186	-0.621	0.041	1.7	1.0	2.6	1.1	A+	A-
316	635609	5	5	2867	.218	.431	.140	.218	.202	.008	.172	.079	-.127	.172	-.095	1.328	0.048	3.9	1.1	6.4	1.3	A-	A+
317	627072	5	4	2867	.637	.145	.092	.116	.637	.011	.425	-.227	-.210	-.108	.425	-0.841	0.042	-2.8	1.0	-2.3	0.9	A+	A-
318	623109	5	5	2867	.524	.137	.524	.203	.124	.011	.364	-.174	.364	-.109	-.151	-0.290	0.041	1.6	1.0	1.3	1.0	A+	A-
319	630296	5	5	2867	.479	.090	.218	.200	.479	.014	.370	-.165	-.109	-.157	.370	-0.082	0.041	1.1	1.0	0.9	1.0	A+	A-
320	625492	5	5	221	.525	.177	.149	.525	.149	.000	.361	-.110	-.233	.361	-.155	-0.226	0.146	-0.1	1.0	-0.2	1.0	B+	
321	626926	5	5	221	.620	.199	.620	.081	.091	.009	.198	-.018	-.198	-.204	-.054	-0.703	0.150	2.7	1.2	2.7	1.2	A+	
322	635607	5	4	221	.425	.213	.190	.425	.167	.005	.354	.056	-.256	.354	-.195	0.245	0.147	0.5	1.0	0.3	1.0	A+	
323	623121	5	5	221	.520	.045	.326	.095	.520	.014	.471	-.273	-.254	-.076	.471	-0.219	0.146	-2.2	0.9	-2.0	0.9	A+	
324	623140	5	5	221	.615	.167	.615	.167	.032	.018	.311	-.132	.311	-.125	-.107	-0.694	0.151	0.7	1.0	-0.1	1.0	A-	
325	624283	5	5	221	.833	.833	.081	.068	.018	.000	.459	.459	-.281	-.274	-.193	-2.089	0.193	-0.6	0.9	-1.6	0.7	A+	A-
326	635608	5	4	221	.362	.362	.226	.217	.195	.000	.346	.346	-.133	-.152	-.122	0.505	0.152	-0.6	1.0	-0.5	0.9	A-	A+
327	637154	5	5	221	.629	.086	.167	.629	.118	.000	.481	-.142	-.281	.481	-.272	-0.810	0.153	-2.0	0.9	-2.1	0.8	A+	A-
328	627772	5	5	221	.747	.050	.131	.747	.068	.005	.499	-.213	-.245	.499	-.320	-1.494	0.169	-1.2	0.9	-1.2	0.8	A-	B-
329	625513	5	5	221	.308	.136	.434	.308	.104	.018	.337	-.245	.002	.337	-.163	0.775	0.158	0.4	1.0	1.4	1.2	A-	A-
330	626573	5	5	221	.692	.167	.081	.692	.054	.005	.399	-.238	-.183	.399	-.097	-1.080	0.158	0.0	1.0	-0.3	1.0	A-	
331	638016	5	5	221	.597	.077	.100	.597	.222	.005	.511	-.236	-.222	.511	-.237	-0.586	0.149	-3.2	0.8	-3.0	0.8	A+	
332	632602	5	5	221	.353	.353	.177	.249	.213	.009	.262	.262	-.076	-.030	-.136	0.585	0.151	0.6	1.0	1.0	1.1	A+	
333	628021	5	5	221	.579	.122	.208	.579	.077	.014	.520	-.178	-.333	.520	-.108	-0.519	0.149	-2.4	0.9	-1.9	0.9	A-	
334	626563	5	5	221	.249	.249	.158	.167	.407	.018	.283	.283	-.070	-.098	-.039	1.178	0.167	0.3	1.0	0.5	1.1	A+	
335	626577	5	5	222	.523	.135	.270	.523	.068	.005	.365	-.143	-.197	.365	-.097	-0.257	0.145	-0.4	1.0	-0.7	1.0	A-	
336	637151	5	5	222	.342	.342	.203	.257	.189	.009	.276	.276	-.007	-.064	-.147	0.616	0.153	0.7	1.0	0.5	1.0	A-	
337	626564	5	3	222	.581	.581	.099	.126	.180	.014	.418	.418	-.042	-.181	-.236	-0.551	0.147	-0.1	1.0	0.2	1.0	A+	
338	624753	5	5	222	.464	.104	.248	.171	.464	.014	.392	-.180	-.119	-.101	.392	0.012	0.146	-0.9	1.0	-0.3	1.0	A-	
339	627009	5	5	222	.189	.302	.279	.189	.221	.009	.182	.040	.009	.182	-.154	1.551	0.184	0.7	1.1	1.6	1.3	A+	
340	623103	5	5	218	.775	.064	.096	.775	.064	.000	.334	-.306	-.129	.334	-.108	-1.455	0.172	-0.2	1.0	0.0	1.0	A+	
341	635439	5	5	218	.762	.762	.078	.028	.133	.000	.291	.291	-.225	-.170	-.105	-1.368	0.169	0.4	1.0	0.8	1.1	A+	
342	635604	5	5	218	.500	.243	.096	.500	.161	.000	.413	-.189	-.229	.413	-.158	-0.039	0.147	-0.3	1.0	-0.5	1.0	A+	
343	632605	5	5	218	.220	.188	.482	.110	.220	.000	.338	-.090	-.128	-.131	.338	1.442	0.174	0.2	1.0	-0.3	1.0	A-	
344	635606	5	5	218	.509	.106	.229	.156	.509	.000	.390	-.133	-.309	-.068	.390	-0.083	0.147	0.2	1.0	0.3	1.0	A+	
345	626565	5	3	218	.518	.161	.156	.518	.165	.000	.447	-.223	-.164	.447	-.221	-0.126	0.147	-0.8	1.0	-0.7	1.0	A+	

Table B–5 (continued). Writing/English Composition Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
346	627493	5	5	218	.610	.610	.147	.115	.128	.000	.482	.482	-.275	-.224	-.198	-0.568	0.150	-1.5	0.9	-1.8	0.9	B+	
347	622435	5	5	218	.518	.165	.174	.518	.142	.000	.501	-.133	-.201	.501	-.357	-0.104	0.147	-2.4	0.9	-2.3	0.9	A+	
348	627681	5	5	218	.445	.147	.445	.179	.225	.005	.423	-.219	.423	-.223	-.103	0.214	0.148	-0.4	1.0	-0.1	1.0	A-	
349	621388	5	5	218	.688	.119	.688	.078	.101	.014	.461	-.137	.461	-.251	-.294	-1.018	0.160	-1.2	0.9	-0.9	0.9	B+	
350	632518	5	4	218	.372	.124	.289	.372	.202	.014	.280	-.176	-.069	.280	-.082	0.563	0.152	1.8	1.1	2.1	1.2	B-	
351	635440	5	5	221	.584	.584	.054	.213	.140	.009	.295	.295	-.152	-.093	-.072	-0.539	0.146	1.1	1.1	1.2	1.1	B-	
352	628104	5	5	221	.742	.081	.081	.742	.086	.009	.461	-.220	-.158	.461	-.180	-1.361	0.164	-1.2	0.9	-1.7	0.8	A-	
353	623112	5	5	221	.810	.810	.068	.086	.027	.009	.496	.496	-.274	-.284	.012	-1.807	0.182	-1.4	0.9	-1.6	0.8	A-	
354	635610	5	5	221	.661	.077	.661	.154	.100	.009	.452	-.125	.452	-.264	-.125	-0.915	0.152	-1.5	0.9	-1.7	0.9	A-	
355	626817	5	5	221	.267	.407	.072	.244	.267	.009	.261	-.050	-.014	-.091	.261	0.996	0.160	0.5	1.0	0.6	1.1	A+	
356	623087	5	5	221	.706	.027	.059	.199	.706	.009	.520	-.243	-.166	-.276	.520	-1.154	0.157	-2.3	0.8	-2.5	0.8	A+	
357	632519	5	4	221	.796	.050	.796	.045	.100	.009	.428	-.140	.428	-.158	-.203	-1.710	0.177	-0.6	0.9	-1.5	0.8	A-	
358	622988	5	5	221	.226	.457	.199	.226	.109	.009	.238	.042	-.163	.238	-.024	1.240	0.169	0.4	1.0	1.0	1.1	A+	
359	623085	5	5	221	.208	.208	.195	.475	.113	.009	.094	.094	-.187	.229	-.096	1.358	0.173	1.6	1.2	2.3	1.4	A+	
360	632607	5	5	221	.520	.100	.158	.520	.213	.009	.340	-.134	-.068	.340	-.139	-0.244	0.144	0.3	1.0	0.2	1.0	A+	
361	635448	5	N/A	221	.195	.054	.195	.534	.213	.005	.095	-.226	.095	-.067	.176	1.408	0.179	1.2	1.1	2.7	1.5	A+	
362	639865	5	5	221	.348	.285	.190	.348	.167	.009	.093	.152	-.162	.093	-.079	0.497	0.151	3.3	1.2	3.3	1.3	A-	
363	624815	5	5	221	.796	.796	.050	.072	.072	.009	.468	.468	-.211	-.296	-.155	-1.874	0.183	-0.8	0.9	-1.2	0.8	A+	
364	632604	5	5	221	.887	.059	.018	.887	.027	.009	.468	-.226	-.173	.468	-.321	-2.727	0.237	-0.9	0.9	-1.2	0.7	B+	
365	623124	5	5	221	.760	.032	.760	.145	.059	.005	.437	-.207	.437	-.258	-.148	-1.598	0.171	-0.7	0.9	-0.5	0.9	B+	
366	620999	5	5	221	.548	.109	.104	.235	.548	.005	.346	-.061	-.200	-.159	.346	-0.461	0.146	0.8	1.0	0.8	1.1	A-	
367	628315	5	5	221	.634	.253	.036	.634	.072	.005	.545	-.396	-.328	.545	-.017	-0.882	0.151	-2.6	0.9	-2.7	0.8	B+	
368	627683	5	5	221	.679	.140	.679	.104	.072	.005	.521	-.258	.521	-.278	-.169	-1.119	0.156	-1.9	0.9	-2.0	0.8	A+	
369	630396	5	5	221	.317	.095	.317	.100	.480	.009	.070	-.162	.070	-.272	.257	0.647	0.154	3.6	1.2	3.9	1.4	A+	
370	627007	5	5	221	.670	.109	.131	.670	.081	.009	.592	-.301	-.256	.592	-.241	-1.082	0.156	-3.0	0.8	-3.1	0.7	A+	
371	623104	5	5	218	.491	.087	.184	.234	.491	.005	.390	-.083	-.200	-.167	.390	-0.209	0.147	-0.8	1.0	-0.5	1.0	A-	
372	625535	5	5	218	.381	.239	.381	.161	.211	.009	.335	-.103	.335	-.080	-.133	0.294	0.150	0.4	1.0	1.6	1.2	A+	
373	626815	5	5	218	.922	.922	.032	.023	.018	.005	.423	.423	-.221	-.198	-.158	-3.210	0.278	-0.2	0.9	-1.1	0.6	A+	
374	639866	5	N/A	218	.174	.147	.115	.174	.555	.009	.036	-.204	-.063	.036	.202	1.497	0.187	1.5	1.2	3.3	1.8	B+	
375	630408	5	5	218	.826	.826	.151	.000	.018	.005	.475	.475	-.373	.000	-.171	-2.117	0.193	-0.7	0.9	-0.9	0.8	B+	
376	628023	5	5	218	.849	.055	.849	.046	.041	.009	.517	-.215	.517	-.329	-.161	-2.344	0.208	-1.0	0.9	-1.8	0.7	A-	
377	637139	5	5	218	.362	.156	.280	.188	.362	.014	.377	-.117	-.197	-.024	.377	0.380	0.152	-0.4	1.0	0.0	1.0	A+	
378	628063	5	5	218	.844	.844	.028	.055	.055	.018	.499	.499	-.017	-.345	-.214	-2.360	0.210	-0.7	0.9	-0.9	0.8	A+	
379	624819	5	5	218	.688	.142	.106	.688	.051	.014	.505	-.200	-.259	.505	-.200	-1.239	0.160	-1.4	0.9	-1.6	0.8	B-	
380	621000	5	5	218	.560	.073	.560	.248	.101	.018	.512	-.115	.512	-.248	-.245	-0.584	0.150	-2.2	0.9	-2.1	0.9	A-	

Table B–5 (continued). Writing/English Composition Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
381	620818	5	5	220	.832	.036	.832	.050	.082	.000	.449	-.210	.449	-.291	-.238	-2.001	0.189	-1.3	0.9	-1.9	0.7	A-	
382	628105	5	5	220	.932	.014	.018	.932	.036	.000	.188	-.173	-.077	.188	-.090	-3.100	0.273	0.1	1.0	0.4	1.1	A+	
383	626985	5	5	220	.632	.086	.136	.632	.146	.000	.405	-.115	-.238	.405	-.230	-0.796	0.150	-0.8	1.0	-0.7	0.9	A-	
384	626558	5	3	220	.505	.068	.314	.505	.105	.009	.344	-.116	-.177	.344	-.162	-0.207	0.146	1.0	1.1	0.9	1.1	A+	
385	637172	5	5	220	.718	.132	.055	.091	.718	.005	.458	-.174	-.239	-.284	.458	-1.270	0.161	-1.2	0.9	-1.6	0.8	A+	
386	628308	5	5	220	.468	.136	.314	.077	.468	.005	.394	-.237	-.118	-.186	.394	-0.023	0.146	0.0	1.0	-0.1	1.0	A+	
387	626812	5	3	220	.759	.759	.068	.064	.105	.005	.391	.391	-.282	-.155	-.153	-1.516	0.169	-0.3	1.0	-0.8	0.9	A+	
388	635944	5	5	220	.482	.482	.159	.227	.127	.005	.409	.409	-.176	-.090	-.274	-0.088	0.146	-0.3	1.0	-0.5	1.0	A+	
389	626544	5	5	220	.705	.705	.114	.073	.105	.005	.452	.452	-.269	-.223	-.170	-1.193	0.159	-1.4	0.9	-0.4	0.9	A-	
390	639867	5	5	220	.273	.250	.186	.273	.277	.014	.117	-.053	-.043	.117	-.026	0.948	0.163	2.9	1.2	3.1	1.4	A-	
391	622432	5	5	221	.765	.765	.109	.095	.032	.000	.359	.359	-.139	-.308	-.106	-1.459	0.168	-0.1	1.0	-0.6	0.9	B+	
392	633848	5	5	221	.552	.244	.552	.158	.045	.000	.271	-.215	.271	-.082	-.061	-0.337	0.146	2.5	1.1	1.6	1.1	A-	
393	639366	5	5	221	.873	.027	.068	.032	.873	.000	.312	-.230	-.137	-.183	.312	-2.297	0.211	-0.2	1.0	-0.7	0.8	A+	
394	626999	5	5	221	.683	.118	.683	.095	.104	.000	.330	-.253	.330	-.109	-.131	-0.990	0.155	0.3	1.0	0.7	1.1	A+	
395	628120	5	4	221	.281	.172	.281	.262	.276	.009	.315	-.116	.315	-.068	-.113	1.013	0.162	0.5	1.0	1.9	1.2	A-	
396	630721	5	5	221	.493	.113	.303	.493	.081	.009	.436	-.215	-.236	.436	-.056	-0.066	0.146	-0.8	1.0	-0.5	1.0	A-	
397	623128	5	5	221	.692	.045	.100	.154	.692	.009	.530	-.135	-.334	-.252	.530	-1.055	0.157	-2.4	0.8	-2.5	0.7	A-	
398	623131	5	5	221	.552	.158	.027	.253	.552	.009	.538	-.318	-.142	-.235	.538	-0.346	0.147	-3.3	0.8	-1.9	0.9	B+	
399	627494	5	5	221	.529	.113	.529	.145	.208	.005	.457	-.111	.457	-.264	-.204	-0.232	0.146	-1.3	0.9	-1.3	0.9	A+	
400	624817	5	5	221	.294	.113	.154	.294	.430	.009	.309	-.133	-.141	.309	-.045	0.941	0.160	1.2	1.1	0.7	1.1	B-	
401	625498	5	4	221	.534	.262	.140	.534	.050	.014	.451	-.197	-.244	.451	-.127	-0.273	0.147	-1.2	0.9	-1.1	0.9	A-	
402	623102	5	5	222	.905	.036	.045	.014	.905	.000	.407	-.336	-.237	-.066	.407	-2.733	0.246	-0.5	0.9	-1.0	0.7	A+	
403	635436	5	5	222	.635	.081	.635	.090	.194	.000	.340	-.222	.340	-.177	-.133	-0.763	0.150	0.4	1.0	0.4	1.0	A+	
404	635441	5	5	222	.721	.721	.036	.149	.095	.000	.384	.384	-.163	-.212	-.226	-1.220	0.160	-0.1	1.0	-0.4	1.0	A-	
405	627046	5	5	222	.698	.144	.104	.698	.054	.000	.424	-.142	-.328	.424	-.198	-1.094	0.157	-0.6	1.0	-0.9	0.9	B+	
406	628967	5	5	222	.703	.167	.703	.045	.086	.000	.469	-.286	.469	-.200	-.237	-1.118	0.158	-1.3	0.9	-1.6	0.8	A+	
407	637150	5	N/A	222	.158	.045	.401	.392	.158	.005	.063	-.091	-.018	.009	.063	1.807	0.194	0.8	1.1	1.8	1.4	A+	
408	624764	5	5	222	.342	.086	.342	.293	.270	.009	.144	-.167	.144	.016	-.014	0.628	0.151	2.9	1.2	2.6	1.2	A+	
409	624768	5	5	222	.617	.230	.617	.050	.095	.009	.383	-.167	.383	-.070	-.267	-0.687	0.149	-0.1	1.0	0.1	1.0	A-	
410	628470	5	5	222	.653	.113	.144	.068	.653	.023	.555	-.231	-.239	-.311	.555	-0.894	0.153	-3.3	0.8	-3.0	0.8	A-	
411	624839	5	5	222	.491	.072	.491	.176	.243	.018	.538	-.232	.538	-.280	-.194	-0.119	0.145	-3.4	0.8	-3.0	0.8	A+	
412	627073	5	4	222	.667	.108	.131	.667	.081	.014	.443	-.203	-.274	.443	-.182	-0.983	0.155	-0.9	0.9	-1.2	0.9	A+	
413	623110	5	5	221	.692	.104	.068	.692	.127	.009	.496	-.232	-.172	.496	-.213	-1.186	0.158	-1.8	0.9	-1.6	0.8	A-	
414	635437	5	5	221	.846	.036	.846	.059	.050	.009	.375	-.131	.375	-.188	-.104	-2.227	0.199	-0.2	1.0	-0.2	1.0	B+	
415	637173	5	3	221	.747	.086	.122	.036	.747	.009	.374	-.170	-.161	-.098	.374	-1.503	0.167	0.2	1.0	-0.5	0.9	A-	

Table B–5 (continued). Writing/English Composition Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
416	627358	5	5	221	.507	.262	.507	.163	.059	.009	.348	-.109	.348	-.102	-.189	-0.257	0.146	0.9	1.1	0.5	1.0	A-	
417	622438	5	5	221	.774	.036	.068	.113	.774	.009	.399	-.236	-.243	-.057	.399	-1.677	0.173	-0.5	1.0	0.6	1.1	A+	
418	623117	5	5	221	.593	.023	.136	.593	.240	.009	.428	-.197	-.253	.428	-.118	-0.671	0.149	-0.8	1.0	-0.5	1.0	B-	
419	637152	5	4	221	.656	.656	.045	.222	.068	.009	.440	.440	-.246	-.171	-.171	-0.991	0.153	-0.8	1.0	-0.8	0.9	A+	
420	625489	5	5	221	.253	.434	.100	.204	.253	.009	.211	.094	-.176	-.104	.211	1.037	0.165	1.3	1.1	1.9	1.3	C+	
421	639863	5	5	221	.652	.652	.154	.072	.109	.014	.544	.544	-.255	-.299	-.129	-0.979	0.154	-2.7	0.8	-2.5	0.8	A-	
422	628057	5	5	221	.724	.118	.724	.077	.068	.014	.484	-.196	.484	-.118	-.288	-1.382	0.163	-1.3	0.9	-1.6	0.8	A-	
423	633436	5	5	221	.548	.018	.548	.181	.240	.014	.392	-.006	.392	-.184	-.174	-0.459	0.147	0.3	1.0	-0.3	1.0	A+	
424	635940	5	5	220	.455	.455	.318	.136	.091	.000	.363	.363	-.258	-.168	-.011	-0.044	0.148	1.1	1.1	0.6	1.0	A-	C-
425	627364	5	5	220	.623	.255	.050	.623	.073	.000	.373	-.316	-.161	.373	-.031	-0.857	0.151	0.3	1.0	0.0	1.0	A+	B+
426	637174	5	3	220	.586	.123	.091	.200	.586	.000	.496	-.298	-.210	-.216	.496	-0.677	0.149	-2.0	0.9	-2.2	0.8	A+	A-
427	628251	5	5	220	.486	.177	.214	.486	.123	.000	.340	-.203	-.175	.340	-.064	-0.196	0.147	1.4	1.1	1.3	1.1	A-	A+
428	624805	5	5	220	.955	.014	.955	.014	.018	.000	.239	-.205	.239	-.174	-.044	-3.780	0.346	0.1	1.0	-0.4	0.8	A+	A-
429	622439	5	5	220	.736	.086	.068	.109	.736	.000	.494	-.192	-.274	-.304	.494	-1.475	0.164	-1.8	0.9	-2.1	0.7	A-	B-
430	637153	5	4	220	.718	.064	.718	.091	.123	.005	.418	-.206	.418	-.152	-.261	-1.387	0.162	-0.6	1.0	-0.6	0.9	A-	A+
431	625547	5	5	220	.391	.146	.064	.396	.391	.005	.335	-.258	-.226	-.019	.335	0.284	0.151	0.8	1.1	0.9	1.1	A+	A-
432	621001	5	5	220	.491	.196	.491	.100	.209	.005	.489	-.238	.489	-.130	-.252	-0.205	0.147	-2.0	0.9	-1.9	0.9	A+	A-
433	639842	5	5	220	.596	.168	.596	.150	.077	.009	.343	-.118	.343	-.233	-.104	-0.743	0.150	1.1	1.1	1.3	1.1	A+	A+
434	633437	5	5	220	.705	.068	.114	.705	.105	.009	.434	-.231	-.255	.434	-.149	-1.323	0.161	-0.6	1.0	-0.9	0.9	A+	A+
435	623105	5	5	221	.290	.190	.100	.416	.290	.005	.289	-.193	-.246	.087	.289	0.820	0.158	0.1	1.0	0.0	1.0	A+	
436	626927	5	5	218	.569	.165	.133	.569	.128	.005	.453	-.168	-.164	.453	-.247	-0.602	0.149	-1.2	0.9	-0.8	0.9	A+	
437	632608	5	5	220	.750	.091	.750	.077	.082	.000	.490	-.288	.490	-.241	-.237	-1.439	0.166	-2.0	0.8	-1.9	0.8	A-	
438	625460	5	5	221	.742	.742	.104	.068	.081	.005	.440	.440	-.187	-.250	-.202	-1.326	0.164	-1.1	0.9	-1.1	0.9	A+	
439	626923	5	5	222	.554	.225	.185	.554	.036	.000	.337	-.133	-.178	.337	-.229	-0.371	0.145	0.7	1.0	1.0	1.1	A-	
440	628065	5	4	221	.335	.262	.335	.158	.235	.009	.435	-.182	.435	-.146	-.066	0.583	0.153	-1.5	0.9	-0.4	1.0	A+	
441	633443	5	5	220	.755	.755	.123	.091	.027	.005	.367	.367	-.181	-.238	-.134	-1.579	0.168	-0.1	1.0	-0.7	0.9	A-	A-
442	621390	5	N/A	218	.106	.395	.106	.307	.184	.009	-.082	.227	-.082	.024	-.231	2.462	0.233	1.3	1.2	2.8	1.9	A-	
443	626820	5	5	221	.697	.045	.140	.109	.697	.009	.550	-.202	-.281	-.210	.550	-1.105	0.156	-2.9	0.8	-3.0	0.7	B+	
444	624842	5	5	218	.537	.197	.133	.537	.119	.014	.450	-.134	-.115	.450	-.281	-0.463	0.148	-1.0	1.0	-1.1	0.9	A-	
445	624800	5	5	218	.307	.083	.307	.495	.110	.005	.237	-.039	.237	-.056	-.150	0.674	0.157	1.6	1.1	1.1	1.1	A-	
446	627413	5	5	220	.286	.491	.155	.286	.068	.000	.433	-.209	-.113	.433	-.199	0.904	0.160	-0.9	0.9	-0.7	0.9	A+	
447	630403	5	5	221	.516	.516	.186	.177	.118	.005	.358	.358	-.223	-.037	-.228	-0.173	0.146	0.7	1.0	0.8	1.1	A-	
448	624804	5	5	222	.676	.126	.162	.036	.676	.000	.509	-.371	-.147	-.327	.509	-0.972	0.154	-2.0	0.9	-1.6	0.9	A-	
449	626570	5	5	221	.312	.235	.339	.104	.312	.009	.381	-.116	-.050	-.195	.381	0.703	0.156	-0.6	1.0	0.1	1.0	A+	
450	624773	5	4	220	.500	.500	.114	.196	.186	.005	.403	.403	-.164	-.173	-.186	-0.271	0.147	0.2	1.0	0.0	1.0	A-	A+

Table B–5 (continued). Writing/English Composition Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
451	633442	5	5	218	.748	.748	.083	.138	.032	.000	.326	.326	-.243	-.131	-.168	-1.311	0.167	0.3	1.0	0.4	1.1	A-	
452	629854	5	5	221	.326	.199	.326	.204	.262	.009	.185	.009	.185	-.161	.051	0.679	0.152	2.0	1.1	2.0	1.2	B+	
453	623060	5	5	221	.778	.118	.063	.778	.032	.009	.511	-.225	-.276	.511	-.231	-1.738	0.177	-1.2	0.9	-1.7	0.8	B+	
454	627488	5	5	220	.396	.241	.396	.086	.273	.005	.375	-.146	.375	-.181	-.133	0.326	0.149	-0.3	1.0	1.8	1.2	A+	
455	624292	6	6	304	.599	.161	.599	.099	.135	.007	.232	-.066	.232	-.106	-.113	-0.485	0.126	2.7	1.1	2.6	1.2	A-	A-
456	626934	6	6	303	.630	.129	.076	.630	.162	.003	.384	-.233	-.277	.384	-.043	-0.580	0.129	0.3	1.0	0.1	1.0	A-	B+
457	627013	6	4	304	.915	.053	.020	.013	.915	.000	.459	-.287	-.305	-.191	.459	-2.724	0.220	-0.9	0.9	-1.9	0.5	A+	A-
458	632646	6	6	305	.446	.157	.292	.446	.102	.003	.342	-.237	-.096	.342	-.118	0.370	0.125	1.1	1.1	0.8	1.1	A+	A+
459	624829	6	6	304	.454	.109	.227	.211	.454	.000	.086	-.016	.008	-.100	.086	0.303	0.123	5.0	1.2	5.6	1.3	A-	
460	630378	6	6	304	.734	.095	.092	.066	.734	.013	.486	-.149	-.243	-.316	.486	-1.231	0.140	-2.3	0.9	-1.9	0.8	A-	A-
461	624297	6	6	303	.693	.693	.102	.106	.092	.007	.321	.321	-.200	-.031	-.166	-0.916	0.135	1.1	1.1	0.9	1.1	A+	A-
462	635654	6	6	304	.658	.109	.658	.125	.099	.010	.474	-.315	.474	-.165	-.200	-0.728	0.133	-1.5	0.9	-1.4	0.9	A+	C-
463	639363	6	6	305	.341	.315	.226	.112	.341	.007	.330	-.193	.063	-.279	.330	0.876	0.130	0.4	1.0	1.7	1.2	A-	A-
464	633448	6	6	304	.599	.095	.599	.201	.076	.030	.386	-.212	.386	-.126	-.110	-0.438	0.127	-0.2	1.0	-0.6	1.0	B+	
465	623114	6	6	303	.673	.112	.673	.145	.063	.007	.401	-.179	.401	-.195	-.158	-0.809	0.133	-0.1	1.0	-0.5	1.0	A+	B-
466	626932	6	6	304	.852	.852	.046	.030	.072	.000	.486	.486	-.329	-.216	-.259	-1.975	0.172	-1.3	0.9	-2.7	0.6	A-	B-
467	635660	6	4	305	.390	.180	.390	.148	.282	.000	.284	-.074	.284	-.062	-.196	0.643	0.127	1.6	1.1	2.7	1.2	A-	A-
468	626822	6	6	304	.816	.072	.059	.053	.816	.000	.478	-.282	-.290	-.195	.478	-1.583	0.155	-1.9	0.8	-2.4	0.7	A-	
469	625478	6	6	304	.546	.109	.546	.217	.115	.013	.315	-.145	.315	-.167	-.067	-0.253	0.125	1.3	1.1	2.3	1.1	B+	B+
470	626776	6	6	303	.406	.112	.112	.406	.363	.007	.390	-.075	-.245	.390	-.126	0.499	0.126	-0.3	1.0	-0.2	1.0	A+	A-
471	624296	6	6	304	.895	.895	.033	.033	.033	.007	.474	.474	-.258	-.249	-.259	-2.537	0.206	-1.0	0.9	-1.9	0.6	A+	A+
472	628055	6	6	305	.433	.036	.479	.433	.049	.003	.327	-.328	-.109	.327	-.221	0.422	0.125	1.2	1.1	1.3	1.1	A+	B-
473	627289	6	6	304	.559	.095	.234	.089	.559	.023	.492	-.083	-.216	-.296	.492	-0.229	0.125	-2.8	0.9	-2.7	0.9	A+	
474	633444	6	6	304	.671	.122	.671	.118	.066	.023	.546	-.293	.546	-.245	-.220	-0.923	0.134	-3.3	0.8	-3.1	0.7	A-	A-
475	639351	6	6	2733	.449	.374	.105	.070	.449	.003	.269	-.042	-.158	-.220	.269	0.315	0.042	6.5	1.1	5.9	1.1	A+	A+
476	633449	6	6	2733	.587	.071	.199	.587	.140	.003	.367	-.165	-.181	.367	-.165	-0.343	0.042	0.5	1.0	0.2	1.0	A+	A-
477	639377	6	6	2733	.667	.109	.667	.085	.136	.002	.482	-.201	.482	-.290	-.217	-0.743	0.044	-6.0	0.9	-6.2	0.8	A-	A-
478	628472	6	6	2733	.408	.202	.203	.183	.408	.003	.381	-.170	-.145	-.127	.381	0.511	0.042	-0.8	1.0	-0.5	1.0	A+	A-
479	639389	6	6	2733	.435	.435	.248	.103	.208	.006	.425	.425	-.129	-.269	-.140	0.379	0.042	-3.8	1.0	-3.0	0.9	A-	A-
480	624831	6	6	2733	.422	.206	.219	.422	.146	.007	.179	.009	-.102	.179	-.088	0.434	0.042	9.9	1.2	9.9	1.3	A-	A+
481	624761	6	6	2733	.733	.733	.062	.062	.136	.008	.459	.459	-.243	-.280	-.167	-1.122	0.047	-4.2	0.9	-3.9	0.9	A+	A+
482	626546	6	4	2733	.437	.437	.154	.116	.283	.011	.324	.324	-.181	-.166	-.044	0.357	0.042	3.8	1.1	3.4	1.1	A+	A-
483	639362	6	6	2733	.506	.283	.126	.506	.070	.015	.374	-.085	-.275	.374	-.134	0.018	0.042	0.2	1.0	0.8	1.0	A-	A+
484	625483	6	6	2733	.247	.054	.143	.540	.247	.015	.184	-.169	-.110	.045	.184	1.356	0.047	4.6	1.1	7.8	1.3	A+	A+
485	639406	6	6	303	.835	.026	.835	.020	.116	.003	.363	-.128	.363	-.108	-.256	-1.840	0.164	-0.4	1.0	-1.2	0.8	A-	A-

Table B–5 (continued). Writing/English Composition Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
486	624288	6	6	303	.726	.726	.178	.073	.017	.007	.386	.386	-.187	-.239	-.069	-1.122	0.139	-0.4	1.0	0.2	1.0	A-	A-
487	639397	6	6	303	.716	.106	.716	.139	.033	.007	.374	-.138	.374	-.238	-.080	-1.065	0.137	-0.5	1.0	-0.5	1.0	A+	A-
488	624808	6	6	303	.568	.568	.112	.109	.205	.007	.447	.447	-.223	-.166	-.172	-0.297	0.126	-1.7	0.9	-1.7	0.9	A+	A+
489	623057	6	6	303	.588	.132	.139	.588	.135	.007	.483	-.101	-.327	.483	-.178	-0.393	0.127	-2.1	0.9	-2.0	0.9	A+	A+
490	639400	6	6	303	.488	.488	.238	.172	.096	.007	.376	.376	-.017	-.318	-.105	0.081	0.125	-0.1	1.0	0.2	1.0	B-	A-
491	635611	6	6	303	.340	.046	.485	.340	.122	.007	.431	-.182	-.144	.431	-.196	0.812	0.131	-1.1	0.9	-1.0	0.9	B-	B-
492	639347	6	6	303	.581	.139	.116	.158	.581	.007	.482	-.219	-.216	-.173	.482	-0.361	0.126	-1.6	0.9	-1.4	0.9	A+	A-
493	622437	6	6	303	.531	.201	.149	.531	.112	.007	.382	-.172	-.178	.382	-.090	-0.123	0.125	0.3	1.0	0.0	1.0	A+	A-
494	627682	6	6	303	.442	.152	.248	.149	.442	.010	.373	-.155	-.159	-.073	.373	0.299	0.126	-0.1	1.0	0.1	1.0	A+	C-
495	632949	6	6	303	.310	.320	.310	.244	.116	.010	.276	.096	.276	-.215	-.140	0.969	0.134	1.2	1.1	1.7	1.2	A-	A+
496	639436	6	3	303	.396	.360	.396	.096	.139	.010	.153	-.001	.153	-.217	.072	0.524	0.128	4.3	1.2	3.2	1.2	A+	A-
497	639880	6	6	303	.660	.096	.188	.040	.660	.017	.531	-.308	-.191	-.236	.531	-0.785	0.132	-2.8	0.9	-2.2	0.8	A+	A+
498	621385	6	6	303	.333	.102	.333	.452	.092	.020	.387	-.228	.387	-.030	-.221	0.824	0.132	-0.9	1.0	-0.8	0.9	A+	A+
499	639877	6	6	608	.382	.160	.382	.133	.313	.013	.389	-.219	.389	-.211	-.030	0.626	0.091	-0.9	1.0	1.1	1.1	A+	A-
500	620814	6	6	304	.602	.076	.072	.250	.602	.000	.414	-.072	-.206	-.301	.414	-0.423	0.127	-1.3	0.9	-0.7	1.0	A-	
501	629914	6	6	304	.704	.197	.704	.059	.036	.003	.290	-.097	.290	-.256	-.142	-0.929	0.135	0.6	1.0	0.5	1.1	A-	
502	632647	6	6	304	.753	.010	.158	.753	.079	.000	.290	-.108	-.136	.290	-.241	-1.204	0.142	-0.2	1.0	-0.1	1.0	A-	
503	639369	6	6	304	.750	.089	.059	.102	.750	.000	.433	-.158	-.229	-.293	.433	-1.225	0.143	-1.3	0.9	0.0	1.0	A+	
504	624802	6	6	304	.701	.095	.161	.043	.701	.000	.387	-.184	-.192	-.259	.387	-0.917	0.135	-0.5	1.0	-0.5	1.0	A+	
505	639401	6	N/A	304	.030	.411	.030	.533	.026	.000	.027	-.142	.027	.169	-.120	4.390	0.417	0.3	1.1	0.1	1.0	A-	
506	639352	6	6	304	.556	.138	.099	.556	.207	.000	.516	-.247	-.276	.516	-.220	-0.200	0.125	-3.5	0.9	-3.0	0.8	A-	
507	624837	6	3	304	.543	.543	.240	.151	.063	.003	.350	.350	-.158	-.217	-.093	-0.114	0.125	-0.3	1.0	-0.6	1.0	A+	
508	624813	6	6	304	.516	.178	.099	.204	.516	.003	.451	-.220	-.260	-.141	.451	-0.020	0.124	-1.3	1.0	-1.2	0.9	A+	
509	623089	6	6	304	.540	.385	.540	.013	.059	.003	.287	-.167	.287	-.138	-.167	-0.098	0.125	1.8	1.1	0.7	1.0	B-	
510	627059	6	N/A	304	.263	.444	.132	.155	.263	.007	.080	.132	-.176	-.076	.080	1.282	0.140	3.0	1.2	3.8	1.5	A-	
511	639437	6	3	304	.576	.576	.174	.072	.174	.003	.275	.275	-.106	-.183	-.110	-0.303	0.126	1.6	1.1	2.0	1.1	A-	
512	624844	6	6	304	.530	.086	.191	.188	.530	.007	.517	-.165	-.306	-.212	.517	-0.090	0.125	-3.3	0.9	-3.2	0.8	B+	
513	621387	6	6	304	.339	.191	.339	.211	.253	.007	.246	-.011	.246	-.238	-.012	0.839	0.131	2.1	1.1	2.1	1.2	A-	
514	639878	6	6	608	.273	.273	.239	.275	.194	.020	.391	.391	-.112	-.099	-.137	1.184	0.097	-1.6	0.9	-0.5	1.0	A+	A+
515	623096	6	6	303	.815	.815	.050	.099	.036	.000	.282	.282	-.095	-.178	-.191	-1.516	0.156	0.3	1.0	0.0	1.0	B+	A+
516	635398	6	6	303	.822	.036	.033	.822	.109	.000	.415	-.191	-.194	.415	-.283	-1.566	0.158	-1.1	0.9	-1.7	0.8	A+	A+
517	639354	6	6	303	.488	.142	.488	.132	.238	.000	.346	-.104	.346	-.240	-.130	0.252	0.124	0.7	1.0	1.1	1.1	A-	B-
518	639379	6	6	303	.551	.254	.551	.109	.076	.010	.498	-.230	.498	-.252	-.232	-0.064	0.126	-2.8	0.9	-2.3	0.9	A-	A-
519	625536	6	6	303	.703	.030	.195	.703	.069	.003	.501	-.193	-.254	.501	-.378	-0.822	0.135	-2.6	0.9	-2.5	0.8	A-	A-
520	639405	6	6	303	.201	.165	.558	.201	.076	.000	.292	.023	-.202	.292	-.096	1.813	0.153	0.4	1.0	1.1	1.2	A+	B-

Table B–5 (continued). Writing/English Composition Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
521	635455	6	N/A	303	.525	.086	.122	.267	.525	.000	.329	-.174	-.221	-.098	.329	0.080	0.125	1.0	1.0	0.8	1.1	A+	A-
522	625485	6	3	303	.343	.472	.119	.343	.066	.000	.110	.038	-.158	.110	-.081	0.963	0.131	3.9	1.2	4.1	1.4	A-	A-
523	625464	6	6	303	.429	.102	.330	.139	.429	.000	.423	-.255	-.127	-.210	.423	0.534	0.126	-1.2	0.9	-0.9	0.9	A-	B-
524	622984	6	6	303	.845	.053	.845	.063	.036	.003	.428	-.279	.428	-.194	-.227	-1.776	0.168	-1.1	0.9	-1.3	0.8	A-	A+
525	627780	6	6	303	.469	.172	.469	.198	.152	.010	.396	-.182	.396	-.126	-.213	0.317	0.125	-0.2	1.0	-0.1	1.0	A-	A+
526	639444	6	3	303	.356	.356	.076	.248	.310	.010	.272	.272	-.184	-.223	.049	0.872	0.130	1.8	1.1	2.0	1.2	A-	A-
527	627010	6	6	303	.720	.083	.720	.152	.033	.013	.489	-.296	.489	-.288	-.143	-0.961	0.139	-1.6	0.9	-2.1	0.8	A+	A-
528	635652	6	6	303	.654	.654	.231	.050	.053	.013	.497	.497	-.321	-.208	-.209	-0.595	0.131	-2.2	0.9	-2.1	0.8	A-	A+
529	639879	6	6	303	.452	.267	.211	.056	.452	.013	.433	-.134	-.230	-.230	.433	0.392	0.126	-1.1	1.0	-1.0	0.9	A+	A-
530	625531	6	6	303	.729	.086	.066	.729	.119	.000	.497	-.274	-.204	.497	-.288	-1.089	0.137	-1.7	0.9	-2.2	0.8	A+	
531	639346	6	N/A	303	.116	.116	.317	.515	.050	.003	.037	.037	-.028	.093	-.218	2.402	0.191	0.9	1.1	1.1	1.2	A+	
532	627356	6	6	303	.333	.347	.175	.145	.333	.000	.380	-.190	-.156	-.083	.380	0.838	0.130	-1.2	0.9	-1.2	0.9	B-	
533	639386	6	6	303	.710	.086	.073	.710	.129	.003	.412	-.294	-.231	.412	-.125	-0.991	0.135	-0.7	1.0	-1.1	0.9	A+	
534	626924	6	6	303	.363	.152	.363	.320	.162	.003	.272	-.109	.272	-.045	-.159	0.704	0.128	0.6	1.0	1.4	1.1	A-	
535	639417	6	6	303	.330	.026	.439	.201	.330	.003	.309	-.132	-.027	-.246	.309	0.854	0.130	0.2	1.0	0.6	1.1	A+	
536	625467	6	6	303	.875	.030	.875	.036	.053	.007	.438	-.162	.438	-.243	-.219	-2.193	0.187	-0.4	0.9	-1.4	0.7	A-	
537	623086	6	6	303	.512	.066	.145	.271	.512	.007	.372	-.097	-.240	-.122	.372	-0.013	0.123	-0.1	1.0	0.0	1.0	A+	
538	626553	6	6	303	.307	.241	.228	.307	.218	.007	.237	-.024	-.160	.237	-.021	0.975	0.133	1.3	1.1	2.1	1.2	A-	
539	625497	6	4	303	.297	.188	.119	.389	.297	.007	.299	-.201	-.151	.028	.299	1.028	0.134	0.3	1.0	0.4	1.0	A+	
540	634135	6	6	303	.446	.079	.238	.231	.446	.007	.394	-.244	-.059	-.194	.394	0.292	0.124	-0.8	1.0	-0.8	1.0	A+	
541	623130	6	6	303	.644	.109	.109	.132	.644	.007	.528	-.192	-.211	-.308	.528	-0.640	0.128	-3.3	0.9	-3.3	0.8	A+	
542	629823	6	6	303	.406	.254	.406	.152	.178	.010	.329	-.124	.329	-.249	.018	0.471	0.125	0.4	1.0	0.2	1.0	C+	
543	635658	6	6	303	.211	.317	.224	.211	.241	.007	.138	.092	-.136	.138	-.045	1.566	0.149	1.3	1.1	1.9	1.2	A+	
544	623123	6	6	303	.323	.132	.271	.323	.264	.010	.202	-.122	.094	.202	-.156	0.900	0.131	1.6	1.1	1.7	1.1	A+	
545	635397	6	6	304	.625	.128	.135	.625	.112	.000	.398	-.194	-.244	.398	-.141	-0.603	0.128	-0.5	1.0	-0.8	0.9	A-	A-
546	639367	6	6	304	.766	.069	.766	.053	.109	.003	.316	-.122	.316	-.244	-.098	-1.383	0.144	0.2	1.0	0.2	1.0	A-	A-
547	639348	6	N/A	304	.115	.401	.115	.309	.171	.003	.049	.086	.049	-.093	.008	2.320	0.187	0.8	1.1	3.1	1.8	A-	A+
548	633853	6	6	304	.526	.230	.053	.526	.188	.003	.417	-.226	-.210	.417	-.124	-0.129	0.124	-0.2	1.0	-0.8	1.0	A-	A-
549	639345	6	6	304	.303	.299	.076	.319	.303	.003	.191	.012	-.203	-.047	.191	0.969	0.134	2.7	1.2	2.9	1.3	A+	A-
550	639390	6	6	304	.309	.214	.309	.339	.132	.007	.139	-.045	.139	-.102	.064	0.927	0.133	3.1	1.2	4.1	1.4	A-	A-
551	635617	6	6	304	.628	.099	.628	.184	.082	.007	.368	-.149	.368	-.163	-.171	-0.633	0.128	0.0	1.0	0.8	1.1	B+	A+
552	639416	6	6	304	.372	.257	.316	.372	.049	.007	.492	-.200	-.208	.492	-.144	0.601	0.128	-2.5	0.9	-2.2	0.9	A-	A-
553	624755	6	6	304	.691	.135	.691	.079	.089	.007	.456	-.218	.456	-.165	-.243	-0.958	0.133	-1.7	0.9	-1.6	0.9	A-	B-
554	627047	6	6	304	.418	.306	.171	.095	.418	.010	.363	-.041	-.244	-.148	.363	0.364	0.126	0.3	1.0	0.4	1.0	A+	A+
555	621155	6	6	304	.507	.171	.250	.507	.063	.010	.369	-.206	-.122	.369	-.122	-0.059	0.124	0.5	1.0	-0.1	1.0	A-	A+

Table B–5 (continued). Writing/English Composition Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
556	624757	6	6	304	.691	.691	.132	.095	.066	.016	.305	.305	-.169	-.083	-.106	-0.991	0.135	0.9	1.1	1.2	1.1	A+	A+
557	639425	6	3	304	.237	.293	.339	.237	.122	.010	.259	-.097	-.068	.259	-.028	1.337	0.144	1.0	1.1	1.1	1.1	A-	A-
558	626929	6	6	304	.592	.115	.151	.592	.132	.010	.484	-.139	-.318	.484	-.162	-0.468	0.126	-2.1	0.9	-2.2	0.9	A-	A-
559	635653	6	6	304	.516	.516	.181	.148	.138	.016	.443	.443	-.094	-.239	-.216	-0.126	0.125	-1.3	0.9	-0.9	1.0	A+	A-
560	639872	6	6	304	.569	.569	.237	.092	.079	.023	.404	.404	-.135	-.210	-.205	-0.400	0.127	-0.4	1.0	-0.4	1.0	A+	A-
561	633450	6	6	304	.684	.063	.158	.072	.684	.023	.541	-.207	-.296	-.258	.541	-0.996	0.135	-3.2	0.8	-3.1	0.7	A+	A-
562	639428	6	6	303	.759	.125	.086	.026	.759	.003	.555	-.334	-.292	-.165	.555	-1.304	0.145	-2.7	0.8	-2.8	0.7	A-	A-
563	639350	6	6	303	.805	.106	.805	.066	.020	.003	.434	-.207	.434	-.269	-.168	-1.622	0.156	-0.7	0.9	-1.2	0.8	A+	A+
564	635416	6	6	303	.508	.152	.201	.508	.135	.003	.447	-.210	-.204	.447	-.140	0.013	0.125	-1.8	0.9	-1.4	0.9	A-	A-
565	635902	6	6	303	.749	.109	.053	.086	.749	.003	.518	-.211	-.257	-.296	.518	-1.221	0.143	-2.6	0.8	-2.1	0.8	A+	A+
566	628039	6	6	303	.502	.122	.135	.238	.502	.003	.301	-.012	-.237	-.112	.301	0.044	0.125	2.0	1.1	1.9	1.1	A-	A-
567	639391	6	8	303	.696	.696	.116	.142	.043	.003	.514	.514	-.232	-.261	-.260	-0.931	0.135	-2.2	0.9	-2.4	0.8	A-	A+
568	635618	6	6	303	.878	.030	.056	.878	.026	.010	.474	-.273	-.214	.474	-.179	-2.313	0.192	-1.0	0.9	-1.5	0.7	A+	A-
569	635616	6	6	303	.568	.119	.568	.139	.168	.007	.507	-.112	.507	-.334	-.186	-0.273	0.126	-2.7	0.9	-2.7	0.8	A+	A+
570	624832	6	6	303	.568	.568	.215	.099	.112	.007	.404	.404	-.101	-.175	-.243	-0.273	0.126	-0.2	1.0	-0.2	1.0	A+	B-
571	639404	6	6	303	.446	.251	.116	.446	.182	.007	.241	-.029	-.222	.241	-.017	0.308	0.125	3.2	1.2	3.1	1.2	A+	A-
572	623097	6	6	303	.871	.076	.871	.023	.023	.007	.418	-.210	.418	-.188	-.174	-2.210	0.186	-0.3	1.0	-1.3	0.8	A-	C-
573	623090	6	6	303	.178	.281	.228	.307	.178	.007	.052	-.007	-.085	.106	.052	1.841	0.159	1.7	1.2	3.4	1.6	A-	A-
574	639427	6	3	303	.271	.363	.175	.185	.271	.007	.238	.039	-.095	-.150	.238	1.208	0.138	1.4	1.1	2.2	1.2	A+	A+
575	639361	6	6	303	.832	.076	.832	.056	.026	.010	.478	-.345	.478	-.130	-.161	-1.836	0.166	-1.2	0.9	-2.2	0.7	A-	A+
576	627697	6	5	303	.634	.162	.634	.096	.099	.010	.459	-.195	.459	-.281	-.117	-0.611	0.130	-1.2	0.9	-1.6	0.9	A+	A-
577	639873	6	6	303	.442	.139	.178	.442	.228	.013	.470	-.211	-.223	.470	-.100	0.311	0.126	-2.1	0.9	-1.8	0.9	A+	A-
578	633451	6	6	303	.515	.221	.102	.515	.142	.020	.360	-.077	-.235	.360	-.100	-0.044	0.126	0.9	1.0	0.9	1.1	A-	B+
579	639376	6	6	304	.734	.220	.734	.023	.023	.000	.324	-.213	.324	-.215	-.152	-1.138	0.141	0.8	1.1	0.7	1.1	A+	A-
580	639353	6	6	304	.720	.720	.109	.092	.079	.000	.537	.537	-.352	-.262	-.207	-1.059	0.139	-2.4	0.8	-2.5	0.8	A-	A-
581	635449	6	6	304	.526	.247	.526	.092	.135	.000	.394	-.100	.394	-.265	-.225	-0.058	0.125	0.1	1.0	0.0	1.0	B-	A-
582	635415	6	6	304	.766	.089	.033	.766	.112	.000	.385	-.323	-.160	.385	-.134	-1.324	0.146	-0.4	1.0	-0.5	0.9	A+	B-
583	639399	6	6	304	.615	.135	.135	.615	.115	.000	.500	-.293	-.220	.500	-.213	-0.491	0.128	-2.2	0.9	-2.3	0.8	A+	A-
584	639398	6	6	304	.717	.118	.109	.717	.056	.000	.513	-.263	-.287	.513	-.247	-1.040	0.138	-2.1	0.9	-2.0	0.8	A+	A+
585	635620	6	6	304	.513	.204	.148	.135	.513	.000	.455	-.138	-.225	-.268	.455	0.004	0.125	-1.5	0.9	-0.9	0.9	A-	A-
586	639387	6	6	304	.901	.030	.901	.026	.040	.003	.415	-.216	.415	-.272	-.225	-2.539	0.206	-0.9	0.9	-1.6	0.7	A+	A+
587	624834	6	6	304	.141	.138	.171	.549	.141	.000	-.012	-.012	-.142	.124	-.012	2.149	0.173	1.5	1.2	3.3	1.8	A-	A+
588	624752	6	5	304	.461	.207	.214	.461	.112	.007	.289	-.036	-.108	.289	-.242	0.236	0.125	2.7	1.1	1.9	1.1	A+	A+
589	630726	6	6	304	.898	.056	.026	.898	.013	.007	.462	-.271	-.309	.462	-.169	-2.580	0.209	-0.7	0.9	-2.0	0.6	A+	A-
590	639433	6	3	304	.457	.457	.079	.378	.076	.010	.206	.206	-.150	.063	-.289	0.266	0.125	3.6	1.2	4.2	1.3	C-	A+

Table B–5 (continued). Writing/English Composition Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
591	639430	6	6	304	.875	.030	.040	.049	.875	.007	.501	-.194	-.356	-.251	.501	-2.299	0.191	-1.1	0.9	-2.3	0.6	A-	A+
592	635355	6	8	304	.747	.053	.747	.046	.145	.010	.421	-.304	.421	-.259	-.127	-1.262	0.145	-0.4	1.0	-0.2	1.0	A-	A-
593	635659	6	5	304	.408	.155	.191	.237	.408	.010	.292	-.108	-.112	-.105	.292	0.488	0.126	2.1	1.1	1.8	1.1	A+	A-
594	639874	6	6	304	.665	.122	.665	.092	.112	.010	.563	-.291	.563	-.332	-.186	-0.778	0.133	-2.7	0.9	-2.8	0.8	B+	A-
595	633452	6	6	304	.707	.026	.188	.707	.066	.013	.463	-.211	-.302	.463	-.181	-1.036	0.139	-1.0	0.9	-1.1	0.9	A-	A+
596	622440	6	6	305	.721	.220	.721	.039	.020	.000	.480	-.414	.480	-.177	-.067	-1.007	0.138	-1.5	0.9	-1.5	0.9	B-	A-
597	635945	6	6	305	.702	.053	.702	.098	.141	.007	.442	-.208	.442	-.206	-.243	-0.912	0.136	-0.8	1.0	-0.9	0.9	A-	A+
598	635450	6	6	305	.571	.053	.571	.167	.210	.000	.300	-.222	.300	-.144	-.112	-0.220	0.126	1.9	1.1	1.8	1.1	A-	A+
599	635615	6	6	305	.741	.134	.085	.036	.741	.003	.417	-.182	-.277	-.199	.417	-1.133	0.141	-0.7	1.0	-0.4	1.0	A-	A-
600	639403	6	6	305	.790	.075	.790	.059	.075	.000	.526	-.300	.526	-.332	-.215	-1.443	0.151	-2.1	0.8	-2.5	0.7	B+	A+
601	635453	6	6	305	.679	.144	.105	.679	.069	.003	.454	-.195	-.301	.454	-.186	-0.778	0.133	-1.4	0.9	-0.2	1.0	A-	A+
602	624806	6	6	305	.653	.098	.108	.653	.138	.003	.512	-.359	-.232	.512	-.176	-0.638	0.131	-2.2	0.9	-2.1	0.8	A+	C-
603	639388	6	6	305	.859	.016	.043	.079	.859	.003	.544	-.183	-.340	-.346	.544	-2.014	0.175	-1.9	0.8	-2.9	0.5	A-	A-
604	625480	6	6	305	.600	.151	.600	.102	.148	.000	.364	-.235	.364	-.167	-.124	-0.364	0.127	0.8	1.0	0.2	1.0	A-	B-
605	624827	6	6	305	.571	.571	.138	.164	.128	.000	.392	.392	-.288	-.152	-.115	-0.220	0.126	0.0	1.0	0.2	1.0	A+	B-
606	632917	6	6	305	.771	.053	.026	.771	.151	.000	.456	-.381	-.303	.456	-.163	-1.310	0.146	-1.3	0.9	-0.1	1.0	A+	A+
607	639434	6	3	305	.321	.351	.321	.105	.213	.010	.271	-.060	.271	-.007	-.207	0.977	0.132	1.9	1.1	0.9	1.1	A-	A+
608	639426	6	4	305	.607	.167	.030	.190	.607	.007	.367	-.181	-.303	-.141	.367	-0.416	0.128	0.6	1.0	0.3	1.0	A+	A+
609	624767	6	5	305	.226	.177	.125	.226	.466	.007	.220	-.191	-.209	.220	.111	1.531	0.145	0.8	1.1	2.4	1.3	A+	A+
610	639875	6	6	305	.820	.056	.059	.820	.059	.007	.556	-.349	-.293	.556	-.252	-1.698	0.161	-2.4	0.8	-2.8	0.6	A+	A+
611	624824	6	4	305	.741	.039	.161	.049	.741	.010	.523	-.265	-.296	-.274	.523	-1.164	0.143	-2.0	0.9	-2.4	0.8	A-	A-
612	635454	6	6	304	.727	.095	.727	.102	.076	.000	.285	-.082	.285	-.136	-.235	-1.019	0.136	0.8	1.1	0.5	1.1	A+	
613	639378	6	6	304	.572	.138	.572	.171	.118	.000	.323	-.136	.323	-.239	-.071	-0.241	0.123	1.0	1.0	0.6	1.0	A-	
614	639371	6	6	304	.678	.036	.079	.207	.678	.000	.329	-.300	-.183	-.119	.329	-0.753	0.130	-0.4	1.0	0.6	1.1	A+	
615	635882	6	6	304	.674	.092	.674	.079	.155	.000	.383	-.221	.383	-.125	-.227	-0.736	0.130	-1.1	0.9	-0.3	1.0	A-	
616	639368	6	6	304	.717	.092	.079	.717	.112	.000	.355	-.174	-.310	.355	-.082	-0.964	0.134	-0.5	1.0	-0.6	0.9	A+	
617	635612	6	6	304	.645	.092	.158	.645	.105	.000	.374	-.148	-.199	.374	-.208	-0.587	0.127	-1.1	1.0	-0.6	1.0	A-	
618	624295	6	6	304	.533	.155	.533	.155	.158	.000	.399	-.299	.399	-.126	-.125	-0.059	0.123	-0.8	1.0	-1.0	1.0	A-	
619	639402	6	6	304	.372	.214	.306	.372	.109	.000	.200	-.120	-.026	.200	-.115	0.691	0.126	2.6	1.1	2.5	1.2	A+	
620	627774	6	6	304	.740	.072	.740	.148	.040	.000	.367	-.091	.367	-.282	-.192	-1.094	0.138	-0.6	1.0	-0.8	0.9	A-	
621	623088	6	4	304	.615	.158	.086	.615	.135	.007	.338	-.083	-.192	.338	-.165	-0.454	0.126	0.3	1.0	-0.4	1.0	A+	
622	623083	6	5	304	.566	.059	.345	.566	.020	.010	.261	-.200	-.087	.261	-.082	-0.228	0.124	1.9	1.1	1.5	1.1	A+	
623	623036	6	6	304	.724	.724	.102	.125	.030	.020	.447	.447	-.269	-.210	-.066	-1.070	0.138	-1.5	0.9	-1.6	0.8	B+	
624	639435	6	3	304	.263	.135	.263	.319	.263	.020	.119	-.224	.119	.101	.038	1.239	0.138	2.7	1.2	2.8	1.3	B-	
625	627061	6	6	304	.661	.118	.661	.122	.076	.023	.463	-.191	.463	-.185	-.199	-0.735	0.131	-1.7	0.9	-1.9	0.9	A+	

Table B–5 (continued). Writing/English Composition Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
626	624843	6	5	304	.477	.286	.118	.095	.477	.023	.515	-.252	-.144	-.179	.515	0.157	0.124	-3.6	0.9	-3.5	0.8	A+	
627	639876	6	6	304	.605	.605	.217	.040	.109	.030	.363	.363	-.203	-.153	-.053	-0.471	0.127	-0.2	1.0	0.9	1.1	A+	
628	633446	6	6	304	.477	.477	.135	.253	.135	.000	.273	.273	-.289	.035	-.156	0.175	0.124	2.8	1.1	2.9	1.2	A+	A-
629	635619	6	6	305	.246	.246	.134	.266	.354	.000	.250	.250	-.201	-.195	.099	1.422	0.142	0.7	1.1	2.7	1.4	A-	A-
630	635662	6	4	304	.322	.260	.128	.322	.286	.003	.261	-.151	.001	.261	-.114	0.934	0.130	1.2	1.1	1.2	1.1	A+	
631	623111	6	6	304	.668	.086	.066	.178	.668	.003	.380	-.112	-.198	-.212	.380	-0.821	0.131	-0.1	1.0	-0.8	0.9	A+	A+
632	624754	6	6	303	.363	.588	.363	.023	.020	.007	.242	-.063	.242	-.163	-.223	0.711	0.129	2.6	1.1	2.4	1.2	A-	A+
633	628060	6	6	304	.513	.168	.174	.513	.138	.007	.412	-.100	-.176	.412	-.265	0.007	0.125	-0.5	1.0	-0.4	1.0	A-	A-
634	627415	6	6	305	.266	.348	.157	.230	.266	.000	.287	-.132	-.173	-.003	.287	1.304	0.138	0.6	1.0	1.7	1.2	A+	A+
635	624287	6	6	304	.793	.049	.069	.793	.066	.023	.559	-.278	-.297	.559	-.203	-1.534	0.154	-2.6	0.8	-3.2	0.6	A+	
636	624763	6	6	304	.556	.174	.165	.556	.092	.013	.412	-.101	-.232	.412	-.193	-0.304	0.125	-0.6	1.0	-1.0	0.9	A+	B+
637	627960	6	6	303	.320	.320	.122	.073	.469	.017	.216	.216	-.216	-.255	.152	0.923	0.133	2.6	1.2	2.6	1.2	A-	A+
638	633447	6	6	305	.712	.712	.098	.085	.105	.000	.296	.296	-.078	-.216	-.165	-0.951	0.136	1.1	1.1	1.3	1.1	A-	A-
639	639392	6	6	304	.293	.240	.211	.257	.293	.000	.297	-.129	-.062	-.126	.297	1.096	0.134	0.2	1.0	1.3	1.1	A-	
640	635661	6	4	304	.474	.474	.105	.191	.227	.003	.224	.224	-.136	-.095	-.036	0.119	0.124	3.1	1.1	2.7	1.2	A-	A+
641	624289	6	6	303	.762	.050	.079	.762	.102	.007	.450	-.213	-.213	.450	-.191	-1.331	0.146	-0.8	0.9	-1.4	0.8	A+	A-
642	624756	6	6	304	.464	.211	.161	.464	.165	.000	.140	-.076	-.053	.140	-.054	0.253	0.125	4.9	1.2	4.7	1.3	A+	A+
643	628061	6	6	305	.777	.777	.128	.053	.036	.007	.447	.447	-.224	-.280	-.228	-1.382	0.149	-0.9	0.9	-1.5	0.8	A-	A-
644	628112	6	6	304	.434	.214	.434	.217	.122	.013	.378	-.141	.378	-.192	-.052	0.378	0.124	-0.4	1.0	-0.7	1.0	A+	
645	626567	6	6	304	.461	.174	.138	.217	.461	.010	.460	-.143	-.191	-.204	.460	0.159	0.125	-1.7	0.9	-1.5	0.9	A+	A+
646	624840	6	6	303	.551	.165	.076	.551	.198	.010	.456	-.130	-.220	.456	-.222	-0.186	0.126	-1.8	0.9	-1.7	0.9	A+	A-
647	627030	6	6	304	.549	.145	.549	.089	.207	.010	.418	-.189	.418	-.327	-.080	-0.192	0.126	-0.3	1.0	0.0	1.0	A-	A+
648	627052	7	3	280	.839	.839	.057	.014	.086	.004	.389	.389	-.169	-.077	-.264	-1.676	0.173	-0.6	0.9	-0.8	0.9	B+	
649	639447	7	7	280	.775	.136	.775	.029	.061	.000	.447	-.334	.447	-.183	-.175	-1.145	0.152	-1.3	0.9	-1.6	0.8	A-	
650	627058	7	3	280	.446	.214	.196	.139	.446	.004	-.008	.008	.069	-.081	-.008	0.593	0.130	7.3	1.4	6.7	1.5	A-	A-
651	639380	7	7	279	.545	.545	.204	.161	.086	.004	.304	.304	-.166	-.053	-.157	0.000	0.129	1.7	1.1	1.2	1.1	A-	
652	624286	7	7	280	.711	.136	.711	.093	.054	.007	.499	-.251	.499	-.182	-.222	-0.801	0.141	-2.0	0.9	-2.2	0.8	A-	
653	624822	7	4	280	.246	.343	.132	.271	.246	.007	.173	.067	-.098	-.093	.173	1.549	0.147	1.7	1.1	2.9	1.4	B+	
654	636003	7	7	280	.457	.457	.071	.257	.214	.000	.222	.222	-.303	-.128	.057	0.495	0.130	3.4	1.2	3.4	1.2	A-	
655	633454	7	7	280	.811	.071	.811	.054	.061	.004	.545	-.240	.545	-.288	-.310	-1.376	0.166	-1.9	0.8	-2.4	0.7	B+	A-
656	635909	7	7	279	.491	.118	.491	.179	.204	.007	.454	-.179	.454	-.223	-.155	0.239	0.129	-1.8	0.9	-1.9	0.9	A+	
657	634300	7	7	280	.561	.143	.179	.561	.107	.011	.460	-.203	-.210	.460	-.126	-0.051	0.130	-1.9	0.9	-2.0	0.9	C+	
658	626992	7	3	280	.875	.025	.875	.029	.071	.000	.353	-.220	.353	-.159	-.217	-1.933	0.188	-0.5	0.9	-0.8	0.8	A+	
659	639438	7	7	280	.882	.054	.029	.882	.036	.000	.435	-.348	-.181	.435	-.172	-1.958	0.198	-0.9	0.9	-1.4	0.7	A+	B-
660	628116	7	3	279	.548	.548	.093	.118	.237	.004	.483	.483	-.252	-.239	-.162	-0.017	0.129	-2.7	0.9	-2.0	0.9	A-	

Table B–5 (continued). Writing/English Composition Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
661	626764	7	7	280	.771	.771	.057	.057	.107	.007	.448	.448	-.223	-.235	-.143	-1.166	0.152	-1.2	0.9	-0.9	0.9	A-	
662	639394	7	7	280	.500	.171	.500	.143	.179	.007	.339	-.200	.339	-.150	-.026	0.248	0.130	1.1	1.1	1.1	1.1	A+	
663	628476	7	4	280	.254	.264	.254	.389	.093	.000	.110	-.041	.110	.014	-.127	1.553	0.147	2.7	1.2	3.5	1.5	B+	
664	636008	7	8	280	.750	.075	.068	.107	.750	.000	.470	-.160	-.259	-.311	.470	-0.926	0.149	-1.3	0.9	-1.8	0.8	A+	A-
665	633455	7	7	279	.896	.025	.050	.896	.025	.004	.427	-.203	-.253	.427	-.145	-2.242	0.205	-0.7	0.9	-2.0	0.6	A+	
666	639420	7	7	280	.304	.304	.300	.207	.182	.007	.232	.232	-.041	-.103	-.022	1.195	0.138	1.3	1.1	1.7	1.2	A-	
667	634299	7	7	280	.646	.132	.646	.093	.114	.014	.523	-.187	.523	-.244	-.239	-0.491	0.137	-2.3	0.9	-2.3	0.8	A-	
668	630377	7	7	2516	.845	.049	.845	.053	.052	.002	.355	-.200	.355	-.177	-.162	-1.665	0.058	-1.0	1.0	-2.1	0.9	A+	A+
669	627055	7	3	2516	.725	.066	.725	.159	.047	.003	.422	-.200	.422	-.242	-.181	-0.837	0.048	-2.5	0.9	-2.5	0.9	A-	A-
670	625552	7	7	2516	.328	.176	.246	.328	.247	.004	.355	-.128	-.117	.355	-.122	1.134	0.046	0.2	1.0	0.7	1.0	A-	A-
671	623032	7	4	2516	.762	.091	.069	.762	.075	.003	.396	-.185	-.227	.396	-.165	-1.067	0.050	-1.4	1.0	-2.5	0.9	A+	A+
672	629824	7	7	2516	.407	.139	.407	.235	.215	.005	.250	-.100	.250	-.109	-.065	0.736	0.044	6.4	1.1	7.6	1.2	A-	A+
673	621386	7	7	2516	.734	.734	.097	.121	.044	.005	.435	.435	-.181	-.236	-.223	-0.902	0.049	-3.0	0.9	-3.2	0.9	A+	A-
674	628106	7	7	2516	.467	.301	.467	.085	.143	.004	.303	-.032	.303	-.239	-.154	0.449	0.043	4.2	1.1	3.8	1.1	A-	A-
675	639419	7	7	2516	.417	.197	.068	.417	.314	.005	.462	-.283	-.222	.462	-.097	0.691	0.044	-6.5	0.9	-3.9	0.9	A+	A-
676	627967	7	7	2516	.425	.111	.271	.186	.425	.006	.414	-.155	-.134	-.202	.414	0.647	0.044	-2.8	1.0	-1.3	1.0	A-	A-
677	633456	7	7	2516	.657	.050	.116	.170	.657	.006	.465	-.231	-.253	-.190	.465	-0.483	0.046	-4.6	0.9	-4.1	0.9	B+	A+
678	622603	7	7	558	.502	.034	.238	.224	.502	.002	.307	-.049	-.179	-.137	.307	0.286	0.092	2.5	1.1	2.1	1.1	A+	
679	622817	7	7	558	.785	.038	.125	.785	.050	.002	.453	-.221	-.291	.453	-.168	-1.213	0.110	-1.9	0.9	-2.6	0.8	A-	
680	639383	7	7	558	.713	.063	.106	.115	.713	.004	.487	-.200	-.245	-.267	.487	-0.779	0.101	-3.1	0.9	-3.2	0.8	A-	
681	630380	7	8	558	.744	.045	.052	.158	.744	.002	.392	-.193	-.166	-.228	.392	-0.950	0.104	-0.7	1.0	-1.1	0.9	A+	
682	626769	7	7	558	.781	.781	.134	.034	.048	.002	.432	.432	-.305	-.189	-.135	-1.189	0.109	-1.5	0.9	-1.9	0.8	A-	
683	630286	7	7	558	.296	.296	.350	.154	.195	.005	.307	.307	-.051	-.156	-.114	1.302	0.099	0.7	1.0	1.3	1.1	A-	
684	625543	7	3	558	.263	.253	.263	.208	.272	.004	.115	.059	.115	-.109	-.047	1.485	0.102	3.6	1.2	4.8	1.4	A-	
685	625514	7	7	558	.575	.301	.082	.039	.575	.002	.404	-.212	-.227	-.147	.404	-0.053	0.092	-0.6	1.0	-0.9	1.0	A-	
686	621207	7	7	279	.699	.068	.115	.699	.115	.004	.526	-.145	-.286	.526	-.346	-0.623	0.141	-2.7	0.8	-2.9	0.7	A-	
687	633851	7	7	279	.488	.054	.136	.488	.319	.004	.208	-.152	-.221	.208	.024	0.437	0.130	3.7	1.2	3.8	1.3	B+	
688	639415	7	7	279	.878	.878	.075	.011	.036	.000	.465	.465	-.417	-.148	-.144	-1.918	0.195	-1.1	0.9	-1.4	0.7	A+	
689	634073	7	7	279	.728	.082	.728	.115	.075	.000	.433	-.199	.433	-.339	-.115	-0.754	0.144	-1.5	0.9	-1.6	0.8	A-	
690	625510	7	7	558	.262	.093	.262	.624	.018	.004	.039	-.064	.039	.048	-.079	1.516	0.103	4.0	1.2	6.0	1.6	A-	
691	628024	7	7	558	.618	.090	.215	.618	.074	.004	.449	-.201	-.237	.449	-.200	-0.278	0.094	-2.2	0.9	-2.6	0.9	A+	
692	639445	7	3	279	.301	.348	.301	.136	.215	.000	.093	.140	.093	-.135	-.154	1.388	0.140	2.7	1.2	3.2	1.3	A-	
693	633847	7	7	559	.528	.106	.195	.168	.528	.004	.305	-.125	-.114	-.130	.305	0.148	0.092	2.6	1.1	2.7	1.1	A-	
694	636005	7	7	559	.424	.177	.424	.258	.136	.005	.435	-.052	.435	-.180	-.258	0.641	0.093	-2.1	0.9	-1.7	0.9	A-	
695	639412	7	7	559	.850	.007	.061	.850	.077	.005	.411	-.137	-.239	.411	-.190	-1.755	0.126	-1.1	0.9	-1.0	0.9	A+	

Table B–5 (continued). Writing/English Composition Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
696	633844	7	7	559	.483	.091	.152	.267	.483	.007	.401	-.150	-.205	-.109	.401	0.358	0.092	-0.1	1.0	0.0	1.0	A-	
697	635990	7	8	559	.556	.147	.556	.127	.161	.009	.406	-.191	.406	-.262	-.029	0.005	0.093	-0.8	1.0	-0.1	1.0	A+	
698	633408	7	7	559	.472	.472	.132	.109	.279	.007	.261	.261	-.139	-.238	.058	0.409	0.092	3.7	1.1	4.2	1.2	A-	
699	627049	7	7	559	.479	.297	.106	.479	.109	.009	.385	-.231	-.219	.385	.057	0.373	0.092	0.2	1.0	0.9	1.0	B-	
700	627006	7	7	279	.728	.086	.728	.093	.086	.007	.498	-.184	.498	-.310	-.165	-0.878	0.147	-1.6	0.9	-1.6	0.8	A+	
701	626995	7	3	559	.632	.632	.143	.149	.070	.007	.373	.373	-.274	-.062	-.104	-0.363	0.095	0.5	1.0	-0.2	1.0	A-	
702	626989	7	7	559	.846	.034	.079	.032	.846	.009	.462	-.127	-.287	-.157	.462	-1.739	0.126	-1.3	0.9	-1.8	0.8	A+	
703	628309	7	7	279	.488	.172	.176	.488	.158	.007	.390	-.068	-.151	.390	-.214	0.376	0.132	0.3	1.0	-0.1	1.0	A+	
704	639423	7	7	279	.516	.516	.090	.093	.290	.011	.389	.389	-.279	-.173	-.074	0.221	0.132	0.4	1.0	-0.1	1.0	A-	
705	639355	7	7	279	.398	.229	.233	.129	.398	.011	.293	-.022	-.061	-.207	.293	0.815	0.134	1.9	1.1	1.4	1.1	A-	
706	629850	7	7	279	.599	.061	.237	.599	.093	.011	.490	-.159	-.307	.490	-.134	-0.186	0.135	-2.2	0.9	-2.0	0.9	A+	
707	626559	7	7	279	.169	.488	.169	.222	.111	.011	.012	.112	.012	-.032	-.043	2.194	0.170	2.2	1.2	4.0	1.9	A-	
708	639372	7	7	279	.344	.222	.290	.344	.143	.000	.253	-.237	.044	.253	-.119	1.066	0.135	2.0	1.1	2.0	1.2	A-	
709	635943	7	7	279	.652	.047	.258	.043	.652	.000	.375	-.101	-.211	-.320	.375	-0.430	0.136	-0.3	1.0	-0.2	1.0	A+	
710	639605	7	8	279	.918	.039	.918	.025	.018	.000	.368	-.240	.368	-.247	-.120	-2.430	0.226	-0.7	0.9	-1.1	0.7	A-	
711	627412	7	3	279	.434	.133	.394	.434	.039	.000	.248	-.298	.002	.248	-.117	0.643	0.131	2.1	1.1	2.9	1.2	A+	
712	626990	7	7	279	.731	.108	.072	.090	.731	.000	.347	-.223	-.059	-.243	.347	-0.866	0.146	0.2	1.0	-0.2	1.0	A+	
713	638833	7	7	279	.470	.158	.172	.470	.197	.004	.332	-.269	-.110	.332	-.032	0.455	0.130	0.8	1.0	0.7	1.1	A+	
714	627050	7	7	279	.853	.050	.054	.853	.043	.000	.464	-.344	-.273	.464	-.137	-1.743	0.180	-1.2	0.9	-1.5	0.7	A-	
715	628241	7	N/A	279	.233	.412	.233	.169	.186	.000	.081	.209	.081	-.296	-.068	1.692	0.150	2.3	1.2	2.9	1.4	A-	
716	625476	7	7	279	.520	.208	.082	.520	.190	.000	.411	-.214	-.278	.411	-.107	0.219	0.130	-1.2	1.0	0.4	1.0	A+	
717	627414	7	6	279	.918	.918	.022	.032	.029	.000	.387	.387	-.253	-.168	-.239	-2.430	0.226	-0.7	0.9	-1.7	0.6	A-	
718	627062	7	7	279	.878	.050	.025	.047	.878	.000	.483	-.322	-.145	-.309	.483	-1.989	0.195	-1.4	0.8	-2.3	0.6	A+	
719	634301	7	7	279	.563	.186	.093	.158	.563	.000	.423	-.199	-.151	-.242	.423	0.015	0.131	-0.8	1.0	-0.5	1.0	A+	
720	633390	7	7	279	.308	.122	.333	.237	.308	.000	.365	-.134	.001	-.295	.365	1.255	0.139	-0.7	1.0	-0.5	1.0	A-	
721	639385	7	N/A	279	.111	.125	.466	.111	.294	.004	.032	-.258	.241	.032	-.087	2.717	0.201	0.8	1.1	2.3	1.6	A+	
722	639408	7	7	279	.699	.699	.104	.122	.075	.000	.378	.378	-.226	-.131	-.235	-0.680	0.141	-0.5	1.0	-0.9	0.9	A-	
723	627473	7	7	280	.407	.404	.407	.071	.118	.000	.292	-.137	.292	-.156	-.112	0.747	0.131	1.4	1.1	1.0	1.1	A+	
724	633405	7	6	280	.332	.343	.332	.107	.214	.004	.304	-.067	.304	-.074	-.195	1.121	0.136	0.6	1.0	0.4	1.0	A-	
725	628131	7	8	280	.632	.136	.200	.632	.032	.000	.259	-.104	-.199	.259	-.056	-0.324	0.133	2.0	1.1	1.8	1.1	A+	
726	627363	7	7	280	.932	.932	.011	.032	.025	.000	.278	.278	-.109	-.197	-.153	-2.625	0.243	0.0	1.0	-0.7	0.8	A+	
727	635669	7	4	280	.550	.550	.164	.221	.064	.000	.248	.248	-.238	-.017	-.114	0.073	0.130	2.2	1.1	2.2	1.1	A-	
728	639422	7	7	280	.350	.121	.282	.246	.350	.000	.236	-.201	-.071	-.035	.236	1.030	0.134	1.5	1.1	1.2	1.1	A-	
729	625524	7	7	280	.446	.446	.239	.096	.218	.000	.358	.358	-.090	-.304	-.121	0.559	0.130	0.3	1.0	0.4	1.0	A+	
730	639424	7	7	280	.793	.139	.054	.793	.014	.000	.465	-.400	-.178	.465	-.082	-1.239	0.156	-1.9	0.9	-1.9	0.8	A+	

Table B–5 (continued). Writing/English Composition Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
731	626988	7	7	280	.254	.307	.154	.254	.282	.004	.266	-.154	-.176	.266	.061	1.558	0.146	0.3	1.0	2.3	1.3	A+	
732	627043	7	7	280	.800	.039	.089	.068	.800	.004	.547	-.243	-.381	-.236	.547	-1.305	0.159	-1.9	0.8	-2.7	0.7	A+	
733	639374	7	7	280	.696	.086	.086	.696	.132	.000	.442	-.304	-.334	.442	-.073	-0.658	0.139	-1.4	0.9	-1.2	0.9	A+	
734	639579	7	8	280	.625	.189	.089	.093	.625	.004	.303	-.105	-.149	-.213	.303	-0.300	0.133	0.8	1.0	0.9	1.1	A+	
735	634302	7	7	280	.454	.189	.454	.125	.232	.000	.286	-.234	.286	-.185	.025	0.525	0.129	1.6	1.1	1.8	1.1	B+	
736	627782	7	7	280	.564	.179	.564	.114	.143	.000	.370	-.263	.370	-.104	-.141	0.005	0.130	0.3	1.0	0.1	1.0	A+	
737	628310	7	3	280	.361	.129	.161	.350	.361	.000	.229	-.223	-.102	.004	.229	0.975	0.134	2.2	1.1	2.2	1.2	A-	
738	630298	7	3	280	.329	.293	.271	.329	.104	.004	.257	-.008	-.130	.257	-.127	1.089	0.136	1.4	1.1	2.5	1.2	A-	
739	639356	7	7	280	.471	.471	.129	.250	.143	.007	.084	.084	-.072	.054	-.073	0.373	0.130	5.8	1.3	5.2	1.3	A+	
740	639360	7	7	280	.439	.050	.104	.439	.404	.004	.161	-.225	-.064	.161	.019	0.540	0.130	4.3	1.2	4.3	1.3	A-	
741	625459	7	7	280	.889	.071	.889	.025	.011	.004	.388	-.259	-.388	-.098	-.189	-2.158	0.201	-0.4	0.9	-0.4	0.9	B+	
742	629848	7	7	280	.329	.329	.289	.186	.189	.007	.234	.234	-.064	-.098	-.028	1.087	0.136	1.7	1.1	2.9	1.3	A+	
743	623058	7	N/A	280	.179	.514	.143	.157	.179	.007	.067	.301	-.205	-.200	.067	2.006	0.163	1.8	1.2	3.3	1.6	A-	
744	625509	7	7	280	.382	.446	.032	.132	.382	.007	.473	-.281	-.220	-.058	.473	0.815	0.133	-2.0	0.9	-2.1	0.9	A-	
745	635908	7	7	280	.371	.293	.371	.189	.136	.011	.330	-.151	.330	-.069	-.092	0.862	0.133	0.6	1.0	1.3	1.1	A+	
746	626986	7	7	280	.686	.079	.143	.086	.686	.007	.632	-.335	-.351	-.173	.632	-0.678	0.140	-4.4	0.8	-4.2	0.7	B+	
747	633850	7	7	280	.679	.086	.679	.186	.043	.007	.435	-.154	.435	-.219	-.212	-0.639	0.139	-0.9	1.0	-0.4	1.0	A-	
748	627053	7	7	280	.418	.275	.193	.104	.418	.011	.390	-.114	-.122	-.186	.390	0.634	0.131	-0.1	1.0	0.0	1.0	A+	
749	633133	7	7	280	.568	.568	.161	.207	.054	.011	.295	.295	-.100	-.100	-.142	-0.086	0.132	2.2	1.1	2.1	1.1	A-	
750	627785	7	7	280	.432	.207	.114	.432	.236	.011	.377	-.116	-.181	.377	-.107	0.565	0.131	0.4	1.0	-0.2	1.0	A+	
751	635663	7	7	280	.614	.614	.221	.043	.111	.011	.524	.524	-.264	-.217	-.206	-0.316	0.134	-2.6	0.9	-2.4	0.8	B+	
752	633849	7	7	280	.539	.236	.129	.539	.086	.011	.413	-.189	-.217	.413	-.058	0.052	0.131	-0.4	1.0	-0.1	1.0	B-	
753	635369	7	8	280	.929	.929	.014	.032	.011	.014	.363	.363	-.086	-.193	-.090	-2.866	0.263	0.0	1.0	-0.8	0.7	A+	
754	639421	7	N/A	280	.171	.154	.546	.171	.114	.014	.128	-.188	.205	.128	-.134	2.055	0.166	0.9	1.1	3.4	1.7	A-	
755	626941	7	7	280	.761	.761	.064	.068	.107	.000	.381	.381	-.219	-.215	-.177	-1.054	0.149	-0.5	1.0	-0.6	0.9	A+	
756	639365	7	7	280	.632	.218	.068	.632	.082	.000	.448	-.320	-.145	.448	-.171	-0.344	0.134	-1.3	0.9	-1.2	0.9	A-	
757	639611	7	8	280	.243	.575	.129	.054	.243	.000	.119	.097	-.188	-.159	.119	1.619	0.149	2.5	1.2	3.6	1.5	A+	
758	639357	7	7	280	.625	.193	.625	.007	.175	.000	.372	-.323	.372	-.051	-.127	-0.308	0.133	0.2	1.0	-0.1	1.0	A+	
759	635903	7	7	280	.764	.100	.061	.075	.764	.000	.395	-.236	-.207	-.179	.395	-1.077	0.150	-0.7	0.9	-0.7	0.9	A+	
760	635911	7	7	280	.450	.132	.239	.179	.450	.000	.341	-.157	-.177	-.107	.341	0.529	0.130	1.1	1.1	0.8	1.1	A-	
761	627051	7	7	280	.475	.057	.293	.175	.475	.000	.565	-.104	-.493	-.089	.565	0.410	0.130	-4.2	0.8	-3.4	0.8	A+	
762	628130	7	7	280	.436	.436	.118	.093	.354	.000	.422	.422	-.199	-.152	-.212	0.597	0.130	-0.7	1.0	-0.5	1.0	A+	
763	639409	7	7	280	.514	.164	.189	.132	.514	.000	.498	-.139	-.215	-.335	.498	0.225	0.129	-2.4	0.9	-2.3	0.9	A-	
764	640044	7	4	280	.761	.079	.082	.761	.079	.000	.393	-.103	-.233	.393	-.283	-1.054	0.149	-0.7	0.9	-0.5	0.9	A+	
765	633134	7	7	280	.236	.021	.536	.236	.207	.000	.255	-.150	-.151	.255	-.028	1.664	0.150	1.0	1.1	1.7	1.2	A-	

Table B–5 (continued). Writing/English Composition Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M /F	W /B
766	625511	7	7	280	.407	.407	.354	.118	.121	.000	.361	.361	-.188	-.158	-.113	0.734	0.131	0.7	1.0	0.0	1.0	A+	
767	639440	7	7	280	.718	.107	.718	.096	.079	.000	.529	-.234	.529	-.357	-.225	-0.799	0.142	-2.7	0.8	-2.5	0.7	A+	
768	625517	7	7	280	.575	.575	.157	.154	.114	.000	.392	.392	-.297	-.071	-.190	-0.063	0.131	0.0	1.0	-0.3	1.0	B+	
769	637141	7	3	280	.314	.221	.432	.314	.032	.000	.215	-.375	.097	.215	.044	1.207	0.138	2.0	1.1	3.3	1.3	C+	
770	635942	7	7	280	.682	.139	.089	.682	.089	.000	.417	-.217	-.214	.417	-.203	-0.602	0.138	-0.9	1.0	-0.5	0.9	A+	
771	628477	7	4	280	.343	.211	.343	.282	.164	.000	.311	-.160	.311	-.066	-.143	1.056	0.136	1.1	1.1	1.3	1.1	A+	
772	633846	7	7	280	.829	.036	.096	.829	.039	.000	.461	-.220	-.307	.461	-.219	-1.484	0.171	-1.0	0.9	-2.1	0.7	A-	A+
773	639373	7	7	280	.475	.050	.475	.311	.161	.004	.277	-.203	.277	-.079	-.146	0.513	0.130	1.3	1.1	1.6	1.1	A+	A+
774	627001	7	7	280	.207	.232	.189	.371	.207	.000	.152	.006	-.117	-.037	.152	1.888	0.155	1.3	1.1	2.2	1.3	A-	A-
775	639382	7	7	280	.593	.121	.593	.139	.146	.000	.315	-.193	.315	-.202	-.062	-0.076	0.132	1.2	1.1	1.4	1.1	A-	B-
776	630728	7	7	280	.343	.343	.150	.368	.139	.000	.291	.291	-.155	-.011	-.224	1.107	0.135	1.0	1.1	1.5	1.1	A-	A-
777	628322	7	7	280	.718	.718	.093	.096	.093	.000	.489	.489	-.314	-.186	-.256	-0.733	0.143	-1.6	0.9	-2.1	0.8	A-	A-
778	639414	7	7	280	.432	.314	.168	.432	.086	.000	.434	-.357	.022	.434	-.205	0.687	0.130	-1.4	0.9	-1.1	0.9	A-	A+
779	635912	7	7	280	.682	.086	.075	.157	.682	.000	.418	-.230	-.249	-.178	.418	-0.513	0.138	-0.9	1.0	-0.8	0.9	A+	A-
780	633135	7	3	280	.371	.371	.296	.111	.221	.000	.224	.224	-.185	-.105	.023	0.999	0.133	2.0	1.1	1.9	1.2	A+	A+
781	621154	7	7	280	.800	.143	.800	.036	.021	.000	.441	-.347	.441	-.154	-.181	-1.186	0.158	-1.3	0.9	-2.0	0.7	A+	A-
782	633453	7	7	280	.682	.193	.075	.682	.050	.000	.498	-.309	-.273	.498	-.174	-0.552	0.139	-1.8	0.9	-1.7	0.9	A-	A-
783	635349	7	7	280	.818	.818	.068	.036	.079	.000	.482	.482	-.303	-.244	-.241	-1.426	0.168	-1.1	0.9	-1.7	0.8	A-	A-
784	627067	7	7	280	.186	.179	.221	.407	.186	.007	.144	-.149	-.038	.067	.144	2.036	0.161	1.1	1.1	2.6	1.4	A-	A-
785	627068	7	7	280	.536	.132	.171	.536	.161	.000	.388	-.020	-.272	.388	-.230	0.198	0.130	-0.3	1.0	0.3	1.0	A+	A-
786	633391	7	N/A	280	.064	.186	.064	.532	.218	.000	-.070	-.069	-.070	.105	-.021	3.593	0.278	0.4	1.1	1.3	1.5	A-	A+
787	635879	7	7	280	.657	.132	.154	.657	.057	.000	.440	-.237	-.262	.440	-.147	-0.400	0.136	-1.2	0.9	-0.8	0.9	A-	A-
788	624830	7	7	280	.600	.600	.150	.175	.075	.000	.410	.410	-.148	-.283	-.153	-0.128	0.132	-0.4	1.0	-0.2	1.0	C+	A-
789	633460	7	7	279	.358	.358	.176	.387	.075	.004	.269	.269	-.061	-.142	-.061	0.884	0.134	1.4	1.1	2.0	1.2	A+	
790	633459	7	7	279	.602	.602	.136	.140	.118	.004	.426	.426	-.192	-.215	-.146	-0.273	0.131	-1.0	1.0	-1.3	0.9	A-	
791	635880	7	7	279	.652	.133	.122	.652	.090	.004	.452	-.123	-.340	.452	-.145	-0.523	0.135	-1.5	0.9	-1.3	0.9	A-	
792	628321	7	7	279	.634	.229	.093	.039	.634	.004	.458	-.199	-.267	-.198	.458	-0.432	0.133	-1.7	0.9	-1.7	0.9	A-	
793	628056	7	7	279	.294	.373	.294	.179	.151	.004	.353	-.131	.353	.001	-.215	1.221	0.140	-0.2	1.0	0.0	1.0	A+	
794	628148	7	7	279	.620	.620	.176	.100	.093	.011	.432	.432	-.276	-.123	-.134	-0.379	0.133	-1.1	0.9	-1.1	0.9	A-	
795	626993	7	7	279	.308	.072	.444	.165	.308	.011	.316	-.223	.028	-.199	.316	1.133	0.138	0.5	1.0	0.7	1.1	A+	
796	639359	7	7	280	.436	.082	.229	.250	.436	.004	.272	-.153	-.031	-.137	.272	0.544	0.129	1.8	1.1	1.6	1.1	A-	
797	639443	7	3	280	.446	.325	.089	.446	.132	.007	.248	.030	-.177	.248	-.146	0.491	0.129	2.3	1.1	2.6	1.2	A-	
798	626991	7	3	280	.682	.154	.086	.682	.071	.007	.514	-.208	-.255	.514	-.217	-0.644	0.138	-2.6	0.9	-2.2	0.8	A+	
799	630414	7	7	280	.332	.100	.075	.332	.486	.007	.143	-.198	-.261	.143	.196	1.046	0.135	3.1	1.2	3.2	1.3	A+	
800	634076	7	5	280	.629	.046	.629	.086	.232	.007	.290	-.174	.290	-.202	-.023	-0.369	0.133	1.5	1.1	1.5	1.1	A-	

Table B-5 (continued). Writing/English Composition Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M /F	W /B
801	625529	7	3	280	.779	.093	.779	.075	.046	.007	.377	-.116	.377	-.137	-.235	-1.213	0.154	-0.3	1.0	-0.3	1.0	A+	
802	630730	7	7	280	.336	.411	.111	.136	.336	.007	.246	.094	-.177	-.203	.246	1.027	0.135	1.7	1.1	1.2	1.1	A-	
803	627040	7	7	280	.468	.096	.361	.064	.468	.011	.306	-.155	-.004	-.273	.306	0.384	0.129	1.3	1.1	1.4	1.1	A+	
804	627684	7	3	280	.775	.036	.107	.082	.775	.000	.338	-.181	-.201	-.165	.338	-1.088	0.154	0.2	1.0	0.0	1.0	A-	B-
805	625487	7	7	279	.262	.280	.262	.376	.079	.004	.092	-.135	.092	.132	-.084	1.404	0.145	2.8	1.2	3.4	1.4	A-	
806	627464	7	7	280	.882	.036	.882	.054	.021	.007	.488	-.265	.488	-.196	-.184	-2.072	0.197	-1.0	0.9	-2.0	0.6	A+	
807	639375	7	7	280	.696	.696	.193	.068	.036	.007	.514	.514	-.297	-.192	-.211	-0.738	0.141	-2.2	0.9	-2.0	0.8	A+	
808	633458	7	7	280	.693	.693	.057	.096	.154	.000	.325	.325	-.303	-.230	-.033	-0.660	0.139	0.6	1.0	0.5	1.1	A+	
809	626996	7	6	280	.382	.146	.368	.382	.104	.000	.168	-.201	.025	.168	-.075	0.911	0.132	3.6	1.2	3.4	1.3	A+	A+
810	628098	7	4	279	.412	.111	.136	.412	.333	.007	.321	-.098	-.133	.321	-.128	0.611	0.131	0.9	1.0	1.0	1.1	A+	
811	639358	7	7	280	.575	.575	.161	.118	.139	.007	.450	.450	-.223	-.091	-.213	-0.109	0.130	-1.6	0.9	-1.8	0.9	A-	
812	635665	7	5	280	.318	.221	.189	.257	.318	.014	.315	-.004	-.152	-.110	.315	1.134	0.138	0.5	1.0	1.5	1.1	B+	
813	627361	7	7	280	.446	.164	.329	.446	.061	.000	.319	-.292	-.074	.319	-.066	0.546	0.130	1.6	1.1	1.1	1.1	B+	
814	627056	7	3	279	.652	.075	.197	.652	.068	.007	.294	-.078	-.093	.294	-.215	-0.528	0.135	1.3	1.1	1.1	1.1	A-	
815	639407	7	7	280	.275	.275	.382	.232	.107	.004	.063	.063	.087	.025	-.193	1.353	0.141	3.2	1.2	3.6	1.4	B+	
816	626943	7	7	280	.732	.061	.057	.732	.143	.007	.413	-.208	-.198	.413	-.159	-0.944	0.146	-0.4	1.0	-0.7	0.9	A-	
817	639364	7	7	280	.800	.054	.064	.800	.082	.000	.448	-.213	-.292	.448	-.217	-1.314	0.158	-1.2	0.9	-1.8	0.7	B-	
818	633457	7	7	280	.611	.139	.611	.186	.064	.000	.199	.031	.199	-.112	-.264	-0.164	0.133	3.0	1.2	3.5	1.3	A-	B+
819	626997	7	6	279	.738	.140	.738	.054	.061	.007	.351	-.110	.351	-.174	-.223	-1.006	0.146	-0.1	1.0	0.3	1.0	B+	
820	630429	7	4	280	.314	.314	.232	.154	.293	.007	.294	.294	.055	-.190	-.119	1.138	0.137	0.4	1.0	1.1	1.1	B+	
821	625506	7	7	280	.779	.054	.779	.071	.086	.011	.560	-.235	.560	-.322	-.214	-1.257	0.156	-2.2	0.8	-3.0	0.6	A+	
822	635668	7	5	280	.196	.361	.311	.132	.196	.000	.152	-.014	.074	-.258	.152	1.929	0.160	1.6	1.2	2.4	1.4	A-	
823	627362	7	7	280	.650	.650	.036	.054	.261	.000	.379	.379	-.289	-.256	-.158	-0.344	0.135	-0.1	1.0	-0.6	1.0	A-	A+
824	633498	8	8	144	.507	.076	.507	.368	.049	.000	.163	-.081	.163	-.076	-.109	0.360	0.177	2.3	1.1	1.7	1.1	A+	
825	639580	8	8	145	.435	.110	.435	.207	.248	.000	.188	-.321	.188	.114	-.091	0.902	0.178	2.2	1.1	2.0	1.2	A-	
826	624848	8	4	143	.518	.273	.518	.140	.070	.000	.358	-.156	.358	-.132	-.250	0.428	0.178	-0.2	1.0	0.0	1.0	A+	
827	639612	8	7	144	.639	.639	.188	.118	.056	.000	.252	.252	-.253	-.004	-.091	-0.058	0.184	1.1	1.1	0.7	1.1	A+	
828	628115	8	5	144	.278	.083	.278	.063	.569	.007	.337	-.205	.337	-.159	-.076	1.419	0.196	-0.4	1.0	0.6	1.1	C-	
829	627963	8	8	144	.486	.028	.104	.375	.486	.007	.337	-.194	-.215	-.103	.337	0.442	0.177	0.3	1.0	0.0	1.0	A+	
830	628311	8	3	145	.317	.228	.228	.317	.228	.000	.278	-.117	-.046	.278	-.145	1.472	0.189	0.6	1.0	0.7	1.1	A-	
831	628242	8	8	143	.469	.175	.469	.126	.231	.000	.193	-.103	.193	-.096	-.061	0.650	0.178	2.0	1.1	2.0	1.1	A+	
832	639857	8	8	144	.875	.875	.028	.083	.014	.000	.356	.356	-.214	-.292	-.017	-1.568	0.259	-0.5	0.9	-0.4	0.9	A+	
833	639441	8	4	144	.799	.069	.083	.799	.042	.007	.483	-.206	-.371	.483	-.104	-1.249	0.222	-0.9	0.9	-1.4	0.8	A+	
834	633497	8	8	145	.524	.055	.214	.207	.524	.000	.317	-.165	-.116	-.181	.317	0.491	0.177	0.6	1.0	0.5	1.0	A+	
835	639588	8	8	143	.706	.063	.203	.028	.706	.000	.586	-.308	-.401	-.185	.586	-0.481	0.193	-2.5	0.8	-2.7	0.7	A-	

Table B–5 (continued). Writing/English Composition Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M /F	W /B
836	625522	8	4	144	.833	.007	.833	.104	.056	.000	.403	-.097	.403	-.281	-.245	-1.207	0.232	-0.7	0.9	-1.1	0.8	A-	
837	639610	8	8	144	.750	.042	.049	.750	.160	.000	.395	-.270	-.286	.395	-.151	-0.896	0.204	-0.7	0.9	-0.8	0.9	A+	
838	624828	8	5	144	.813	.056	.090	.813	.035	.007	.340	-.082	-.217	.340	-.169	-1.272	0.224	-0.3	1.0	-0.3	0.9	B+	
839	625520	8	7	145	.641	.117	.641	.041	.200	.000	.318	-.294	.318	-.239	-.026	-0.060	0.184	0.2	1.0	0.6	1.1	A-	
840	625508	8	3	143	.594	.042	.594	.280	.084	.000	.492	-.286	.492	-.250	-.260	0.075	0.181	-1.9	0.9	-1.9	0.9	A+	
841	626775	8	8	144	.639	.306	.028	.028	.639	.000	.449	-.318	-.165	-.256	.449	-0.058	0.184	-1.3	0.9	-1.4	0.9	C-	
842	639856	8	8	144	.819	.819	.042	.083	.042	.014	.548	.548	-.247	-.384	-.161	-1.447	0.236	-1.2	0.8	-2.0	0.6	B+	
843	639439	8	4	144	.854	.854	.049	.042	.049	.007	.386	.386	-.221	-.215	-.116	-1.606	0.248	-0.5	0.9	-0.9	0.8	A+	
844	627686	8	3	1298	.508	.012	.474	.005	.508	.002	.263	-.071	-.215	-.089	.263	0.406	0.059	3.5	1.1	2.9	1.1	A+	A+
845	626768	8	8	1298	.504	.220	.109	.164	.504	.003	.371	-.078	-.231	-.181	.371	0.421	0.060	-0.9	1.0	-0.9	1.0	A+	A-
846	639592	8	8	1298	.500	.207	.500	.126	.164	.004	.399	-.127	-.399	-.192	-.186	0.438	0.060	-1.6	1.0	-1.5	1.0	A-	B-
847	622606	8	8	1298	.633	.172	.138	.633	.052	.006	.350	-.125	-.158	.350	-.202	-0.195	0.062	0.2	1.0	0.3	1.0	A-	A-
848	624758	8	6	1298	.307	.307	.201	.197	.289	.007	.265	.265	-.052	-.099	-.084	1.371	0.064	1.8	1.1	3.4	1.2	A+	A+
849	621161	8	7	1298	.408	.297	.164	.125	.408	.007	.482	-.167	-.195	-.195	.482	0.866	0.060	-6.1	0.9	-4.8	0.9	A-	C-
850	628474	8	N/A	1298	.212	.212	.275	.277	.230	.007	.070	.070	-.115	-.015	.129	1.942	0.072	4.6	1.2	5.5	1.4	A-	A+
851	628319	8	4	1298	.608	.047	.260	.608	.077	.008	.398	-.192	-.181	.398	-.182	-0.076	0.061	-1.5	1.0	-1.7	1.0	A-	A-
852	639600	8	8	1298	.735	.103	.735	.067	.089	.007	.493	-.246	.493	-.243	-.203	-0.746	0.067	-4.0	0.9	-4.5	0.8	A-	B-
853	633499	8	8	1298	.498	.140	.218	.498	.135	.009	.345	-.116	-.190	.345	-.079	0.441	0.060	0.6	1.0	1.1	1.0	A+	A+
854	633845	8	7	145	.600	.021	.145	.228	.600	.007	.398	-.090	-.184	-.191	.398	0.047	0.182	-0.9	0.9	-1.1	0.9	A+	
855	638830	8	7	145	.766	.766	.041	.103	.083	.007	.191	.191	-.224	.110	-.118	-0.896	0.211	1.1	1.1	1.9	1.4	A+	
856	639595	8	8	145	.628	.007	.628	.193	.159	.014	.339	.015	.339	-.073	-.216	-0.147	0.187	0.4	1.0	0.0	1.0	A-	
857	622607	8	8	145	.490	.055	.048	.490	.393	.014	.316	-.208	-.175	.316	-.031	0.519	0.180	1.2	1.1	0.6	1.0	A-	
858	635384	8	8	145	.435	.200	.124	.435	.228	.014	.118	.004	.082	.118	-.071	0.814	0.181	3.9	1.3	4.0	1.4	A-	
859	639603	8	8	145	.379	.110	.379	.469	.028	.014	.248	-.094	.248	-.012	-.168	1.049	0.184	1.3	1.1	1.4	1.1	B+	
860	635367	8	8	145	.531	.241	.069	.145	.531	.014	.501	-.144	-.282	-.168	.501	0.324	0.180	-2.5	0.9	-2.4	0.8	A+	
861	628254	8	8	145	.669	.276	.669	.021	.021	.014	.378	-.180	.378	-.065	-.215	-0.362	0.192	-0.1	1.0	-0.4	0.9	A+	
862	640047	8	3	145	.152	.552	.152	.200	.083	.014	.021	.341	.021	-.180	-.175	2.512	0.248	0.9	1.2	2.4	1.7	A+	
863	640045	8	4	145	.469	.138	.269	.469	.110	.014	.359	-.116	-.169	.359	-.021	0.617	0.180	0.0	1.0	0.2	1.0	A+	
864	627486	8	8	145	.207	.648	.014	.117	.207	.014	.331	.009	-.106	-.213	.331	2.028	0.217	0.0	1.0	-0.5	0.9	A+	
865	639585	8	8	145	.435	.386	.069	.435	.097	.014	.433	-.072	-.207	.433	-.237	0.781	0.181	-1.4	0.9	-1.4	0.9	A+	
866	638663	8	4	145	.807	.090	.807	.048	.041	.014	.500	-.244	.500	-.211	-.127	-1.229	0.230	-0.9	0.9	-1.4	0.7	A-	
867	640050	8	4	145	.807	.807	.103	.048	.028	.014	.483	.483	-.209	-.200	-.165	-1.176	0.227	-1.2	0.8	-1.4	0.7	A+	
868	639858	8	8	145	.724	.152	.724	.069	.035	.021	.490	-.227	.490	-.208	-.147	-0.705	0.204	-1.3	0.9	-1.6	0.8	A-	
869	622604	8	8	145	.855	.041	.041	.855	.062	.000	.235	-.209	-.129	.235	-.063	-1.656	0.246	0.4	1.1	0.5	1.1	A-	
870	639607	8	8	145	.628	.103	.179	.090	.628	.000	.359	-.184	-.167	-.187	.359	-0.235	0.185	-0.4	1.0	-0.6	0.9	A+	

Table B–5 (continued). Writing/English Composition Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
871	628245	8	8	145	.821	.048	.821	.097	.035	.000	.342	-.169	.342	-.280	-.068	-1.374	0.228	-0.1	1.0	0.5	1.1	A+	
872	639598	8	8	145	.462	.193	.462	.310	.035	.000	.372	-.220	.372	-.126	-.219	0.554	0.180	-0.1	1.0	-0.6	1.0	A-	
873	635905	8	8	145	.835	.041	.069	.055	.835	.000	.509	-.136	-.355	-.316	.509	-1.482	0.234	-1.4	0.8	-1.8	0.6	A+	
874	638831	8	7	145	.545	.228	.145	.545	.069	.014	.392	-.016	-.379	.392	-.103	0.134	0.181	0.1	1.0	-0.2	1.0	A-	
875	628122	8	8	145	.703	.152	.703	.083	.048	.014	.506	-.290	.506	-.156	-.220	-0.679	0.197	-1.4	0.9	-1.5	0.8	B+	
876	635352	8	7	145	.503	.090	.269	.124	.503	.014	.427	-.168	-.189	-.135	.427	0.332	0.181	-0.4	1.0	-0.2	1.0	A-	
877	640051	8	4	145	.497	.103	.497	.269	.117	.014	.437	-.176	.437	-.190	-.136	0.365	0.181	-1.8	0.9	-1.1	0.9	C+	
878	640046	8	4	145	.897	.014	.897	.021	.055	.014	.444	-.183	.444	-.241	-.187	-2.218	0.299	-0.5	0.9	-1.2	0.6	A+	
879	635371	8	8	145	.317	.497	.117	.317	.055	.014	.138	.148	-.328	.138	.020	1.252	0.192	2.0	1.2	3.1	1.4	A-	
880	633427	8	8	145	.428	.317	.179	.055	.428	.021	.129	.004	-.064	-.184	.129	0.689	0.183	3.8	1.3	3.8	1.4	A+	
881	628121	8	8	145	.655	.655	.076	.179	.076	.014	.540	.540	-.199	-.339	-.139	-0.415	0.190	-1.8	0.9	-2.2	0.8	A+	
882	635732	8	5	145	.448	.166	.235	.145	.448	.007	.584	-.354	-.167	-.201	.584	0.600	0.181	-3.5	0.8	-3.3	0.7	B+	
883	639859	8	8	145	.393	.283	.110	.393	.207	.007	.140	.028	-.031	.140	-.132	0.867	0.184	2.7	1.2	2.5	1.3	A-	
884	628243	8	8	143	.608	.608	.161	.042	.189	.000	.199	.199	-.081	-.025	-.160	-0.137	0.184	0.9	1.1	1.1	1.1	A-	
885	626950	8	8	143	.392	.091	.392	.399	.119	.000	.302	-.134	.302	-.157	-.099	0.874	0.182	0.6	1.0	0.3	1.0	A-	
886	639574	8	8	143	.322	.483	.322	.077	.119	.000	.226	-.187	.226	.030	-.063	1.219	0.189	1.1	1.1	1.1	1.1	A-	
887	622429	8	8	143	.776	.776	.042	.042	.140	.000	.358	.358	-.168	-.059	-.299	-1.062	0.214	-0.3	1.0	-0.4	0.9	A+	
888	636010	8	8	143	.657	.112	.175	.657	.049	.007	.334	-.017	-.285	.334	-.228	-0.408	0.190	0.3	1.0	-0.1	1.0	A-	
889	638880	8	7	143	.685	.105	.168	.685	.042	.000	.413	-.164	-.262	.413	-.219	-0.527	0.193	-0.6	1.0	-0.6	0.9	A+	
890	628253	8	8	143	.518	.231	.161	.091	.518	.000	.328	.008	-.305	-.192	.328	0.290	0.179	0.4	1.0	0.2	1.0	A+	
891	635934	8	8	143	.790	.091	.790	.070	.049	.000	.568	-.354	.568	-.331	-.210	-1.109	0.217	-1.7	0.8	-2.2	0.7	A+	
892	640055	8	4	143	.476	.140	.161	.224	.476	.000	.161	-.008	-.055	-.138	.161	0.483	0.179	2.1	1.1	3.1	1.3	A+	
893	640048	8	5	143	.413	.056	.252	.280	.413	.000	.406	-.093	-.183	-.221	.406	0.808	0.181	-1.6	0.9	-1.6	0.9	A-	
894	627680	8	4	143	.294	.294	.294	.231	.182	.000	.253	.253	-.039	-.089	-.157	1.366	0.193	0.4	1.0	0.4	1.1	A-	
895	639442	8	3	143	.203	.385	.203	.252	.161	.000	.119	-.176	.119	.056	.037	1.955	0.219	0.5	1.1	1.0	1.2	A+	
896	635353	8	7	143	.867	.035	.042	.867	.056	.000	.531	-.185	-.367	.531	-.317	-1.784	0.262	-0.9	0.8	-2.0	0.5	A-	
897	634075	8	5	143	.245	.245	.168	.511	.077	.000	.139	.139	-.294	.184	-.157	1.684	0.205	0.8	1.1	1.3	1.2	C+	
898	639860	8	8	143	.748	.084	.098	.748	.070	.000	.503	-.101	-.346	.503	-.343	-0.885	0.206	-1.4	0.9	-1.8	0.7	A+	
899	636056	8	8	145	.738	.097	.738	.055	.103	.007	.368	-.126	.368	-.254	-.092	-0.926	0.204	0.1	1.0	-0.1	1.0	A-	
900	640049	8	6	145	.869	.035	.028	.869	.062	.007	.506	-.229	-.164	.506	-.264	-1.925	0.263	-1.1	0.8	-1.7	0.5	A-	
901	636016	8	8	145	.890	.007	.069	.890	.028	.007	.357	-.039	-.196	.357	-.127	-2.150	0.283	-0.1	1.0	-0.5	0.8	A-	
902	625550	8	8	145	.814	.021	.035	.117	.814	.014	.479	-.174	-.069	-.341	.479	-1.484	0.233	-0.8	0.9	-1.4	0.7	A-	
903	621164	8	6	145	.538	.179	.131	.538	.138	.014	.465	-.166	-.235	.465	-.094	0.119	0.182	-1.3	0.9	-1.4	0.9	B+	
904	639609	8	7	145	.524	.062	.069	.331	.524	.014	.271	-.150	-.216	.025	.271	0.185	0.181	1.8	1.1	2.1	1.2	A-	
905	640053	8	6	145	.772	.062	.041	.772	.110	.014	.488	-.165	-.203	.488	-.217	-1.161	0.216	-1.4	0.8	-1.5	0.7	C+	

Table B–5 (continued). Writing/English Composition Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
906	635935	8	8	145	.828	.069	.828	.055	.035	.014	.525	-.170	.525	-.216	-.271	-1.574	0.239	-1.5	0.8	-1.9	0.6	A-	
907	628132	8	8	145	.628	.628	.152	.117	.083	.021	.520	.520	-.235	-.269	-.061	-0.343	0.189	-1.8	0.9	-1.9	0.8	A+	
908	635930	8	8	145	.538	.110	.538	.159	.172	.021	.251	-.087	.251	-.104	.010	0.105	0.183	1.5	1.1	1.5	1.2	A+	
909	635377	8	8	145	.255	.400	.255	.124	.200	.021	.088	-.034	.088	.092	.030	1.558	0.205	2.5	1.3	2.9	1.5	A-	
910	621202	8	4	145	.421	.276	.421	.186	.097	.021	.330	-.105	.330	-.178	.059	0.672	0.183	0.3	1.0	0.8	1.1	A+	
911	635354	8	7	145	.455	.055	.069	.400	.455	.021	.342	-.111	-.183	-.071	.342	0.504	0.182	1.1	1.1	1.2	1.1	A+	
912	634317	8	5	145	.524	.145	.159	.152	.524	.021	.420	-.121	-.207	-.078	.420	0.172	0.182	-0.9	0.9	-0.8	0.9	B+	
913	639861	8	8	145	.221	.248	.221	.255	.255	.021	.062	.025	.062	-.062	.124	1.779	0.215	2.2	1.3	2.8	1.6	A+	
914	627035	8	8	144	.861	.861	.035	.076	.028	.000	.181	.181	-.186	-.093	-.023	-1.616	0.247	0.1	1.0	0.5	1.1	A-	
915	636001	8	8	144	.667	.146	.111	.667	.076	.000	.326	-.188	-.142	.326	-.160	-0.387	0.186	-0.3	1.0	-0.6	0.9	A+	
916	639604	8	8	144	.806	.090	.806	.028	.076	.000	.271	-.076	.271	-.208	-.193	-1.185	0.218	-0.1	1.0	-0.3	0.9	A-	
917	636050	8	8	144	.708	.028	.083	.181	.708	.000	.249	-.073	-.128	-.172	.249	-0.602	0.192	0.5	1.0	1.1	1.2	A-	
918	636007	8	8	144	.778	.097	.076	.778	.035	.014	.362	-.168	-.229	.362	-.048	-1.061	0.213	-0.3	1.0	-0.6	0.9	A-	
919	626781	8	6	144	.486	.111	.132	.486	.264	.007	.386	-.174	-.113	.386	-.179	0.442	0.177	-0.5	1.0	-0.6	1.0	A-	
920	639583	8	8	144	.486	.090	.250	.167	.486	.007	.244	-.167	.130	-.294	.244	0.442	0.177	1.6	1.1	1.5	1.1	A-	
921	639596	8	8	144	.215	.215	.472	.208	.097	.007	.127	.127	-.016	-.033	-.032	1.842	0.214	1.3	1.2	1.7	1.3	A+	
922	639581	8	8	144	.819	.049	.819	.111	.014	.007	.356	-.011	.356	-.309	-.142	-1.323	0.227	-0.5	0.9	0.0	1.0	A+	
923	633501	8	8	144	.486	.486	.125	.188	.194	.007	.423	.423	-.192	-.193	-.131	0.442	0.177	-1.2	0.9	-1.0	0.9	A+	
924	630671	8	4	144	.313	.146	.250	.313	.285	.007	.250	-.155	-.016	.250	-.074	1.274	0.191	0.7	1.1	1.5	1.2	A+	
925	628111	8	6	144	.431	.125	.132	.306	.431	.007	.291	-.057	-.140	-.124	.291	0.697	0.179	1.0	1.1	0.6	1.1	A+	
926	635382	8	8	144	.215	.361	.181	.236	.215	.007	.224	.077	-.134	-.134	.224	1.842	0.214	0.9	1.1	0.5	1.1	A-	
927	621208	8	4	144	.549	.063	.201	.181	.549	.007	.488	-.219	-.264	-.164	.488	0.157	0.178	-2.3	0.9	-2.0	0.8	A+	
928	628013	8	4	144	.375	.299	.208	.375	.111	.007	.275	-.184	.001	.275	-.090	0.960	0.183	0.8	1.1	1.2	1.1	A-	
929	625518	8	6	144	.410	.167	.257	.410	.160	.007	.423	-.104	-.233	.423	-.127	0.794	0.180	-1.2	0.9	-0.7	0.9	A+	
930	639868	8	8	144	.347	.229	.347	.236	.181	.007	.393	-.130	.393	-.229	-.037	1.096	0.186	-0.5	1.0	-0.7	0.9	A+	
931	627470	8	8	145	.448	.331	.172	.448	.048	.000	.319	-.064	-.293	.319	-.085	0.838	0.178	0.5	1.0	0.6	1.1	A+	
932	639601	8	8	145	.745	.745	.055	.131	.069	.000	.456	.456	-.144	-.275	-.289	-0.608	0.200	-1.1	0.9	-1.5	0.8	A-	
933	634074	8	6	145	.421	.048	.290	.421	.241	.000	.235	-.033	.071	.235	-.330	0.966	0.179	1.6	1.1	1.4	1.1	A-	
934	639573	8	8	145	.800	.800	.097	.021	.083	.000	.398	.398	-.250	-.184	-.215	-0.954	0.217	-0.8	0.9	-0.6	0.9	B-	
935	639578	8	8	145	.793	.041	.083	.083	.793	.000	.443	-.168	-.216	-.314	.443	-0.908	0.214	-0.9	0.9	-1.4	0.8	A-	
936	626819	8	6	145	.524	.028	.083	.524	.366	.000	.344	-.284	-.194	.344	-.149	0.491	0.177	0.2	1.0	0.3	1.0	B+	
937	628128	8	4	145	.372	.228	.372	.269	.131	.000	.296	-.109	.296	-.245	.034	1.196	0.182	0.5	1.0	0.8	1.1	A-	
938	635933	8	8	145	.393	.283	.393	.159	.159	.007	.345	-.062	.345	-.263	-.096	1.091	0.181	0.0	1.0	0.3	1.0	A+	
939	639590	8	8	145	.579	.117	.207	.097	.579	.000	.585	-.211	-.372	-.238	.585	0.236	0.179	-3.4	0.8	-3.0	0.8	A-	
940	639591	8	8	145	.662	.152	.662	.062	.124	.000	.536	-.301	.536	-.204	-.292	-0.163	0.186	-2.2	0.8	-2.3	0.8	A+	

Table B–5 (continued). Writing/English Composition Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
941	628313	8	6	145	.200	.035	.469	.297	.200	.000	.340	-.239	-.116	-.075	.340	2.162	0.217	-0.3	1.0	-0.2	1.0	A-	
942	635364	8	8	145	.283	.435	.283	.145	.131	.007	.256	-.125	.256	-.108	-.068	1.639	0.195	0.7	1.1	0.6	1.1	A-	
943	635388	8	8	145	.255	.255	.193	.331	.221	.000	.087	.087	-.172	.037	.031	1.814	0.200	1.8	1.2	1.9	1.3	A-	
944	633504	8	8	145	.710	.710	.048	.110	.131	.000	.485	.485	-.138	-.259	-.324	-0.414	0.193	-1.5	0.9	-1.6	0.8	A+	
945	635358	8	7	145	.572	.076	.262	.572	.083	.007	.358	-.019	-.243	.358	-.202	0.258	0.179	0.0	1.0	0.4	1.0	A+	
946	622609	8	8	145	.310	.310	.235	.262	.193	.000	.157	.157	-.095	.010	-.094	1.509	0.190	1.4	1.1	2.4	1.3	A-	
947	634304	8	8	145	.497	.124	.207	.497	.172	.000	.228	-.049	-.278	.228	.040	0.617	0.177	1.7	1.1	1.8	1.1	A+	
948	629913	8	8	143	.539	.175	.539	.238	.049	.000	.393	-.046	.393	-.354	-.129	0.333	0.178	-0.6	1.0	-0.6	1.0	A+	
949	639602	8	8	143	.713	.028	.713	.133	.126	.000	.364	-.201	.364	-.379	-.008	-0.518	0.195	-0.7	0.9	0.4	1.0	A-	
950	629912	8	8	143	.636	.245	.049	.636	.070	.000	.314	-.125	-.154	.314	-.252	-0.125	0.184	0.3	1.0	0.2	1.0	B-	
951	628244	8	8	143	.776	.042	.063	.776	.119	.000	.351	-.308	-.233	.351	-.087	-0.886	0.210	-0.3	1.0	-0.4	0.9	A+	
952	630386	8	6	143	.462	.245	.140	.147	.462	.007	.417	.027	-.349	-.261	.417	0.672	0.178	-0.9	1.0	-1.0	0.9	B+	
953	634314	8	6	143	.364	.224	.364	.154	.259	.000	-.057	-.182	-.057	.007	.230	1.138	0.183	4.2	1.3	3.7	1.4	A-	
954	627694	8	4	143	.273	.252	.161	.315	.273	.000	.328	-.044	-.138	-.164	.328	1.607	0.197	-0.3	1.0	0.2	1.0	A+	
955	635936	8	8	143	.413	.294	.175	.413	.119	.000	.430	-.279	-.116	.430	-.126	0.906	0.180	-1.3	0.9	-0.9	0.9	A+	
956	627773	8	3	143	.308	.203	.308	.203	.287	.000	.381	-.099	.381	-.240	-.087	1.419	0.190	-0.7	1.0	-0.6	0.9	A+	
957	628129	8	4	143	.406	.259	.147	.406	.189	.000	.258	.089	-.128	.258	-.307	0.939	0.180	0.9	1.1	1.3	1.1	A-	
958	630669	8	6	143	.217	.217	.280	.273	.231	.000	.060	.060	-.006	-.096	.050	1.940	0.211	1.2	1.1	2.1	1.4	B+	
959	635389	8	8	143	.434	.196	.182	.434	.189	.000	.227	-.167	-.176	.227	.056	0.810	0.179	1.5	1.1	1.5	1.1	A+	
960	639594	8	8	143	.559	.147	.154	.140	.559	.000	.242	-.147	-.088	-.105	.242	0.237	0.179	1.3	1.1	1.6	1.1	A+	
961	630413	8	7	143	.413	.119	.070	.413	.399	.000	.190	-.181	-.310	.190	.090	0.906	0.180	1.8	1.1	2.0	1.2	A+	
962	627979	8	3	143	.336	.490	.091	.084	.336	.000	.084	.118	-.164	-.186	.084	1.276	0.187	2.5	1.2	2.1	1.2	A+	
963	638828	8	7	143	.329	.182	.182	.329	.308	.000	.329	-.102	.023	.329	-.269	1.311	0.187	0.1	1.0	-0.2	1.0	A+	
964	635730	8	8	143	.301	.301	.273	.182	.245	.000	.418	.418	-.140	-.123	-.191	1.455	0.191	-1.1	0.9	-0.8	0.9	A-	
965	630375	8	8	144	.326	.396	.222	.056	.326	.000	.249	-.146	.014	-.224	.249	1.407	0.188	1.0	1.1	0.8	1.1	A-	
966	636011	8	8	144	.972	.014	.972	.014	.000	.000	.239	-.137	.239	-.198	.000	-3.234	0.509	0.1	1.0	-0.9	0.5	A-	
967	635459	8	8	144	.854	.854	.049	.014	.083	.000	.260	.260	-.090	-.264	-.150	-1.377	0.244	-0.1	1.0	0.2	1.0	A-	
968	628117	8	3	144	.396	.208	.097	.299	.396	.000	.456	-.207	-.020	-.291	.456	1.067	0.181	-1.5	0.9	-1.4	0.9	A+	
969	640054	8	6	144	.264	.049	.146	.264	.542	.000	.122	-.055	-.069	.122	-.036	1.743	0.199	1.2	1.1	2.6	1.4	A-	
970	635937	8	8	144	.500	.167	.139	.500	.194	.000	.478	-.282	-.059	.478	-.287	0.588	0.177	-2.0	0.9	-1.8	0.9	B-	
971	639606	8	8	144	.924	.924	.014	.028	.035	.000	.396	.396	-.174	-.213	-.273	-2.143	0.319	-0.5	0.9	-1.4	0.5	A+	
972	634158	8	8	144	.625	.243	.083	.625	.049	.000	.270	-.151	-.046	.270	-.248	0.009	0.182	0.8	1.1	1.1	1.1	A+	
973	639575	8	8	144	.576	.271	.576	.076	.076	.000	.267	-.056	.267	-.157	-.246	0.238	0.179	1.2	1.1	0.6	1.1	A+	
974	640052	8	3	144	.792	.000	.035	.174	.792	.000	.368	.000	-.216	-.291	.368	-0.908	0.214	-0.4	1.0	-0.8	0.9	A+	
975	622417	8	6	144	.465	.215	.465	.146	.174	.000	.207	-.129	.207	-.070	-.067	0.745	0.177	2.1	1.1	1.7	1.1	A+	

Table B–5 (continued). Writing/English Composition Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
976	635731	8	4	144	.326	.222	.243	.326	.208	.000	.142	-.007	-.198	.142	.052	1.407	0.188	1.8	1.1	2.2	1.3	A-	
977	628320	8	4	144	.826	.028	.826	.063	.083	.000	.359	-.083	.359	-.251	-.223	-1.154	0.228	-0.3	1.0	-1.0	0.8	A-	
978	634072	8	4	144	.875	.063	.049	.875	.014	.000	.456	-.290	-.260	.456	-.211	-1.568	0.259	-0.9	0.9	-1.5	0.6	A+	
979	634071	8	7	144	.264	.639	.056	.042	.264	.000	.475	-.302	-.116	-.190	.475	1.743	0.199	-1.5	0.9	-1.2	0.8	A+	
980	635938	8	8	144	.375	.299	.201	.375	.125	.000	.288	.002	-.248	.288	-.125	1.166	0.182	0.7	1.0	0.6	1.1	A+	
981	635390	8	8	144	.451	.125	.451	.264	.160	.000	.026	-.025	.026	-.017	.008	0.809	0.178	4.2	1.3	4.3	1.4	A+	
982	639950	8	8	144	.792	.153	.792	.028	.028	.000	.306	-.187	.306	-.197	-.149	-1.161	0.216	0.0	1.0	-0.2	1.0	A-	
983	639593	8	8	144	.507	.507	.160	.146	.188	.000	.444	.444	-.057	-.390	-.163	0.320	0.177	-1.1	0.9	-1.3	0.9	A-	
984	635383	8	8	144	.382	.194	.382	.278	.146	.000	.109	.064	.109	-.122	-.067	0.897	0.182	2.3	1.2	2.7	1.3	A+	
985	636000	8	8	144	.792	.063	.049	.792	.076	.021	.495	-.371	-.190	.495	-.207	-1.286	0.226	-1.2	0.9	-1.3	0.8	A-	
986	639576	8	8	144	.681	.681	.069	.146	.090	.014	.489	.489	-.285	-.308	-.092	-0.560	0.193	-1.3	0.9	-1.3	0.9	A+	
987	638827	8	7	144	.250	.361	.250	.174	.215	.000	.043	.191	.043	-.128	-.152	1.628	0.203	1.3	1.1	2.0	1.3	A-	
988	639952	8	8	144	.507	.354	.069	.063	.507	.007	.409	-.091	-.236	-.342	.409	0.304	0.178	-0.7	1.0	-0.7	1.0	A+	
989	633500	8	8	144	.160	.188	.160	.278	.368	.007	.178	.097	.178	-.122	-.063	2.192	0.236	0.2	1.0	1.8	1.4	A+	
990	628312	8	3	144	.201	.368	.243	.201	.181	.007	.108	.041	.071	.108	-.196	1.885	0.217	1.0	1.1	1.6	1.3	A+	
991	628247	8	4	144	.167	.056	.549	.222	.167	.007	.296	-.227	-.123	.050	.296	2.137	0.232	-0.1	1.0	0.0	1.0	A+	
992	627065	8	4	144	.604	.097	.181	.604	.111	.007	.412	-.339	-.150	.412	-.081	-0.117	0.182	-1.2	0.9	-1.0	0.9	A-	
993	635363	8	8	144	.396	.090	.396	.340	.167	.007	.058	-.125	.058	.067	-.016	0.819	0.181	3.5	1.2	3.9	1.4	A+	
994	636054	8	8	144	.361	.319	.361	.215	.097	.007	.229	-.099	.229	.018	-.179	0.987	0.184	1.4	1.1	1.5	1.1	A-	
995	630289	8	4	144	.743	.076	.049	.743	.125	.007	.624	-.270	-.316	.624	-.347	-0.886	0.204	-2.4	0.8	-2.7	0.6	A+	
996	634316	8	4	144	.514	.250	.139	.514	.090	.007	.455	-.124	-.318	.455	-.159	0.272	0.178	-1.4	0.9	-1.2	0.9	A-	
997	634155	8	8	144	.340	.167	.340	.354	.132	.007	.304	-.078	.304	-.035	-.238	1.090	0.186	0.4	1.0	0.5	1.1	A+	
998	627484	8	8	144	.528	.528	.028	.229	.208	.007	.304	.304	-.202	-.341	.105	0.240	0.178	0.5	1.0	0.3	1.0	A-	
999	636213	8	8	143	.378	.154	.231	.238	.378	.000	.318	-.072	-.179	-.125	.318	1.071	0.182	0.3	1.0	0.0	1.0	A-	
1000	639599	8	8	144	.771	.049	.771	.139	.042	.000	.372	-.194	.372	-.290	-.072	-0.774	0.208	-0.4	1.0	-0.8	0.9	A-	
1001	633503	8	8	144	.688	.049	.181	.083	.688	.000	.235	-.264	-.021	-.159	.235	-0.546	0.191	1.0	1.1	1.6	1.2	A+	
1002	629857	8	4	144	.278	.104	.278	.438	.174	.007	.360	-.105	.360	-.235	.022	1.463	0.197	-0.2	1.0	-0.1	1.0	A-	
1003	634156	8	8	145	.283	.283	.062	.166	.490	.000	.301	.301	-.043	-.219	-.088	1.657	0.194	0.3	1.0	0.2	1.0	A+	
1004	639577	8	8	143	.594	.594	.259	.077	.070	.000	.503	.503	-.261	-.272	-.236	0.075	0.181	-2.1	0.9	-2.0	0.9	A+	
1005	635385	8	8	144	.236	.076	.236	.243	.444	.000	.384	-.123	.384	-.115	-.164	1.908	0.206	-0.7	0.9	-0.2	1.0	A+	
1006	635351	8	N/A	144	.097	.097	.431	.368	.097	.007	.142	-.051	-.204	.191	.142	2.883	0.297	0.0	1.0	0.3	1.1	A+	
1007	627964	8	8	144	.729	.729	.097	.076	.090	.007	.414	.414	-.181	-.242	-.158	-0.741	0.198	-0.9	0.9	-0.9	0.9	A-	
1008	626786	8	8	145	.497	.035	.207	.255	.497	.007	.570	-.294	-.302	-.234	.570	0.607	0.178	-3.2	0.8	-3.1	0.8	A-	
1009	636212	8	8	144	.924	.007	.042	.028	.924	.000	.232	-.206	-.135	-.106	.232	-2.143	0.319	0.0	1.0	-0.4	0.8	A+	
1010	639597	8	8	144	.750	.049	.132	.750	.063	.007	.417	-.292	-.269	.417	-.100	-0.928	0.206	-0.5	0.9	-0.5	0.9	A-	

Table B–5 (continued). Writing/English Composition Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
1011	633502	8	8	144	.528	.257	.528	.167	.042	.007	.330	-.145	.330	-.212	-.007	0.252	0.178	0.4	1.0	-0.1	1.0	A+	
1012	629860	8	4	145	.441	.103	.179	.276	.441	.000	.391	-.036	-.268	-.180	.391	0.870	0.178	-0.4	1.0	-0.6	1.0	A+	
1013	634157	8	8	143	.664	.042	.245	.049	.664	.000	.220	-.366	.031	-.203	.220	-0.263	0.187	1.0	1.1	1.4	1.2	A-	
1014	639608	8	8	144	.847	.035	.028	.847	.090	.000	.385	-.316	-.023	.385	-.269	-1.319	0.240	-0.6	0.9	-1.0	0.8	A-	
1015	635386	8	8	144	.236	.153	.194	.410	.236	.007	.149	-.224	-.240	.265	.149	1.661	0.206	1.2	1.1	1.4	1.2	A-	
1016	635350	8	7	144	.319	.313	.153	.208	.319	.007	.282	-.195	-.038	-.016	.282	1.238	0.190	0.7	1.1	0.7	1.1	A+	
1017	628143	8	8	145	.766	.103	.766	.069	.062	.000	.475	-.262	.475	-.295	-.194	-0.731	0.205	-1.2	0.9	-1.8	0.7	A-	
1018	626785	8	8	143	.580	.580	.126	.063	.231	.000	.428	.428	-.446	-.211	-.030	0.140	0.180	-1.0	0.9	-1.1	0.9	C-	
1019	622816	EC	EC	173	.509	.093	.139	.254	.509	.006	.415	-.116	-.255	-.118	.415	0.496	0.163	-1.3	0.9	-0.4	1.0	A-	
1020	639932	EC	EC	173	.231	.312	.110	.231	.335	.012	.269	.070	-.110	.269	-.145	1.804	0.189	0.1	1.0	0.3	1.0	A+	
1021	639920	EC	EC	171	.515	.146	.123	.515	.211	.006	.503	-.168	-.283	.503	-.165	0.573	0.168	-2.0	0.9	-1.6	0.9	A-	
1022	634313	EC	EC	173	.497	.075	.150	.254	.497	.023	.424	-.146	-.079	-.199	.424	0.474	0.168	-0.4	1.0	-0.3	1.0	A+	
1023	633540	EC	EC	172	.576	.227	.576	.070	.116	.012	.437	-.204	.437	-.151	-.163	0.115	0.169	-0.7	1.0	-0.6	1.0	A+	
1024	622613	EC	EC	173	.457	.121	.249	.457	.150	.023	.389	-.147	-.113	.389	-.024	0.677	0.167	0.2	1.0	-0.1	1.0	A+	
1025	623126	EC	EC	173	.515	.243	.515	.139	.081	.023	.248	-.141	.248	.002	-.125	0.449	0.166	2.2	1.1	2.5	1.2	A-	
1026	639971	EC	EC	174	.626	.626	.149	.092	.092	.040	.468	.468	-.150	-.177	-.059	-0.227	0.172	-1.4	0.9	-1.6	0.9	A-	
1027	629853	EC	EC	174	.253	.149	.253	.368	.213	.017	.353	-.202	.353	.037	-.113	1.930	0.187	-0.3	1.0	0.1	1.0	A+	
1028	630391	EC	EC	173	.734	.127	.734	.058	.046	.035	.490	-.226	.490	-.190	-.132	-0.822	0.196	-1.0	0.9	-1.3	0.8	B+	
1029	622815	EC	EC	174	.764	.764	.121	.052	.058	.006	.342	.342	-.085	-.318	-.067	-0.713	0.192	0.1	1.0	0.4	1.1	A+	
1030	639933	EC	EC	173	.347	.347	.173	.121	.353	.006	.215	.215	-.021	-.148	-.026	1.252	0.171	1.4	1.1	1.2	1.1	A+	
1031	639919	EC	EC	173	.480	.231	.173	.116	.480	.000	.239	-.108	-.065	-.155	.239	0.688	0.165	1.9	1.1	1.6	1.1	A+	
1032	634349	EC	EC	174	.443	.052	.443	.218	.276	.012	.053	-.133	.053	-.154	.264	0.709	0.167	5.7	1.4	5.7	1.5	A+	
1033	633536	EC	EC	174	.454	.132	.454	.305	.092	.017	.394	-.172	.394	-.155	-.107	0.606	0.166	-0.1	1.0	-0.5	1.0	A+	
1034	622611	EC	EC	174	.661	.075	.109	.121	.661	.035	.548	-.174	-.239	-.145	.548	-0.288	0.181	-1.4	0.9	-1.6	0.8	A-	
1035	621166	EC	EC	173	.468	.202	.139	.468	.168	.023	.338	.005	-.221	.338	-.078	0.611	0.169	1.6	1.1	1.5	1.1	B-	
1036	630659	EC	EC	173	.410	.249	.410	.162	.168	.012	.407	-.186	.407	-.084	-.111	0.943	0.166	-1.1	0.9	-0.9	0.9	B+	
1037	629822	EC	EC	173	.335	.335	.121	.330	.197	.017	.354	.354	-.090	-.132	-.044	1.216	0.171	-0.6	1.0	-0.5	1.0	A-	
1038	630392	EC	EC	171	.655	.140	.140	.655	.029	.035	.503	-.277	-.227	.503	-.119	-0.226	0.181	-1.8	0.9	-1.8	0.8	A+	
1039	628028	EC	EC	2595	.086	.825	.050	.030	.086	.009	.270	-.033	-.068	-.052	.270	3.214	0.073	-1.2	0.9	-1.5	0.9	A+	A+
1040	636061	EC	EC	2595	.706	.706	.091	.108	.084	.011	.460	.460	-.220	-.177	-.159	-0.535	0.047	-4.5	0.9	-5.0	0.8	A-	A-
1041	639964	EC	EC	2595	.530	.217	.144	.094	.530	.015	.367	-.155	-.058	-.153	.367	0.352	0.043	1.3	1.0	1.5	1.0	A+	A+
1042	640040	EC	EC	2595	.925	.026	.015	.020	.925	.014	.433	-.160	-.125	-.133	.433	-2.531	0.085	-0.9	0.9	-4.0	0.6	A+	A-
1043	629820	EC	EC	2595	.621	.621	.114	.126	.121	.017	.470	.470	-.196	-.204	-.117	-0.105	0.044	-5.2	0.9	-5.2	0.9	A+	C-
1044	633537	EC	EC	2595	.278	.293	.221	.278	.188	.020	.302	-.024	-.088	.302	-.062	1.620	0.047	0.6	1.0	4.1	1.1	A+	B+
1045	639959	EC	EC	2595	.662	.115	.662	.115	.085	.023	.481	-.154	.481	-.223	-.149	-0.340	0.046	-5.2	0.9	-4.8	0.9	A-	A-

Table B–5 (continued). Writing/English Composition Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
1046	635484	EC	EC	2595	.558	.155	.148	.558	.115	.024	.417	-.147	-.121	.417	-.132	0.192	0.043	-1.5	1.0	-1.8	1.0	A+	A+
1047	629833	EC	EC	2595	.289	.174	.289	.278	.229	.030	.168	.023	.168	-.116	.088	1.534	0.047	8.0	1.2	9.6	1.3	A-	A-
1048	635741	EC	EC	2595	.600	.118	.131	.600	.121	.031	.410	-.122	-.182	.410	-.093	-0.036	0.044	-0.7	1.0	-1.0	1.0	A+	A-
1049	639954	EC	EC	173	.728	.087	.728	.069	.104	.012	.559	-.246	.559	-.165	-.276	-0.894	0.189	-2.3	0.8	-2.5	0.6	A-	
1050	635482	EC	EC	173	.515	.173	.168	.515	.127	.017	.357	-.111	-.134	.357	-.059	0.280	0.169	0.4	1.0	0.3	1.0	A-	
1051	636019	EC	EC	173	.723	.098	.121	.723	.046	.012	.513	-.222	-.191	.513	-.227	-0.859	0.188	-1.8	0.8	-2.0	0.7	A+	
1052	629825	EC	EC	173	.416	.260	.416	.220	.081	.023	.315	-.060	.315	-.059	-.087	0.705	0.171	2.1	1.1	1.4	1.1	A+	
1053	640020	EC	EC	173	.422	.150	.364	.422	.035	.029	.453	-.161	-.119	.453	-.066	0.671	0.171	-1.7	0.9	-1.1	0.9	A+	
1054	640105	EC	EC	173	.272	.272	.289	.272	.139	.029	.260	.260	-.026	-.061	.059	1.491	0.187	1.4	1.1	2.0	1.3	B-	
1055	635947	EC	EC	173	.335	.249	.254	.335	.133	.029	.228	.089	-.126	.228	.016	1.126	0.178	2.7	1.2	2.6	1.3	A-	
1056	636051	EC	EC	173	.121	.133	.121	.150	.567	.029	.171	-.153	-.171	-.230	.353	2.778	0.258	0.1	1.0	1.3	1.4	A-	
1057	640015	EC	EC	173	.630	.093	.116	.630	.127	.035	.500	-.167	-.138	.500	-.131	-0.369	0.177	-1.4	0.9	-1.7	0.8	A+	
1058	640036	EC	EC	173	.549	.549	.139	.156	.116	.041	.573	.573	-.205	-.197	-.113	0.010	0.172	-2.9	0.8	-2.5	0.8	A+	
1059	639990	EC	EC	173	.711	.104	.093	.711	.058	.035	.585	-.169	-.272	.585	-.125	-0.874	0.191	-2.4	0.8	-1.9	0.7	A+	
1060	639994	EC	EC	173	.335	.249	.168	.214	.335	.035	.220	-.053	-.027	.086	.220	1.123	0.178	2.3	1.2	2.6	1.3	A+	
1061	636018	EC	EC	173	.578	.121	.098	.578	.168	.035	.501	-.176	-.162	.501	-.097	-0.123	0.173	-1.3	0.9	-1.4	0.9	B+	
1062	621160	EC	EC	173	.225	.289	.225	.116	.324	.046	.166	.161	.166	-.113	.004	1.810	0.200	1.4	1.2	2.7	1.5	A+	
1063	629856	EC	EC	173	.260	.283	.260	.301	.116	.041	.103	-.008	.103	.096	.067	1.624	0.192	2.4	1.3	2.8	1.5	A-	
1064	639956	EC	EC	171	.275	.146	.275	.328	.234	.018	.194	-.207	.194	.209	-.062	1.675	0.186	1.7	1.2	1.3	1.2	A-	
1065	636060	EC	EC	171	.456	.456	.094	.228	.199	.023	.466	.466	-.035	-.206	-.110	0.692	0.168	-2.3	0.9	-2.1	0.9	A-	
1066	636024	EC	EC	171	.696	.140	.696	.029	.111	.023	.380	-.088	.380	-.195	-.065	-0.491	0.182	0.0	1.0	-0.3	1.0	A-	
1067	639997	EC	EC	171	.637	.035	.064	.637	.240	.023	.432	-.065	-.168	.432	-.148	-0.172	0.175	-1.0	0.9	-1.1	0.9	A+	
1068	639992	EC	EC	171	.556	.368	.053	.556	.000	.023	.240	.049	-.230	.240	.000	0.211	0.169	2.3	1.1	2.0	1.2	A+	
1069	638834	EC	EC	171	.415	.111	.281	.415	.175	.018	.334	-.182	.045	.334	-.111	0.929	0.170	0.8	1.1	0.8	1.1	B+	
1070	630714	EC	EC	171	.532	.059	.532	.135	.257	.018	.384	-.075	.384	-.154	-.083	0.364	0.168	0.1	1.0	0.2	1.0	A+	
1071	636052	EC	EC	171	.444	.117	.199	.444	.222	.018	.321	-.027	-.021	.321	-.137	0.786	0.168	1.1	1.1	1.0	1.1	A-	
1072	640016	EC	EC	171	.737	.164	.041	.041	.737	.018	.415	-.082	-.171	-.166	.415	-0.711	0.189	-0.3	1.0	-0.7	0.9	A-	
1073	640037	EC	EC	171	.801	.053	.029	.094	.801	.023	.468	-.166	-.097	-.134	.468	-1.168	0.211	-0.2	1.0	-0.9	0.8	A+	
1074	639909	EC	EC	171	.866	.035	.866	.018	.059	.023	.434	-.128	.434	-.087	-.080	-1.748	0.252	-0.2	1.0	-0.3	0.9	A+	
1075	639931	EC	EC	171	.175	.175	.304	.263	.234	.023	.146	.146	.053	.005	.029	2.301	0.213	1.0	1.1	1.3	1.3	A+	
1076	635485	EC	EC	171	.281	.234	.211	.281	.246	.029	.255	-.085	-.043	.255	.092	1.599	0.184	0.6	1.1	0.9	1.1	A-	
1077	621389	EC	EC	171	.444	.105	.444	.363	.064	.023	.423	-.062	.423	-.187	-.031	0.782	0.168	-1.0	0.9	-0.9	0.9	B-	
1078	630427	EC	EC	171	.339	.269	.175	.193	.339	.023	.331	-.030	-.131	.002	.331	1.313	0.176	0.0	1.0	-0.4	1.0	B-	
1079	639940	EC	EC	173	.515	.243	.515	.035	.208	.000	.174	-.220	.174	-.067	.049	0.470	0.163	2.7	1.1	3.5	1.3	A-	
1080	635486	EC	EC	173	.486	.121	.486	.243	.139	.012	.366	-.229	.366	-.078	-.103	0.595	0.163	-0.7	1.0	-0.7	1.0	A-	

Table B–5 (continued). Writing/English Composition Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M /F	W /B
1081	640072	EC	EC	173	.815	.052	.069	.815	.058	.006	.369	-.086	-.180	.369	-.190	-1.155	0.208	-0.2	1.0	-0.4	0.9	B+	
1082	640071	EC	EC	173	.653	.029	.272	.041	.653	.006	.449	-.204	-.227	-.225	.449	-0.189	0.170	-2.0	0.9	-1.3	0.9	A+	
1083	625530	EC	EC	173	.624	.041	.272	.624	.058	.006	.220	-.086	-.056	.220	-.132	-0.046	0.168	1.6	1.1	1.5	1.1	A-	
1084	640085	EC	EC	173	.642	.168	.642	.104	.075	.012	.305	-.028	.305	-.244	-.088	-0.147	0.170	0.8	1.1	0.8	1.1	B+	
1085	640001	EC	EC	173	.405	.439	.041	.098	.405	.017	.273	-.021	-.211	-.131	.273	0.959	0.166	1.0	1.1	0.5	1.0	B+	
1086	640087	EC	EC	173	.347	.046	.405	.347	.191	.012	.191	-.212	-.003	.191	.006	1.254	0.171	2.2	1.2	1.6	1.2	A-	
1087	638881	EC	EC	173	.312	.312	.243	.254	.173	.017	.256	.256	-.128	-.060	.036	1.459	0.176	0.6	1.0	1.3	1.1	A+	
1088	635583	EC	EC	173	.561	.116	.202	.561	.110	.012	.281	-.104	-.103	.281	-.055	0.243	0.165	1.2	1.1	1.3	1.1	A+	
1089	630715	EC	EC	173	.434	.104	.214	.434	.237	.012	.185	.043	-.023	.185	-.112	0.861	0.165	2.4	1.1	2.2	1.2	A+	
1090	636053	EC	EC	173	.399	.179	.399	.231	.179	.012	.276	-.121	.276	-.101	.003	0.998	0.166	1.0	1.1	1.3	1.1	B-	
1091	639969	EC	EC	173	.480	.197	.480	.208	.104	.012	.343	-.151	.343	-.077	-.106	0.618	0.163	0.2	1.0	0.5	1.0	A+	
1092	640018	EC	EC	173	.809	.809	.104	.052	.023	.012	.453	.453	-.240	-.221	-.052	-1.146	0.209	-0.7	0.9	-1.5	0.7	A+	
1093	635877	EC	EC	173	.480	.220	.098	.191	.480	.012	.516	-.182	-.140	-.236	.516	0.618	0.163	-3.4	0.8	-2.8	0.8	C+	
1094	640025	EC	EC	173	.844	.844	.017	.052	.064	.023	.425	.425	-.133	-.193	-.106	-1.497	0.235	-0.3	0.9	-0.8	0.8	A-	
1095	629818	EC	EC	173	.422	.098	.087	.382	.422	.012	.418	-.170	-.101	-.164	.418	0.888	0.165	-1.5	0.9	-0.4	1.0	A-	
1096	639928	EC	EC	173	.358	.358	.214	.225	.191	.012	.274	.274	-.160	-.099	.058	1.225	0.170	0.6	1.0	0.6	1.1	A+	
1097	621165	EC	EC	173	.260	.168	.318	.231	.260	.023	.294	-.135	.047	-.121	.294	1.709	0.185	0.2	1.0	0.9	1.1	A+	
1098	640092	EC	EC	173	.434	.162	.185	.434	.191	.029	.294	-.032	-.168	.294	-.022	0.832	0.166	0.8	1.0	0.8	1.1	B+	
1099	628027	EC	EC	173	.272	.260	.249	.272	.202	.017	.299	-.139	-.034	.299	-.031	1.642	0.182	0.0	1.0	0.9	1.1	C-	
1100	621157	EC	EC	173	.451	.179	.451	.156	.197	.017	.334	-.080	.334	-.123	-.114	0.734	0.164	0.3	1.0	0.4	1.0	A-	
1101	630428	EC	EC	173	.278	.278	.133	.387	.185	.017	.458	.458	-.167	-.165	-.059	1.642	0.182	-1.8	0.9	-1.8	0.8	A-	
1102	639953	EC	EC	174	.460	.460	.477	.012	.046	.006	.337	.337	-.202	-.146	-.095	0.857	0.165	0.9	1.1	0.5	1.0	A-	
1103	629917	EC	EC	174	.575	.224	.138	.575	.058	.006	.400	-.199	-.169	.400	-.107	0.311	0.166	-0.8	1.0	0.2	1.0	A+	
1104	640078	EC	EC	174	.575	.264	.575	.121	.035	.006	.410	-.200	.410	-.119	-.244	0.311	0.166	-0.3	1.0	-0.9	0.9	A+	
1105	638882	EC	EC	174	.431	.161	.293	.109	.431	.006	.414	-.273	-.095	-.095	.414	0.994	0.166	-0.7	1.0	-0.7	0.9	B+	
1106	636006	EC	EC	174	.615	.052	.293	.035	.615	.006	.242	-.214	-.030	-.138	.242	0.114	0.169	2.0	1.1	2.2	1.2	A-	
1107	639970	EC	EC	174	.828	.828	.103	.040	.017	.012	.402	.402	-.202	-.118	-.287	-1.207	0.218	-0.7	0.9	-0.4	0.9	A-	
1108	640002	EC	EC	174	.489	.069	.098	.333	.489	.012	.518	-.199	-.238	-.233	.518	0.702	0.165	-3.1	0.8	-2.4	0.8	A-	
1109	640096	EC	EC	174	.569	.138	.569	.247	.040	.006	.299	-.143	.299	-.138	-.041	0.338	0.166	1.5	1.1	1.0	1.1	A+	
1110	635988	EC	EC	174	.333	.253	.184	.213	.333	.017	.245	-.044	-.128	.021	.245	1.479	0.174	1.9	1.1	1.3	1.1	B-	
1111	635586	EC	EC	174	.845	.023	.086	.845	.040	.006	.340	-.216	-.016	.340	-.278	-1.309	0.224	-0.2	1.0	1.0	1.2	A+	
1112	629851	EC	EC	174	.598	.075	.598	.155	.167	.006	.427	-.224	.427	-.217	-.108	0.199	0.168	-0.7	1.0	-0.9	0.9	A-	
1113	640093	EC	EC	174	.672	.672	.178	.092	.052	.006	.523	.523	-.235	-.276	-.200	-0.181	0.175	-2.4	0.8	-1.9	0.8	A+	
1114	640091	EC	EC	174	.816	.103	.816	.063	.012	.006	.443	-.263	.443	-.203	-.099	-1.075	0.210	-0.8	0.9	-0.6	0.9	A-	
1115	640024	EC	EC	174	.897	.017	.052	.897	.029	.006	.510	-.130	-.274	.510	-.276	-1.839	0.266	-0.9	0.8	-2.0	0.5	A-	

Table B-5 (continued). Writing/English Composition Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
1116	625507	EC	EC	174	.379	.132	.328	.155	.379	.006	.447	-.107	-.139	-.232	.447	1.248	0.169	-1.3	0.9	-0.9	0.9	A-	
1117	639900	EC	EC	174	.276	.126	.333	.276	.241	.023	.316	-.093	-.081	.316	-.049	1.781	0.183	0.2	1.0	0.9	1.1	A+	
1118	640043	EC	EC	174	.517	.517	.092	.052	.322	.017	.342	.342	-.173	-.228	-.036	0.570	0.165	0.9	1.1	0.6	1.1	A+	
1119	629819	EC	EC	174	.328	.161	.328	.247	.247	.017	.203	-.162	.203	-.068	.109	1.504	0.175	1.9	1.1	3.0	1.4	A+	
1120	625533	EC	EC	174	.299	.167	.230	.287	.299	.017	.419	-.105	-.071	-.154	.419	1.661	0.179	-0.9	0.9	-0.7	0.9	B-	
1121	639929	EC	EC	174	.178	.253	.213	.178	.339	.017	.096	-.041	.034	.096	.043	2.442	0.211	1.6	1.2	2.3	1.5	A-	
1122	635948	EC	EC	174	.276	.126	.253	.276	.328	.017	.284	-.088	-.078	.284	-.023	1.793	0.183	0.6	1.1	1.4	1.2	A-	
1123	636025	EC	EC	174	.218	.310	.236	.213	.218	.023	.246	-.010	.036	-.153	.246	2.139	0.197	0.7	1.1	1.3	1.2	A-	
1124	635739	EC	EC	174	.264	.287	.149	.264	.276	.023	.302	-.073	-.083	.302	-.039	1.852	0.185	0.5	1.0	0.8	1.1	A-	
1125	630652	EC	EC	173	.780	.780	.029	.121	.069	.000	.331	.331	-.067	-.187	-.256	-0.964	0.193	0.0	1.0	0.1	1.0	A+	
1126	639946	EC	EC	173	.254	.694	.254	.017	.035	.000	.168	-.053	.168	-.115	-.185	1.667	0.184	0.9	1.1	0.7	1.1	A-	
1127	640090	EC	EC	173	.445	.023	.266	.445	.260	.006	.261	-.154	-.140	.261	-.024	0.708	0.162	1.2	1.1	1.1	1.1	A+	
1128	635580	EC	EC	173	.815	.133	.029	.017	.815	.006	.449	-.256	-.202	-.147	.449	-1.202	0.206	-1.1	0.9	-1.8	0.7	A+	
1129	629852	EC	EC	173	.254	.254	.121	.185	.428	.012	.249	.249	-.119	-.003	-.026	1.663	0.184	0.3	1.0	0.8	1.1	A-	
1130	639972	EC	EC	173	.526	.104	.526	.127	.231	.012	.260	-.120	.260	-.066	-.038	0.332	0.162	1.3	1.1	1.6	1.1	A-	
1131	640104	EC	EC	173	.509	.197	.202	.509	.081	.012	.416	-.133	-.161	.416	-.127	0.411	0.162	-1.4	0.9	-1.6	0.9	A-	
1132	622423	EC	EC	173	.491	.179	.491	.225	.093	.012	.331	-.054	.331	-.197	-.025	0.490	0.162	0.2	1.0	0.2	1.0	A+	
1133	640089	EC	EC	173	.393	.104	.353	.393	.133	.017	.223	-.180	.093	.223	-.117	0.934	0.166	1.5	1.1	1.8	1.1	B+	
1134	635587	EC	EC	173	.630	.035	.630	.052	.272	.012	.423	-.169	.423	-.189	-.170	-0.155	0.168	-1.1	0.9	-1.2	0.9	A-	
1135	640008	EC	EC	173	.497	.225	.173	.497	.093	.012	.279	.105	-.225	.279	-.148	0.463	0.162	1.1	1.1	1.3	1.1	A+	
1136	630395	EC	EC	173	.688	.173	.087	.035	.688	.017	.457	-.136	-.207	-.221	.457	-0.465	0.176	-1.3	0.9	-1.5	0.8	A+	
1137	640102	EC	EC	173	.335	.335	.145	.173	.335	.012	.325	.089	-.183	-.200	.325	1.225	0.170	-0.1	1.0	-0.1	1.0	B+	
1138	640026	EC	EC	173	.902	.046	.902	.035	.000	.017	.422	-.160	.422	-.211	.000	-2.152	0.285	-0.2	0.9	-1.2	0.6	B+	
1139	628030	EC	EC	173	.231	.145	.405	.208	.231	.012	.310	-.133	.067	-.151	.310	1.802	0.189	-0.3	1.0	-0.1	1.0	A-	
1140	639901	EC	EC	173	.243	.243	.162	.370	.214	.012	.239	.239	-.011	-.081	-.009	1.732	0.186	0.2	1.0	1.1	1.2	A+	
1141	622418	EC	EC	173	.324	.145	.312	.324	.202	.017	.129	.048	.016	.129	-.063	1.278	0.172	2.5	1.2	1.9	1.2	A+	
1142	629834	EC	EC	173	.214	.208	.353	.214	.214	.012	.332	-.078	-.088	-.016	.332	1.913	0.194	-0.7	0.9	0.1	1.0	B-	
1143	639930	EC	EC	173	.335	.358	.335	.156	.127	.023	.156	.027	.156	-.043	-.031	1.209	0.171	2.0	1.1	2.2	1.2	A+	
1144	630297	EC	EC	173	.353	.116	.231	.353	.283	.017	.121	-.117	.096	.121	-.007	1.129	0.169	2.6	1.2	2.9	1.3	A-	
1145	622608	EC	EC	173	.543	.543	.127	.179	.133	.017	.451	.451	-.134	-.111	-.233	0.238	0.163	-2.0	0.9	-1.9	0.9	B+	
1146	621391	EC	EC	173	.295	.127	.266	.295	.295	.017	.378	.020	-.163	-.107	.378	1.428	0.176	-1.0	0.9	-0.5	0.9	A+	
1147	635888	EC	EC	173	.278	.289	.278	.306	.098	.029	.237	-.053	.237	.026	-.119	1.505	0.180	0.7	1.1	0.8	1.1	A+	
1148	639938	EC	EC	173	.763	.763	.052	.058	.121	.006	.391	.391	-.230	-.204	-.105	-0.771	0.192	-0.9	0.9	-1.1	0.8	A+	
1149	639947	EC	EC	173	.428	.202	.046	.318	.428	.006	.375	-.121	-.234	-.117	.375	0.854	0.166	-0.9	1.0	-0.6	1.0	A-	
1150	640098	EC	EC	173	.659	.220	.052	.659	.064	.006	.342	-.126	-.173	.342	-.155	-0.240	0.174	0.2	1.0	0.0	1.0	A+	

Table B–5 (continued). Writing/English Composition Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
1151	636058	EC	EC	173	.069	.069	.387	.462	.069	.012	.094	-.052	.338	-.280	.094	3.617	0.333	0.2	1.0	-0.1	0.9	A-	
1152	630381	EC	EC	173	.838	.064	.052	.838	.041	.006	.427	-.241	-.228	.427	-.071	-1.419	0.228	-0.3	1.0	-0.9	0.8	A-	
1153	639973	EC	EC	173	.688	.093	.688	.093	.116	.012	.465	-.169	.465	-.204	-.215	-0.446	0.181	-1.2	0.9	-1.3	0.9	A-	
1154	640009	EC	EC	173	.451	.214	.185	.451	.145	.006	.462	-.036	-.204	.462	-.291	0.771	0.165	-2.0	0.9	-2.1	0.9	A-	
1155	622433	EC	EC	173	.353	.318	.353	.191	.133	.006	.203	.160	.203	-.178	-.200	1.222	0.171	1.7	1.1	2.0	1.2	A-	
1156	628250	EC	EC	173	.538	.093	.208	.538	.150	.012	.285	-.090	-.127	.285	-.074	0.323	0.166	1.5	1.1	1.3	1.1	A+	
1157	635588	EC	EC	173	.734	.116	.734	.098	.041	.012	.380	-.136	.380	-.194	-.123	-0.730	0.190	0.3	1.0	-0.4	0.9	A+	
1158	630394	EC	EC	173	.538	.272	.093	.538	.087	.012	.443	-.229	-.045	.443	-.226	0.342	0.166	-1.5	0.9	-1.7	0.9	B+	
1159	634315	EC	EC	173	.249	.093	.249	.561	.087	.012	.074	-.095	.074	.105	-.049	1.816	0.188	2.0	1.2	3.4	1.5	A-	
1160	640061	EC	EC	173	.584	.064	.173	.584	.168	.012	.284	-.263	-.099	.284	.011	0.147	0.168	1.5	1.1	0.9	1.1	A-	
1161	640027	EC	EC	173	.775	.156	.775	.041	.017	.012	.473	-.314	.473	-.141	-.102	-1.001	0.203	-0.7	0.9	-1.1	0.8	A-	
1162	629821	EC	EC	173	.578	.110	.225	.075	.578	.012	.442	-.261	-.159	-.104	.442	0.147	0.168	-1.1	0.9	-1.0	0.9	A-	
1163	639910	EC	EC	173	.890	.017	.064	.890	.006	.023	.437	-.066	-.248	.437	-.216	-2.129	0.295	-0.2	1.0	-0.5	0.8	A+	
1164	628014	EC	EC	173	.162	.104	.665	.162	.052	.017	-.090	-.217	.303	-.090	.008	2.461	0.223	1.2	1.2	3.2	1.8	A-	
1165	639925	EC	EC	173	.376	.278	.376	.231	.087	.029	.365	-.006	.365	-.160	-.132	1.067	0.170	-0.2	1.0	-0.2	1.0	A+	
1166	639998	EC	EC	173	.607	.254	.046	.607	.029	.029	.503	-.167	-.289	-.200	.503	-0.045	0.171	-2.4	0.9	-1.8	0.9	A+	
1167	625548	EC	EC	173	.243	.168	.243	.301	.260	.029	.049	.041	.049	-.148	.216	1.783	0.189	2.4	1.2	3.3	1.5	B-	
1168	621158	EC	EC	173	.607	.150	.075	.139	.607	.029	.520	-.197	-.149	-.235	.520	-0.045	0.171	-2.9	0.8	-2.7	0.8	A-	
1169	640062	EC	EC	173	.827	.827	.064	.046	.035	.029	.469	.469	-.280	-.208	-.013	-1.519	0.236	-0.6	0.9	-0.6	0.8	A+	
1170	636475	EC	EC	173	.116	.116	.162	.428	.260	.035	.007	.007	-.167	.144	.104	2.828	0.253	0.6	1.1	2.8	1.9	A-	
1171	639957	EC	EC	171	.661	.193	.088	.047	.661	.012	.175	.064	-.171	-.119	.175	-0.154	0.178	2.8	1.2	2.5	1.3	A+	
1172	639948	EC	EC	171	.819	.140	.023	.819	.012	.006	.315	-.200	-.078	.315	-.076	-1.171	0.216	0.4	1.0	0.9	1.2	A-	
1173	630660	EC	EC	171	.111	.111	.246	.099	.532	.012	.033	.033	-.181	-.001	.210	3.049	0.255	1.0	1.2	3.0	2.2	A+	
1174	640099	EC	EC	171	.754	.076	.754	.070	.094	.006	.470	-.206	.470	-.219	-.205	-0.712	0.194	-1.1	0.9	-1.3	0.8	A-	
1175	636059	EC	EC	171	.614	.228	.614	.070	.070	.018	.532	-.365	.532	-.114	-.119	0.050	0.174	-2.1	0.9	-2.2	0.8	A-	
1176	635886	EC	EC	171	.784	.047	.784	.064	.099	.006	.427	-.193	.427	-.206	-.176	-0.909	0.202	-0.6	0.9	-0.6	0.9	B+	
1177	627975	EC	EC	171	.637	.053	.637	.222	.082	.006	.208	-.099	.208	-.076	-.052	-0.040	0.175	2.9	1.2	2.0	1.2	A+	
1178	627045	EC	EC	171	.749	.035	.082	.749	.123	.012	.393	-.048	-.321	.393	-.121	-0.704	0.194	-0.2	1.0	0.6	1.1	C+	
1179	622420	EC	EC	171	.474	.152	.263	.474	.099	.012	.548	-.213	-.223	.548	-.217	0.757	0.169	-2.9	0.8	-2.7	0.8	A+	
1180	635589	EC	EC	171	.690	.690	.070	.047	.187	.006	.451	.451	-.311	-.238	-.120	-0.325	0.181	-0.8	0.9	-1.1	0.9	A+	
1181	635950	EC	EC	171	.836	.053	.059	.047	.836	.006	.508	-.159	-.271	-.271	.508	-1.318	0.225	-1.1	0.9	-1.9	0.6	A+	
1182	639926	EC	EC	171	.784	.053	.064	.094	.784	.006	.451	-.258	-.163	-.193	.451	-0.909	0.202	-0.7	0.9	-1.3	0.8	A+	
1183	626928	EC	EC	171	.252	.252	.252	.310	.175	.012	.297	.297	-.131	-.066	-.011	1.931	0.190	0.3	1.0	1.0	1.2	A-	
1184	640029	EC	EC	171	.842	.076	.029	.041	.842	.012	.464	-.306	-.145	-.143	.464	-1.421	0.232	-0.8	0.9	-1.2	0.7	B+	
1185	634319	EC	EC	171	.158	.059	.626	.140	.158	.018	.159	-.111	.130	-.157	.159	2.635	0.225	0.6	1.1	2.1	1.6	A-	

Table B-5 (continued). Writing/English Composition Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
1186	639996	EC	EC	171	.456	.175	.456	.228	.129	.012	.455	-.202	.455	-.178	-.118	0.833	0.169	-0.8	1.0	-0.8	0.9	A-	
1187	630390	EC	EC	171	.240	.345	.275	.240	.123	.018	.096	.047	-.037	.096	-.018	1.983	0.193	2.2	1.2	3.7	1.7	A-	
1188	640077	EC	EC	171	.790	.790	.088	.064	.035	.023	.524	.524	-.275	-.204	-.233	-1.068	0.211	-1.5	0.8	-1.4	0.7	A-	
1189	639999	EC	EC	171	.760	.012	.187	.760	.018	.023	.062	-.085	.142	.062	-.190	-0.844	0.201	2.7	1.3	4.8	2.1	A+	
1190	639902	EC	EC	171	.544	.544	.099	.146	.193	.018	.450	.450	-.178	-.242	-.112	0.385	0.170	-0.7	1.0	-0.7	0.9	A-	
1191	621394	EC	EC	171	.714	.059	.105	.105	.714	.018	.528	-.245	-.297	-.159	.528	-0.523	0.188	-1.7	0.9	-1.6	0.8	A+	
1192	630407	EC	EC	171	.345	.211	.152	.257	.345	.035	.215	.088	-.211	-.037	.215	1.346	0.177	2.7	1.2	2.1	1.2	A-	
1193	640010	EC	EC	171	.450	.181	.450	.181	.152	.035	.272	-.147	.272	-.134	.048	0.830	0.171	1.9	1.1	1.7	1.2	A-	
1194	639958	EC	EC	173	.642	.225	.642	.087	.041	.006	.400	-.212	.400	-.223	-.183	-0.117	0.172	-0.4	1.0	-0.5	1.0	A+	
1195	639941	EC	EC	173	.665	.665	.179	.012	.139	.006	.469	.469	-.348	-.143	-.208	-0.233	0.174	-1.4	0.9	-1.7	0.8	A+	
1196	636004	EC	EC	173	.358	.191	.098	.358	.353	.000	.251	-.191	-.154	.251	.002	1.275	0.171	0.9	1.1	1.2	1.1	A-	
1197	640100	EC	EC	173	.890	.041	.890	.058	.012	.000	.399	-.284	.399	-.219	-.164	-1.791	0.253	-0.7	0.9	-1.2	0.7	A+	
1198	630662	EC	EC	173	.619	.619	.214	.035	.133	.000	.453	.453	-.237	-.270	-.216	0.027	0.169	-1.4	0.9	-1.5	0.9	A-	
1199	628020	EC	EC	173	.214	.173	.480	.214	.133	.000	.224	-.419	.113	.224	.031	2.102	0.197	0.6	1.1	1.4	1.2	A+	
1200	640057	EC	EC	173	.711	.121	.093	.711	.058	.017	.336	-.132	-.184	.336	-.139	-0.524	0.183	0.4	1.0	-0.2	1.0	B-	
1201	628011	EC	EC	173	.266	.266	.075	.104	.543	.012	.178	.178	-.049	-.165	-.010	1.735	0.184	1.0	1.1	2.6	1.4	B+	
1202	630661	EC	EC	173	.289	.254	.249	.197	.289	.012	.380	-.052	-.167	-.168	.380	1.603	0.180	-0.1	1.0	0.1	1.0	A-	
1203	640082	EC	EC	173	.474	.474	.150	.075	.295	.006	.459	.459	-.231	-.222	-.172	0.690	0.165	-1.5	0.9	-1.3	0.9	B+	
1204	628475	EC	EC	173	.399	.150	.399	.116	.324	.012	.279	-.194	.279	-.099	-.054	1.033	0.168	1.8	1.1	1.6	1.1	A-	
1205	635949	EC	EC	173	.665	.058	.098	.665	.162	.017	.586	-.334	-.274	.586	-.277	-0.292	0.176	-3.0	0.8	-3.0	0.7	A-	
1206	639903	EC	EC	173	.642	.075	.642	.231	.035	.017	.523	-.104	.523	-.424	-.084	-0.156	0.173	-1.8	0.9	-1.8	0.8	A-	
1207	640033	EC	EC	173	.595	.104	.104	.595	.179	.017	.400	-.180	-.221	.400	-.116	0.078	0.169	-0.1	1.0	-0.1	1.0	A-	
1208	640000	EC	EC	173	.266	.549	.266	.168	.000	.017	.013	.016	.013	.042	.000	1.719	0.183	2.9	1.3	3.8	1.6	B+	
1209	630672	EC	EC	173	.295	.249	.231	.202	.295	.023	.195	.013	-.063	-.095	.195	1.542	0.179	1.9	1.2	1.4	1.2	A+	
1210	639927	EC	EC	173	.676	.104	.676	.121	.081	.017	.574	-.315	.574	-.208	-.278	-0.341	0.177	-2.5	0.8	-2.3	0.8	A-	
1211	640022	EC	EC	173	.376	.370	.121	.110	.376	.023	.286	.088	-.279	-.193	.286	1.119	0.170	1.3	1.1	1.1	1.1	A-	
1212	627689	EC	EC	173	.335	.214	.110	.335	.324	.017	.068	.071	-.268	.068	.110	1.339	0.173	3.6	1.3	3.1	1.4	A+	
1213	628064	EC	EC	173	.740	.069	.740	.093	.081	.017	.428	-.218	.428	-.216	-.150	-0.710	0.189	-0.4	1.0	-0.9	0.9	A-	
1214	634318	EC	EC	173	.283	.283	.457	.197	.041	.023	.137	.137	.001	.015	-.170	1.615	0.180	2.2	1.2	3.0	1.4	A+	
1215	621392	EC	EC	173	.538	.041	.358	.538	.041	.023	.556	-.132	-.347	.556	-.255	0.347	0.167	-2.8	0.9	-2.7	0.8	A+	
1216	640074	EC	EC	173	.480	.179	.087	.225	.480	.029	.508	-.234	-.208	-.169	.508	0.606	0.166	-2.1	0.9	-1.7	0.9	A+	
1217	639960	EC	EC	173	.376	.202	.197	.376	.214	.012	.279	-.195	-.149	.279	.090	1.088	0.172	2.0	1.1	2.1	1.2	B+	
1218	639955	EC	EC	173	.821	.029	.821	.127	.017	.006	.366	-.122	.366	-.218	-.140	-1.330	0.213	-0.3	1.0	-0.8	0.8	B-	
1219	640058	EC	EC	173	.468	.468	.341	.139	.046	.006	.189	.189	.028	-.194	-.055	0.637	0.167	3.1	1.2	3.4	1.3	A+	
1220	640101	EC	EC	173	.520	.249	.520	.179	.041	.012	.401	-.210	.401	-.109	-.124	0.382	0.167	0.6	1.0	0.2	1.0	A-	

Table B–5 (continued). Writing/English Composition Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
1221	636057	EC	EC	173	.717	.133	.717	.087	.058	.006	.408	-.132	.408	-.226	-.199	-0.634	0.184	-0.4	1.0	-0.6	0.9	A+	
1222	635461	EC	EC	173	.486	.133	.081	.289	.486	.012	.535	-.136	-.176	-.306	.535	0.542	0.168	-2.4	0.9	-2.1	0.8	B-	
1223	639975	EC	EC	173	.763	.069	.104	.763	.046	.017	.443	-.157	-.273	.443	-.025	-0.951	0.196	-0.7	0.9	-0.8	0.9	B+	
1224	640034	EC	EC	173	.272	.029	.023	.272	.665	.012	.321	-.271	-.115	.321	-.073	1.662	0.185	0.3	1.0	1.4	1.2	A+	
1225	640011	EC	EC	173	.832	.023	.832	.017	.104	.023	.390	-.171	.390	-.124	-.129	-1.528	0.228	0.3	1.0	0.0	1.0	A-	
1226	640064	EC	EC	173	.728	.046	.110	.728	.098	.017	.515	-.231	-.243	.515	-.159	-0.742	0.189	-1.5	0.9	-1.3	0.8	A-	
1227	640075	EC	EC	173	.590	.590	.127	.150	.116	.017	.519	.519	-.220	-.222	-.143	0.022	0.171	-1.9	0.9	-1.9	0.8	A-	
1228	639982	EC	EC	173	.243	.306	.243	.335	.093	.023	.002	.110	.002	.042	-.021	1.828	0.192	3.6	1.4	4.3	1.9	A+	
1229	639904	EC	EC	173	.890	.041	.890	.046	.000	.023	.507	-.201	.507	-.255	.000	-2.169	0.280	-0.5	0.9	-1.5	0.5	A-	
1230	622818	EC	EC	173	.590	.191	.116	.081	.590	.023	.578	-.195	-.185	-.305	.578	0.006	0.172	-2.9	0.8	-2.9	0.7	B+	
1231	630393	EC	EC	173	.786	.121	.046	.023	.786	.023	.525	-.315	-.116	-.150	.525	-1.161	0.207	-1.4	0.8	-0.7	0.9	A-	
1232	630673	EC	EC	173	.214	.272	.214	.208	.278	.029	.126	.019	.126	.080	-.048	2.015	0.200	1.8	1.2	3.3	1.7	A+	
1233	634303	EC	EC	173	.746	.746	.075	.093	.058	.029	.523	.523	-.202	-.216	-.140	-0.892	0.196	-1.0	0.9	-1.8	0.7	A-	
1234	640042	EC	EC	173	.751	.098	.081	.751	.035	.035	.541	-.245	-.167	.541	-.165	-0.960	0.199	-1.2	0.9	-1.7	0.7	A+	
1235	629828	EC	EC	173	.260	.347	.260	.191	.173	.029	.257	-.033	.257	-.008	-.066	1.715	0.188	1.3	1.1	1.8	1.3	A-	
1236	630434	EC	EC	173	.150	.150	.185	.405	.225	.035	.129	.129	-.054	.152	-.057	2.511	0.227	1.2	1.2	2.4	1.7	A+	
1237	634321	EC	EC	173	.214	.214	.364	.243	.150	.029	.235	.235	-.004	-.029	-.036	2.016	0.200	0.6	1.1	2.7	1.6	A-	
1238	628100	EC	EC	173	.653	.121	.069	.127	.653	.029	.557	-.168	-.190	-.279	.557	-0.345	0.179	-2.0	0.9	-2.2	0.8	A-	
1239	639995	EC	EC	173	.567	.098	.168	.567	.127	.041	.388	-.174	-.145	.388	.011	0.093	0.172	0.9	1.1	1.0	1.1	A+	
1240	622672	EC	EC	174	.328	.333	.029	.328	.305	.006	.253	-.226	-.220	.253	.115	1.291	0.176	1.8	1.1	1.4	1.2	A-	
1241	629919	EC	EC	174	.385	.184	.190	.385	.236	.006	.358	-.050	-.145	.358	-.163	1.022	0.170	-0.4	1.0	-0.5	1.0	A-	
1242	622612	EC	EC	174	.540	.069	.224	.540	.155	.012	.369	-.145	-.208	.369	-.101	0.217	0.167	0.3	1.0	0.7	1.1	A+	
1243	640079	EC	EC	174	.552	.086	.253	.092	.552	.017	.247	-.132	.031	-.149	.247	0.168	0.167	2.5	1.2	3.2	1.3	A+	
1244	639968	EC	EC	174	.822	.052	.822	.075	.040	.012	.496	-.211	.496	-.210	-.188	-1.392	0.216	-1.0	0.9	-1.8	0.6	A+	
1245	636064	EC	EC	174	.632	.046	.259	.052	.632	.012	.487	-.144	-.242	-.215	.487	-0.216	0.172	-1.7	0.9	-1.9	0.8	A-	
1246	635740	EC	EC	174	.213	.213	.305	.155	.310	.017	.063	.063	-.074	-.113	.223	1.980	0.200	2.5	1.3	3.3	1.7	A-	
1247	636049	EC	EC	174	.644	.075	.644	.098	.172	.012	.360	-.124	.360	-.213	-.069	-0.276	0.173	0.4	1.0	0.2	1.0	A-	
1248	639977	EC	EC	174	.753	.753	.052	.121	.058	.017	.490	.490	-.142	-.245	-.199	-0.925	0.193	-1.3	0.9	-1.6	0.7	A+	
1249	640083	EC	EC	174	.494	.121	.494	.195	.178	.012	.336	-.033	.336	-.190	-.080	0.487	0.166	0.6	1.0	0.5	1.0	A+	
1250	639912	EC	EC	174	.672	.190	.052	.672	.075	.012	.357	-.085	-.190	.357	-.155	-0.428	0.176	0.7	1.1	0.1	1.0	A-	
1251	640066	EC	EC	174	.684	.035	.040	.684	.230	.012	.488	-.140	-.172	.488	-.277	-0.459	0.177	-2.0	0.9	-1.8	0.8	A+	
1252	639905	EC	EC	174	.535	.144	.535	.259	.046	.017	.423	-.263	.423	-.105	-.090	0.254	0.167	-0.8	1.0	-0.6	0.9	B-	
1253	640041	EC	EC	174	.333	.230	.184	.236	.333	.017	.262	.010	-.061	-.117	.262	1.254	0.175	1.6	1.1	1.9	1.2	A-	
1254	639914	EC	EC	174	.523	.000	.391	.523	.075	.012	.379	.000	-.184	.379	-.185	0.322	0.166	0.3	1.0	0.2	1.0	A-	
1255	640023	EC	EC	174	.540	.540	.144	.190	.103	.023	.441	.441	-.203	-.141	-.112	0.203	0.168	-0.7	1.0	-0.9	0.9	A+	

Table B–5 (continued). Writing/English Composition Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
1256	639923	EC	EC	174	.448	.213	.103	.213	.448	.023	.274	-.074	-.153	-.002	.274	0.651	0.168	2.2	1.1	2.3	1.2	B-	
1257	640076	EC	EC	174	.632	.075	.632	.155	.115	.023	.418	-.052	.418	-.270	-.098	-0.260	0.173	-0.2	1.0	-0.5	0.9	A+	
1258	621206	EC	EC	174	.385	.121	.385	.230	.241	.023	.449	-.170	.449	-.205	-.042	0.966	0.171	-1.1	0.9	-1.0	0.9	B+	
1259	638877	EC	EC	174	.535	.046	.264	.535	.132	.023	.465	-.081	-.159	.465	-.254	0.259	0.167	-1.6	0.9	-1.7	0.9	A-	
1260	635841	EC	EC	174	.632	.632	.155	.132	.058	.023	.466	.466	-.258	-.151	-.091	-0.260	0.173	-1.1	0.9	-1.2	0.9	A-	
1261	639888	EC	EC	174	.552	.098	.103	.224	.552	.023	.545	-.233	-.265	-.149	.545	0.147	0.168	-3.0	0.8	-2.6	0.8	A+	
1262	630425	EC	EC	174	.356	.356	.253	.259	.109	.023	.459	.459	-.132	-.210	-.038	1.114	0.173	-1.3	0.9	-1.1	0.9	A-	
1263	639976	EC	EC	174	.477	.132	.477	.144	.224	.023	.466	-.165	.466	-.230	-.090	0.511	0.167	-1.4	0.9	-1.3	0.9	B-	
1264	630649	EC	EC	172	.558	.111	.157	.169	.558	.006	.531	-.206	-.270	-.190	.531	0.216	0.168	-3.0	0.8	-2.9	0.8	A+	
1265	635462	EC	EC	172	.750	.023	.012	.209	.750	.006	.320	-.317	.008	-.152	.320	-0.814	0.191	0.9	1.1	0.9	1.1	A-	
1266	639974	EC	EC	172	.616	.262	.076	.616	.041	.006	.520	-.257	-.257	.520	-.212	-0.071	0.171	-2.2	0.9	-2.2	0.8	A+	
1267	640095	EC	EC	172	.436	.076	.297	.436	.186	.006	.266	-.243	-.069	.266	-.016	0.803	0.168	1.8	1.1	1.9	1.2	A+	
1268	625505	EC	EC	172	.622	.035	.169	.169	.622	.006	.396	-.216	-.141	-.185	.396	-0.100	0.172	-0.1	1.0	0.2	1.0	A-	
1269	636065	EC	EC	172	.424	.134	.424	.308	.128	.006	.249	-.029	.249	-.069	-.155	0.888	0.168	1.4	1.1	1.3	1.1	A+	
1270	639979	EC	EC	172	.215	.587	.122	.215	.070	.006	.104	.239	-.132	.104	-.342	2.019	0.199	2.0	1.2	2.0	1.4	A-	
1271	630709	EC	EC	172	.814	.070	.814	.064	.047	.006	.501	-.125	.501	-.286	-.299	-1.259	0.212	-1.2	0.9	-1.9	0.7	C+	
1272	628135	EC	EC	172	.384	.384	.297	.128	.186	.006	.194	.194	-.156	.042	-.019	1.061	0.171	3.1	1.2	2.9	1.3	A+	
1273	640063	EC	EC	172	.442	.471	.029	.047	.442	.012	.465	-.243	-.175	-.191	.465	0.763	0.168	-1.3	0.9	-1.3	0.9	A-	
1274	640080	EC	EC	172	.535	.140	.535	.192	.122	.012	.515	-.148	.515	-.332	-.106	0.314	0.168	-2.2	0.9	-2.0	0.8	B+	
1275	640067	EC	EC	172	.331	.145	.070	.331	.436	.017	.388	-.304	-.246	.388	.070	1.315	0.176	-0.2	1.0	-0.1	1.0	A+	
1276	639906	EC	EC	172	.663	.157	.663	.163	.006	.012	.373	-.148	.373	-.215	-.041	-0.333	0.177	0.5	1.0	-0.1	1.0	A-	
1277	640021	EC	EC	172	.791	.064	.099	.791	.035	.012	.368	-.109	-.214	.368	-.104	-1.120	0.205	0.3	1.0	-0.2	1.0	A+	
1278	639917	EC	EC	172	.727	.070	.093	.727	.099	.012	.475	-.236	-.126	.475	-.251	-0.698	0.187	-1.2	0.9	-1.0	0.9	A-	
1279	640028	EC	EC	172	.593	.593	.302	.035	.052	.017	.461	.461	-.276	-.081	-.168	0.013	0.171	-0.9	0.9	-0.9	0.9	B-	
1280	639934	EC	EC	172	.273	.221	.215	.273	.273	.017	.245	-.106	-.071	.025	.245	1.640	0.185	1.2	1.1	2.3	1.3	A-	
1281	640030	EC	EC	172	.890	.029	.890	.052	.012	.017	.537	-.301	.537	-.239	-.162	-2.113	0.279	-0.7	0.8	-1.8	0.5	A+	
1282	625549	EC	EC	172	.645	.151	.645	.081	.099	.023	.337	-.170	.337	-.091	-.078	-0.276	0.177	1.6	1.1	0.3	1.0	C-	
1283	635487	EC	EC	172	.616	.616	.099	.145	.116	.023	.546	.546	-.269	-.238	-.155	-0.122	0.174	-2.4	0.8	-2.3	0.8	A+	
1284	639889	EC	EC	172	.692	.105	.692	.116	.064	.023	.512	-.261	.512	-.231	-.124	-0.536	0.184	-1.3	0.9	-1.8	0.8	A+	
1285	634320	EC	EC	172	.529	.198	.192	.529	.058	.023	.383	-.091	-.102	.383	-.268	0.317	0.169	0.7	1.0	0.2	1.0	A-	
1286	635738	EC	EC	172	.186	.186	.326	.244	.221	.023	.179	.179	.020	-.109	.048	2.211	0.209	0.8	1.1	3.0	1.7	A-	
1287	633534	EC	EC	172	.488	.488	.285	.116	.076	.035	.265	.265	-.053	-.054	-.152	0.486	0.169	2.7	1.2	2.2	1.2	A-	
1288	639937	EC	EC	174	.810	.810	.069	.040	.081	.000	.254	.254	-.070	-.211	-.147	-1.246	0.204	0.1	1.0	0.5	1.1	A-	
1289	639939	EC	EC	174	.494	.454	.494	.017	.035	.000	.265	-.141	.265	-.176	-.217	0.452	0.164	1.8	1.1	1.4	1.1	A-	
1290	626920	EC	EC	174	.672	.035	.029	.264	.672	.000	.474	-.132	-.215	-.369	.474	-0.412	0.173	-1.6	0.9	-1.6	0.8	A-	

Table B–5 (continued). Writing/English Composition Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
1291	626947	EC	EC	174	.529	.270	.132	.529	.058	.012	.365	-.134	-.107	.365	-.244	0.272	0.165	0.3	1.0	0.1	1.0	A-	
1292	639983	EC	EC	174	.299	.437	.299	.115	.144	.006	.211	.052	.211	-.251	-.063	1.404	0.177	1.7	1.1	1.5	1.2	A+	
1293	639961	EC	EC	174	.483	.172	.190	.144	.483	.012	.348	-.084	-.096	-.222	.348	0.484	0.165	1.0	1.1	0.9	1.1	A+	
1294	639980	EC	EC	174	.333	.213	.167	.333	.282	.006	.197	.027	-.176	.197	-.040	1.221	0.172	1.9	1.1	2.9	1.3	A+	
1295	639984	EC	EC	174	.592	.063	.264	.592	.075	.006	.471	-.199	-.266	.471	-.173	-0.025	0.167	-1.6	0.9	-1.5	0.9	A+	
1296	630387	EC	EC	174	.615	.615	.218	.092	.069	.006	.461	.461	-.128	-.275	-.281	-0.138	0.169	-1.7	0.9	-0.5	1.0	A+	
1297	640065	EC	EC	174	.655	.655	.058	.058	.218	.012	.490	.490	-.342	-.325	-.113	-0.365	0.173	-1.6	0.9	-1.1	0.9	A+	
1298	640086	EC	EC	174	.483	.109	.483	.144	.253	.012	.327	-.040	.327	-.209	-.108	0.478	0.165	1.0	1.1	1.0	1.1	A-	
1299	640068	EC	EC	174	.615	.144	.121	.109	.615	.012	.453	-.276	-.099	-.193	.453	-0.159	0.169	-0.9	0.9	-0.8	0.9	A+	
1300	639907	EC	EC	174	.661	.161	.121	.661	.046	.012	.485	-.171	-.336	.485	-.125	-0.395	0.174	-1.0	0.9	-1.3	0.9	A-	
1301	640004	EC	EC	174	.316	.420	.316	.138	.115	.012	.290	.044	.290	-.231	-.144	1.300	0.175	0.9	1.1	0.8	1.1	A+	
1302	639918	EC	EC	174	.741	.178	.741	.046	.023	.012	.529	-.326	.529	-.236	-.177	-0.851	0.187	-1.6	0.9	-1.9	0.8	A-	
1303	639899	EC	EC	174	.592	.017	.592	.253	.126	.012	.449	-.181	.449	-.225	-.206	-0.044	0.168	-0.9	0.9	-0.8	0.9	A-	
1304	640012	EC	EC	174	.414	.414	.305	.213	.046	.023	.420	.420	-.146	-.264	-.006	0.776	0.167	-0.7	1.0	-0.3	1.0	A-	
1305	639911	EC	EC	174	.615	.615	.098	.109	.155	.023	.360	.360	-.173	-.222	-.042	-0.197	0.171	0.4	1.0	1.0	1.1	A-	
1306	630416	EC	EC	174	.581	.086	.138	.167	.581	.029	.635	-.199	-.272	-.319	.635	-0.037	0.169	-3.9	0.8	-3.8	0.7	A-	
1307	635478	EC	EC	174	.322	.126	.115	.408	.322	.029	.343	.004	-.320	-.029	.343	1.243	0.175	0.5	1.0	0.1	1.0	A-	
1308	639890	EC	EC	174	.351	.218	.201	.351	.201	.029	.151	-.105	-.007	.151	.048	1.092	0.172	2.8	1.2	3.6	1.4	A+	
1309	635569	EC	EC	174	.615	.081	.126	.615	.144	.035	.405	-.113	-.147	.405	-.200	-0.231	0.173	0.0	1.0	0.1	1.0	A-	
1310	635751	EC	EC	174	.529	.086	.121	.529	.230	.035	.432	-.249	.006	.432	-.239	0.203	0.168	-0.6	1.0	-0.1	1.0	B+	
1311	633535	EC	EC	174	.259	.069	.259	.443	.195	.035	.227	-.234	.227	.042	-.035	1.590	0.186	0.9	1.1	2.1	1.3	A+	
1312	639943	EC	EC	173	.468	.035	.468	.353	.133	.012	.154	-.096	.154	-.011	.003	0.655	0.166	3.4	1.2	3.7	1.3	A+	
1313	639942	EC	EC	173	.711	.069	.104	.711	.098	.017	.578	-.176	-.214	.578	-.252	-0.609	0.184	-2.6	0.8	-2.6	0.7	A-	
1314	627284	EC	EC	173	.630	.185	.630	.104	.064	.017	.471	-.179	.471	-.130	-.169	-0.166	0.173	-1.5	0.9	-1.4	0.9	A+	
1315	636022	EC	EC	173	.578	.173	.578	.081	.150	.017	.416	-.112	.416	-.137	-.136	0.125	0.168	-0.6	1.0	-0.6	1.0	A-	
1316	639986	EC	EC	173	.769	.069	.098	.046	.769	.017	.442	-.102	-.185	-.133	.442	-0.974	0.198	-0.4	1.0	-0.1	1.0	A+	
1317	639962	EC	EC	173	.642	.150	.642	.127	.064	.017	.540	-.202	.540	-.209	-.163	-0.226	0.174	-2.5	0.8	-2.5	0.8	A-	
1318	639981	EC	EC	173	.723	.035	.069	.723	.150	.023	.383	-.131	-.169	.383	-.068	-0.665	0.187	0.0	1.0	-0.2	1.0	A-	
1319	639989	EC	EC	173	.266	.266	.451	.156	.110	.017	.254	.254	.007	-.024	-.095	1.675	0.185	0.6	1.1	2.3	1.3	A-	
1320	640060	EC	EC	173	.549	.087	.549	.156	.185	.023	.365	-.024	.365	-.230	-.024	0.229	0.168	0.2	1.0	0.4	1.0	A+	
1321	628016	EC	EC	173	.405	.306	.052	.405	.214	.023	.197	.009	-.205	.197	.063	0.929	0.169	2.9	1.2	2.9	1.3	A-	
1322	622421	EC	EC	173	.428	.179	.150	.225	.428	.017	.456	-.185	-.115	-.088	.456	0.822	0.167	-1.8	0.9	-1.7	0.9	A-	
1323	640097	EC	EC	173	.462	.254	.462	.220	.041	.023	.436	-.153	.436	-.072	-.167	0.649	0.167	-1.1	0.9	-1.3	0.9	B+	
1324	640069	EC	EC	173	.642	.642	.162	.064	.110	.023	.496	.496	-.220	-.158	-.095	-0.207	0.174	-2.0	0.9	-1.5	0.8	A-	
1325	640005	EC	EC	173	.549	.549	.266	.093	.069	.023	.320	.320	-.019	-.105	-.125	0.230	0.168	1.2	1.1	2.6	1.2	A-	

Table B–5 (continued). Writing/English Composition Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
1326	639922	EC	EC	173	.150	.486	.150	.121	.220	.023	-.004	.201	-.004	-.100	.053	2.544	0.229	1.4	1.2	2.8	1.8	A-	
1327	639908	EC	EC	173	.902	.902	.035	.012	.017	.035	.526	.526	-.147	-.064	-.178	-2.404	0.319	-0.3	0.9	-1.4	0.5	A-	
1328	640014	EC	EC	173	.434	.405	.052	.075	.434	.035	.424	-.027	-.248	-.161	.424	0.764	0.168	-0.9	1.0	-0.8	0.9	A-	
1329	639913	EC	EC	173	.457	.139	.254	.457	.116	.035	.262	-.027	-.038	.262	-.017	0.651	0.168	2.4	1.1	2.6	1.2	A-	
1330	630417	EC	EC	173	.526	.526	.127	.110	.202	.035	.399	.399	-.073	-.123	-.093	0.313	0.168	0.0	1.0	0.0	1.0	A+	
1331	635479	EC	EC	173	.312	.162	.237	.312	.249	.041	.161	-.003	.043	.161	.035	1.417	0.179	2.6	1.2	2.7	1.3	A-	
1332	639891	EC	EC	173	.665	.075	.064	.665	.150	.046	.392	-.113	-.016	.392	-.106	-0.428	0.182	0.5	1.0	0.4	1.1	A+	
1333	635773	EC	EC	173	.462	.081	.353	.064	.462	.041	.381	-.179	-.008	-.124	.381	0.618	0.168	0.3	1.0	0.2	1.0	A+	
1334	635772	EC	EC	173	.208	.104	.208	.370	.278	.041	.187	-.123	.187	.040	.110	2.022	0.201	1.0	1.1	2.6	1.5	A+	
1335	633538	EC	EC	173	.173	.382	.110	.289	.173	.046	.317	.041	-.142	.040	.317	2.280	0.214	-0.3	1.0	0.1	1.0	A-	
1336	639944	EC	EC	174	.184	.374	.310	.184	.126	.006	.112	.049	.031	.112	-.156	2.333	0.206	1.1	1.1	2.9	1.7	A+	
1337	639949	EC	EC	174	.776	.776	.058	.035	.126	.006	.314	.314	-.281	-.196	-.001	-0.900	0.198	0.1	1.0	1.1	1.2	A+	
1338	630383	EC	EC	174	.707	.000	.707	.155	.126	.012	.451	.000	.451	-.286	-.177	-0.481	0.184	-0.5	1.0	-0.6	0.9	A-	
1339	640059	EC	EC	174	.649	.649	.259	.029	.058	.006	.325	.325	-.094	-.205	-.216	-0.145	0.175	0.5	1.0	0.9	1.1	A+	
1340	639991	EC	EC	174	.374	.310	.247	.374	.058	.012	.364	-.120	-.065	.364	-.213	1.215	0.170	0.4	1.0	0.5	1.1	A+	
1341	639965	EC	EC	174	.615	.069	.069	.615	.236	.012	.506	-.278	-.233	.506	-.160	0.022	0.172	-1.4	0.9	-1.8	0.8	A+	
1342	639987	EC	EC	174	.839	.035	.035	.839	.081	.012	.551	-.212	-.135	.551	-.332	-1.425	0.227	-1.3	0.8	-1.4	0.7	A-	
1343	640003	EC	EC	174	.810	.035	.810	.058	.081	.017	.590	-.228	.590	-.303	-.210	-1.213	0.215	-1.8	0.8	-2.3	0.6	B+	
1344	622419	EC	EC	174	.753	.052	.753	.115	.063	.017	.463	-.142	.463	-.217	-.150	-0.792	0.196	-0.6	0.9	-0.8	0.9	A-	
1345	639978	EC	EC	174	.833	.833	.012	.069	.063	.023	.492	.492	-.006	-.325	-.149	-1.458	0.230	-0.8	0.9	-0.7	0.8	A-	
1346	630710	EC	EC	174	.782	.058	.782	.063	.075	.023	.473	-.180	.473	-.170	-.148	-1.021	0.207	-0.4	1.0	-0.5	0.9	B+	
1347	640103	EC	EC	174	.517	.161	.138	.517	.155	.029	.538	-.265	-.116	.538	-.123	0.490	0.168	-2.7	0.8	-2.4	0.8	A+	
1348	640073	EC	EC	174	.402	.086	.402	.345	.138	.029	.350	-.172	.350	-.050	-.037	1.057	0.169	0.9	1.1	0.8	1.1	A-	
1349	640006	EC	EC	174	.397	.132	.167	.270	.397	.035	.324	-.028	-.112	-.034	.324	1.069	0.170	1.4	1.1	1.6	1.2	A-	
1350	639924	EC	EC	174	.810	.023	.092	.810	.040	.035	.497	-.143	-.086	.497	-.287	-1.318	0.224	-0.4	1.0	-0.5	0.9	C+	
1351	640032	EC	EC	174	.879	.879	.012	.046	.029	.035	.611	.611	-.135	-.280	-.201	-2.067	0.282	-0.8	0.8	-2.3	0.4	A+	
1352	640019	EC	EC	174	.322	.218	.322	.385	.046	.029	.259	-.026	.259	.012	-.176	1.460	0.176	1.6	1.1	1.6	1.2	A-	
1353	640038	EC	EC	174	.667	.081	.063	.161	.667	.029	.497	-.162	-.207	-.166	.497	-0.307	0.181	-0.9	0.9	-0.7	0.9	A-	
1354	635590	EC	EC	174	.718	.075	.121	.718	.040	.046	.589	-.145	-.353	.589	-.071	-0.695	0.195	-1.8	0.8	-1.6	0.8	A+	
1355	635480	EC	EC	174	.310	.190	.310	.270	.190	.040	.221	-.007	.221	-.117	.094	1.503	0.178	2.3	1.2	2.1	1.3	A+	
1356	635667	EC	EC	174	.287	.081	.241	.345	.287	.046	.241	-.051	-.021	.025	.241	1.629	0.181	1.4	1.1	2.2	1.3	A+	
1357	636476	EC	EC	174	.287	.046	.287	.431	.195	.040	.128	-.113	.128	.097	.006	1.632	0.181	2.7	1.2	4.1	1.7	A+	
1358	621393	EC	EC	174	.563	.563	.058	.052	.282	.046	.513	.513	-.080	-.297	-.161	0.201	0.173	-1.3	0.9	-1.4	0.9	B-	
1359	633539	EC	EC	174	.506	.259	.063	.132	.506	.040	.427	-.064	-.159	-.183	.427	0.503	0.170	0.0	1.0	0.2	1.0	A+	
1360	639945	EC	EC	174	.603	.603	.218	.092	.075	.012	.373	.373	-.095	-.155	-.160	-0.014	0.166	-1.0	0.9	-0.9	0.9	A-	

Table B–5 (continued). Writing/English Composition Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
1361	640056	EC	EC	174	.218	.661	.218	.086	.017	.017	.358	-.021	.358	-.128	-.185	1.902	0.194	-0.6	0.9	-0.6	0.9	A+	
1362	630667	EC	EC	174	.448	.035	.448	.397	.103	.017	.256	-.076	.256	-.090	.028	0.685	0.164	2.0	1.1	1.6	1.1	A+	
1363	636023	EC	EC	174	.851	.063	.046	.851	.023	.017	.482	-.113	-.210	.482	-.149	-1.592	0.233	-0.6	0.9	-1.1	0.8	A+	
1364	639993	EC	EC	174	.201	.207	.241	.201	.333	.017	.108	.154	-.023	.108	-.037	2.019	0.200	1.0	1.1	2.0	1.4	B-	
1365	639967	EC	EC	174	.603	.138	.603	.075	.161	.023	.246	.030	.246	-.176	-.008	-0.055	0.168	1.9	1.1	1.2	1.1	A+	
1366	639988	EC	EC	174	.448	.190	.448	.178	.167	.017	.265	.017	.265	-.083	-.077	0.685	0.164	1.9	1.1	1.5	1.1	A+	
1367	640088	EC	EC	174	.632	.213	.046	.632	.086	.023	.324	-.064	-.262	.324	.055	-0.200	0.170	0.8	1.1	0.8	1.1	A-	
1368	640081	EC	EC	174	.172	.132	.500	.167	.172	.029	.065	-.036	.129	.036	.065	2.217	0.211	1.5	1.2	1.9	1.4	A-	
1369	635581	EC	EC	174	.644	.121	.144	.069	.644	.023	.499	-.154	-.115	-.229	.499	-0.259	0.172	-2.4	0.9	-2.2	0.8	A+	
1370	636885	EC	EC	174	.328	.236	.201	.328	.213	.023	.148	.011	.020	.148	.021	1.265	0.173	2.6	1.2	2.4	1.3	A+	
1371	640094	EC	EC	174	.500	.086	.184	.201	.500	.029	.351	-.104	-.191	.047	.351	0.413	0.164	0.1	1.0	0.2	1.0	A-	
1372	640084	EC	EC	174	.356	.224	.155	.356	.241	.023	.212	-.040	-.087	.212	.088	1.119	0.170	1.5	1.1	3.6	1.4	A-	
1373	639921	EC	EC	174	.598	.218	.598	.081	.075	.029	.425	-.073	.425	-.127	-.159	-0.038	0.168	-1.2	0.9	-0.5	1.0	A-	
1374	621156	EC	EC	174	.241	.224	.201	.299	.241	.035	.206	-.040	-.052	.110	.206	1.738	0.188	0.8	1.1	2.6	1.4	A+	
1375	640031	EC	EC	174	.512	.328	.017	.115	.512	.029	.379	-.043	-.118	-.165	.379	0.374	0.164	-0.2	1.0	-0.2	1.0	A+	
1376	640035	EC	EC	174	.695	.695	.075	.155	.046	.029	.459	.459	-.150	-.139	-.097	-0.549	0.180	-1.0	0.9	-0.9	0.9	A+	
1377	628314	EC	EC	174	.695	.121	.695	.121	.023	.040	.489	-.155	.489	-.166	-.108	-0.604	0.183	-1.3	0.9	-1.4	0.8	A+	
1378	635591	EC	EC	174	.483	.103	.483	.218	.155	.040	.412	-.159	.412	-.072	-.065	0.473	0.165	-0.9	1.0	-1.2	0.9	B+	
1379	635481	EC	EC	174	.316	.316	.247	.259	.138	.040	.401	.401	-.074	-.032	-.105	1.295	0.175	-1.1	0.9	-1.2	0.9	A+	
1380	621159	EC	EC	174	.408	.247	.178	.408	.126	.040	.407	-.101	-.103	.407	-.039	0.830	0.167	-1.3	0.9	-0.7	0.9	A-	
1381	635946	EC	EC	174	.356	.144	.299	.356	.161	.040	.315	-.105	-.049	.315	.034	1.086	0.170	0.4	1.0	0.5	1.0	A+	
1382	628062	EC	EC	174	.310	.161	.310	.247	.236	.046	.334	-.059	.334	-.021	-.048	1.314	0.176	-0.3	1.0	0.4	1.0	A+	
1383	633541	EC	EC	174	.282	.282	.132	.448	.092	.046	.269	.269	.050	.014	-.142	1.474	0.181	0.5	1.0	1.3	1.2	A+	
1384	684126	K	K	139	.863	.086	.036	.007	.863	.007	.422	-.324	-.297	.017	.422	-3.298	0.267	-0.3	1.0	-0.8	0.7	A-	
1385	685000	K	K	139	.806	.144	.806	.007	.029	.014	.468	-.309	.468	-.091	-.212	-2.802	0.234	-0.7	0.9	-0.8	0.8	A-	
1386	684304	K	K	139	.899	.899	.050	.022	.007	.022	.495	.495	-.281	-.222	-.218	-3.697	0.301	-1.0	0.8	-1.3	0.5	A+	
1387	684993	K	K	139	.468	.072	.410	.043	.468	.007	.274	-.363	.004	-.137	.274	-0.896	0.190	2.6	1.2	2.0	1.2	A-	
1388	685029	K	K	141	.872	.078	.035	.872	.007	.007	.499	-.300	-.397	.499	-.075	-3.186	0.269	-0.8	0.9	-1.3	0.6	A+	
1389	684123	K	K	141	.943	.943	.028	.007	.021	.000	.483	.483	-.327	-.229	-.265	-4.175	0.379	-0.7	0.8	-1.5	0.3	A+	
1390	683778	K	K	141	.816	.121	.816	.035	.021	.007	.483	-.362	.483	-.231	-.164	-2.684	0.235	-0.7	0.9	-1.2	0.7	B+	
1391	683781	K	K	140	.829	.829	.014	.064	.086	.007	.532	.532	-.138	-.341	-.333	-2.688	0.244	-0.9	0.9	-1.4	0.7	A-	
1392	684129	K	K	140	.957	.014	.957	.007	.021	.000	.416	-.345	.416	-.191	-.188	-4.410	0.432	-0.4	0.8	-0.7	0.6	A-	
1393	683779	K	K	140	.836	.050	.836	.014	.093	.007	.413	-.348	.413	-.301	-.147	-2.748	0.247	-0.1	1.0	-0.5	0.9	A-	
1394	684990	K	K	143	.958	.021	.958	.007	.014	.000	.320	-.321	.320	-.132	-.061	-4.669	0.432	-0.1	0.9	-0.7	0.6	A+	
1395	685030	K	K	143	.923	.923	.021	.014	.035	.007	.434	.434	-.184	-.103	-.325	-3.968	0.331	-0.4	0.9	-1.2	0.5	A-	

Table B–5 (continued). Writing/English Composition Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M /F	W /B
1396	684987	K	K	143	.532	.049	.531	.203	.210	.007	.433	-.280	.433	-.079	-.261	-1.201	0.184	-0.3	1.0	-0.5	1.0	A-	
1397	683788	K	K	145	.766	.048	.041	.145	.766	.000	.596	-.360	-.240	-.363	.596	-2.352	0.221	-1.4	0.8	-1.8	0.6	A+	
1398	684988	K	K	145	.848	.048	.034	.069	.848	.000	.568	-.367	-.293	-.283	.568	-3.021	0.256	-1.3	0.8	-1.3	0.6	A+	
1399	684306	K	K	145	.890	.055	.890	.021	.034	.000	.568	-.467	.568	-.209	-.229	-3.461	0.288	-1.3	0.8	-1.6	0.4	A+	
1400	683785	K	K	145	.828	.021	.828	.055	.097	.000	.398	-.192	.398	-.222	-.244	-3.217	0.245	0.5	1.1	-0.1	0.9	A-	
1401	685048	K	K	145	.924	.021	.924	.041	.014	.000	.541	-.270	.541	-.371	-.265	-4.334	0.336	-1.1	0.7	-1.7	0.3	A-	
1402	684986	K	K	145	.938	.021	.938	.007	.028	.007	.314	-.259	.314	-.168	-.203	-4.579	0.365	0.0	1.0	0.8	1.4	A-	
1403	684127	K	K	148	.831	.074	.054	.831	.041	.000	.415	-.321	-.218	.415	-.112	-3.006	0.236	-0.2	1.0	-1.0	0.7	A-	
1404	684125	K	K	148	.878	.088	.878	.014	.020	.000	.423	-.291	.423	-.157	-.268	-3.443	0.266	-0.6	0.9	-0.8	0.7	A+	
1405	683783	K	K	148	.730	.101	.730	.135	.034	.000	.569	-.302	.569	-.363	-.208	-2.298	0.203	-1.8	0.8	-1.7	0.7	A+	
1406	685022	K	K	142	.817	.014	.007	.162	.817	.000	.267	-.234	.046	-.216	.267	-2.816	0.235	1.0	1.1	0.1	1.0	A+	
1407	683787	K	K	142	.782	.782	.049	.120	.049	.000	.460	.460	-.396	-.208	-.171	-2.556	0.222	-0.4	0.9	-1.1	0.8	A-	
1408	685023	K	K	142	.789	.028	.162	.021	.789	.000	.595	-.253	-.449	-.247	.595	-2.605	0.224	-1.9	0.8	-1.9	0.6	A+	
1409	685001	K	K	142	.866	.077	.866	.028	.028	.000	.482	-.413	.482	-.084	-.240	-3.380	0.266	-0.8	0.9	-1.2	0.6	A+	
1410	683782	K	K	142	.866	.056	.063	.014	.866	.000	.544	-.350	-.385	-.091	.544	-3.380	0.266	-1.1	0.8	-1.6	0.5	A-	
1411	684985	K	K	142	.894	.049	.035	.021	.894	.000	.548	-.376	-.293	-.228	.548	-3.689	0.291	-1.2	0.8	-1.6	0.4	A-	
1412	684992	K	K	142	.838	.049	.838	.056	.056	.000	.574	-.188	.574	-.344	-.396	-3.117	0.248	-1.7	0.8	-1.1	0.7	A-	
1413	684305	K	K	141	.922	.043	.035	.922	.000	.000	.396	-.335	-.209	.396	.000	-4.436	0.340	-0.6	0.9	0.0	0.9	A+	
1414	683784	K	K	141	.709	.099	.149	.043	.709	.000	.450	-.250	-.297	-.120	.450	-2.450	0.214	0.7	1.1	0.1	1.0	A+	
1415	685028	K	K	141	.830	.085	.830	.043	.043	.000	.551	-.272	.551	-.289	-.361	-3.354	0.252	-1.1	0.8	-1.3	0.6	A-	
1416	683786	K	K	144	.847	.007	.118	.021	.847	.007	.449	-.179	-.326	-.249	.449	-3.265	0.253	-0.5	0.9	-0.6	0.8	A+	
1417	683780	K	K	144	.750	.014	.201	.750	.035	.000	.429	-.138	-.278	.429	-.316	-2.519	0.213	-0.1	1.0	0.1	1.0	A+	
1418	685013	K	K	144	.813	.014	.063	.111	.813	.000	.465	-.151	-.304	-.287	.465	-2.968	0.235	-0.3	1.0	-0.9	0.8	B+	
1419	685027	K	K	142	.979	.979	.014	.007	.000	.000	.232	.232	-.220	-.089	.000	-5.685	0.595	0.1	1.0	-0.6	0.4	A+	
1420	684128	K	K	142	.747	.746	.056	.169	.028	.000	.326	.326	-.361	-.060	-.218	-2.562	0.216	1.2	1.1	1.1	1.2	A+	
1421	685049	K	K	142	.817	.049	.063	.063	.817	.007	.591	-.299	-.321	-.301	.591	-3.076	0.239	-1.5	0.8	-1.9	0.6	A-	
1422	684991	K	K	142	.768	.162	.768	.035	.021	.014	.450	-.262	.450	-.203	-.232	-2.706	0.222	-0.2	1.0	0.1	1.0	A-	
1423	685024	K	K	143	.916	.916	.049	.014	.021	.000	.480	.480	-.389	-.157	-.216	-4.106	0.322	-0.7	0.9	-1.6	0.4	A+	
1424	684124	K	K	143	.301	.301	.161	.294	.238	.007	.365	.365	-.369	-.101	.065	0.047	0.206	0.9	1.1	1.0	1.2	A-	
1425	684994	K	K	143	.846	.070	.014	.063	.846	.007	.568	-.313	-.191	-.366	.568	-3.297	0.256	-1.6	0.8	-1.3	0.6	A+	
1426	684130	K	K	137	.898	.036	.898	.022	.044	.000	.465	-.301	.465	-.218	-.257	-3.862	0.306	-0.3	0.9	-1.1	0.6	A-	
1427	684989	K	K	137	.905	.044	.007	.905	.036	.007	.587	-.453	-.220	.587	-.266	-3.959	0.315	-1.3	0.7	-1.8	0.4	A-	
1428	684858	1	1	139	.856	.856	.043	.022	.079	.000	.317	.317	-.152	-.086	-.252	-3.229	0.261	0.8	1.1	-0.4	0.9	A+	
1429	685015	1	1	139	.453	.065	.453	.446	.036	.000	.306	-.269	.306	-.108	-.174	-0.823	0.190	2.0	1.2	1.4	1.2	A+	
1430	684835	1	1	139	.576	.576	.129	.108	.187	.000	.531	.531	-.181	-.230	-.334	-1.436	0.191	-1.4	0.9	-1.4	0.8	A-	

Table B–5 (continued). Writing/English Composition Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
1431	684782	1	1	139	.612	.144	.612	.137	.101	.007	.553	-.283	.553	-.248	-.227	-1.621	0.194	-1.6	0.9	-2.0	0.8	A-	
1432	684980	1	1	139	.662	.029	.043	.259	.662	.007	.433	-.212	-.272	-.222	.433	-1.890	0.199	0.0	1.0	0.2	1.0	A+	
1433	684972	1	1	139	.684	.683	.014	.259	.036	.007	.365	.365	-.193	-.198	-.231	-2.011	0.202	0.8	1.1	0.3	1.0	A+	
1434	684969	1	1	139	.734	.115	.072	.734	.065	.014	.572	-.386	-.428	.572	-.015	-2.310	0.212	-1.8	0.8	-1.6	0.7	A-	
1435	684854	1	1	139	.863	.065	.863	.022	.043	.007	.537	-.251	.537	-.285	-.318	-3.298	0.267	-1.3	0.8	-1.4	0.6	A+	
1436	683757	1	1	141	.546	.248	.142	.064	.546	.000	.380	-.272	-.123	-.118	.380	-1.122	0.187	0.7	1.0	0.0	1.0	A+	
1437	685018	1	1	141	.716	.035	.716	.142	.092	.014	.330	-.100	.330	-.100	-.310	-2.020	0.205	0.8	1.1	0.3	1.0	A-	
1438	684850	1	1	141	.617	.199	.617	.078	.099	.007	.434	-.294	.434	-.137	-.164	-1.477	0.191	-0.1	1.0	-0.7	0.9	A+	
1439	685014	1	1	141	.731	.730	.057	.085	.128	.000	.249	.249	-.224	-.212	.001	-2.105	0.208	1.5	1.2	1.2	1.2	A-	
1440	685025	1	1	141	.752	.142	.752	.057	.050	.000	.407	-.281	.407	-.147	-.202	-2.238	0.213	-0.2	1.0	1.4	1.3	B-	
1441	684843	1	1	141	.723	.723	.092	.092	.092	.000	.428	.428	-.108	-.243	-.310	-2.063	0.206	-0.1	1.0	-0.7	0.9	A-	
1442	684545	1	1	141	.837	.837	.078	.071	.007	.007	.478	.478	-.288	-.295	-.171	-2.857	0.245	-0.5	0.9	-1.3	0.7	A-	
1443	684771	1	1	141	.823	.057	.085	.021	.823	.014	.623	-.336	-.444	-.187	.623	-2.740	0.238	-1.8	0.8	-2.2	0.5	A+	
1444	684840	1	1	141	.617	.135	.149	.617	.092	.007	.517	-.416	-.152	.517	-.159	-1.477	0.191	-1.4	0.9	-1.3	0.9	A+	
1445	685037	1	1	140	.886	.036	.014	.886	.057	.007	.606	-.386	-.257	.606	-.358	-3.237	0.285	-1.3	0.8	-2.0	0.5	A+	
1446	684976	1	1	140	.771	.086	.086	.057	.771	.000	.321	-.139	-.195	-.177	.321	-2.261	0.220	0.8	1.1	0.3	1.0	A+	
1447	684857	1	1	140	.771	.107	.036	.086	.771	.000	.500	-.327	-.311	-.183	.500	-2.261	0.220	-0.8	0.9	-0.3	0.9	A+	
1448	685039	1	1	140	.807	.807	.121	.036	.036	.000	.453	.453	-.232	-.245	-.311	-2.517	0.233	-0.4	0.9	-0.7	0.9	A+	
1449	685026	1	1	140	.857	.057	.064	.857	.014	.007	.504	-.328	-.283	.504	-.271	-2.941	0.261	-0.8	0.9	-1.0	0.7	A-	
1450	685148	1	1	140	.671	.079	.064	.186	.671	.000	.401	-.137	-.369	-.157	.401	-1.658	0.198	0.2	1.0	-0.4	0.9	A+	
1451	684770	1	1	140	.479	.386	.064	.479	.071	.000	.349	-.015	-.326	.349	-.339	-0.698	0.185	0.5	1.0	0.5	1.0	A+	
1452	683758	1	1	140	.864	.864	.071	.036	.029	.000	.499	.499	-.319	-.283	-.218	-3.010	0.266	-0.6	0.9	-1.3	0.7	A-	
1453	684116	1	1	140	.879	.071	.879	.029	.021	.000	.446	-.319	.446	-.250	-.152	-3.158	0.278	-0.4	0.9	-1.0	0.7	A-	
1454	685057	1	1	140	.864	.864	.029	.021	.079	.007	.535	.535	-.187	-.321	-.326	-3.010	0.266	-1.0	0.8	-1.3	0.7	A+	
1455	685040	1	1	143	.664	.084	.664	.070	.182	.000	.248	-.144	.248	-.302	-.001	-1.874	0.194	2.0	1.2	1.3	1.2	A-	
1456	684546	1	1	143	.762	.762	.042	.182	.014	.000	.099	.099	-.002	-.107	-.006	-2.451	0.214	2.4	1.3	2.2	1.4	A+	
1457	685041	1	1	143	.755	.112	.063	.063	.755	.007	.523	-.313	-.184	-.265	.523	-2.406	0.212	-1.3	0.9	-1.2	0.8	A-	
1458	684296	1	1	143	.238	.238	.175	.266	.315	.007	.082	.082	-.084	.168	-.129	0.330	0.211	1.8	1.2	2.8	1.6	A-	
1459	684542	1	1	143	.636	.084	.636	.105	.168	.007	.379	-.368	.379	-.243	.032	-1.726	0.191	0.5	1.0	0.0	1.0	A+	
1460	684110	1	1	143	.643	.189	.112	.049	.643	.007	.665	-.426	-.204	-.325	.665	-1.762	0.192	-3.5	0.7	-3.2	0.7	A+	
1461	683810	1	1	143	.734	.175	.734	.049	.035	.007	.491	-.317	.491	-.143	-.263	-2.274	0.207	-0.8	0.9	-1.0	0.8	A-	
1462	684547	1	1	143	.476	.392	.105	.014	.476	.014	.264	-.105	-.184	-.131	.264	-0.931	0.184	2.2	1.2	2.2	1.2	A+	
1463	684295	1	1	145	.352	.469	.145	.352	.034	.000	.214	-.035	-.130	.214	-.213	-0.031	0.197	2.5	1.2	3.8	1.7	A+	
1464	685021	1	1	145	.766	.152	.766	.062	.021	.000	.496	-.389	.496	-.230	-.106	-2.352	0.221	-0.3	1.0	-0.7	0.8	A+	
1465	685056	1	1	145	.835	.083	.041	.034	.834	.007	.573	-.347	-.350	-.285	.573	-2.895	0.248	-1.4	0.8	-1.1	0.7	A+	

Table B-5 (continued). Writing/English Composition Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
1466	684772	1	1	145	.972	.972	.007	.000	.021	.000	.299	.299	-.214	.000	-.219	-5.107	0.522	0.0	1.0	-0.8	0.3	A+	
1467	684970	1	1	145	.841	.062	.841	.062	.034	.000	.398	-.248	.398	-.157	-.261	-2.957	0.251	0.2	1.0	0.3	1.1	A-	
1468	685059	1	1	145	.890	.028	.028	.055	.890	.000	.596	-.317	-.361	-.332	.596	-3.461	0.288	-1.6	0.7	-1.7	0.4	A-	
1469	684549	1	1	145	.841	.841	.041	.117	.000	.000	.306	.306	-.218	-.213	.000	-2.957	0.251	1.1	1.2	0.3	1.1	A+	
1470	685055	1	1	145	.772	.069	.014	.138	.772	.007	.581	-.301	-.166	-.442	.581	-2.401	0.223	-1.4	0.8	-1.5	0.7	A+	
1471	684841	1	1	145	.635	.090	.634	.145	.131	.000	.533	-.289	.533	-.313	-.191	-1.540	0.197	-0.8	0.9	-1.2	0.8	A+	
1472	685044	1	1	145	.862	.862	.083	.028	.028	.000	.575	.575	-.369	-.329	-.262	-3.543	0.266	-1.4	0.8	-1.5	0.6	A-	
1473	685053	1	1	145	.903	.034	.041	.903	.014	.007	.298	.002	-.363	.298	-.197	-4.027	0.305	0.2	1.0	1.3	1.6	A-	
1474	684975	1	1	145	.676	.676	.048	.028	.248	.000	.339	.339	-.246	-.136	-.194	-2.156	0.202	1.8	1.2	1.3	1.2	A+	
1475	685034	1	1	145	.828	.828	.021	.069	.083	.000	.515	.515	-.226	-.316	-.299	-3.217	0.245	-0.7	0.9	-1.0	0.7	A-	
1476	684995	1	1	145	.931	.028	.021	.931	.021	.000	.554	-.388	-.270	.554	-.270	-4.451	0.349	-1.2	0.7	-1.8	0.3	A-	
1477	684844	1	1	145	.566	.076	.566	.145	.214	.000	.509	-.073	.509	-.292	-.318	-1.547	0.190	-0.6	1.0	-1.0	0.9	A-	
1478	685032	1	1	145	.883	.883	.055	.041	.021	.000	.571	.571	-.361	-.315	-.270	-3.768	0.283	-1.2	0.8	-1.7	0.4	A+	
1479	684977	1	1	145	.572	.097	.124	.207	.572	.000	.344	-.142	-.397	.007	.344	-1.583	0.191	1.8	1.2	1.8	1.2	B+	
1480	683763	1	1	145	.841	.055	.028	.841	.076	.000	.613	-.368	-.242	.613	-.379	-3.341	0.252	-1.6	0.8	-2.0	0.5	A+	
1481	683761	1	1	148	.710	.209	.020	.709	.054	.007	.391	-.388	-.301	.391	.133	-2.176	0.199	0.0	1.0	1.2	1.2	A-	
1482	683748	1	1	148	.885	.885	.061	.020	.034	.000	.410	.410	-.244	-.279	-.182	-3.515	0.273	-0.6	0.9	-0.6	0.7	A+	
1483	684112	1	1	148	.777	.101	.054	.068	.777	.000	.334	-.236	-.103	-.177	.334	-2.602	0.215	0.4	1.1	0.3	1.1	A+	
1484	685052	1	1	148	.966	.966	.007	.020	.007	.000	.267	.267	-.017	-.312	-.036	-4.925	0.464	-0.1	0.9	-0.5	0.6	A+	
1485	684548	1	1	148	.520	.291	.041	.520	.142	.007	.379	-.246	-.314	.379	-.066	-1.175	0.184	1.1	1.1	0.6	1.1	A+	
1486	684308	1	1	148	.493	.493	.189	.291	.027	.000	.209	.209	-.314	.057	-.044	-1.040	0.184	3.0	1.2	3.7	1.4	A+	
1487	684114	1	1	148	.926	.926	.034	.034	.007	.000	.367	.367	-.259	-.199	-.166	-4.043	0.326	-0.4	0.9	-0.8	0.6	A+	
1488	683816	1	1	142	.909	.028	.908	.021	.042	.000	.375	-.314	.375	-.130	-.186	-3.733	0.308	-0.2	0.9	-0.8	0.7	A+	
1489	684783	1	1	142	.697	.190	.697	.042	.070	.000	.566	-.490	.566	-.228	-.086	-2.025	0.201	-1.8	0.8	-1.6	0.8	A+	
1490	685051	1	1	142	.901	.901	.042	.035	.021	.000	.451	.451	-.345	-.160	-.247	-3.641	0.299	-0.6	0.9	-1.3	0.5	A-	
1491	684773	1	1	142	.930	.056	.930	.007	.007	.000	.310	-.246	.310	-.095	-.175	-4.051	0.345	0.1	1.0	-0.5	0.7	A-	
1492	684298	1	1	142	.662	.120	.127	.070	.662	.021	.548	-.358	-.287	-.126	.548	-1.828	0.196	-1.6	0.9	-1.4	0.8	A+	
1493	685054	1	1	142	.627	.077	.627	.225	.070	.000	.235	-.200	.235	-.132	-.021	-1.639	0.192	2.6	1.2	2.6	1.4	A+	
1494	684134	1	1	142	.782	.162	.782	.021	.035	.000	.546	-.367	.546	-.282	-.270	-2.556	0.222	-1.4	0.8	-1.4	0.7	A+	
1495	684774	1	1	142	.909	.908	.028	.028	.035	.000	.491	.491	-.242	-.202	-.370	-3.733	0.308	-0.8	0.8	-1.5	0.5	A-	
1496	684563	1	1	142	.585	.197	.585	.014	.204	.000	.338	-.283	.338	-.077	-.111	-1.421	0.189	1.4	1.1	0.5	1.1	A+	
1497	685017	1	1	142	.451	.183	.345	.451	.021	.000	.138	-.279	.149	.138	-.217	-0.814	0.192	4.9	1.4	5.1	1.8	A+	
1498	684855	1	1	142	.838	.838	.035	.028	.092	.007	.446	.446	-.203	-.212	-.295	-3.117	0.248	-0.4	0.9	-0.8	0.7	A-	
1499	684851	1	1	142	.655	.655	.092	.141	.113	.000	.564	.564	-.342	-.170	-.349	-1.889	0.198	-1.6	0.9	-1.6	0.8	A+	
1500	684543	1	1	142	.866	.049	.866	.063	.014	.007	.340	-.195	.340	-.236	-.130	-3.380	0.266	0.2	1.0	0.1	1.0	A+	

Table B–5 (continued). Writing/English Composition Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M /F	W /B
1501	684849	1	1	142	.507	.507	.239	.085	.169	.000	.239	.239	.050	-.259	-.183	-1.107	0.191	3.4	1.3	3.0	1.4	A+	
1502	685058	1	1	142	.810	.810	.042	.127	.021	.000	.339	.339	-.258	-.155	-.207	-2.885	0.234	0.6	1.1	0.0	1.0	B-	
1503	685035	1	1	142	.754	.183	.754	.042	.021	.000	.545	-.354	.545	-.326	-.228	-2.482	0.216	-1.3	0.9	-1.5	0.7	A-	
1504	684979	1	1	142	.838	.077	.838	.049	.035	.000	.463	-.340	.463	-.195	-.203	-3.117	0.248	-0.6	0.9	-0.9	0.7	A+	
1505	684544	1	1	141	.879	.879	.064	.021	.035	.000	.493	.493	-.256	-.257	-.330	-3.857	0.286	-0.8	0.9	-1.0	0.6	A+	
1506	685036	1	1	141	.745	.213	.028	.014	.745	.000	.607	-.443	-.343	-.224	.607	-2.688	0.222	-1.6	0.8	-1.6	0.7	A+	
1507	684852	1	1	141	.645	.106	.645	.135	.113	.000	.536	-.324	.536	-.274	-.199	-2.055	0.205	-0.3	1.0	-0.6	0.9	A-	
1508	685020	1	1	141	.553	.035	.326	.085	.553	.000	.375	-.287	-.215	-.117	.375	-1.527	0.199	2.4	1.2	3.5	1.6	A+	
1509	683760	1	1	141	.674	.674	.043	.184	.099	.000	.516	.516	-.237	-.256	-.316	-2.227	0.209	-0.1	1.0	-0.5	0.9	A+	
1510	684561	1	1	141	.738	.149	.064	.738	.043	.007	.617	-.359	-.321	.617	-.283	-2.639	0.220	-1.8	0.8	-1.2	0.7	A+	
1511	684973	1	1	141	.667	.667	.092	.085	.149	.007	.491	.491	-.140	-.244	-.304	-2.183	0.208	0.3	1.0	-0.1	1.0	A-	
1512	683764	1	1	141	.688	.688	.106	.064	.142	.000	.578	.578	-.465	-.358	-.106	-2.315	0.211	-1.2	0.9	0.5	1.1	A+	
1513	685033	1	1	141	.603	.135	.603	.064	.199	.000	.471	-.336	.471	-.326	-.091	-1.808	0.201	0.8	1.1	0.4	1.1	A+	
1514	684847	1	1	141	.518	.092	.170	.220	.518	.000	.566	-.199	-.523	-.069	.566	-1.330	0.198	-0.9	0.9	-0.7	0.9	A+	
1515	683815	1	1	144	.764	.139	.035	.063	.764	.000	.523	-.289	-.308	-.273	.523	-2.612	0.217	-0.8	0.9	-1.4	0.7	B-	
1516	685031	1	1	144	.507	.021	.076	.507	.396	.000	.284	-.302	-.185	.284	-.102	-1.187	0.186	2.4	1.2	2.3	1.3	A-	
1517	684115	1	1	144	.569	.188	.076	.569	.167	.000	.532	-.322	-.349	.532	-.120	-1.501	0.188	-1.5	0.9	-1.4	0.9	A-	
1518	684786	1	1	144	.618	.021	.618	.000	.361	.000	.293	-.239	.293	.000	-.226	-1.753	0.192	2.1	1.2	1.1	1.1	A+	
1519	684117	1	1	144	.889	.889	.042	.049	.021	.000	.566	.566	-.326	-.365	-.239	-3.696	0.286	-1.3	0.8	-1.7	0.5	B+	
1520	684996	1	1	144	.826	.063	.056	.826	.056	.000	.584	-.354	-.342	.584	-.250	-3.082	0.241	-1.5	0.8	-1.5	0.6	A-	
1521	685038	1	1	144	.722	.194	.722	.069	.007	.007	.315	-.058	.315	-.342	-.234	-2.342	0.207	1.2	1.1	1.1	1.2	A-	
1522	685043	1	1	144	.799	.799	.076	.104	.021	.000	.504	.504	-.179	-.375	-.281	-2.861	0.229	-0.7	0.9	-1.1	0.8	A+	
1523	685016	1	1	142	.894	.035	.894	.014	.042	.014	.313	-.296	.313	-.180	-.044	-3.836	0.293	0.1	1.0	0.5	1.2	A+	
1524	684113	1	1	142	.901	.063	.021	.014	.901	.000	.477	-.359	-.178	-.246	.477	-3.924	0.301	-0.8	0.8	-1.3	0.5	A-	
1525	683811	1	1	142	.958	.007	.021	.958	.014	.000	.378	-.145	-.254	.378	-.233	-4.930	0.432	-0.3	0.9	-1.2	0.3	A+	
1526	684108	1	1	142	.845	.056	.845	.049	.042	.007	.454	-.184	.454	-.234	-.308	-3.319	0.254	-0.3	0.9	-1.0	0.7	A+	
1527	684560	1	1	142	.528	.359	.070	.028	.528	.014	.444	-.395	-.004	-.133	.444	-1.324	0.191	0.6	1.0	-0.1	1.0	A+	
1528	684307	1	1	142	.183	.500	.268	.183	.049	.000	.190	-.152	.106	.190	-.205	0.693	0.239	1.0	1.1	2.2	1.8	A+	
1529	684974	1	1	142	.817	.070	.817	.049	.056	.007	.615	-.316	.615	-.278	-.374	-3.076	0.239	-2.0	0.8	-2.0	0.5	A-	
1530	683756	1	1	142	.465	.127	.162	.239	.465	.007	.538	-.347	-.169	-.188	.538	-0.997	0.191	-1.4	0.9	-0.7	0.9	A+	
1531	685019	1	1	143	.755	.133	.755	.070	.042	.000	.437	-.398	.437	-.160	-.061	-2.568	0.222	0.4	1.1	0.0	1.0	A+	
1532	685157	1	1	143	.825	.825	.063	.056	.056	.000	.483	.483	-.382	-.279	-.115	-3.108	0.246	-0.6	0.9	-0.4	0.9	A-	
1533	684562	1	1	143	.699	.091	.112	.699	.098	.000	.529	-.399	-.194	.529	-.225	-2.196	0.210	-0.3	1.0	-1.1	0.8	A-	
1534	684971	1	1	143	.839	.063	.839	.035	.063	.000	.574	-.316	.574	-.225	-.382	-3.233	0.253	-1.4	0.8	-1.8	0.5	A+	
1535	683765	1	1	143	.797	.049	.070	.077	.797	.007	.558	-.283	-.376	-.200	.558	-2.879	0.234	-1.6	0.8	0.4	1.1	A+	

Table B–5 (continued). Writing/English Composition Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
1536	684856	1	1	143	.790	.049	.790	.049	.105	.007	.453	-.364	.453	-.233	-.136	-2.824	0.232	0.0	1.0	0.1	1.0	A+	
1537	685050	1	1	137	.898	.898	.044	.036	.022	.000	.481	.481	-.501	-.094	-.174	-3.862	0.306	-0.8	0.8	-0.1	0.9	A+	
1538	684111	1	1	137	.723	.029	.073	.723	.175	.000	.323	-.071	-.229	.323	-.192	-2.358	0.216	1.4	1.2	1.7	1.3	A-	
1539	684978	1	1	137	.898	.015	.898	.015	.073	.000	.539	-.177	.539	-.298	-.409	-3.862	0.306	-1.1	0.8	-1.4	0.5	A-	
1540	683755	1	1	137	.818	.818	.058	.058	.066	.000	.559	.559	-.466	-.136	-.302	-3.043	0.247	-1.2	0.8	-0.9	0.8	A-	
1541	683759	1	1	137	.759	.066	.044	.759	.131	.000	.444	-.081	-.343	.444	-.295	-2.601	0.225	0.1	1.0	0.4	1.1	A+	
1542	684848	1	1	137	.438	.139	.438	.153	.270	.000	.390	-.389	.390	-.150	-.011	-0.824	0.192	-0.2	1.0	2.3	1.3	A+	
1543	683762	1	1	137	.876	.876	.058	.051	.015	.000	.636	.636	-.459	-.360	-.191	-3.601	0.284	-1.7	0.7	-2.1	0.4	A+	
1544	684109	1	1	137	.788	.095	.044	.788	.073	.000	.680	-.488	-.335	.680	-.254	-2.812	0.235	-2.3	0.7	-2.5	0.5	A-	
1545	685155	1	1	137	.642	.109	.080	.168	.642	.000	.566	-.392	-.288	-.189	.566	-1.882	0.202	-1.4	0.9	-0.7	0.9	A-	
1546	684899	2	2	139	.669	.173	.669	.079	.079	.000	.442	-.316	.442	-.246	-.082	-1.930	0.200	0.0	1.0	-0.4	0.9	A+	
1547	684902	2	2	139	.770	.770	.043	.101	.086	.000	.499	.499	-.130	-.298	-.335	-2.544	0.221	-1.0	0.9	0.1	1.0	A-	
1548	684914	2	2	139	.309	.180	.252	.259	.309	.000	.280	-.156	-.055	-.104	.280	-0.064	0.203	0.9	1.1	2.6	1.5	A-	
1549	684896	2	2	139	.676	.676	.079	.151	.086	.007	.496	.496	-.393	-.183	-.155	-1.970	0.201	-0.7	0.9	-1.2	0.8	A+	
1550	684879	2	3	139	.338	.129	.165	.338	.353	.014	.031	-.200	-.005	.031	.136	-0.225	0.199	4.4	1.4	3.7	1.7	A-	
1551	684920	2	2	139	.518	.223	.518	.158	.094	.007	.450	-.211	.450	-.314	-.019	-1.147	0.189	-0.3	1.0	-0.1	1.0	A+	
1552	683777	2	2	139	.655	.094	.165	.079	.655	.007	.560	-.339	-.177	-.314	.560	-1.851	0.198	-1.7	0.9	-1.7	0.8	A+	
1553	684892	2	2	139	.504	.245	.122	.504	.108	.022	.505	-.191	-.274	.505	-.200	-1.075	0.189	-1.3	0.9	-0.1	1.0	A+	
1554	684845	2	2	141	.603	.106	.092	.199	.603	.000	.599	-.416	-.159	-.298	.599	-1.405	0.190	-2.6	0.8	-2.3	0.8	A+	
1555	683771	2	2	141	.809	.809	.035	.064	.092	.000	.447	.447	-.327	-.198	-.232	-2.630	0.232	-0.5	0.9	-0.7	0.8	A-	
1556	683776	2	2	141	.560	.348	.057	.560	.028	.007	-.006	.263	-.259	-.006	-.356	-1.192	0.187	5.7	1.5	4.9	1.6	B-	
1557	684917	2	2	141	.787	.085	.007	.113	.787	.007	.523	-.444	-.056	-.281	.523	-2.475	0.223	-1.1	0.9	-0.8	0.8	A-	
1558	684982	2	2	141	.752	.135	.752	.078	.035	.000	.501	-.221	.501	-.306	-.319	-2.238	0.213	-1.0	0.9	-0.7	0.9	A-	
1559	684120	2	2	141	.688	.156	.064	.688	.092	.000	.529	-.166	-.350	.529	-.344	-1.857	0.200	-1.3	0.9	-1.3	0.8	A+	
1560	684928	2	2	141	.674	.241	.028	.043	.674	.014	.412	-.215	-.307	-.251	.412	-1.778	0.197	0.1	1.0	0.0	1.0	A-	
1561	684886	2	2	141	.731	.142	.730	.078	.043	.007	.417	-.276	.417	-.318	-.002	-2.105	0.208	-0.1	1.0	-0.3	1.0	A+	
1562	684135	2	2	140	.586	.129	.071	.586	.214	.000	.476	-.415	-.258	.476	-.071	-1.215	0.188	-1.0	0.9	-0.7	0.9	A+	
1563	684900	2	2	140	.686	.107	.686	.093	.114	.000	.306	-.072	.306	-.329	-.077	-1.737	0.200	1.1	1.1	2.0	1.3	A+	
1564	684912	2	2	140	.836	.093	.836	.029	.043	.000	.517	-.341	.517	-.271	-.235	-2.748	0.247	-0.8	0.9	-1.5	0.7	B-	
1565	684302	2	2	140	.686	.686	.086	.057	.171	.000	.310	.310	-.070	-.192	-.211	-1.737	0.200	1.1	1.1	0.9	1.1	A+	
1566	684877	2	2	140	.493	.121	.300	.079	.493	.007	.400	-.333	-.068	-.228	.400	-0.766	0.185	-0.1	1.0	0.2	1.0	A+	
1567	684890	2	2	140	.500	.179	.500	.293	.029	.000	.245	-.337	.245	.044	-.081	-0.800	0.185	2.3	1.2	2.1	1.2	A+	
1568	685153	2	2	140	.550	.300	.057	.093	.550	.000	.404	-.221	-.238	-.153	.404	-1.040	0.186	0.0	1.0	-0.1	1.0	B-	
1569	683775	2	2	143	.525	.119	.266	.091	.524	.000	.346	-.106	-.187	-.194	.346	-1.168	0.184	0.9	1.1	1.1	1.1	A-	
1570	684779	2	2	143	.916	.042	.035	.916	.007	.000	.233	-.271	.022	.233	-.171	-3.863	0.318	0.1	1.0	0.8	1.3	A+	

Table B–5 (continued). Writing/English Composition Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
1571	684118	2	2	143	.839	.084	.839	.042	.028	.007	.562	-.386	.562	-.271	-.167	-3.023	0.245	-1.4	0.8	-1.8	0.6	A+	
1572	684299	2	2	143	.643	.252	.049	.049	.643	.007	.518	-.291	-.242	-.242	.518	-1.762	0.192	-1.3	0.9	-1.5	0.8	A+	
1573	684787	2	2	143	.713	.084	.042	.713	.154	.007	.422	-.174	-.287	.422	-.188	-2.149	0.202	-0.2	1.0	0.1	1.0	A-	
1574	683767	2	2	143	.629	.175	.056	.629	.126	.014	.492	-.317	-.339	.492	-.067	-1.689	0.190	-1.1	0.9	-0.5	0.9	B+	
1575	684911	2	2	143	.818	.818	.070	.042	.056	.014	.412	.412	-.289	.015	-.318	-2.851	0.235	-0.1	1.0	-0.7	0.8	A+	
1576	683814	2	2	143	.490	.273	.168	.063	.490	.007	.544	-.247	-.284	-.157	.544	-0.999	0.184	-2.5	0.8	-1.3	0.9	A-	
1577	684776	2	2	143	.678	.210	.678	.091	.014	.007	.575	-.434	.575	-.200	-.145	-1.950	0.196	-1.9	0.8	-2.0	0.8	A+	
1578	684309	2	2	145	.683	.186	.683	.055	.069	.007	.370	-.225	.370	-.255	-.058	-1.819	0.203	1.4	1.1	0.9	1.2	A-	
1579	685151	2	2	145	.731	.731	.076	.131	.062	.000	.439	.439	-.255	-.317	-.085	-2.119	0.212	0.3	1.0	1.0	1.2	A+	
1580	685046	2	2	145	.828	.034	.110	.828	.021	.007	.615	-.333	-.456	.615	-.116	-2.834	0.244	-1.6	0.8	-1.9	0.5	A-	
1581	684930	2	2	145	.414	.172	.414	.090	.324	.000	.282	-.126	.282	-.074	-.150	-0.369	0.192	1.9	1.2	3.7	1.6	A-	
1582	684916	2	2	145	.793	.793	.097	.083	.028	.000	.351	.351	-.220	-.288	.014	-2.555	0.230	1.1	1.1	-0.1	0.9	A-	
1583	684842	2	2	145	.648	.110	.124	.648	.117	.000	.513	-.316	-.306	.513	-.140	-1.618	0.198	-0.5	1.0	-0.8	0.9	A+	
1584	684904	2	2	145	.607	.069	.138	.607	.186	.000	.539	-.312	-.319	.539	-.191	-1.388	0.194	-0.8	0.9	-0.8	0.9	A+	
1585	683769	2	2	145	.635	.634	.159	.103	.103	.000	.394	.394	-.350	-.166	-.036	-1.540	0.197	1.2	1.1	1.2	1.2	A+	
1586	684132	2	2	145	.710	.124	.097	.710	.069	.000	.470	-.243	-.277	.470	-.203	-2.365	0.208	0.0	1.0	1.1	1.2	A+	
1587	684923	2	2	145	.462	.152	.179	.207	.462	.000	.462	-.139	-.246	-.213	.462	-1.013	0.188	0.0	1.0	-0.5	0.9	A-	
1588	684983	2	2	145	.862	.069	.862	.048	.021	.000	.432	-.191	.432	-.276	-.293	-3.543	0.266	-0.1	1.0	-0.3	0.9	A-	
1589	684121	2	2	145	.910	.910	.028	.028	.034	.000	.587	.587	-.291	-.320	-.372	-4.123	0.314	-1.5	0.7	-1.9	0.3	A-	
1590	684981	2	2	145	.807	.131	.034	.028	.807	.000	.498	-.321	-.233	-.281	.498	-3.044	0.236	-0.5	0.9	0.2	1.0	A-	
1591	684903	2	2	145	.497	.179	.200	.497	.124	.000	.433	-.316	-.260	.433	.027	-1.190	0.188	0.6	1.0	0.4	1.0	A-	
1592	684929	2	2	145	.407	.234	.200	.152	.407	.007	.262	-.065	-.165	-.081	.262	-0.727	0.190	2.3	1.2	2.8	1.4	B+	
1593	684303	2	2	145	.455	.455	.083	.414	.048	.000	.382	.382	-.317	-.183	-.061	-0.978	0.188	1.1	1.1	1.4	1.2	A+	
1594	684564	2	2	148	.466	.142	.466	.101	.291	.000	.426	-.360	.426	-.191	-.065	-0.905	0.184	0.1	1.0	0.6	1.1	A-	
1595	684552	2	2	148	.703	.115	.128	.047	.703	.007	.432	-.386	-.015	-.291	.432	-2.137	0.198	-0.2	1.0	1.0	1.2	A-	
1596	684887	2	2	148	.743	.081	.743	.122	.054	.000	.534	-.218	.534	-.343	-.272	-2.381	0.206	-1.3	0.9	-1.4	0.7	A+	
1597	684895	2	2	148	.426	.203	.074	.297	.426	.000	.348	-.127	-.344	-.067	.348	-0.700	0.186	1.4	1.1	1.6	1.2	A-	
1598	684556	2	2	148	.770	.162	.770	.041	.027	.000	.342	-.215	.342	-.244	-.100	-2.557	0.213	0.5	1.1	0.2	1.0	A-	
1599	683812	2	2	148	.696	.696	.216	.027	.061	.000	.319	.319	-.168	-.251	-.155	-2.098	0.197	1.1	1.1	1.0	1.2	A-	
1600	684891	2	2	148	.662	.176	.662	.061	.101	.000	.584	-.421	.584	-.193	-.231	-1.908	0.192	-2.2	0.8	-1.9	0.7	A-	
1601	683773	2	2	148	.777	.122	.047	.054	.777	.000	.503	-.306	-.161	-.333	.503	-2.602	0.215	-1.3	0.9	-0.6	0.9	A-	
1602	684781	2	2	148	.473	.095	.054	.473	.378	.000	.251	-.281	-.252	.251	.028	-0.939	0.184	2.8	1.2	3.3	1.4	A-	
1603	684878	2	2	148	.453	.284	.128	.135	.453	.000	.350	-.127	-.148	-.198	.350	-0.837	0.185	1.5	1.1	1.0	1.1	A-	
1604	683774	2	2	142	.655	.655	.070	.099	.176	.000	.212	.212	-.053	-.355	.050	-1.789	0.195	2.6	1.2	3.0	1.5	A+	
1605	684889	2	2	142	.627	.028	.077	.627	.268	.000	.256	.002	-.169	.256	-.179	-1.639	0.192	2.3	1.2	2.7	1.4	A-	

Table B–5 (continued). Writing/English Composition Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
1606	684300	2	2	142	.394	.296	.148	.394	.162	.000	.211	-.162	.000	.211	-.079	-0.466	0.191	2.5	1.2	3.0	1.4	A+	
1607	683768	2	2	142	.472	.310	.113	.472	.106	.000	.493	-.081	-.364	.493	-.305	-0.858	0.187	-0.8	0.9	-1.1	0.9	A+	
1608	684881	2	2	142	.514	.155	.113	.514	.197	.021	.475	-.431	-.156	.475	-.055	-1.068	0.187	-0.5	1.0	-0.8	0.9	A-	
1609	684888	2	2	142	.725	.725	.141	.099	.035	.000	.523	.523	-.349	-.169	-.334	-2.191	0.207	-1.2	0.9	-1.2	0.8	A-	
1610	683813	2	2	142	.838	.070	.056	.035	.838	.000	.486	-.362	-.180	-.242	.486	-2.989	0.246	-0.8	0.9	-1.2	0.7	A+	
1611	685047	2	2	142	.683	.683	.183	.063	.070	.000	.426	.426	-.174	-.261	-.263	-2.049	0.202	0.4	1.0	-0.1	1.0	A+	
1612	684555	2	2	142	.549	.289	.549	.077	.085	.000	.363	-.180	.363	-.018	-.341	-1.326	0.191	1.6	1.1	1.2	1.2	A+	
1613	685149	2	2	142	.648	.120	.113	.120	.648	.000	.468	-.249	-.162	-.282	.468	-1.850	0.197	-0.2	1.0	0.3	1.0	A-	
1614	684883	2	2	142	.747	.141	.746	.035	.077	.000	.434	-.366	.434	-.154	-.125	-2.436	0.214	0.0	1.0	-0.5	0.9	A+	
1615	684554	2	2	142	.500	.085	.310	.106	.500	.000	.458	-.313	-.149	-.238	.458	-1.071	0.191	0.1	1.0	0.0	1.0	A+	
1616	685042	2	2	142	.817	.817	.028	.085	.063	.007	.459	.459	-.276	-.243	-.236	-2.940	0.237	-0.4	0.9	-0.9	0.7	A-	
1617	684557	2	2	142	.648	.141	.063	.648	.148	.000	.408	-.366	-.112	.408	-.114	-1.850	0.197	0.7	1.1	0.8	1.1	A+	
1618	684918	2	2	142	.754	.183	.042	.754	.021	.000	.493	-.287	-.273	.493	-.322	-2.482	0.216	-0.6	0.9	-1.2	0.8	A+	
1619	684880	2	2	141	.915	.915	.028	.035	.021	.000	.404	.404	-.145	-.230	-.321	-4.324	0.328	-0.6	0.9	-0.4	0.7	A+	
1620	684921	2	2	141	.731	.191	.057	.730	.021	.000	.449	-.323	-.202	.449	-.175	-2.591	0.219	0.7	1.1	0.1	1.0	A-	
1621	684131	2	2	141	.922	.922	.035	.014	.028	.000	.435	.435	-.351	-.235	-.145	-4.436	0.340	-0.7	0.8	-0.1	0.9	A+	
1622	684894	2	2	141	.688	.128	.092	.688	.085	.007	.601	-.257	-.327	.601	-.296	-2.315	0.211	-1.6	0.8	-1.0	0.8	C+	
1623	684901	2	2	141	.475	.121	.121	.475	.284	.000	.496	-.319	-.344	.496	-.071	-1.094	0.199	0.3	1.0	0.2	1.0	A+	
1624	684553	2	2	141	.674	.071	.170	.071	.674	.014	.516	-.367	-.124	-.306	.516	-2.227	0.209	-0.1	1.0	-0.1	1.0	A+	
1625	684551	2	2	141	.582	.135	.582	.206	.078	.000	.564	-.344	.564	-.214	-.278	-1.687	0.200	-0.9	0.9	-0.7	0.9	A-	
1626	684559	2	2	144	.785	.069	.056	.785	.090	.000	.498	-.336	-.157	.498	-.291	-2.758	0.224	-0.6	0.9	-1.2	0.8	A-	
1627	684931	2	2	144	.438	.438	.139	.160	.264	.000	.285	.285	-.084	-.135	-.143	-0.841	0.187	1.3	1.1	3.9	1.5	A+	
1628	684893	2	2	144	.833	.076	.833	.049	.042	.000	.578	-.298	.578	-.323	-.334	-3.141	0.245	-1.5	0.8	-1.5	0.6	A+	
1629	684778	2	2	144	.375	.313	.111	.375	.201	.000	.338	-.123	-.181	.338	-.124	-0.522	0.190	0.9	1.1	0.9	1.1	A+	
1630	684122	2	2	144	.743	.056	.743	.160	.042	.000	.566	-.223	.566	-.386	-.273	-2.474	0.212	-1.5	0.8	-1.2	0.8	A+	
1631	684853	2	2	144	.479	.479	.188	.090	.243	.000	.295	.295	-.322	-.043	-.022	-1.049	0.186	2.3	1.2	1.7	1.2	B+	
1632	684119	2	2	144	.604	.250	.090	.604	.056	.000	.454	-.241	-.301	.454	-.138	-1.680	0.190	-0.1	1.0	-0.4	1.0	A-	
1633	684910	2	2	144	.813	.111	.035	.035	.813	.007	.569	-.268	-.374	-.341	.569	-2.968	0.235	-1.3	0.8	-1.7	0.6	A+	
1634	684297	2	2	144	.778	.132	.778	.049	.042	.000	.583	-.381	.583	-.232	-.318	-2.708	0.222	-1.4	0.8	-1.7	0.7	A-	
1635	684884	2	2	142	.556	.176	.134	.556	.134	.000	.449	-.182	-.398	.449	-.053	-1.470	0.192	0.4	1.0	0.3	1.0	A-	
1636	684927	2	2	142	.711	.099	.711	.127	.063	.000	.475	-.251	.475	-.253	-.231	-2.337	0.209	-0.1	1.0	-0.6	0.9	A-	
1637	684897	2	2	142	.761	.761	.056	.155	.028	.000	.426	.426	-.313	-.238	-.143	-2.657	0.220	0.1	1.0	0.1	1.0	A+	
1638	685152	2	2	142	.570	.275	.085	.570	.070	.000	.547	-.214	-.378	.547	-.273	-1.544	0.193	-1.3	0.9	-0.4	1.0	A-	
1639	684913	2	2	142	.683	.113	.085	.683	.106	.014	.597	-.318	-.288	.597	-.283	-2.167	0.204	-1.8	0.8	-1.5	0.8	B+	
1640	684885	2	2	142	.676	.676	.134	.056	.127	.007	.583	.583	-.403	-.211	-.230	-2.125	0.203	-1.5	0.9	-1.7	0.8	A-	

Table B–5 (continued). Writing/English Composition Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
1641	684898	2	2	142	.352	.225	.141	.352	.268	.014	.274	-.321	-.105	.274	.137	-0.401	0.197	1.6	1.1	3.5	1.6	A-	
1642	684785	2	2	142	.648	.042	.190	.648	.113	.007	.532	-.199	-.366	.532	-.190	-1.964	0.199	-1.0	0.9	-0.1	1.0	A+	
1643	684558	2	2	143	.692	.070	.112	.692	.119	.007	.611	-.176	-.398	.611	-.323	-2.152	0.209	-1.5	0.9	-1.8	0.7	A+	
1644	684919	2	2	143	.322	.175	.077	.322	.427	.000	.367	-.210	-.256	.367	-.048	-0.078	0.203	0.8	1.1	1.4	1.3	A-	
1645	684780	2	2	143	.839	.056	.042	.063	.839	.000	.508	-.238	-.275	-.316	.508	-3.233	0.253	-0.5	0.9	-1.4	0.6	B-	
1646	684550	2	2	143	.657	.657	.091	.126	.126	.000	.506	.506	-.254	-.252	-.252	-1.939	0.204	0.0	1.0	-0.1	1.0	A+	
1647	684133	2	2	143	.699	.091	.077	.133	.699	.000	.661	-.273	-.372	-.370	.661	-2.196	0.210	-2.4	0.8	-2.5	0.6	A+	
1648	684777	2	2	143	.559	.140	.175	.559	.119	.007	.464	-.290	-.189	.464	-.136	-1.383	0.196	0.6	1.1	0.7	1.1	A+	
1649	684925	2	2	143	.525	.147	.315	.524	.007	.007	.673	-.300	-.472	.673	.043	-1.193	0.194	-3.0	0.8	-2.7	0.7	B+	
1650	684846	2	2	143	.392	.399	.119	.392	.084	.007	.447	-.250	-.123	.447	-.151	-0.475	0.196	-0.1	1.0	1.2	1.2	A+	
1651	683770	2	2	143	.476	.203	.112	.476	.203	.007	.528	-.250	-.326	.528	-.116	-0.930	0.194	-0.5	1.0	-0.7	0.9	A+	
1652	684915	2	2	143	.713	.084	.070	.126	.713	.007	.657	-.165	-.292	-.491	.657	-2.285	0.213	-2.2	0.8	-2.4	0.6	A+	
1653	684775	2	2	143	.650	.650	.070	.126	.147	.007	.465	.465	-.313	-.130	-.240	-1.898	0.203	0.4	1.0	1.1	1.2	B-	
1654	684984	2	2	137	.839	.839	.058	.007	.095	.000	.352	.352	-.267	-.182	-.175	-3.235	0.258	0.6	1.1	0.5	1.1	A+	
1655	684924	2	2	137	.526	.095	.124	.255	.526	.000	.509	-.246	-.265	-.218	.509	-1.266	0.193	-1.4	0.9	-0.7	0.9	A-	
1656	683766	2	2	137	.803	.102	.036	.803	.058	.000	.568	-.348	-.275	.568	-.294	-2.925	0.240	-1.0	0.9	-1.3	0.7	A-	
1657	684882	2	2	137	.832	.832	.044	.102	.022	.000	.589	.589	-.327	-.390	-.240	-3.169	0.254	-1.3	0.8	-1.6	0.6	A+	
1658	683772	2	2	137	.730	.109	.088	.730	.066	.007	.512	-.475	-.172	.512	-.081	-2.405	0.217	-0.6	0.9	0.0	1.0	A-	
1659	685150	2	2	137	.657	.131	.117	.095	.657	.000	.330	-.247	-.053	-.191	.330	-1.964	0.204	1.7	1.2	1.2	1.2	A-	
1660	685045	2	2	137	.708	.058	.708	.153	.080	.000	.475	-.294	.475	-.083	-.430	-2.267	0.212	-0.1	1.0	0.1	1.0	A-	
1661	683817	2	2	137	.380	.380	.380	.073	.168	.000	.166	-.027	.166	-.099	-.111	-0.525	0.195	3.5	1.3	3.7	1.6	B+	
1662	684565	2	2	137	.562	.066	.117	.255	.562	.000	.337	-.276	-.123	-.137	.337	-1.453	0.194	1.5	1.1	1.7	1.2	A+	
1663	684610	3	3	574	.401	.303	.275	.021	.401	.000	.429	-.341	-.074	-.143	.429	-0.013	0.093	-1.4	1.0	-0.4	1.0	A+	B-
1664	684949	3	3	574	.401	.401	.040	.380	.179	.000	.239	.239	-.118	-.067	-.160	-0.013	0.093	4.2	1.2	4.5	1.3	A-	A+
1665	686605	3	3	574	.352	.232	.352	.214	.200	.002	.180	-.024	.180	-.101	-.081	0.236	0.095	5.5	1.2	6.0	1.4	A+	B+
1666	684637	3	3	574	.524	.098	.064	.524	.312	.002	.231	-.249	-.311	.231	.080	-0.620	0.092	6.1	1.2	5.5	1.3	A-	A-
1667	684938	3	3	574	.807	.118	.807	.031	.044	.000	.425	-.247	.425	-.183	-.276	-2.228	0.115	-0.5	1.0	-0.6	0.9	A-	A+
1668	684946	3	3	574	.666	.094	.106	.132	.666	.002	.478	-.259	-.134	-.309	.478	-1.340	0.098	-1.1	1.0	-1.6	0.9	A+	A-
1669	686604	3	3	574	.591	.223	.108	.591	.075	.003	.445	-.183	-.250	.445	-.222	-0.948	0.094	-0.1	1.0	-0.5	1.0	A+	B-
1670	684614	3	3	574	.768	.768	.052	.098	.078	.003	.616	.616	-.362	-.357	-.248	-1.956	0.108	-4.2	0.8	-4.4	0.6	A+	A-
1671	684633	3	3	574	.854	.092	.854	.024	.026	.003	.424	-.194	.424	-.246	-.304	-2.618	0.127	-1.0	0.9	-1.5	0.8	A+	B+
1672	684631	3	3	574	.744	.091	.075	.744	.084	.007	.489	-.193	-.291	.489	-.248	-1.798	0.105	-1.5	0.9	-1.6	0.9	A-	A+
1673	684623	3	3	574	.484	.066	.249	.195	.484	.005	.323	-.253	-.143	-.069	.323	-0.425	0.092	2.9	1.1	2.8	1.1	A-	A-
1674	684936	3	3	574	.653	.066	.220	.653	.056	.005	.420	-.308	-.150	.420	-.226	-1.274	0.097	0.4	1.0	-0.4	1.0	A-	A+
1675	684961	3	3	574	.746	.051	.746	.111	.087	.005	.516	-.266	.516	-.291	-.233	-1.809	0.105	-2.2	0.9	-1.0	0.9	A+	A+

Table B-5 (continued). Writing/English Composition Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M /F	W /B
1676	684958	3	3	574	.488	.300	.139	.068	.488	.005	.241	-.135	-.020	-.167	.241	-0.442	0.092	5.4	1.2	5.5	1.3	A+	A+
1677	684627	3	3	574	.779	.077	.080	.779	.057	.007	.585	-.350	-.290	.585	-.268	-2.027	0.110	-3.4	0.8	-3.7	0.7	A-	B-
1678	684960	3	3	574	.740	.740	.061	.085	.108	.005	.535	.535	-.369	-.229	-.234	-1.776	0.104	-2.7	0.9	-2.5	0.8	A+	B+
1679	684943	3	3	574	.828	.071	.040	.054	.828	.007	.552	-.364	-.237	-.259	.552	-2.392	0.119	-2.5	0.8	-3.3	0.6	A+	A-
1680	684613	3	3	574	.436	.436	.139	.172	.244	.009	.340	.340	-.309	-.114	-.019	-0.186	0.093	1.4	1.1	2.5	1.1	A+	A+
1681	684942	3	3	574	.706	.228	.042	.706	.019	.005	.473	-.272	-.339	.473	-.178	-1.566	0.101	-0.9	1.0	-1.7	0.9	A+	A-
1682	684939	3	3	574	.686	.059	.127	.118	.686	.009	.518	-.334	-.236	-.214	.518	-1.456	0.099	-2.3	0.9	-2.3	0.8	A-	A-
1683	684636	3	3	592	.588	.179	.204	.027	.588	.002	.459	-.217	-.291	-.144	.459	-1.053	0.093	-0.6	1.0	-0.8	1.0	A-	B-
1684	684625	3	3	592	.487	.390	.095	.486	.029	.000	.419	-.319	-.067	.419	-.204	-0.543	0.092	0.7	1.0	1.1	1.1	A-	A+
1685	686602	3	3	592	.780	.066	.780	.035	.118	.000	.392	-.144	.392	-.265	-.240	-2.162	0.108	0.0	1.0	-0.7	0.9	A+	B-
1686	684953	3	3	592	.975	.008	.010	.007	.975	.000	.314	-.204	-.149	-.192	.314	-4.814	0.269	-0.6	0.9	-2.2	0.4	A+	A-
1687	684940	3	3	592	.640	.047	.306	.640	.007	.000	.293	-.263	-.162	.293	-.121	-1.326	0.095	3.9	1.2	4.1	1.3	B-	B-
1688	684950	3	3	592	.716	.057	.716	.057	.166	.003	.388	-.251	.388	-.274	-.151	-1.752	0.100	0.4	1.0	0.6	1.1	A-	A-
1689	684615	3	3	592	.860	.860	.042	.076	.022	.000	.467	.467	-.264	-.329	-.148	-2.798	0.127	-1.7	0.9	-1.6	0.8	A+	A-
1690	684628	3	3	592	.753	.118	.753	.035	.091	.002	.525	-.356	.525	-.204	-.242	-1.981	0.104	-2.5	0.9	-2.6	0.8	B+	A+
1691	684935	3	3	592	.694	.194	.044	.064	.694	.003	.487	-.296	-.266	-.196	.487	-1.624	0.098	-1.6	0.9	-1.2	0.9	A+	A+
1692	684941	3	3	592	.460	.032	.481	.459	.024	.003	.300	-.283	-.139	.300	-.177	-0.407	0.092	4.9	1.2	4.0	1.2	A-	A-
1693	684618	3	3	592	.684	.160	.684	.095	.059	.002	.293	-.103	.293	-.189	-.169	-1.566	0.098	3.0	1.1	2.8	1.2	A+	A-
1694	684934	3	3	592	.495	.495	.383	.063	.057	.002	.302	.302	-.133	-.169	-.179	-0.585	0.092	4.6	1.2	6.9	1.4	A+	B+
1695	684957	3	3	592	.431	.111	.316	.431	.137	.005	.461	-.258	-.162	.461	-.193	-0.261	0.093	-1.0	1.0	-0.2	1.0	A-	A-
1696	684620	3	3	592	.655	.655	.204	.091	.046	.003	.456	.456	-.195	-.328	-.187	-1.408	0.096	-0.5	1.0	-0.4	1.0	A+	A-
1697	684944	3	3	592	.883	.042	.883	.025	.042	.007	.482	-.303	.482	-.207	-.252	-3.039	0.136	-1.9	0.8	-2.5	0.6	B+	A-
1698	684621	3	3	592	.775	.088	.088	.042	.775	.007	.520	-.342	-.221	-.264	.520	-2.127	0.107	-2.6	0.9	-1.7	0.8	A+	B-
1699	684611	3	3	592	.564	.564	.130	.176	.122	.008	.397	.397	-.130	-.346	-.044	-0.933	0.092	1.7	1.1	1.3	1.1	A+	A-
1700	686603	3	3	592	.382	.341	.149	.120	.382	.008	.403	-.022	-.336	-.187	.403	-0.006	0.095	1.3	1.1	0.7	1.1	A+	A+
1701	684624	3	3	592	.287	.255	.204	.247	.287	.007	.479	-.313	-.261	.071	.479	0.528	0.101	-2.1	0.9	-0.7	0.9	A+	A+
1702	684945	3	3	592	.758	.093	.088	.758	.052	.008	.573	-.331	-.346	.573	-.195	-2.014	0.105	-3.7	0.8	-3.8	0.7	A+	A-
1703	684963	3	3	571	.862	.026	.862	.086	.025	.002	.329	-.189	.329	-.163	-.227	-2.904	0.129	0.3	1.0	-0.4	0.9	A-	
1704	684959	3	3	571	.485	.201	.254	.485	.058	.002	.278	-.074	-.115	.278	-.236	-0.655	0.092	3.9	1.1	3.5	1.2	A+	
1705	684619	3	3	571	.769	.769	.117	.049	.063	.002	.479	.479	-.276	-.224	-.255	-2.175	0.108	-1.7	0.9	-2.1	0.8	A+	
1706	684626	3	3	571	.632	.201	.053	.632	.110	.004	.318	-.055	-.287	.318	-.211	-1.385	0.095	2.7	1.1	3.9	1.3	A+	
1707	684956	3	3	571	.445	.445	.128	.236	.186	.005	.340	.340	-.131	-.160	-.153	-0.458	0.093	2.4	1.1	2.0	1.1	A+	
1708	684634	3	3	571	.870	.040	.870	.032	.056	.002	.383	-.310	.383	-.194	-.146	-2.990	0.133	-0.9	0.9	-1.0	0.8	A-	
1709	684954	3	3	571	.478	.193	.158	.478	.168	.004	.404	-.156	-.192	.404	-.189	-0.621	0.092	0.6	1.0	0.5	1.0	A-	
1710	686607	3	3	571	.184	.184	.271	.299	.243	.002	.110	.110	-.036	.019	-.083	1.040	0.116	2.2	1.2	5.1	1.8	A-	

Table B-5 (continued). Writing/English Composition Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
1711	684937	3	3	571	.804	.028	.804	.119	.046	.004	.491	-.256	.491	-.302	-.242	-2.421	0.114	-1.9	0.9	-2.3	0.8	A+	
1712	684632	3	3	571	.532	.165	.140	.532	.161	.002	.412	-.216	-.133	.412	-.210	-0.885	0.092	-0.2	1.0	1.0	1.1	A-	
1713	684622	3	3	571	.648	.145	.114	.084	.648	.009	.578	-.359	-.190	-.293	.578	-1.468	0.096	-4.2	0.8	-3.7	0.8	A+	
1714	684933	3	3	571	.550	.296	.550	.112	.033	.009	.327	-.144	.327	-.160	-.200	-0.971	0.093	2.6	1.1	2.5	1.1	A-	
1715	684635	3	3	571	.827	.053	.072	.039	.827	.011	.548	-.275	-.303	-.287	.548	-2.597	0.119	-2.9	0.8	-3.6	0.6	A+	
1716	684616	3	3	571	.159	.096	.193	.159	.543	.009	.051	-.227	-.169	.051	.257	1.237	0.122	2.7	1.2	5.6	2.0	A-	
1717	684630	3	3	571	.473	.145	.473	.236	.137	.009	.418	-.219	.418	-.083	-.242	-0.595	0.092	0.0	1.0	0.3	1.0	A-	
1718	684932	3	3	571	.716	.046	.173	.054	.716	.011	.475	-.174	-.286	-.243	.475	-1.848	0.101	-1.6	0.9	-1.5	0.9	B+	
1719	684951	3	3	571	.680	.110	.680	.075	.126	.009	.574	-.271	.574	-.343	-.240	-1.638	0.098	-4.2	0.8	-3.7	0.8	A+	
1720	684617	3	3	571	.536	.124	.149	.179	.536	.012	.508	-.264	-.273	-.136	.508	-0.902	0.092	-2.8	0.9	-2.3	0.9	A-	
1721	684612	3	3	571	.692	.692	.096	.112	.086	.014	.552	.552	-.316	-.283	-.200	-1.707	0.099	-3.3	0.9	-3.4	0.8	C-	
1722	686601	3	3	571	.692	.198	.070	.025	.692	.016	.451	-.225	-.257	-.205	.451	-1.707	0.099	-1.1	1.0	-0.7	1.0	A+	
1723	682232	4	4	1137	.675	.185	.075	.066	.675	.000	.426	-.186	-.225	-.275	.426	-0.970	0.070	0.3	1.0	0.2	1.0	A+	
1724	682087	4	4	1137	.790	.790	.101	.051	.058	.000	.389	.389	-.266	-.154	-.191	-1.696	0.080	0.6	1.0	-0.4	1.0	A-	
1725	686597	4	4	1137	.423	.285	.142	.423	.149	.002	.365	-.164	-.118	.365	-.181	0.330	0.067	2.2	1.1	2.9	1.1	A-	
1726	682152	4	4	1137	.955	.026	.955	.015	.003	.001	.309	-.179	.309	-.262	-.061	-3.683	0.149	-0.6	0.9	-0.7	0.9	A-	
1727	682085	4	4	1137	.694	.694	.107	.073	.126	.000	.423	.423	-.237	-.152	-.248	-1.080	0.071	0.4	1.0	-0.4	1.0	B+	
1728	682248	4	4	1137	.829	.055	.828	.075	.038	.004	.451	-.257	.451	-.248	-.201	-1.997	0.086	-1.3	0.9	-2.0	0.8	A-	
1729	682144	4	4	1137	.738	.105	.122	.034	.738	.001	.432	-.236	-.239	-.200	.432	-1.346	0.074	-0.3	1.0	-0.6	1.0	A-	
1730	682095	4	4	1137	.164	.233	.164	.416	.185	.003	.006	-.076	.006	.081	-.017	1.955	0.088	5.8	1.3	9.6	2.4	A-	
1731	682099	4	4	1137	.858	.047	.059	.858	.034	.001	.468	-.274	-.291	.468	-.186	-2.265	0.092	-1.9	0.9	-2.4	0.8	A-	
1732	682146	4	4	1137	.873	.085	.027	.872	.013	.002	.447	-.280	-.296	.447	-.159	-2.406	0.096	-1.8	0.9	-1.7	0.8	C+	
1733	682135	4	4	1137	.531	.026	.309	.531	.130	.004	.336	-.178	-.278	.336	-.011	-0.216	0.067	4.8	1.1	3.1	1.1	A-	
1734	682214	4	4	1137	.953	.019	.953	.008	.017	.004	.301	-.160	.301	-.161	-.161	-3.618	0.145	-0.6	0.9	1.4	1.3	A-	
1735	682142	4	4	1137	.502	.183	.138	.172	.502	.004	.464	-.214	-.202	-.189	.464	-0.070	0.066	-1.9	1.0	0.1	1.0	A+	
1736	682094	4	4	1137	.726	.726	.201	.033	.033	.007	.358	.358	-.116	-.288	-.272	-1.269	0.074	1.7	1.1	4.3	1.3	A-	
1737	682223	4	4	1137	.849	.073	.849	.033	.038	.007	.502	-.315	.502	-.149	-.304	-2.174	0.090	-2.5	0.9	-3.2	0.7	A+	
1738	682224	4	4	1137	.530	.195	.099	.168	.529	.009	.465	-.224	-.250	-.152	.465	-0.207	0.067	-1.4	1.0	-0.7	1.0	A-	
1739	682213	4	4	1137	.376	.062	.471	.084	.376	.007	.401	-.268	-.197	-.071	.401	0.573	0.068	0.1	1.0	3.0	1.2	B-	
1740	682086	4	4	1137	.842	.119	.027	.842	.005	.007	.327	-.162	-.282	.327	-.129	-2.111	0.088	0.8	1.0	0.9	1.1	A+	
1741	682083	4	4	1137	.643	.103	.643	.060	.182	.012	.443	-.235	.443	-.277	-.162	-0.795	0.069	-0.1	1.0	0.3	1.0	A+	
1742	682148	4	4	1137	.742	.064	.049	.136	.742	.008	.511	-.280	-.213	-.281	.511	-1.374	0.075	-2.7	0.9	-2.8	0.8	A-	
1743	682078	4	4	1134	.526	.153	.145	.526	.175	.001	.472	-.261	-.202	.472	-.184	-0.040	0.066	-1.6	1.0	-1.9	0.9	A-	A+
1744	682150	4	4	1134	.739	.150	.015	.096	.739	.000	.353	-.267	-.166	-.134	.353	-1.195	0.074	1.5	1.1	1.7	1.1	A-	A-
1745	686600	4	4	1134	.601	.601	.144	.054	.199	.003	.423	.423	-.234	-.250	-.166	-0.420	0.068	0.7	1.0	0.6	1.0	A+	B-

Table B–5 (continued). Writing/English Composition Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M /F	W /B
1746	682079	4	4	1134	.583	.138	.583	.129	.149	.001	.501	-.251	.501	-.228	-.233	-0.330	0.067	-2.6	0.9	-2.9	0.9	A+	A-
1747	682096	4	4	1134	.572	.086	.296	.572	.044	.001	.444	-.166	-.324	.444	-.111	-0.276	0.067	-0.2	1.0	-0.2	1.0	A-	A+
1748	682145	4	4	1134	.779	.116	.779	.050	.055	.001	.496	-.352	.496	-.192	-.219	-1.455	0.078	-2.5	0.9	-3.2	0.8	A+	A+
1749	682137	4	4	1134	.883	.050	.024	.041	.883	.002	.475	-.289	-.258	-.235	.475	-2.335	0.098	-2.7	0.8	-2.3	0.7	C+	A-
1750	682081	4	4	1134	.752	.752	.076	.034	.135	.003	.464	.464	-.273	-.216	-.242	-1.279	0.075	-1.6	0.9	-2.3	0.9	A-	B-
1751	682143	4	4	1134	.830	.040	.083	.830	.044	.004	.532	-.259	-.342	.532	-.233	-1.838	0.085	-3.6	0.8	-4.1	0.7	A+	A-
1752	686594	4	4	1134	.486	.153	.486	.122	.235	.004	.315	-.266	.315	-.197	.026	0.158	0.066	5.4	1.1	5.2	1.2	A+	B-
1753	682227	4	4	1134	.665	.049	.117	.665	.164	.005	.416	-.268	-.305	.416	-.089	-0.763	0.070	0.5	1.0	1.1	1.1	A+	A+
1754	682216	4	4	1134	.726	.076	.726	.120	.074	.004	.404	-.248	.404	-.176	-.187	-1.113	0.073	0.5	1.0	-0.9	0.9	A+	A-
1755	686593	4	4	1134	.519	.519	.278	.078	.119	.007	.269	.269	-.079	-.179	-.131	-0.005	0.066	6.9	1.2	6.7	1.3	A-	A+
1756	682140	4	4	1134	.711	.111	.094	.711	.078	.005	.484	-.248	-.277	.484	-.198	-1.024	0.072	-2.0	0.9	-2.4	0.9	B+	B-
1757	682092	4	4	1134	.477	.082	.207	.227	.477	.007	.478	-.354	-.200	-.120	.478	0.202	0.066	-1.8	1.0	-1.8	0.9	A+	A+
1758	682136	4	4	1134	.667	.667	.058	.213	.057	.005	.349	.349	-.144	-.201	-.171	-0.772	0.070	2.8	1.1	2.1	1.1	A+	A-
1759	684480	4	4	1134	.435	.466	.077	.435	.016	.007	.243	-.058	-.250	.243	-.117	0.416	0.067	8.3	1.2	7.8	1.3	A+	A+
1760	682089	4	4	1134	.658	.229	.658	.045	.059	.009	.465	-.290	.465	-.200	-.186	-0.724	0.069	-1.2	1.0	-1.7	0.9	A-	A+
1761	682133	4	4	1134	.609	.058	.221	.103	.609	.008	.452	-.260	-.184	-.233	.452	-0.466	0.068	-0.6	1.0	-0.2	1.0	A+	A+
1762	682093	4	4	1134	.455	.455	.185	.182	.171	.007	.432	.432	-.183	-.179	-.171	0.313	0.067	0.1	1.0	0.4	1.0	A-	A+
1763	682151	4	4	1141	.912	.040	.912	.038	.009	.001	.335	-.252	.335	-.171	-.130	-2.721	0.110	-0.5	1.0	-0.6	0.9	A+	A+
1764	682090	4	4	1141	.696	.055	.039	.209	.696	.001	.414	-.267	-.173	-.233	.414	-0.966	0.071	0.1	1.0	-0.3	1.0	A-	A-
1765	682226	4	4	1141	.507	.180	.507	.065	.247	.002	.334	-.074	.334	-.191	-.205	0.014	0.066	4.1	1.1	3.5	1.1	A-	A+
1766	682211	4	4	1141	.821	.025	.057	.821	.096	.001	.467	-.184	-.244	.467	-.317	-1.793	0.083	-2.3	0.9	-2.0	0.8	A+	A-
1767	682088	4	4	1141	.186	.195	.237	.186	.376	.006	.042	-.044	.009	.042	.009	1.825	0.082	5.3	1.3	8.8	2.0	A+	A+
1768	682149	4	4	1141	.864	.864	.036	.039	.058	.004	.375	.375	-.256	-.138	-.204	-2.168	0.092	-0.7	1.0	-1.5	0.8	A+	A+
1769	682139	4	4	1141	.699	.699	.052	.032	.216	.002	.420	.420	-.143	-.138	-.321	-0.981	0.071	-0.2	1.0	-0.8	1.0	A+	A-
1770	682134	4	4	1141	.248	.152	.491	.248	.104	.005	.199	.072	-.023	.199	-.300	1.392	0.075	3.1	1.1	6.4	1.5	A-	A-
1771	682215	4	4	1141	.422	.122	.422	.232	.221	.004	.391	-.235	.391	-.190	-.066	0.434	0.066	0.3	1.0	2.4	1.1	A-	A+
1772	682221	4	4	1141	.833	.034	.053	.833	.074	.006	.457	-.228	-.287	.457	-.202	-1.885	0.085	-1.9	0.9	-2.6	0.8	A-	A-
1773	686595	4	4	1141	.477	.193	.477	.165	.161	.004	.246	-.161	.246	-.120	-.019	0.160	0.066	7.4	1.2	6.0	1.2	A+	A+
1774	682098	4	4	1141	.482	.204	.135	.174	.482	.004	.516	-.240	-.231	-.190	.516	0.134	0.066	-4.2	0.9	-4.1	0.9	A-	A-
1775	682228	4	4	1141	.517	.517	.161	.236	.081	.005	.444	.444	-.223	-.174	-.209	-0.038	0.066	-0.8	1.0	-0.9	1.0	A-	A+
1776	682141	4	4	1141	.775	.084	.775	.078	.056	.007	.526	-.276	.526	-.268	-.253	-1.453	0.077	-3.4	0.9	-4.4	0.7	B+	B-
1777	682225	4	4	1141	.816	.045	.046	.086	.816	.007	.551	-.269	-.252	-.321	.551	-1.751	0.083	-3.8	0.8	-5.4	0.6	A+	A-
1778	682138	4	4	1141	.357	.078	.018	.539	.357	.008	.255	-.241	-.160	-.049	.255	0.767	0.068	5.2	1.2	6.1	1.3	A-	A-
1779	682220	4	4	1141	.850	.850	.067	.067	.008	.008	.391	.391	-.183	-.266	-.146	-2.037	0.089	-0.8	1.0	-1.3	0.9	B+	A+
1780	682082	4	4	1141	.536	.220	.135	.100	.535	.010	.488	-.270	-.217	-.154	.488	-0.129	0.066	-2.7	0.9	-3.0	0.9	A-	A+

Table B–5 (continued). Writing/English Composition Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
1781	682217	4	4	1141	.784	.128	.784	.061	.018	.009	.462	-.254	.462	-.286	-.183	-1.514	0.078	-1.8	0.9	-2.6	0.8	A-	B-
1782	682091	4	4	1141	.376	.286	.189	.376	.139	.010	.277	-.038	-.121	.277	-.166	0.666	0.067	4.3	1.1	5.2	1.3	A+	A+
1783	682080	5	5	170	.582	.241	.065	.582	.112	.000	.435	-.202	-.238	.435	-.221	-0.755	0.174	-0.3	1.0	-0.9	0.9	A+	
1784	682101	5	5	158	.532	.234	.532	.127	.108	.000	.256	.040	.256	-.230	-.219	-0.527	0.174	1.7	1.1	1.6	1.1	A+	
1785	682102	5	5	134	.224	.179	.231	.224	.366	.000	.095	-.221	-.021	.095	.112	1.072	0.224	1.7	1.2	3.5	2.1	A+	
1786	682103	5	5	164	.360	.463	.122	.360	.055	.000	.240	.078	-.367	.240	-.149	0.461	0.175	1.1	1.1	1.6	1.2	A+	
1787	682104	5	5	141	.674	.149	.135	.674	.043	.000	.496	-.246	-.227	.496	-.334	-1.084	0.200	-0.8	0.9	-1.4	0.8	A+	
1788	682105	5	5	150	.593	.247	.593	.087	.073	.000	.364	-.095	.364	-.290	-.215	-0.906	0.183	0.4	1.0	0.0	1.0	B+	
1789	682106	5	5	153	.634	.634	.072	.203	.092	.000	.550	.550	-.298	-.292	-.244	-0.998	0.186	-2.1	0.8	-1.9	0.8	A+	
1790	682107	5	5	141	.156	.248	.489	.106	.156	.000	.150	-.115	-.197	-.335	.150	1.683	0.247	0.4	1.1	3.4	2.6	A+	
1791	682108	5	5	159	.283	.440	.132	.283	.145	.000	.130	.105	-.229	.130	-.094	0.739	0.191	2.0	1.2	3.1	1.6	A-	
1792	682109	5	5	166	.163	.108	.181	.548	.163	.000	.013	-.238	-.020	.155	.013	1.508	0.223	1.2	1.2	4.2	2.5	A+	
1793	682110	5	5	161	.584	.584	.161	.149	.106	.000	.305	.305	-.166	-.141	-.127	-0.910	0.177	1.3	1.1	1.2	1.1	A-	
1794	682111	5	5	155	.729	.097	.729	.071	.103	.000	.283	-.127	.283	-.246	-.083	-1.505	0.197	0.7	1.1	1.0	1.1	A+	
1795	682113	5	5	160	.256	.263	.256	.244	.238	.000	.246	-.097	.246	-.230	.080	0.849	0.194	0.5	1.0	1.4	1.2	A-	
1796	682114	5	5	129	.256	.202	.256	.279	.264	.000	.051	-.088	.051	-.030	.059	0.959	0.214	1.8	1.2	2.5	1.5	A-	
1797	682115	5	5	142	.282	.268	.282	.232	.218	.000	-.015	-.029	-.015	-.040	.088	0.790	0.199	2.7	1.3	4.4	1.9	A+	
1798	682117	5	5	170	.653	.100	.218	.653	.029	.000	.405	-.247	-.235	.405	-.129	-1.123	0.178	-0.1	1.0	-0.1	1.0	A+	
1799	682118	5	5	132	.409	.409	.167	.205	.220	.000	.297	.297	-.126	-.200	-.044	0.168	0.193	0.4	1.0	2.0	1.2	A+	
1800	682119	5	5	157	.554	.191	.204	.051	.554	.000	.593	-.287	-.276	-.320	.593	-0.647	0.176	-3.6	0.8	-3.5	0.7	A-	
1801	682120	5	5	169	.249	.361	.249	.249	.142	.000	.076	.040	-.030	.076	-.112	0.897	0.189	1.6	1.2	3.0	1.6	B-	
1802	682121	5	5	162	.457	.179	.136	.457	.228	.000	.289	-.017	-.225	.289	-.144	-0.160	0.174	1.5	1.1	1.6	1.2	A-	
1803	682122	5	5	161	.603	.137	.124	.602	.137	.000	.392	-.214	-.106	.392	-.243	-0.754	0.178	0.1	1.0	-0.4	1.0	C+	
1804	682123	5	5	154	.630	.065	.630	.188	.117	.000	.331	-.046	.331	-.120	-.316	-0.960	0.184	0.7	1.1	0.6	1.1	A+	
1805	682124	5	5	154	.500	.188	.195	.500	.117	.000	.332	-.259	-.174	.332	.013	-0.368	0.177	0.7	1.0	0.7	1.1	A+	
1806	682126	5	5	159	.767	.767	.075	.132	.025	.000	.443	.443	-.252	-.291	-.142	-1.875	0.206	-0.5	0.9	-1.1	0.8	A+	
1807	682127	5	5	160	.613	.131	.613	.138	.119	.000	.434	-.246	.434	-.257	-.123	-1.082	0.181	-0.3	1.0	-0.9	0.9	A-	
1808	682128	5	5	154	.494	.201	.494	.084	.221	.000	.439	-.254	.439	-.321	-.068	-0.329	0.180	-0.6	1.0	-0.4	1.0	A+	
1809	682129	5	5	172	.448	.448	.343	.116	.093	.000	.124	.124	.154	-.211	-.231	-0.190	0.168	3.8	1.3	3.6	1.4	A+	
1810	682130	5	5	160	.231	.175	.294	.300	.231	.000	.169	-.169	.006	-.020	.169	1.042	0.200	0.8	1.1	2.2	1.4	A+	
1811	682131	5	5	184	.261	.212	.196	.332	.261	.000	.116	.074	-.163	-.035	.116	0.889	0.179	1.9	1.2	2.3	1.4	A+	
1812	682154	5	5	151	.729	.132	.093	.728	.046	.000	.502	-.280	-.276	.502	-.230	-1.805	0.208	-0.4	1.0	-1.2	0.8	A+	
1813	682155	5	5	163	.503	.196	.503	.202	.098	.000	.560	-.235	.560	-.333	-.178	-0.411	0.177	-2.0	0.9	-2.1	0.8	B+	
1814	682156	5	5	147	.517	.102	.170	.211	.517	.000	.260	-.181	.020	-.203	.260	-0.334	0.178	1.0	1.1	1.5	1.1	A-	
1815	682157	5	5	145	.152	.152	.110	.503	.234	.000	.063	.063	-.318	.083	.085	1.660	0.242	0.7	1.1	2.4	1.8	B+	

Table B–5 (continued). Writing/English Composition Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
1816	682158	5	5	161	.311	.460	.106	.124	.311	.000	.095	.141	-.203	-.158	.095	0.701	0.184	2.7	1.2	3.9	1.7	A+	
1817	682159	5	5	155	.555	.116	.219	.555	.110	.000	.397	-.102	-.234	.397	-.217	-0.709	0.180	0.0	1.0	0.6	1.1	A+	
1818	682160	5	5	147	.626	.170	.054	.150	.626	.000	.238	-.005	-.172	-.208	.238	-1.098	0.187	1.7	1.1	1.5	1.2	A+	
1819	682161	5	5	159	.786	.101	.786	.088	.025	.000	.385	-.273	.385	-.160	-.193	-1.836	0.212	0.2	1.0	-0.7	0.9	A+	
1820	682162	5	5	158	.703	.703	.139	.108	.051	.000	.525	.525	-.232	-.345	-.241	-1.516	0.195	-1.1	0.9	-1.6	0.8	A-	
1821	682163	5	5	186	.559	.253	.559	.081	.108	.000	.278	-.116	.278	-.289	-.029	-0.756	0.163	1.8	1.1	1.2	1.1	A+	
1822	682164	5	5	134	.739	.060	.164	.739	.037	.000	.440	-.115	-.328	.440	-.236	-1.604	0.216	-0.5	0.9	-1.0	0.8	A-	
1823	682165	5	5	148	.899	.899	.041	.020	.041	.000	.389	.389	-.228	-.155	-.257	-2.904	0.290	-0.3	0.9	-1.2	0.6	A-	
1824	682166	5	5	146	.856	.068	.021	.856	.055	.000	.385	-.391	-.078	.385	-.110	-2.657	0.254	-0.3	0.9	-0.6	0.8	A+	
1825	682167	5	5	167	.677	.228	.054	.677	.042	.000	.440	-.220	-.330	.440	-.194	-1.202	0.185	-0.1	1.0	-0.5	0.9	B+	
1826	682168	5	5	168	.542	.542	.363	.060	.036	.000	.362	.362	-.183	-.292	-.126	-0.607	0.170	0.3	1.0	0.1	1.0	A-	
1827	682169	5	5	142	.704	.134	.704	.120	.042	.000	.366	-.203	.366	-.094	-.334	-1.486	0.203	0.1	1.0	1.0	1.1	A-	
1828	682170	5	5	137	.372	.526	.073	.029	.372	.000	.181	.112	-.377	-.268	.181	0.380	0.192	1.7	1.1	3.3	1.4	A-	
1829	682171	5	5	148	.770	.122	.770	.054	.054	.000	.420	-.316	.420	-.173	-.150	-1.781	0.214	-0.5	0.9	-0.7	0.9	A+	
1830	682172	5	5	156	.654	.256	.077	.654	.013	.000	.429	-.249	-.349	.429	-.020	-1.121	0.187	-0.3	1.0	-0.6	0.9	A+	
1831	682173	5	5	142	.739	.070	.077	.113	.739	.000	.309	-.125	-.227	-.136	.309	-1.597	0.211	0.9	1.1	0.6	1.1	A-	
1832	682212	5	5	151	.536	.536	.338	.079	.046	.000	.196	.196	.043	-.237	-.257	-0.633	0.181	2.7	1.2	3.8	1.4	B-	
1833	682218	5	5	155	.761	.761	.129	.065	.045	.000	.549	.549	-.395	-.317	-.115	-1.842	0.205	-1.9	0.8	-2.2	0.6	A+	
1834	682219	5	5	146	.877	.068	.877	.034	.021	.000	.432	-.283	.432	-.240	-.190	-2.707	0.267	-0.7	0.9	-1.3	0.6	A+	
1835	682230	5	5	142	.655	.655	.169	.063	.113	.000	.338	.338	-.146	-.189	-.191	-1.286	0.195	0.9	1.1	0.2	1.0	A+	
1836	682231	5	5	127	.677	.110	.102	.677	.110	.000	.496	-.408	-.277	.496	-.066	-1.113	0.205	-1.5	0.9	-1.9	0.8	A-	
1837	682233	5	5	140	.279	.314	.279	.286	.121	.000	.160	-.014	.160	-.162	.025	0.768	0.201	1.0	1.1	2.1	1.3	A-	
1838	682234	5	5	140	.471	.093	.193	.243	.471	.000	.324	-.201	-.212	-.046	.324	-0.142	0.187	1.1	1.1	0.7	1.1	A-	
1839	682235	5	5	156	.609	.609	.109	.045	.237	.000	.166	.166	-.314	-.265	.168	-1.072	0.183	3.1	1.3	3.4	1.4	B+	
1840	682236	5	5	145	.607	.607	.117	.193	.083	.000	.386	.386	-.276	-.214	-.055	-0.992	0.190	0.2	1.0	0.7	1.1	A+	
1841	682237	5	5	156	.750	.090	.083	.750	.077	.000	.373	-.240	-.242	.373	-.098	-1.767	0.201	-0.3	1.0	0.1	1.0	A-	
1842	682238	5	5	161	.248	.248	.255	.329	.168	.000	.064	.064	-.164	.027	.084	0.913	0.194	1.9	1.2	2.6	1.5	B-	
1843	682239	5	5	148	.608	.608	.209	.135	.047	.000	.344	.344	-.084	-.281	-.179	-1.043	0.185	0.4	1.0	0.5	1.1	A+	
1844	682240	5	5	172	.529	.529	.314	.064	.093	.000	.491	.491	-.255	-.143	-.317	-0.424	0.166	-2.2	0.9	-2.2	0.8	A-	
1845	682241	5	5	163	.552	.552	.104	.110	.233	.000	.041	.041	-.154	.067	.014	-0.627	0.175	5.0	1.4	4.7	1.5	A-	
1846	682242	5	5	160	.200	.250	.481	.200	.069	.000	.042	-.183	.165	.042	-.079	1.255	0.209	1.5	1.2	3.2	1.8	A+	
1847	682243	5	5	153	.641	.085	.170	.641	.105	.000	.563	-.258	-.324	.563	-.250	-1.031	0.188	-2.1	0.8	-2.3	0.8	A+	
1848	682244	5	5	140	.786	.043	.786	.107	.064	.000	.484	-.250	.484	-.241	-.298	-1.978	0.224	-1.3	0.9	-1.1	0.8	A+	
1849	682245	5	5	147	.762	.762	.116	.054	.068	.000	.514	.514	-.303	-.268	-.244	-1.755	0.212	-1.5	0.8	-1.3	0.8	A+	
1850	682249	5	5	155	.852	.852	.084	.032	.032	.000	.413	.413	-.352	-.086	-.193	-2.569	0.242	-0.6	0.9	-0.5	0.9	A-	

Table B–5 (continued). Writing/English Composition Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
1851	682250	5	5	159	.635	.132	.138	.094	.635	.000	.666	-.429	-.271	-.280	.666	-1.113	0.187	-3.8	0.7	-3.3	0.6	A+	
1852	684475	5	5	184	.717	.103	.114	.717	.065	.000	.535	-.376	-.174	.535	-.290	-1.558	0.182	-1.6	0.9	-1.8	0.8	A+	
1853	686598	5	5	163	.761	.110	.761	.074	.055	.000	.485	-.229	.485	-.306	-.242	-1.790	0.201	-1.1	0.9	-1.4	0.8	A+	
1854	724205	6	6	655	.712	.144	.076	.711	.069	.000	.339	-.107	-.333	.339	-.109	-1.318	0.098	2.5	1.1	1.5	1.1	A+	
1855	724206	6	6	683	.792	.098	.792	.060	.050	.000	.540	-.358	.540	-.215	-.282	-1.831	0.106	-2.5	0.9	-3.2	0.7	A+	A+
1856	724207	6	6	652	.499	.199	.498	.155	.147	.000	.307	-.180	.307	-.107	-.122	-0.081	0.088	3.5	1.1	4.4	1.3	A+	A-
1857	724209	6	6	668	.734	.734	.117	.103	.046	.000	.475	.475	-.215	-.299	-.239	-1.421	0.100	-0.6	1.0	-1.3	0.9	A+	A-
1858	724210	6	6	708	.315	.274	.153	.258	.315	.000	.245	-.046	-.189	-.058	.245	0.805	0.088	1.9	1.1	4.3	1.4	A+	A-
1859	724211	6	6	619	.792	.074	.792	.078	.057	.000	.528	-.308	.528	-.262	-.275	-1.767	0.111	-1.8	0.9	-3.0	0.7	A-	
1860	724212	6	6	663	.502	.502	.113	.184	.201	.000	.349	.349	-.193	-.176	-.112	-0.132	0.087	1.5	1.1	3.2	1.2	A-	A-
1861	724213	6	6	742	.247	.247	.341	.217	.195	.000	-.007	-.007	.135	-.073	-.078	1.214	0.091	6.0	1.3	9.4	2.2	A-	A+
1862	724214	6	6	649	.439	.186	.214	.439	.160	.000	.264	-.109	-.132	.264	-.093	0.211	0.087	3.7	1.1	5.3	1.3	A-	A+
1863	724215	6	6	682	.584	.182	.584	.101	.133	.000	.270	-.111	.270	-.141	-.141	-0.576	0.088	5.3	1.2	5.0	1.3	A+	
1864	724216	6	6	701	.234	.234	.111	.127	.528	.000	.003	.003	-.220	-.224	.286	1.375	0.096	5.3	1.3	9.0	2.3	A-	A-
1865	725543	6	6	699	.469	.469	.212	.120	.199	.000	.222	.222	-.178	-.098	-.015	0.086	0.084	5.7	1.2	5.7	1.3	A-	
1866	725545	6	6	652	.410	.169	.225	.196	.410	.000	.296	-.198	-.083	-.093	.296	0.349	0.088	1.7	1.1	5.5	1.4	A-	B-
1867	725548	6	6	670	.600	.600	.179	.151	.070	.000	.396	.396	-.282	-.154	-.120	-0.557	0.088	0.8	1.0	0.8	1.0	A+	A+
1868	725550	6	6	665	.394	.394	.328	.177	.101	.000	.307	.307	-.085	-.173	-.144	0.470	0.087	1.8	1.1	3.6	1.2	A+	A-
1869	725553	6	6	708	.708	.708	.076	.061	.155	.000	.257	.257	-.273	-.172	-.010	-1.193	0.092	3.2	1.2	3.9	1.3	A-	A-
1870	725555	6	6	701	.351	.127	.184	.338	.351	.000	.298	-.176	-.101	-.093	.298	0.626	0.087	1.2	1.0	5.1	1.4	A+	
1871	725556	6	6	672	.415	.415	.147	.103	.335	.000	.112	.112	-.110	-.233	.115	0.323	0.086	8.1	1.3	9.1	1.6	A+	A+
1872	729929	6	6	674	.549	.197	.144	.110	.549	.000	.389	-.133	-.210	-.214	.389	-0.328	0.086	0.2	1.0	0.6	1.0	A+	
1873	729930	6	6	666	.668	.140	.140	.668	.053	.000	.444	-.230	-.215	.444	-.246	-1.030	0.093	0.1	1.0	-0.6	1.0	A+	
1874	729931	6	6	672	.350	.376	.350	.106	.168	.000	.209	-.014	.209	-.234	-.056	0.641	0.089	4.3	1.2	6.5	1.6	A+	
1875	729932	6	6	639	.521	.355	.521	.083	.041	.000	.176	.015	.176	-.188	-.219	-0.194	0.089	7.6	1.3	6.8	1.4	A-	A-
1876	729933	6	6	642	.291	.590	.291	.033	.086	.000	.077	.129	.077	-.281	-.173	0.994	0.094	4.7	1.2	8.3	1.9	A+	A+
1877	729934	6	6	687	.831	.047	.068	.831	.054	.000	.486	-.246	-.296	.486	-.246	-2.136	0.113	-1.4	0.9	-2.4	0.7	A-	A+
1878	729994	6	6	692	.736	.736	.077	.069	.118	.000	.500	.500	-.247	-.304	-.240	-1.443	0.098	-1.0	1.0	-2.2	0.8	A+	A+
1879	729995	6	6	684	.380	.380	.181	.091	.348	.000	.330	.330	-.267	-.263	.038	0.540	0.086	-0.2	1.0	4.1	1.3	A-	B-
1880	729996	6	6	734	.514	.090	.249	.514	.147	.000	.346	-.284	-.145	.346	-.083	-0.159	0.083	2.1	1.1	5.0	1.3	A-	A-
1881	729997	6	6	681	.423	.304	.156	.117	.423	.000	.285	-.042	-.218	-.133	.285	0.264	0.086	3.5	1.1	4.3	1.3	A+	
1882	729998	6	6	659	.736	.097	.067	.100	.736	.000	.569	-.296	-.281	-.309	.569	-1.408	0.100	-3.1	0.8	-3.8	0.7	A+	B-
1883	729999	6	6	659	.640	.147	.152	.640	.061	.000	.368	-.225	-.192	.368	-.117	-0.805	0.092	2.0	1.1	1.5	1.1	A-	
1884	730000	6	6	696	.468	.105	.075	.468	.352	.000	.321	-.209	-.233	.321	-.074	0.068	0.084	1.3	1.0	4.2	1.2	A-	A-
1885	730001	6	6	625	.573	.138	.176	.114	.573	.000	.465	-.233	-.239	-.185	.465	-0.608	0.092	-0.9	1.0	-0.3	1.0	A+	A-

Table B–5 (continued). Writing/English Composition Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M /F	W /B
1886	730002	6	6	693	.551	.128	.170	.150	.551	.000	.388	-.187	-.179	-.176	.388	-0.305	0.085	0.4	1.0	2.3	1.1	A+	
1887	730003	6	6	656	.706	.706	.104	.127	.064	.000	.298	.298	-.187	-.136	-.137	-1.111	0.096	2.9	1.2	3.1	1.2	A+	B-
1888	730004	6	6	675	.747	.061	.074	.119	.747	.000	.433	-.335	-.227	-.151	.433	-1.403	0.098	-0.8	1.0	-0.4	1.0	A+	A+
1889	730005	6	6	673	.765	.097	.086	.765	.052	.000	.511	-.313	-.297	.511	-.183	-1.600	0.103	-1.7	0.9	-2.2	0.8	A+	
1890	730006	6	6	677	.378	.419	.378	.137	.065	.000	.345	-.071	.345	-.217	-.235	0.506	0.087	-1.0	1.0	5.1	1.4	A-	A-
1891	730007	6	6	687	.361	.100	.361	.182	.357	.000	.193	-.188	.193	-.250	.125	0.594	0.087	4.4	1.2	5.3	1.4	A+	B-
1892	730008	6	6	643	.635	.109	.107	.635	.149	.000	.393	-.249	-.301	.393	-.052	-0.759	0.093	1.3	1.1	1.1	1.1	A+	B-
1893	730009	6	6	678	.435	.245	.130	.190	.435	.000	.294	-.024	-.264	-.118	.294	0.182	0.086	3.6	1.1	4.3	1.3	A+	B-
1894	730010	6	6	650	.465	.280	.145	.465	.111	.000	.210	-.003	-.202	.210	-.103	0.103	0.088	6.4	1.2	6.0	1.4	A+	
1895	730011	6	6	680	.471	.093	.171	.266	.471	.000	.395	-.209	-.189	-.148	.395	0.057	0.085	-0.6	1.0	2.1	1.1	A+	A-
1896	730012	6	6	664	.467	.294	.117	.467	.122	.000	.342	-.144	-.103	.342	-.219	0.147	0.086	0.9	1.0	2.4	1.1	A-	A-
1897	730013	6	6	706	.724	.034	.048	.724	.194	.000	.256	-.331	-.197	.256	-.031	-1.264	0.096	4.2	1.2	4.0	1.3	A-	
1898	730016	6	6	710	.607	.185	.607	.123	.086	.000	.468	-.181	.468	-.288	-.229	-0.610	0.086	-1.3	1.0	-1.5	0.9	A-	B+
1899	730017	6	6	679	.563	.150	.169	.118	.563	.000	.449	-.115	-.258	-.263	.449	-0.441	0.087	-1.1	1.0	-0.5	1.0	A-	A-
1900	730018	6	6	697	.836	.055	.042	.836	.067	.000	.434	-.235	-.283	.434	-.203	-2.201	0.115	-0.1	1.0	-1.4	0.8	A-	B-
1901	730019	6	6	666	.803	.068	.803	.084	.045	.000	.395	-.259	.395	-.133	-.266	-1.897	0.110	0.2	1.0	1.9	1.2	A+	B-
1902	730020	6	6	659	.461	.077	.414	.047	.461	.000	.290	-.147	-.100	-.264	.290	0.148	0.086	2.9	1.1	4.3	1.3	A+	A+
1903	730021	6	6	639	.603	.122	.172	.603	.103	.000	.463	-.263	-.256	.463	-.144	-0.565	0.091	-1.2	1.0	-0.8	1.0	B-	
1904	730022	6	6	653	.401	.234	.401	.208	.156	.000	.276	-.113	.276	-.145	-.079	0.388	0.088	1.9	1.1	6.1	1.4	A+	A-
1905	730023	6	6	653	.539	.170	.130	.161	.539	.000	.424	-.208	-.276	-.110	.424	-0.235	0.088	-0.3	1.0	0.6	1.0	B-	A+
1906	730024	6	6	694	.523	.192	.523	.171	.114	.000	.320	-.236	.320	-.068	-.131	-0.209	0.085	2.9	1.1	3.4	1.2	A+	A+
1907	730025	6	6	701	.605	.130	.077	.188	.605	.000	.384	-.200	-.212	-.165	.384	-0.644	0.088	1.5	1.1	2.1	1.1	A+	A-
1908	730026	6	6	662	.431	.071	.177	.322	.431	.000	.370	-.316	-.203	-.052	.370	0.239	0.087	0.4	1.0	1.9	1.1	A+	
1909	730027	6	6	624	.466	.155	.466	.250	.128	.000	.342	-.145	.342	-.234	-.051	0.061	0.090	2.1	1.1	3.1	1.2	A-	A-
1910	730028	6	6	667	.661	.154	.661	.118	.066	.000	.539	-.291	.539	-.281	-.238	-0.934	0.092	-2.8	0.9	-3.4	0.8	A+	B-
1911	730029	6	6	689	.521	.165	.215	.099	.521	.000	.551	-.184	-.324	-.248	.551	-0.220	0.086	-4.9	0.8	-3.7	0.8	A-	A+
1912	730036	6	6	653	.438	.438	.124	.309	.129	.000	.242	.242	-.175	-.041	-.130	0.123	0.088	4.9	1.2	6.1	1.4	A-	
1913	730037	6	6	646	.403	.096	.313	.402	.189	.000	.187	-.122	-.099	.187	-.026	0.375	0.089	5.6	1.2	7.0	1.5	A+	A+
1914	730038	6	6	693	.470	.470	.173	.160	.196	.000	.162	.162	-.022	-.093	-.097	0.043	0.084	7.2	1.2	8.0	1.5	A-	B-
1915	730039	6	6	634	.145	.145	.140	.409	.306	.000	.045	.045	-.111	.039	.008	2.000	0.118	1.8	1.1	4.6	1.9	A-	A+
1916	730040	6	6	655	.638	.101	.638	.105	.156	.000	.288	-.174	.288	-.145	-.115	-0.831	0.091	3.7	1.2	3.3	1.2	A-	
1917	730215	6	6	693	.427	.167	.232	.173	.427	.000	.171	-.009	-.076	-.131	.171	0.292	0.085	6.9	1.2	7.5	1.5	A+	A+
1918	730216	6	6	649	.550	.125	.550	.185	.140	.000	.383	-.202	.383	-.207	-.125	-0.351	0.088	0.7	1.0	2.4	1.1	A+	A-
1919	730218	6	6	725	.483	.214	.215	.483	.088	.000	.265	-.143	-.042	.265	-.199	0.077	0.082	4.0	1.1	4.6	1.2	A+	A-
1920	730228	6	6	717	.538	.158	.121	.183	.538	.000	.385	-.207	-.145	-.179	.385	-0.285	0.084	0.3	1.0	2.3	1.1	A+	A-

Table B–5 (continued). Writing/English Composition Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
1921	730229	6	6	676	.559	.160	.169	.559	.112	.000	.296	-.142	-.114	.296	-.166	-0.382	0.086	3.4	1.1	3.1	1.2	A+	A-
1922	730230	6	6	659	.609	.608	.073	.134	.185	.000	.382	.382	-.251	-.264	-.081	-0.614	0.090	1.3	1.1	1.8	1.1	A+	A+
1923	734926	6	6	640	.708	.708	.064	.159	.069	.000	.461	.461	-.242	-.284	-.184	-1.168	0.098	-0.6	1.0	-1.4	0.9	A+	A-
1924	735376	6	6	696	.683	.098	.101	.682	.119	.000	.516	-.346	-.255	.516	-.187	-1.090	0.093	-1.9	0.9	-2.1	0.9	A-	
1925	735377	6	6	623	.787	.083	.787	.085	.045	.000	.570	-.325	.570	-.323	-.258	-1.809	0.111	-2.8	0.8	-3.2	0.7	A+	A+
1926	735378	6	6	641	.701	.700	.115	.092	.092	.000	.509	.509	-.253	-.341	-.186	-1.179	0.098	-1.6	0.9	-1.7	0.9	A-	A+
1927	735380	6	6	651	.485	.200	.146	.169	.485	.000	.385	-.181	-.169	-.162	.385	0.083	0.086	-0.3	1.0	0.6	1.0	A+	A-
1928	735384	6	6	693	.645	.645	.104	.134	.117	.000	.479	.479	-.376	-.181	-.165	-0.860	0.090	-1.5	0.9	-1.2	0.9	A-	A+
1929	735385	6	6	640	.536	.102	.536	.228	.134	.000	.303	-.185	.303	-.092	-.167	-0.218	0.088	2.7	1.1	3.8	1.2	A+	
1930	735386	6	6	638	.323	.223	.323	.155	.299	.000	.076	-.035	.076	-.187	.103	0.821	0.092	6.4	1.3	7.7	1.7	A-	A-
1931	735387	6	6	675	.347	.172	.366	.116	.347	.000	.346	-.234	.067	-.341	.346	0.644	0.089	0.6	1.0	1.5	1.1	A-	A+
1932	735388	6	6	663	.359	.428	.124	.359	.089	.000	.106	.141	-.230	.106	-.159	0.596	0.088	6.5	1.2	8.2	1.6	A+	A+
1933	738288	6	6	662	.311	.311	.322	.239	.128	.000	.039	.039	.041	.022	-.139	0.848	0.091	7.9	1.3	8.4	1.9	A+	
1934	738289	6	6	698	.062	.655	.203	.080	.062	.000	-.185	.434	-.228	-.258	-.185	3.006	0.161	1.2	1.2	8.6	4.7	B-	
1935	738290	6	6	645	.310	.229	.209	.310	.251	.000	-.007	.029	-.164	-.007	.133	0.873	0.092	8.3	1.3	8.8	1.9	A+	A-
1936	738291	6	6	677	.747	.747	.038	.055	.160	.000	.459	.459	-.300	-.364	-.161	-1.506	0.101	-0.6	1.0	0.2	1.0	A-	
1937	738292	6	6	657	.767	.068	.076	.767	.088	.000	.489	-.266	-.251	.489	-.258	-1.641	0.104	-1.2	0.9	-1.0	0.9	A+	A+
1938	738293	6	6	689	.573	.078	.168	.573	.180	.000	.408	-.285	-.197	.408	-.134	-0.528	0.087	0.8	1.0	1.4	1.1	A+	A+
1939	738294	6	6	691	.748	.058	.748	.098	.096	.000	.519	-.380	.519	-.272	-.189	-1.469	0.099	-1.9	0.9	-2.2	0.8	B+	
1940	738295	6	6	714	.461	.461	.176	.270	.092	.000	.275	.275	-.119	-.096	-.170	0.154	0.083	3.5	1.1	6.2	1.4	A-	A+
1941	741711	6	6	686	.637	.637	.112	.207	.044	.000	.361	.361	-.203	-.165	-.208	-0.842	0.090	2.4	1.1	2.0	1.1	A-	A-
1942	741712	6	6	630	.398	.259	.146	.197	.398	.000	.263	.010	-.183	-.173	.263	0.398	0.089	2.6	1.1	5.6	1.4	A+	
1943	741740	6	6	621	.763	.140	.058	.039	.763	.000	.487	-.239	-.303	-.277	.487	-1.569	0.106	-1.2	0.9	-2.2	0.8	B+	B+
1944	741760	6	6	677	.369	.437	.133	.061	.369	.000	.292	.039	-.222	-.355	.292	0.509	0.088	2.4	1.1	4.5	1.4	A+	
1945	742046	6	6	668	.446	.058	.446	.087	.409	.000	.261	-.279	.261	-.270	.024	0.121	0.087	4.2	1.1	5.6	1.4	B-	A+
1946	742048	6	6	689	.399	.149	.212	.239	.399	.000	.247	-.063	-.090	-.145	.247	0.403	0.086	3.9	1.1	4.7	1.3	A+	
1947	730217	7	7	470	.636	.074	.198	.091	.636	.000	.468	-.272	-.204	-.252	.468	-0.502	0.108	-0.8	1.0	-0.9	0.9	A+	
1948	730219	7	7	464	.651	.075	.175	.099	.651	.000	.438	-.340	-.089	-.284	.438	-0.632	0.110	-0.1	1.0	0.2	1.0	A-	
1949	730227	7	7	474	.675	.675	.148	.086	.091	.000	.434	.434	-.257	-.202	-.192	-0.818	0.110	0.1	1.0	-0.6	1.0	A+	
1950	735366	7	7	469	.544	.544	.162	.181	.113	.000	.319	.319	-.233	-.073	-.142	-0.149	0.103	2.3	1.1	1.7	1.1	A-	
1951	735367	7	7	498	.430	.245	.189	.430	.137	.000	.283	-.071	-.077	.283	-.232	0.479	0.100	2.5	1.1	5.0	1.4	A-	A-
1952	735368	7	7	547	.686	.124	.686	.143	.048	.000	.351	-.245	.351	-.024	-.346	-0.915	0.105	2.2	1.1	1.9	1.2	A+	
1953	735369	7	7	496	.595	.595	.081	.087	.238	.000	.421	.421	-.250	-.373	-.078	-0.362	0.103	-0.2	1.0	0.8	1.1	A+	A-
1954	735370	7	7	481	.441	.189	.239	.441	.131	.000	.201	-.058	-.108	.201	-.092	0.420	0.102	4.9	1.2	8.4	1.8	A-	
1955	735371	7	7	476	.580	.261	.580	.088	.071	.000	.343	-.091	.343	-.315	-.157	-0.336	0.106	2.3	1.1	4.3	1.3	A+	

Table B–5 (continued). Writing/English Composition Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
1956	735372	7	7	439	.779	.071	.084	.779	.066	.000	.567	-.331	-.328	.567	-.239	-1.461	0.129	-2.3	0.8	-2.9	0.7	A+	A+
1957	735373	7	7	463	.568	.110	.210	.112	.568	.000	.411	-.237	-.145	-.224	.411	-0.219	0.105	-0.2	1.0	1.3	1.1	C+	
1958	735382	7	7	504	.466	.466	.200	.127	.206	.000	.258	.258	-.207	-.203	.053	0.217	0.100	4.3	1.2	6.3	1.5	A+	A-
1959	735383	7	7	461	.321	.137	.358	.321	.184	.000	.126	-.143	.002	.126	-.027	1.023	0.108	4.5	1.2	6.1	1.7	A-	
1960	735389	7	7	447	.172	.208	.268	.351	.172	.000	.037	-.093	-.031	.078	.037	2.007	0.132	1.9	1.2	7.8	3.1	A-	
1961	735390	7	7	533	.261	.259	.261	.171	.310	.000	-.114	.024	-.114	-.127	.188	1.313	0.106	7.3	1.4	9.9	2.9	A-	A-
1962	735391	7	7	485	.363	.202	.235	.200	.363	.000	.277	-.116	-.104	-.106	.277	0.855	0.104	1.9	1.1	3.9	1.4	A-	
1963	735392	7	7	465	.581	.138	.144	.581	.138	.000	.433	-.274	-.257	.433	-.085	-0.346	0.106	0.2	1.0	-0.1	1.0	A+	A+
1964	735393	7	7	521	.466	.466	.296	.163	.075	.000	.266	.266	.015	-.231	-.207	0.270	0.098	3.5	1.1	5.9	1.4	A-	
1965	735430	7	7	470	.543	.111	.126	.543	.221	.000	.288	-.141	-.208	.288	-.074	-0.079	0.104	3.4	1.2	4.6	1.3	A-	
1966	735431	7	7	473	.408	.125	.123	.345	.408	.000	.320	-.182	-.310	.009	.320	0.568	0.102	0.4	1.0	3.7	1.3	A-	
1967	735432	7	7	456	.678	.678	.145	.112	.066	.000	.466	.466	-.266	-.210	-.233	-0.755	0.113	-0.9	1.0	-0.7	1.0	B-	
1968	735433	7	7	477	.484	.212	.180	.124	.484	.000	.313	-.123	-.105	-.199	.313	0.213	0.102	2.0	1.1	4.9	1.4	A-	B-
1969	735437	7	7	433	.346	.143	.346	.132	.379	.000	.187	-.151	.187	-.203	.067	0.959	0.109	2.3	1.1	5.9	1.6	A-	
1970	735438	7	7	471	.760	.760	.066	.062	.113	.000	.327	.327	-.176	-.319	-.061	-1.229	0.121	1.3	1.1	1.7	1.2	A-	
1971	735439	7	7	448	.319	.319	.217	.308	.156	.000	.291	.291	-.055	-.177	-.087	0.977	0.110	0.0	1.0	5.5	1.7	A+	
1972	735469	7	7	493	.572	.572	.217	.079	.132	.000	.247	.247	-.147	-.192	-.029	-0.232	0.102	4.7	1.2	4.2	1.3	A+	
1973	735470	7	7	446	.518	.518	.242	.090	.150	.000	.333	.333	-.184	-.265	-.034	0.061	0.106	2.3	1.1	2.0	1.1	A+	
1974	735471	7	7	490	.259	.145	.239	.357	.259	.000	.227	-.340	-.082	.115	.227	1.342	0.111	1.2	1.1	4.5	1.7	A-	
1975	735472	7	7	482	.625	.112	.191	.624	.073	.000	.465	-.329	-.158	.465	-.229	-0.472	0.106	-1.1	1.0	-0.8	1.0	A+	
1976	735577	7	7	486	.428	.428	.179	.243	.150	.000	.345	.345	-.319	-.043	-.085	0.486	0.102	1.0	1.0	3.1	1.2	A-	A-
1977	735578	7	7	427	.461	.070	.176	.293	.461	.000	.399	-.281	-.160	-.145	.399	0.262	0.107	-0.5	1.0	0.6	1.0	A+	A-
1978	735579	7	7	522	.567	.172	.111	.567	.149	.000	.395	-.245	-.185	.395	-.125	-0.242	0.100	0.8	1.0	1.9	1.1	A+	
1979	735596	7	7	490	.649	.114	.649	.122	.114	.000	.367	-.228	.367	-.234	-.081	-0.695	0.106	1.2	1.1	1.4	1.1	A+	
1980	735597	7	7	494	.496	.136	.158	.211	.496	.000	.322	-.129	-.165	-.139	.322	0.163	0.101	2.3	1.1	3.8	1.3	A+	
1981	735598	7	7	484	.320	.246	.320	.192	.242	.000	.132	-.116	.132	-.093	.059	1.072	0.106	3.8	1.2	8.1	1.9	A-	
1982	735599	7	7	472	.377	.377	.208	.225	.191	.000	.151	.151	-.014	-.129	-.035	0.800	0.103	4.5	1.2	6.7	1.6	A+	
1983	735601	7	7	454	.427	.427	.205	.183	.185	.000	.262	.262	-.115	-.104	-.110	0.497	0.104	2.6	1.1	4.1	1.3	A+	
1984	735603	7	7	481	.776	.110	.089	.775	.025	.000	.434	-.257	-.225	.434	-.236	-1.533	0.124	0.5	1.0	-1.1	0.9	A+	
1985	735604	7	7	493	.239	.245	.373	.239	.142	.000	-.054	.009	.214	-.054	-.241	1.501	0.112	4.5	1.3	9.9	3.0	A-	
1986	735605	7	7	473	.552	.093	.180	.175	.552	.000	.368	-.194	-.141	-.191	.368	-0.098	0.103	0.7	1.0	1.7	1.1	A-	
1987	735606	7	7	481	.495	.495	.077	.341	.087	.000	.184	.184	-.230	.019	-.142	0.159	0.101	5.5	1.2	6.9	1.5	A+	
1988	735607	7	7	519	.254	.299	.164	.283	.254	.000	-.048	.220	-.213	-.002	-.048	1.414	0.108	5.8	1.3	9.9	2.9	A-	
1989	735608	7	7	473	.501	.049	.501	.070	.381	.000	.245	-.288	.245	-.280	.022	0.101	0.103	4.5	1.2	5.0	1.4	A+	
1990	735609	7	7	525	.577	.171	.577	.152	.099	.000	.362	-.090	.362	-.262	-.171	-0.221	0.099	1.5	1.1	1.6	1.1	A+	

Table B–5 (continued). Writing/English Composition Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M /F	W /B
1991	735610	7	7	487	.801	.801	.082	.045	.072	.000	.402	.402	-.324	-.261	-.068	-1.660	0.128	0.6	1.0	-0.1	1.0	A-	
1992	735611	7	7	444	.590	.050	.286	.590	.074	.000	.372	-.202	-.225	.372	-.142	-0.275	0.109	1.3	1.1	2.6	1.2	A+	
1993	735612	7	7	475	.587	.166	.074	.587	.173	.000	.362	-.228	-.140	.362	-.150	-0.436	0.107	2.6	1.1	3.2	1.2	A+	
1994	735613	7	7	480	.492	.129	.233	.492	.146	.000	.175	-.057	-.130	.175	-.038	0.206	0.101	5.6	1.2	7.1	1.5	A-	
1995	735615	7	7	506	.514	.075	.283	.514	.128	.000	.354	-.254	-.089	.354	-.209	0.023	0.099	1.4	1.1	3.0	1.2	A-	
1996	735616	7	7	429	.664	.105	.152	.079	.664	.000	.618	-.339	-.303	-.293	.618	-0.869	0.118	-3.5	0.8	-3.5	0.7	A+	
1997	735617	7	7	517	.327	.108	.344	.221	.327	.000	.222	-.208	-.072	-.013	.222	0.926	0.103	2.1	1.1	7.7	1.9	A-	
1998	735668	7	7	481	.432	.432	.164	.191	.212	.000	.302	.302	-.192	-.172	-.027	0.468	0.101	2.2	1.1	2.6	1.2	A+	
1999	736149	7	7	452	.785	.077	.785	.071	.066	.000	.535	-.300	.535	-.278	-.274	-1.580	0.130	-1.5	0.9	-2.5	0.7	B+	
2000	736150	7	7	494	.733	.091	.105	.733	.071	.000	.492	-.341	-.299	.492	-.108	-1.231	0.116	-0.7	1.0	-1.5	0.9	A-	A-
2001	736156	7	7	505	.596	.182	.139	.083	.596	.000	.536	-.157	-.321	-.331	.536	-0.384	0.102	-3.4	0.9	-1.9	0.9	A+	
2002	737278	7	7	441	.574	.093	.136	.197	.574	.000	.396	-.125	-.194	-.234	.396	-0.258	0.108	0.1	1.0	1.7	1.1	A+	
2003	737279	7	7	467	.443	.141	.443	.152	.263	.000	.333	-.179	.333	-.231	-.046	0.455	0.103	0.9	1.0	3.5	1.3	B+	
2004	737280	7	7	483	.634	.133	.168	.634	.066	.000	.368	-.256	-.144	.368	-.146	-0.503	0.106	1.1	1.1	1.0	1.1	A-	
2005	737281	7	7	519	.609	.247	.094	.609	.050	.000	.247	-.009	-.190	.247	-.278	-0.465	0.102	4.9	1.2	5.9	1.4	A-	
2006	737282	7	7	465	.654	.127	.088	.654	.131	.000	.447	-.234	-.329	.447	-.123	-0.713	0.111	0.0	1.0	0.2	1.0	A+	A-
2007	737283	7	7	457	.525	.171	.239	.525	.066	.000	.303	-.186	-.060	.303	-.225	-0.071	0.106	3.2	1.1	4.5	1.3	A-	
2008	737284	7	7	499	.597	.182	.148	.597	.072	.000	.456	-.117	-.291	.456	-.289	-0.428	0.103	-0.3	1.0	-0.8	1.0	A+	
2009	737285	7	7	493	.556	.154	.110	.181	.556	.000	.360	-.180	-.152	-.173	.360	-0.188	0.103	2.0	1.1	2.8	1.2	A+	A+
2010	737286	7	7	501	.723	.723	.102	.074	.102	.000	.432	.432	-.232	-.278	-.168	-1.116	0.114	0.4	1.0	0.0	1.0	A+	
2011	737287	7	7	476	.366	.149	.074	.412	.366	.000	.224	-.301	-.266	.141	.224	0.781	0.103	3.1	1.1	3.5	1.3	A-	
2012	737288	7	7	466	.577	.058	.112	.577	.253	.000	.448	-.305	-.354	.448	-.089	-0.253	0.106	-0.3	1.0	0.2	1.0	A+	A-
2013	737292	7	7	475	.333	.164	.128	.333	.375	.000	.127	-.154	-.272	.127	.182	0.954	0.106	4.1	1.2	7.2	1.8	A-	
2014	737298	7	7	498	.265	.265	.299	.137	.299	.000	.050	.050	.081	-.116	-.043	1.351	0.110	4.5	1.2	8.7	2.4	A+	A+
2015	737299	7	7	498	.396	.343	.102	.159	.396	.000	.295	.038	-.321	-.178	.295	0.613	0.100	1.2	1.0	3.5	1.3	A-	
2016	737766	7	7	486	.609	.111	.142	.138	.609	.000	.468	-.267	-.083	-.334	.468	-0.312	0.104	-1.2	0.9	-1.2	0.9	A+	A-
2017	737767	7	7	509	.328	.132	.320	.220	.328	.000	.309	-.293	-.005	-.107	.309	1.020	0.103	0.1	1.0	4.6	1.5	A+	
2018	737772	7	7	453	.342	.247	.342	.190	.221	.000	.154	-.133	.154	-.132	.087	0.847	0.109	5.1	1.2	5.2	1.6	A-	B+
2019	737774	7	7	484	.585	.093	.105	.585	.217	.000	.331	-.144	-.259	.331	-.102	-0.303	0.104	2.3	1.1	3.1	1.2	A+	A-
2020	737775	7	7	495	.499	.499	.218	.176	.107	.000	.344	.344	-.145	-.173	-.149	0.156	0.100	1.1	1.0	3.9	1.3	A+	B-
2021	737776	7	7	474	.456	.181	.456	.169	.194	.000	.212	-.116	.212	-.196	.032	0.309	0.102	5.1	1.2	4.5	1.3	A+	
2022	737778	7	7	463	.475	.251	.475	.127	.147	.000	.344	-.127	.344	-.225	-.119	0.192	0.104	1.4	1.1	3.5	1.3	A-	
2023	738277	7	7	502	.406	.406	.191	.120	.283	.000	.090	.090	-.213	-.090	.153	0.581	0.100	7.4	1.3	8.0	1.7	A+	
2024	738278	7	7	463	.577	.577	.108	.123	.192	.000	.350	.350	-.182	-.399	.037	-0.343	0.106	1.6	1.1	3.0	1.2	A+	
2025	738279	7	7	474	.553	.553	.190	.099	.158	.000	.352	.352	-.112	-.192	-.202	-0.134	0.104	2.1	1.1	3.0	1.2	A-	

Table B–5 (continued). Writing/English Composition Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M /F	W /B
2026	738280	7	7	508	.504	.226	.132	.504	.138	.000	.243	.065	-.244	.243	-.192	0.053	0.100	4.9	1.2	6.3	1.5	B-	A-
2027	738281	7	7	459	.540	.100	.540	.148	.211	.000	.393	-.342	.393	-.214	-.042	-0.160	0.106	1.1	1.1	1.9	1.1	A+	
2028	738282	7	7	478	.557	.159	.556	.159	.126	.000	.282	-.170	.282	-.163	-.056	-0.122	0.103	3.5	1.2	3.6	1.2	A+	
2029	738284	7	7	498	.526	.092	.526	.217	.165	.000	.329	-.203	.329	-.220	-.041	-0.065	0.102	2.7	1.1	4.5	1.3	A+	
2030	738285	7	7	508	.715	.715	.110	.094	.081	.000	.428	.428	-.134	-.254	-.282	-1.089	0.112	0.8	1.1	-0.4	1.0	B-	
2031	738286	7	7	454	.575	.075	.229	.121	.575	.000	.452	-.208	-.146	-.329	.452	-0.277	0.108	-0.3	1.0	0.3	1.0	A-	A-
2032	738287	7	7	505	.489	.160	.489	.226	.125	.000	.241	-.103	.241	-.103	-.120	0.219	0.098	4.1	1.2	5.1	1.3	A-	
2033	739626	7	7	495	.628	.628	.133	.147	.091	.000	.463	.463	-.238	-.254	-.183	-0.581	0.106	0.0	1.0	-0.5	1.0	C+	A+
2034	739636	7	7	487	.661	.150	.661	.080	.109	.000	.469	-.275	.469	-.337	-.104	-0.695	0.107	-1.0	1.0	-1.8	0.9	A+	
2035	739934	7	7	514	.455	.134	.189	.222	.455	.000	.462	-.207	-.167	-.226	.462	0.369	0.098	-2.7	0.9	0.0	1.0	A+	
2036	739952	7	7	505	.687	.081	.172	.687	.059	.000	.379	-.234	-.166	.379	-.207	-0.941	0.109	1.7	1.1	1.3	1.1	A+	
2037	741772	7	7	479	.597	.194	.597	.123	.086	.000	.491	-.200	.491	-.291	-.237	-0.441	0.106	-1.1	1.0	-0.9	0.9	A-	B-
2038	741773	7	7	470	.428	.428	.309	.119	.145	.000	.246	.246	-.050	-.189	-.106	0.510	0.103	3.5	1.1	4.5	1.4	A+	A+
2039	741775	7	7	489	.701	.196	.701	.055	.047	.000	.391	-.202	.391	-.187	-.266	-0.990	0.113	1.5	1.1	0.4	1.0	A-	
2040	724208	8	8	535	.424	.071	.424	.318	.187	.000	.212	-.338	.212	-.003	-.042	0.659	0.096	4.1	1.1	6.4	1.5	A+	
2041	729920	8	8	505	.275	.123	.358	.275	.244	.000	.054	-.156	.034	.054	.026	1.492	0.107	4.5	1.2	7.9	2.3	A+	
2042	729921	8	8	556	.836	.081	.045	.836	.038	.000	.404	-.171	-.245	.404	-.274	-1.708	0.128	0.0	1.0	-0.4	1.0	B+	
2043	729922	8	8	560	.204	.466	.163	.168	.204	.000	.178	.120	-.096	-.258	.178	1.964	0.112	1.1	1.1	5.5	2.0	A-	
2044	729924	8	8	533	.687	.069	.687	.092	.152	.000	.514	-.317	.514	-.296	-.201	-0.695	0.108	-1.2	0.9	-1.0	0.9	A-	
2045	729925	8	8	569	.631	.151	.631	.097	.121	.000	.260	-.092	.260	-.240	-.067	-0.357	0.098	4.0	1.2	5.3	1.4	A+	
2046	729926	8	8	561	.392	.091	.392	.319	.198	.000	.187	-.123	.187	.036	-.181	0.914	0.095	4.3	1.2	9.2	1.9	A-	
2047	729927	8	8	532	.359	.246	.165	.229	.359	.000	.300	-.056	-.201	-.106	.300	1.028	0.099	1.3	1.1	3.8	1.4	A+	
2048	729928	8	8	543	.567	.193	.140	.567	.099	.000	.362	-.151	-.264	.362	-.095	0.005	0.097	1.4	1.1	1.9	1.1	A-	
2049	729986	8	8	530	.513	.206	.513	.164	.117	.000	.312	-.050	.312	-.200	-.193	0.199	0.098	3.1	1.1	3.3	1.2	A-	
2050	729987	8	8	532	.303	.141	.303	.470	.086	.000	.060	-.180	.060	.147	-.137	1.327	0.103	6.0	1.3	9.9	2.5	A-	
2051	729988	8	8	541	.728	.091	.728	.115	.067	.000	.510	-.237	.510	-.260	-.304	-0.914	0.110	-1.7	0.9	-2.0	0.8	A-	
2052	729989	8	8	539	.607	.152	.161	.607	.080	.000	.380	-.244	-.116	.380	-.203	-0.267	0.100	1.6	1.1	1.9	1.1	A+	
2053	729990	8	8	553	.494	.128	.141	.237	.494	.000	.368	-.230	-.293	-.012	.368	0.373	0.095	1.3	1.0	2.9	1.2	A-	
2054	729991	8	8	549	.388	.388	.197	.153	.262	.000	.018	.018	-.036	-.181	.161	0.878	0.096	9.7	1.4	9.5	1.9	A-	
2055	729992	8	8	578	.696	.144	.078	.696	.083	.000	.395	-.215	-.266	.395	-.127	-0.728	0.103	1.4	1.1	0.9	1.1	A+	
2056	729993	8	8	535	.652	.080	.140	.127	.652	.000	.497	-.207	-.203	-.331	.497	-0.499	0.104	-1.1	0.9	-1.4	0.9	A-	
2057	730220	8	8	598	.249	.249	.291	.253	.207	.000	.146	.146	.042	-.091	-.104	1.583	0.102	2.2	1.1	8.0	2.2	A-	
2058	730221	8	8	518	.481	.120	.224	.481	.176	.000	.399	-.192	-.288	.399	-.045	0.390	0.098	0.1	1.0	1.7	1.1	A-	
2059	730222	8	8	547	.335	.265	.196	.335	.205	.000	.132	.077	-.165	.132	-.076	1.200	0.099	5.4	1.2	7.3	1.8	A+	
2060	730223	8	8	505	.513	.263	.513	.093	.131	.000	.378	-.149	.378	-.240	-.159	0.236	0.100	0.5	1.0	3.9	1.3	A+	A-

Table B–5 (continued). Writing/English Composition Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
2061	730224	8	8	546	.317	.134	.317	.363	.187	.000	.137	-.193	.137	.040	-.044	1.190	0.100	4.8	1.2	6.1	1.7	A-	
2062	730225	8	8	546	.421	.222	.200	.421	.158	.000	.280	-.058	-.126	.280	-.175	0.752	0.096	2.3	1.1	5.6	1.4	A-	B-
2063	730226	8	8	544	.590	.590	.151	.136	.123	.000	.441	.441	-.298	-.207	-.118	-0.129	0.098	-0.8	1.0	0.4	1.0	A+	
2064	735172	8	8	534	.406	.406	.221	.251	.122	.000	.260	.260	-.060	-.039	-.263	0.789	0.097	2.4	1.1	6.2	1.5	A-	
2065	735402	8	8	492	.425	.154	.266	.425	.154	.000	.186	-.122	-.093	.186	-.018	0.632	0.101	5.0	1.2	8.5	1.8	A+	
2066	735403	8	8	546	.247	.247	.339	.233	.181	.000	.039	.039	-.008	-.080	.054	1.647	0.107	4.1	1.2	9.7	2.5	A+	
2067	735405	8	8	552	.259	.259	.335	.264	.141	.000	.149	.149	-.013	-.099	-.044	1.535	0.105	3.6	1.2	6.3	1.9	A+	
2068	735406	8	8	536	.584	.179	.147	.584	.090	.000	.439	-.227	-.244	.439	-.150	-0.159	0.099	-0.1	1.0	0.2	1.0	A+	
2069	735407	8	8	529	.473	.112	.242	.473	.174	.000	.295	-.271	-.075	.295	-.080	0.515	0.097	2.6	1.1	6.9	1.5	A+	
2070	735408	8	8	540	.402	.089	.248	.261	.402	.000	.349	-.192	-.215	-.054	.349	0.852	0.098	0.9	1.0	3.6	1.3	A+	
2071	735410	8	8	522	.529	.107	.230	.529	.134	.000	.315	-.204	-.176	.315	-.059	0.165	0.099	3.0	1.1	4.5	1.3	A+	
2072	735411	8	8	523	.430	.191	.218	.430	.161	.000	.153	-.012	-.128	.153	-.049	0.689	0.097	6.3	1.2	5.9	1.4	A+	A-
2073	735412	8	8	554	.590	.590	.146	.108	.155	.000	.365	.365	-.193	-.243	-.098	-0.227	0.098	2.3	1.1	2.4	1.2	A+	
2074	735413	8	8	544	.647	.647	.153	.112	.088	.000	.516	.516	-.351	-.249	-.147	-0.482	0.101	-2.2	0.9	-3.0	0.8	A+	
2075	735434	8	8	545	.468	.160	.204	.468	.169	.000	.290	-.148	-.144	.290	-.087	0.452	0.095	2.5	1.1	5.9	1.4	A+	
2076	735435	8	8	546	.639	.159	.101	.639	.101	.000	.443	-.249	-.234	.443	-.170	-0.428	0.101	-0.1	1.0	-0.3	1.0	A+	
2077	735436	8	8	514	.436	.181	.292	.436	.091	.000	.086	-.082	.002	.086	-.042	0.581	0.099	9.0	1.4	9.2	1.9	A+	A-
2078	735580	8	8	524	.508	.135	.239	.508	.118	.000	.271	-.318	.016	.271	-.104	0.199	0.099	4.5	1.2	5.7	1.4	A+	
2079	735581	8	8	552	.435	.241	.187	.138	.435	.000	.322	.021	-.198	-.266	.322	0.648	0.095	1.6	1.1	3.1	1.2	A-	
2080	735582	8	8	521	.466	.466	.161	.186	.186	.000	.247	.247	-.176	-.159	.009	0.472	0.097	4.0	1.2	5.7	1.4	A+	
2081	735583	8	8	522	.726	.726	.115	.092	.067	.000	.527	.527	-.294	-.237	-.290	-0.944	0.110	-2.0	0.9	-2.8	0.8	A+	
2082	735584	8	8	521	.708	.065	.708	.138	.088	.000	.372	-.267	.372	-.077	-.269	-0.778	0.109	1.4	1.1	0.4	1.0	A+	
2083	735585	8	8	584	.760	.060	.065	.760	.115	.000	.456	-.278	-.326	.456	-.151	-1.110	0.110	-0.1	1.0	-1.4	0.9	A-	
2084	735586	8	8	584	.565	.146	.151	.565	.139	.000	.324	-.219	-.135	.324	-.102	0.013	0.094	2.6	1.1	3.6	1.2	A+	
2085	735587	8	8	566	.742	.095	.742	.097	.065	.000	.491	-.283	.491	-.274	-.204	-1.170	0.110	-0.7	1.0	-1.5	0.9	A+	
2086	735638	8	8	585	.494	.156	.494	.178	.173	.000	.342	-.138	.342	-.192	-.125	0.331	0.093	1.9	1.1	3.6	1.2	A+	A-
2087	735639	8	8	543	.464	.057	.464	.204	.274	.000	.300	-.253	.300	-.203	-.020	0.428	0.096	2.4	1.1	4.5	1.3	A-	
2088	735641	8	8	559	.374	.197	.340	.089	.374	.000	.164	-.147	.106	-.249	.164	0.952	0.095	4.3	1.2	7.7	1.7	A+	
2089	735642	8	8	535	.344	.215	.110	.331	.344	.000	.128	-.067	-.262	.104	.128	1.150	0.099	5.0	1.2	7.9	1.8	A-	
2090	735643	8	8	548	.374	.151	.199	.276	.374	.000	.192	-.140	-.298	.170	.192	0.995	0.098	5.4	1.2	5.9	1.6	A+	
2091	735644	8	8	565	.411	.127	.255	.207	.411	.000	.349	-.227	-.065	-.167	.349	0.728	0.095	0.6	1.0	3.2	1.3	A-	
2092	736151	8	8	497	.638	.052	.638	.249	.060	.000	.356	-.273	.356	-.097	-.286	-0.386	0.106	2.2	1.1	2.2	1.2	A-	
2093	736152	8	8	551	.545	.098	.187	.544	.171	.000	.423	-.207	-.240	.423	-.147	0.043	0.096	-0.3	1.0	0.5	1.0	C+	
2094	736154	8	8	526	.629	.629	.101	.118	.152	.000	.464	.464	-.249	-.227	-.211	-0.411	0.103	-0.4	1.0	-0.6	1.0	A-	
2095	736155	8	8	529	.603	.096	.603	.125	.176	.000	.390	-.236	.390	-.203	-.143	-0.187	0.100	0.7	1.0	1.0	1.1	A+	

Table B–5 (continued). Writing/English Composition Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
2096	737293	8	8	537	.700	.048	.106	.700	.145	.000	.415	-.232	-.211	.415	-.214	-0.713	0.107	0.6	1.0	0.2	1.0	A+	
2097	737294	8	8	535	.280	.142	.174	.404	.280	.000	.120	-.140	-.045	.025	.120	1.444	0.104	4.0	1.2	7.0	2.0	A-	
2098	737295	8	8	569	.209	.408	.209	.241	.142	.000	.059	.095	.059	-.124	-.050	1.940	0.111	3.5	1.2	7.7	2.5	A+	
2099	737296	8	8	573	.543	.169	.543	.206	.082	.000	.288	-.247	.288	-.055	-.105	0.078	0.094	3.6	1.1	5.0	1.3	A+	
2100	737297	8	8	500	.136	.056	.142	.666	.136	.000	-.019	-.264	-.145	.249	-.019	2.472	0.138	2.2	1.2	8.5	3.9	A+	
2101	737301	8	8	554	.527	.527	.139	.141	.193	.000	.377	.377	-.220	-.223	-.089	0.125	0.095	0.6	1.0	2.4	1.1	A+	
2102	737302	8	8	586	.367	.324	.072	.237	.367	.000	.261	-.018	-.255	-.121	.261	0.966	0.094	2.9	1.1	4.7	1.4	A+	
2103	737303	8	8	530	.570	.091	.172	.168	.570	.000	.391	-.228	-.143	-.200	.391	-0.102	0.099	1.3	1.1	1.7	1.1	A-	
2104	737304	8	8	560	.741	.741	.107	.084	.068	.000	.427	.427	-.240	-.234	-.190	-1.061	0.110	0.4	1.0	0.6	1.1	A+	A-
2105	737305	8	8	539	.425	.215	.425	.128	.232	.000	.226	-.086	.226	-.321	.073	0.675	0.097	4.9	1.2	5.9	1.5	A+	
2106	737306	8	8	576	.655	.056	.240	.655	.050	.000	.367	-.252	-.156	.367	-.229	-0.499	0.099	1.4	1.1	2.9	1.2	A+	
2107	737307	8	8	586	.531	.099	.166	.205	.531	.000	.485	-.231	-.298	-.154	.485	0.113	0.093	-2.4	0.9	0.1	1.0	A-	B-
2108	737308	8	8	568	.604	.088	.153	.155	.604	.000	.383	-.216	-.196	-.153	.383	-0.208	0.097	1.3	1.1	2.2	1.1	A-	
2109	737309	8	8	571	.657	.657	.173	.123	.047	.000	.438	.438	-.207	-.290	-.164	-0.478	0.100	-0.4	1.0	1.2	1.1	A+	A+
2110	737310	8	8	535	.527	.090	.234	.527	.150	.000	.304	-.258	-.111	.304	-.087	0.127	0.097	3.2	1.1	4.6	1.3	A+	A+
2111	737311	8	8	567	.399	.169	.171	.261	.399	.000	.193	-.069	-.161	-.018	.193	0.751	0.095	5.1	1.2	7.9	1.7	A-	A+
2112	737768	8	8	551	.354	.211	.241	.354	.194	.000	.207	-.117	-.179	.207	.064	1.049	0.098	4.1	1.2	6.8	1.7	A+	
2113	737769	8	8	590	.568	.337	.568	.069	.025	.000	.265	-.070	.265	-.246	-.228	-0.062	0.093	4.2	1.2	5.1	1.3	A+	
2114	737770	8	8	560	.409	.409	.341	.136	.114	.000	.339	.339	-.096	-.267	-.094	0.814	0.095	0.8	1.0	3.5	1.3	B-	A-
2115	737777	8	8	546	.383	.207	.114	.383	.297	.000	.090	-.037	-.317	.090	.157	0.912	0.097	8.0	1.3	8.3	1.8	A+	
2116	737782	8	8	539	.245	.199	.371	.186	.245	.000	.092	-.120	.159	-.175	.092	1.611	0.108	3.7	1.2	7.1	2.2	A-	
2117	737787	8	8	502	.339	.219	.339	.267	.175	.000	.005	-.080	.005	.084	-.017	1.132	0.103	7.6	1.3	9.1	2.0	A-	
2118	738242	8	8	594	.609	.138	.609	.113	.140	.000	.349	-.158	.349	-.280	-.078	-0.223	0.094	1.8	1.1	2.6	1.2	A+	
2119	738243	8	8	563	.568	.185	.568	.124	.123	.000	.419	-.228	.419	-.204	-.157	-0.046	0.097	1.0	1.0	1.1	1.1	B+	
2120	738244	8	8	565	.696	.696	.182	.065	.057	.000	.306	.306	-.105	-.259	-.158	-0.816	0.104	3.3	1.2	2.4	1.2	A+	
2121	738245	8	8	555	.589	.589	.108	.173	.130	.000	.462	.462	-.196	-.220	-.247	-0.192	0.097	-1.1	1.0	-0.2	1.0	A-	
2122	738247	8	8	586	.567	.109	.160	.567	.164	.000	.357	-.181	-.145	.357	-.183	0.031	0.093	1.5	1.1	2.8	1.2	A+	
2123	738248	8	8	535	.523	.112	.168	.196	.523	.000	.471	-.161	-.266	-.213	.471	0.151	0.098	-1.6	0.9	-0.7	1.0	A+	
2124	738249	8	8	572	.642	.079	.642	.191	.089	.000	.307	-.186	.307	-.099	-.205	-0.469	0.100	3.8	1.2	3.3	1.2	A+	
2125	738250	8	8	557	.510	.086	.214	.190	.510	.000	.474	-.349	-.180	-.166	.474	0.265	0.095	-2.2	0.9	-0.6	1.0	A+	
2126	738251	8	8	510	.443	.443	.212	.149	.196	.000	.244	.244	-.146	-.175	.003	0.641	0.099	4.3	1.2	4.5	1.4	A+	
2127	738252	8	8	528	.318	.125	.405	.318	.152	.000	.243	-.220	-.097	.243	.019	1.224	0.102	1.1	1.0	7.7	1.9	A-	
2128	739628	8	8	532	.603	.071	.071	.254	.603	.000	.501	-.369	-.256	-.193	.501	-0.204	0.100	-1.8	0.9	-1.8	0.9	A+	
2129	739629	8	8	575	.583	.583	.148	.167	.103	.000	.398	.398	-.214	-.255	-.083	-0.064	0.095	1.1	1.0	1.2	1.1	A+	
2130	739630	8	8	537	.557	.106	.557	.168	.169	.000	.299	-.101	.299	-.162	-.152	-0.003	0.097	3.2	1.1	4.0	1.3	A-	

Table B–5 (continued). Writing/English Composition Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
2131	739935	8	8	588	.502	.156	.158	.184	.502	.000	.415	-.136	-.220	-.201	.415	0.184	0.093	0.2	1.0	1.4	1.1	A-	
2132	739936	8	8	542	.734	.057	.116	.092	.734	.000	.540	-.281	-.231	-.342	.540	-1.082	0.111	-2.0	0.9	-1.6	0.9	A-	
2133	739937	8	8	537	.581	.581	.119	.173	.127	.000	.332	.332	-.149	-.173	-.150	-0.012	0.098	2.3	1.1	3.2	1.2	A+	
2134	739941	8	8	533	.788	.045	.058	.109	.788	.000	.494	-.304	-.273	-.240	.494	-1.313	0.118	-1.3	0.9	-2.4	0.8	A+	
2135	739944	8	8	542	.526	.122	.186	.166	.526	.000	.389	-.259	-.085	-.205	.389	0.196	0.097	1.1	1.0	2.1	1.1	A+	
2136	739945	8	8	520	.346	.163	.333	.158	.346	.000	.329	-.181	-.018	-.223	.329	0.965	0.102	0.8	1.0	2.9	1.3	A-	
2137	739947	8	8	526	.413	.262	.413	.203	.122	.000	.330	-.103	.330	-.189	-.126	0.692	0.098	1.3	1.1	3.2	1.2	A+	
2138	739948	8	8	539	.675	.063	.675	.139	.122	.000	.383	-.330	.383	-.172	-.122	-0.677	0.105	1.9	1.1	1.4	1.1	A+	
2139	739950	8	8	576	.651	.069	.130	.149	.651	.000	.472	-.174	-.236	-.284	.472	-0.491	0.100	-0.5	1.0	-0.8	1.0	A+	
2140	739951	8	8	501	.547	.547	.204	.118	.132	.000	.346	.346	-.135	-.306	-.058	0.072	0.101	1.9	1.1	2.9	1.2	A+	
2141	739953	8	8	543	.610	.610	.120	.155	.116	.000	.511	.511	-.266	-.279	-.195	-0.319	0.100	-1.8	0.9	-0.9	0.9	A-	
2142	739954	8	8	584	.514	.514	.199	.214	.074	.000	.330	.330	-.170	-.172	-.100	0.267	0.093	2.2	1.1	5.9	1.4	A+	
2143	739955	8	8	540	.474	.172	.474	.174	.180	.000	.256	-.089	.256	-.216	-.032	0.482	0.097	4.7	1.2	6.1	1.5	A+	
2144	739956	8	8	556	.495	.112	.219	.495	.174	.000	.374	-.196	-.187	.374	-.126	0.283	0.095	1.0	1.0	1.5	1.1	A+	
2145	739958	8	8	562	.605	.071	.125	.605	.199	.000	.348	-.254	-.325	.348	.006	-0.249	0.098	2.5	1.1	2.1	1.1	A-	
2146	739959	8	8	546	.407	.176	.249	.407	.168	.000	.140	-.095	-.063	.140	-.015	0.831	0.096	5.9	1.2	8.9	1.8	A-	
2147	741776	8	8	537	.218	.264	.218	.438	.080	.000	-.021	-.031	-.021	.191	-.267	1.876	0.112	4.4	1.3	8.0	2.5	A+	
2148	741787	8	8	570	.497	.195	.496	.221	.088	.000	.232	-.124	.232	-.151	-.015	0.316	0.092	4.3	1.1	5.4	1.3	B+	
2149	741821	8	8	585	.511	.084	.511	.309	.096	.000	.255	-.175	.255	-.097	-.117	0.242	0.092	4.5	1.2	6.5	1.4	C-	
2150	730179	EC	EC	215	.321	.321	.195	.219	.265	.000	.130	.130	-.219	.099	-.033	1.310	0.157	2.0	1.1	6.0	2.1	A-	
2151	735168	EC	EC	221	.421	.339	.100	.421	.140	.000	.178	.013	-.213	.178	-.086	0.898	0.152	4.0	1.2	4.4	1.6	A+	
2152	735169	EC	EC	196	.464	.327	.107	.464	.102	.000	.262	.037	-.328	.262	-.153	0.732	0.158	2.3	1.1	1.9	1.2	A+	
2153	735170	EC	EC	207	.314	.242	.290	.314	.155	.000	.258	.051	-.220	.258	-.116	1.485	0.164	0.9	1.1	3.1	1.6	A-	
2154	735171	EC	EC	227	.749	.110	.097	.749	.044	.000	.382	-.218	-.193	.382	-.196	-0.661	0.173	0.9	1.1	0.2	1.0	A-	
2155	735173	EC	EC	212	.665	.099	.123	.113	.665	.000	.494	-.246	-.322	-.171	.494	-0.356	0.166	-0.6	1.0	-0.8	0.9	A+	
2156	735174	EC	EC	233	.678	.137	.155	.678	.030	.000	.221	-.168	-.071	.221	-.115	-0.323	0.157	2.9	1.2	2.7	1.3	A-	
2157	735175	EC	EC	196	.587	.587	.046	.276	.092	.000	.411	.411	-.069	-.192	-.354	0.149	0.161	0.0	1.0	-0.6	0.9	A+	
2158	735176	EC	EC	214	.416	.322	.079	.182	.416	.000	.196	.135	-.197	-.276	.196	1.104	0.153	3.3	1.2	4.2	1.7	A+	
2159	735177	EC	EC	215	.740	.116	.102	.042	.740	.000	.495	-.174	-.348	-.279	.495	-0.576	0.174	-0.9	0.9	-1.5	0.8	A+	
2160	735178	EC	EC	192	.500	.219	.130	.500	.151	.000	.159	-.002	-.145	.159	-.083	0.464	0.161	3.9	1.3	5.8	1.8	A+	
2161	735179	EC	EC	206	.597	.146	.597	.117	.141	.000	.352	-.221	.352	-.277	-.017	0.002	0.162	1.8	1.1	2.0	1.2	A-	
2162	736160	EC	EC	205	.605	.078	.078	.239	.605	.000	.406	-.176	-.084	-.302	.406	0.071	0.159	-0.2	1.0	1.0	1.1	A-	
2163	736161	EC	EC	201	.508	.179	.129	.507	.184	.000	.429	-.211	-.208	.429	-.165	0.501	0.157	-0.9	1.0	0.1	1.0	B+	
2164	736163	EC	EC	216	.412	.412	.222	.278	.088	.000	.118	.118	.036	.017	-.283	1.028	0.155	5.4	1.3	5.0	1.8	A-	
2165	737189	EC	EC	223	.821	.821	.058	.108	.013	.000	.458	.458	-.406	-.196	-.171	-1.469	0.204	0.6	1.1	-0.1	1.0	B-	

Table B–5 (continued). Writing/English Composition Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
2166	737190	EC	EC	208	.423	.173	.240	.423	.163	.000	.237	.011	-.165	.237	-.137	1.023	0.154	2.2	1.1	3.5	1.4	A-	
2167	737191	EC	EC	236	.504	.076	.318	.102	.504	.000	.304	-.457	.102	-.259	.304	0.579	0.144	1.9	1.1	1.8	1.2	A+	
2168	737192	EC	EC	230	.530	.174	.183	.530	.113	.000	.351	-.037	-.329	.351	-.107	0.365	0.149	1.1	1.1	2.5	1.3	A+	
2169	737193	EC	EC	230	.591	.083	.157	.170	.591	.000	.471	-.264	-.126	-.301	.471	0.071	0.152	-0.5	1.0	-0.7	0.9	A+	
2170	737194	EC	EC	217	.484	.138	.484	.143	.235	.000	.193	-.105	.193	-.142	-.025	0.723	0.150	3.8	1.2	3.0	1.3	A+	
2171	737195	EC	EC	203	.389	.276	.153	.182	.389	.000	.088	.084	-.126	-.092	.088	1.038	0.157	3.7	1.2	6.6	2.1	A-	
2172	737196	EC	EC	222	.306	.306	.144	.212	.338	.000	.264	.264	-.232	-.080	-.015	1.568	0.158	0.9	1.1	1.2	1.2	B+	
2173	737197	EC	EC	206	.515	.136	.165	.184	.515	.000	.232	.077	-.215	-.161	.232	0.609	0.154	2.8	1.2	3.8	1.4	A+	
2174	737198	EC	EC	212	.599	.142	.599	.175	.085	.000	.242	-.183	.242	-.123	-.030	-0.016	0.158	2.8	1.2	3.7	1.4	A-	
2175	737199	EC	EC	230	.444	.443	.226	.239	.091	.000	.525	.525	-.250	-.260	-.157	0.924	0.149	-2.8	0.9	-1.8	0.8	A+	
2176	737200	EC	EC	205	.517	.517	.117	.210	.156	.000	.453	.453	-.226	-.289	-.100	0.361	0.160	-0.2	1.0	0.8	1.1	A-	
2177	737201	EC	EC	211	.645	.118	.109	.128	.645	.000	.452	-.240	-.148	-.277	.452	-0.298	0.163	0.0	1.0	-0.4	1.0	A+	
2178	738254	EC	EC	195	.456	.169	.456	.200	.174	.000	.267	-.078	.267	-.284	.026	0.635	0.163	2.5	1.2	4.8	1.7	A-	
2179	738257	EC	EC	216	.454	.310	.454	.153	.083	.000	.142	-.008	.142	-.166	-.026	0.909	0.150	4.1	1.2	5.4	1.6	A+	
2180	738258	EC	EC	200	.655	.655	.110	.110	.125	.000	.478	.478	-.289	-.351	-.083	-0.422	0.170	-0.4	1.0	-0.1	1.0	A+	
2181	738259	EC	EC	226	.314	.186	.314	.288	.212	.000	.048	-.193	.048	.108	.010	1.351	0.157	4.4	1.3	7.0	2.5	A-	
2182	738260	EC	EC	223	.278	.278	.202	.251	.269	.000	.311	.311	-.307	-.071	.032	1.752	0.161	-0.6	1.0	2.2	1.4	A+	
2183	738261	EC	EC	209	.617	.124	.617	.191	.067	.000	.495	-.346	.495	-.238	-.131	-0.098	0.164	-0.6	1.0	0.5	1.1	A-	
2184	739631	EC	EC	229	.555	.183	.140	.555	.122	.000	.337	-.126	-.188	.337	-.163	0.387	0.147	0.7	1.0	1.3	1.1	A+	
2185	739632	EC	EC	216	.500	.120	.500	.102	.278	.000	.201	-.199	.201	-.161	.029	0.644	0.150	2.8	1.2	6.5	1.7	A+	
2186	739633	EC	EC	212	.637	.080	.146	.137	.637	.000	.526	-.355	-.200	-.250	.526	-0.169	0.162	-1.5	0.9	-1.1	0.9	A-	
2187	739635	EC	EC	226	.354	.354	.181	.288	.177	.000	.266	.266	.034	-.119	-.227	1.357	0.151	0.4	1.0	5.1	1.8	A+	
2188	739938	EC	EC	221	.575	.575	.154	.072	.199	.000	.423	.423	-.172	-.294	-.177	0.220	0.152	-0.5	1.0	0.9	1.1	A-	
2189	739939	EC	EC	232	.276	.276	.237	.224	.263	.000	.206	.206	-.068	-.119	-.031	1.740	0.158	1.0	1.1	4.0	1.8	B+	
2190	739940	EC	EC	219	.534	.110	.219	.534	.137	.000	.183	-.096	.038	.183	-.224	0.363	0.152	4.2	1.3	5.0	1.6	A-	
2191	739960	EC	EC	197	.655	.112	.056	.655	.178	.000	.267	-.194	-.281	.267	-.004	-0.020	0.165	1.6	1.1	2.2	1.3	A-	
2192	739962	EC	EC	223	.610	.099	.610	.175	.117	.000	.187	.057	.187	-.260	-.028	0.091	0.153	3.6	1.3	3.4	1.3	A+	
2193	739963	EC	EC	210	.362	.081	.362	.452	.105	.000	.193	-.259	.193	-.014	-.049	1.342	0.155	1.8	1.1	2.8	1.4	A+	
2194	739964	EC	EC	207	.217	.130	.382	.271	.217	.000	.035	-.079	.002	.025	.035	2.165	0.180	2.1	1.2	5.4	2.7	A-	
2195	739966	EC	EC	226	.336	.226	.155	.283	.336	.000	.078	-.017	-.133	.041	.078	1.403	0.153	3.2	1.2	6.8	2.5	A+	
2196	739967	EC	EC	209	.397	.397	.244	.196	.163	.000	.310	.310	-.259	-.108	.007	0.925	0.157	0.8	1.1	2.9	1.4	A+	
2197	739968	EC	EC	201	.413	.104	.413	.134	.348	.000	.214	-.295	.214	-.112	.049	1.003	0.158	3.6	1.2	2.2	1.3	A+	
2198	739977	EC	EC	236	.297	.203	.250	.250	.297	.000	.257	-.030	-.065	-.178	.257	1.558	0.155	0.1	1.0	5.5	2.3	A+	
2199	739978	EC	EC	196	.536	.536	.194	.184	.087	.000	.364	.364	-.248	-.025	-.262	0.327	0.161	1.0	1.1	1.0	1.1	A-	
2200	739979	EC	EC	236	.360	.191	.199	.360	.250	.000	.290	-.045	-.211	.290	-.085	1.218	0.149	0.9	1.1	2.9	1.4	A-	

Table B–5 (continued). Writing/English Composition Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M /F	W /B
2201	739980	EC	EC	242	.360	.298	.169	.174	.360	.000	.299	.041	-.196	-.235	.299	1.299	0.145	0.5	1.0	1.9	1.2	A-	
2202	739981	EC	EC	204	.431	.294	.431	.113	.162	.000	.260	-.081	.260	-.134	-.133	0.881	0.153	1.3	1.1	2.3	1.2	B+	
2203	739982	EC	EC	213	.286	.286	.075	.469	.169	.000	.325	.325	-.155	-.029	-.245	1.722	0.163	-0.4	1.0	1.4	1.2	A+	
2204	739983	EC	EC	230	.370	.170	.265	.196	.370	.000	.530	-.123	-.268	-.230	.530	1.195	0.150	-3.6	0.8	-2.5	0.7	A+	
2205	739984	EC	EC	194	.397	.144	.242	.397	.216	.000	.168	-.073	-.189	.168	.059	0.973	0.159	1.8	1.1	5.7	1.7	A+	
2206	739985	EC	EC	229	.445	.157	.445	.140	.258	.000	.326	-.110	.326	-.278	-.059	0.796	0.146	1.1	1.1	1.1	1.1	A+	
2207	739986	EC	EC	222	.464	.342	.108	.464	.086	.000	.293	-.089	-.163	.293	-.189	0.771	0.152	2.2	1.1	4.7	1.6	A+	
2208	739987	EC	EC	195	.636	.144	.636	.169	.051	.000	.458	-.200	.458	-.226	-.298	-0.004	0.165	-0.9	0.9	-1.0	0.9	A-	
2209	739988	EC	EC	211	.611	.133	.156	.100	.611	.000	.469	-.053	-.311	-.326	.469	-0.020	0.161	-0.6	1.0	0.2	1.0	A+	
2210	739989	EC	EC	250	.656	.240	.052	.052	.656	.000	.494	-.211	-.307	-.344	.494	-0.315	0.151	-1.2	0.9	-0.7	0.9	B+	
2211	739990	EC	EC	213	.352	.131	.352	.286	.230	.000	.218	-.162	.218	-.148	.042	1.222	0.158	2.2	1.1	3.4	1.6	A+	
2212	739991	EC	EC	189	.624	.180	.624	.132	.063	.000	.337	-.018	.337	-.303	-.219	-0.070	0.170	1.5	1.1	1.8	1.2	A-	
2213	739992	EC	EC	224	.509	.509	.080	.143	.268	.000	.293	.293	-.174	-.224	-.047	0.591	0.150	2.4	1.1	2.5	1.3	A-	
2214	739993	EC	EC	238	.710	.155	.113	.710	.021	.000	.397	-.220	-.293	.397	-.053	-0.704	0.164	1.3	1.1	0.2	1.0	A-	
2215	739994	EC	EC	200	.255	.235	.295	.215	.255	.000	.280	-.074	-.133	-.073	.280	1.700	0.174	0.2	1.0	1.3	1.3	A-	
2216	739995	EC	EC	202	.446	.139	.257	.446	.158	.000	.214	-.069	-.139	.214	-.060	0.856	0.158	3.4	1.2	4.1	1.5	A+	
2217	739996	EC	EC	223	.247	.152	.247	.345	.256	.000	.029	-.016	.029	.058	-.079	1.948	0.167	2.7	1.2	6.5	2.9	A-	
2218	739997	EC	EC	217	.765	.055	.088	.092	.765	.000	.519	-.237	-.250	-.329	.519	-1.042	0.190	-0.1	1.0	-0.3	0.9	A+	
2219	740036	EC	EC	223	.260	.143	.179	.260	.417	.000	.041	.025	-.244	.041	.136	1.781	0.165	2.7	1.2	6.5	2.8	A+	
2220	740037	EC	EC	207	.560	.343	.560	.068	.029	.000	.191	.022	.191	-.265	-.233	0.282	0.156	3.5	1.2	4.0	1.4	A+	
2221	740038	EC	EC	235	.383	.383	.174	.230	.213	.000	.382	.382	-.160	-.279	-.019	1.171	0.148	-1.3	0.9	4.3	1.7	B+	
2222	740039	EC	EC	193	.518	.171	.171	.140	.518	.000	.499	-.027	-.332	-.329	.499	0.550	0.161	-1.9	0.9	-1.7	0.8	A-	
2223	740040	EC	EC	247	.547	.182	.186	.085	.547	.000	.470	-.140	-.249	-.296	.470	0.255	0.146	-0.9	1.0	0.6	1.1	A+	
2224	740041	EC	EC	214	.636	.117	.154	.093	.636	.000	.519	-.240	-.257	-.275	.519	-0.231	0.162	-1.2	0.9	-0.9	0.9	C+	
2225	740042	EC	EC	224	.746	.746	.103	.036	.116	.000	.467	.467	-.228	-.184	-.313	-0.889	0.174	-0.2	1.0	-0.7	0.9	B-	
2226	740043	EC	EC	226	.301	.301	.177	.332	.190	.000	.310	.310	-.229	-.147	.037	1.593	0.158	0.5	1.0	0.5	1.1	B-	
2227	740091	EC	EC	218	.271	.271	.372	.078	.280	.000	.099	.099	-.044	-.176	.054	1.798	0.165	2.3	1.2	5.3	2.3	A-	
2228	740092	EC	EC	210	.600	.124	.600	.138	.138	.000	.292	-.102	.292	-.159	-.158	0.010	0.159	2.1	1.2	3.1	1.3	A-	
2229	740093	EC	EC	205	.595	.200	.112	.093	.595	.000	.476	-.264	-.257	-.163	.476	0.144	0.159	-1.4	0.9	-1.0	0.9	A-	
2230	740094	EC	EC	235	.192	.191	.204	.413	.191	.000	.066	.066	-.064	.031	-.039	2.307	0.176	1.4	1.1	5.0	2.5	A+	
2231	740095	EC	EC	202	.267	.282	.267	.267	.183	.000	.146	-.112	-.071	.146	.046	1.772	0.172	1.8	1.1	3.5	1.9	A+	
2232	740096	EC	EC	226	.646	.075	.646	.111	.168	.000	.337	-.171	.337	-.163	-.174	-0.208	0.158	1.4	1.1	1.7	1.2	A-	
2233	740097	EC	EC	231	.403	.403	.078	.134	.385	.000	.249	.249	-.277	-.294	.108	1.010	0.147	1.7	1.1	4.2	1.6	A-	
2234	740098	EC	EC	207	.488	.058	.396	.488	.058	.000	.333	-.214	-.152	.333	-.179	0.543	0.154	0.6	1.0	2.5	1.3	A-	
2235	740099	EC	EC	202	.540	.089	.158	.540	.213	.000	.241	-.264	-.305	.241	.163	0.199	0.158	2.9	1.2	3.2	1.3	A-	

Table B–5 (continued). Writing/English Composition Multiple-Choice Item Statistics

Ref	ID	FT Grade	PCS Grade	N	PVal	P(A)	P(B)	P(C)	P(D)	P(-)	PtBis	PT(A)	PT(B)	PT(C)	PT(D)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M/F	W/B
2236	740100	EC	EC	214	.846	.023	.070	.061	.846	.000	.619	-.178	-.430	-.364	.619	-1.704	0.216	-1.9	0.8	-2.1	0.6	A+	
2237	740127	EC	EC	210	.443	.267	.133	.157	.443	.000	.304	.033	-.208	-.261	.304	0.862	0.155	1.7	1.1	2.1	1.2	C-	
2238	740128	EC	EC	206	.544	.068	.180	.209	.544	.000	.351	-.155	-.310	-.041	.351	0.207	0.157	0.7	1.0	4.0	1.5	A+	
2239	740129	EC	EC	209	.397	.187	.397	.230	.187	.000	.155	.059	.155	-.135	-.108	1.048	0.155	3.4	1.2	4.4	1.6	A+	
2240	740130	EC	EC	213	.540	.122	.192	.540	.146	.000	.376	-.182	-.107	.376	-.243	0.324	0.154	0.6	1.0	1.9	1.2	A+	
2241	740131	EC	EC	211	.597	.076	.118	.597	.209	.000	.452	-.226	-.232	.452	-.214	-0.096	0.161	0.1	1.0	0.8	1.1	A+	
2242	740133	EC	EC	224	.719	.036	.183	.719	.063	.000	.287	-.174	-.154	.287	-.154	-0.607	0.167	1.9	1.2	1.3	1.2	A-	
2243	740259	EC	EC	207	.556	.556	.111	.101	.232	.000	.338	.338	-.361	-.186	.003	0.259	0.160	2.1	1.1	3.0	1.4	B+	
2244	740260	EC	EC	207	.628	.082	.188	.628	.101	.000	.447	-.190	-.310	.447	-.142	-0.037	0.160	-0.8	0.9	-0.4	1.0	B+	
2245	740261	EC	EC	197	.513	.152	.513	.107	.228	.000	.323	-.311	.323	-.173	.009	0.644	0.157	0.9	1.1	1.9	1.2	A+	
2246	741707	EC	EC	217	.309	.309	.286	.166	.240	.000	.173	.173	.060	-.097	-.166	1.530	0.161	1.8	1.1	6.4	2.4	A-	
2247	741991	EC	EC	202	.584	.228	.074	.584	.114	.000	.294	.003	-.312	.294	-.203	0.209	0.162	2.2	1.2	2.9	1.3	A+	
2248	742027	EC	EC	193	.145	.145	.285	.285	.285	.000	-.100	-.100	-.075	.050	.102	2.558	0.214	1.7	1.2	5.3	3.5	A+	
2249	742038	EC	EC	224	.107	.598	.107	.121	.174	.000	-.143	.153	-.143	-.220	.107	2.954	0.225	1.0	1.2	9.0	8.3	A-	
2250	742049	EC	EC	200	.325	.365	.205	.325	.105	.000	.264	-.143	-.087	.264	-.065	1.484	0.165	1.2	1.1	1.9	1.4	A+	
2251	742050	EC	EC	224	.558	.558	.040	.250	.152	.000	.385	.385	-.267	-.117	-.245	0.342	0.150	0.5	1.0	0.6	1.1	B+	
2252	742051	EC	EC	224	.424	.388	.076	.112	.424	.000	.319	-.111	-.239	-.129	.319	0.968	0.150	1.2	1.1	2.6	1.4	A+	
2253	742091	EC	EC	217	.530	.272	.530	.120	.078	.000	.297	-.234	.297	-.131	-.005	0.358	0.154	2.3	1.1	3.9	1.4	A-	

Items with reference line numbers 1-1383 were field tested during the stand-alone field test administered in spring 2011. Items with reference line numbers 1383-1853 were field tested during the field test administered in fall 2013. Items with reference line numbers 1854-2253 were field tested during the embedded field test administered during the 2015-2016 school year.

Table B-6. Evidence-Based Selected-Response Item Statistics

Table B-6. Evidence-Based Selected-Response Item Statistics

Column Heading	Definition
Ref	Reference line number
ID	Item ID
FT Grade	Item grade or course alignment when field tested
Max Points	Maximum possible item score
<i>N</i>	Number of students
PVal	Item mean score/Maximum possible item score
P()	Proportion gaining given point (- = blank)
PtBis	Point biserial (item-total correlation)
PT()	Point biserial of given score point
Meas	Rasch item difficulty measure estimate
MSE	Standard error of Rasch item difficulty measure estimate
Z-in	Z-standardized infit statistic
MS-in	Mean square infit statistic
Z-out	Z-standardized outfit statistic
MS-out	Mean square outfit statistic
M/F	Male/female DIF statistic
W/B	White/black DIF statistic

READING/LITERATURE EVIDENCE-BASED SELECTED-RESPONSE ITEMS

Table B-7. Reading/Literature Evidence-Based Selected-Response Item Statistics

Table B-7. Reading/Literature Evidence-Based Selected-Response Item Statistics

Ref	ID	FT Grade	Max Points	N	PVal	P(0)	P(1)	P(2)	P(3)	P(-)	PtBis	PT(0)	PT(1)	PT(2)	PT(3)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M /F	W /B
1	734505	3	2	2107	.314	.504	.363	.133		.000	.238	-.156	-.026	.266		-0.156	0.036	8.4	1.3	9.9	1.4	A+	A-
2	734506	3	2	2289	.462	.353	.372	.276		.000	.463	-.325	-.114	.470		-0.770	0.032	0.8	1.0	1.9	1.1	A+	A+
3	734508	3	2	1338	.602	.290	.216	.494		.000	.643	-.503	-.237	.652		-0.980	0.044	0.6	1.0	0.2	1.0	A-	B-
4	734509	3	2	1069	.608	.331	.123	.546		.000	.403	-.286	-.299	.468		-0.417	0.040	3.4	1.1	2.8	1.2	A-	A-
5	734510	3	2	1986	.366	.450	.368	.182		.000	.127	-.035	-.125	.201		-0.571	0.035	9.9	1.5	9.9	1.5	A-	A-
6	734512	3	2	179	.439	.380	.363	.257		.000	.418	-.277	-.127	.447		-1.322	0.105	-1.3	0.9	-1.4	0.9		
7	734517	3	2	3062	.395	.365	.479	.155		.000	.219	-.166	.019	.195		-0.316	0.030	9.9	1.3	9.9	1.3	A-	A-
8	734518	3	2	2867	.467	.356	.354	.290		.000	.390	-.266	-.121	.409		0.020	0.028	9.0	1.2	9.0	1.3	A+	A-
9	734519	3	2	1316	.517	.380	.207	.413		.000	.530	-.370	-.279	.594		-0.585	0.038	-0.9	1.0	0.1	1.0	A-	B-
10	734521	3	2	2297	.545	.284	.342	.374		.000	.573	-.435	-.147	.549		-1.327	0.031	-6.8	0.9	-6.8	0.8	A-	A+
11	734523	3	2	181	.475	.304	.442	.254		.000	.456	-.325	-.082	.437		-0.623	0.122	1.5	1.1	1.3	1.1	B-	
12	734503	3	3	2601	.457	.174	.373	.363	.091	.000	.395	-.211	-.226	.236	.264	-0.691	0.027	5.9	1.2	6.2	1.2	A+	A-
13	734504	3	3	1353	.483	.226	.293	.287	.194	.000	.510	-.206	-.360	.122	.494	-0.738	0.036	8.2	1.3	8.0	1.3	A+	A-
14	734507	3	3	1904	.323	.239	.569	.175	.016	.000	.190	-.178	.063	.087	.090	0.192	0.038	7.6	1.3	8.0	1.3	A+	
15	734511	3	3	3736	.454	.212	.339	.324	.126	.000	.606	-.389	-.252	.298	.420	-0.571	0.022	-4.0	0.9	-4.0	0.9	A+	A-
16	734513	3	3	2706	.444	.171	.403	.348	.078	.000	.408	-.254	-.184	.255	.241	-0.598	0.027	5.1	1.1	5.2	1.1	A-	A-
17	734514	3	3	2556	.423	.229	.371	.301	.098	.000	.479	-.285	-.226	.296	.314	-0.739	0.026	0.4	1.0	0.4	1.0	A+	
18	734515	3	3	413	.383	.264	.404	.249	.082	.000	.321	-.135	-.160	.102	.341	-0.563	0.068	5.2	1.4	5.6	1.4	B-	
19	734516	3	3	283	.482	.205	.332	.276	.187	.000	.548	-.305	-.253	.114	.489	-1.017	0.076	1.0	1.1	0.9	1.1	A-	
20	734520	3	3	2947	.482	.191	.340	.301	.168	.000	.488	-.237	-.303	.189	.401	-0.859	0.023	3.0	1.1	2.6	1.1	A+	A-
21	734522	3	3	3606	.578	.093	.278	.432	.197	.000	.552	-.305	-.339	.169	.395	-1.283	0.023	-1.6	1.0	-1.5	1.0	A-	B-
22	734524	3	3	1502	.579	.159	.248	.290	.304	.000	.511	-.180	-.388	-.018	.525	-0.853	0.034	9.4	1.4	8.9	1.4	A-	A-
23	734525	4	2	1194	.795	.028	.353	.618		.000	.459	-.325	-.298	.405		-1.111	0.058	-2.9	0.9	-3.4	0.9	A+	
24	734526	4	2	1194	.717	.137	.291	.571		.000	.351	-.247	-.183	.339		0.109	0.044	-0.9	1.0	-0.8	1.0		
25	734528	4	2	2078	.604	.296	.200	.503		.000	.590	-.472	-.206	.596		-0.678	0.033	0.6	1.0	0.0	1.0	A+	A-
26	734530	4	2	155	.603	.290	.213	.497		.000	.454	-.323	-.241	.490		-0.636	0.118	1.9	1.2	1.6	1.3	A+	
27	734531	4	2	1212	.364	.479	.313	.208		.000	.212	-.089	-.165	.299		-0.074	0.044	9.9	1.4	9.9	1.6	A+	
28	734534	4	2	2573	.422	.431	.293	.276		.000	.382	-.240	-.172	.441		-0.260	0.029	7.0	1.2	7.8	1.3	A-	
29	734536	4	2	1159	.530	.218	.504	.278		.000	.232	-.108	-.149	.265		0.643	0.046	2.3	1.1	2.5	1.1		
30	734538	4	2	201	.358	.512	.259	.229		.000	.469	-.387	.013	.447		1.147	0.107	0.7	1.1	1.2	1.2	C-	

Table B-7 (continued). Reading/Literature Evidence-Based Selected-Response Item Statistics

Ref	ID	FT Grade	Max Points	N	PVal	P(0)	P(1)	P(2)	P(3)	P(-)	PtBis	PT(0)	PT(1)	PT(2)	PT(3)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M /F	W /B
31	734539	4	2	1349	.816	.073	.223	.704		.000	.454	-.323	-.267	.428		-0.540	0.048	-3.0	0.9	-4.5	0.8	A-	
32	734542	4	2	3386	.207	.674	.239	.087		.000	.156	-.087	-.045	.212		1.469	0.031	9.9	1.4	9.9	2.2	A+	A-
33	734543	4	2	3361	.732	.152	.232	.616		.000	.546	-.392	-.294	.545		-0.972	0.029	0.1	1.0	-0.1	1.0	A+	A+
34	734545	4	2	1159	.745	.092	.325	.582		.000	.380	-.293	-.173	.336		-0.328	0.048	-1.6	0.9	-1.7	0.9		
35	734527	4	3	1413	.723	.121	.089	.291	.499	.000	.398	-.220	-.294	-.052	.359	0.243	0.031	0.7	1.0	0.5	1.0		
36	734529	4	3	446	.632	.128	.200	.321	.352	.000	.601	-.336	-.435	.145	.457	-0.303	0.064	1.2	1.1	1.3	1.1	A-	
37	734532	4	3	390	.486	.133	.369	.405	.092	.000	.451	-.296	-.208	.254	.263	-0.523	0.072	0.8	1.1	0.9	1.1	A-	
38	734533	4	3	1405	.442	.200	.386	.301	.112	.000	.430	-.278	-.167	.222	.288	-0.681	0.035	3.1	1.1	2.9	1.1	A-	
39	734535	4	3	197	.607	.102	.208	.457	.234	.000	.471	-.335	-.226	.123	.311	-0.279	0.100	1.6	1.2	1.6	1.2	B+	
40	734537	4	3	467	.622	.124	.227	.308	.340	.000	.556	-.257	-.428	.097	.463	-0.062	0.058	0.6	1.0	-0.1	1.0	B+	B+
41	734540	4	3	2058	.451	.220	.347	.293	.140	.000	.374	-.179	-.226	.162	.311	-0.311	0.028	8.4	1.3	8.7	1.3	A-	A+
42	734541	4	3	2102	.612	.139	.192	.362	.307	.000	.553	-.306	-.389	.132	.424	-0.525	0.028	2.6	1.1	1.9	1.1	A+	A+
43	734544	4	3	1292	.353	.316	.401	.191	.092	.000	.271	-.117	-.133	.103	.273	0.548	0.036	8.0	1.3	9.7	1.4	A+	A-
44	734546	4	3	774	.675	.080	.151	.433	.336	.000	.478	-.309	-.290	.062	.333	-0.059	0.048	-0.2	1.0	-0.7	1.0	A-	A-
45	734548	5	2	753	.766	.129	.210	.661		.000	.476	-.387	-.196	.442		-0.848	0.060	-0.7	1.0	-1.1	0.9	A+	A+
46	734550	5	2	766	.487	.358	.311	.332		.000	.351	-.205	-.203	.409		0.853	0.053	4.9	1.2	9.6	1.7	A-	
47	734551	5	2	588	.560	.304	.270	.425		.000	.512	-.402	-.141	.501		-0.242	0.059	-0.4	1.0	-0.4	1.0	A+	
48	734552	5	2	1388	.319	.426	.511	.063		.000	.211	-.223	.188	.066		0.562	0.050	5.9	1.2	7.3	1.3	A-	
49	734554	5	2	1742	.760	.126	.227	.646		.000	.504	-.329	-.331	.519		-0.937	0.040	-1.0	1.0	-1.9	0.9	A-	A-
50	734557	5	2	1071	.817	.061	.246	.694		.000	.371	-.289	-.193	.330		-0.769	0.056	-0.8	1.0	-1.6	0.9	A+	
51	734558	5	2	629	.400	.447	.307	.246		.000	.181	-.098	-.106	.226		0.972	0.055	4.3	1.2	4.6	1.3	A-	
52	734559	5	2	1006	.646	.164	.380	.456		.000	.400	-.306	-.137	.360		0.016	0.048	-0.8	1.0	-1.0	1.0	A-	A-
53	734561	5	2	555	.532	.301	.333	.366		.000	.316	-.208	-.141	.336		0.586	0.058	0.9	1.0	1.2	1.1	A-	B-
54	734564	5	2	2188	.829	.052	.238	.710		.000	.394	-.364	-.152	.321		-1.216	0.042	-0.5	1.0	0.5	1.0	A+	A+
55	734547	5	3	1183	.480	.205	.290	.368	.138	.000	.226	-.062	-.194	.070	.231	0.396	0.036	9.7	1.4	9.9	1.5	A+	A-
56	734549	5	3	1256	.767	.056	.090	.354	.501	.000	.403	-.246	-.284	-.023	.298	-0.315	0.039	0.1	1.0	-0.1	1.0	A+	A+
57	734553	5	3	2181	.506	.249	.257	.222	.272	.000	.522	-.247	-.331	.042	.526	0.020	0.026	8.8	1.3	9.9	1.4	A-	A-
58	734555	5	3	173	.769	.081	.075	.301	.543	.000	.580	-.507	-.237	.013	.391	-0.097	0.116	1.1	1.1	1.2	1.2		
59	734556	5	3	778	.477	.170	.355	.351	.125	.000	.445	-.222	-.250	.172	.365	-0.813	0.048	1.7	1.1	2.0	1.1	A-	
60	734560	5	3	1275	.620	.076	.229	.455	.240	.000	.446	-.229	-.335	.154	.292	-0.301	0.039	2.2	1.1	2.1	1.1	A+	A-
61	734562	5	3	1364	.691	.084	.141	.392	.383	.000	.406	-.157	-.371	.027	.328	-0.046	0.035	1.2	1.0	1.9	1.1	A+	A+
62	734563	5	3	712	.418	.226	.390	.288	.096	.000	.417	-.203	-.219	.193	.354	-0.877	0.048	0.5	1.0	0.5	1.0		
63	734565	5	3	1903	.613	.142	.180	.374	.304	.000	.379	-.175	-.310	.077	.311	0.241	0.028	7.0	1.2	7.7	1.3	A+	A-
64	734566	5	3	2339	.562	.168	.277	.256	.299	.000	.448	-.229	-.248	-.003	.433	-0.479	0.025	9.2	1.3	9.5	1.3	A+	A-
65	734568	5	3	780	.655	.049	.247	.395	.309	.000	.282	-.200	-.121	-.022	.229	0.234	0.046	1.1	1.1	1.7	1.1		

Table B-7 (continued). Reading/Literature Evidence-Based Selected-Response Item Statistics

Ref	ID	FT Grade	Max Points	N	PVal	P(0)	P(1)	P(2)	P(3)	P(-)	PtBis	PT(0)	PT(1)	PT(2)	PT(3)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M /F	W /B
66	737329	6	2	2773	.683	.214	.207	.579		.000	.451	-.311	-.274	.483		-0.172	0.030	8.3	1.2	7.3	1.3	A-	A+
67	737519	6	2	2780	.486	.327	.374	.299		.000	.497	-.392	-.052	.456		0.677	0.029	1.8	1.0	2.3	1.1	A+	A-
68	740077	6	2	2805	.318	.463	.438	.099		.000	.322	-.297	.172	.210		1.661	0.033	5.9	1.2	9.9	1.3	A+	A-
69	740148	6	2	2690	.502	.281	.435	.284		.000	.464	-.412	.042	.364		0.552	0.031	3.4	1.1	3.9	1.1	A+	A+
70	740322	6	2	2790	.424	.378	.396	.226		.000	.231	-.136	-.092	.264		0.996	0.030	9.9	1.4	9.9	1.6	A+	A+
71	741072	6	2	2761	.533	.257	.419	.324		.000	.348	-.254	-.085	.327		0.457	0.030	9.9	1.3	9.9	1.3	A-	A+
72	741076	6	2	2732	.515	.173	.626	.202		.000	.355	-.373	.134	.190		0.447	0.036	4.6	1.1	4.8	1.1	A-	A+
73	741129	6	2	2733	.576	.330	.189	.481		.000	.480	-.336	-.281	.537		0.342	0.028	7.4	1.2	7.1	1.3	A-	A-
74	741219	6	2	2816	.352	.469	.358	.173		.000	.297	-.203	-.040	.318		1.333	0.030	9.7	1.2	9.9	1.6	A-	A+
75	741341	6	2	2780	.482	.410	.217	.373		.000	.524	-.402	-.164	.549		0.706	0.027	1.1	1.0	4.7	1.2	A+	A+
76	739545	6	3	2846	.580	.110	.265	.400	.225	.000	.457	-.282	-.266	.155	.312	0.220	0.026	8.0	1.2	8.8	1.2	A+	A-
77	739553	6	3	2700	.477	.190	.346	.308	.157	.000	.432	-.171	-.336	.222	.343	0.699	0.026	9.7	1.3	9.9	1.3	A+	A-
78	740162	6	3	2838	.513	.143	.341	.350	.166	.000	.554	-.322	-.319	.261	.374	0.509	0.026	0.2	1.0	0.2	1.0	A-	A-
79	740359	6	3	2767	.487	.135	.395	.345	.125	.000	.412	-.280	-.151	.155	.290	0.639	0.027	7.9	1.2	8.7	1.2	A+	A-
80	741191	6	3	2714	.565	.163	.201	.414	.223	.000	.530	-.335	-.352	.259	.329	0.385	0.026	4.6	1.1	5.8	1.2	A+	A-
81	741329	6	3	2708	.613	.114	.208	.404	.274	.000	.515	-.238	-.400	.122	.400	0.067	0.026	5.4	1.2	5.9	1.2	A+	A-
82	741348	6	3	2686	.601	.109	.235	.397	.258	.000	.529	-.254	-.406	.167	.387	0.081	0.026	4.2	1.1	3.6	1.1	A-	A-
83	741508	6	3	2788	.305	.445	.307	.135	.112	.000	.187	.069	-.302	-.039	.375	1.449	0.024	9.9	1.5	9.9	2.2	A-	A-
84	741538	6	3	2821	.460	.165	.381	.364	.091	.000	.420	-.282	-.191	.284	.212	0.844	0.027	8.4	1.2	8.9	1.2	A+	B-
85	737325	7	2	2032	.340	.532	.256	.212		.000	.318	-.204	-.119	.375		1.542	0.034	8.2	1.2	9.9	2.0	A-	A-
86	737524	7	2	2116	.578	.211	.422	.367		.000	.460	-.404	-.025	.368		0.361	0.036	4.4	1.1	5.2	1.2	A-	A+
87	739558	7	2	1992	.427	.325	.495	.180		.000	.381	-.363	.151	.247		1.238	0.039	5.6	1.2	8.0	1.3	A+	A+
88	740155	7	2	1925	.541	.346	.226	.428		.000	.445	-.299	-.251	.500		0.628	0.034	8.1	1.3	9.7	1.5	A+	A-
89	740351	7	2	2000	.294	.635	.144	.222		.000	.200	-.059	-.312	.331		1.653	0.033	9.9	1.4	9.9	2.9	A+	A+
90	740564	7	2	1983	.482	.356	.326	.319		.000	.476	-.398	-.020	.429		0.890	0.034	3.4	1.1	6.4	1.2	A+	A-
91	740758	7	2	2095	.677	.194	.257	.549		.000	.523	-.415	-.188	.495		-0.047	0.036	3.6	1.1	3.3	1.1	A+	A+
92	741284	7	2	1996	.622	.244	.268	.487		.000	.517	-.340	-.297	.555		0.267	0.035	4.4	1.1	3.9	1.2	A+	A-
93	741359	7	2	1974	.642	.180	.355	.465		.000	.513	-.416	-.136	.452		0.095	0.037	1.9	1.1	2.6	1.1	A+	A-
94	741621	7	2	2074	.472	.444	.169	.388		.000	.333	-.212	-.245	.405		0.983	0.031	9.9	1.4	9.9	1.9	A-	A-
95	741827	7	2	2019	.490	.373	.274	.353		.000	.373	-.206	-.267	.457		0.858	0.033	9.8	1.3	9.9	1.5	A-	A-
96	737756	7	3	2030	.545	.131	.309	.352	.207	.000	.533	-.298	-.331	.207	.381	0.486	0.030	3.4	1.1	3.1	1.1	A+	B-
97	740312	7	3	2020	.494	.181	.331	.313	.175	.000	.489	-.261	-.275	.174	.393	0.816	0.030	6.4	1.2	6.9	1.2	A+	A-
98	740343	7	3	1971	.410	.232	.399	.275	.094	.000	.393	-.248	-.150	.230	.259	1.276	0.031	8.0	1.3	9.9	1.4	A+	A+
99	740813	7	3	2008	.481	.150	.375	.356	.119	.000	.386	-.241	-.174	.176	.266	0.886	0.032	9.9	1.3	9.9	1.4	A+	A-
100	741096	7	3	1923	.566	.121	.296	.348	.235	.000	.547	-.333	-.308	.170	.397	0.406	0.031	3.2	1.1	3.0	1.1	A+	A-

Table B-7 (continued). Reading/Literature Evidence-Based Selected-Response Item Statistics

Ref	ID	FT Grade	Max Points	N	PVal	P(0)	P(1)	P(2)	P(3)	P(-)	PtBis	PT(0)	PT(1)	PT(2)	PT(3)	Meas	MSE	Z-in	MS-in	Z-out	MS-out	M /F	W /B
101	741157	7	3	1963	.560	.123	.290	.371	.216	.000	.544	-.291	-.351	.188	.399	0.432	0.031	3.2	1.1	3.8	1.1	A-	B-
102	741323	7	3	2009	.571	.139	.258	.354	.249	.000	.537	-.314	-.342	.196	.381	0.442	0.030	4.0	1.1	4.7	1.2	A+	A-
103	741676	7	3	2020	.468	.145	.375	.411	.069	.000	.490	-.370	-.166	.306	.237	1.096	0.034	3.8	1.1	4.2	1.1	A-	A-
104	741685	7	3	2038	.363	.348	.364	.140	.149	.000	.279	-.036	-.248	.004	.380	1.341	0.028	9.9	1.5	9.9	1.8	A+	A+
105	741697	7	3	2122	.609	.128	.158	.475	.239	.000	.608	-.400	-.390	.232	.376	0.334	0.031	-0.6	1.0	-0.8	1.0	A+	A-
106	736998	8	2	4103	.673	.231	.191	.578		.000	.491	-.314	-.364	.558		0.316	0.025	9.9	1.3	9.9	1.4	A+	A-
107	737008	8	2	4245	.742	.157	.202	.641		.000	.588	-.450	-.284	.579		-0.074	0.027	0.9	1.0	-1.8	0.9	A+	A+
108	739560	8	2	4235	.633	.234	.266	.500		.000	.521	-.357	-.276	.546		0.502	0.024	5.6	1.1	6.8	1.2	A+	A-
109	739753	8	2	4266	.552	.250	.396	.354		.000	.431	-.341	-.074	.385		0.799	0.025	9.9	1.2	9.9	1.3	A+	A+
110	740240	8	2	4253	.481	.328	.384	.289		.000	.492	-.403	-.015	.434		1.164	0.024	3.6	1.1	7.1	1.2	A+	A-
111	740308	8	2	4077	.527	.339	.268	.393		.000	.371	-.214	-.256	.440		1.005	0.023	9.9	1.4	9.9	1.7	A+	A-
112	741131	8	2	4176	.663	.224	.227	.549		.000	.570	-.423	-.271	.582		0.336	0.025	1.9	1.0	3.4	1.1	A+	A-
113	741330	8	2	4142	.342	.544	.228	.227		.000	.249	-.104	-.239	.363		1.794	0.023	9.9	1.4	9.9	2.6	A-	A-
114	741630	8	2	4280	.584	.275	.283	.442		.000	.489	-.351	-.205	.502		0.693	0.024	9.9	1.2	9.9	1.3	A+	A+
115	741670	8	2	4230	.530	.310	.319	.370		.000	.418	-.260	-.221	.463		0.944	0.024	9.9	1.3	9.9	1.4	A-	A-
116	741717	8	2	4059	.575	.284	.283	.433		.000	.526	-.397	-.179	.524		0.719	0.024	4.5	1.1	7.5	1.2	A-	A-
117	742017	8	2	4187	.309	.516	.350	.134		.000	.224	-.127	-.067	.281		2.081	0.026	9.9	1.3	9.9	1.8	A+	A-
118	737750	8	3	4103	.468	.265	.240	.320	.175	.000	.189	.052	-.337	.041	.268	1.276	0.020	9.9	2.0	9.9	2.4	A-	A-
119	739763	8	3	4122	.370	.282	.377	.290	.051	.000	.408	-.276	-.137	.329	.189	1.901	0.023	9.9	1.3	9.9	1.4	A+	A-
120	740084	8	3	4214	.661	.088	.173	.408	.331	.000	.651	-.398	-.436	.134	.450	0.206	0.022	-3.8	0.9	-5.1	0.9	A+	A-
121	740363	8	3	4194	.420	.175	.460	.296	.069	.000	.386	-.323	-.054	.227	.182	1.529	0.023	9.9	1.3	9.9	1.4	A+	A-
122	741500	8	3	4196	.615	.098	.240	.381	.281	.000	.543	-.258	-.398	.118	.420	0.417	0.022	8.1	1.2	7.7	1.2	A-	B-
123	741515	8	3	4247	.505	.139	.361	.345	.155	.000	.414	-.161	-.301	.163	.340	0.997	0.022	9.9	1.3	9.9	1.4	A+	A-
124	741533	8	3	4294	.455	.177	.374	.357	.092	.000	.372	-.206	-.208	.231	.237	1.385	0.022	9.9	1.4	9.9	1.4	A-	A-
125	741690	8	3	4134	.594	.090	.227	.492	.190	.000	.554	-.396	-.293	.225	.316	0.533	0.024	3.1	1.1	2.8	1.1	B+	A-
126	741724	8	3	4228	.398	.165	.530	.251	.054	.000	.288	-.217	-.034	.125	.192	1.616	0.024	9.9	1.4	9.9	1.4	A+	A-

Items with reference line numbers 1-126 were field tested during the embedded field test administered during the 2015-2016 school year.

APPENDIX C: VERTICAL LINKING ITEM DETAILS

This appendix provides details on the items used to build the vertical scales in each content area. Information such as grade, n-count, eligible content code, and diagnostic category is provided for each of the vertical linking items. This information is based on the academic standards in place at the time each of the content area vertical scale was established¹. Summary tables indicate the number of linking items in each diagnostic category. A sample of the vertical linking Excel file is provided as well as plots of the vertical linking items.

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Tables C-1 through C-8 show n-counts, eligible content code, and diagnostic category for each of the vertical linking items.

Each item was administered in two grades so there are two n-counts: one for the lower grade and one for the upper grade. For example, item 600869 is a grade 3 item used to link grades 3 and 4. It was administered 1,280 times on the lower grade forms (grade 3) and 964 times on the upper grade forms (grade 4).

Diagnostic categories for Algebra I, Geometry, and Algebra II are different than diagnostic categories for grades 3 through 8 and 11 Mathematics. Items may fall into both a Mathematics diagnostic category and an Algebra I, Geometry, or Algebra II diagnostic category. This is shown in Tables C-6, C-7, and C-8. For example, item 601329 is in the Mathematics diagnostic category “Geometry” and the Geometry diagnostic category “Coordinate Geometry and Right Triangles”.

The Mathematics diagnostic categories are²:

- Numbers and Operations
- Measurement
- Geometry
- Algebraic Concepts
- Data Analysis and Probability

The Algebra I diagnostic categories are:

- Operations with Real Numbers and Expressions
- Linear Equations & Inequalities
- Functions & Coordinate Geometry
- Data Analysis

The Geometry diagnostic categories are:

- Geometric Properties
- Congruence, Similarity, & Proofs
- Coordinate Geometry and Right Triangles
- Measurement

The Algebra II diagnostic categories are:

- Operations with Complex Numbers
- Non-linear Expressions & Equations
- Functions
- Data Analysis

¹ Before the 2013-2014 school year items in mathematics, reading, and writing were re-aligned to the new Pennsylvania Core Standards.

² Mathematics diagnostic categories changed at the start of the 2013-2014 school year due to re-alignment to the Pennsylvania Core Standards. See Chapter Thirteen for a list of the current diagnostic categories.

Table C–1. Mathematics Items Used to Link Grade 3 to Grade 4

Item ID	Item Grade	Link	N Count Lower Grade	N Count Upper Grade	Eligible Content	Mathematics Diagnostic Category
600869	3	Grade 3 to Grade 4	1280	964	M3.B.1.1.1	Measure.
600871	3	Grade 3 to Grade 4	1275	964	M3.B.2.2.1	Measure.
601980	3	Grade 3 to Grade 4	1280	964	M3.B.1.2.1	Measure.
604352	3	Grade 3 to Grade 4	1281	964	M3.D.2.1.1	Alg. Con.
600442	3	Grade 3 to Grade 4	1280	964	M3.C.2.1.1	Geo.
600431	3	Grade 3 to Grade 4	1274	964	M3.A.1.1.1	Numbers & Op.
601975	3	Grade 3 to Grade 4	1281	964	M3.A.2.1.1	Numbers & Op.
600865	3	Grade 3 to Grade 4	1279	964	M3.A.1.3.1	Numbers & Op.
601985	3	Grade 3 to Grade 4	1285	963	M3.E.1.1.1	Data & Prob.
601897	3	Grade 3 to Grade 4	1282	964	M3.A.1.2.1	Numbers & Op.
601437	3	Grade 3 to Grade 4	1274	963	M3.A.1.1.4	Numbers & Op.
600438	3	Grade 3 to Grade 4	1277	963	M3.A.1.2.2	Numbers & Op.
600427	3	Grade 3 to Grade 4	1282	963	M3.C.1.1.1	Geo.
600877	3	Grade 3 to Grade 4	1283	963	M3.E.1.2.1	Data & Prob.
601587	3	Grade 3 to Grade 4	1276	963	M3.A.2.1.3	Numbers & Op.
600440	3	Grade 3 to Grade 4	639	963	M3.B.2.1.1	Measure.
600921	3	Grade 3 to Grade 4	1271	963	M3.A.1.3.2	Numbers & Op.
601589	3	Grade 3 to Grade 4	639	962	M3.D.1.1.1	Alg. Con.
601440	3	Grade 3 to Grade 4	1272	962	M3.B.1.1.3	Measure.
601984	3	Grade 3 to Grade 4	1278	962	M3.D.2.1.2	Alg. Con.
604193	4	Grade 3 to Grade 4	1283	959	M4.D.1.1.2	Alg. Con.
602015	4	Grade 3 to Grade 4	1284	481	M4.E.1.2.1	Data & Prob.
601993	4	Grade 3 to Grade 4	1282	1447	M4.C.1.1.1	Geo.
603609	4	Grade 3 to Grade 4	1284	959	M4.B.2.1.1	Measure.
604189	4	Grade 3 to Grade 4	1280	962	M4.B.1.1.3	Measure.
602010	4	Grade 3 to Grade 4	1285	961	M4.C.1.1.2	Geo.
601646	4	Grade 3 to Grade 4	1283	960	M4.D.2.2.2	Alg. Con.
604186	4	Grade 3 to Grade 4	1279	965	M4.A.3.1.1	Numbers & Op.
601958	4	Grade 3 to Grade 4	1281	961	M4.A.1.1.2	Numbers & Op.
604488	4	Grade 3 to Grade 4	1279	958	M4.A.1.2.2	Numbers & Op.
603744	4	Grade 3 to Grade 4	1279	481	M4.B.2.2.1	Measure.
602009	4	Grade 3 to Grade 4	1279	963	M4.C.1.1.2	Geo.
604514	4	Grade 3 to Grade 4	1280	481	M4.C.2.1.1	Geo.
604492	4	Grade 3 to Grade 4	1278	961	M4.A.3.1.2	Numbers & Op.
601972	4	Grade 3 to Grade 4	1281	965	M4.E.1.2.2	Data & Prob.
601962	4	Grade 3 to Grade 4	1278	962	M4.A.1.3.2	Numbers & Op.
601987	4	Grade 3 to Grade 4	1278	961	M4.A.1.1.4	Numbers & Op.

Table C–1 (continued). Mathematics Items Used to Link Grade 3 to Grade 4

Item ID	Item Grade	Link	N Count Lower Grade	N Count Upper Grade	Eligible Content	Mathematics Diagnostic Category
604195	4	Grade 3 to Grade 4	1279	481	M4.D.2.1.1	Alg. Con.
604501	4	Grade 3 to Grade 4	1279	959	M4.E.1.1.1	Data & Prob.
604493	4	Grade 3 to Grade 4	1279	1443	M4.B.1.1.4	Measure.

Table C–2. Mathematics Items Used to Link Grade 4 to Grade 5

Item ID	Item Grade	Link	N Count Lower Grade	N Count Upper Grade	Eligible Content	Mathematics Diagnostic Category
601646	4	Grade 4 to Grade 5	960	1187	M4.D.2.2.2	Alg. Con.
601987	4	Grade 4 to Grade 5	961	1186	M4.A.1.1.4	Numbers & Op.
604493	4	Grade 4 to Grade 5	1443	1183	M4.B.1.1.4	Measure.
601961	4	Grade 4 to Grade 5	965	1184	M4.A.1.3.2	Numbers & Op.
604499	4	Grade 4 to Grade 5	962	1188	M4.E.1.1.1	Data & Prob.
602889	4	Grade 4 to Grade 5	962	1187	M4.E.1.2.2	Data & Prob.
602885	4	Grade 4 to Grade 5	965	1186	M4.B.2.2.1	Measure.
602887	4	Grade 4 to Grade 5	962	1187	M4.C.3.1.1	Geo.
601639	4	Grade 4 to Grade 5	960	1184	M4.A.3.1.3	Numbers & Op.
604969	4	Grade 4 to Grade 5	480	1184	M4.C.1.2.2	Geo.
601994	4	Grade 4 to Grade 5	479	1185	M4.D.1.2.2	Alg. Con.
601998	4	Grade 4 to Grade 5	960	1191	M4.E.3.1.1	Data & Prob.
602000	4	Grade 4 to Grade 5	959	1190	M4.C.1.1.1	Geo.
601991	4	Grade 4 to Grade 5	959	1189	M4.A.2.1.2	Numbers & Op.
604879	4	Grade 4 to Grade 5	1441	1188	M4.D.1.1.3	Alg. Con.
601964	4	Grade 4 to Grade 5	961	1188	M4.A.3.2.2	Numbers & Op.
602971	4	Grade 4 to Grade 5	480	1187	M4.B.2.1.1	Measure.
604486	4	Grade 4 to Grade 5	481	1186	M4.E.1.2.1	Data & Prob.
604967	4	Grade 4 to Grade 5	962	1187	M4.A.1.2.2	Numbers & Op.
602973	4	Grade 4 to Grade 5	964	1186	M4.C.2.1.1	Geo.
600853	5	Grade 4 to Grade 5	964	1790	M5.B.2.1.1	Measure.
604790	5	Grade 4 to Grade 5	964	586	M5.C.2.1.2	Geo.
604956	5	Grade 4 to Grade 5	959	1175	M5.A.2.1.1	Numbers & Op.
604862	5	Grade 4 to Grade 5	960	1182	M5.D.1.2.1	Alg. Con.
604783	5	Grade 4 to Grade 5	961	1179	M5.A.1.2.1	Numbers & Op.
606159	5	Grade 4 to Grade 5	960	1190	M5.A.1.5.1	Numbers & Op.
604848	5	Grade 4 to Grade 5	961	1784	M5.E.3.1.1	Data & Prob.
604843	5	Grade 4 to Grade 5	959	1186	M5.C.1.1.2	Geo.
604966	5	Grade 4 to Grade 5	961	596	M5.E.1.1.1	Data & Prob.
606163	5	Grade 4 to Grade 5	961	1188	M5.B.1.1.1	Measure.
601532	5	Grade 4 to Grade 5	956	2369	M5.A.1.1.1	Numbers & Op.
606160	5	Grade 4 to Grade 5	958	1190	M5.A.3.1.1	Numbers & Op.
604960	5	Grade 4 to Grade 5	957	594	M5.B.2.2.3	Measure.
600852	5	Grade 4 to Grade 5	958	1178	M5.D.1.1.1	Alg. Con.
604834	5	Grade 4 to Grade 5	954	1189	M5.A.1.3.1	Numbers & Op.
604959	5	Grade 4 to Grade 5	956	1183	M5.B.1.2.2	Measure.
604961	5	Grade 4 to Grade 5	956	1193	M5.C.1.2.1	Geo.

Table C–2 (continued). Mathematics Items Used to Link Grade 4 to Grade 5

Item ID	Item Grade	Link	N Count Lower Grade	N Count Upper Grade	Eligible Content	Mathematics Diagnostic Category
606278	5	Grade 4 to Grade 5	954	1177	M5.D.2.1.2	Alg. Con.
604965	5	Grade 4 to Grade 5	957	1190	M5.E.1.1.1	Data & Prob.
604865	5	Grade 4 to Grade 5	956	1192	M5.A.1.6.2	Numbers & Op.

Table C–3. Mathematics Items Used to Link Grade 5 to Grade 6

Item ID	Item Grade	Link	N Count Lower Grade	N Count Upper Grade	Eligible Content	Mathematics Diagnostic Category
606277	5	Grade 5 to Grade 6	1175	1225	M5.D.2.1.2	Alg. Con.
606153	5	Grade 5 to Grade 6	590	1225	M5.A.1.4.2	Numbers & Op.
604796	5	Grade 5 to Grade 6	1194	1224	M5.B.1.3.2	Measure.
606154	5	Grade 5 to Grade 6	1195	1223	M5.A.2.1.3	Numbers & Op.
604962	5	Grade 5 to Grade 6	1192	1222	M5.C.1.2.1	Geo.
606826	5	Grade 5 to Grade 6	593	1221	M5.A.1.3.2	Numbers & Op.
604859	5	Grade 5 to Grade 6	1766	1223	M5.C.1.1.1	Geo.
604860	5	Grade 5 to Grade 6	1184	1215	M5.D.1.2.1	Alg. Con.
606167	5	Grade 5 to Grade 6	1181	1216	M5.E.3.1.1	Data & Prob.
604836	5	Grade 5 to Grade 6	1176	1216	M5.A.1.6.1	Numbers & Op.
606162	5	Grade 5 to Grade 6	593	1216	M5.B.1.1.1	Measure.
604841	5	Grade 5 to Grade 6	594	1215	M5.B.2.2.1	Measure.
606155	5	Grade 5 to Grade 6	1193	1215	M5.C.2.1.2	Geo.
601592	5	Grade 5 to Grade 6	595	1214	M5.E.2.1.1	Data & Prob.
601590	5	Grade 5 to Grade 6	2372	1214	M5.A.1.1.1	Numbers & Op.
604953	5	Grade 5 to Grade 6	1171	1226	M5.A.1.3.3	Numbers & Op.
604853	5	Grade 5 to Grade 6	1175	1227	M5.A.1.5.1	Numbers & Op.
604784	5	Grade 5 to Grade 6	1178	1227	M5.A.1.2.1	Numbers & Op.
604868	5	Grade 5 to Grade 6	1176	1225	M5.B.1.2.1	Measure.
604964	5	Grade 5 to Grade 6	1190	1226	M5.E.1.1.1	Data & Prob.
601542	5	Grade 5 to Grade 6	1189	1225	M5.B.2.1.1	Measure.
606276	5	Grade 5 to Grade 6	590	1223	M5.C.2.1.1	Geo.
604856	5	Grade 5 to Grade 6	1180	1219	M5.A.3.1.1	Numbers & Op.
606166	5	Grade 5 to Grade 6	1181	1220	M5.D.2.1.1	Alg. Con.
604958	5	Grade 5 to Grade 6	1176	1219	M5.A.2.1.1	Numbers & Op.
604842	5	Grade 5 to Grade 6	1182	1219	M5.C.1.1.2	Geo.
606157	5	Grade 5 to Grade 6	1188	1219	M5.D.1.1.2	Alg. Con.
604794	5	Grade 5 to Grade 6	1177	1217	M5.E.2.1.2	Data & Prob.
604869	5	Grade 5 to Grade 6	1191	1216	M5.B.2.2.2	Measure.
606279	5	Grade 5 to Grade 6	1196	1219	M5.E.3.1.2	Data & Prob.
601040	6	Grade 5 to Grade 6	1190	609	M6.E.3.1.1	Data & Prob.
602096	6	Grade 5 to Grade 6	1190	1213	M6.B.2.1.1	Measure.
601730	6	Grade 5 to Grade 6	1191	1223	M6.B.2.2.1	Measure.
602081	6	Grade 5 to Grade 6	1188	1199	M6.E.1.1.3	Data & Prob.
599668	6	Grade 5 to Grade 6	1186	608	M6.A.1.3.1	Numbers & Op.
600989	6	Grade 5 to Grade 6	1184	1223	M6.D.1.1.1	Alg. Con.
602070	6	Grade 5 to Grade 6	1184	614	M6.E.1.1.1	Data & Prob.

Table C–3 (continued). Mathematics Items Used to Link Grade 5 to Grade 6

Item ID	Item Grade	Link	N Count Lower Grade	N Count Upper Grade	Eligible Content	Mathematics Diagnostic Category
601689	6	Grade 5 to Grade 6	1185	609	M6.C.1.2.2	Geo.
601031	6	Grade 5 to Grade 6	1185	1206	M6.D.2.1.2	Alg. Con.
602174	6	Grade 5 to Grade 6	1181	1210	M6.A.3.2.1	Numbers & Op.
601249	6	Grade 5 to Grade 6	1186	600	M6.C.3.1.1	Geo.
599670	6	Grade 5 to Grade 6	1181	1199	M6.A.1.3.2	Numbers & Op.
600978	6	Grade 5 to Grade 6	1184	615	M6.D.2.2.1	Alg. Con.
601706	6	Grade 5 to Grade 6	1186	1209	M6.E.2.1.1	Data & Prob.
601024	6	Grade 5 to Grade 6	1183	608	M6.D.1.2.1	Alg. Con.
602176	6	Grade 5 to Grade 6	1183	1213	M6.B.1.1.1	Measure.
602071	6	Grade 5 to Grade 6	1184	1210	M6.E.1.1.2	Data & Prob.
602104	6	Grade 5 to Grade 6	1179	607	M6.B.2.1.2	Measure.
599667	6	Grade 5 to Grade 6	1181	1226	M6.A.1.2.1	Numbers & Op.
601260	6	Grade 5 to Grade 6	1181	610	M6.C.1.1.1	Geo.

Table C–4. Mathematics Items Used to Link Grade 6 to Grade 7

Item ID	Item Grade	Link	N Count Lower Grade	N Count Upper Grade	Eligible Content	Mathematics Diagnostic Category
599606	6	Grade 6 to Grade 7	1224	792	M6.A.1.2.1	Numbers & Op.
601257	6	Grade 6 to Grade 7	1214	792	M6.C.3.1.1	Geo.
601026	6	Grade 6 to Grade 7	614	790	M6.D.1.2.1	Alg. Con.
601705	6	Grade 6 to Grade 7	1221	786	M6.E.1.1.1	Data & Prob.
601811	6	Grade 6 to Grade 7	1220	785	M6.A.2.1.1	Numbers & Op.
601714	6	Grade 6 to Grade 7	1203	786	M6.C.1.2.1	Geo.
601032	6	Grade 6 to Grade 7	1210	783	M6.D.2.1.2	Alg. Con.
599590	6	Grade 6 to Grade 7	2447	783	M6.A.1.1.1	Numbers & Op.
602095	6	Grade 6 to Grade 7	606	784	M6.B.2.1.3	Measure.
601700	6	Grade 6 to Grade 7	1230	785	M6.C.1.1.3	Geo.
601277	6	Grade 6 to Grade 7	1223	785	M6.E.3.1.1	Data & Prob.
602073	6	Grade 6 to Grade 7	603	784	M6.E.1.1.3	Data & Prob.
599643	6	Grade 6 to Grade 7	1217	778	M6.A.1.3.2	Numbers & Op.
602177	6	Grade 6 to Grade 7	1217	778	M6.B.1.1.1	Measure.
601220	6	Grade 6 to Grade 7	1205	778	M6.B.2.3.1	Measure.
601030	6	Grade 6 to Grade 7	1217	789	M6.D.2.1.1	Alg. Con.
601275	6	Grade 6 to Grade 7	592	786	M6.E.2.1.1	Data & Prob.
601678	6	Grade 6 to Grade 7	1220	785	M6.D.1.1.1	Alg. Con.
601301	6	Grade 6 to Grade 7	1220	785	M6.E.1.1.2	Data & Prob.
601245	6	Grade 6 to Grade 7	1225	783	M6.E.3.1.2	Data & Prob.
599593	6	Grade 6 to Grade 7	1221	784	M6.A.1.1.2	Numbers & Op.
601664	6	Grade 6 to Grade 7	600	780	M6.C.1.1.4	Geo.
599609	6	Grade 6 to Grade 7	1207	776	M6.A.1.3.1	Numbers & Op.
601799	6	Grade 6 to Grade 7	1211	778	M6.A.1.4.1	Numbers & Op.
602101	6	Grade 6 to Grade 7	612	775	M6.B.2.1.1	Measure.
602175	6	Grade 6 to Grade 7	614	773	M6.A.3.2.1	Numbers & Op.
601044	6	Grade 6 to Grade 7	1210	773	M6.D.2.2.1	Alg. Con.
601694	6	Grade 6 to Grade 7	1211	773	M6.C.1.1.2	Geo.
602088	6	Grade 6 to Grade 7	1226	772	M6.B.2.2.1	Measure.
601702	6	Grade 6 to Grade 7	605	771	M6.C.1.2.2	Geo.
601287	7	Grade 6 to Grade 7	1222	395	M7.D.2.1.1	Alg. Con.
601050	7	Grade 6 to Grade 7	1223	399	M7.E.2.1.1	Data & Prob.
601772	7	Grade 6 to Grade 7	1222	793	M7.D.1.1.1	Alg. Con.
602215	7	Grade 6 to Grade 7	1222	765	M7.B.2.1.3	Measure.
601132	7	Grade 6 to Grade 7	1221	764	M7.E.4.1.1	Data & Prob.
599720	7	Grade 6 to Grade 7	1221	757	M7.A.2.1.1	Numbers & Op.
602190	7	Grade 6 to Grade 7	1219	788	M7.B.1.1.1	Measure.

Table C–4 (continued). Mathematics Items Used to Link Grade 6 to Grade 7

Item ID	Item Grade	Link	N Count Lower Grade	N Count Upper Grade	Eligible Content	Mathematics Diagnostic Category
601273	7	Grade 6 to Grade 7	1215	762	M7.D.2.2.1	Alg. Con.
599734	7	Grade 6 to Grade 7	1215	792	M7.A.1.2.1	Numbers & Op.
601784	7	Grade 6 to Grade 7	1216	373	M7.C.1.1.2	Geo.
601278	7	Grade 6 to Grade 7	1213	401	M7.D.3.1.1	Alg. Con.
601704	7	Grade 6 to Grade 7	1214	788	M7.C.3.1.1	Geo.
602189	7	Grade 6 to Grade 7	1212	780	M7.A.3.2.2	Numbers & Op.
601123	7	Grade 6 to Grade 7	1209	385	M7.E.3.1.1	Data & Prob.
599633	7	Grade 6 to Grade 7	1209	797	M7.A.2.2.4	Numbers & Op.
601099	7	Grade 6 to Grade 7	1218	777	M7.E.1.1.1	Data & Prob.
599685	7	Grade 6 to Grade 7	1214	400	M7.A.2.2.2	Numbers & Op.
601124	7	Grade 6 to Grade 7	1216	785	M7.E.3.1.2	Data & Prob.
602193	7	Grade 6 to Grade 7	1214	792	M7.B.2.1.1	Measure.
601827	7	Grade 6 to Grade 7	1211	772	M7.C.1.1.3	Geo.
601067	7	Grade 6 to Grade 7	1208	781	M7.D.2.1.1	Alg. Con.
601379	7	Grade 6 to Grade 7	1212	793	M7.E.2.1.2	Data & Prob.
599708	7	Grade 6 to Grade 7	1206	563	M7.A.1.1.1	Numbers & Op.
601771	7	Grade 6 to Grade 7	1202	767	M7.D.1.1.1	Alg. Con.
601271	7	Grade 6 to Grade 7	1206	761	M7.D.2.2.1	Alg. Con.
599715	7	Grade 6 to Grade 7	1206	781	M7.A.1.2.2	Numbers & Op.
599650	7	Grade 6 to Grade 7	1193	798	M7.A.3.2.1	Numbers & Op.
602180	7	Grade 6 to Grade 7	1199	789	M7.B.1.1.1	Measure.
601355	7	Grade 6 to Grade 7	1190	399	M7.D.3.1.1	Alg. Con.
602202	7	Grade 6 to Grade 7	1194	795	M7.C.1.1.1	Geo.

Table C–5. Mathematics Items Used to Link Grade 8 to Grade 7

Item ID	Item Grade	Link	N Count Lower Grade	N Count Upper Grade	Eligible Content	Mathematics Diagnostic Category
601054	7	Grade 8 to Grade 7	745	312	M7.E.3.1.1	Data & Prob.
601365	7	Grade 8 to Grade 7	746	312	M7.D.3.1.1	Alg. Con.
601117	7	Grade 8 to Grade 7	747	311	M7.E.1.1.1	Data & Prob.
601835	7	Grade 8 to Grade 7	748	310	M7.C.1.1.3	Geo.
601677	7	Grade 8 to Grade 7	749	312	M7.C.1.2.2	Geo.
602155	7	Grade 8 to Grade 7	750	312	M7.A.3.2.2	Numbers & Op.
602142	7	Grade 8 to Grade 7	751	312	M7.B.2.1.3	Measure.
601300	7	Grade 8 to Grade 7	752	312	M7.D.2.1.2	Alg. Con.
601130	7	Grade 8 to Grade 7	753	312	M7.E.3.1.3	Data & Prob.
599682	7	Grade 8 to Grade 7	754	311	M7.A.2.2.1	Numbers & Op.
602144	7	Grade 8 to Grade 7	755	309	M7.B.2.2.2	Measure.
599732	7	Grade 8 to Grade 7	756	309	M7.A.2.2.6	Numbers & Op.
599727	7	Grade 8 to Grade 7	757	309	M7.A.1.2.1	Numbers & Op.
599686	7	Grade 8 to Grade 7	758	309	M7.A.2.2.3	Numbers & Op.
601687	7	Grade 8 to Grade 7	759	307	M7.C.3.1.2	Geo.
601218	7	Grade 8 to Grade 7	760	315	M7.C.3.1.1	Geo.
599722	7	Grade 8 to Grade 7	761	314	M7.A.2.1.1	Numbers & Op.
599684	7	Grade 8 to Grade 7	762	313	M7.A.2.2.2	Numbers & Op.
602141	7	Grade 8 to Grade 7	763	311	M7.B.2.1.2	Measure.
601051	7	Grade 8 to Grade 7	764	314	M7.E.2.1.2	Data & Prob.
599712	7	Grade 8 to Grade 7	765	314	M7.A.3.2.1	Numbers & Op.
602234	7	Grade 8 to Grade 7	766	314	M7.C.1.1.1	Geo.
602146	7	Grade 8 to Grade 7	767	314	M7.C.1.2.1	Geo.
601773	7	Grade 8 to Grade 7	768	313	M7.D.2.1.1	Alg. Con.
599711	7	Grade 8 to Grade 7	769	313	M7.A.2.2.5	Numbers & Op.
602143	7	Grade 8 to Grade 7	770	313	M7.B.2.2.1	Measure.
601110	7	Grade 8 to Grade 7	771	313	M7.E.3.1.2	Data & Prob.
601272	7	Grade 8 to Grade 7	772	312	M7.D.2.2.1	Alg. Con.
601357	7	Grade 8 to Grade 7	773	313	M7.D.3.1.2	Alg. Con.
601086	7	Grade 8 to Grade 7	774	313	M7.E.4.1.1	Data & Prob.
601263	8	Grade 8 to Grade 7	775	309	M8.C.3.1.1	Geo.
601757	8	Grade 8 to Grade 7	776	158	M8.D.1.1.2	Alg. Con.
601069	8	Grade 8 to Grade 7	777	308	M8.E.4.1.2	Data & Prob.
599651	8	Grade 8 to Grade 7	778	318	M8.A.3.1.2	Numbers & Op.
601073	8	Grade 8 to Grade 7	779	314	M8.D.2.1.3	Alg. Con.
601801	8	Grade 8 to Grade 7	780	154	M8.B.1.1.1	Measure.
599610	8	Grade 8 to Grade 7	781	160	M8.A.2.1.1	Numbers & Op.

Table C–5 (continued). Mathematics Items Used to Link Grade 8 to Grade 7

Item ID	Item Grade	Link	N Count Lower Grade	N Count Upper Grade	Eligible Content	Mathematics Diagnostic Category
601097	8	Grade 8 to Grade 7	782	159	M8.E.1.1.1	Data & Prob.
601725	8	Grade 8 to Grade 7	783	316	M8.B.1.1.3	Measure.
601744	8	Grade 8 to Grade 7	784	157	M8.B.2.2.3	Measure.
601288	8	Grade 8 to Grade 7	785	157	M8.D.2.1.1	Alg. Con.
601247	8	Grade 8 to Grade 7	786	312	M8.D.2.2.2	Alg. Con.
599698	8	Grade 8 to Grade 7	787	156	M8.A.2.2.2	Numbers & Op.
601763	8	Grade 8 to Grade 7	788	306	M8.D.4.1.2	Alg. Con.
601090	8	Grade 8 to Grade 7	789	154	M8.E.1.1.3	Data & Prob.
601804	8	Grade 8 to Grade 7	790	318	M8.B.1.1.4	Measure.
599640	8	Grade 8 to Grade 7	791	311	M8.A.3.1.1	Numbers & Op.
602158	8	Grade 8 to Grade 7	792	310	M8.B.1.1.2	Measure.
602072	8	Grade 8 to Grade 7	793	315	M8.D.1.1.1	Alg. Con.
601707	8	Grade 8 to Grade 7	794	317	M8.D.1.1.3	Alg. Con.
601332	8	Grade 8 to Grade 7	795	312	M8.D.2.1.2	Alg. Con.
599613	8	Grade 8 to Grade 7	796	317	M8.A.2.2.1	Numbers & Op.
601675	8	Grade 8 to Grade 7	797	317	M8.D.4.1.3	Alg. Con.
601100	8	Grade 8 to Grade 7	798	157	M8.E.3.1.1	Data & Prob.
599583	8	Grade 8 to Grade 7	799	636	M8.A.1.1.1	Numbers & Op.
601340	8	Grade 8 to Grade 7	800	156	M8.D.2.2.1	Alg. Con.
601344	8	Grade 8 to Grade 7	801	321	M8.D.4.1.1	Alg. Con.
600990	8	Grade 8 to Grade 7	802	306	M8.E.1.1.2	Data & Prob.
599645	8	Grade 8 to Grade 7	803	160	M8.A.3.3.1	Numbers & Op.
602058	8	Grade 8 to Grade 7	804	307	M8.C.1.1.1	Geo.

Table C–6. Mathematics Items Used to Link Algebra I to Grade 8

Item ID	Item Grade	Link	N Count Lower Grade	N Count Upper Grade	Eligible Content	Mathematics Diagnostic Category	Algebra I Diagnostic Category
601121	8	Algebra I to Grade 8	316	1400	M8.A.3.3.1	Numbers & Op.	Op. with Real Num.
601102	8	Algebra I to Grade 8	310	1406	M8.E.3.1.1	Data & Prob.	Data Anal.
601360	8	Algebra I to Grade 8	155	1403	M8.D.4.1.1	Alg. Con.	Functions & Geo.
601764	8	Algebra I to Grade 8	316	1396	M8.D.4.1.3	Alg. Con.	Functions & Geo.
602052	8	Algebra I to Grade 8	318	1396	M8.D.1.1.3	Alg. Con.	Functions & Geo.
599639	8	Algebra I to Grade 8	154	1391	M8.A.3.1.1	Numbers & Op.	Op. with Real Num.
602065	8	Algebra I to Grade 8	156	1376	M8.D.1.1.1	Alg. Con.	Functions & Geo.
601346	8	Algebra I to Grade 8	306	1390	M8.D.2.2.2	Alg. Con.	Linear Eq.
599582	8	Algebra I to Grade 8	625	1387	M8.A.1.1.1	Numbers & Op.	Op. with Real Num.
599697	8	Algebra I to Grade 8	314	1377	M8.A.2.2.1	Numbers & Op.	Op. with Real Num.
600980	8	Algebra I to Grade 8	318	1376	M8.D.2.1.3	Alg. Con.	Linear Eq.
601127	8	Algebra I to Grade 8	158	1376	M8.E.4.1.1	Data & Prob.	Data Anal.
601776	8	Algebra I to Grade 8	311	1370	M8.D.4.1.2	Alg. Con.	Functions & Geo.
601092	8	Algebra I to Grade 8	306	1362	M8.E.1.1.2	Data & Prob.	Data Anal.
601232	8	Algebra I to Grade 8	151	1359	M8.D.2.1.1	Alg. Con.	Linear Eq.
601348	8	Algebra I to Grade 8	311	1402	M8.D.2.2.1	Alg. Con.	Linear Eq.
601777	8	Algebra I to Grade 8	307	1401	M8.D.4.1.3	Alg. Con.	Functions & Geo.
599619	8	Algebra I to Grade 8	314	1388	M8.A.2.2.2	Numbers & Op.	Op. with Real Num.
601222	8	Algebra I to Grade 8	311	1389	M8.C.3.1.1	Geo.	None
601384	8	Algebra I to Grade 8	317	1388	M8.D.4.1.1	Alg. Con.	Functions & Geo.
601091	8	Algebra I to Grade 8	314	1390	M8.E.1.1.3	Data & Prob.	Data Anal.
599585	8	Algebra I to Grade 8	310	1377	M8.A.2.1.1	Numbers & Op.	Op. with Real Num.
599637	8	Algebra I to Grade 8	308	1380	M8.A.3.1.2	Numbers & Op.	Op. with Real Num.
601231	8	Algebra I to Grade 8	313	1374	M8.D.2.1.1	Alg. Con.	Linear Eq.
601663	8	Algebra I to Grade 8	155	1368	M8.D.1.1.2	Alg. Con.	Functions & Geo.
601126	8	Algebra I to Grade 8	308	1370	M8.E.4.1.2	Data & Prob.	Data Anal.
601089	8	Algebra I to Grade 8	151	1357	M8.E.1.1.2	Data & Prob.	Data Anal.
601234	8	Algebra I to Grade 8	303	1356	M8.D.2.1.2	Alg. Con.	Linear Eq.
601775	8	Algebra I to Grade 8	312	1349	M8.D.4.1.2	Alg. Con.	Functions & Geo.
601103	8	Algebra I to Grade 8	319	1344	M8.E.3.2.1	Data & Prob.	Data Anal.
602259	11	Algebra I to Grade 8	312	714	M11.E.2.1.3	Data & Prob.	Data Anal.
604952	11	Algebra I to Grade 8	312	710	M11.E.4.1.2	Data & Prob.	Data Anal.
601837	A1	Algebra I to Grade 8	312	700	A1.2.2.1.1	Alg. Con.	Functions & Geo.
602184	A1	Algebra I to Grade 8	313	1421	A1.2.1.1.1	Alg. Con.	Functions & Geo.
601554	11	Algebra I to Grade 8	313	711	M11.E.2.1.3	Data & Prob.	Data Anal.
602171	A1	Algebra I to Grade 8	309	1382	A1.2.1.2.2	Alg. Con.	Functions & Geo.
601841	A1	Algebra I to Grade 8	313	1383	A1.2.2.1.2	Alg. Con.	Functions & Geo.

Table C–6 (continued). Mathematics Items Used to Link Algebra I to Grade 8

Item ID	Item Grade	Link	N Count Lower Grade	N Count Upper Grade	Eligible Content	Mathematics Diagnostic Category	Algebra I Diagnostic Category
604806	11	Algebra I to Grade 8	312	710	M11.E.4.1.2	Data & Prob.	Data Anal.
600839	11	Algebra I to Grade 8	313	713	M11.E.1.1.1	Data & Prob.	Data Anal.
601461	11	Algebra I to Grade 8	313	711	M11.E.1.1.1	Data & Prob.	Data Anal.
604804	11	Algebra I to Grade 8	313	705	M11.E.2.1.3	Data & Prob.	Data Anal.
602241	A1	Algebra I to Grade 8	312	1420	A1.2.1.2.1	Alg. Con.	Functions & Geo.
601793	A1	Algebra I to Grade 8	313	1425	A1.2.2.1.4	Alg. Con.	Functions & Geo.
602159	A1	Algebra I to Grade 8	312	1416	A1.2.2.2.1	Alg. Con.	Functions & Geo.
602274	11	Algebra I to Grade 8	312	713	M11.E.4.1.2	Data & Prob.	Data Anal.
601135	A1	Algebra I to Grade 8	315	1418	A1.2.3.3.1	Data & Prob.	Data Anal.
601144	A1	Algebra I to Grade 8	317	1415	A1.1.2.1.3	Alg. Con.	Linear Eq.
600842	11	Algebra I to Grade 8	316	717	M11.A.2.1.3	Numbers & Op.	Op. with Real Num.
601370	A1	Algebra I to Grade 8	314	1364	A1.1.3.1.3	Alg. Con.	Linear Eq.
600646	11	Algebra I to Grade 8	315	710	M11.A.3.1.1	Numbers & Op.	Op. with Real Num.
601630	11	Algebra I to Grade 8	314	718	M11.A.3.1.1	Numbers & Op.	Op. with Real Num.
601138	A1	Algebra I to Grade 8	313	1378	A1.2.3.2.1	Data & Prob.	Data Anal.
601139	A1	Algebra I to Grade 8	310	1413	A1.2.3.2.2	Data & Prob.	Data Anal.
600826	11	Algebra I to Grade 8	311	716	M11.A.3.1.1	Numbers & Op.	Op. with Real Num.
601140	A1	Algebra I to Grade 8	310	1408	A1.2.3.2.3	Data & Prob.	Data Anal.
600930	A1	Algebra I to Grade 8	311	707	A1.1.1.4.1	Numbers & Op.	Op. with Real Num.
602260	11	Algebra I to Grade 8	312	717	M11.A.2.1.1	Numbers & Op.	Op. with Real Num.
600931	A1	Algebra I to Grade 8	310	1375	A1.1.1.5.1	Alg. Con.	Op. with Real Num.
602644	11	Algebra I to Grade 8	311	714	M11.A.2.1.1	Numbers & Op.	Op. with Real Num.
604162	11	Algebra I to Grade 8	310	714	M11.A.2.1.2	Numbers & Op.	Op. with Real Num.

Table C–7. Mathematics Items Used to Link Geometry to Grade 8

Item ID	Item Grade	Link	N Count Lower Grade	N Count Upper Grade	Eligible Content	Mathematics Diagnostic Category	Geometry Diagnostic Category
601740	8	Geometry to Grade 8	306	1052	M8.B.2.1.3	Measure.	Measure.
602118	8	Geometry to Grade 8	319	1049	M8.B.2.2.1	Measure.	Measure.
602056	8	Geometry to Grade 8	306	1052	M8.C.1.1.2	Geo.	Geo. Prop.
602059	8	Geometry to Grade 8	156	1052	M8.C.1.1.2	Geo.	Geo. Prop.
601733	8	Geometry to Grade 8	151	1039	M8.B.2.1.1	Measure.	Measure.
602133	8	Geometry to Grade 8	320	1049	M8.C.1.1.3	Geo.	Geo. Prop.
602117	8	Geometry to Grade 8	151	1046	M8.B.2.2.2	Measure.	Measure.
602128	8	Geometry to Grade 8	312	1047	M8.C.1.1.1	Geo.	Geo. Prop.
601802	8	Geometry to Grade 8	319	1047	M8.B.1.1.3	Measure.	None
602205	8	Geometry to Grade 8	318	1047	M8.C.1.1.1	Geo.	Geo. Prop.
601723	8	Geometry to Grade 8	306	1037	M8.B.1.1.1	Measure.	None
602208	8	Geometry to Grade 8	317	1043	M8.C.1.1.3	Geo.	Geo. Prop.
601326	8	Geometry to Grade 8	317	1038	M8.C.1.2.1	Geo.	Coord. Geo.
601338	8	Geometry to Grade 8	311	1038	M8.C.3.1.1	Geo.	Coord. Geo.
601371	8	Geometry to Grade 8	316	1031	M8.C.3.1.1	Geo.	Coord. Geo.
601736	8	Geometry to Grade 8	316	1048	M8.B.2.1.2	Measure.	Measure.
602136	8	Geometry to Grade 8	316	1034	M8.C.1.2.1	Geo.	Coord. Geo.
601755	8	Geometry to Grade 8	306	1039	M8.C.1.2.1	Geo.	Coord. Geo.
601372	8	Geometry to Grade 8	316	1037	M8.C.3.1.1	Geo.	Coord. Geo.
601782	8	Geometry to Grade 8	156	1028	M8.B.1.1.4	Measure.	None
602204	8	Geometry to Grade 8	308	1039	M8.C.1.1.1	Geo.	Geo. Prop.
602131	8	Geometry to Grade 8	317	1037	M8.C.1.1.2	Geo.	Geo. Prop.
602061	8	Geometry to Grade 8	314	1035	M8.C.1.1.2	Geo.	Geo. Prop.
602115	8	Geometry to Grade 8	317	1029	M8.B.2.2.2	Measure.	Measure.
602087	8	Geometry to Grade 8	312	1034	M8.C.1.1.3	Geo.	Geo. Prop.
602212	8	Geometry to Grade 8	319	1030	M8.C.1.1.3	Geo.	Geo. Prop.
601724	8	Geometry to Grade 8	310	1023	M8.B.1.1.2	Measure.	None
602113	8	Geometry to Grade 8	315	1023	M8.B.2.2.1	Measure.	Measure.
601329	8	Geometry to Grade 8	302	1031	M8.C.3.1.1	Geo.	Coord. Geo.
601743	8	Geometry to Grade 8	305	1029	M8.B.2.2.3	Measure.	Measure.
602661	11	Geometry to Grade 8	316	531	M11.B.2.1.1	Measure.	Measure.
604163	11	Geometry to Grade 8	317	531	M11.B.2.2.2	Measure.	Measure.
604671	GE	Geometry to Grade 8	311	1963	G.1.1.1.1	Geo.	Geo. Prop.
604400	GE	Geometry to Grade 8	316	992	G.1.3.1.1	Geo.	Congruence
604389	GE	Geometry to Grade 8	316	1001	G.2.1.1.1	Geo.	Coord. Geo.
604799	11	Geometry to Grade 8	316	528	M11.B.2.3.1	Measure.	Measure.
604418	GE	Geometry to Grade 8	312	478	G.1.2.1.4	Geo.	Geo. Prop.

Table C–7 (continued). Mathematics Items Used to Link Geometry to Grade 8

Item ID	Item Grade	Link	N Count Lower Grade	N Count Upper Grade	Eligible Content	Mathematics Diagnostic Category	Geometry Diagnostic Category
600651	11	Geometry to Grade 8	315	531	M11.B.2.2.4	Measure.	Measure.
604707	GE	Geometry to Grade 8	314	1053	G.1.2.1.5	Geo.	Geo. Prop.
604180	11	Geometry to Grade 8	316	528	M11.B.2.2.3	Measure.	Measure.
604378	GE	Geometry to Grade 8	316	1048	G.2.2.1.1	Geo.	Measure.
601544	11	Geometry to Grade 8	316	532	M11.B.2.1.1	Measure.	Measure.
600749	11	Geometry to Grade 8	314	531	M11.B.2.2.4	Measure.	Measure.
604392	GE	Geometry to Grade 8	315	1053	G.1.1.1.4	Geo.	Geo. Prop.
604395	GE	Geometry to Grade 8	314	1024	G.1.3.1.2	Geo.	Congruence
604178	11	Geometry to Grade 8	315	531	M11.C.1.3.1	Geo.	Congruence
600785	11	Geometry to Grade 8	315	530	M11.C.1.2.2	Geo.	Geo. Prop.
604522	11	Geometry to Grade 8	313	533	M11.C.1.4.1	Geo.	Coor. Geo.
604763	GE	Geometry to Grade 8	308	503	G.2.2.2.1	Geo.	Measure.
602650	11	Geometry to Grade 8	313	530	M11.C.1.3.1	Geo.	Congruence
604474	GE	Geometry to Grade 8	313	988	G.2.2.1.2	Geo.	Measure.
604600	GE	Geometry to Grade 8	310	1053	G.2.2.2.4	Geo.	Measure.
604361	GE	Geometry to Grade 8	312	525	G.2.3.2.1	Geo.	Measure.
601550	11	Geometry to Grade 8	311	530	M11.C.1.2.3	Geo.	Geo. Prop.
604360	GE	Geometry to Grade 8	309	1042	G.2.3.1.3	Geo.	Measure.
604170	11	Geometry to Grade 8	309	528	M11.C.1.4.1	Geo.	Coor. Geo.
604354	GE	Geometry to Grade 8	306	1007	G.2.2.3.1	Geo.	Measure.
601549	11	Geometry to Grade 8	306	530	M11.C.1.2.3	Geo.	Geo. Prop.
602268	11	Geometry to Grade 8	305	527	M11.C.1.3.1	Geo.	Congruence
604453	GE	Geometry to Grade 8	304	955	G.2.2.2.2	Geo.	Measure.

Table C–8. Mathematics Items Used to Link Algebra II to Algebra I

Item ID	Item Grade	Link	N Count Lower Grade	N Count Upper Grade	Eligible Content	Algebra I Diagnostic Category	Algebra II Diagnostic Category
602167	A1	Algebra II to Algebra I	701	949	A1.1.3.2.1	Linear Eq.	Non-linear
601423	A1	Algebra II to Algebra I	709	951	A1.1.2.1.3	Linear Eq.	Non-linear
602188	A1	Algebra II to Algebra I	708	943	A1.2.2.1.4	Functions & Geo.	Functions
600971	A1	Algebra II to Algebra I	1407	944	A1.1.1.5.1	Op. with Real Num.	Non-linear
601180	A1	Algebra II to Algebra I	1372	948	A1.1.2.1.1	Linear Eq.	Non-linear
601854	A1	Algebra II to Algebra I	670	937	A1.1.2.2.2	Linear Eq.	Non-linear
602253	A1	Algebra II to Algebra I	705	939	A1.2.2.1.2	Functions & Geo.	Functions
601419	A1	Algebra II to Algebra I	693	941	A1.1.3.1.2	Linear Eq.	Non-linear
602251	A1	Algebra II to Algebra I	1371	942	A1.2.1.2.2	Functions & Geo.	Functions
601176	A1	Algebra II to Algebra I	676	941	A1.2.3.2.3	Data Anal.	Data Anal.
600928	A1	Algebra II to Algebra I	1405	935	A1.1.1.2.1	Op. with Real Num.	Non-linear
600926	A1	Algebra II to Algebra I	2816	940	A1.1.1.1.1	Op. with Real Num.	Non-linear
602237	A1	Algebra II to Algebra I	662	931	A1.2.1.1.1	Functions & Geo.	Functions
601394	A1	Algebra II to Algebra I	697	931	A1.2.1.1.3	Functions & Geo.	Functions
600973	A1	Algebra II to Algebra I	682	925	A1.1.1.5.3	Op. with Real Num.	Non-linear
601397	A1	Algebra II to Algebra I	1378	943	A1.1.3.1.1	Linear Eq.	Non-linear
601368	A1	Algebra II to Algebra I	1374	948	A1.1.3.1.3	Linear Eq.	Non-linear
601136	A1	Algebra II to Algebra I	709	942	A1.1.2.1.2	Linear Eq.	Non-linear
601836	A1	Algebra II to Algebra I	713	946	A1.2.2.1.1	Functions & Geo.	Functions
601148	A1	Algebra II to Algebra I	1395	942	A1.2.3.3.1	Data Anal.	Data Anal.
602160	A1	Algebra II to Algebra I	1397	947	A1.2.2.2.1	Functions & Geo.	Functions
601813	A1	Algebra II to Algebra I	1424	941	A1.2.1.2.1	Functions & Geo.	Functions
601805	A1	Algebra II to Algebra I	1348	920	A1.2.2.1.3	Functions & Geo.	Functions
600953	A1	Algebra II to Algebra I	659	940	A1.1.1.1.2	Op. with Real Num.	Non-linear
600932	A1	Algebra II to Algebra I	1411	941	A1.1.1.5.2	Op. with Real Num.	Non-linear
601398	A1	Algebra II to Algebra I	1410	931	A1.1.2.2.1	Linear Eq.	Non-linear
600948	A1	Algebra II to Algebra I	1387	920	A1.2.3.1.1	Data Anal.	Data Anal.
600966	A1	Algebra II to Algebra I	1395	912	A1.1.1.3.1	Op. with Real Num.	Non-linear
602154	A1	Algebra II to Algebra I	1387	918	A1.1.3.2.2	Linear Eq.	Non-linear
601380	A1	Algebra II to Algebra I	1392	915	A1.2.1.1.2	Functions & Geo.	Functions
604700	A2	Algebra II to Algebra I	1406	927	A2.2.1.1.1	Functions & Geo.	Functions
603013	A2	Algebra II to Algebra I	1406	957	A2.1.3.1.4	Linear Eq.	Non-linear
604570	A2	Algebra II to Algebra I	1386	462	A2.2.2.1.3	Functions & Geo.	Functions
603086	A2	Algebra II to Algebra I	1400	914	A2.1.2.1.4	Op. with Real Num.	Non-linear
604625	A2	Algebra II to Algebra I	1380	948	A2.2.1.1.3	Functions & Geo.	Functions
604530	A2	Algebra II to Algebra I	1380	935	A2.1.3.2.2	Linear Eq.	Non-linear
604686	A2	Algebra II to Algebra I	1379	446	A2.2.2.2.1	Functions & Geo.	Functions

Table C–8 (continued). Mathematics Items Used to Link Algebra II to Algebra I

Item ID	Item Grade	Link	N Count Lower Grade	N Count Upper Grade	Eligible Content	Algebra I Diagnostic Category	Algebra II Diagnostic Category
603043	A2	Algebra II to Algebra I	1383	932	A2.1.2.1.2	Op. with Real Num.	Non-linear
603037	A2	Algebra II to Algebra I	1366	950	A2.2.1.1.4	Functions & Geo.	Functions
604572	A2	Algebra II to Algebra I	1377	453	A2.2.2.1.4	Functions & Geo.	Functions
603000	A2	Algebra II to Algebra I	1372	471	A2.1.2.2.2	Op. with Real Num.	Non-linear
604537	A2	Algebra II to Algebra I	1373	908	A2.2.1.1.2	Functions & Geo.	Functions
604634	A2	Algebra II to Algebra I	1369	472	A2.2.3.2.3	Data Anal.	Data Anal.
603106	A2	Algebra II to Algebra I	1360	898	A2.2.3.1.2	Data Anal.	Data Anal.
603057	A2	Algebra II to Algebra I	1351	456	A2.2.3.2.1	Data Anal.	Data Anal.
603055	A2	Algebra II to Algebra I	1397	919	A2.2.3.1.1	Data Anal.	Data Anal.
603018	A2	Algebra II to Algebra I	1408	937	A2.1.2.2.1	Op. with Real Num.	Non-linear
604685	A2	Algebra II to Algebra I	1404	476	A2.2.2.2.1	Functions & Geo.	Functions
603126	A2	Algebra II to Algebra I	1396	474	A2.2.3.2.3	Data Anal.	Data Anal.
604539	A2	Algebra II to Algebra I	1395	941	A2.1.3.2.1	Linear Eq.	Non-linear
604540	A2	Algebra II to Algebra I	1382	889	A2.1.3.2.2	Linear Eq.	Non-linear
604703	A2	Algebra II to Algebra I	1397	479	A2.2.1.1.1	Functions & Geo.	Functions
604629	A2	Algebra II to Algebra I	1387	902	A2.2.2.1.1	Functions & Geo.	Functions
603056	A2	Algebra II to Algebra I	1390	928	A2.2.3.2.1	Data Anal.	Data Anal.
603003	A2	Algebra II to Algebra I	1376	473	A2.1.3.1.2	Linear Eq.	Non-linear
604550	A2	Algebra II to Algebra I	1369	939	A2.2.2.1.4	Functions & Geo.	Functions
603098	A2	Algebra II to Algebra I	1374	944	A2.1.2.1.3	Op. with Real Num.	Non-linear
604544	A2	Algebra II to Algebra I	1370	461	A2.2.1.1.2	Functions & Geo.	Functions
604627	A2	Algebra II to Algebra I	1363	953	A2.2.1.1.3	Functions & Geo.	Functions
603042	A2	Algebra II to Algebra I	1368	936	A2.1.2.1.1	Op. with Real Num.	Non-linear

Tables C–9 through C–16 summarize the number of linking items by diagnostic category. Items coded in a Mathematics diagnostic category and an Algebra I, Geometry, or Algebra II diagnostic category are noted.

Table C–9. Number of Items Linking Grade 3 to Grade 4 by Diagnostic Category

Diagnostic Category	Grade 3 Items	Grade 4 Items	Total
Numbers & Operations	8	6	14
Measurement	5	4	9
Geometry	2	4	6
Algebraic Concepts	3	3	6
Data Analysis & Probability	2	3	5
TOTAL	20	20	40

Table C–10. Number of Items Linking Grade 4 to Grade 5 by Diagnostic Category

Diagnostic Category	Grade 4 Items	Grade 5 Items	Total
Numbers & Operations	6	7	13
Measurement	3	4	7
Geometry	4	3	7
Algebraic Concepts	3	3	6
Data Analysis & Probability	4	3	7
TOTAL	20	20	40

Table C–11. Number of Items Linking Grade 5 to Grade 6 by Diagnostic Category

Diagnostic Category	Grade 5 Items	Grade 6 Items	Total
Numbers & Operations	10	4	14
Measurement	6	4	10
Geometry	5	3	8
Algebraic Concepts	4	4	8
Data Analysis & Probability	5	5	10
TOTAL	30	20	50

Table C–12. Number of Items Linking Grade 6 to Grade 7 by Diagnostic Category

Diagnostic Category	Grade 6 Items	Grade 7 Items	Total
Numbers & Operations	8	8	16
Measurement	5	4	9
Geometry	6	4	10
Algebraic Concepts	5	8	13
Data Analysis & Probability	6	6	12
TOTAL	30	30	60

Table C–13. Number of Items Linking Grade 8 to Grade 7 by Diagnostic Category

Diagnostic Category	Grade 7 Items	Grade 8 Items	Total
Numbers & Operations	9	7	16
Measurement	4	5	9
Geometry	6	2	8
Algebraic Concepts	5	11	16
Data Analysis & Probability	6	5	11
TOTAL	30	30	60

Table C–14a. Number of Items Linking Algebra I to Grade 8 by Diagnostic Category

Diagnostic Category	Grade 8 Items	Algebra I Items	Total
Numbers & Operations	7	8	15
Measurement	0	0	0
Geometry	1	0	1
Algebraic Concepts	15	10	25
Data Analysis & Probability	7	12	19
No Grade 8 DC	0	0	0
TOTAL	30	30	60

Table C–14b. Number of Items Linking Algebra I to Grade 8 by Diagnostic Category

Diagnostic Category	Grade 8 Items	Algebra I Items	Total
Operations with Real Numbers	7	9	16
Linear Equations	6	2	8
Functions	9	7	16
Data Analysis	7	12	19
No Algebra I DC	1	0	1
TOTAL	30	30	60

Table C–15a. Number of Items Linking Geometry to Grade 8 by Diagnostic Category

Diagnostic Category	Grade 8 Items	Geometry Items	Total
Numbers & Operations	0	0	0
Measurement	12	0	12
Geometry	18	30	48
Algebraic Concepts	0	0	0
Data Analysis & Probability	0	0	0
No Grade 8 DC	0	0	0
TOTAL	30	30	60

Table C–15b. Number of Items Linking Geometry to Grade 8 by Diagnostic Category

Diagnostic Category	Grade 8 Items	Geometry Items	Total
Geometric Properties	11	8	19
Congruence	0	4	4
Coordinate	7	2	9
Measurement	8	16	24
No Geometry DC	4	0	4
TOTAL	30	30	60

Table C–16a. Number of Items Linking Algebra II to Algebra I by Diagnostic Category

Diagnostic Category	Algebra I Items	Algebra II Items	Total
Operations with Real Numbers	7	6	13
Linear Equations	10	5	15
Functions	10	13	23
Data Analysis	3	6	9
No Algebra I DC	0	0	0
TOTAL	30	30	60

Table C–16b. Number of Items Linking Algebra II to Algebra I by Diagnostic Category

Diagnostic Category	Algebra I Items	Algebra II Items	Total
Op. with Complex Numbers	0	0	0
Non-linear	17	11	28
Functions	10	13	23
Data Analysis	3	6	9
No Algebra II DC	0	0	0
TOTAL	30	30	60

Table C–17. Mathematics Example of Vertical Linking Workbook

Item ID	Item Grade	Grade 4 Calibration			Grade 5 Calibration			Discrepancy	Grade 4 on	Grade 5 Scale	Robust Z	Flag
		Difficulty	Fit	Displace	Difficulty	Fit	Displace					
601646	4	-1.028	1.020	-0.006	-1.880	1.000	-0.004	-0.852	-1.650	-0.458		
601987	4	0.195	0.970	0.001	-0.384	0.930	0.000	-0.579	-0.427	0.205		
604493	4	0.784	1.030	0.000	0.204	1.010	0.000	-0.580	0.162	0.203		
601961	4	0.684	1.000	0.002	-0.469	0.910	0.000	-1.153	0.062	-1.189		
604499	4	-0.488	0.900	0.001	-0.492	0.910	0.000	-0.004	-1.110	1.601		
602889	4	-0.160	0.920	-0.002	-1.157	0.840	0.000	-0.997	-0.782	-0.810		
602885	4	0.112	1.200	0.003	0.051	1.220	0.000	-0.061	-0.510	1.463		
602887	4	-0.493	1.070	-0.002	-1.063	1.030	0.000	-0.570	-1.115	0.227		
601639	4	0.397	1.070	0.001	0.149	1.090	0.000	-0.248	-0.225	1.009		
604969	4	1.559	1.060	0.000	1.469	1.080	0.000	-0.090	0.937	1.393		
601994	4	0.257	0.950	0.000	0.100	1.090	0.000	-0.157	-0.365	1.230		
601998	4	-0.551	1.120	-0.001	-1.376	1.140	-0.004	-0.825	-1.173	-0.392		
602000	4	2.034	1.070	-0.006	1.248	1.060	-0.003	-0.786	1.412	-0.297		
601991	4	1.106	0.900	0.001	0.095	0.860	-0.003	-1.011	0.484	-0.844		
604879	4	-0.099	1.020	0.000	-1.101	0.870	-0.003	-1.002	-0.721	-0.822		
601964	4	1.069	1.020	0.001	0.154	1.010	-0.003	-0.915	0.447	-0.611		
602971	4	-0.355	1.000	0.000	-0.858	1.070	-0.003	-0.503	-0.977	0.390		
604486	4	-0.420	0.940	0.000	-0.749	0.970	-0.003	-0.329	-1.042	0.812		
604967	4	-1.495	0.900	0.001	-1.254	0.960	-0.003	0.241	-2.117	2.196	high robust Z	
602973	4	-0.035	0.940	0.003	0.362	1.220	-0.003	0.397	-0.657	2.575	high robust Z	
600853	5	0.883	1.100	0.004	-0.047	1.100	-0.003	-0.930	0.261	-0.647		
604790	5	-0.495	1.010	0.004	-1.082	0.970	0.000	-0.587	-1.117	0.186		
604956	5	1.299	0.870	0.004	0.590	0.820	-0.003	-0.709	0.677	-0.110		
604862	5	1.405	0.920	0.004	0.368	0.850	-0.003	-1.037	0.783	-0.907		
604783	5	0.764	0.970	0.004	-0.814	0.890	0.001	-1.578	0.142	-2.221	high robust Z	
606159	5	0.793	1.090	0.004	-0.157	0.990	-0.003	-0.950	0.171	-0.696		
604848	5	0.301	0.910	0.004	-0.707	1.020	0.001	-1.008	-0.321	-0.837		
604843	5	1.481	1.050	0.004	0.819	0.940	0.001	-0.662	0.859	0.004		
604966	5	-1.974	0.920	0.004	-3.190	0.870	-0.005	-1.216	-2.596	-1.342		
606163	5	0.780	1.130	0.004	0.478	1.200	0.002	-0.302	0.158	0.878		
601532	5	-0.368	0.950	0.000	-1.033	0.920	-0.001	-0.665	-0.990	-0.004		
606160	5	0.382	1.070	0.000	-0.313	0.940	-0.005	-0.695	-0.240	-0.076		
604960	5	0.618	0.910	0.000	0.223	1.050	0.000	-0.395	-0.004	0.652		
600852	5	0.753	1.100	0.000	0.050	1.020	0.002	-0.703	0.131	-0.096		
604834	5	-0.673	0.980	0.000	-1.151	0.980	-0.004	-0.478	-1.295	0.450		
604959	5	0.012	0.880	0.000	-0.871	0.840	-0.001	-0.883	-0.610	-0.533		
604961	5	0.141	1.000	0.000	-0.319	1.010	0.002	-0.460	-0.481	0.494		
606278	5	1.197	1.000	0.000	0.700	0.960	0.001	-0.497	0.575	0.404		
604965	5	-1.454	0.890	0.000	-1.565	0.900	-0.005	-0.111	-2.076	1.342		
604865	5	0.454	0.930	0.000	-0.537	0.910	-0.001	-0.991	-0.168	-0.795		
	Mean	0.234			-0.388			-0.622	-0.388	0.101		
	SD	0.887			0.893			0.413	0.887	1.002		
	SD Ratio	0.993										
	Correlation	0.892										
	Add. Constant	-0.622										
	Median							-0.664				
	Q							0.557				

Figures C-1 through C-8 are the adjacent grade linking plots. Items removed from final linking procedure are colored red.

Figure C-1. CDT Mathematics: Grade 3 to Grade 4 Linking – All Links

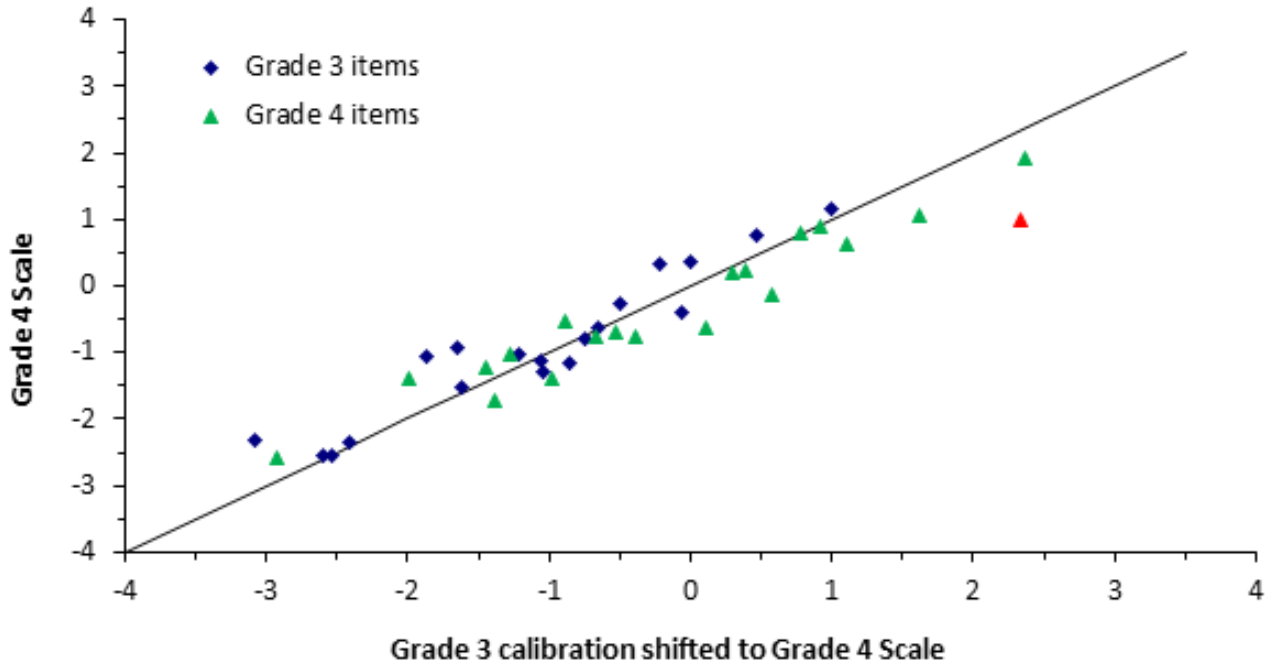


Figure C-2. CDT Mathematics: Grade 4 to Grade 5 Linking – All Links

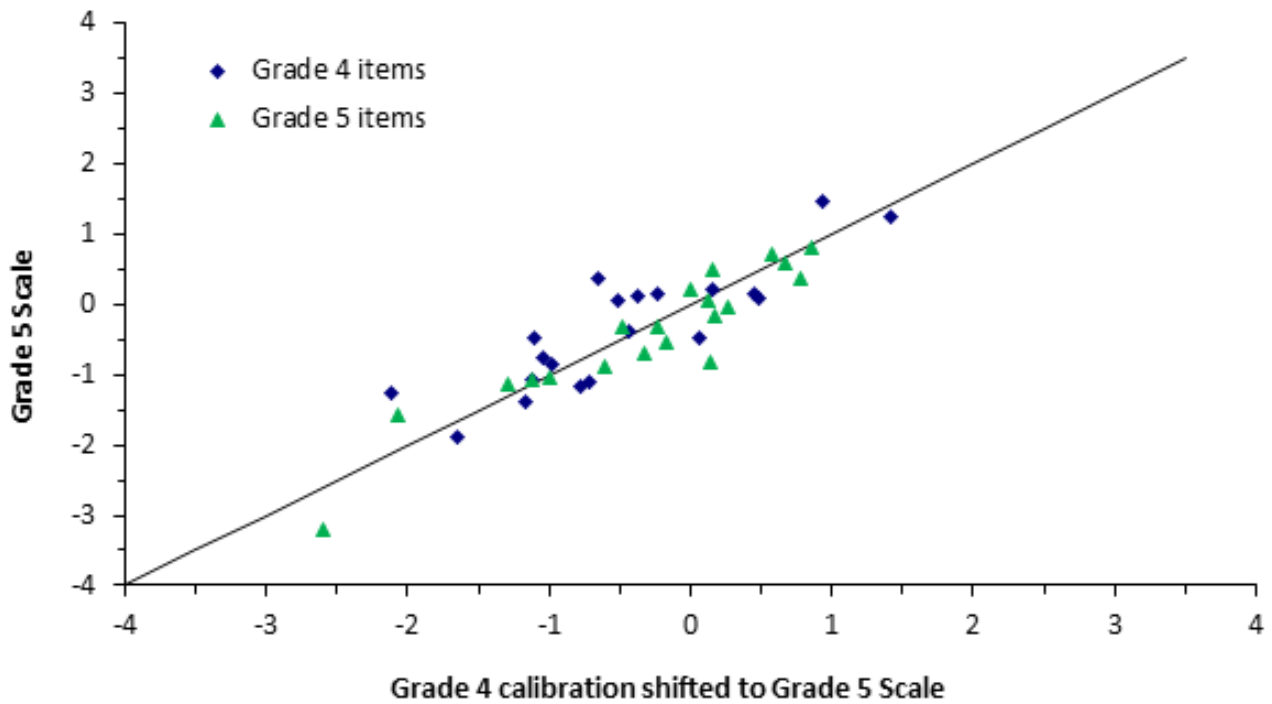


Figure C-3. CDT Mathematics: Grade 5 to Grade 6 Linking – All Links

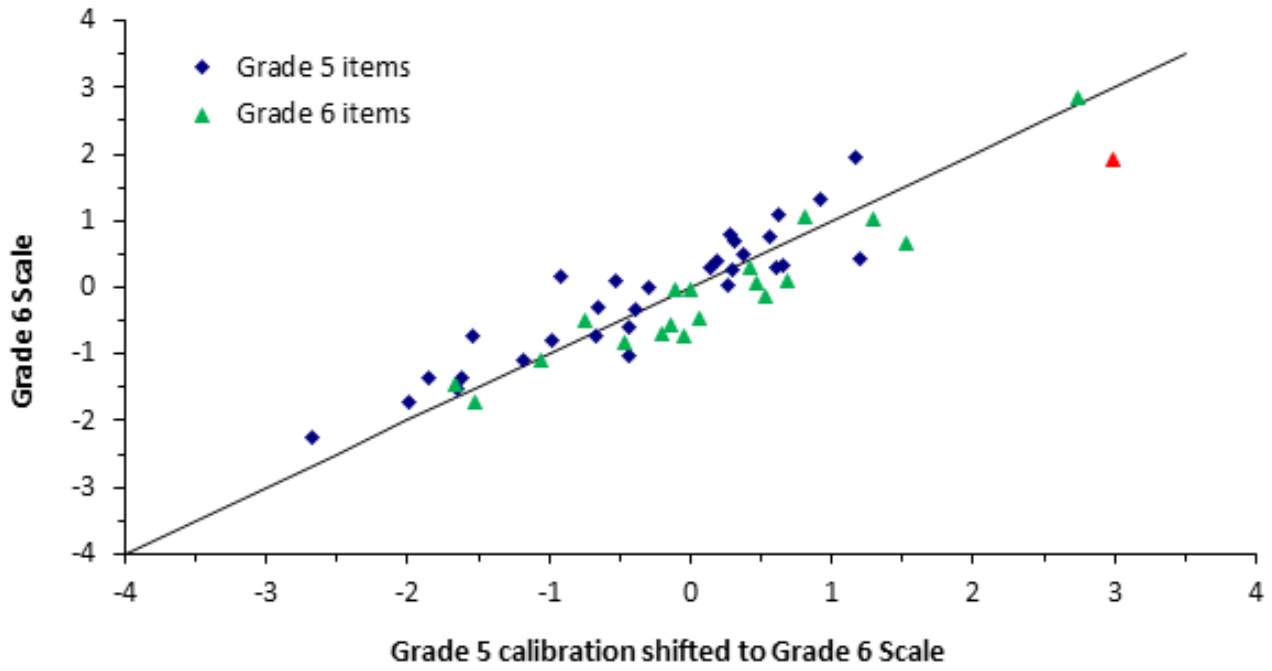


Figure C-4. CDT Mathematics: Grade 6 to Grade 7 Linking – All Links

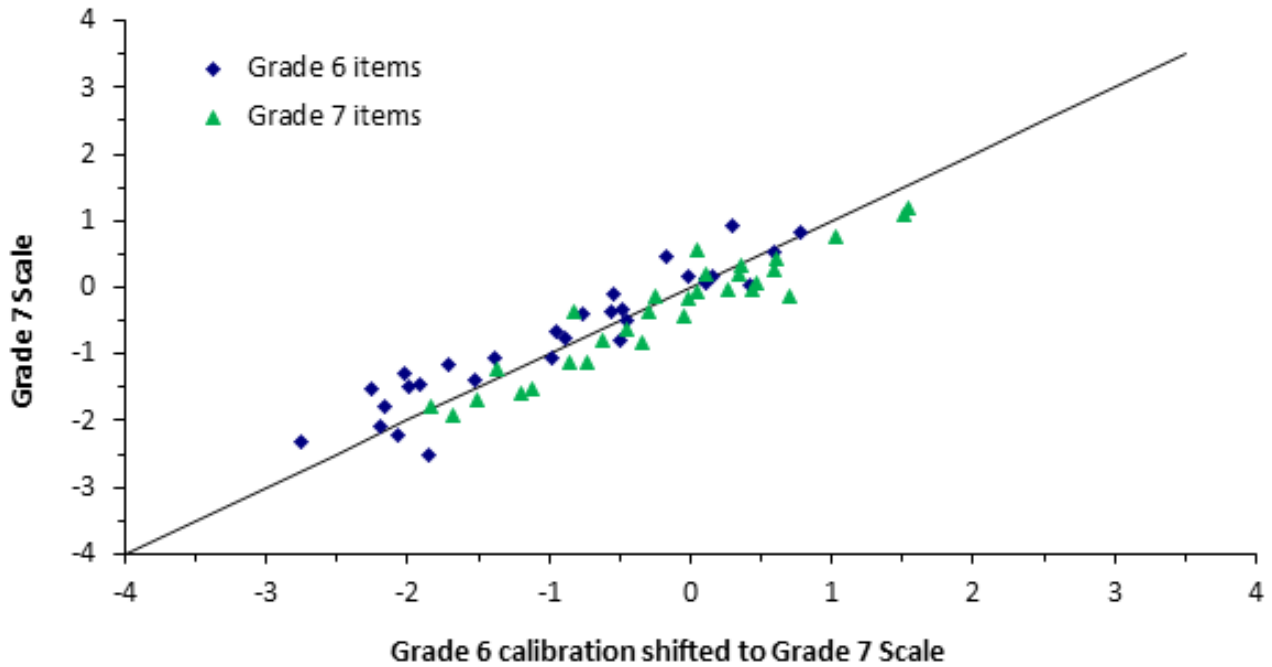


Figure C-5. CDT Mathematics: Grade 8 to Grade 7 Linking – All Links

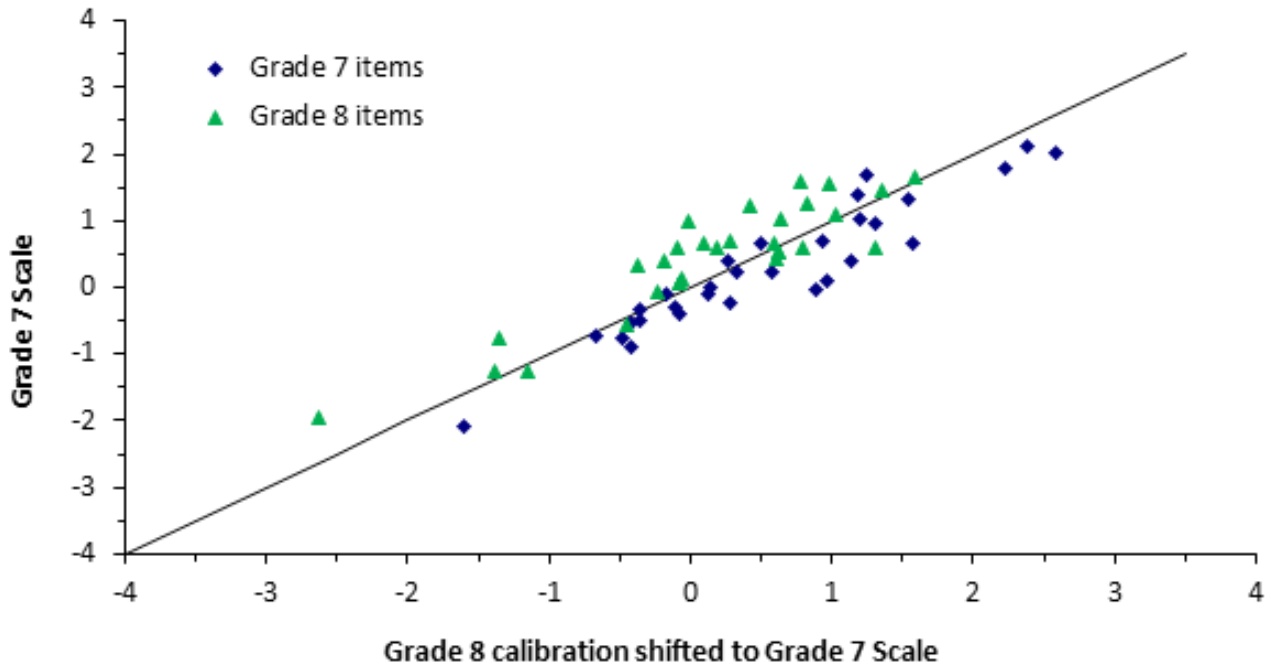


Figure C-6. CDT Mathematics: Algebra I to Grade 8 Linking – All Links

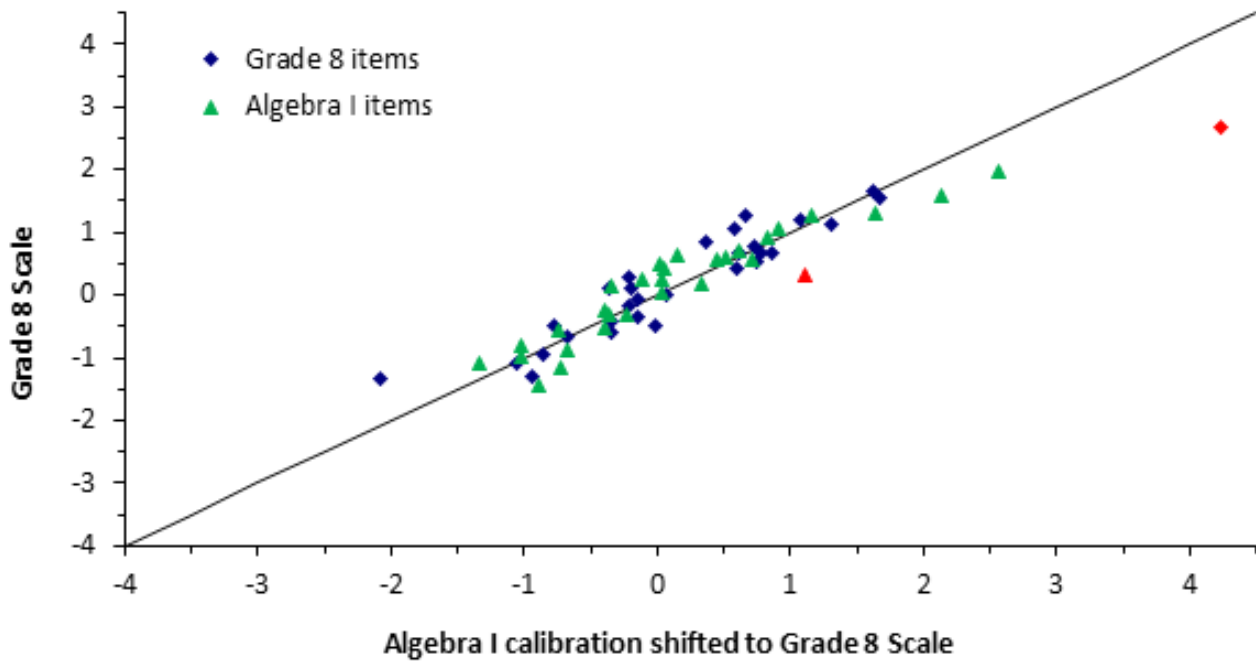


Figure C-7. CDT Mathematics: Geometry to Grade 8 Linking – All Links

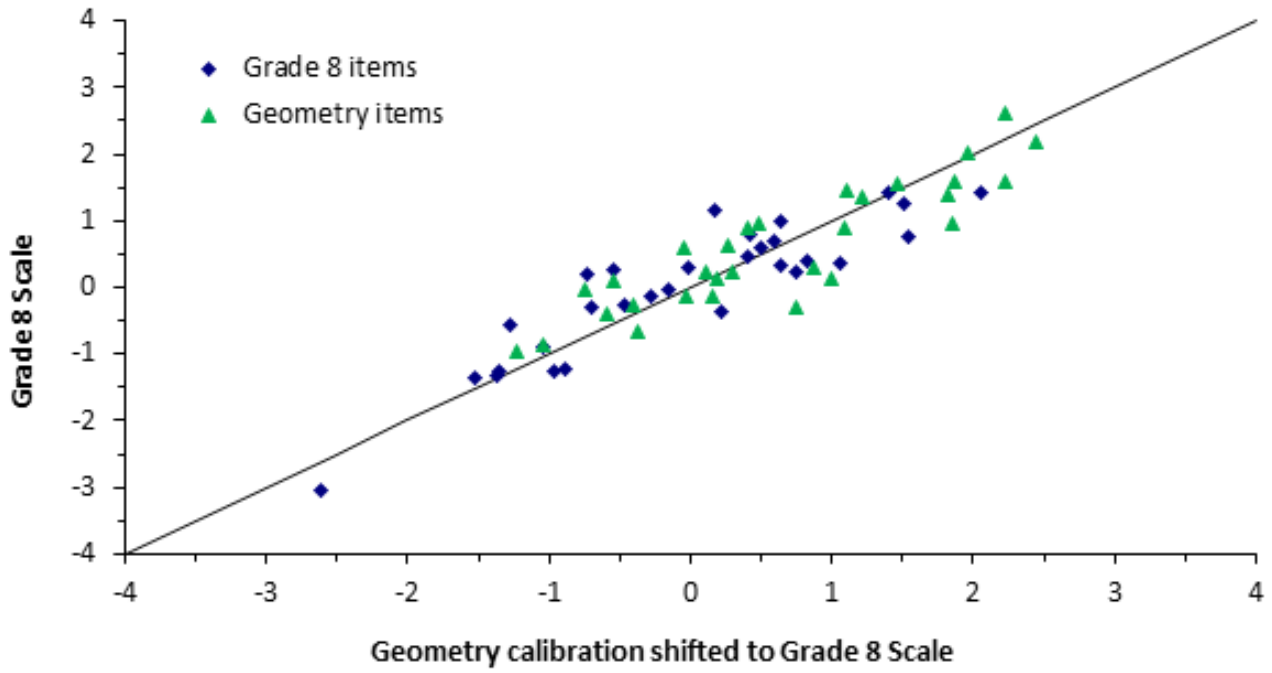
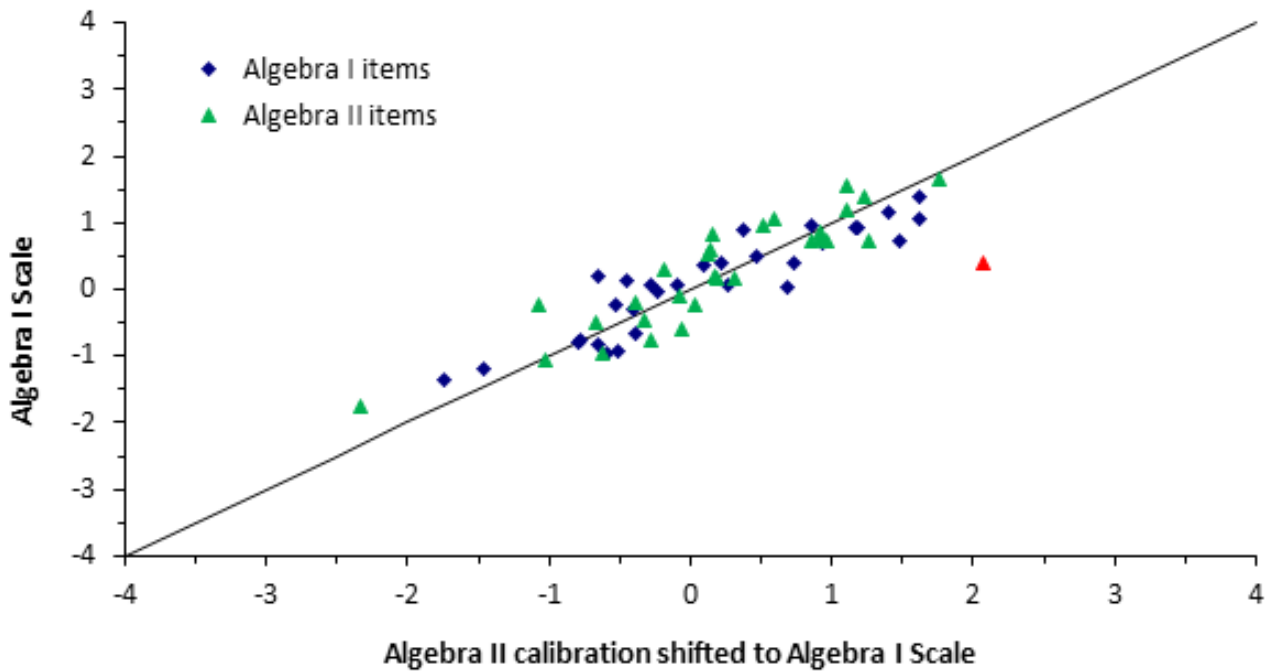


Figure C-8. CDT Mathematics: Algebra II to Algebra I Linking – All Links



READING/LITERATURE

Tables C–18 through C–23 show n-counts, eligible content code, and diagnostic category for each of the vertical linking items.

Each item was administered in two grades so there are two n-counts: one for the lower grade and one for the upper grade. For example, item 613607 is a grade 3 item used to link grades 3 and 4. It was administered 761 times on the lower grade form (grade 3) and 826 times on the upper grade form (grade 4). In some cases, a linking item was also a common item. This results in n-count that is much higher in one of the two grades. For example, item 613400 is a grade 4 item used to link grades 3 and 4. It was also a common grade 4 item (meaning it appeared on all grade 4 forms). The n-counts reflect this: Grade 3 n-count is 754 while grade 4 n-count is 6,574.

The diagnostic categories are³:

- Comprehension
- Vocabulary
- Interpretation/Analysis Literary Elements & Devices
- Interpretation/Analysis Persuasive Techniques
- Interpretation/Analysis Organizational Skills

³ Reading diagnostic categories changed at the start of the 2013-2014 school year due to re-alignment to the Pennsylvania Core Standards. See Chapter Thirteen for a list of the current diagnostic categories.

Table C–18. Reading/Literature Items Used to Link Grade 3 to Grade 4

Item ID	Item Grade	Link	N Count Lower Grade	N Count Upper Grade	Eligible Content	Reading/Literature Diagnostic Category
613605	3	Grade 3 to Grade 4	5272	823	R3A.1.1.2	Vocabulary
613613	3	Grade 3 to Grade 4	5270	822	R3A.2.2.1	Vocabulary
613614	3	Grade 3 to Grade 4	5275	822	R3A.2.1.1	Vocabulary
613592	3	Grade 3 to Grade 4	5262	822	R3A.2.3.1	Comprehension
613593	3	Grade 3 to Grade 4	5263	822	R3A.2.4.1	Comprehension
613460	3	Grade 3 to Grade 4	5251	823	R3A.1.2.2	Vocabulary
613459	3	Grade 3 to Grade 4	5245	822	R3A.1.1.1	Vocabulary
613461	3	Grade 3 to Grade 4	5242	823	R3A.1.4.1	Comprehension
613463	3	Grade 3 to Grade 4	5246	823	R3B.2.1.1	I/A Literary
613462	3	Grade 3 to Grade 4	5241	823	R3A.1.5.1	Comprehension
613607	3	Grade 3 to Grade 4	761	826	R3A.1.2.1	Vocabulary
613446	3	Grade 3 to Grade 4	752	825	R3A.1.1.1	Vocabulary
613444	3	Grade 3 to Grade 4	752	824	R3B.1.1.1	I/A Literary
613445	3	Grade 3 to Grade 4	751	823	R3A.1.5.1	Comprehension
613440	3	Grade 3 to Grade 4	744	823	R3A.1.2.2	Vocabulary
613439	3	Grade 3 to Grade 4	740	823	R3A.1.1.1	Vocabulary
613438	3	Grade 3 to Grade 4	739	822	R3B.1.1.1	I/A Literary
613443	3	Grade 3 to Grade 4	739	823	R3A.1.6.1	Comprehension
613442	3	Grade 3 to Grade 4	735	822	R3A.1.5.1	Comprehension
613441	3	Grade 3 to Grade 4	733	821	R3A.1.3.1	Comprehension
613220	4	Grade 3 to Grade 4	755	6576	R4B.2.1.3	I/A Literary
613219	4	Grade 3 to Grade 4	754	6573	R4B.2.1.2	I/A Literary
613399	4	Grade 3 to Grade 4	757	6569	R4A.2.2.1	Vocabulary
613400	4	Grade 3 to Grade 4	754	6574	R4A.2.3.1	Comprehension
613402	4	Grade 3 to Grade 4	756	6568	R4B.3.2.1	I/A Persuasive
613403	4	Grade 3 to Grade 4	759	6566	R4B.3.2.1	I/A Persuasive
613401	4	Grade 3 to Grade 4	756	6570	R4A.2.6.1	Comprehension
613288	4	Grade 3 to Grade 4	757	6569	R4A.1.1.2	Vocabulary
613291	4	Grade 3 to Grade 4	756	6567	R4A.1.1.1	Vocabulary
613295	4	Grade 3 to Grade 4	757	6563	R4A.2.2.1	Vocabulary
613289	4	Grade 3 to Grade 4	756	804	R4A.1.2.1	Vocabulary
613292	4	Grade 3 to Grade 4	756	805	R4A.1.2.2	Vocabulary
613215	4	Grade 3 to Grade 4	755	805	R4A.1.2.2	Vocabulary
613213	4	Grade 3 to Grade 4	751	803	R4B.2.1.1	I/A Literary
613214	4	Grade 3 to Grade 4	752	804	R4A.1.4.1	Comprehension
613388	4	Grade 3 to Grade 4	749	827	R4A.2.3.1	Comprehension
613389	4	Grade 3 to Grade 4	750	827	R4A.2.4.1	Comprehension

Table C–18 (continued). Reading/Literature Items Used to Link Grade 3 to Grade 4

Item ID	Item Grade	Link	N Count Lower Grade	N Count Upper Grade	Eligible Content	Reading/Literature Diagnostic Category
613391	4	Grade 3 to Grade 4	748	827	R4B.3.3.2	I/A Organizational
613392	4	Grade 3 to Grade 4	746	826	R4B.3.3.3	I/A Organizational
613390	4	Grade 3 to Grade 4	746	826	R4A.2.5.1	Comprehension

Table C–19. Reading/Literature Items Used to Link Grade 4 to Grade 5

Item ID	Item Grade	Link	N Count Lower Grade	N Count Upper Grade	Eligible Content	Reading/Literature Diagnostic Category
613220	4	Grade 4 to Grade 5	6576	955	R4B.2.1.3	I/A Literary
613219	4	Grade 4 to Grade 5	6573	957	R4B.2.1.2	I/A Literary
613399	4	Grade 4 to Grade 5	6569	958	R4A.2.2.1	Vocabulary
613400	4	Grade 4 to Grade 5	6574	958	R4A.2.3.1	Comprehension
613402	4	Grade 4 to Grade 5	6568	957	R4B.3.2.1	I/A Persuasive
613403	4	Grade 4 to Grade 5	6566	957	R4B.3.2.1	I/A Persuasive
613401	4	Grade 4 to Grade 5	6570	958	R4A.2.6.1	Comprehension
613288	4	Grade 4 to Grade 5	6569	958	R4A.1.1.2	Vocabulary
613291	4	Grade 4 to Grade 5	6567	958	R4A.1.1.1	Vocabulary
613295	4	Grade 4 to Grade 5	6563	958	R4A.2.2.1	Vocabulary
613293	4	Grade 4 to Grade 5	830	931	R4A.2.1.2	Vocabulary
613297	4	Grade 4 to Grade 5	829	930	R4A.2.2.2	Vocabulary
613212	4	Grade 4 to Grade 5	829	930	R4A.1.1.2	Vocabulary
613211	4	Grade 4 to Grade 5	830	926	R4A.1.5.1	Comprehension
613210	4	Grade 4 to Grade 5	829	925	R4A.1.6.1	Comprehension
613369	4	Grade 4 to Grade 5	815	920	R4A.2.2.1	Vocabulary
613370	4	Grade 4 to Grade 5	813	920	R4A.2.4.1	Comprehension
613372	4	Grade 4 to Grade 5	813	919	R4B.3.1.1	I/A Persuasive
613371	4	Grade 4 to Grade 5	813	917	R4A.2.5.1	Comprehension
613373	4	Grade 4 to Grade 5	812	915	R4B.3.3.1	I/A Organizational
611554	5	Grade 4 to Grade 5	812	7546	R5A.2.1.1	Vocabulary
613007	5	Grade 4 to Grade 5	813	7530	R5B.2.1.4	I/A Literary
613005	5	Grade 4 to Grade 5	810	7528	R5B.1.1.1	I/A Literary
613006	5	Grade 4 to Grade 5	812	7526	R5A.1.6.2	Comprehension
611354	5	Grade 4 to Grade 5	811	7530	R5A.2.1.2	Vocabulary
611377	5	Grade 4 to Grade 5	808	7524	R5B.3.3.2	I/A Organizational
611376	5	Grade 4 to Grade 5	812	7526	R5B.3.1.1	I/A Persuasive
611390	5	Grade 4 to Grade 5	810	7517	R5B.3.3.3	I/A Organizational
611374	5	Grade 4 to Grade 5	807	7510	R5A.2.5.1	Comprehension
611375	5	Grade 4 to Grade 5	808	7509	R5A.2.6.2	Comprehension
611550	5	Grade 4 to Grade 5	826	931	R5A.2.1.2	Vocabulary
611245	5	Grade 4 to Grade 5	826	924	R5B.2.1.1	I/A Literary
611246	5	Grade 4 to Grade 5	826	924	R5B.2.2.1	I/A Literary
611244	5	Grade 4 to Grade 5	826	921	R5A.1.4.1	Comprehension
611269	5	Grade 4 to Grade 5	826	935	R5A.2.1.1	Vocabulary
611272	5	Grade 4 to Grade 5	824	935	R5B.3.1.1	I/A Persuasive
611270	5	Grade 4 to Grade 5	823	935	R5A.2.3.1	Comprehension

Table C–19 (continued). Reading/Literature Items Used to Link Grade 4 to Grade 5

Item ID	Item Grade	Link	N Count Lower Grade	N Count Upper Grade	Eligible Content	Reading/Literature Diagnostic Category
611274	5	Grade 4 to Grade 5	824	935	R5B.3.3.2	I/A Organizational
611271	5	Grade 4 to Grade 5	824	934	R5A.2.6.1	Comprehension
611273	5	Grade 4 to Grade 5	824	933	R5B.3.3.1	I/A Organizational

Table C–20. Reading/Literature Items Used to Link Grade 5 to Grade 6

Item ID	Item Grade	Link	N Count Lower Grade	N Count Upper Grade	Eligible Content	Reading/Literature Diagnostic Category
611554	5	Grade 5 to Grade 6	7546	716	R5A.2.1.1	Vocabulary
613007	5	Grade 5 to Grade 6	7530	719	R5B.2.1.4	I/A Literary
613005	5	Grade 5 to Grade 6	7528	721	R5B.1.1.1	I/A Literary
613006	5	Grade 5 to Grade 6	7526	720	R5A.1.6.2	Comprehension
611354	5	Grade 5 to Grade 6	7530	719	R5A.2.1.2	Vocabulary
611377	5	Grade 5 to Grade 6	7524	717	R5B.3.3.2	I/A Organizational
611376	5	Grade 5 to Grade 6	7526	719	R5B.3.1.1	I/A Persuasive
611390	5	Grade 5 to Grade 6	7517	718	R5B.3.3.3	I/A Organizational
611374	5	Grade 5 to Grade 6	7510	717	R5A.2.5.1	Comprehension
611375	5	Grade 5 to Grade 6	7509	717	R5A.2.6.2	Comprehension
611247	5	Grade 5 to Grade 6	928	697	R5A.1.1.1	Vocabulary
611251	5	Grade 5 to Grade 6	928	698	R5B.2.1.4	I/A Literary
611250	5	Grade 5 to Grade 6	926	697	R5B.2.1.3	I/A Literary
611249	5	Grade 5 to Grade 6	926	696	R5A.1.3.2	Comprehension
611248	5	Grade 5 to Grade 6	926	694	R5A.1.3.1	Comprehension
611309	5	Grade 5 to Grade 6	925	688	R5B.3.3.3	I/A Organizational
611278	5	Grade 5 to Grade 6	924	687	R5A.2.3.2	Comprehension
611291	5	Grade 5 to Grade 6	921	685	R5B.3.3.1	I/A Organizational
611545	5	Grade 5 to Grade 6	942	682	R5A.1.1.2	Vocabulary
611553	5	Grade 5 to Grade 6	945	680	R5A.2.1.1	Vocabulary
610132	6	Grade 5 to Grade 6	936	7111	R6A.1.2.1	Vocabulary
610135	6	Grade 5 to Grade 6	937	7105	R6B.2.1.2	I/A Literary
610133	6	Grade 5 to Grade 6	935	7086	R6A.1.4.1	Comprehension
610355	6	Grade 5 to Grade 6	935	7075	R6A.1.3.2	Comprehension
610136	6	Grade 5 to Grade 6	935	7066	R6B.2.2.2	I/A Literary
610134	6	Grade 5 to Grade 6	936	7069	R6A.1.6.1	Comprehension
612249	6	Grade 5 to Grade 6	937	7035	R6B.3.3.4	I/A Organizational
612248	6	Grade 5 to Grade 6	936	7026	R6A.2.6.2	Comprehension
607918	6	Grade 5 to Grade 6	937	7150	R6A.2.1.1	Vocabulary
607921	6	Grade 5 to Grade 6	937	7142	R6A.2.1.2	Vocabulary
607927	6	Grade 5 to Grade 6	941	713	R6A.2.2.1	Vocabulary
607917	6	Grade 5 to Grade 6	941	716	R6A.2.1.1	Vocabulary
610141	6	Grade 5 to Grade 6	938	703	R6A.1.1.1	Vocabulary
610144	6	Grade 5 to Grade 6	937	701	R6B.2.1.1	I/A Literary
610305	6	Grade 5 to Grade 6	933	700	R6A.1.3.1	Comprehension
610145	6	Grade 5 to Grade 6	932	695	R6B.2.2.2	I/A Literary
610142	6	Grade 5 to Grade 6	927	695	R6A.1.5.1	Comprehension

Table C–20 (continued). Reading/Literature Items Used to Link Grade 5 to Grade 6

Item ID	Item Grade	Link	N Count Lower Grade	N Count Upper Grade	Eligible Content	Reading/Literature Diagnostic Category
610143	6	Grade 5 to Grade 6	925	694	R6A.1.6.1	Comprehension
610310	6	Grade 5 to Grade 6	917	726	R6B.3.2.2	I/A Persuasive
610309	6	Grade 5 to Grade 6	917	726	R6A.2.6.1	Comprehension

Table C–21. Reading/Literature Items Used to Link Grade 6 to Grade 7

Item ID	Item Grade	Link	N Count Lower Grade	N Count Upper Grade	Eligible Content	Reading/Literature Diagnostic Category
610132	6	Grade 6 to Grade 7	7111	549	R6A.1.2.1	Vocabulary
610135	6	Grade 6 to Grade 7	7105	550	R6B.2.1.2	I/A Literary
610133	6	Grade 6 to Grade 7	7086	551	R6A.1.4.1	Comprehension
610355	6	Grade 6 to Grade 7	7075	551	R6A.1.3.2	Comprehension
610136	6	Grade 6 to Grade 7	7066	551	R6B.2.2.2	I/A Literary
610134	6	Grade 6 to Grade 7	7069	551	R6A.1.6.1	Comprehension
607921	6	Grade 6 to Grade 7	7142	550	R6A.2.1.2	Vocabulary
610327	6	Grade 6 to Grade 7	685	550	R6A.1.2.2	Vocabulary
610328	6	Grade 6 to Grade 7	682	549	R6B.2.1.4	I/A Literary
610329	6	Grade 6 to Grade 7	679	548	R6B.2.2.1	I/A Literary
610065	6	Grade 6 to Grade 7	696	551	R6A.1.1.1	Vocabulary
610071	6	Grade 6 to Grade 7	692	550	R6A.1.3.1	Comprehension
610066	6	Grade 6 to Grade 7	691	550	R6B.2.1.4	I/A Literary
610070	6	Grade 6 to Grade 7	689	551	R6A.1.3.2	Comprehension
610078	6	Grade 6 to Grade 7	687	551	R6B.2.1.3	I/A Literary
609022	6	Grade 6 to Grade 7	1433	551	R6A.1.1.2	Vocabulary
609025	6	Grade 6 to Grade 7	1431	550	R6B.2.1.1	I/A Literary
609026	6	Grade 6 to Grade 7	1431	550	R6B.2.1.4	I/A Literary
609023	6	Grade 6 to Grade 7	1431	549	R6A.1.3.1	Comprehension
609024	6	Grade 6 to Grade 7	1432	548	R6A.1.6.2	Comprehension
609658	7	Grade 6 to Grade 7	722	4978	R7A.1.1.1	Vocabulary
609663	7	Grade 6 to Grade 7	725	4976	R7B.2.2.1	I/A Literary
609661	7	Grade 6 to Grade 7	723	4971	R7A.1.5.1	Comprehension
610324	7	Grade 6 to Grade 7	724	4974	R7A.2.2.1	Vocabulary
610325	7	Grade 6 to Grade 7	723	4968	R7A.2.3.2	Comprehension
610146	7	Grade 6 to Grade 7	722	563	R7A.1.1.1	Vocabulary
610149	7	Grade 6 to Grade 7	723	565	R7B.2.1.1	I/A Literary
610147	7	Grade 6 to Grade 7	722	564	R7A.1.3.1	Comprehension
610338	7	Grade 6 to Grade 7	721	563	R7B.1.1.1	I/A Literary
610148	7	Grade 6 to Grade 7	721	564	R7A.1.6.1	Comprehension
607933	7	Grade 6 to Grade 7	705	545	R7A.1.1.2	Vocabulary
607936	7	Grade 6 to Grade 7	703	545	R7A.1.2.1	Vocabulary
609243	7	Grade 6 to Grade 7	701	544	R7B.2.1.2	I/A Literary
609053	7	Grade 6 to Grade 7	700	544	R7A.1.3.2	Comprehension
609219	7	Grade 6 to Grade 7	700	544	R7A.1.6.2	Comprehension
609037	7	Grade 6 to Grade 7	695	553	R7A.2.2.2	Vocabulary
609038	7	Grade 6 to Grade 7	692	552	R7A.2.4.1	Comprehension

Table C-21 (continued). Reading/Literature Items Used to Link Grade 6 to Grade 7

Item ID	Item Grade	Link	N Count Lower Grade	N Count Upper Grade	Eligible Content	Reading/Literature Diagnostic Category
609039	7	Grade 6 to Grade 7	684	551	R7A.2.6.2	Comprehension
609040	7	Grade 6 to Grade 7	680	553	R7B.3.1.1	I/A Persuasive
609041	7	Grade 6 to Grade 7	678	552	R7B.3.3.1	I/A Organizational

Table C–22. Reading/Literature Items Used to Link Grade 7 to Grade 8

Item ID	Item Grade	Link	N Count Lower Grade	N Count Upper Grade	Eligible Content	Reading/Literature Diagnostic Category
609658	7	Grade 8 to Grade 7	4978	518	R7A.1.1.1	Vocabulary
609663	7	Grade 8 to Grade 7	4976	518	R7B.2.2.1	I/A Literary
609661	7	Grade 8 to Grade 7	4971	517	R7A.1.5.1	Comprehension
610324	7	Grade 8 to Grade 7	4974	516	R7A.2.2.1	Vocabulary
610325	7	Grade 8 to Grade 7	4968	515	R7A.2.3.2	Comprehension
610146	7	Grade 8 to Grade 7	563	491	R7A.1.1.1	Vocabulary
610149	7	Grade 8 to Grade 7	565	491	R7B.2.1.1	I/A Literary
610147	7	Grade 8 to Grade 7	564	490	R7A.1.3.1	Comprehension
610338	7	Grade 8 to Grade 7	563	488	R7B.1.1.1	I/A Literary
610148	7	Grade 8 to Grade 7	564	485	R7A.1.6.1	Comprehension
614855	7	Grade 8 to Grade 7	559	516	R7A.1.1.2	Vocabulary
614859	7	Grade 8 to Grade 7	558	516	R7B.2.2.1	I/A Literary
614858	7	Grade 8 to Grade 7	559	515	R7B.2.1.2	I/A Literary
614856	7	Grade 8 to Grade 7	559	515	R7A.1.3.2	Comprehension
614857	7	Grade 8 to Grade 7	558	514	R7A.1.6.1	Comprehension
609152	7	Grade 8 to Grade 7	550	504	R7B.3.1.1	I/A Persuasive
609072	7	Grade 8 to Grade 7	551	502	R7A.2.5.1	Comprehension
609209	7	Grade 8 to Grade 7	548	500	R7B.1.1.1	I/A Literary
609210	7	Grade 8 to Grade 7	548	496	R7B.2.1.1	I/A Literary
609208	7	Grade 8 to Grade 7	548	495	R7A.1.3.1	Comprehension
609060	8	Grade 8 to Grade 7	550	4645	R8B.3.1.1	I/A Persuasive
609059	8	Grade 8 to Grade 7	550	4647	R8A.2.5.1	Comprehension
608017	8	Grade 8 to Grade 7	550	4637	R8A.1.1.2	Vocabulary
608016	8	Grade 8 to Grade 7	551	4629	R8B.2.1.2	I/A Literary
607999	8	Grade 8 to Grade 7	550	4622	R8A.1.6.2	Comprehension
610087	8	Grade 8 to Grade 7	550	510	R8B.3.3.4	I/A Organizational
610260	8	Grade 8 to Grade 7	550	509	R8B.3.3.2	I/A Organizational
610090	8	Grade 8 to Grade 7	550	511	R8B.3.3.4	I/A Organizational
610089	8	Grade 8 to Grade 7	550	511	R8B.3.3.4	I/A Organizational
610088	8	Grade 8 to Grade 7	550	510	R8B.3.3.4	I/A Organizational
609135	8	Grade 8 to Grade 7	540	531	R8B.3.2.1	I/A Persuasive
609131	8	Grade 8 to Grade 7	540	532	R8B.3.2.1	I/A Persuasive
609120	8	Grade 8 to Grade 7	539	532	R8B.3.3.2	I/A Organizational
609143	8	Grade 8 to Grade 7	539	531	R8A.2.3.2	Comprehension
609140	8	Grade 8 to Grade 7	539	532	R8A.2.6.2	Comprehension
609264	8	Grade 8 to Grade 7	539	513	R8A.1.1.2	Vocabulary
609267	8	Grade 8 to Grade 7	539	513	R8B.2.1.2	I/A Literary

Table C-22 (continued). Reading/Literature Items Used to Link Grade 7 to Grade 8

Item ID	Item Grade	Link	N Count Lower Grade	N Count Upper Grade	Eligible Content	Reading/Literature Diagnostic Category
609265	8	Grade 8 to Grade 7	539	514	R8A.1.3.2	Comprehension
609269	8	Grade 8 to Grade 7	539	514	R8B.2.2.1	I/A Literary
609266	8	Grade 8 to Grade 7	539	515	R8A.1.6.1	Comprehension

Table C–23. Reading/Literature Items Used to Link Literature to Grade 8

Item ID	Item Grade	Link	N Count Lower Grade	N Count Upper Grade	Eligible Content	Reading/Literature Diagnostic Category
608017	8	Literature to Grade 8	4637	255	R8A.1.1.2	Vocabulary
608016	8	Literature to Grade 8	4629	253	R8B.2.1.2	I/A Literary
607999	8	Literature to Grade 8	4622	252	R8A.1.6.2	Comprehension
610087	8	Literature to Grade 8	510	256	R8B.3.3.4	I/A Organizational
610260	8	Literature to Grade 8	509	256	R8B.3.3.2	I/A Organizational
610090	8	Literature to Grade 8	511	255	R8B.3.3.4	I/A Organizational
610089	8	Literature to Grade 8	511	255	R8B.3.3.4	I/A Organizational
610088	8	Literature to Grade 8	510	255	R8B.3.3.4	I/A Organizational
607957	8	Literature to Grade 8	502	254	R8A.1.1.2	Vocabulary
607963	8	Literature to Grade 8	501	254	R8A.1.1.1	Vocabulary
607958	8	Literature to Grade 8	516	258	R8A.1.2.1	Vocabulary
607962	8	Literature to Grade 8	516	258	R8A.1.1.1	Vocabulary
612324	8	Literature to Grade 8	516	257	R8B.3.3.4	I/A Organizational
612280	8	Literature to Grade 8	517	257	R8B.3.3.4	I/A Organizational
612279	8	Literature to Grade 8	517	257	R8A.2.6.1	Comprehension
609244	8	Literature to Grade 8	523	257	R8A.1.1.1	Vocabulary
609254	8	Literature to Grade 8	523	256	R8B.2.1.1	I/A Literary
609279	8	Literature to Grade 8	522	256	R8B.1.1.1	I/A Literary
609245	8	Literature to Grade 8	523	256	R8A.1.3.1	Comprehension
609252	8	Literature to Grade 8	523	256	R8A.1.6.1	Comprehension
608136	Lit	Literature to Grade 8	515	258	L.F.1.3.1	Comprehension
608138	Lit	Literature to Grade 8	515	258	L.F.2.3.4	I/A Literary
608137	Lit	Literature to Grade 8	512	257	L.F.2.2.1	Comprehension
614029	Lit	Literature to Grade 8	515	271	L.F.1.2.4	Vocabulary
614032	Lit	Literature to Grade 8	515	271	L.F.2.3.1	I/A Literary
614030	Lit	Literature to Grade 8	515	271	L.F.2.1.1	Comprehension
614031	Lit	Literature to Grade 8	515	271	L.F.2.2.2	Comprehension
614033	Lit	Literature to Grade 8	515	271	L.F.2.3.2	I/A Literary
614034	Lit	Literature to Grade 8	510	271	L.F.2.5.1	I/A Literary
608118	Lit	Literature to Grade 8	514	265	L.F.1.2.4	Vocabulary
610352	Lit	Literature to Grade 8	516	261	L.F.2.5.2	I/A Literary
610092	Lit	Literature to Grade 8	511	261	L.F.2.2.1	Comprehension
610094	Lit	Literature to Grade 8	509	260	L.F.2.3.6	I/A Literary
610095	Lit	Literature to Grade 8	510	259	L.F.2.4.1	I/A Literary
610093	Lit	Literature to Grade 8	509	260	L.F.2.3.4	I/A Literary
610091	Lit	Literature to Grade 8	507	260	L.F.1.1.1	Comprehension
612547	Lit	Literature to Grade 8	504	258	L.F.1.2.2	Vocabulary

Table C–23 (continued). Reading/Literature Items Used to Link Literature to Grade 8

Item ID	Item Grade	Link	N Count Lower Grade	N Count Upper Grade	Eligible Content	Reading/Literature Diagnostic Category
612498	Lit	Literature to Grade 8	502	258	L.F.2.2.2	Comprehension
612548	Lit	Literature to Grade 8	499	258	L.F.1.3.2	Comprehension
612496	Lit	Literature to Grade 8	497	258	L.F.1.1.1	Comprehension

Tables C–24 through C–29 summarize the number of linking items by diagnostic category.

Vertical linking items are not distributed evenly across the diagnostic categories. This is due to the fact that Reading and Literature items are passage based. The three passage types (literary, persuasive, and organizational) may each have associated comprehension and vocabulary items, as well as interpretation/analysis items.

Table C–24. Number of Items Linking Grade 3 to Grade 4 by Diagnostic Category

Diagnostic Category	Grade 3 Items	Grade 4 Items	Total
Comprehension	8	6	14
Vocabulary	9	7	16
I/A Literary	3	3	6
I/A Persuasive	0	2	2
I/A Organizational	0	2	2
TOTAL	20	20	40

Table C–25. Number of Items Linking Grade 4 to Grade 5 by Diagnostic Category

Diagnostic Category	Grade 4 Items	Grade 5 Items	Total
Comprehension	6	6	12
Vocabulary	8	4	12
I/A Literary	2	4	6
I/A Persuasive	3	2	5
I/A Organizational	1	4	5
TOTAL	20	20	40

Table C–26. Number of Items Linking Grade 5 to Grade 6 by Diagnostic Category

Diagnostic Category	Grade 5 Items	Grade 6 Items	Total
Comprehension	6	8	14
Vocabulary	5	6	11
I/A Literary	4	4	8
I/A Persuasive	1	1	2
I/A Organizational	4	1	5
TOTAL	20	20	40

Table C–27. Number of Items Linking Grade 6 to Grade 7 by Diagnostic Category

Diagnostic Category	Grade 6 Items	Grade 7 Items	Total
Comprehension	7	8	15
Vocabulary	5	6	11
I/A Literary	8	4	12
I/A Persuasive	0	1	1
I/A Organizational	0	1	1
TOTAL	20	20	40

Table C–28. Number of Items Linking Grade 8 to Grade 7 by Diagnostic Category

Diagnostic Category	Grade 7 Items	Grade 8 Items	Total
Comprehension	8	6	14
Vocabulary	4	2	6
I/A Literary	7	3	10
I/A Persuasive	1	3	4
I/A Organizational	0	6	6
TOTAL	20	20	40

Table C–29. Number of Items Linking Literature to Grade 8 by Diagnostic Category

Diagnostic Category	Grade 8 Items	Literature Items	Total
Comprehension	4	9	13
Vocabulary	6	3	9
I/A Literary	3	8	11
I/A Persuasive	0	0	0
I/A Organizational	7	0	7
TOTAL	20	20	40

Table C–30. Reading/Literature Example of Vertical Linking Workbook

Item ID	Item Grade	Grade 4 Calibration			Grade 5 Calibration			Discrepancy	Grade 4 on		Flag
		Difficulty	Fit	Displace	Difficulty	Fit	Displace		Grade 5 Scale	Robust Z	
613220	4	0.700	1.090	0.000	0.258	1.040	-0.003	-0.442	0.290	-0.271	
613219	4	-0.063	0.980	0.000	-0.495	0.960	-0.003	-0.432	-0.473	-0.235	
613399	4	0.557	1.040	0.000	0.056	0.980	-0.003	-0.501	0.147	-0.486	
613400	4	0.589	1.020	0.000	0.131	1.000	-0.003	-0.458	0.179	-0.329	
613402	4	0.316	1.070	0.000	0.014	0.930	-0.003	-0.302	-0.094	0.238	
613403	4	0.295	0.970	0.000	-0.446	0.890	-0.003	-0.741	-0.115	-1.360	
613401	4	-0.657	0.810	0.000	-1.307	0.810	-0.003	-0.650	-1.067	-1.028	
613288	4	-0.608	0.960	0.000	-1.044	0.950	-0.003	-0.436	-1.018	-0.249	
613291	4	0.927	1.200	0.000	0.628	1.170	-0.003	-0.299	0.517	0.249	
613295	4	-1.117	0.880	0.000	-1.712	0.900	-0.003	-0.595	-1.527	-0.828	
613293	4	0.173	0.930	0.002	-0.113	0.880	0.000	-0.286	-0.237	0.297	
613297	4	0.807	1.070	0.002	0.424	0.990	0.000	-0.383	0.397	-0.056	
613212	4	1.664	1.210	0.003	1.491	1.220	0.000	-0.173	1.254	0.708	
613211	4	0.245	0.930	0.002	0.082	0.890	0.000	-0.163	-0.165	0.744	
613210	4	0.203	1.000	0.002	-0.273	0.910	0.000	-0.476	-0.207	-0.395	
613369	4	-0.556	0.900	0.004	-0.791	0.920	0.000	-0.235	-0.966	0.482	
613370	4	0.433	0.930	0.004	0.151	0.950	0.000	-0.282	0.023	0.311	
613372	4	-0.305	0.860	0.004	-0.698	0.870	0.000	-0.393	-0.715	-0.093	
613371	4	-0.513	0.910	0.004	-0.670	0.960	0.000	-0.157	-0.923	0.766	
613373	4	1.012	1.060	0.004	1.002	1.040	0.000	-0.010	0.602	1.301	
611554	5	1.180	1.170	0.003	1.126	1.050	0.000	-0.054	0.770	1.141	
613007	5	-0.124	0.900	0.003	-0.476	0.960	-0.001	-0.352	-0.534	0.056	
613005	5	2.069	1.250	0.003	2.138	1.220	0.000	0.069	1.659	1.589	
613006	5	2.275	1.240	0.003	2.367	1.120	0.000	0.092	1.865	1.673	
611354	5	0.669	1.020	0.003	0.576	1.020	-0.001	-0.093	0.259	0.999	
611377	5	0.336	1.060	0.003	0.559	1.010	-0.001	0.223	-0.074	2.149	high robust Z
611376	5	-0.804	0.840	0.003	-0.946	0.850	-0.001	-0.142	-1.214	0.821	
611390	5	1.351	1.110	0.003	1.443	1.040	0.000	0.092	0.941	1.673	
611374	5	0.109	0.930	0.003	-0.065	0.920	-0.001	-0.174	-0.301	0.704	
611375	5	0.581	1.160	0.003	0.605	1.120	-0.001	0.024	0.171	1.425	
611550	5	0.355	1.000	0.001	-0.586	0.900	0.000	-0.941	-0.055	-2.088	high robust Z
611245	5	1.298	1.070	0.001	0.635	1.030	0.000	-0.663	0.888	-1.076	
611246	5	-0.051	0.860	0.001	-0.532	0.850	0.000	-0.481	-0.461	-0.413	
611244	5	-0.152	0.910	0.001	-0.226	0.940	0.000	-0.074	-0.562	1.068	
611269	5	-0.287	0.900	0.001	-1.341	0.960	-0.006	-1.054	-0.697	-2.499	high robust Z
611272	5	-0.860	0.840	0.001	-2.081	0.930	-0.006	-1.221	-1.270	-3.107	high robust Z
611270	5	-0.274	0.900	0.001	-1.286	0.960	-0.006	-1.012	-0.684	-2.346	high robust Z
611274	5	-0.784	0.760	0.001	-2.720	0.870	-0.006	-1.936	-1.194	-5.709	high robust Z
611271	5	0.972	0.910	0.001	0.157	0.900	-0.005	-0.815	0.562	-1.629	
611273	5	2.533	1.250	0.001	2.056	1.040	-0.004	-0.477	2.123	-0.399	
	Mean	0.362			-0.048			-0.410	-0.048	-0.155	
	SD	0.868			1.107			0.415	0.868	1.511	
	SD Ratio	0.784									
	Correlation	0.940									
	Add. Constant	-0.410									
	Median							-0.368			
	Q							0.371			

Figures C-9 through C-14 are the adjacent grade linking plots. Items removed from final linking procedure are colored red.

Figure C-9. CDT Reading/Literature: Grade 3 to Grade 4 Linking – All Links

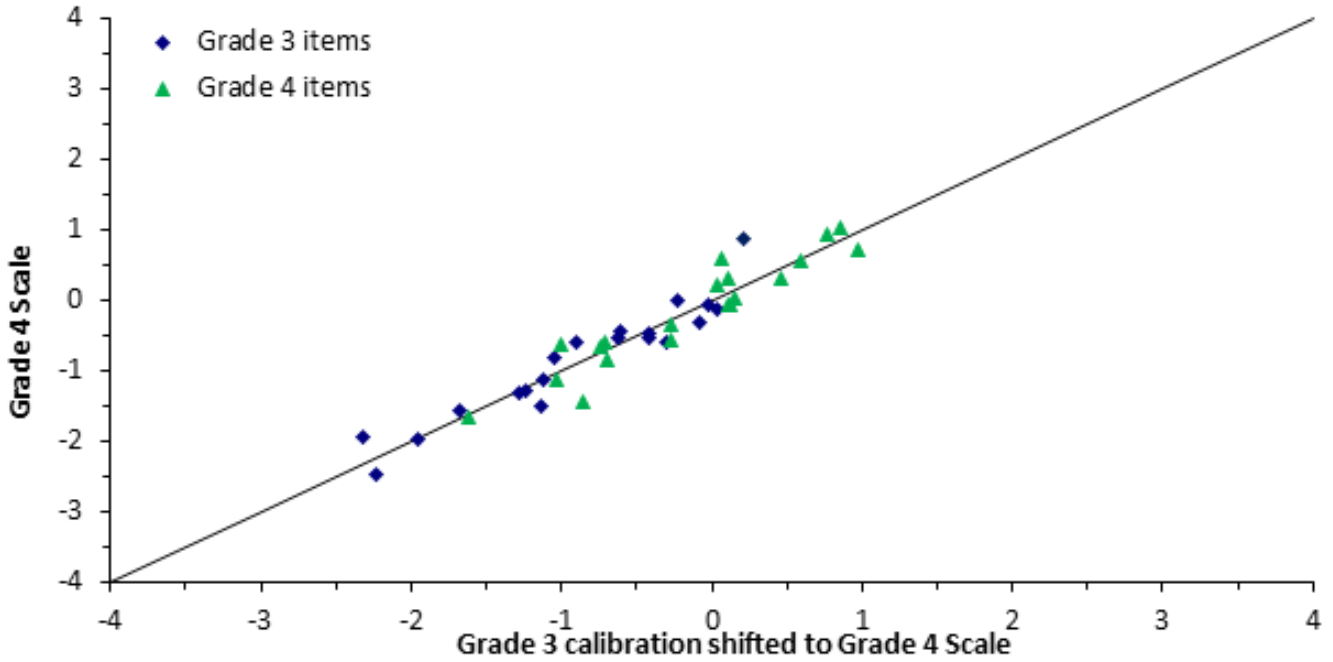


Figure C-10. CDT Reading/Literature: Grade 4 to Grade 5 Linking – All Links

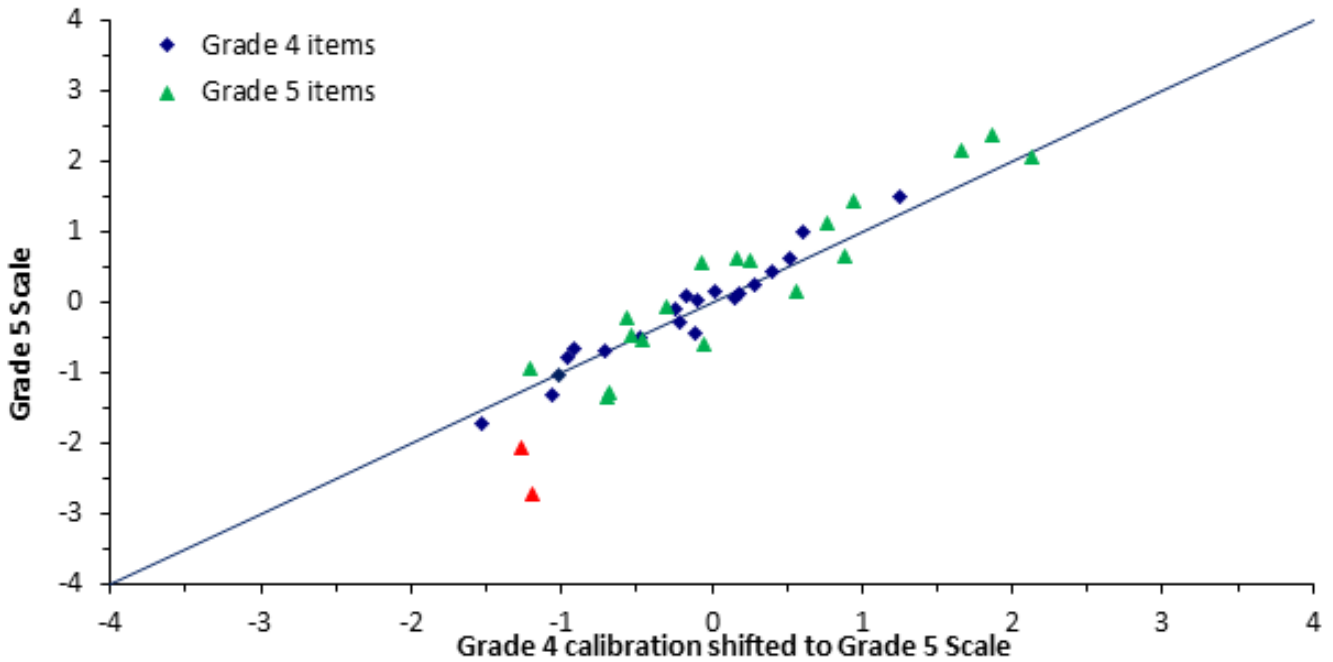


Figure C-11. CDT Reading/Literature: Grade 5 to Grade 6 Linking – All Links

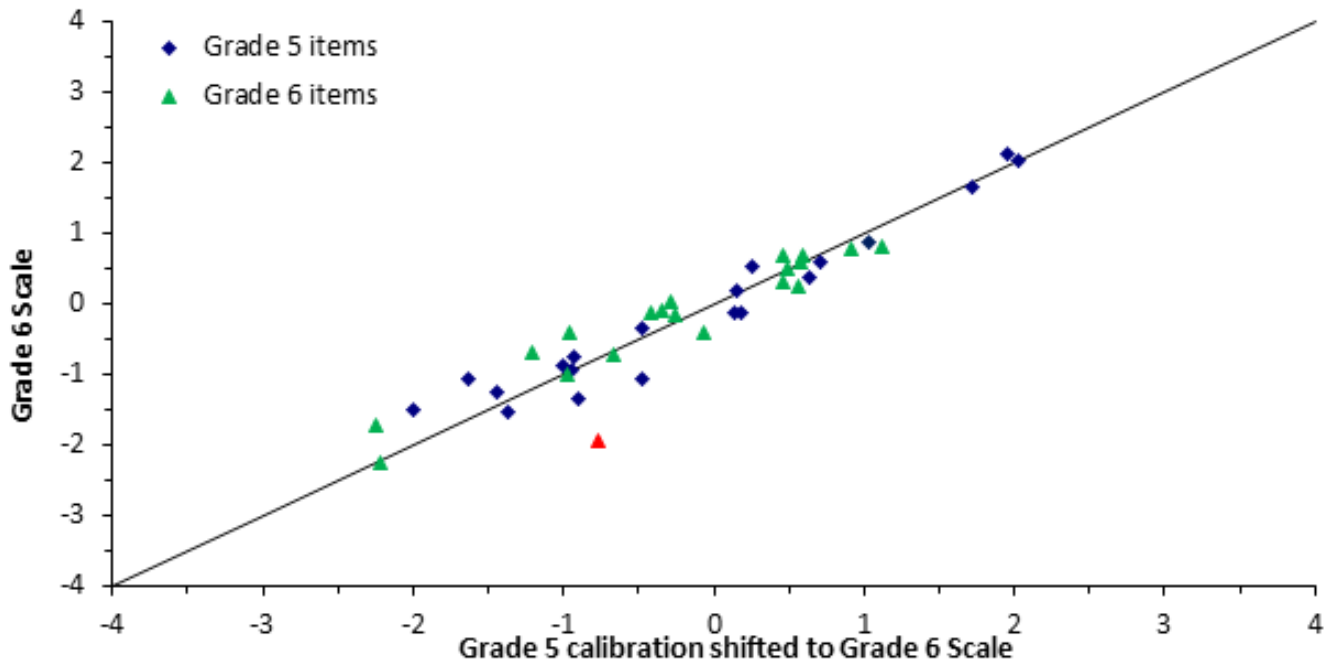


Figure C-12. CDT Reading/Literature: Grade 6 to Grade 7 Linking – All Links

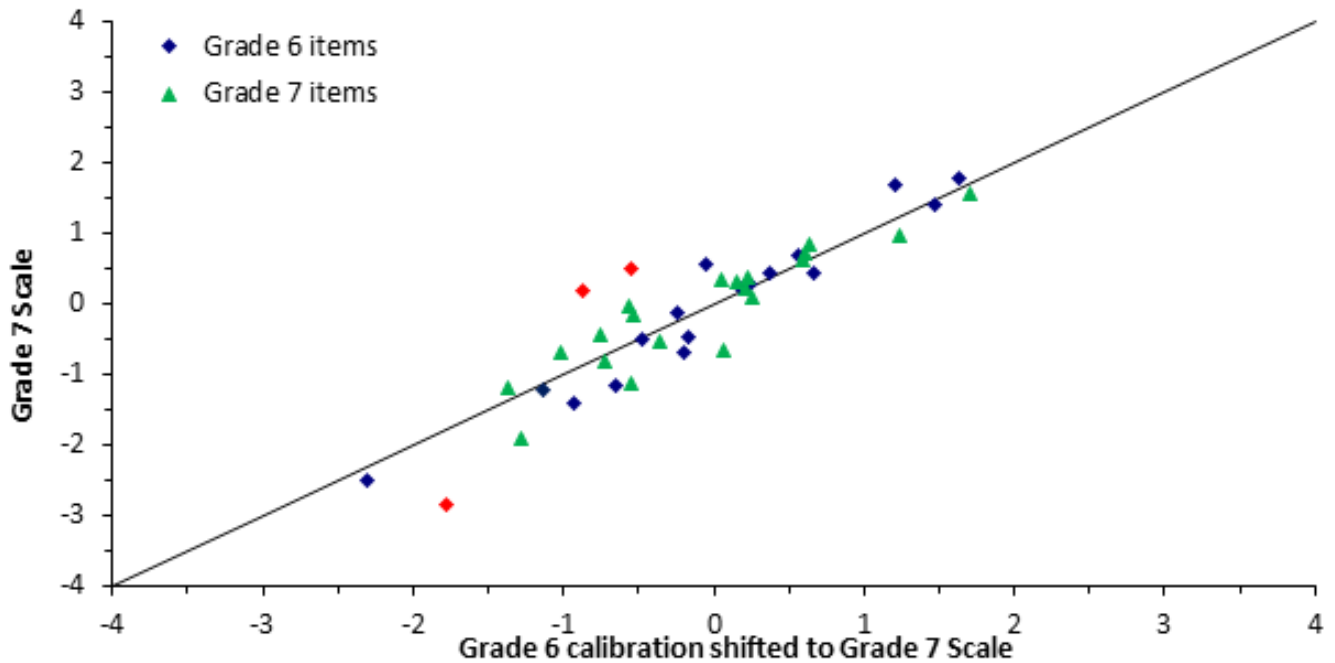


Figure C-13. CDT Reading/Literature: Grade 8 to Grade 7 Linking – All Links

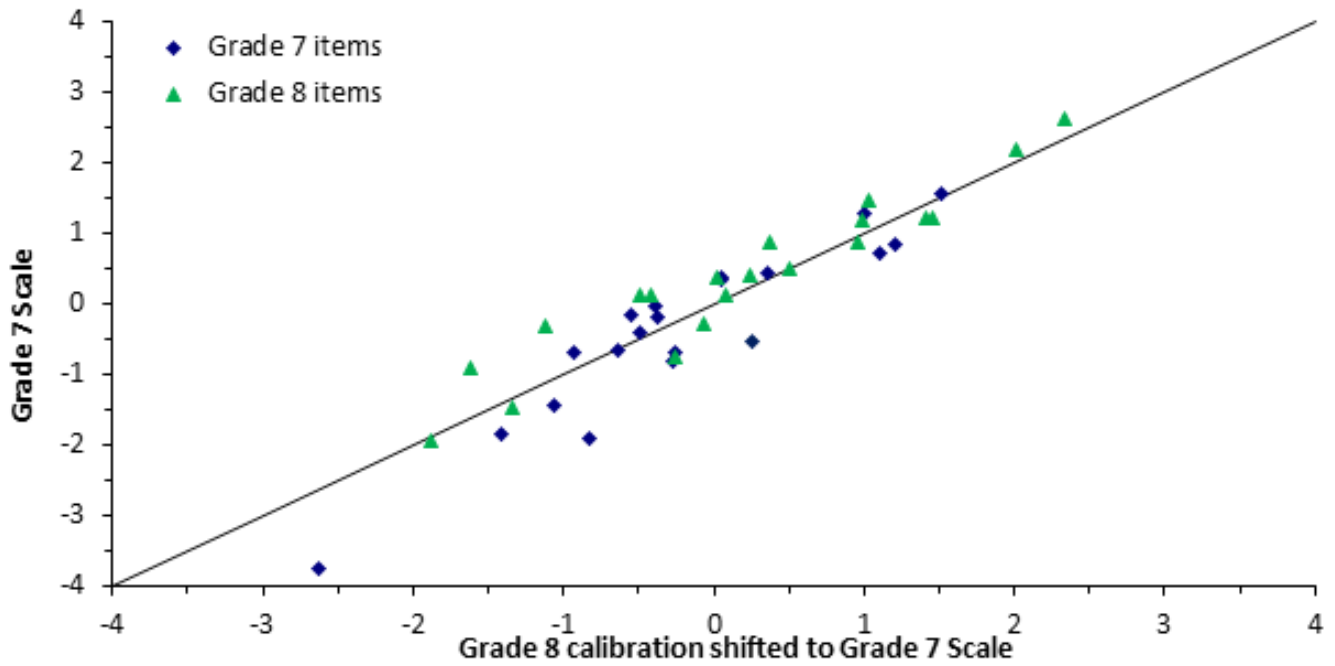
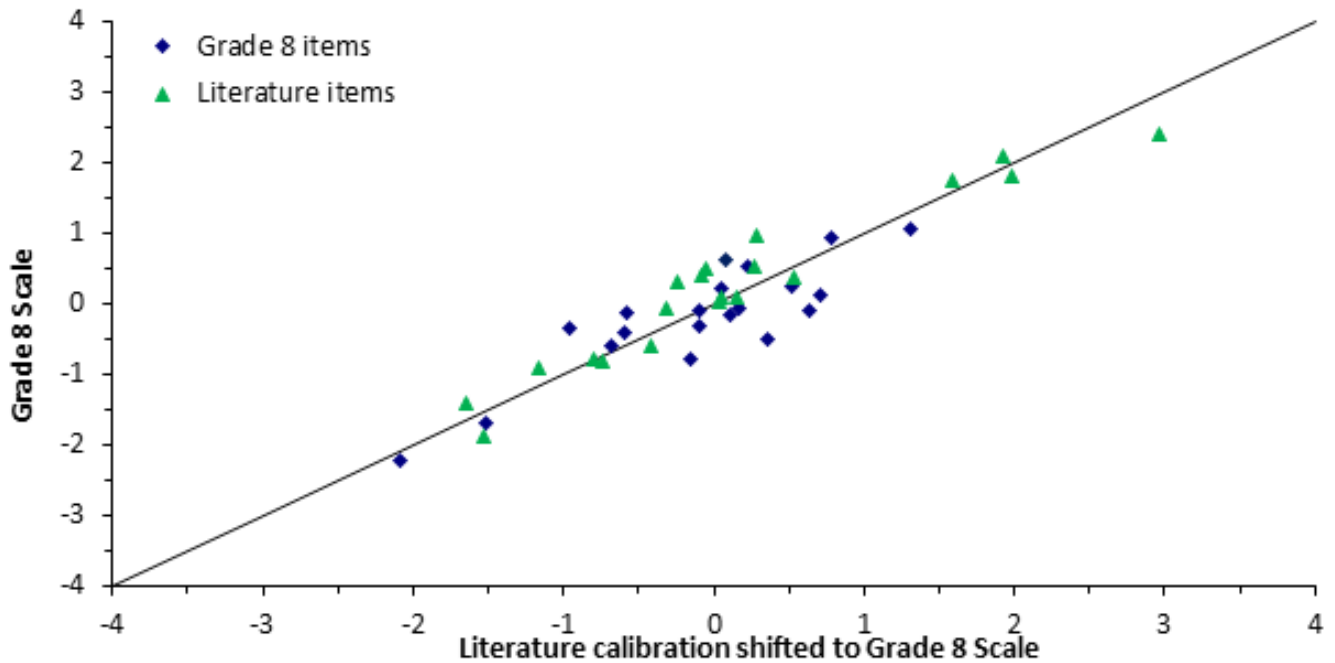


Figure C-14. CDT Reading/Literature: Literature to Grade 8 Linking – All Links



SCIENCE

Tables C–31 through C–37 show n-counts, eligible content code, and diagnostic category for each of the vertical linking items.

Each item was administered in two grades so there are two n-counts: one for the lower grade and one for the upper grade. For example, item 615315 is a grade 3 item used to link grades 3 and 4. It was administered 789 times on the lower grade form (grade 3) and 530 times on the upper grade form (grade 4). In some cases, a linking item was also a common item. This results in n-count that is much higher in one of the two grades. For example, item 617401 is a Biology item used to link Biology and grade 8. It was also a common Biology item (meaning it appeared on all Biology forms). The n-counts reflect this: Grade 8 n-count is 256 while Biology n-count is 4,874.

Diagnostic categories for Biology and Chemistry are different than diagnostic categories for grades 3 through 8 and 11 Science. Items may fall into both a Science diagnostic category and a Biology or Chemistry diagnostic category. This is shown in Tables C–36 and C–37. For example, item 615777 is in the Science diagnostic category “Biological Sciences” and the Biology diagnostic category “Basic Biological Principles”.

The Science diagnostic categories are:

- The Nature of Science
- Biological Science
- Physical Sciences
- Earth and Space Sciences

The Biology diagnostic categories are:

- Basic Biological Principles/Chemical Basis for Life
- Bioenergetics/Homeostasis and Transport
- Cell Growth and Reproduction/Genetics
- Theory of Evolution/Ecology

The Chemistry diagnostic categories are:

- Properties and Classification of Matter
- Atomic Structure and the Periodic Table
- The Mole and Chemical Bonding
- Chemical Relationships and Reactions

Table C–31. Science Items Used to Link Grade 3 to Grade 4

Item ID	Item Grade	Link	N Count Lower Grade	N Count Upper Grade	Eligible Content	Science Diagnostic Category
615315	3	Grade 3 to Grade 4	789	530	S3.A.2.1.3	Nature of Science
615379	3	Grade 3 to Grade 4	790	530	S3.D.1.2.1	Earth and Space Sci.
615333	3	Grade 3 to Grade 4	770	530	S3.B.2.1.1	Biological Sci.
615395	3	Grade 3 to Grade 4	797	530	S3.D.1.3.3	Earth and Space Sci.
615363	3	Grade 3 to Grade 4	1559	530	S3.C.1.1.4	Physical Sci.
615368	3	Grade 3 to Grade 4	773	530	S3.C.2.1.2	Physical Sci.
615314	3	Grade 3 to Grade 4	796	530	S3.A.2.1.2	Nature of Science
615331	3	Grade 3 to Grade 4	782	529	S3.B.1.1.4	Biological Sci.
615324	3	Grade 3 to Grade 4	786	529	S3.A.2.1.3	Nature of Science
615347	3	Grade 3 to Grade 4	796	528	S3.B.3.1.2	Biological Sci.
615385	3	Grade 3 to Grade 4	771	525	S3.D.1.2.1	Earth and Space Sci.
615319	3	Grade 3 to Grade 4	790	524	S3.A.3.1.1	Nature of Science
615339	3	Grade 3 to Grade 4	785	524	S3.B.2.2.1	Biological Sci.
617274	3	Grade 3 to Grade 4	796	525	S3.A.1.1.1	Nature of Science
615400	3	Grade 3 to Grade 4	771	524	S3.D.3.1.1	Earth and Space Sci.
615322	3	Grade 3 to Grade 4	1572	523	S3.A.3.2.1	Nature of Science
615325	3	Grade 3 to Grade 4	773	523	S3.B.1.1.1	Biological Sci.
615376	3	Grade 3 to Grade 4	785	521	S3.D.1.1.1	Earth and Space Sci.
615327	3	Grade 3 to Grade 4	787	521	S3.B.1.1.2	Biological Sci.
615334	3	Grade 3 to Grade 4	794	521	S3.B.2.1.2	Biological Sci.
617229	4	Grade 3 to Grade 4	792	538	S4.C.1.1.2	Physical Sci.
617061	4	Grade 3 to Grade 4	793	1086	S4.A.2.1.4	Nature of Science
617244	4	Grade 3 to Grade 4	789	558	S4.D.1.1.1	Earth and Space Sci.
617095	4	Grade 3 to Grade 4	792	1097	S4.B.2.1.2	Biological Sci.
615621	4	Grade 3 to Grade 4	793	1065	S4.A.1.1.1	Nature of Science
617239	4	Grade 3 to Grade 4	793	1073	S4.C.3.1.1	Physical Sci.
617099	4	Grade 3 to Grade 4	793	539	S4.B.2.2.1	Biological Sci.
617249	4	Grade 3 to Grade 4	792	539	S4.D.1.1.3	Earth and Space Sci.
617084	4	Grade 3 to Grade 4	790	536	S4.B.1.1.1	Biological Sci.
615625	4	Grade 3 to Grade 4	791	539	S4.A.1.3.1	Nature of Science
617233	4	Grade 3 to Grade 4	780	535	S4.C.2.1.2	Physical Sci.
615632	4	Grade 3 to Grade 4	782	534	S4.A.1.3.5	Nature of Science
617245	4	Grade 3 to Grade 4	780	536	S4.D.1.1.1	Earth and Space Sci.
617096	4	Grade 3 to Grade 4	780	1092	S4.B.2.1.2	Biological Sci.
615627	4	Grade 3 to Grade 4	781	528	S4.A.1.3.2	Nature of Science
617255	4	Grade 3 to Grade 4	779	538	S4.D.1.2.3	Earth and Space Sci.
617101	4	Grade 3 to Grade 4	778	540	S4.B.3.1.1	Biological Sci.

Table C–31 (continued). Science Items Used to Link Grade 3 to Grade 4

Item ID	Item Grade	Link	N Count Lower Grade	N Count Upper Grade	Eligible Content	Science Diagnostic Category
617253	4	Grade 3 to Grade 4	779	559	S4.D.1.2.2	Earth and Space Sci.
617071	4	Grade 3 to Grade 4	779	531	S4.A.3.1.4	Nature of Science
617091	4	Grade 3 to Grade 4	779	529	S4.B.1.1.5	Biological Sci.

Table C–32. Science Items Used to Link Grade 4 to Grade 5

Item ID	Item Grade	Link	N Count Lower Grade	N Count Upper Grade	Eligible Content	Science Diagnostic Category
617231	4	Grade 4 to Grade 5	1099	608	S4.C.2.1.1	Physical Sci.
617060	4	Grade 4 to Grade 5	527	606	S4.A.2.1.3	Nature of Science
617092	4	Grade 4 to Grade 5	524	607	S4.B.1.1.5	Biological Sci.
617074	4	Grade 4 to Grade 5	528	608	S4.A.3.2.2	Nature of Science
617246	4	Grade 4 to Grade 5	537	606	S4.D.1.1.2	Earth and Space Sci.
617237	4	Grade 4 to Grade 5	538	607	S4.C.2.1.4	Physical Sci.
617068	4	Grade 4 to Grade 5	536	607	S4.A.3.1.3	Nature of Science
617102	4	Grade 4 to Grade 5	534	604	S4.B.3.1.2	Biological Sci.
617075	4	Grade 4 to Grade 5	557	606	S4.A.3.2.2	Nature of Science
617259	4	Grade 4 to Grade 5	523	604	S4.D.1.3.3	Earth and Space Sci.
617072	4	Grade 4 to Grade 5	539	599	S4.A.3.2.1	Nature of Science
617240	4	Grade 4 to Grade 5	540	600	S4.C.3.1.2	Physical Sci.
617112	4	Grade 4 to Grade 5	533	600	S4.B.3.3.3	Biological Sci.
617080	4	Grade 4 to Grade 5	533	601	S4.A.3.3.1	Nature of Science
617257	4	Grade 4 to Grade 5	538	600	S4.D.1.3.1	Earth and Space Sci.
617271	4	Grade 4 to Grade 5	533	600	S4.D.3.1.3	Earth and Space Sci.
617089	4	Grade 4 to Grade 5	534	600	S4.B.1.1.4	Biological Sci.
617234	4	Grade 4 to Grade 5	527	600	S4.C.2.1.3	Physical Sci.
617070	4	Grade 4 to Grade 5	537	599	S4.A.3.1.4	Nature of Science
617260	4	Grade 4 to Grade 5	531	599	S4.D.1.3.3	Earth and Space Sci.
617311	5	Grade 4 to Grade 5	532	604	S5.B.1.1.2	Biological Sci.
616317	5	Grade 4 to Grade 5	533	609	S5.A.1.1.2	Nature of Science
615950	5	Grade 4 to Grade 5	532	616	S5.B.2.1.1	Biological Sci.
617328	5	Grade 4 to Grade 5	532	610	S5.C.3.2.1	Physical Sci.
617304	5	Grade 4 to Grade 5	533	598	S5.A.2.1.2	Nature of Science
615962	5	Grade 4 to Grade 5	533	606	S5.D.3.1.1	Earth and Space Sci.
615936	5	Grade 4 to Grade 5	533	633	S5.A.1.1.2	Nature of Science
617330	5	Grade 4 to Grade 5	532	636	S5.D.1.1.1	Earth and Space Sci.
615958	5	Grade 4 to Grade 5	532	629	S5.C.1.2.1	Physical Sci.
617307	5	Grade 4 to Grade 5	528	635	S5.A.2.2.1	Nature of Science
617338	5	Grade 4 to Grade 5	540	617	S5.D.1.2.2	Earth and Space Sci.
615939	5	Grade 4 to Grade 5	538	610	S5.A.2.1.1	Nature of Science
617504	5	Grade 4 to Grade 5	541	630	S5.B.3.2.2	Biological Sci.
616969	5	Grade 4 to Grade 5	541	637	S5.C.2.1.1	Physical Sci.
615943	5	Grade 4 to Grade 5	538	627	S5.B.1.1.1	Biological Sci.
617502	5	Grade 4 to Grade 5	539	616	S5.B.2.1.3	Biological Sci.
617499	5	Grade 4 to Grade 5	540	614	S5.A.1.1.3	Nature of Science

Table C–32 (continued). Science Items Used to Link Grade 4 to Grade 5

Item ID	Item Grade	Link	N Count Lower Grade	N Count Upper Grade	Eligible Content	Science Diagnostic Category
615965	5	Grade 4 to Grade 5	540	608	S5.D.1.1.1	Earth and Space Sci.
615942	5	Grade 4 to Grade 5	539	608	S5.A.3.1.1	Nature of Science
617507	5	Grade 4 to Grade 5	539	607	S5.C.2.1.2	Physical Sci.

Table C–33. Science Items Used to Link Grade 5 to Grade 6

Item ID	Item Grade	Link	N Count Lower Grade	N Count Upper Grade	Eligible Content	Science Diagnostic Category
617334	5	Grade 5 to Grade 6	605	621	S5.C.2.1.4	Physical Sci.
615949	5	Grade 5 to Grade 6	629	622	S5.B.1.1.3	Biological Sci.
615938	5	Grade 5 to Grade 6	608	622	S5.A.2.1.1	Nature of Science
615963	5	Grade 5 to Grade 6	617	623	S5.D.3.1.2	Earth and Space Sci.
615946	5	Grade 5 to Grade 6	617	621	S5.B.1.1.3	Biological Sci.
616968	5	Grade 5 to Grade 6	608	620	S5.C.1.2.2	Physical Sci.
617725	5	Grade 5 to Grade 6	602	620	S5.A.2.2.2	Nature of Science
616319	5	Grade 5 to Grade 6	637	618	S5.C.1.1.2	Physical Sci.
617318	5	Grade 5 to Grade 6	629	618	S5.B.3.1.2	Biological Sci.
616970	5	Grade 5 to Grade 6	637	617	S5.C.2.1.1	Physical Sci.
617339	5	Grade 5 to Grade 6	602	624	S5.D.1.2.1	Earth and Space Sci.
617729	5	Grade 5 to Grade 6	1215	623	S5.B.2.1.4	Biological Sci.
617501	5	Grade 5 to Grade 6	606	625	S5.A.1.1.3	Nature of Science
617342	5	Grade 5 to Grade 6	616	627	S5.D.2.1.2	Earth and Space Sci.
617310	5	Grade 5 to Grade 6	628	626	S5.A.3.2.1	Nature of Science
617326	5	Grade 5 to Grade 6	636	625	S5.C.2.1.4	Physical Sci.
617305	5	Grade 5 to Grade 6	617	625	S5.A.2.1.2	Nature of Science
617323	5	Grade 5 to Grade 6	1219	626	S5.C.1.1.1	Physical Sci.
617312	5	Grade 5 to Grade 6	634	618	S5.B.1.1.2	Biological Sci.
617327	5	Grade 5 to Grade 6	629	609	S5.C.2.1.4	Physical Sci.
615560	6	Grade 5 to Grade 6	614	623	S6.C.1.2.2	Physical Sci.
615518	6	Grade 5 to Grade 6	614	625	S6.A.2.2.1	Nature of Science
617741	6	Grade 5 to Grade 6	614	616	S6.B.2.1.2	Biological Sci.
615520	6	Grade 5 to Grade 6	614	619	S6.A.2.1.1	Nature of Science
615594	6	Grade 5 to Grade 6	614	624	S6.D.2.1.1	Earth and Space Sci.
619132	6	Grade 5 to Grade 6	614	617	S6.C.2.1.3	Physical Sci.
615554	6	Grade 5 to Grade 6	613	625	S6.B.3.2.1	Biological Sci.
615557	6	Grade 5 to Grade 6	613	620	S6.C.1.2.1	Physical Sci.
615514	6	Grade 5 to Grade 6	614	624	S6.A.1.1.3	Nature of Science
615603	6	Grade 5 to Grade 6	612	616	S6.D.3.1.2	Earth and Space Sci.
615574	6	Grade 5 to Grade 6	613	620	S6.C.2.1.3	Physical Sci.
618591	6	Grade 5 to Grade 6	612	625	S6.A.1.2.2	Nature of Science
615532	6	Grade 5 to Grade 6	612	621	S6.B.2.1.2	Biological Sci.
619296	6	Grade 5 to Grade 6	611	625	S6.A.2.1.1	Nature of Science
615601	6	Grade 5 to Grade 6	610	616	S6.D.3.1.1	Earth and Space Sci.
617512	6	Grade 5 to Grade 6	610	625	S6.C.2.1.1	Physical Sci.
615540	6	Grade 5 to Grade 6	610	624	S6.B.3.1.1	Biological Sci.

Table C–33 (continued). Science Items Used to Link Grade 5 to Grade 6

Item ID	Item Grade	Link	N Count Lower Grade	N Count Upper Grade	Eligible Content	Science Diagnostic Category
617508	6	Grade 5 to Grade 6	608	619	S6.B.1.1.1	Biological Sci.
615526	6	Grade 5 to Grade 6	608	620	S6.A.3.2.1	Nature of Science
619365	6	Grade 5 to Grade 6	608	618	S6.D.2.1.1	Earth and Space Sci.

Table C–34. Science Items Used to Link Grade 6 to Grade 7

Item ID	Item Grade	Link	N Count Lower Grade	N Count Upper Grade	Eligible Content	Science Diagnostic Category
615535	6	Grade 6 to Grade 7	1248	428	S6.A.3.2.1	Nature of Science
615562	6	Grade 6 to Grade 7	620	428	S6.C.1.2.2	Physical Sci.
615530	6	Grade 6 to Grade 7	1234	428	S6.B.2.1.1	Biological Sci.
619141	6	Grade 6 to Grade 7	616	426	S6.D.2.1.3	Earth and Space Sci.
615510	6	Grade 6 to Grade 7	1253	425	S6.A.1.1.2	Nature of Science
618609	6	Grade 6 to Grade 7	625	426	S6.C.3.1.2	Physical Sci.
618590	6	Grade 6 to Grade 7	1243	425	S6.A.1.2.1	Nature of Science
615576	6	Grade 6 to Grade 7	621	424	S6.C.2.1.3	Physical Sci.
615551	6	Grade 6 to Grade 7	621	424	S6.C.1.2.1	Physical Sci.
615512	6	Grade 6 to Grade 7	1233	423	S6.A.1.1.3	Nature of Science
615577	6	Grade 6 to Grade 7	619	428	S6.C.3.1.1	Physical Sci.
618791	6	Grade 6 to Grade 7	1235	428	S6.A.1.2.1	Nature of Science
615531	6	Grade 6 to Grade 7	1225	428	S6.B.2.1.1	Biological Sci.
619624	6	Grade 6 to Grade 7	627	428	S6.D.3.1.2	Earth and Space Sci.
616332	6	Grade 6 to Grade 7	1228	426	S6.A.1.1.3	Nature of Science
619149	6	Grade 6 to Grade 7	618	425	S6.C.3.2.1	Physical Sci.
617533	6	Grade 6 to Grade 7	1249	427	S6.B.2.1.1	Biological Sci.
618794	6	Grade 6 to Grade 7	624	426	S6.C.3.2.1	Physical Sci.
615517	6	Grade 6 to Grade 7	1245	426	S6.A.1.2.2	Nature of Science
615567	6	Grade 6 to Grade 7	616	425	S6.C.2.1.1	Physical Sci.
616616	7	Grade 6 to Grade 7	619	428	S7.D.1.1.2	Earth and Space Sci.
615235	7	Grade 6 to Grade 7	619	430	S7.B.1.1.2	Biological Sci.
617184	7	Grade 6 to Grade 7	616	424	S7.A.1.1.1	Nature of Science
618806	7	Grade 6 to Grade 7	618	427	S7.D.2.1.1	Earth and Space Sci.
615974	7	Grade 6 to Grade 7	618	443	S7.A.1.2.1	Nature of Science
618603	7	Grade 6 to Grade 7	617	439	S7.C.2.1.3	Physical Sci.
615973	7	Grade 6 to Grade 7	617	424	S7.A.1.1.4	Nature of Science
615275	7	Grade 6 to Grade 7	614	870	S7.B.3.3.2	Biological Sci.
615238	7	Grade 6 to Grade 7	609	427	S7.B.1.1.3	Biological Sci.
618802	7	Grade 6 to Grade 7	606	430	S7.C.2.1.1	Physical Sci.
617531	7	Grade 6 to Grade 7	624	424	S7.D.1.1.2	Earth and Space Sci.
616339	7	Grade 6 to Grade 7	626	431	S7.A.2.2.3	Nature of Science
615970	7	Grade 6 to Grade 7	625	429	S7.A.1.1.2	Nature of Science
616626	7	Grade 6 to Grade 7	625	443	S7.D.3.1.1	Earth and Space Sci.
617195	7	Grade 6 to Grade 7	626	444	S7.A.1.3.1	Nature of Science
617526	7	Grade 6 to Grade 7	624	422	S7.C.1.2.2	Physical Sci.
619627	7	Grade 6 to Grade 7	625	428	S7.A.1.1.4	Nature of Science

Table C-34 (continued). Science Items Used to Link Grade 6 to Grade 7

Item ID	Item Grade	Link	N Count Lower Grade	N Count Upper Grade	Eligible Content	Science Diagnostic Category
615252	7	Grade 6 to Grade 7	624	444	S7.B.2.1.3	Biological Sci.
615234	7	Grade 6 to Grade 7	620	427	S7.B.1.1.1	Biological Sci.
616039	7	Grade 6 to Grade 7	618	424	S7.C.2.1.3	Physical Sci.

Table C–35. Science Items Used to Link Grade 8 to Grade 7

Item ID	Item Grade	Link	N Count Lower Grade	N Count Upper Grade	Eligible Content	Science Diagnostic Category
617198	7	Grade 8 to Grade 7	431	256	S7.A.1.3.2	Nature of Science
616619	7	Grade 8 to Grade 7	426	256	S7.D.1.2.2	Earth and Space Sci.
615969	7	Grade 8 to Grade 7	427	255	S7.A.1.1.1	Nature of Science
616038	7	Grade 8 to Grade 7	424	256	S7.C.2.1.2	Physical Sci.
616622	7	Grade 8 to Grade 7	427	254	S7.D.2.1.1	Earth and Space Sci.
615971	7	Grade 8 to Grade 7	429	254	S7.A.1.1.3	Nature of Science
615249	7	Grade 8 to Grade 7	425	255	S7.B.2.1.2	Biological Sci.
618803	7	Grade 8 to Grade 7	432	254	S7.D.2.1.1	Earth and Space Sci.
618801	7	Grade 8 to Grade 7	427	252	S7.C.2.1.3	Physical Sci.
615999	7	Grade 8 to Grade 7	423	251	S7.B.1.1.3	Biological Sci.
615308	7	Grade 8 to Grade 7	422	253	S7.C.3.1.3	Physical Sci.
618855	7	Grade 8 to Grade 7	430	254	S7.A.2.1.1	Nature of Science
618853	7	Grade 8 to Grade 7	425	254	S7.A.1.3.1	Nature of Science
616348	7	Grade 8 to Grade 7	438	254	S7.B.2.2.2	Biological Sci.
616621	7	Grade 8 to Grade 7	426	254	S7.D.1.2.3	Earth and Space Sci.
617000	7	Grade 8 to Grade 7	441	254	S7.D.3.1.3	Earth and Space Sci.
616014	7	Grade 8 to Grade 7	419	254	S7.B.3.1.1	Biological Sci.
617196	7	Grade 8 to Grade 7	441	252	S7.A.1.3.1	Nature of Science
616313	7	Grade 8 to Grade 7	430	251	S7.C.3.1.1	Physical Sci.
616007	7	Grade 8 to Grade 7	429	252	S7.B.2.1.2	Biological Sci.
615771	8	Grade 8 to Grade 7	445	262	S8.A.3.3.2	Nature of Science
617489	8	Grade 8 to Grade 7	445	257	S8.C.3.1.1	Physical Sci.
615784	8	Grade 8 to Grade 7	444	262	S8.B.2.1.1	Biological Sci.
620362	8	Grade 8 to Grade 7	444	271	S8.D.1.2.1	Earth and Space Sci.
618535	8	Grade 8 to Grade 7	444	267	S8.A.3.2.2	Nature of Science
617484	8	Grade 8 to Grade 7	444	258	S8.D.1.1.2	Earth and Space Sci.
618896	8	Grade 8 to Grade 7	443	272	S8.D.1.3.2	Earth and Space Sci.
615776	8	Grade 8 to Grade 7	443	255	S8.B.1.1.2	Biological Sci.
618543	8	Grade 8 to Grade 7	442	264	S8.C.2.2.2	Physical Sci.
617735	8	Grade 8 to Grade 7	441	287	S8.A.2.1.2	Nature of Science
617294	8	Grade 8 to Grade 7	432	262	S8.D.2.1.3	Earth and Space Sci.
617289	8	Grade 8 to Grade 7	432	255	S8.B.2.2.1	Biological Sci.
618544	8	Grade 8 to Grade 7	432	260	S8.C.2.2.2	Physical Sci.
620027	8	Grade 8 to Grade 7	432	289	S8.A.3.1.5	Nature of Science
617962	8	Grade 8 to Grade 7	432	259	S8.A.1.3.4	Nature of Science
615810	8	Grade 8 to Grade 7	432	267	S8.C.2.1.1	Physical Sci.
617279	8	Grade 8 to Grade 7	432	258	S8.B.1.1.1	Biological Sci.

Table C–35 (continued). Science Items Used to Link Grade 8 to Grade 7

Item ID	Item Grade	Link	N Count Lower Grade	N Count Upper Grade	Eligible Content	Science Diagnostic Category
617293	8	Grade 8 to Grade 7	430	286	S8.D.2.1.3	Earth and Space Sci.
620020	8	Grade 8 to Grade 7	430	256	S8.A.1.1.2	Nature of Science
620400	8	Grade 8 to Grade 7	430	255	S8.B.3.2.3	Biological Sci.

Table C–36. Science Items Used to Link Biology to Grade 8

Item ID	Item Grade	Link	N Count Lower Grade	N Count Upper Grade	Eligible Content	Science Diagnostic Category	Biology Diagnostic Category
615777	8	Biology to Grade 8	261	306	S8.B.1.1.3	Biological Sci.	Basic Bio. Princ.
615790	8	Biology to Grade 8	259	306	S8.B.2.1.3	Biological Sci.	Cell Growth
615817	8	Biology to Grade 8	519	306	S8.C.2.1.3	Physical Sci.	No Biology DC
620364	8	Biology to Grade 8	256	305	S8.D.1.3.1	Earth and Space Sci.	Theory of Evolution
617739	8	Biology to Grade 8	288	304	S8.A.2.1.4	Nature of Science	No Biology DC
615789	8	Biology to Grade 8	257	303	S8.B.2.1.2	Biological Sci.	Theory of Evolution
618786	8	Biology to Grade 8	257	305	S8.A.3.2.3	Nature of Science	No Biology DC
617059	8	Biology to Grade 8	266	306	S8.B.1.1.1	Biological Sci.	Basic Bio. Princ.
615791	8	Biology to Grade 8	529	305	S8.B.2.1.3	Biological Sci.	Cell Growth
617284	8	Biology to Grade 8	259	305	S8.B.2.1.3	Biological Sci.	Cell Growth
620015	8	Biology to Grade 8	254	298	S8.A.1.1.1	Nature of Science	No Biology DC
620396	8	Biology to Grade 8	256	298	S8.B.3.2.2	Biological Sci.	Theory of Evolution
617737	8	Biology to Grade 8	252	298	S8.A.2.1.3	Nature of Science	No Biology DC
617292	8	Biology to Grade 8	255	297	S8.B.2.2.2	Biological Sci.	Cell Growth
615822	8	Biology to Grade 8	542	298	S8.C.2.2.3	Physical Sci.	Theory of Evolution
620637	8	Biology to Grade 8	262	298	S8.B.3.1.3	Biological Sci.	Theory of Evolution
618540	8	Biology to Grade 8	259	298	S8.A.3.3.1	Nature of Science	No Biology DC
618548	8	Biology to Grade 8	260	298	S8.D.1.3.4	Earth and Space Sci.	Theory of Evolution
620029	8	Biology to Grade 8	522	298	S8.A.3.2.3	Nature of Science	No Biology DC
620401	8	Biology to Grade 8	259	298	S8.B.3.2.3	Biological Sci.	Theory of Evolution
617377	Bio	Biology to Grade 8	257	305	BIO.A.4.2.1	Biological Sci.	Bioenergetics
617565	Bio	Biology to Grade 8	256	311	BIO.B.4.2.5	Biological Sci.	Theory of Evolution
616111	Bio	Biology to Grade 8	256	303	BIO.A.1.2.1	Biological Sci.	Basic Bio. Princ.
617401	Bio	Biology to Grade 8	256	4874	BIO.B.2.1.1	Biological Sci.	Cell Growth
617430	Bio	Biology to Grade 8	256	309	BIO.B.3.1.1	Biological Sci.	Theory of Evolution
617395	Bio	Biology to Grade 8	256	310	BIO.B.1.2.2	Biological Sci.	Cell Growth
617013	Bio	Biology to Grade 8	257	311	BIO.A.2.2.3	Biological Sci.	Basic Bio. Princ.
617444	Bio	Biology to Grade 8	257	311	BIO.B.3.2.1	Biological Sci.	Theory of Evolution
617458	Bio	Biology to Grade 8	256	295	BIO.B.4.1.2	Biological Sci.	Theory of Evolution
617449	Bio	Biology to Grade 8	256	311	BIO.B.3.3.1	Biological Sci.	Theory of Evolution
617839	Bio	Biology to Grade 8	263	300	BIO.A.4.2.1	Biological Sci.	Bioenergetics
617462	Bio	Biology to Grade 8	263	297	BIO.B.3.3.1	Biological Sci.	Theory of Evolution
616112	Bio	Biology to Grade 8	263	305	BIO.A.1.2.1	Biological Sci.	Basic Bio. Princ.
617457	Bio	Biology to Grade 8	263	4863	BIO.B.4.1.2	Biological Sci.	Theory of Evolution
617394	Bio	Biology to Grade 8	262	296	BIO.B.1.2.2	Biological Sci.	Cell Growth
617454	Bio	Biology to Grade 8	263	310	BIO.B.4.1.1	Biological Sci.	Theory of Evolution
617349	Bio	Biology to Grade 8	263	309	BIO.A.3.1.1	Biological Sci.	Bioenergetics

Table C–36 (continued). Science Items Used to Link Biology to Grade 8

Item ID	Item Grade	Link	N Count Lower Grade	N Count Upper Grade	Eligible Content	Science Diagnostic Category	Biology Diagnostic Category
617414	Bio	Biology to Grade 8	263	300	BIO.B.2.2.2	Biological Sci.	Cell Growth
617880	Bio	Biology to Grade 8	263	305	BIO.B.2.2.2	Biological Sci.	Cell Growth
617451	Bio	Biology to Grade 8	263	298	BIO.B.3.3.1	Biological Sci.	Theory of Evolution

Table C–37. Science Items Used to Link Chemistry to Grade 8

Item ID	Item Grade	Link	N Count Lower Grade	N Count Upper Grade	Eligible Content	Science Diagnostic Category	Chemistry Diagnostic Category
615817	8	Chemistry to Grade 8	519	305	S8.C.2.1.3	Physical Sci.	Properties of Matter
615822	8	Chemistry to Grade 8	542	304	S8.C.2.2.3	Physical Sci.	No Chemistry DC
620029	8	Chemistry to Grade 8	522	307	S8.A.3.2.3	Nature of Science	No Chemistry DC
620025	8	Chemistry to Grade 8	258	308	S8.A.2.1.1	Nature of Science	No Chemistry DC
615819	8	Chemistry to Grade 8	261	308	S8.C.2.2.1	Physical Sci.	No Chemistry DC
620021	8	Chemistry to Grade 8	262	308	S8.A.1.1.3	Nature of Science	No Chemistry DC
615833	8	Chemistry to Grade 8	265	306	S8.D.1.1.2	Earth and Space Sci.	No Chemistry DC
615749	8	Chemistry to Grade 8	259	307	S8.A.2.2.3	Nature of Science	No Chemistry DC
620426	8	Chemistry to Grade 8	253	306	S8.B.3.3.4	Biological Sci.	No Chemistry DC
615723	8	Chemistry to Grade 8	270	305	S8.A.1.3.3	Nature of Science	No Chemistry DC
615809	8	Chemistry to Grade 8	511	307	S8.C.1.1.3	Physical Sci.	Chem. Relation.
615884	8	Chemistry to Grade 8	253	306	S8.A.2.1.1	Nature of Science	No Chemistry DC
615919	8	Chemistry to Grade 8	260	306	S8.C.1.1.1	Physical Sci.	Mole
620030	8	Chemistry to Grade 8	258	307	S8.A.3.2.3	Nature of Science	No Chemistry DC
620427	8	Chemistry to Grade 8	287	304	S8.B.3.3.4	Biological Sci.	No Chemistry DC
615927	8	Chemistry to Grade 8	266	305	S8.A.1.3.1	Nature of Science	No Chemistry DC
615826	8	Chemistry to Grade 8	262	306	S8.C.3.1.2	Physical Sci.	No Chemistry DC
620023	8	Chemistry to Grade 8	262	305	S8.A.1.3.2	Nature of Science	No Chemistry DC
615857	8	Chemistry to Grade 8	267	304	S8.D.2.1.1	Earth and Space Sci.	No Chemistry DC
615804	8	Chemistry to Grade 8	259	306	S8.C.1.1.1	Physical Sci.	Mole
616406	Chem	Chemistry to Grade 8	258	305	CHEM.A.2.1.2	Physical Sci.	Atomic Structure

Table C–37 (continued). Science Items Used to Link Chemistry to Grade 8

Item ID	Item Grade	Link	N Count Lower Grade	N Count Upper Grade	Eligible Content	Science Diagnostic Category	Chemistry Diagnostic Category
618699	Chem	Chemistry to Grade 8	259	302	CHEM.B.2.1.5	Physical Sci.	Chem. Relation.
616511	Chem	Chemistry to Grade 8	259	299	CHEM.B.1.4.1	Physical Sci.	Mole
616362	Chem	Chemistry to Grade 8	258	303	CHEM.A.1.1.2	Physical Sci.	Properties of Matter
618734	Chem	Chemistry to Grade 8	259	307	CHEM.B.2.1.4	Physical Sci.	Chem. Relation.
616367	Chem	Chemistry to Grade 8	259	615	CHEM.A.1.2.2	Physical Sci.	Properties of Matter
616559	Chem	Chemistry to Grade 8	259	305	CHEM.A.1.1.5	Physical Sci.	Properties of Matter
619910	Chem	Chemistry to Grade 8	259	306	CHEM.B.1.4.2	Physical Sci.	Mole
616494	Chem	Chemistry to Grade 8	259	305	CHEM.A.1.2.3	Physical Sci.	Properties of Matter
616518	Chem	Chemistry to Grade 8	259	304	CHEM.B.2.1.5	Physical Sci.	Chem. Relation.
616427	Chem	Chemistry to Grade 8	260	306	CHEM.A.1.1.1	Physical Sci.	Properties of Matter
618726	Chem	Chemistry to Grade 8	260	309	CHEM.B.1.3.1	Physical Sci.	Mole
616365	Chem	Chemistry to Grade 8	260	301	CHEM.A.1.1.5	Physical Sci.	Properties of Matter
616516	Chem	Chemistry to Grade 8	260	306	CHEM.B.2.1.3	Physical Sci.	Chem. Relation.
618733	Chem	Chemistry to Grade 8	260	307	CHEM.B.2.1.3	Physical Sci.	Chem. Relation.
620468	Chem	Chemistry to Grade 8	260	315	CHEM.B.2.1.1	Physical Sci.	Chem. Relation.
616561	Chem	Chemistry to Grade 8	260	307	CHEM.A.1.2.2	Physical Sci.	Properties of Matter
616376	Chem	Chemistry to Grade 8	259	304	CHEM.A.2.3.1	Physical Sci.	Atomic Structure
616533	Chem	Chemistry to Grade 8	259	306	CHEM.A.2.2.2	Physical Sci.	Atomic Structure
618698	Chem	Chemistry to Grade 8	259	302	CHEM.B.2.1.4	Physical Sci.	Chem. Relation.

Tables C–38 through C–44 summarize the number of linking items by diagnostic category. Items coded in a Science diagnostic category and a Biology or Chemistry diagnostic category are noted.

Table C–38. Number of Items Linking Grade 3 to Grade 4 by Diagnostic Category

Diagnostic Category	Grade 3 Items	Grade 4 Items	Total
Nature of Science	6	6	12
Biological Sciences	7	6	13
Physical Sciences	2	3	5
Earth and Space Sciences	5	5	10
TOTAL	20	20	40

Table C–39. Number of Items Linking Grade 4 to Grade 5 by Diagnostic Category

Diagnostic Category	Grade 4 Items	Grade 5 Items	Total
Nature of Science	7	7	14
Biological Sciences	4	5	9
Physical Sciences	4	4	8
Earth and Space Sciences	5	4	9
TOTAL	20	20	40

Table C–40. Number of Items Linking Grade 5 to Grade 6 by Diagnostic Category

Diagnostic Category	Grade 5 Items	Grade 6 Items	Total
Nature of Science	5	6	11
Biological Sciences	5	5	10
Physical Sciences	7	5	12
Earth and Space Sciences	3	4	7
TOTAL	20	20	40

Table C–41. Number of Items Linking Grade 6 to Grade 7 by Diagnostic Category

Diagnostic Category	Grade 6 Items	Grade 7 Items	Total
Nature of Science	7	7	14
Biological Sciences	3	5	8
Physical Sciences	8	4	12
Earth and Space Sciences	2	4	6
TOTAL	20	20	40

Table C–42. Number of Items Linking Grade 8 to Grade 7 by Diagnostic Category

Diagnostic Category	Grade 7 Items	Grade 8 Items	Total
Nature of Science	6	6	12
Biological Sciences	5	5	10
Physical Sciences	4	4	8
Earth and Space Sciences	5	5	10
TOTAL	20	20	40

Table C–43a. Number of Items Linking Biology to Grade 8 by Diagnostic Category

Diagnostic Category	Grade 8 Items	Biology Items	Total
Nature of Science	6	0	6
Biological Sciences	10	20	30
Physical Sciences	2	0	2
Earth and Space Sciences	2	0	2
No Grade 8 DC	0	0	0
TOTAL	20	20	40

Table C–43b. Number of Items Linking Biology to Grade 8 by Diagnostic Category

Diagnostic Category	Grade 8 Items	Biology Items	Total
Basic Biological Principles	2	3	5
Bioenergetics	0	3	3
Cell Growth	4	5	9
Theory of Evolution	7	9	16
No Biology DC	7	0	7
TOTAL	20	20	40

Table C–44a. Number of Items Linking Chemistry to Grade 8 by Diagnostic Category

Diagnostic Category	Grade 8 Items	Chemistry Items	Total
Nature of Science	9	0	9
Biological Sciences	2	0	2
Physical Sciences	7	20	27
Earth and Space Sciences	2	0	2
No Grade 8 DC	0	0	0
TOTAL	20	20	40

Table C–44b. Number of Items Linking Chemistry to Grade 8 by Diagnostic Category

Diagnostic Category	Grade 8 Items	Chemistry Items	Total
Properties of Matter	1	7	8
Atomic Structure	0	3	3
The Mole	2	3	5
Chemical Relationships	1	7	8
No Chemistry DC	16	0	16
TOTAL	20	20	40

Figures C-15 through C-21 are the adjacent grade linking plots. Items removed from final linking procedure are colored red.

Figure C-15. CDT Science: Grade 3 to Grade 4 Linking – All Links

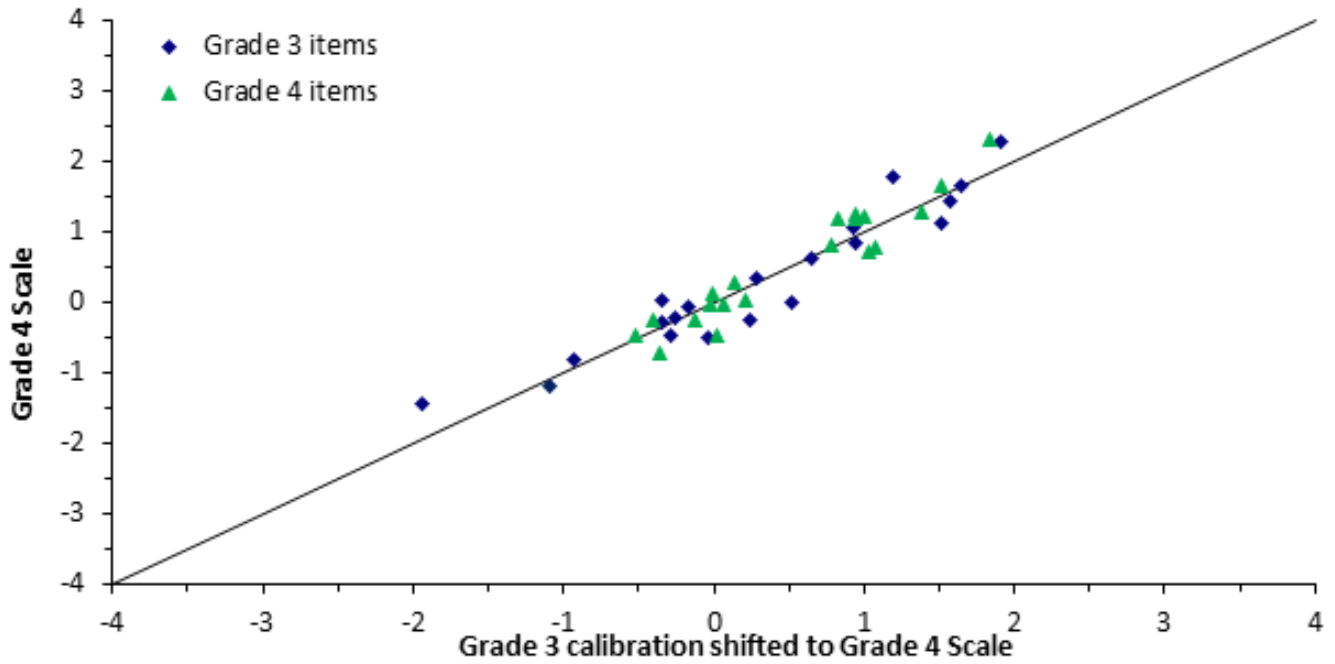


Figure C-16. CDT Science: Grade 4 to Grade 5 Linking – All Links

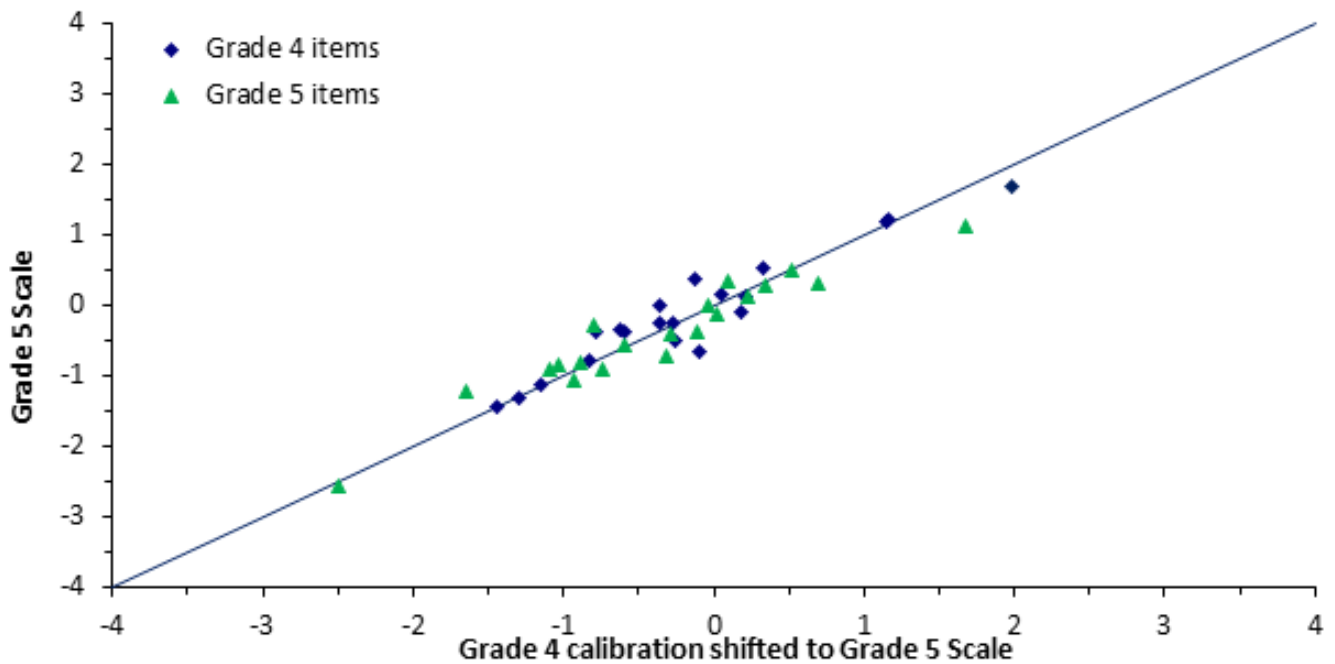


Figure C-17. CDT Science: Grade 5 to Grade 6 Linking – All Links

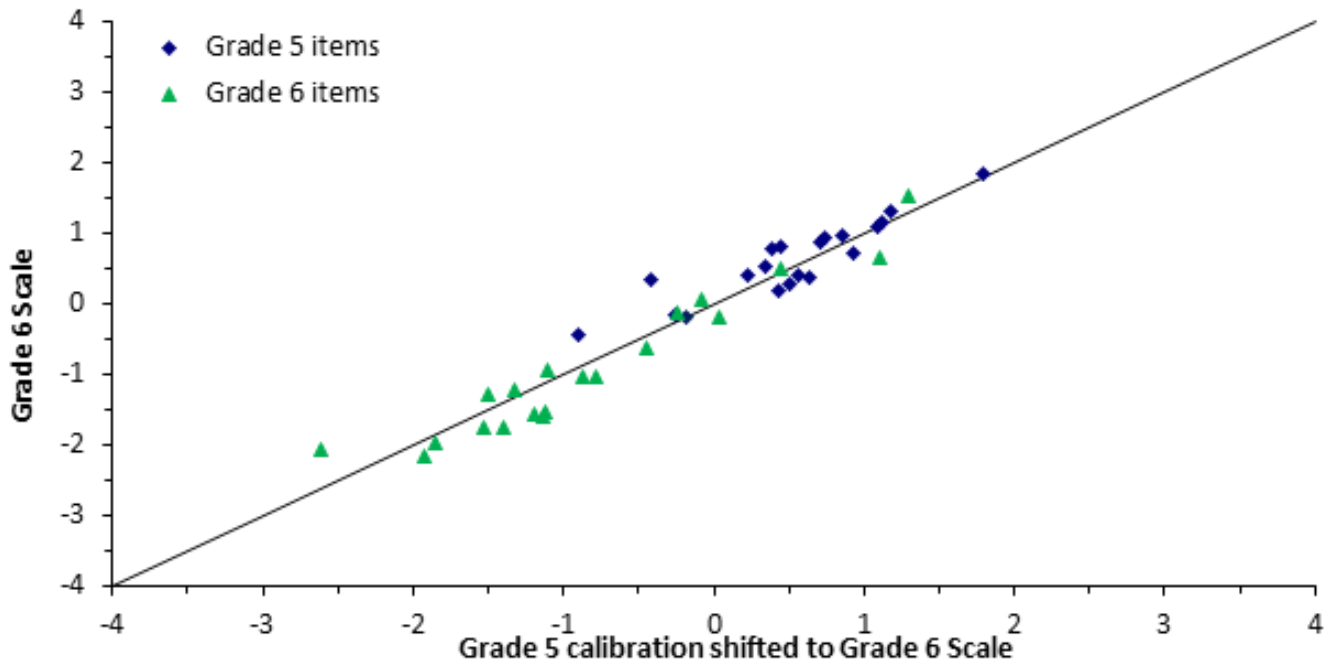


Figure C-18. CDT Science: Grade 6 to Grade 7 Linking – All Links

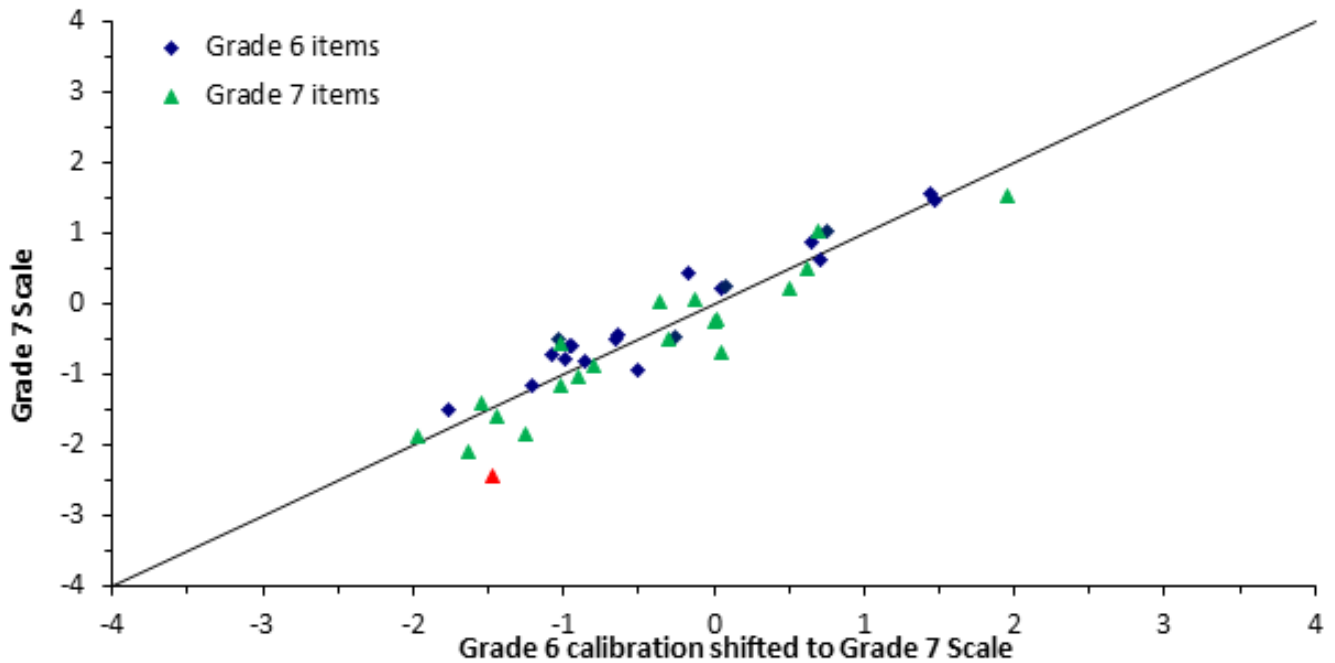


Figure C-19. CDT Science: Grade 8 to Grade 7 Linking – All Links

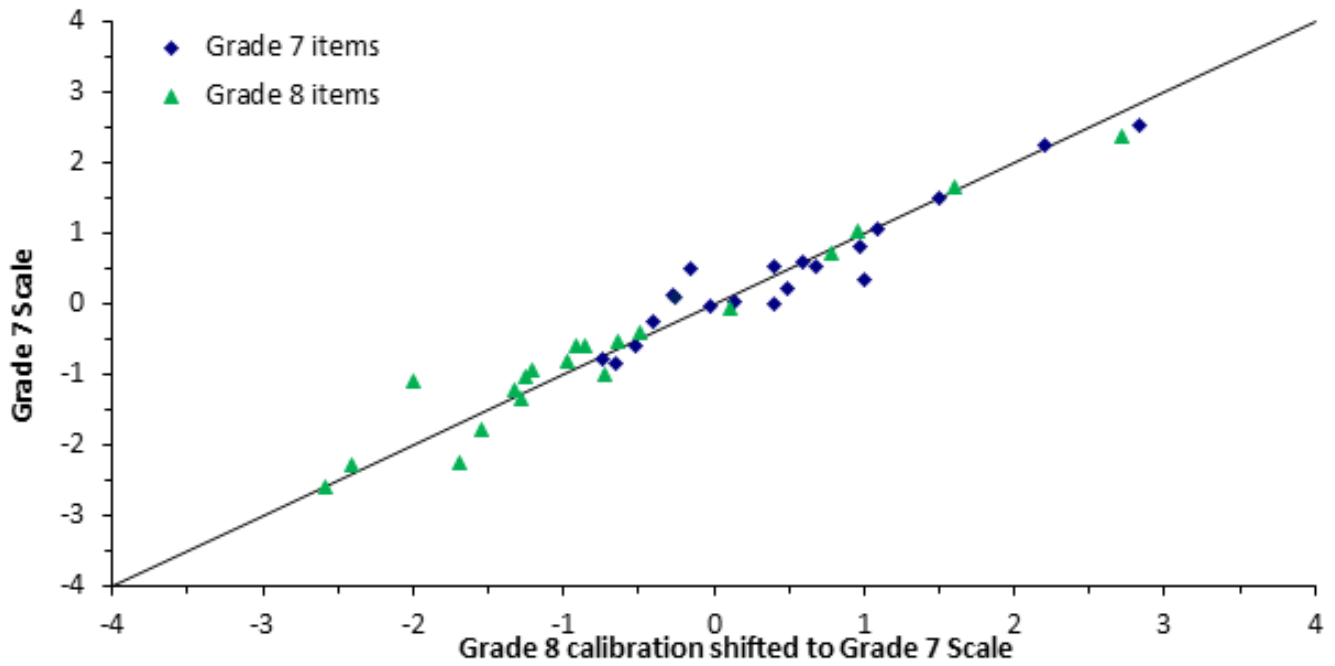


Figure C-20. CDT Science: Biology to Grade 8 Linking – All Links

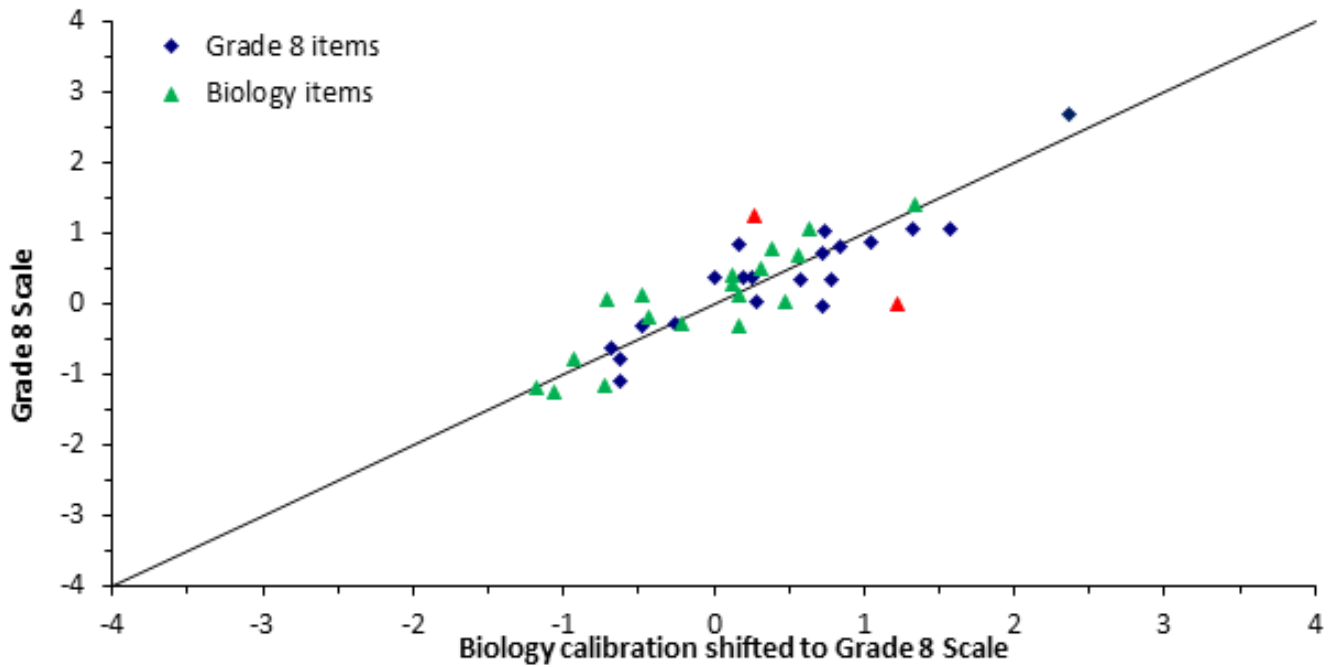
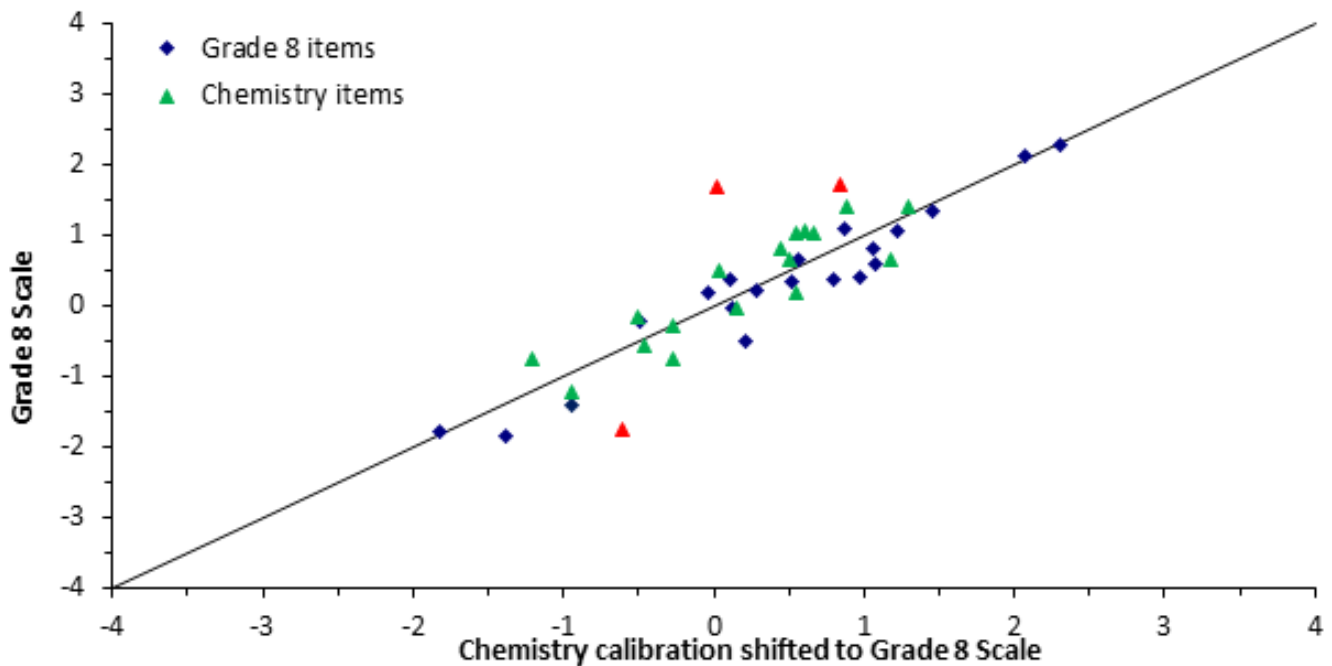


Figure C–21. CDT Science: Chemistry to Grade 8 Linking – All Links



WRITING/ENGLISH COMPOSITION

Tables C–46 through C–51 show n-counts, eligible content code, and diagnostic category for each of the vertical linking items.

Each item was administered in two grades so there are two n-counts: one for the lower grade and one for the upper grade. For example, item 626547 is a grade 3 item used to link grades 3 and 4. It was administered 274 times on the lower grade form (grade 3) and 234 times on the upper grade form (grade 4).

The diagnostic categories are⁴:

- Quality of Writing: Focus and Content
- Quality of Writing: Organization and Style
- Quality of Writing: Editing
- Conventions: Spelling, Capitalization, and Punctuation
- Conventions: Grammar and Sentence Formation

⁴ Writing diagnostic categories changed at the start of the 2013-2014 school year due to re-alignment to the Pennsylvania Core Standards. See Chapter Thirteen for a list of the current diagnostic categories.

Table C–46. Writing/English Composition Items Used to Link Grade 3 to Grade 4

Item ID	Item Grade	Link	N Count Lower Grade	N Count Upper Grade	Eligible Content	Writing/Composition Diagnostic Category
626547	3	Grade 3 to Grade 4	274	234	W.1.5.3.F.b	Spell., Cap., Punct.
621012	3	Grade 3 to Grade 4	276	234	W.1.5.3.F.d	Gram. and Sent.
634030	3	Grade 3 to Grade 4	277	234	W.1.5.3.F.a	Spell., Cap., Punct.
634160	3	Grade 3 to Grade 4	275	234	W.1.5.3.D	Org and Style
623056	3	Grade 3 to Grade 4	275	234	W.1.5.3.C	Org and Style
621006	3	Grade 3 to Grade 4	277	234	W.1.5.3.F.d	Gram. and Sent.
624801	3	Grade 3 to Grade 4	276	234	W.1.5.3.A	Focus and Content
623023	3	Grade 3 to Grade 4	274	234	W.1.5.3.F.d	Gram. and Sent.
622985	3	Grade 3 to Grade 4	274	234	W.1.5.3.B	Focus and Content
624847	3	Grade 3 to Grade 4	277	234	W.1.5.3.F.c	Spell., Cap., Punct.
624849	3	Grade 3 to Grade 4	276	232	W.1.5.3.F.b	Spell., Cap., Punct.
622465	3	Grade 3 to Grade 4	277	232	W.1.5.3.F.d	Gram. and Sent.
634029	3	Grade 3 to Grade 4	275	232	W.1.5.3.F.a	Spell., Cap., Punct.
634162	3	Grade 3 to Grade 4	275	232	W.1.5.3.D	Org and Style
626574	3	Grade 3 to Grade 4	277	232	W.1.5.3.C	Org and Style
636550	3	Grade 3 to Grade 4	276	232	W.1.5.3.F.d	Gram. and Sent.
622979	3	Grade 3 to Grade 4	274	232	W.1.5.3.A	Focus and Content
621008	3	Grade 3 to Grade 4	274	232	W.1.5.3.F.d	Gram. and Sent.
623107	3	Grade 3 to Grade 4	276	232	W.1.5.3.B	Focus and Content
625516	3	Grade 3 to Grade 4	275	232	W.1.5.3.F.c	Spell., Cap., Punct.
623113	4	Grade 3 to Grade 4	274	233	W.1.5.4.C	Org and Style
637175	4	Grade 3 to Grade 4	274	232	W.1.5.4.D	Org and Style
633445	4	Grade 3 to Grade 4	274	235	W.1.5.4.F.a	Spell., Cap., Punct.
635414	4	Grade 3 to Grade 4	274	233	W.1.5.4.A	Focus and Content
639852	4	Grade 3 to Grade 4	274	234	W.1.5.4.F.c	Spell., Cap., Punct.
623033	4	Grade 3 to Grade 4	274	232	W.1.5.4.F.b	Spell., Cap., Punct.
623013	4	Grade 3 to Grade 4	274	233	W.1.5.4.B	Focus and Content
633852	4	Grade 3 to Grade 4	274	233	W.1.5.4.C	Org and Style
624765	4	Grade 3 to Grade 4	274	233	W.1.5.4.F.d	Gram. and Sent.
625527	4	Grade 3 to Grade 4	274	232	W.1.5.4.E	Editing
627004	4	Grade 3 to Grade 4	275	232	W.1.5.4.E	Editing
637177	4	Grade 3 to Grade 4	275	235	W.1.5.4.D	Org and Style
633432	4	Grade 3 to Grade 4	275	233	W.1.5.4.F.a	Spell., Cap., Punct.
633464	4	Grade 3 to Grade 4	275	234	W.1.5.4.A	Focus and Content
639854	4	Grade 3 to Grade 4	275	232	W.1.5.4.F.c	Spell., Cap., Punct.
623136	4	Grade 3 to Grade 4	275	233	W.1.5.4.F.b	Spell., Cap., Punct.
635900	4	Grade 3 to Grade 4	275	233	W.1.5.4.B	Focus and Content

Table C–46 (continued). Writing/English Composition Items Used to Link Grade 3 to Grade 4

Item ID	Item Grade	Link	N Count Lower Grade	N Count Upper Grade	Eligible Content	Writing/Composition Diagnostic Category
635412	4	Grade 3 to Grade 4	275	233	W.1.5.4.C	Org and Style
630419	4	Grade 3 to Grade 4	275	232	W.1.5.4.F.d	Gram. and Sent.
630295	4	Grade 3 to Grade 4	275	235	W.1.5.4.E	Editing

Table C–47. Writing/English Composition Items Used to Link Grade 4 to Grade 5

Item ID	Item Grade	Link	N Count Lower Grade	N Count Upper Grade	Eligible Content	Writing/Composition Diagnostic Category
623017	4	Grade 4 to Grade 5	235	221	W.1.5.4.E	Editing
625455	4	Grade 4 to Grade 5	233	221	W.1.5.4.A	Focus and Content
622453	4	Grade 4 to Grade 5	234	221	W.1.5.4.E	Editing
623135	4	Grade 4 to Grade 5	232	221	W.1.5.4.F.b	Spell., Cap., Punct.
632573	4	Grade 4 to Grade 5	233	221	W.1.5.4.F.d	Gram. and Sent.
623020	4	Grade 4 to Grade 5	233	221	W.1.5.4.C	Org and Style
633435	4	Grade 4 to Grade 5	233	221	W.1.5.4.F.a	Spell., Cap., Punct.
623108	4	Grade 4 to Grade 5	232	221	W.1.5.4.B	Focus and Content
633468	4	Grade 4 to Grade 5	235	221	W.1.5.4.C	Org and Style
627696	4	Grade 4 to Grade 5	233	221	W.1.5.4.F.c	Spell., Cap., Punct.
623115	4	Grade 4 to Grade 5	233	221	W.1.5.4.E	Editing
622983	4	Grade 4 to Grade 5	234	221	W.1.5.4.A	Focus and Content
622454	4	Grade 4 to Grade 5	232	221	W.1.5.4.E	Editing
621395	4	Grade 4 to Grade 5	233	221	W.1.5.4.F.b	Spell., Cap., Punct.
632587	4	Grade 4 to Grade 5	233	221	W.1.5.4.F.d	Gram. and Sent.
623019	4	Grade 4 to Grade 5	233	221	W.1.5.4.C	Org and Style
634025	4	Grade 4 to Grade 5	232	221	W.1.5.4.F.a	Spell., Cap., Punct.
626922	4	Grade 4 to Grade 5	235	221	W.1.5.4.B	Focus and Content
633469	4	Grade 4 to Grade 5	233	221	W.1.5.4.C	Org and Style
628471	4	Grade 4 to Grade 5	234	221	W.1.5.4.F.c	Spell., Cap., Punct.
637149	5	Grade 4 to Grade 5	233	218	W.1.5.5.F.d	Gram. and Sent.
633440	5	Grade 4 to Grade 5	233	221	W.1.5.5.F.a	Spell., Cap., Punct.
635884	5	Grade 4 to Grade 5	233	221	W.1.5.5.E	Editing
637062	5	Grade 4 to Grade 5	233	218	W.1.5.5.F.d	Gram. and Sent.
623027	5	Grade 4 to Grade 5	233	220	W.1.5.5.F.d	Gram. and Sent.
622469	5	Grade 4 to Grade 5	233	221	W.1.5.5.F.b	Spell., Cap., Punct.
639843	5	Grade 4 to Grade 5	233	222	W.1.5.5.F.c	Spell., Cap., Punct.
635417	5	Grade 4 to Grade 5	233	221	W.1.5.5.C	Org and Style
620819	5	Grade 4 to Grade 5	233	220	W.1.5.5.C	Org and Style
635605	5	Grade 4 to Grade 5	233	221	W.1.5.5.C	Org and Style
637148	5	Grade 4 to Grade 5	232	221	W.1.5.5.C	Org and Style
633439	5	Grade 4 to Grade 5	232	221	W.1.5.5.F.a	Spell., Cap., Punct.
620820	5	Grade 4 to Grade 5	232	218	W.1.5.5.E	Editing
626566	5	Grade 4 to Grade 5	232	220	W.1.5.5.F.d	Gram. and Sent.
623129	5	Grade 4 to Grade 5	232	221	W.1.5.5.F.d	Gram. and Sent.
629858	5	Grade 4 to Grade 5	232	222	W.1.5.5.F.b	Spell., Cap., Punct.
639864	5	Grade 4 to Grade 5	232	221	W.1.5.5.F.c	Spell., Cap., Punct.

Table C–47 (continued). Writing/English Composition Items Used to Link Grade 4 to Grade 5

Item ID	Item Grade	Link	N Count Lower Grade	N Count Upper Grade	Eligible Content	Writing/Composition Diagnostic Category
627291	5	Grade 4 to Grade 5	232	220	W.1.5.5.C	Org and Style
639349	5	Grade 4 to Grade 5	232	218	W.1.5.5.C	Org and Style
626818	5	Grade 4 to Grade 5	232	221	W.1.5.5.C	Org and Style

Table C–48. Writing/English Composition Items Used to Link Grade 5 to Grade 6

Item ID	Item Grade	Link	N Count Lower Grade	N Count Upper Grade	Eligible Content	Writing/Composition Diagnostic Category
623105	5	Grade 5 to Grade 6	221	303	W.1.5.5.A	Focus and Content
626927	5	Grade 5 to Grade 6	218	303	W.1.5.5.F.d	Gram. and Sent.
632608	5	Grade 5 to Grade 6	220	303	W.1.5.5.E	Editing
625460	5	Grade 5 to Grade 6	221	303	W.1.5.5.C	Org and Style
626923	5	Grade 5 to Grade 6	222	303	W.1.5.5.E	Editing
628065	5	Grade 5 to Grade 6	221	303	W.1.5.5.F.b	Spell., Cap., Punct.
633443	5	Grade 5 to Grade 6	220	303	W.1.5.5.F.a	Spell., Cap., Punct.
621390	5	Grade 5 to Grade 6	218	303	W.1.5.5.F.c	Spell., Cap., Punct.
626820	5	Grade 5 to Grade 6	221	303	W.1.5.5.E	Editing
624842	5	Grade 5 to Grade 6	218	303	W.1.5.5.F.d	Gram. and Sent.
624800	5	Grade 5 to Grade 6	218	304	W.1.5.5.A	Focus and Content
627413	5	Grade 5 to Grade 6	220	304	W.1.5.5.F.d	Gram. and Sent.
630403	5	Grade 5 to Grade 6	221	304	W.1.5.5.E	Editing
624804	5	Grade 5 to Grade 6	222	304	W.1.5.5.C	Org and Style
626570	5	Grade 5 to Grade 6	221	304	W.1.5.5.E	Editing
624773	5	Grade 5 to Grade 6	220	304	W.1.5.5.F.b	Spell., Cap., Punct.
633442	5	Grade 5 to Grade 6	218	304	W.1.5.5.F.a	Spell., Cap., Punct.
629854	5	Grade 5 to Grade 6	221	304	W.1.5.5.F.c	Spell., Cap., Punct.
623060	5	Grade 5 to Grade 6	221	304	W.1.5.5.E	Editing
627488	5	Grade 5 to Grade 6	220	304	W.1.5.5.F.d	Gram. and Sent.
624292	6	Grade 5 to Grade 6	221	304	W.1.5.6.E	Editing
626934	6	Grade 5 to Grade 6	221	303	W.1.5.6.A	Focus and Content
627013	6	Grade 5 to Grade 6	221	304	W.1.5.6.F.b	Spell., Cap., Punct.
632646	6	Grade 5 to Grade 6	221	305	W.1.5.6.F.d	Gram. and Sent.
624829	6	Grade 5 to Grade 6	221	304	W.1.5.6.F.d	Gram. and Sent.
630378	6	Grade 5 to Grade 6	221	304	W.1.5.6.B	Focus and Content
624297	6	Grade 5 to Grade 6	221	303	W.1.5.6.C	Org and Style
635654	6	Grade 5 to Grade 6	221	304	W.1.5.6.F.c	Spell., Cap., Punct.
639363	6	Grade 5 to Grade 6	221	305	W.1.5.6.C	Org and Style
633448	6	Grade 5 to Grade 6	221	304	W.1.5.6.F.a	Spell., Cap., Punct.
623114	6	Grade 5 to Grade 6	222	303	W.1.5.6.E	Editing
626932	6	Grade 5 to Grade 6	222	304	W.1.5.6.A	Focus and Content
635660	6	Grade 5 to Grade 6	222	305	W.1.5.6.F.b	Spell., Cap., Punct.
626822	6	Grade 5 to Grade 6	222	304	W.1.5.6.F.d	Gram. and Sent.
625478	6	Grade 5 to Grade 6	222	304	W.1.5.6.F.d	Gram. and Sent.
626776	6	Grade 5 to Grade 6	222	303	W.1.5.6.B	Focus and Content
624296	6	Grade 5 to Grade 6	222	304	W.1.5.6.C	Org and Style

Table C–48 (continued). Writing/English Composition Items Used to Link Grade 5 to Grade 6

Item ID	Item Grade	Link	N Count Lower Grade	N Count Upper Grade	Eligible Content	Writing/Composition Diagnostic Category
628055	6	Grade 5 to Grade 6	222	305	W.1.5.6.F.c	Spell., Cap., Punct.
627289	6	Grade 5 to Grade 6	222	304	W.1.5.6.C	Org and Style
633444	6	Grade 5 to Grade 6	222	304	W.1.5.6.F.a	Spell., Cap., Punct.

Table C–49. Writing/English Composition Items Used to Link Grade 6 to Grade 7

Item ID	Item Grade	Link	N Count Lower Grade	N Count Upper Grade	Eligible Content	Writing/Composition Diagnostic Category
633446	6	Grade 6 to Grade 7	304	279	W.1.5.6.F.a	Spell., Cap., Punct.
635619	6	Grade 6 to Grade 7	305	279	W.1.5.6.D	Org and Style
635662	6	Grade 6 to Grade 7	304	279	W.1.5.6.F.b	Spell., Cap., Punct.
623111	6	Grade 6 to Grade 7	304	279	W.1.5.6.E	Editing
624754	6	Grade 6 to Grade 7	303	279	W.1.5.6.F.d	Gram. and Sent.
628060	6	Grade 6 to Grade 7	304	279	W.1.5.6.F.c	Spell., Cap., Punct.
627415	6	Grade 6 to Grade 7	305	279	W.1.5.6.F.d	Gram. and Sent.
624287	6	Grade 6 to Grade 7	304	279	W.1.5.6.E	Editing
624763	6	Grade 6 to Grade 7	304	279	W.1.5.6.F.d	Gram. and Sent.
627960	6	Grade 6 to Grade 7	303	279	W.1.5.6.A	Focus and Content
633447	6	Grade 6 to Grade 7	305	279	W.1.5.6.F.a	Spell., Cap., Punct.
639392	6	Grade 6 to Grade 7	304	279	W.1.5.6.D	Org and Style
635661	6	Grade 6 to Grade 7	304	279	W.1.5.6.F.b	Spell., Cap., Punct.
624289	6	Grade 6 to Grade 7	303	279	W.1.5.6.E	Editing
624756	6	Grade 6 to Grade 7	304	279	W.1.5.6.F.d	Gram. and Sent.
628061	6	Grade 6 to Grade 7	305	279	W.1.5.6.F.c	Spell., Cap., Punct.
628112	6	Grade 6 to Grade 7	304	279	W.1.5.6.F.d	Gram. and Sent.
626567	6	Grade 6 to Grade 7	304	279	W.1.5.6.E	Editing
624840	6	Grade 6 to Grade 7	303	279	W.1.5.6.F.d	Gram. and Sent.
627030	6	Grade 6 to Grade 7	304	279	W.1.5.6.A	Focus and Content
627052	7	Grade 6 to Grade 7	303	280	W.1.5.7.F.d	Gram. and Sent.
639447	7	Grade 6 to Grade 7	303	280	W.1.5.7.F.d	Gram. and Sent.
627058	7	Grade 6 to Grade 7	303	280	W.1.5.7.F.d	Gram. and Sent.
639380	7	Grade 6 to Grade 7	303	279	W.1.5.7.A	Focus and Content
624286	7	Grade 6 to Grade 7	303	280	W.1.5.7.B	Focus and Content
624822	7	Grade 6 to Grade 7	303	280	W.1.5.7.F.b	Spell., Cap., Punct.
636003	7	Grade 6 to Grade 7	303	280	W.1.5.7.C	Org and Style
633454	7	Grade 6 to Grade 7	303	280	W.1.5.7.F.a	Spell., Cap., Punct.
635909	7	Grade 6 to Grade 7	303	279	W.1.5.7.D	Org and Style
634300	7	Grade 6 to Grade 7	303	280	W.1.5.7.F.c	Spell., Cap., Punct.
626992	7	Grade 6 to Grade 7	303	280	W.1.5.7.F.d	Gram. and Sent.
639438	7	Grade 6 to Grade 7	303	280	W.1.5.7.F.d	Gram. and Sent.
628116	7	Grade 6 to Grade 7	303	279	W.1.5.7.F.d	Gram. and Sent.
626764	7	Grade 6 to Grade 7	303	280	W.1.5.7.A	Focus and Content
639394	7	Grade 6 to Grade 7	303	280	W.1.5.7.B	Focus and Content
628476	7	Grade 6 to Grade 7	303	280	W.1.5.7.F.b	Spell., Cap., Punct.
636008	7	Grade 6 to Grade 7	303	280	W.1.5.7.C	Org and Style

Table C–49 (continued). Writing/English Composition Items Used to Link Grade 6 to Grade 7

Item ID	Item Grade	Link	N Count Lower Grade	N Count Upper Grade	Eligible Content	Writing/Composition Diagnostic Category
633455	7	Grade 6 to Grade 7	303	279	W.1.5.7.F.a	Spell., Cap., Punct.
639420	7	Grade 6 to Grade 7	303	280	W.1.5.7.D	Org and Style
634299	7	Grade 6 to Grade 7	303	280	W.1.5.7.F.c	Spell., Cap., Punct.

Table C–50. Writing/English Composition Items Used to Link Grade 7 to Grade 8

Item ID	Item Grade	Link	N Count Lower Grade	N Count Upper Grade	Eligible Content	Writing/Composition Diagnostic Category
627684	7	Grade 8 to Grade 7	280	145	W.1.5.7.F.d	Gram. and Sent.
625487	7	Grade 8 to Grade 7	279	145	W.1.5.7.F.d	Gram. and Sent.
627464	7	Grade 8 to Grade 7	280	145	W.1.5.7.A	Focus and Content
639375	7	Grade 8 to Grade 7	280	145	W.1.5.7.C	Org and Style
633458	7	Grade 8 to Grade 7	280	145	W.1.5.7.F.a	Spell., Cap., Punct.
626996	7	Grade 8 to Grade 7	280	145	W.1.5.7.E	Editing
628098	7	Grade 8 to Grade 7	279	145	W.1.5.7.F.b	Spell., Cap., Punct.
639358	7	Grade 8 to Grade 7	280	145	W.1.5.7.B	Focus and Content
635665	7	Grade 8 to Grade 7	280	145	W.1.5.7.F.c	Spell., Cap., Punct.
627361	7	Grade 8 to Grade 7	280	145	W.1.5.7.C	Org and Style
627056	7	Grade 8 to Grade 7	279	145	W.1.5.7.F.d	Gram. and Sent.
639407	7	Grade 8 to Grade 7	280	145	W.1.5.7.F.d	Gram. and Sent.
626943	7	Grade 8 to Grade 7	280	145	W.1.5.7.A	Focus and Content
639364	7	Grade 8 to Grade 7	280	145	W.1.5.7.C	Org and Style
633457	7	Grade 8 to Grade 7	280	145	W.1.5.7.F.a	Spell., Cap., Punct.
626997	7	Grade 8 to Grade 7	279	145	W.1.5.7.F.d	Gram. and Sent.
630429	7	Grade 8 to Grade 7	280	145	W.1.5.7.F.b	Spell., Cap., Punct.
625506	7	Grade 8 to Grade 7	280	145	W.1.5.7.B	Focus and Content
635668	7	Grade 8 to Grade 7	280	145	W.1.5.7.F.c	Spell., Cap., Punct.
627362	7	Grade 8 to Grade 7	280	145	W.1.5.7.C	Org and Style
633498	8	Grade 8 to Grade 7	279	144	W.1.5.8.F.a	Spell., Cap., Punct.
639580	8	Grade 8 to Grade 7	279	145	W.1.5.8.C	Org and Style
624848	8	Grade 8 to Grade 7	279	143	W.1.5.8.F.b	Spell., Cap., Punct.
639612	8	Grade 8 to Grade 7	279	144	W.1.5.8.B	Focus and Content
628115	8	Grade 8 to Grade 7	279	144	W.1.5.8.F.d	Gram. and Sent.
627963	8	Grade 8 to Grade 7	279	144	W.1.5.8.A	Focus and Content
628311	8	Grade 8 to Grade 7	279	145	W.1.5.8.F.d	Gram. and Sent.
628242	8	Grade 8 to Grade 7	279	143	W.1.5.8.B	Focus and Content
639857	8	Grade 8 to Grade 7	279	144	W.1.5.8.F.c	Spell., Cap., Punct.
639441	8	Grade 8 to Grade 7	279	144	W.1.5.8.F.d	Gram. and Sent.
633497	8	Grade 8 to Grade 7	280	145	W.1.5.8.F.a	Spell., Cap., Punct.
639588	8	Grade 8 to Grade 7	280	143	W.1.5.8.C	Org and Style
625522	8	Grade 8 to Grade 7	280	144	W.1.5.8.F.b	Spell., Cap., Punct.
639610	8	Grade 8 to Grade 7	280	144	W.1.5.8.B	Focus and Content
624828	8	Grade 8 to Grade 7	280	144	W.1.5.8.F.d	Gram. and Sent.
625520	8	Grade 8 to Grade 7	280	145	W.1.5.8.A	Focus and Content
625508	8	Grade 8 to Grade 7	280	143	W.1.5.8.F.d	Gram. and Sent.

Table C–50 (continued). Writing/English Composition Items Used to Link Grade 7 to Grade 8

Item ID	Item Grade	Link	N Count Lower Grade	N Count Upper Grade	Eligible Content	Writing/Composition Diagnostic Category
626775	8	Grade 8 to Grade 7	280	144	W.1.5.8.B	Focus and Content
639856	8	Grade 8 to Grade 7	280	144	W.1.5.8.F.c	Spell., Cap., Punct.
639439	8	Grade 8 to Grade 7	280	144	W.1.5.8.F.d	Gram. and Sent.

Table C–51. Writing/English Composition Items Used to Link English Composition to Grade 8

Item ID	Item Grade	Link	N Count Lower Grade	N Count Upper Grade	Eligible Content	Writing/Composition Diagnostic Category
636213	8	English Comp to Grade 8	143	173	W.1.5.8.F.d	Gram. and Sent.
639599	8	English Comp to Grade 8	144	173	W.1.5.8.C	Org and Style
633503	8	English Comp to Grade 8	144	173	W.1.5.8.F.a	Spell., Cap., Punct.
629857	8	English Comp to Grade 8	144	173	W.1.5.8.F.b	Spell., Cap., Punct.
634156	8	English Comp to Grade 8	145	173	W.1.5.8.F.c	Spell., Cap., Punct.
639577	8	English Comp to Grade 8	143	173	W.1.5.8.E	Editing
635385	8	English Comp to Grade 8	144	173	W.1.5.8.F.d	Gram. and Sent.
635351	8	English Comp to Grade 8	144	173	W.1.5.8.F.d	Gram. and Sent.
627964	8	English Comp to Grade 8	144	173	W.1.5.8.A	Focus and Content
626786	8	English Comp to Grade 8	145	173	W.1.5.8.C	Org and Style
636212	8	English Comp to Grade 8	144	171	W.1.5.8.F.d	Gram. and Sent.
639597	8	English Comp to Grade 8	144	171	W.1.5.8.C	Org and Style
633502	8	English Comp to Grade 8	144	171	W.1.5.8.F.a	Spell., Cap., Punct.
629860	8	English Comp to Grade 8	145	171	W.1.5.8.F.b	Spell., Cap., Punct.
634157	8	English Comp to Grade 8	143	171	W.1.5.8.F.c	Spell., Cap., Punct.
639608	8	English Comp to Grade 8	144	171	W.1.5.8.E	Editing
635386	8	English Comp to Grade 8	144	171	W.1.5.8.F.d	Gram. and Sent.
635350	8	English Comp to Grade 8	144	171	W.1.5.8.F.d	Gram. and Sent.
628143	8	English Comp to Grade 8	145	171	W.1.5.8.A	Focus and Content
626785	8	English Comp to Grade 8	143	171	W.1.5.8.C	Org and Style
622816	EC	English Comp to Grade 8	143	173	C.E.1.1.1	Focus and Content
639932	EC	English Comp to Grade 8	143	173	C.E.3.1.5	Gram. and Sent.
639920	EC	English Comp to Grade 8	143	171	C.E.3.1.4	Gram. and Sent.
634313	EC	English Comp to Grade 8	143	173	C.E.3.1.2	Spell., Cap., Punct.
633540	EC	English Comp to Grade 8	143	172	C.E.3.1.1	Spell., Cap., Punct.
622613	EC	English Comp to Grade 8	143	173	C.E.1.1.3	Org and Style
623126	EC	English Comp to Grade 8	143	173	C.E.3.1.4	Gram. and Sent.
639971	EC	English Comp to Grade 8	143	174	C.E.1.1.2	Focus and Content
629853	EC	English Comp to Grade 8	143	174	C.E.3.1.3	Spell., Cap., Punct.
630391	EC	English Comp to Grade 8	143	173	C.E.1.1.3	Org and Style
622815	EC	English Comp to Grade 8	145	174	C.P.1.1.1	Focus and Content
639933	EC	English Comp to Grade 8	145	173	C.E.3.1.5	Gram. and Sent.
639919	EC	English Comp to Grade 8	145	173	C.E.3.1.4	Gram. and Sent.
634349	EC	English Comp to Grade 8	145	174	C.E.3.1.2	Spell., Cap., Punct.
633536	EC	English Comp to Grade 8	145	174	C.E.3.1.1	Spell., Cap., Punct.
622611	EC	English Comp to Grade 8	145	174	C.E.1.1.3	Org and Style
621166	EC	English Comp to Grade 8	145	173	C.E.3.1.4	Gram. and Sent.

Table C–51 (continued). Writing/English Composition Items Used to Link English Composition to Grade 8

Item ID	Item Grade	Link	N Count Lower Grade	N Count Upper Grade	Eligible Content	Writing/Composition Diagnostic Category
630659	EC	English Comp to Grade 8	145	173	C.E.1.1.2	Focus and Content
629822	EC	English Comp to Grade 8	145	173	C.E.3.1.3	Spell., Cap., Punct.
630392	EC	English Comp to Grade 8	145	171	C.E.1.1.3	Org and Style

Tables C–52 through C–57 summarize the number of linking items by diagnostic category.

Table C–52. Number of Items Linking Grade 3 to Grade 4 by Diagnostic Category

Diagnostic Category	Grade 3 Items	Grade 4 Items	Total
Focus and Content	4	4	8
Org and Style	4	5	9
Editing	0	3	3
Spell., Cap., Punct.	6	6	12
Gram. and Sent.	6	2	8
TOTAL	20	20	40

Table C–53. Number of Items Linking Grade 4 to Grade 5 by Diagnostic Category

Diagnostic Category	Grade 4 Items	Grade 5 Items	Total
Focus and Content	4	0	4
Org and Style	4	7	11
Editing	4	2	6
Spell., Cap., Punct.	6	6	12
Gram. and Sent.	2	5	7
TOTAL	20	20	40

Table C–54. Number of Items Linking Grade 5 to Grade 6 by Diagnostic Category

Diagnostic Category	Grade 5 Items	Grade 6 Items	Total
Focus and Content	2	4	6
Org and Style	2	4	6
Editing	6	2	8
Spell., Cap., Punct.	6	6	12
Gram. and Sent.	4	4	8
TOTAL	20	20	40

Table C–55. Number of Items Linking Grade 6 to Grade 7 by Diagnostic Category

Diagnostic Category	Grade 6 Items	Grade 7 Items	Total
Focus and Content	2	4	6
Org and Style	2	4	6
Editing	4	0	4
Spell., Cap., Punct.	6	6	12
Gram. and Sent.	6	6	12
TOTAL	20	20	40

Table C–56. Number of Items Linking Grade 8 to Grade 7 by Diagnostic Category

Diagnostic Category	Grade 7 Items	Grade 8 Items	Total
Focus and Content	4	6	10
Org and Style	4	2	6
Editing	1	0	1
Spell., Cap., Punct.	6	6	12
Gram. and Sent.	5	6	11
TOTAL	20	20	40

Table C–57. Number of Items Linking English Composition to Grade 8 by Diagnostic Category

Diagnostic Category	Grade 8 Items	Eng Comp Items	Total
Focus and Content	2	4	6
Org and Style	4	4	8
Editing	2	0	2
Spell., Cap., Punct.	6	6	12
Gram. and Sent.	6	6	12
TOTAL	20	20	40

Table C–58. Writing/English Composition Example of Vertical Linking Workbook

Item ID	Item Grade	Grade 4 Calibration			Grade 5 Calibration			Discrepancy	Grade 4 on	Robust Z	Flag
		Difficulty	Fit	Displace	Difficulty	Fit	Displace		Grade 5 Scale		
623017	4	-0.784	0.910	-0.006	-0.927	0.910	0.000	-0.143	-1.005	0.233	
625455	4	-0.205	1.030	-0.001	0.132	1.010	0.001	0.337	-0.426	1.437	
622453	4	-0.955	0.910	0.003	-1.526	0.860	0.000	-0.571	-1.176	-0.840	
623135	4	1.520	1.200	0.005	1.516	1.110	0.001	-0.004	1.299	0.582	
632573	4	0.527	1.250	-0.002	0.872	1.190	0.001	0.345	0.306	1.457	
623020	4	-1.254	0.890	-0.001	-1.487	0.900	0.000	-0.233	-1.475	0.008	
633435	4	-0.452	1.020	-0.003	-0.441	0.910	0.000	0.011	-0.673	0.620	
623108	4	-0.152	0.830	0.000	0.025	0.920	0.000	0.177	-0.373	1.036	
633468	4	-0.857	0.900	-0.006	-0.475	0.860	0.000	0.382	-1.078	1.550	
627696	4	1.837	1.210	-0.001	1.968	1.140	0.001	0.131	1.616	0.921	
623115	4	-0.678	0.960	-0.001	-1.072	0.890	-0.003	-0.394	-0.899	-0.396	
622983	4	-0.797	1.020	0.003	-1.360	0.980	-0.003	-0.563	-1.018	-0.820	
622454	4	0.922	1.070	0.005	0.483	1.000	-0.002	-0.439	0.701	-0.509	
621395	4	1.634	1.080	-0.002	0.998	1.090	-0.002	-0.636	1.413	-1.003	
632587	4	0.650	0.830	-0.001	0.149	0.980	-0.002	-0.501	0.429	-0.665	
623019	4	-1.134	0.990	-0.003	-1.611	1.020	-0.003	-0.477	-1.355	-0.605	
634025	4	-0.885	0.960	0.000	-1.496	0.920	-0.003	-0.611	-1.106	-0.941	
626922	4	0.516	1.000	-0.006	0.159	0.970	-0.002	-0.357	0.295	-0.304	
633469	4	-0.151	0.880	-0.001	-0.121	0.900	-0.002	0.030	-0.372	0.667	
628471	4	2.662	1.140	0.003	2.119	1.130	-0.001	-0.543	2.441	-0.770	
637149	5	-2.406	0.960	0.003	-2.126	0.960	0.005	0.280	-2.627	1.294	
633440	5	-0.302	1.040	0.003	-0.227	0.960	0.001	0.075	-0.523	0.780	
635884	5	-1.607	0.840	0.003	-1.708	0.870	-0.001	-0.101	-1.828	0.339	
637062	5	0.739	1.110	0.004	0.794	1.170	0.000	0.055	0.518	0.730	
623027	5	-0.341	0.780	0.003	-0.917	0.800	-0.004	-0.576	-0.562	-0.853	
622469	5	1.057	1.110	0.004	0.730	1.000	0.000	-0.327	0.836	-0.228	
639843	5	-0.548	0.910	0.003	-1.127	0.990	-0.002	-0.579	-0.769	-0.860	
635417	5	0.499	1.050	0.004	0.561	1.050	-0.005	0.062	0.278	0.747	
620819	5	0.739	0.970	0.004	0.337	0.950	-0.005	-0.402	0.518	-0.416	
635605	5	1.417	1.220	0.004	1.437	1.080	0.001	0.020	1.196	0.642	
637148	5	-0.606	0.950	0.002	-1.440	0.920	0.001	-0.834	-0.827	-1.500	
633439	5	0.404	1.100	0.002	0.544	1.050	-0.001	0.140	0.183	0.943	
620820	5	0.287	0.950	0.002	0.089	0.960	0.000	-0.198	0.066	0.095	
626566	5	-0.764	0.860	0.002	-1.003	0.860	-0.004	-0.239	-0.985	-0.008	
623129	5	-1.331	0.800	0.002	-1.323	0.820	0.000	0.008	-1.552	0.612	
629858	5	1.124	1.020	0.003	0.983	1.020	-0.002	-0.141	0.903	0.238	
639864	5	-0.729	0.950	0.002	-1.075	0.900	-0.005	-0.346	-0.950	-0.276	
627291	5	0.515	0.880	0.002	0.008	0.970	-0.005	-0.507	0.294	-0.680	
639349	5	0.658	1.040	0.002	0.285	0.890	0.005	-0.373	0.437	-0.344	
626818	5	1.722	0.970	0.003	0.913	0.990	-0.001	-0.809	1.501	-1.437	
	Mean	0.062			-0.159			-0.221	-0.159	0.037	
	SD	1.088			1.095			0.330	1.088	0.828	
	SD Ratio	0.993									
	Correlation	0.954									
	Add. Constant	-0.221									
	Median							-0.236			
	Q							0.539			

Figures C-22 through C-27 are the adjacent grade linking plots. No items were removed from final linking procedure so there are no red items in these plots.

Figure C-22. CDT Writing/English Composition: Grade 3 to Grade 4 Linking – All Links

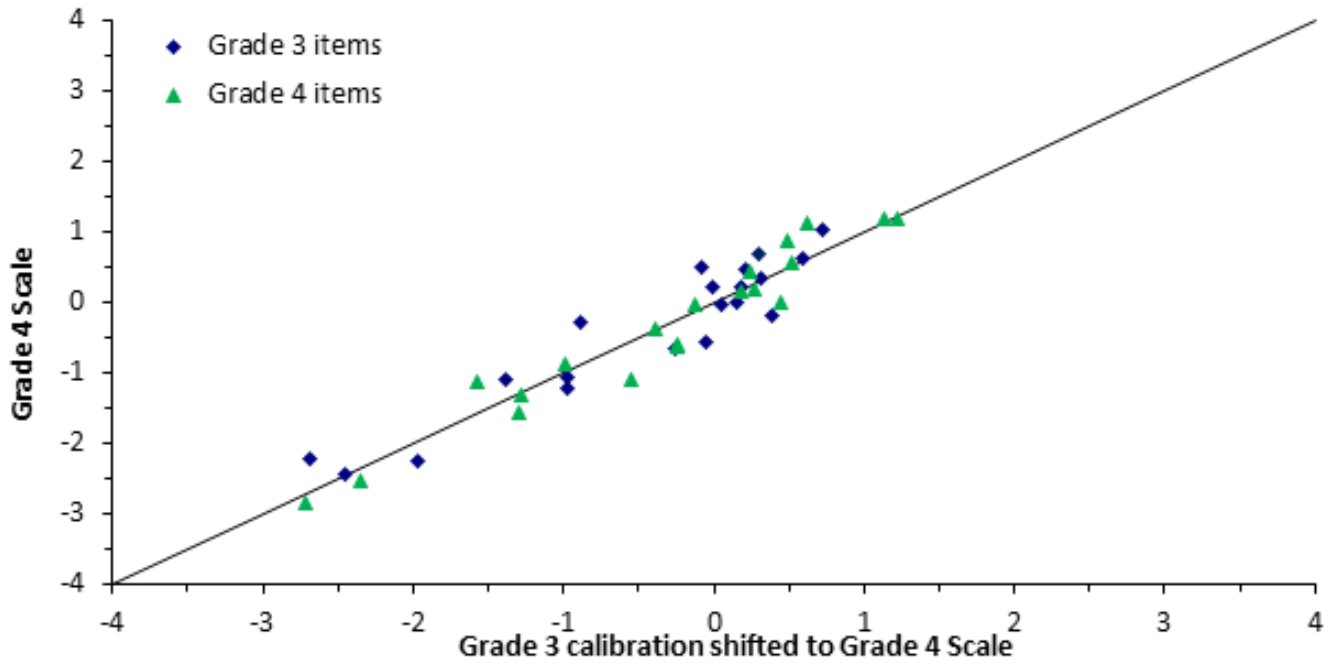


Figure C-23. CDT Writing/English Composition: Grade 4 to Grade 5 Linking – All Links

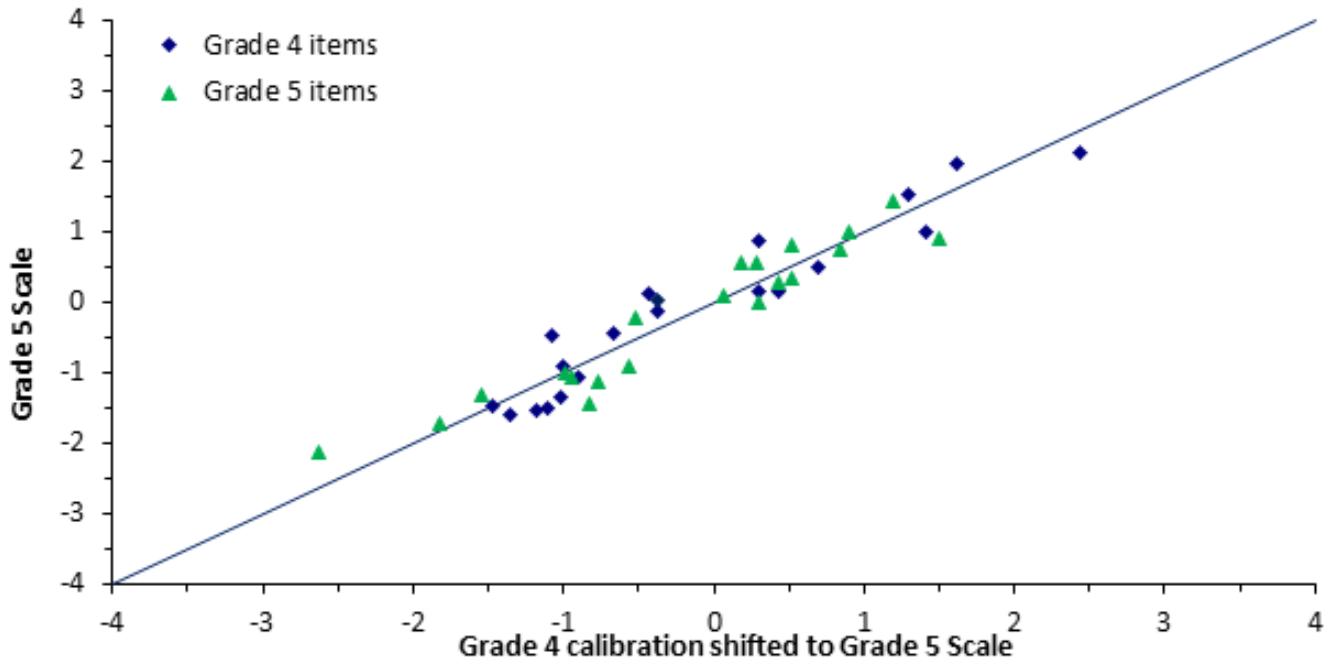


Figure C-24. CDT Writing/English Composition: Grade 5 to Grade 6 Linking – All Links

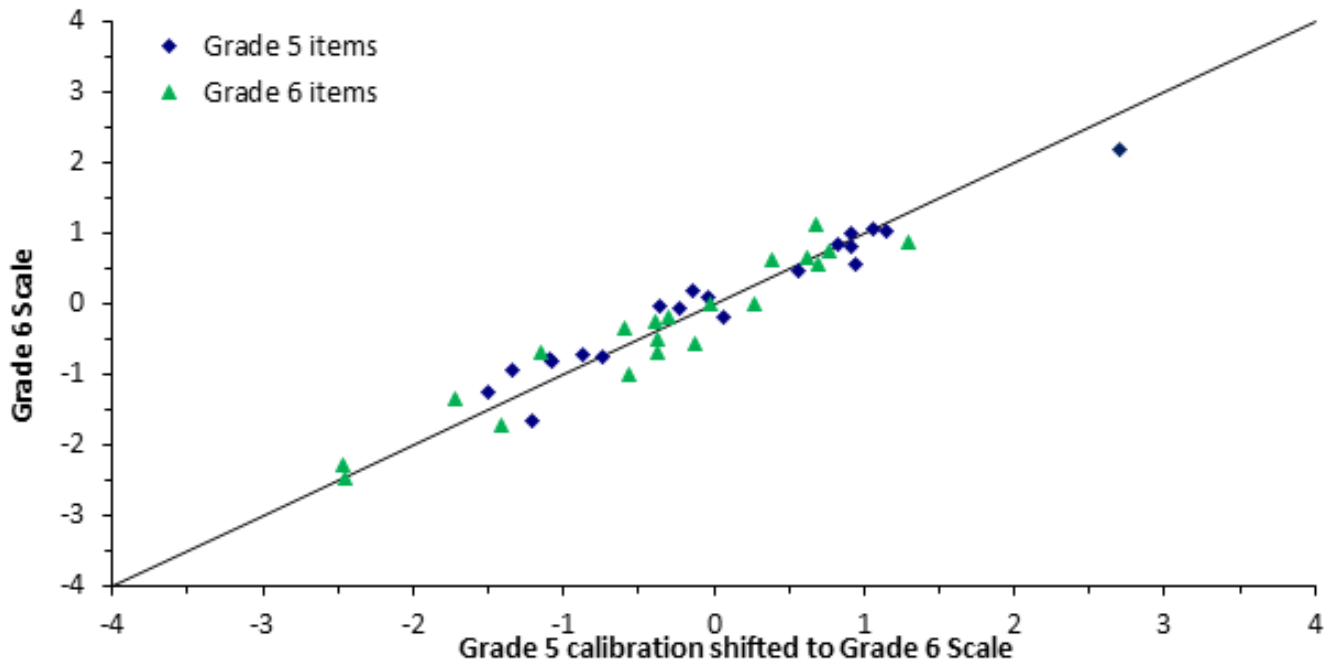


Figure C-25. CDT Writing/English Composition: Grade 6 to Grade 7 Linking – All Links

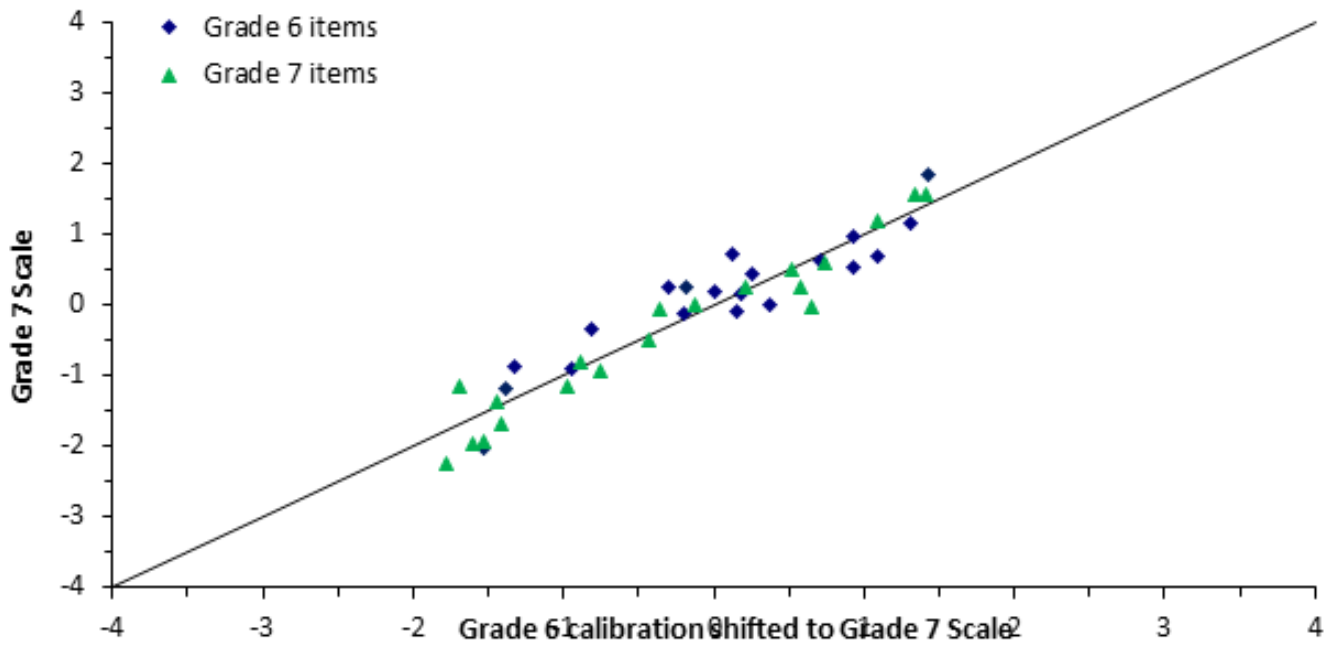


Figure C-26. CDT Writing/English Composition: Grade 8 to Grade 7 Linking – All Links

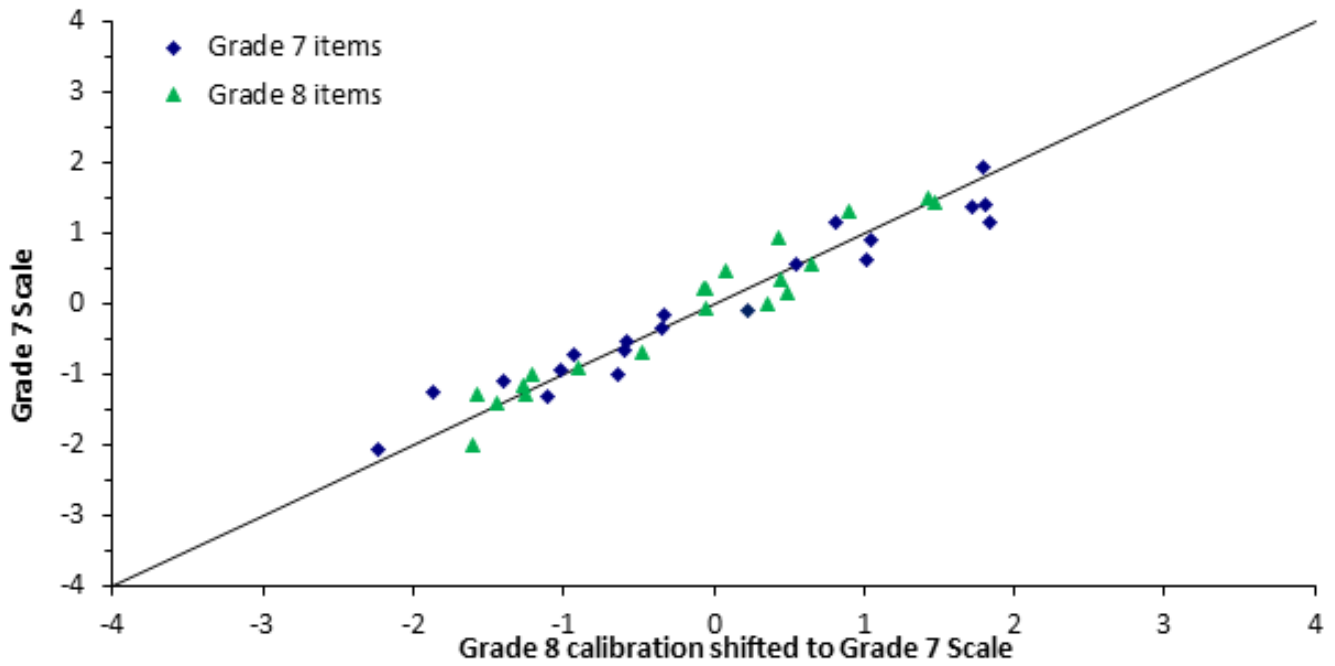
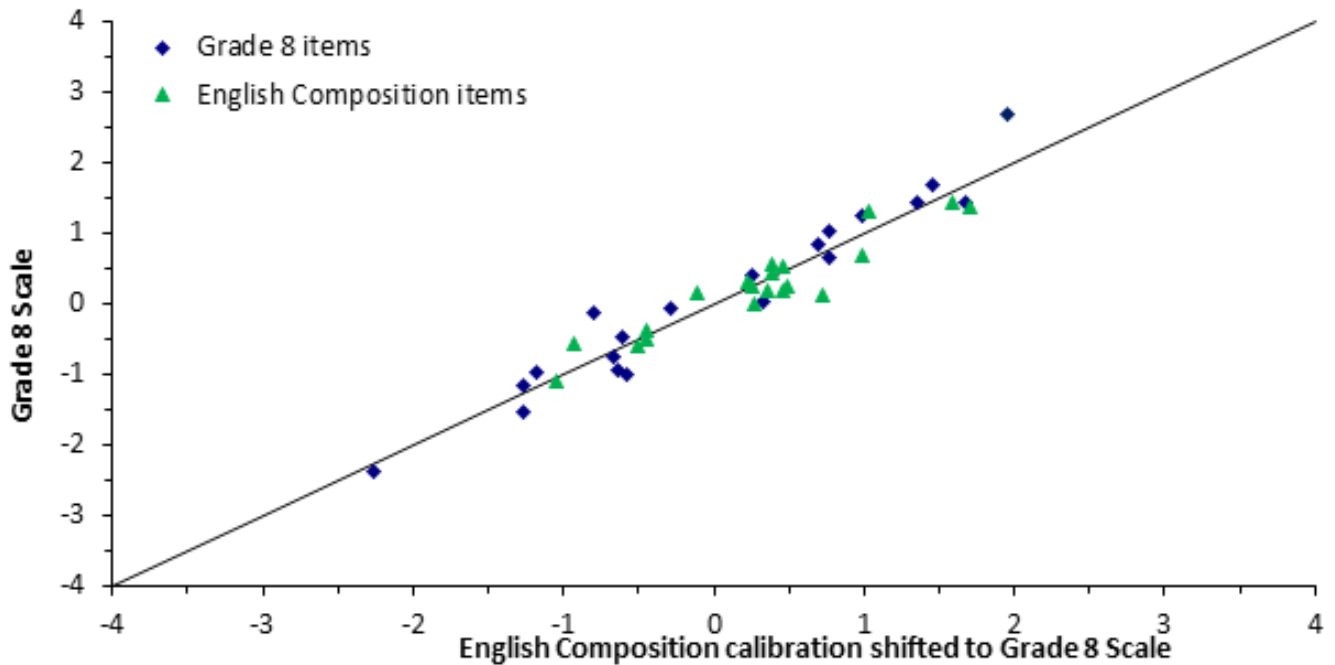


Figure C-27. CDT Writing/English Composition: Literature to Grade 8 Linking – All Links



APPENDIX D: SIGNIFICANT DIFFERENCES AMONG DIAGNOSTIC CATEGORIES

In Chapter Fifteen (Operational Administration 2016–2017), significant differences among diagnostic categories were tested with a t-test using a Bonferroni correction for multiple comparisons to keep the familywise Type I error rate at 0.32. The tables in this appendix show the significant differences with the familywise Type I error rate at 0.10.

DIAGNOSTIC CATEGORY SIGNIFICANT DIFFERENCES

Table D–1a. Diagnostic Category Significant Differences – Math Grades 3-5

Group 1	Group 2	Yes	No	% Yes	% No
DC1	DC2	613	174,742	0.3%	99.7%
DC1	DC3	1,402	173,953	0.8%	99.2%
DC1	DC4	773	174,582	0.4%	99.6%
DC2	DC3	1,586	173,769	0.9%	99.1%
DC2	DC4	712	174,643	0.4%	99.6%
DC3	DC4	1,547	173,808	0.9%	99.1%

Note: Z value is 2.39

Table D–1b. Total Number of Diagnostic Category Significant Differences – Math Grades 3-5

Number of Significant Differences	Number of Students	Percent of Students
0	170,179	97.0%
1	4,006	2.3%
2	891	0.5%
3	271	0.2%
4	8	0.0%
5	0	0.0%
6	0	0.0%

Table D–2a. Diagnostic Category Significant Differences – Math Grades 6-8

Group 1	Group 2	Yes	No	% Yes	% No
DC1	DC2	1,543	213,453	0.7%	99.3%
DC1	DC3	1,705	213,291	0.8%	99.2%
DC1	DC4	1,773	213,223	0.8%	99.2%
DC2	DC3	1,684	213,312	0.8%	99.2%
DC2	DC4	1,757	213,239	0.8%	99.2%
DC3	DC4	1,742	213,254	0.8%	99.2%

Note: Z value is 2.39

Table D–2b. Total Number of Diagnostic Category Significant Differences – Math Grades 6-8

Number of Significant Differences	Number of Students	Percent of Students
0	207,325	96.4%
1	5,623	2.6%
2	1,582	0.7%
3	447	0.2%
4	19	0.0%
5	0	0.0%
6	0	0.0%

Table D–3a. Diagnostic Category Significant Differences – Algebra I

Group 1	Group 2	Yes	No	% Yes	% No
DC1	DC2	1,483	115,266	1.3%	98.7%
DC1	DC3	1,536	115,213	1.3%	98.7%
DC1	DC4	1,908	114,841	1.6%	98.4%
DC2	DC3	627	116,122	0.5%	99.5%
DC2	DC4	1,083	115,666	0.9%	99.1%
DC3	DC4	1,194	115,555	1.0%	99.0%

Note: Z value is 2.39

Table D–3b. Total Number of Diagnostic Category Significant Differences – Algebra I

Number of Significant Differences	Number of Students	Percent of Students
0	110,877	95.0%
1	4,274	3.7%
2	1,249	1.1%
3	337	0.3%
4	12	0.0%
5	0	0.0%
6	0	0.0%

Table D–4a. Diagnostic Category Significant Differences – Geometry

Group 1	Group 2	Yes	No	% Yes	% No
DC1	DC2	110	12,292	0.9%	99.1%
DC1	DC3	124	12,278	1.0%	99.0%
DC1	DC4	154	12,248	1.2%	98.8%
DC2	DC3	148	12,254	1.2%	98.8%
DC2	DC4	161	12,241	1.3%	98.7%
DC3	DC4	156	12,246	1.3%	98.7%

Note: Z value is 2.39

Table D–4b. Total Number of Diagnostic Category Significant Differences – Geometry

Number of Significant Differences	Number of Students	Percent of Students
0	11,778	95.0%
1	434	3.5%
2	154	1.2%
3	33	0.3%
4	3	0.0%
5	0	0.0%
6	0	0.0%

Table D–5a. Diagnostic Category Significant Differences – Algebra II

Group 1	Group 2	Yes	No	% Yes	% No
DC1	DC2	319	11,153	2.8%	97.2%
DC1	DC3	265	11,207	2.3%	97.7%
DC1	DC4	557	10,915	4.9%	95.1%
DC2	DC3	122	11,350	1.1%	98.9%
DC2	DC4	164	11,308	1.4%	98.6%
DC3	DC4	157	11,315	1.4%	98.6%

Note: Z value is 2.39

Table D–5b. Total Number of Diagnostic Category Significant Differences – Algebra II

Number of Significant Differences	Number of Students	Percent of Students
0	10,366	90.4%
1	734	6.4%
2	271	2.4%
3	96	0.8%
4	5	0.0%
5	0	0.0%
6	0	0.0%

Table D–6a. Diagnostic Category Significant Differences – Reading Grades 3-5

Group 1	Group 2	Yes	No	% Yes	% No
DC1	DC2	28	149,249	0.0%	100.0%
DC1	DC3	33	149,244	0.0%	100.0%
DC1	DC4	41	149,236	0.0%	100.0%
DC1	DC5	27	149,250	0.0%	100.0%
DC2	DC3	41	149,236	0.0%	100.0%
DC2	DC4	25	149,252	0.0%	100.0%
DC2	DC5	38	149,239	0.0%	100.0%
DC3	DC4	41	149,236	0.0%	100.0%
DC3	DC5	89	149,188	0.1%	99.9%
DC4	DC5	69	149,208	0.0%	100.0%

Note: Z value is 2.58

Table D-6b. Total Number of Diagnostic Category Significant Differences – Reading Grades 3-5

Number of Significant Differences	Number of Students	Percent of Students
0	148,892	99.7%
1	344	0.2%
2	35	0.0%
3	6	0.0%
4	0	0.0%
5	0	0.0%
6	0	0.0%
7	0	0.0%
8	0	0.0%
9	0	0.0%
10	0	0.0%

Table D-7a. Diagnostic Category Significant Differences – Reading/Lit Grades 6-HS

Group 1	Group 2	Yes	No	% Yes	% No
DC1	DC2	54	350,509	0.0%	100.0%
DC1	DC3	52	350,511	0.0%	100.0%
DC1	DC4	75	350,488	0.0%	100.0%
DC1	DC5	115	350,448	0.0%	100.0%
DC2	DC3	49	350,514	0.0%	100.0%
DC2	DC4	45	350,518	0.0%	100.0%
DC2	DC5	178	350,385	0.1%	99.9%
DC3	DC4	48	350,515	0.0%	100.0%
DC3	DC5	230	350,333	0.1%	99.9%
DC4	DC5	177	350,386	0.1%	99.9%

Note: Z value is 2.58

Table D-7b. Total Number of Diagnostic Category Significant Differences – Reading/Lit Grades 6-HS

Number of Significant Differences	Number of Students	Percent of Students
0	349,662	99.7%
1	800	0.2%
2	84	0.0%
3	13	0.0%
4	4	0.0%
5	0	0.0%
6	0	0.0%
7	0	0.0%
8	0	0.0%
9	0	0.0%
10	0	0.0%

Table D–8a. Diagnostic Category Significant Differences – Science Grades 3-5

Group 1	Group 2	Yes	No	% Yes	% No
DC1	DC2	85	28,853	0.3%	99.7%
DC1	DC3	107	28,831	0.4%	99.6%
DC1	DC4	98	28,840	0.3%	99.7%
DC2	DC3	79	28,859	0.3%	99.7%
DC2	DC4	79	28,859	0.3%	99.7%
DC3	DC4	100	28,838	0.3%	99.7%

Note: Z value is 2.39

Table D–8b. Total Number of Diagnostic Category Significant Differences – Science Grades 3-5

Number of Significant Differences	Number of Students	Percent of Students
0	28,526	98.6%
1	304	1.1%
2	81	0.3%
3	26	0.1%
4	1	0.0%
5	0	0.0%
6	0	0.0%

Table D–9a. Diagnostic Category Significant Differences – Science Grades 6-HS

Group 1	Group 2	Yes	No	% Yes	% No
DC1	DC2	618	105,905	0.6%	99.4%
DC1	DC3	714	105,809	0.7%	99.3%
DC1	DC4	631	105,892	0.6%	99.4%
DC2	DC3	684	105,839	0.6%	99.4%
DC2	DC4	640	105,883	0.6%	99.4%
DC3	DC4	564	105,959	0.5%	99.5%

Note: Z value is 2.39

Table D–9b. Total Number of Diagnostic Category Significant Differences – Science Grades 6-HS

Number of Significant Differences	Number of Students	Percent of Students
0	103,702	97.4%
1	1,994	1.9%
2	629	0.6%
3	193	0.2%
4	5	0.0%
5	0	0.0%
6	0	0.0%

Table D-10a. Diagnostic Category Significant Differences – Biology

Group 1	Group 2	Yes	No	% Yes	% No
DC1	DC2	744	130,688	0.6%	99.4%
DC1	DC3	797	130,635	0.6%	99.4%
DC1	DC4	995	130,437	0.8%	99.2%
DC2	DC3	443	130,989	0.3%	99.7%
DC2	DC4	1,005	130,427	0.8%	99.2%
DC3	DC4	936	130,496	0.7%	99.3%

Note: Z value is 2.39

Table D-10b. Total Number of Diagnostic Category Significant Differences – Biology

Number of Significant Differences	Number of Students	Percent of Students
0	127,539	97.0%
1	3,034	2.3%
2	698	0.5%
3	154	0.1%
4	7	0.0%
5	0	0.0%
6	0	0.0%

Table D-11a. Diagnostic Category Significant Differences – Chemistry

Group 1	Group 2	Yes	No	% Yes	% No
DC1	DC2	236	7,717	3.0%	97.0%
DC1	DC3	137	7,816	1.7%	98.3%
DC1	DC4	150	7,803	1.9%	98.1%
DC2	DC3	14	7,939	0.2%	99.8%
DC2	DC4	16	7,937	0.2%	99.8%
DC3	DC4	14	7,939	0.2%	99.8%

Note: Z value is 2.39

Table D-11b. Total Number of Diagnostic Category Significant Differences – Chemistry

Number of Significant Differences	Number of Students	Percent of Students
0	7,550	94.9%
1	266	3.3%
2	110	1.4%
3	27	0.3%
4	0	0.0%
5	0	0.0%
6	0	0.0%

Table D-12a. Diagnostic Category Significant Differences – Writing Grades 3-5

Group 1	Group 2	Yes	No	% Yes	% No
DC1	DC2	35	24,154	0.1%	99.9%
DC1	DC3	34	24,155	0.1%	99.9%
DC1	DC4	40	24,149	0.2%	99.8%
DC1	DC5	53	24,136	0.2%	99.8%
DC2	DC3	22	24,167	0.1%	99.9%
DC2	DC4	38	24,151	0.2%	99.8%
DC2	DC5	52	24,137	0.2%	99.8%
DC3	DC4	23	24,166	0.1%	99.9%
DC3	DC5	42	24,147	0.2%	99.8%
DC4	DC5	42	24,147	0.2%	99.8%

Note: Z value is 2.58

Table D-12b. Total Number of Diagnostic Category Significant Differences – Writing Grades 3-5

Number of Significant Differences	Number of Students	Percent of Students
0	23,916	98.9%
1	199	0.8%
2	48	0.2%
3	18	0.1%
4	8	0.0%
5	0	0.0%
6	0	0.0%
7	0	0.0%
8	0	0.0%
9	0	0.0%
10	0	0.0%

Table D-13a. Diagnostic Category Significant Differences – Writing/Eng Comp Grades 6-HS

Group 1	Group 2	Yes	No	% Yes	% No
DC1	DC2	85	58,421	0.1%	99.9%
DC1	DC3	114	58,392	0.2%	99.8%
DC1	DC4	165	58,341	0.3%	99.7%
DC1	DC5	128	58,378	0.2%	99.8%
DC2	DC3	101	58,405	0.2%	99.8%
DC2	DC4	123	58,383	0.2%	99.8%
DC2	DC5	96	58,410	0.2%	99.8%
DC3	DC4	136	58,370	0.2%	99.8%
DC3	DC5	134	58,372	0.2%	99.8%
DC4	DC5	109	58,397	0.2%	99.8%

Note: Z value is 2.58

Table D-13b. Total Number of Diagnostic Category Significant Differences – Writing/Eng Comp Grades 6-HS

Number of Significant Differences	Number of Students	Percent of Students
0	57,620	98.5%
1	654	1.1%
2	168	0.3%
3	55	0.1%
4	9	0.0%
5	0	0.0%
6	0	0.0%
7	0	0.0%
8	0	0.0%
9	0	0.0%
10	0	0.0%

APPENDIX E: DECISION CONSISTENCY

In Chapter Sixteen (Reliability), decision consistency for each CDT test and benchmark cut is reported with two values: exact agreement rate and kappa. However, as noted in the chapter, retest classification probability varies at different points along the scale. For example, the retest probability of green is higher for scores near the red/green cut than for scores very low in the red range. This appendix provides a more detailed examination of the differences in retest probability across the score range. 3 X 3 retest classification probability tables and retest classification percent tables by score range are presented for all CDT tests and benchmark cuts.

3 X 3 RETEST CLASSIFICATION PROBABILITY

Table E-1. Retest Classification Probability – Mathematics Grade 3

	Red - retest	Green - retest	Blue - retest
Red – test	0.937	0.063	0.000
Green – test	0.131	0.816	0.052
Blue – test	0.000	0.195	0.805

Exact Agreement Rate = 0.899

Kappa = 0.779

N-count = 51,976

Table E-2. Retest Classification Probability – Mathematics Grade 4

	Red - retest	Green - retest	Blue - retest
Red – test	0.930	0.070	0.000
Green – test	0.130	0.816	0.054
Blue – test	0.000	0.191	0.809

Exact Agreement Rate = 0.890

Kappa = 0.775

N-count = 59,764

Table E-3. Retest Classification Probability – Mathematics Grade 5

	Red - retest	Green - retest	Blue - retest
Red – test	0.927	0.073	0.000
Green – test	0.136	0.816	0.048
Blue – test	0.000	0.199	0.801

Exact Agreement Rate = 0.889

Kappa = 0.766

N-count = 63,615

Table E-4. Retest Classification Probability – Mathematics Grade 6

	Red - retest	Green - retest	Blue - retest
Red – test	0.937	0.063	0.000
Green – test	0.129	0.823	0.047
Blue – test	0.000	0.162	0.838

Exact Agreement Rate = 0.900

Kappa = 0.789

N-count = 77,419

Table E-5. Retest Classification Probability – Mathematics Grade 7

	Red - retest	Green - retest	Blue - retest
Red – test	0.940	0.060	0.000
Green – test	0.142	0.818	0.040
Blue – test	0.000	0.167	0.833

Exact Agreement Rate = 0.906

Kappa = 0.778

N-count = 76,299

Table E-6. Retest Classification Probability – Mathematics Grade 8

	Red - retest	Green - retest	Blue - retest
Red – test	0.939	0.061	0.000
Green – test	0.154	0.808	0.038
Blue – test	0.000	0.165	0.835

Exact Agreement Rate = 0.908

Kappa = 0.762

N-count = 61,278

Table E-7. Retest Classification Probability – Algebra I

	Red - retest	Green - retest	Blue - retest
Red – test	0.927	0.073	0.000
Green – test	0.156	0.810	0.034
Blue – test	0.000	0.186	0.814

Exact Agreement Rate = 0.893

Kappa = 0.752

N-count = 116,749

Table E-8. Retest Classification Probability – Geometry

	Red - retest	Green - retest	Blue - retest
Red – test	0.934	0.066	0.000
Green – test	0.126	0.822	0.051
Blue – test	0.000	0.157	0.843

Exact Agreement Rate = 0.898

Kappa = 0.787

N-count = 12,402

Table E-9. Retest Classification Probability – Algebra II

	Red - retest	Green - retest	Blue - retest
Red – test	0.948	0.052	0.000
Green – test	0.130	0.821	0.049
Blue – test	0.000	0.166	0.834

Exact Agreement Rate = 0.918

Kappa = 0.788

N-count = 11,472

Table E-10. Retest Classification Probability – Reading Grade 3

	Red - retest	Green - retest	Blue - retest
Red – test	0.930	0.070	0.000
Green – test	0.091	0.856	0.053
Blue – test	0.000	0.200	0.800

Exact Agreement Rate = 0.893

Kappa = 0.804

N-count = 44,702

Table E-11. Retest Classification Probability – Reading Grade 4

	Red - retest	Green - retest	Blue - retest
Red – test	0.931	0.069	0.000
Green – test	0.087	0.857	0.056
Blue – test	0.000	0.227	0.773

Exact Agreement Rate = 0.890

Kappa = 0.802

N-count = 49,847

Table E-12. Retest Classification Probability – Reading Grade 5

	Red - retest	Green - retest	Blue - retest
Red – test	0.927	0.073	0.000
Green – test	0.084	0.864	0.052
Blue – test	0.000	0.248	0.752

Exact Agreement Rate = 0.889

Kappa = 0.799

N-count = 54,728

Table E-13. Retest Classification Probability – Reading Grade 6

	Red - retest	Green - retest	Blue - retest
Red – test	0.922	0.078	0.000
Green – test	0.093	0.865	0.042
Blue – test	0.000	0.264	0.736

Exact Agreement Rate = 0.889

Kappa = 0.793

N-count = 63,315

Table E-14. Retest Classification Probability – Reading Grade 7

	Red - retest	Green - retest	Blue - retest
Red – test	0.923	0.077	0.000
Green – test	0.100	0.861	0.039
Blue – test	0.000	0.265	0.735

Exact Agreement Rate = 0.890

Kappa = 0.792

N-count = 65,930

Table E-15. Retest Classification Probability – Reading Grade 8

	Red - retest	Green - retest	Blue - retest
Red – test	0.926	0.074	0.000
Green – test	0.101	0.858	0.041
Blue – test	0.000	0.274	0.726

Exact Agreement Rate = 0.892

Kappa = 0.793

N-count = 63,068

Table E-16. Retest Classification Probability – Literature

	Red - retest	Green - retest	Blue - retest
Red – test	0.923	0.077	0.000
Green – test	0.091	0.859	0.049
Blue – test	0.000	0.272	0.728

Exact Agreement Rate = 0.884

Kappa = 0.787

N-count = 158,250

Table E-17. Retest Classification Probability – Science Grade 3

	Red - retest	Green - retest	Blue - retest
Red – test	0.910	0.090	0.000
Green – test	0.094	0.822	0.084
Blue – test	0.000	0.182	0.818

Exact Agreement Rate = 0.856

Kappa = 0.765

N-count = 4,010

Table E-18. Retest Classification Probability – Science Grade 4

	Red - retest	Green - retest	Blue - retest
Red – test	0.899	0.101	0.000
Green – test	0.089	0.828	0.083
Blue – test	0.000	0.190	0.810

Exact Agreement Rate = 0.849

Kappa = 0.754

N-count = 20,476

Table E-19. Retest Classification Probability – Science Grade 5

	Red - retest	Green - retest	Blue - retest
Red – test	0.902	0.098	0.000
Green – test	0.093	0.826	0.081
Blue – test	0.000	0.211	0.789

Exact Agreement Rate = 0.851

Kappa = 0.747

N-count = 4,452

Table E-20. Retest Classification Probability – Science Grade 6

	Red - retest	Green - retest	Blue - retest
Red – test	0.909	0.091	0.000
Green – test	0.100	0.840	0.060
Blue – test	0.000	0.247	0.753

Exact Agreement Rate = 0.867

Kappa = 0.761

N-count = 20,659

Table E-21. Retest Classification Probability – Science Grade 7

	Red - retest	Green - retest	Blue - retest
Red – test	0.914	0.086	0.000
Green – test	0.112	0.839	0.049
Blue – test	0.000	0.255	0.745

Exact Agreement Rate = 0.874

Kappa = 0.765

N-count = 33,151

Table E-22. Retest Classification Probability – Science Grade 8

	Red - retest	Green - retest	Blue - retest
Red – test	0.909	0.091	0.000
Green – test	0.128	0.834	0.038
Blue – test	0.000	0.249	0.751

Exact Agreement Rate = 0.873

Kappa = 0.755

N-count = 51,426

Table E-23. Retest Classification Probability – Science High School

	Red - retest	Green - retest	Blue - retest
Red – test	0.951	0.049	0.000
Green – test	0.107	0.834	0.059
Blue – test	0.000	0.249	0.751

Exact Agreement Rate = 0.908

Kappa = 0.808

N-count = 1,287

Table E-24. Retest Classification Probability – Biology

	Red - retest	Green - retest	Blue - retest
Red – test	0.907	0.093	0.000
Green – test	0.131	0.824	0.045
Blue – test	0.000	0.178	0.822

Exact Agreement Rate = 0.871

Kappa = 0.758

N-count = 131,432

Table E-25. Retest Classification Probability – Chemistry

	Red - retest	Green - retest	Blue - retest
Red – test	0.910	0.090	0.000
Green – test	0.154	0.820	0.026
Blue – test	0.000	0.197	0.803

Exact Agreement Rate = 0.879

Kappa = 0.738

N-count = 7,953

Table E-26. Retest Classification Probability – Writing Grade 3

	Red - retest	Green - retest	Blue - retest
Red – test	0.933	0.067	0.000
Green – test	0.100	0.832	0.068
Blue – test	0.000	0.205	0.795

Exact Agreement Rate = 0.882

Kappa = 0.790

N-count = 6,943

Table E-27. Retest Classification Probability – Writing Grade 4

	Red - retest	Green - retest	Blue - retest
Red – test	0.928	0.072	0.000
Green – test	0.095	0.834	0.071
Blue – test	0.000	0.223	0.777

Exact Agreement Rate = 0.878

Kappa = 0.784

N-count = 7,504

Table E-28. Retest Classification Probability – Writing Grade 5

	Red - retest	Green - retest	Blue - retest
Red – test	0.917	0.083	0.000
Green – test	0.098	0.835	0.066
Blue – test	0.000	0.211	0.789

Exact Agreement Rate = 0.871

Kappa = 0.773

N-count = 9,742

Table E–29. Retest Classification Probability – Writing Grade 6

	Red - retest	Green - retest	Blue - retest
Red – test	0.925	0.075	0.000
Green – test	0.100	0.843	0.057
Blue – test	0.000	0.207	0.793

Exact Agreement Rate = 0.880

Kappa = 0.787

N-count = 15,543

Table E–30. Retest Classification Probability – Writing Grade 7

	Red - retest	Green - retest	Blue - retest
Red – test	0.923	0.077	0.000
Green – test	0.103	0.844	0.054
Blue – test	0.000	0.226	0.774

Exact Agreement Rate = 0.881

Kappa = 0.783

N-count = 17,971

Table E–31. Retest Classification Probability – Writing Grade 8

	Red - retest	Green - retest	Blue - retest
Red – test	0.921	0.079	0.000
Green – test	0.103	0.843	0.054
Blue – test	0.000	0.217	0.783

Exact Agreement Rate = 0.879

Kappa = 0.781

N-count = 17,828

Table E–32. Retest Classification Probability – English Composition

	Red - retest	Green - retest	Blue - retest
Red – test	0.920	0.080	0.000
Green – test	0.092	0.848	0.059
Blue – test	0.000	0.162	0.838

Exact Agreement Rate = 0.877

Kappa = 0.789

N-count = 7,164

RETEST CLASSIFICATION PERCENT FOR VARIOUS SCALE SCORE RANGES

Tables E–33 through E–64 show the percent chance of scoring in each color range if retested without additional instruction for various scale scores ranges.

Table E-33. Retest Classification Percent for Various Scale Score Ranges – Mathematics Grade 3

Scale Score Range	Number of Students	Red (% Chance in Category if Retested*)	Green (% Chance in Category if Retested*)	Blue (% Chance in Category if Retested*)	% Chance in Same Category if Retested*
< 200	0	N/A	N/A	N/A	N/A
200 to 249	9	>99.9%	0.0%	0.0%	>99.9%
250 to 299	24	>99.9%	0.0%	0.0%	>99.9%
300 to 349	138	>99.9%	0.0%	0.0%	>99.9%
350 to 399	479	>99.9%	0.0%	0.0%	>99.9%
400 to 449	953	>99.9%	0.0%	0.0%	>99.9%
450 to 499	1,557	>99.9%	0.0%	0.0%	>99.9%
500 to 549	2,316	>99.9%	0.0%	0.0%	>99.9%
550 to 599	3,145	>99.9%	0.0%	0.0%	>99.9%
600 to 649	4,140	>99.9%	0.0%	0.0%	>99.9%
650 to 699	5,466	>99.9%	0.0%	0.0%	>99.9%
700 to 749	6,775	99.1%	0.9%	0.0%	99.1%
750 to 799	7,381	87.2%	12.8%	0.0%	87.2%
800 to 849 (Red/Green cut = 822)	6,743	47.2%	52.8%	0.0%	62.5%
850 to 899	5,495	10.3%	89.4%	0.3%	89.4%
900 to 949	3,735	0.7%	92.8%	6.5%	92.8%
950 to 999 (Green/Blue cut = 985)	2,044	0.0%	63.1%	36.9%	66.4%
1000 to 1049	1,012	0.0%	19.3%	80.7%	80.7%
1050 to 1099	361	0.0%	1.9%	98.1%	98.1%
1100 to 1149	131	0.0%	0.1%	99.9%	99.9%
1150 to 1199	50	0.0%	0.0%	>99.9%	>99.9%
1200 to 1249	17	0.0%	0.0%	>99.9%	>99.9%
1250 to 1299	2	0.0%	0.0%	>99.9%	>99.9%
1300 to 1349	1	0.0%	0.0%	>99.9%	>99.9%
1350 to 1399	2	0.0%	0.0%	>99.9%	>99.9%
1400 to 1449	0	N/A	N/A	N/A	N/A
1450 to 1499	0	N/A	N/A	N/A	N/A
1500 to 1549	0	N/A	N/A	N/A	N/A
1550 to 1599	0	N/A	N/A	N/A	N/A
1600 to 1649	0	N/A	N/A	N/A	N/A
1650 to 1699	0	N/A	N/A	N/A	N/A
1700 to 1749	0	N/A	N/A	N/A	N/A
1750 to 1799	0	N/A	N/A	N/A	N/A
1800 to 1849	0	N/A	N/A	N/A	N/A
1850 to 1899	0	N/A	N/A	N/A	N/A
1900 to 1949	0	N/A	N/A	N/A	N/A

Table E-33 (continued). Retest Classification Percent for Various Scale Score Ranges – Mathematics Grade 3

Scale Score Range	Number of Students	Red (% Chance in Category if Retested*)	Green (% Chance in Category if Retested*)	Blue (% Chance in Category if Retested*)	% Chance in Same Category if Retested*
1950 to 1999	0	N/A	N/A	N/A	N/A
>= 2000	0	N/A	N/A	N/A	N/A
TOTAL	51,976				

* Retest assuming no additional instruction

Table E-34. Retest Classification Percent for Various Scale Score Ranges – Mathematics Grade 4

Scale Score Range	Number of Students	Red (% Chance in Category if Retested*)	Green (% Chance in Category if Retested*)	Blue (% Chance in Category if Retested*)	% Chance in Same Category if Retested*
< 200	0	N/A	N/A	N/A	N/A
200 to 249	1	>99.9%	0.0%	0.0%	>99.9%
250 to 299	1	>99.9%	0.0%	0.0%	>99.9%
300 to 349	11	>99.9%	0.0%	0.0%	>99.9%
350 to 399	44	>99.9%	0.0%	0.0%	>99.9%
400 to 449	192	>99.9%	0.0%	0.0%	>99.9%
450 to 499	539	>99.9%	0.0%	0.0%	>99.9%
500 to 549	900	>99.9%	0.0%	0.0%	>99.9%
550 to 599	1,435	>99.9%	0.0%	0.0%	>99.9%
600 to 649	2,126	>99.9%	0.0%	0.0%	>99.9%
650 to 699	3,435	>99.9%	0.0%	0.0%	>99.9%
700 to 749	4,898	>99.9%	0.0%	0.0%	>99.9%
750 to 799	6,472	>99.9%	0.0%	0.0%	>99.9%
800 to 849	8,126	98.0%	2.0%	0.0%	98.0%
850 to 899	8,831	80.0%	20.0%	0.0%	80.0%
900 to 949 (Red/Green cut = 910)	8,107	35.7%	64.3%	0.0%	66.2%
950 to 999	6,315	5.8%	93.4%	0.8%	93.4%
1000 to 1049	4,188	0.3%	89.0%	10.8%	89.0%
1050 to 1099 (Green/Blue cut = 1073)	2,369	0.0%	51.8%	48.2%	62.4%
1100 to 1149	1,122	0.0%	12.1%	87.9%	87.9%
1150 to 1199	457	0.0%	0.8%	99.2%	99.2%
1200 to 1249	154	0.0%	0.0%	>99.9%	>99.9%
1250 to 1299	33	0.0%	0.0%	>99.9%	>99.9%
1300 to 1349	6	0.0%	0.0%	>99.9%	>99.9%
1350 to 1399	1	0.0%	0.0%	>99.9%	>99.9%
1400 to 1449	0	N/A	N/A	N/A	N/A
1450 to 1499	1	0.0%	0.0%	>99.9%	>99.9%
1500 to 1549	0	N/A	N/A	N/A	N/A
1550 to 1599	0	N/A	N/A	N/A	N/A
1600 to 1649	0	N/A	N/A	N/A	N/A
1650 to 1699	0	N/A	N/A	N/A	N/A
1700 to 1749	0	N/A	N/A	N/A	N/A
1750 to 1799	0	N/A	N/A	N/A	N/A
1800 to 1849	0	N/A	N/A	N/A	N/A
1850 to 1899	0	N/A	N/A	N/A	N/A
1900 to 1949	0	N/A	N/A	N/A	N/A

Table E-34 (continued). Retest Classification Percent for Various Scale Score Ranges – Mathematics Grade 4

Scale Score Range	Number of Students	Red (% Chance in Category if Retested*)	Green (% Chance in Category if Retested*)	Blue (% Chance in Category if Retested*)	% Chance in Same Category if Retested*
1950 to 1999	0	N/A	N/A	N/A	N/A
>= 2000	0	N/A	N/A	N/A	N/A
TOTAL	59,764				

* Retest assuming no additional instruction

Table E-35. Retest Classification Percent for Various Scale Score Ranges – Mathematics Grade 5

Scale Score Range	Number of Students	Red (% Chance in Category if Retested*)	Green (% Chance in Category if Retested*)	Blue (% Chance in Category if Retested*)	% Chance in Same Category if Retested*
< 200	0	N/A	N/A	N/A	N/A
200 to 249	0	N/A	N/A	N/A	N/A
250 to 299	0	N/A	N/A	N/A	N/A
300 to 349	2	>99.9%	0.0%	0.0%	>99.9%
350 to 399	10	>99.9%	0.0%	0.0%	>99.9%
400 to 449	50	>99.9%	0.0%	0.0%	>99.9%
450 to 499	184	>99.9%	0.0%	0.0%	>99.9%
500 to 549	483	>99.9%	0.0%	0.0%	>99.9%
550 to 599	932	>99.9%	0.0%	0.0%	>99.9%
600 to 649	1,380	>99.9%	0.0%	0.0%	>99.9%
650 to 699	2,283	>99.9%	0.0%	0.0%	>99.9%
700 to 749	3,526	>99.9%	0.0%	0.0%	>99.9%
750 to 799	5,283	>99.9%	0.0%	0.0%	>99.9%
800 to 849	7,151	99.9%	0.1%	0.0%	99.9%
850 to 899	9,194	97.8%	2.2%	0.0%	97.8%
900 to 949	9,992	78.6%	21.4%	0.0%	78.6%
950 to 999 (Red/Green cut = 958)	9,041	34.1%	65.9%	0.0%	67.1%
1000 to 1049	6,668	5.3%	93.8%	0.8%	93.8%
1050 to 1099	3,984	0.2%	88.3%	11.4%	88.3%
1100 to 1149 (Green/Blue cut = 1121)	2,103	0.0%	49.2%	50.7%	62.3%
1150 to 1199	819	0.0%	11.2%	88.8%	88.8%
1200 to 1249	311	0.0%	0.7%	99.3%	99.3%
1250 to 1299	140	0.0%	0.0%	>99.9%	>99.9%
1300 to 1349	54	0.0%	0.0%	>99.9%	>99.9%
1350 to 1399	16	0.0%	0.0%	>99.9%	>99.9%
1400 to 1449	4	0.0%	0.0%	>99.9%	>99.9%
1450 to 1499	3	0.0%	0.0%	>99.9%	>99.9%
1500 to 1549	1	0.0%	0.0%	>99.9%	>99.9%
1550 to 1599	1	0.0%	0.0%	>99.9%	>99.9%
1600 to 1649	0	N/A	N/A	N/A	N/A
1650 to 1699	0	N/A	N/A	N/A	N/A
1700 to 1749	0	N/A	N/A	N/A	N/A
1750 to 1799	0	N/A	N/A	N/A	N/A
1800 to 1849	0	N/A	N/A	N/A	N/A
1850 to 1899	0	N/A	N/A	N/A	N/A
1900 to 1949	0	N/A	N/A	N/A	N/A

Table E-35 (continued). Retest Classification Percent for Various Scale Score Ranges – Mathematics Grade 5

Scale Score Range	Number of Students	Red (% Chance in Category if Retested*)	Green (% Chance in Category if Retested*)	Blue (% Chance in Category if Retested*)	% Chance in Same Category if Retested*
1950 to 1999	0	N/A	N/A	N/A	N/A
>= 2000	0	N/A	N/A	N/A	N/A
TOTAL	63,615				

* Retest assuming no additional instruction

Table E-36. Retest Classification Percent for Various Scale Score Ranges – Mathematics Grade 6

Scale Score Range	Number of Students	Red (% Chance in Category if Retested*)	Green (% Chance in Category if Retested*)	Blue (% Chance in Category if Retested*)	% Chance in Same Category if Retested*
< 200	0	N/A	N/A	N/A	N/A
200 to 249	0	N/A	N/A	N/A	N/A
250 to 299	0	N/A	N/A	N/A	N/A
300 to 349	0	N/A	N/A	N/A	N/A
350 to 399	0	N/A	N/A	N/A	N/A
400 to 449	2	>99.9%	0.0%	0.0%	>99.9%
450 to 499	18	>99.9%	0.0%	0.0%	>99.9%
500 to 549	98	>99.9%	0.0%	0.0%	>99.9%
550 to 599	411	>99.9%	0.0%	0.0%	>99.9%
600 to 649	1,024	>99.9%	0.0%	0.0%	>99.9%
650 to 699	1,946	>99.9%	0.0%	0.0%	>99.9%
700 to 749	2,865	>99.9%	0.0%	0.0%	>99.9%
750 to 799	4,172	>99.9%	0.0%	0.0%	>99.9%
800 to 849	6,301	>99.9%	0.0%	0.0%	>99.9%
850 to 899	8,551	>99.9%	0.0%	0.0%	>99.9%
900 to 949	10,314	99.3%	0.7%	0.0%	99.3%
950 to 999	10,966	88.3%	11.7%	0.0%	88.3%
1000 to 1049 (Red/Green cut = 1023)	10,464	48.0%	52.0%	0.0%	63.0%
1050 to 1099	8,563	10.0%	89.8%	0.2%	89.8%
1100 to 1149	5,592	0.6%	94.1%	5.4%	94.1%
1150 to 1199 (Green/Blue cut = 1186)	3,072	0.0%	63.7%	36.3%	66.6%
1200 to 1249	1,639	0.0%	18.1%	81.9%	81.9%
1250 to 1299	749	0.0%	1.4%	98.6%	98.6%
1300 to 1349	384	0.0%	0.0%	>99.9%	>99.9%
1350 to 1399	169	0.0%	0.0%	>99.9%	>99.9%
1400 to 1449	77	0.0%	0.0%	>99.9%	>99.9%
1450 to 1499	30	0.0%	0.0%	>99.9%	>99.9%
1500 to 1549	7	0.0%	0.0%	>99.9%	>99.9%
1550 to 1599	4	0.0%	0.0%	>99.9%	>99.9%
1600 to 1649	1	0.0%	0.0%	>99.9%	>99.9%
1650 to 1699	0	N/A	N/A	N/A	N/A
1700 to 1749	0	N/A	N/A	N/A	N/A
1750 to 1799	0	N/A	N/A	N/A	N/A
1800 to 1849	0	N/A	N/A	N/A	N/A
1850 to 1899	0	N/A	N/A	N/A	N/A
1900 to 1949	0	N/A	N/A	N/A	N/A

Table E-36 (continued). Retest Classification Percent for Various Scale Score Ranges – Mathematics Grade 6

Scale Score Range	Number of Students	Red (% Chance in Category if Retested*)	Green (% Chance in Category if Retested*)	Blue (% Chance in Category if Retested*)	% Chance in Same Category if Retested*
1950 to 1999	0	N/A	N/A	N/A	N/A
>= 2000	0	N/A	N/A	N/A	N/A
TOTAL	77,419				

* Retest assuming no additional instruction

Table E-37. Retest Classification Percent for Various Scale Score Ranges – Mathematics Grade 7

Scale Score Range	Number of Students	Red (% Chance in Category if Retested*)	Green (% Chance in Category if Retested*)	Blue (% Chance in Category if Retested*)	% Chance in Same Category if Retested*
< 200	0	N/A	N/A	N/A	N/A
200 to 249	0	N/A	N/A	N/A	N/A
250 to 299	0	N/A	N/A	N/A	N/A
300 to 349	0	N/A	N/A	N/A	N/A
350 to 399	0	N/A	N/A	N/A	N/A
400 to 449	0	N/A	N/A	N/A	N/A
450 to 499	4	>99.9%	0.0%	0.0%	>99.9%
500 to 549	21	>99.9%	0.0%	0.0%	>99.9%
550 to 599	197	>99.9%	0.0%	0.0%	>99.9%
600 to 649	608	>99.9%	0.0%	0.0%	>99.9%
650 to 699	1,165	>99.9%	0.0%	0.0%	>99.9%
700 to 749	1,907	>99.9%	0.0%	0.0%	>99.9%
750 to 799	2,992	>99.9%	0.0%	0.0%	>99.9%
800 to 849	4,309	>99.9%	0.0%	0.0%	>99.9%
850 to 899	6,432	>99.9%	0.0%	0.0%	>99.9%
900 to 949	8,579	>99.9%	0.0%	0.0%	>99.9%
950 to 999	10,483	99.6%	0.4%	0.0%	99.6%
1000 to 1049	11,306	92.3%	7.7%	0.0%	92.3%
1050 to 1099 (Red/Green cut = 1082)	10,715	57.2%	42.8%	0.0%	63.9%
1100 to 1149	8,111	14.6%	85.3%	0.1%	85.3%
1150 to 1199	4,807	1.0%	95.8%	3.2%	95.8%
1200 to 1249 (Green/Blue cut = 1245)	2,450	0.0%	72.5%	27.5%	72.8%
1250 to 1299	1,226	0.0%	24.7%	75.3%	75.3%
1300 to 1349	606	0.0%	2.6%	97.4%	97.4%
1350 to 1399	245	0.0%	0.1%	99.9%	99.9%
1400 to 1449	80	0.0%	0.0%	>99.9%	>99.9%
1450 to 1499	41	0.0%	0.0%	>99.9%	>99.9%
1500 to 1549	11	0.0%	0.0%	>99.9%	>99.9%
1550 to 1599	3	0.0%	0.0%	>99.9%	>99.9%
1600 to 1649	0	N/A	N/A	N/A	N/A
1650 to 1699	0	N/A	N/A	N/A	N/A
1700 to 1749	0	N/A	N/A	N/A	N/A
1750 to 1799	1	0.0%	0.0%	>99.9%	>99.9%
1800 to 1849	0	N/A	N/A	N/A	N/A
1850 to 1899	0	N/A	N/A	N/A	N/A
1900 to 1949	0	N/A	N/A	N/A	N/A

Table E-37 (continued). Retest Classification Percent for Various Scale Score Ranges – Mathematics Grade 7

Scale Score Range	Number of Students	Red (% Chance in Category if Retested*)	Green (% Chance in Category if Retested*)	Blue (% Chance in Category if Retested*)	% Chance in Same Category if Retested*
1950 to 1999	0	N/A	N/A	N/A	N/A
>= 2000	0	N/A	N/A	N/A	N/A
TOTAL	76,299				

* Retest assuming no additional instruction

Table E-38. Retest Classification Percent for Various Scale Score Ranges – Mathematics Grade 8

Scale Score Range	Number of Students	Red (% Chance in Category if Retested*)	Green (% Chance in Category if Retested*)	Blue (% Chance in Category if Retested*)	% Chance in Same Category if Retested*
< 200	0	N/A	N/A	N/A	N/A
200 to 249	1	>99.9%	0.0%	0.0%	>99.9%
250 to 299	0	N/A	N/A	N/A	N/A
300 to 349	0	N/A	N/A	N/A	N/A
350 to 399	0	N/A	N/A	N/A	N/A
400 to 449	0	N/A	N/A	N/A	N/A
450 to 499	4	>99.9%	0.0%	0.0%	>99.9%
500 to 549	18	>99.9%	0.0%	0.0%	>99.9%
550 to 599	114	>99.9%	0.0%	0.0%	>99.9%
600 to 649	383	>99.9%	0.0%	0.0%	>99.9%
650 to 699	906	>99.9%	0.0%	0.0%	>99.9%
700 to 749	1,484	>99.9%	0.0%	0.0%	>99.9%
750 to 799	2,105	>99.9%	0.0%	0.0%	>99.9%
800 to 849	2,798	>99.9%	0.0%	0.0%	>99.9%
850 to 899	3,792	>99.9%	0.0%	0.0%	>99.9%
900 to 949	5,270	>99.9%	0.0%	0.0%	>99.9%
950 to 999	7,185	>99.9%	0.0%	0.0%	>99.9%
1000 to 1049	8,775	99.2%	0.8%	0.0%	99.2%
1050 to 1099	9,768	87.4%	12.6%	0.0%	87.4%
1100 to 1149 (Red/Green cut = 1121)	8,203	47.1%	52.9%	0.0%	62.8%
1150 to 1199	4,962	9.5%	90.3%	0.2%	90.3%
1200 to 1249	2,692	0.5%	93.7%	5.9%	93.7%
1250 to 1299 (Green/Blue cut = 1284)	1,454	0.0%	62.4%	37.6%	66.2%
1300 to 1349	749	0.0%	16.5%	83.5%	83.5%
1350 to 1399	374	0.0%	1.3%	98.7%	98.7%
1400 to 1449	160	0.0%	0.0%	>99.9%	>99.9%
1450 to 1499	55	0.0%	0.0%	>99.9%	>99.9%
1500 to 1549	17	0.0%	0.0%	>99.9%	>99.9%
1550 to 1599	4	0.0%	0.0%	>99.9%	>99.9%
1600 to 1649	2	0.0%	0.0%	>99.9%	>99.9%
1650 to 1699	2	0.0%	0.0%	>99.9%	>99.9%
1700 to 1749	0	N/A	N/A	N/A	N/A
1750 to 1799	0	N/A	N/A	N/A	N/A
1800 to 1849	1	0.0%	0.0%	>99.9%	>99.9%
1850 to 1899	0	N/A	N/A	N/A	N/A
1900 to 1949	0	N/A	N/A	N/A	N/A

Table E-38 (continued). Retest Classification Percent for Various Scale Score Ranges – Mathematics Grade 8

Scale Score Range	Number of Students	Red (% Chance in Category if Retested*)	Green (% Chance in Category if Retested*)	Blue (% Chance in Category if Retested*)	% Chance in Same Category if Retested*
1950 to 1999	0	N/A	N/A	N/A	N/A
>= 2000	0	N/A	N/A	N/A	N/A
TOTAL	61,278				

* Retest assuming no additional instruction

Table E-39. Retest Classification Percent for Various Scale Score Ranges – Algebra I

Scale Score Range	Number of Students	Red (% Chance in Category if Retested*)	Green (% Chance in Category if Retested*)	Blue (% Chance in Category if Retested*)	% Chance in Same Category if Retested*
< 400	0	N/A	N/A	N/A	N/A
400 to 449	0	N/A	N/A	N/A	N/A
450 to 499	1	>99.9%	0.0%	0.0%	>99.9%
500 to 549	12	>99.9%	0.0%	0.0%	>99.9%
550 to 599	98	>99.9%	0.0%	0.0%	>99.9%
600 to 649	471	>99.9%	0.0%	0.0%	>99.9%
650 to 699	1,326	>99.9%	0.0%	0.0%	>99.9%
700 to 749	2,236	>99.9%	0.0%	0.0%	>99.9%
750 to 799	3,040	>99.9%	0.0%	0.0%	>99.9%
800 to 849	4,173	>99.9%	0.0%	0.0%	>99.9%
850 to 899	5,538	>99.9%	0.0%	0.0%	>99.9%
900 to 949	7,585	>99.9%	0.0%	0.0%	>99.9%
950 to 999	10,661	>99.9%	0.0%	0.0%	>99.9%
1000 to 1049	14,710	99.7%	0.3%	0.0%	99.7%
1050 to 1099	19,255	92.6%	7.4%	0.0%	92.6%
1100 to 1149 (Red/Green cut = 1134)	19,802	59.0%	41.0%	0.0%	64.3%
1150 to 1199	14,195	16.1%	83.8%	0.1%	83.8%
1200 to 1249	7,514	1.2%	96.0%	2.8%	96.0%
1250 to 1299 (Green/Blue cut = 1297)	3,495	0.0%	74.2%	25.7%	74.3%
1300 to 1349	1,558	0.0%	27.3%	72.7%	72.7%
1350 to 1399	706	0.0%	2.9%	97.1%	97.1%
1400 to 1449	235	0.0%	0.1%	99.9%	99.9%
1450 to 1499	92	0.0%	0.0%	>99.9%	>99.9%
1500 to 1549	30	0.0%	0.0%	>99.9%	>99.9%
1550 to 1599	13	0.0%	0.0%	>99.9%	>99.9%
1600 to 1649	1	0.0%	0.0%	>99.9%	>99.9%
1650 to 1699	1	0.0%	0.0%	>99.9%	>99.9%
1700 to 1749	1	0.0%	0.0%	>99.9%	>99.9%
1750 to 1799	0	N/A	N/A	N/A	N/A
1800 to 1849	0	N/A	N/A	N/A	N/A
1850 to 1899	0	N/A	N/A	N/A	N/A
1900 to 1949	0	N/A	N/A	N/A	N/A
1950 to 1999	0	N/A	N/A	N/A	N/A
>= 2000	0	N/A	N/A	N/A	N/A
TOTAL	116,749				

* Retest assuming no additional instruction

Table E-40. Retest Classification Percent for Various Scale Score Ranges – Geometry

Scale Score Range	Number of Students	Red (% Chance in Category if Retested*)	Green (% Chance in Category if Retested*)	Blue (% Chance in Category if Retested*)	% Chance in Same Category if Retested*
< 400	0	N/A	N/A	N/A	N/A
400 to 449	0	N/A	N/A	N/A	N/A
450 to 499	0	N/A	N/A	N/A	N/A
500 to 549	5	>99.9%	0.0%	0.0%	>99.9%
550 to 599	14	>99.9%	0.0%	0.0%	>99.9%
600 to 649	47	>99.9%	0.0%	0.0%	>99.9%
650 to 699	63	>99.9%	0.0%	0.0%	>99.9%
700 to 749	112	>99.9%	0.0%	0.0%	>99.9%
750 to 799	181	>99.9%	0.0%	0.0%	>99.9%
800 to 849	302	>99.9%	0.0%	0.0%	>99.9%
850 to 899	364	>99.9%	0.0%	0.0%	>99.9%
900 to 949	621	>99.9%	0.0%	0.0%	>99.9%
950 to 999	925	>99.9%	0.0%	0.0%	>99.9%
1000 to 1049	1,402	>99.9%	0.0%	0.0%	>99.9%
1050 to 1099	1,836	98.7%	1.3%	0.0%	98.7%
1100 to 1149	1,925	84.3%	15.7%	0.0%	84.3%
1150 to 1199 (Red/Green cut = 1165)	1,604	40.9%	59.1%	0.0%	64.3%
1200 to 1249	1,188	6.6%	93.0%	0.4%	93.0%
1250 to 1299	811	0.3%	91.9%	7.8%	91.9%
1300 to 1349 (Green/Blue cut = 1328)	486	0.0%	56.1%	43.9%	64.3%
1350 to 1399	288	0.0%	13.5%	86.5%	86.5%
1400 to 1449	137	0.0%	1.1%	98.9%	98.9%
1450 to 1499	55	0.0%	0.0%	>99.9%	>99.9%
1500 to 1549	25	0.0%	0.0%	>99.9%	>99.9%
1550 to 1599	4	0.0%	0.0%	>99.9%	>99.9%
1600 to 1649	6	0.0%	0.0%	>99.9%	>99.9%
1650 to 1699	1	0.0%	0.0%	>99.9%	>99.9%
1700 to 1749	0	N/A	N/A	N/A	N/A
1750 to 1799	0	N/A	N/A	N/A	N/A
1800 to 1849	0	N/A	N/A	N/A	N/A
1850 to 1899	0	N/A	N/A	N/A	N/A
1900 to 1949	0	N/A	N/A	N/A	N/A
1950 to 1999	0	N/A	N/A	N/A	N/A
>= 2000	0	N/A	N/A	N/A	N/A
TOTAL	12,402				

* Retest assuming no additional instruction

Table E-41. Retest Classification Percent for Various Scale Score Ranges – Algebra II

Scale Score Range	Number of Students	Red (% Chance in Category if Retested*)	Green (% Chance in Category if Retested*)	Blue (% Chance in Category if Retested*)	% Chance in Same Category if Retested*
< 400	0	N/A	N/A	N/A	N/A
400 to 449	0	N/A	N/A	N/A	N/A
450 to 499	0	N/A	N/A	N/A	N/A
500 to 549	0	N/A	N/A	N/A	N/A
550 to 599	2	>99.9%	0.0%	0.0%	>99.9%
600 to 649	5	>99.9%	0.0%	0.0%	>99.9%
650 to 699	40	>99.9%	0.0%	0.0%	>99.9%
700 to 749	108	>99.9%	0.0%	0.0%	>99.9%
750 to 799	166	>99.9%	0.0%	0.0%	>99.9%
800 to 849	227	>99.9%	0.0%	0.0%	>99.9%
850 to 899	289	>99.9%	0.0%	0.0%	>99.9%
900 to 949	431	>99.9%	0.0%	0.0%	>99.9%
950 to 999	612	>99.9%	0.0%	0.0%	>99.9%
1000 to 1049	933	>99.9%	0.0%	0.0%	>99.9%
1050 to 1099	1,479	>99.9%	0.0%	0.0%	>99.9%
1100 to 1149	1,836	99.5%	0.5%	0.0%	99.5%
1150 to 1199	1,803	91.1%	8.9%	0.0%	91.1%
1200 to 1249 (Red/Green cut = 1228)	1,289	54.4%	45.6%	0.0%	63.5%
1250 to 1299	924	12.2%	87.7%	0.1%	87.7%
1300 to 1349	589	0.7%	95.1%	4.2%	95.1%
1350 to 1399 (Green/Blue cut = 1391)	364	0.0%	69.3%	30.7%	70.2%
1400 to 1449	213	0.0%	21.9%	78.1%	78.1%
1450 to 1499	94	0.0%	2.8%	97.2%	97.2%
1500 to 1549	42	0.0%	0.1%	99.9%	99.9%
1550 to 1599	13	0.0%	0.0%	>99.9%	>99.9%
1600 to 1649	9	0.0%	0.0%	>99.9%	>99.9%
1650 to 1699	2	0.0%	0.0%	>99.9%	>99.9%
1700 to 1749	0	N/A	N/A	N/A	N/A
1750 to 1799	1	0.0%	0.0%	>99.9%	>99.9%

Table E-41 (continued). Retest Classification Percent for Various Scale Score Ranges – Algebra II

Scale Score Range	Number of Students	Red (% Chance in Category if Retested*)	Green (% Chance in Category if Retested*)	Blue (% Chance in Category if Retested*)	% Chance in Same Category if Retested*
1800 to 1849	0	N/A	N/A	N/A	N/A
1850 to 1899	1	0.0%	0.0%	>99.9%	>99.9%
1900 to 1949	0	N/A	N/A	N/A	N/A
1950 to 1999	0	N/A	N/A	N/A	N/A
>= 2000	0	N/A	N/A	N/A	N/A
TOTAL	11,472				

* Retest assuming no additional instruction

Table E-42. Retest Classification Percent for Various Scale Score Ranges – Reading Grade 3

Scale Score Range	Number of Students	Red (% Chance in Category if Retested*)	Green (% Chance in Category if Retested*)	Blue (% Chance in Category if Retested*)	% Chance in Same Category if Retested*
< 200	0	N/A	N/A	N/A	N/A
200 to 249	0	N/A	N/A	N/A	N/A
250 to 299	2	>99.9%	0.0%	0.0%	>99.9%
300 to 349	6	>99.9%	0.0%	0.0%	>99.9%
350 to 399	30	>99.9%	0.0%	0.0%	>99.9%
400 to 449	297	>99.9%	0.0%	0.0%	>99.9%
450 to 499	1,283	>99.9%	0.0%	0.0%	>99.9%
500 to 549	3,286	>99.9%	0.0%	0.0%	>99.9%
550 to 599	5,056	>99.9%	0.0%	0.0%	>99.9%
600 to 649	5,333	99.5%	0.5%	0.0%	99.5%
650 to 699	5,156	93.2%	6.8%	0.0%	93.2%
700 to 749 (Red/Green cut = 741)	5,010	63.8%	36.2%	0.0%	65.4%
750 to 799	4,908	21.6%	78.4%	0.0%	78.4%
800 to 849	4,622	2.8%	97.1%	0.1%	97.1%
850 to 899	3,757	0.1%	96.6%	3.2%	96.6%
900 to 949	2,869	0.0%	77.1%	22.9%	77.1%
950 to 999 (Green/Blue cut = 956)	1,752	0.0%	36.1%	63.9%	64.9%
1000 to 1049	899	0.0%	8.0%	92.0%	92.0%
1050 to 1099	326	0.0%	0.8%	99.2%	99.2%
1100 to 1149	80	0.0%	0.0%	>99.9%	>99.9%
1150 to 1199	27	0.0%	0.0%	>99.9%	>99.9%
1200 to 1249	2	0.0%	0.0%	>99.9%	>99.9%
1250 to 1299	1	0.0%	0.0%	>99.9%	>99.9%
1300 to 1349	0	N/A	N/A	N/A	N/A
1350 to 1399	0	N/A	N/A	N/A	N/A
1400 to 1449	0	N/A	N/A	N/A	N/A
1450 to 1499	0	N/A	N/A	N/A	N/A
1500 to 1549	0	N/A	N/A	N/A	N/A
1550 to 1599	0	N/A	N/A	N/A	N/A
1600 to 1649	0	N/A	N/A	N/A	N/A
1650 to 1699	0	N/A	N/A	N/A	N/A
1700 to 1749	0	N/A	N/A	N/A	N/A
1750 to 1799	0	N/A	N/A	N/A	N/A
1800 to 1849	0	N/A	N/A	N/A	N/A
1850 to 1899	0	N/A	N/A	N/A	N/A
1900 to 1949	0	N/A	N/A	N/A	N/A

Table E-42 (continued). Retest Classification Percent for Various Scale Score Ranges – Reading Grade 3

Scale Score Range	Number of Students	Red (% Chance in Category if Retested*)	Green (% Chance in Category if Retested*)	Blue (% Chance in Category if Retested*)	% Chance in Same Category if Retested*
1950 to 1999	0	N/A	N/A	N/A	N/A
>= 2000	0	N/A	N/A	N/A	N/A
TOTAL	44,702				

* Retest assuming no additional instruction

Table E-43. Retest Classification Percent for Various Scale Score Ranges – Reading Grade 4

Scale Score Range	Number of Students	Red (% Chance in Category if Retested*)	Green (% Chance in Category if Retested*)	Blue (% Chance in Category if Retested*)	% Chance in Same Category if Retested*
< 200	0	N/A	N/A	N/A	N/A
200 to 249	0	N/A	N/A	N/A	N/A
250 to 299	0	N/A	N/A	N/A	N/A
300 to 349	2	>99.9%	0.0%	0.0%	>99.9%
350 to 399	20	>99.9%	0.0%	0.0%	>99.9%
400 to 449	92	>99.9%	0.0%	0.0%	>99.9%
450 to 499	460	>99.9%	0.0%	0.0%	>99.9%
500 to 549	1,537	>99.9%	0.0%	0.0%	>99.9%
550 to 599	3,018	>99.9%	0.0%	0.0%	>99.9%
600 to 649	3,895	>99.9%	0.0%	0.0%	>99.9%
650 to 699	4,214	>99.9%	0.0%	0.0%	>99.9%
700 to 749	4,416	98.9%	1.1%	0.0%	98.9%
750 to 799	5,189	87.8%	12.2%	0.0%	87.8%
800 to 849 (Red/Green cut = 826)	5,495	50.3%	49.7%	0.0%	61.7%
850 to 899	5,685	13.1%	86.9%	0.0%	86.9%
900 to 949	5,403	1.3%	98.3%	0.4%	98.3%
950 to 999	4,603	0.0%	93.2%	6.7%	93.2%
1000 to 1049 (Green/Blue cut = 1041)	3,257	0.0%	66.1%	33.9%	67.1%
1050 to 1099	1,683	0.0%	26.0%	74.0%	74.0%
1100 to 1149	653	0.0%	5.1%	94.9%	94.9%
1150 to 1199	176	0.0%	0.5%	99.5%	99.5%
1200 to 1249	42	0.0%	0.1%	99.9%	99.9%
1250 to 1299	5	0.0%	0.0%	>99.9%	>99.9%
1300 to 1349	2	0.0%	0.0%	>99.9%	>99.9%
1350 to 1399	0	N/A	N/A	N/A	N/A
1400 to 1449	0	N/A	N/A	N/A	N/A
1450 to 1499	0	N/A	N/A	N/A	N/A
1500 to 1549	0	N/A	N/A	N/A	N/A
1550 to 1599	0	N/A	N/A	N/A	N/A
1600 to 1649	0	N/A	N/A	N/A	N/A
1650 to 1699	0	N/A	N/A	N/A	N/A
1700 to 1749	0	N/A	N/A	N/A	N/A
1750 to 1799	0	N/A	N/A	N/A	N/A
1800 to 1849	0	N/A	N/A	N/A	N/A
1850 to 1899	0	N/A	N/A	N/A	N/A
1900 to 1949	0	N/A	N/A	N/A	N/A

Table E-43 (continued). Retest Classification Percent for Various Scale Score Ranges – Reading Grade 4

Scale Score Range	Number of Students	Red (% Chance in Category if Retested*)	Green (% Chance in Category if Retested*)	Blue (% Chance in Category if Retested*)	% Chance in Same Category if Retested*
1950 to 1999	0	N/A	N/A	N/A	N/A
>= 2000	0	N/A	N/A	N/A	N/A
TOTAL	49,847				

* Retest assuming no additional instruction

Table E-44. Retest Classification Percent for Various Scale Score Ranges – Reading Grade 5

Scale Score Range	Number of Students	Red (% Chance in Category if Retested*)	Green (% Chance in Category if Retested*)	Blue (% Chance in Category if Retested*)	% Chance in Same Category if Retested*
< 200	0	N/A	N/A	N/A	N/A
200 to 249	0	N/A	N/A	N/A	N/A
250 to 299	0	N/A	N/A	N/A	N/A
300 to 349	0	N/A	N/A	N/A	N/A
350 to 399	10	>99.9%	0.0%	0.0%	>99.9%
400 to 449	41	>99.9%	0.0%	0.0%	>99.9%
450 to 499	191	>99.9%	0.0%	0.0%	>99.9%
500 to 549	824	>99.9%	0.0%	0.0%	>99.9%
550 to 599	1,851	>99.9%	0.0%	0.0%	>99.9%
600 to 649	2,807	>99.9%	0.0%	0.0%	>99.9%
650 to 699	3,275	>99.9%	0.0%	0.0%	>99.9%
700 to 749	3,604	>99.9%	0.0%	0.0%	>99.9%
750 to 799	4,236	99.6%	0.4%	0.0%	99.6%
800 to 849	5,050	92.9%	7.1%	0.0%	92.9%
850 to 899 (Red/Green cut = 890)	6,058	62.5%	37.5%	0.0%	64.9%
900 to 949	6,610	20.7%	79.3%	0.0%	79.3%
950 to 999	6,956	2.7%	97.1%	0.2%	97.1%
1000 to 1049	6,128	0.1%	96.3%	3.5%	96.3%
1050 to 1099	4,086	0.0%	76.5%	23.5%	76.5%
1100 to 1149 (Green/Blue cut = 1105)	2,044	0.0%	36.6%	63.4%	64.1%
1150 to 1199	703	0.0%	9.6%	90.4%	90.4%
1200 to 1249	208	0.0%	1.5%	98.5%	98.5%
1250 to 1299	40	0.0%	0.2%	99.8%	99.8%
1300 to 1349	5	0.0%	0.0%	>99.9%	>99.9%
1350 to 1399	1	0.0%	0.0%	>99.9%	>99.9%
1400 to 1449	0	N/A	N/A	N/A	N/A
1450 to 1499	0	N/A	N/A	N/A	N/A
1500 to 1549	0	N/A	N/A	N/A	N/A
1550 to 1599	0	N/A	N/A	N/A	N/A
1600 to 1649	0	N/A	N/A	N/A	N/A
1650 to 1699	0	N/A	N/A	N/A	N/A
1700 to 1749	0	N/A	N/A	N/A	N/A
1750 to 1799	0	N/A	N/A	N/A	N/A
1800 to 1849	0	N/A	N/A	N/A	N/A
1850 to 1899	0	N/A	N/A	N/A	N/A
1900 to 1949	0	N/A	N/A	N/A	N/A

Table E-44 (continued). Retest Classification Percent for Various Scale Score Ranges – Reading Grade 5

Scale Score Range	Number of Students	Red (% Chance in Category if Retested*)	Green (% Chance in Category if Retested*)	Blue (% Chance in Category if Retested*)	% Chance in Same Category if Retested*
1950 to 1999	0	N/A	N/A	N/A	N/A
>= 2000	0	N/A	N/A	N/A	N/A
TOTAL	54,728				

* Retest assuming no additional instruction

Table E-45. Retest Classification Percent for Various Scale Score Ranges – Reading Grade 6

Scale Score Range	Number of Students	Red (% Chance in Category if Retested*)	Green (% Chance in Category if Retested*)	Blue (% Chance in Category if Retested*)	% Chance in Same Category if Retested*
< 200	0	N/A	N/A	N/A	N/A
200 to 249	0	N/A	N/A	N/A	N/A
250 to 299	0	N/A	N/A	N/A	N/A
300 to 349	0	N/A	N/A	N/A	N/A
350 to 399	1	>99.9%	0.0%	0.0%	>99.9%
400 to 449	2	>99.9%	0.0%	0.0%	>99.9%
450 to 499	22	>99.9%	0.0%	0.0%	>99.9%
500 to 549	123	>99.9%	0.0%	0.0%	>99.9%
550 to 599	572	>99.9%	0.0%	0.0%	>99.9%
600 to 649	1,607	>99.9%	0.0%	0.0%	>99.9%
650 to 699	2,874	>99.9%	0.0%	0.0%	>99.9%
700 to 749	3,842	>99.9%	0.0%	0.0%	>99.9%
750 to 799	4,244	>99.9%	0.0%	0.0%	>99.9%
800 to 849	5,154	99.7%	0.3%	0.0%	99.7%
850 to 899	6,176	94.5%	5.5%	0.0%	94.5%
900 to 949 (Red/Green cut = 945)	7,675	66.8%	33.2%	0.0%	67.5%
950 to 999	8,779	23.6%	76.4%	0.0%	76.4%
1000 to 1049	8,549	3.2%	96.7%	0.1%	96.7%
1050 to 1099	6,831	0.2%	97.3%	2.6%	97.3%
1100 to 1149	4,079	0.0%	79.8%	20.2%	79.8%
1150 to 1199 (Green/Blue cut = 1160)	1,919	0.0%	42.0%	58.0%	60.9%
1200 to 1249	647	0.0%	12.6%	87.4%	87.4%
1250 to 1299	187	0.0%	2.6%	97.4%	97.4%
1300 to 1349	24	0.0%	0.5%	99.5%	99.5%
1350 to 1399	6	0.0%	0.2%	99.8%	99.8%
1400 to 1449	2	0.0%	0.0%	>99.9%	>99.9%
1450 to 1499	0	N/A	N/A	N/A	N/A
1500 to 1549	0	N/A	N/A	N/A	N/A
1550 to 1599	0	N/A	N/A	N/A	N/A
1600 to 1649	0	N/A	N/A	N/A	N/A
1650 to 1699	0	N/A	N/A	N/A	N/A
1700 to 1749	0	N/A	N/A	N/A	N/A
1750 to 1799	0	N/A	N/A	N/A	N/A
1800 to 1849	0	N/A	N/A	N/A	N/A
1850 to 1899	0	N/A	N/A	N/A	N/A
1900 to 1949	0	N/A	N/A	N/A	N/A

Table E-45 (continued). Retest Classification Percent for Various Scale Score Ranges – Reading Grade 6

Scale Score Range	Number of Students	Red (% Chance in Category if Retested*)	Green (% Chance in Category if Retested*)	Blue (% Chance in Category if Retested*)	% Chance in Same Category if Retested*
1950 to 1999	0	N/A	N/A	N/A	N/A
>= 2000	0	N/A	N/A	N/A	N/A
TOTAL	63,315				

* Retest assuming no additional instruction

Table E-46. Retest Classification Percent for Various Scale Score Ranges – Reading Grade 7

Scale Score Range	Number of Students	Red (% Chance in Category if Retested*)	Green (% Chance in Category if Retested*)	Blue (% Chance in Category if Retested*)	% Chance in Same Category if Retested*
< 200	0	N/A	N/A	N/A	N/A
200 to 249	0	N/A	N/A	N/A	N/A
250 to 299	0	N/A	N/A	N/A	N/A
300 to 349	0	N/A	N/A	N/A	N/A
350 to 399	0	N/A	N/A	N/A	N/A
400 to 449	3	>99.9%	0.0%	0.0%	>99.9%
450 to 499	22	>99.9%	0.0%	0.0%	>99.9%
500 to 549	93	>99.9%	0.0%	0.0%	>99.9%
550 to 599	503	>99.9%	0.0%	0.0%	>99.9%
600 to 649	1,542	>99.9%	0.0%	0.0%	>99.9%
650 to 699	2,668	>99.9%	0.0%	0.0%	>99.9%
700 to 749	3,412	>99.9%	0.0%	0.0%	>99.9%
750 to 799	3,977	>99.9%	0.0%	0.0%	>99.9%
800 to 849	4,729	>99.9%	0.0%	0.0%	>99.9%
850 to 899	5,875	99.1%	0.9%	0.0%	99.1%
900 to 949	7,326	88.8%	11.2%	0.0%	88.8%
950 to 999 (Red/Green cut = 979)	8,680	53.1%	46.9%	0.0%	62.0%
1000 to 1049	9,226	14.2%	85.8%	0.0%	85.8%
1050 to 1099	7,817	1.4%	98.3%	0.3%	98.3%
1100 to 1149	5,461	0.1%	94.3%	5.6%	94.3%
1150 to 1199 (Green/Blue cut = 1194)	2,941	0.0%	68.6%	31.4%	68.9%
1200 to 1249	1,183	0.0%	29.8%	70.2%	70.2%
1250 to 1299	362	0.0%	8.3%	91.7%	91.7%
1300 to 1349	89	0.0%	1.7%	98.3%	98.3%
1350 to 1399	19	0.0%	0.4%	99.6%	99.6%
1400 to 1449	2	0.0%	0.1%	99.9%	99.9%
1450 to 1499	0	N/A	N/A	N/A	N/A
1500 to 1549	0	N/A	N/A	N/A	N/A
1550 to 1599	0	N/A	N/A	N/A	N/A
1600 to 1649	0	N/A	N/A	N/A	N/A
1650 to 1699	0	N/A	N/A	N/A	N/A
1700 to 1749	0	N/A	N/A	N/A	N/A
1750 to 1799	0	N/A	N/A	N/A	N/A
1800 to 1849	0	N/A	N/A	N/A	N/A
1850 to 1899	0	N/A	N/A	N/A	N/A
1900 to 1949	0	N/A	N/A	N/A	N/A

Table E-46 (continued). Retest Classification Percent for Various Scale Score Ranges – Reading Grade 7

Scale Score Range	Number of Students	Red (% Chance in Category if Retested*)	Green (% Chance in Category if Retested*)	Blue (% Chance in Category if Retested*)	% Chance in Same Category if Retested*
1950 to 1999	0	N/A	N/A	N/A	N/A
>= 2000	0	N/A	N/A	N/A	N/A
TOTAL	65,930				

* Retest assuming no additional instruction

Table E-47. Retest Classification Percent for Various Scale Score Ranges – Reading Grade 8

Scale Score Range	Number of Students	Red (% Chance in Category if Retested*)	Green (% Chance in Category if Retested*)	Blue (% Chance in Category if Retested*)	% Chance in Same Category if Retested*
< 200	0	N/A	N/A	N/A	N/A
200 to 249	0	N/A	N/A	N/A	N/A
250 to 299	0	N/A	N/A	N/A	N/A
300 to 349	0	N/A	N/A	N/A	N/A
350 to 399	0	N/A	N/A	N/A	N/A
400 to 449	0	N/A	N/A	N/A	N/A
450 to 499	9	>99.9%	0.0%	0.0%	>99.9%
500 to 549	89	>99.9%	0.0%	0.0%	>99.9%
550 to 599	400	>99.9%	0.0%	0.0%	>99.9%
600 to 649	1,086	>99.9%	0.0%	0.0%	>99.9%
650 to 699	2,159	>99.9%	0.0%	0.0%	>99.9%
700 to 749	2,908	>99.9%	0.0%	0.0%	>99.9%
750 to 799	3,401	>99.9%	0.0%	0.0%	>99.9%
800 to 849	3,919	>99.9%	0.0%	0.0%	>99.9%
850 to 899	4,955	99.9%	0.1%	0.0%	99.9%
900 to 949	6,104	97.5%	2.5%	0.0%	97.5%
950 to 999	7,474	79.2%	20.8%	0.0%	79.2%
1000 to 1049 (Red/Green cut = 1011)	8,455	36.6%	63.4%	0.0%	65.5%
1050 to 1099	8,114	7.2%	92.7%	0.0%	92.7%
1100 to 1149	6,689	0.6%	98.3%	1.2%	98.3%
1150 to 1199	4,304	0.0%	87.6%	12.4%	87.6%
1200 to 1249 (Green/Blue cut = 1226)	2,038	0.0%	54.9%	45.1%	60.9%
1250 to 1299	711	0.0%	21.0%	79.0%	79.0%
1300 to 1349	192	0.0%	5.7%	94.3%	94.3%
1350 to 1399	52	0.0%	1.2%	98.8%	98.8%
1400 to 1449	8	0.0%	0.4%	99.6%	99.6%
1450 to 1499	1	0.0%	0.1%	99.9%	99.9%
1500 to 1549	0	N/A	N/A	N/A	N/A
1550 to 1599	0	N/A	N/A	N/A	N/A
1600 to 1649	0	N/A	N/A	N/A	N/A
1650 to 1699	0	N/A	N/A	N/A	N/A
1700 to 1749	0	N/A	N/A	N/A	N/A
1750 to 1799	0	N/A	N/A	N/A	N/A
1800 to 1849	0	N/A	N/A	N/A	N/A
1850 to 1899	0	N/A	N/A	N/A	N/A
1900 to 1949	0	N/A	N/A	N/A	N/A

Table E-47 (continued). Retest Classification Percent for Various Scale Score Ranges – Reading Grade 8

Scale Score Range	Number of Students	Red (% Chance in Category if Retested*)	Green (% Chance in Category if Retested*)	Blue (% Chance in Category if Retested*)	% Chance in Same Category if Retested*
1950 to 1999	0	N/A	N/A	N/A	N/A
>= 2000	0	N/A	N/A	N/A	N/A
TOTAL	63,068				

* Retest assuming no additional instruction

Table E-48. Retest Classification Percent for Various Scale Score Ranges – Literature

Scale Score Range	Number of Students	Red (% Chance in Category if Retested*)	Green (% Chance in Category if Retested*)	Blue (% Chance in Category if Retested*)	% Chance in Same Category if Retested*
< 200	0	N/A	N/A	N/A	N/A
200 to 249	0	N/A	N/A	N/A	N/A
250 to 299	0	N/A	N/A	N/A	N/A
300 to 349	0	N/A	N/A	N/A	N/A
350 to 399	2	>99.9%	0.0%	0.0%	>99.9%
400 to 449	6	>99.9%	0.0%	0.0%	>99.9%
450 to 499	45	>99.9%	0.0%	0.0%	>99.9%
500 to 549	232	>99.9%	0.0%	0.0%	>99.9%
550 to 599	945	>99.9%	0.0%	0.0%	>99.9%
600 to 649	2,442	>99.9%	0.0%	0.0%	>99.9%
650 to 699	4,195	>99.9%	0.0%	0.0%	>99.9%
700 to 749	5,496	>99.9%	0.0%	0.0%	>99.9%
750 to 799	6,366	>99.9%	0.0%	0.0%	>99.9%
800 to 849	7,408	>99.9%	0.0%	0.0%	>99.9%
850 to 899	9,302	>99.9%	0.0%	0.0%	>99.9%
900 to 949	11,815	99.3%	0.7%	0.0%	99.3%
950 to 999	15,211	90.4%	9.6%	0.0%	90.4%
1000 to 1049 (Red/Green cut = 1033)	18,967	56.1%	43.9%	0.0%	62.5%
1050 to 1099	21,923	16.6%	83.4%	0.0%	83.4%
1100 to 1149	21,286	2.0%	97.6%	0.3%	97.6%
1150 to 1199	16,386	0.1%	94.3%	5.6%	94.3%
1200 to 1249 (Green/Blue cut = 1248)	9,769	0.0%	70.2%	29.8%	70.2%
1250 to 1299	4,466	0.0%	34.0%	66.0%	66.0%
1300 to 1349	1,492	0.0%	10.9%	89.1%	89.1%
1350 to 1399	404	0.0%	3.1%	96.9%	96.9%
1400 to 1449	73	0.0%	1.0%	99.0%	99.0%
1450 to 1499	12	0.0%	0.5%	99.5%	99.5%
1500 to 1549	5	0.0%	0.3%	99.7%	99.7%
1550 to 1599	1	0.0%	0.2%	99.8%	99.8%
1600 to 1649	0	N/A	N/A	N/A	N/A
1650 to 1699	1	0.0%	0.3%	99.7%	99.7%
1700 to 1749	0	N/A	N/A	N/A	N/A
1750 to 1799	0	N/A	N/A	N/A	N/A
1800 to 1849	0	N/A	N/A	N/A	N/A
1850 to 1899	0	N/A	N/A	N/A	N/A
1900 to 1949	0	N/A	N/A	N/A	N/A

Table E-48 (continued). Retest Classification Percent for Various Scale Score Ranges – Literature

Scale Score Range	Number of Students	Red (% Chance in Category if Retested*)	Green (% Chance in Category if Retested*)	Blue (% Chance in Category if Retested*)	% Chance in Same Category if Retested*
1950 to 1999	0	N/A	N/A	N/A	N/A
>= 2000	0	N/A	N/A	N/A	N/A
TOTAL	158,250				

* Retest assuming no additional instruction

Table E–49. Retest Classification Percent for Various Scale Score Ranges – Science Grade 3

Scale Score Range	Number of Students	Red (% Chance in Category if Retested*)	Green (% Chance in Category if Retested*)	Blue (% Chance in Category if Retested*)	% Chance in Same Category if Retested*
< 200	0	N/A	N/A	N/A	N/A
200 to 249	7	>99.9%	0.0%	0.0%	>99.9%
250 to 299	28	>99.9%	0.0%	0.0%	>99.9%
300 to 349	64	>99.9%	0.0%	0.0%	>99.9%
350 to 399	117	>99.9%	0.0%	0.0%	>99.9%
400 to 449	137	>99.9%	0.0%	0.0%	>99.9%
450 to 499	135	>99.9%	0.0%	0.0%	>99.9%
500 to 549	176	>99.9%	0.0%	0.0%	>99.9%
550 to 599	218	99.7%	0.3%	0.0%	99.7%
600 to 649	336	94.3%	5.7%	0.0%	94.3%
650 to 699 (Red/Green cut = 694)	464	65.0%	35.0%	0.0%	66.0%
700 to 749	543	23.3%	76.6%	0.0%	76.6%
750 to 799	571	2.9%	95.5%	1.6%	95.5%
800 to 849	515	0.1%	84.1%	15.8%	84.1%
850 to 899 (Green/Blue cut = 867)	378	0.0%	45.2%	54.8%	61.9%
900 to 949	182	0.0%	10.3%	89.7%	89.7%
950 to 999	104	0.0%	0.7%	99.3%	99.3%
1000 to 1049	29	0.0%	0.0%	>99.9%	>99.9%
1050 to 1099	6	0.0%	0.0%	>99.9%	>99.9%
1100 to 1149	0	N/A	N/A	N/A	N/A
1150 to 1199	0	N/A	N/A	N/A	N/A
1200 to 1249	0	N/A	N/A	N/A	N/A
1250 to 1299	0	N/A	N/A	N/A	N/A
1300 to 1349	0	N/A	N/A	N/A	N/A
1350 to 1399	0	N/A	N/A	N/A	N/A
1400 to 1449	0	N/A	N/A	N/A	N/A
1450 to 1499	0	N/A	N/A	N/A	N/A
1500 to 1549	0	N/A	N/A	N/A	N/A
1550 to 1599	0	N/A	N/A	N/A	N/A
1600 to 1649	0	N/A	N/A	N/A	N/A
1650 to 1699	0	N/A	N/A	N/A	N/A
1700 to 1749	0	N/A	N/A	N/A	N/A
1750 to 1799	0	N/A	N/A	N/A	N/A
1800 to 1849	0	N/A	N/A	N/A	N/A
1850 to 1899	0	N/A	N/A	N/A	N/A
1900 to 1949	0	N/A	N/A	N/A	N/A

Table E-49 (continued). Retest Classification Percent for Various Scale Score Ranges – Science Grade 3

Scale Score Range	Number of Students	Red (% Chance in Category if Retested*)	Green (% Chance in Category if Retested*)	Blue (% Chance in Category if Retested*)	% Chance in Same Category if Retested*
1950 to 1999	0	N/A	N/A	N/A	N/A
>= 2000	0	N/A	N/A	N/A	N/A
TOTAL	4,010				

* Retest assuming no additional instruction

Table E–50. Retest Classification Percent for Various Scale Score Ranges – Science Grade 4

Scale Score Range	Number of Students	Red (% Chance in Category if Retested*)	Green (% Chance in Category if Retested*)	Blue (% Chance in Category if Retested*)	% Chance in Same Category if Retested*
< 200	0	N/A	N/A	N/A	N/A
200 to 249	2	>99.9%	0.0%	0.0%	>99.9%
250 to 299	12	>99.9%	0.0%	0.0%	>99.9%
300 to 349	55	>99.9%	0.0%	0.0%	>99.9%
350 to 399	210	>99.9%	0.0%	0.0%	>99.9%
400 to 449	362	>99.9%	0.0%	0.0%	>99.9%
450 to 499	474	>99.9%	0.0%	0.0%	>99.9%
500 to 549	521	>99.9%	0.0%	0.0%	>99.9%
550 to 599	688	>99.9%	0.0%	0.0%	>99.9%
600 to 649	968	99.8%	0.2%	0.0%	99.8%
650 to 699	1,453	95.9%	4.1%	0.0%	95.9%
700 to 749	2,137	71.5%	28.5%	0.0%	71.5%
750 to 799 (Red/Green cut = 751)	2,930	27.8%	72.2%	0.0%	72.2%
800 to 849	3,243	4.1%	94.8%	1.1%	94.8%
850 to 899	2,998	0.2%	87.6%	12.2%	87.6%
900 to 949 (Green/Blue cut = 924)	2,309	0.0%	51.1%	48.9%	62.0%
950 to 999	1,354	0.0%	13.3%	86.7%	86.7%
1000 to 1049	552	0.0%	1.2%	98.8%	98.8%
1050 to 1099	160	0.0%	0.0%	>99.9%	>99.9%
1100 to 1149	45	0.0%	0.0%	>99.9%	>99.9%
1150 to 1199	3	0.0%	0.0%	>99.9%	>99.9%
1200 to 1249	0	N/A	N/A	N/A	N/A
1250 to 1299	0	N/A	N/A	N/A	N/A
1300 to 1349	0	N/A	N/A	N/A	N/A
1350 to 1399	0	N/A	N/A	N/A	N/A
1400 to 1449	0	N/A	N/A	N/A	N/A
1450 to 1499	0	N/A	N/A	N/A	N/A
1500 to 1549	0	N/A	N/A	N/A	N/A
1550 to 1599	0	N/A	N/A	N/A	N/A
1600 to 1649	0	N/A	N/A	N/A	N/A
1650 to 1699	0	N/A	N/A	N/A	N/A
1700 to 1749	0	N/A	N/A	N/A	N/A
1750 to 1799	0	N/A	N/A	N/A	N/A
1800 to 1849	0	N/A	N/A	N/A	N/A
1850 to 1899	0	N/A	N/A	N/A	N/A
1900 to 1949	0	N/A	N/A	N/A	N/A

Table E-50 (continued). Retest Classification Percent for Various Scale Score Ranges – Science Grade 5

Scale Score Range	Number of Students	Red (% Chance in Category if Retested*)	Green (% Chance in Category if Retested*)	Blue (% Chance in Category if Retested*)	% Chance in Same Category if Retested*
1950 to 1999	0	N/A	N/A	N/A	N/A
>= 2000	0	N/A	N/A	N/A	N/A
TOTAL	20,476				

* Retest assuming no additional instruction

Table E-51. Retest Classification Percent for Various Scale Score Ranges – Science Grade 5

Scale Score Range	Number of Students	Red (% Chance in Category if Retested*)	Green (% Chance in Category if Retested*)	Blue (% Chance in Category if Retested*)	% Chance in Same Category if Retested*
< 200	0	N/A	N/A	N/A	N/A
200 to 249	1	>99.9%	0.0%	0.0%	>99.9%
250 to 299	0	N/A	N/A	N/A	N/A
300 to 349	1	>99.9%	0.0%	0.0%	>99.9%
350 to 399	19	>99.9%	0.0%	0.0%	>99.9%
400 to 449	40	>99.9%	0.0%	0.0%	>99.9%
450 to 499	74	>99.9%	0.0%	0.0%	>99.9%
500 to 549	72	>99.9%	0.0%	0.0%	>99.9%
550 to 599	127	>99.9%	0.0%	0.0%	>99.9%
600 to 649	168	>99.9%	0.0%	0.0%	>99.9%
650 to 699	265	99.9%	0.1%	0.0%	99.9%
700 to 749	363	96.5%	3.5%	0.0%	96.5%
750 to 799	508	74.4%	25.6%	0.0%	74.4%
800 to 849 (Red/Green cut = 804)	660	30.2%	69.7%	0.0%	70.0%
850 to 899	724	4.9%	94.2%	0.9%	94.2%
900 to 949	671	0.2%	88.7%	11.1%	88.7%
950 to 999 (Green/Blue cut = 977)	458	0.0%	54.9%	45.1%	62.4%
1000 to 1049	206	0.0%	15.2%	84.8%	84.8%
1050 to 1099	72	0.0%	1.6%	98.4%	98.4%
1100 to 1149	18	0.0%	0.0%	>99.9%	>99.9%
1150 to 1199	5	0.0%	0.0%	>99.9%	>99.9%
1200 to 1249	0	N/A	N/A	N/A	N/A
1250 to 1299	0	N/A	N/A	N/A	N/A
1300 to 1349	0	N/A	N/A	N/A	N/A
1350 to 1399	0	N/A	N/A	N/A	N/A
1400 to 1449	0	N/A	N/A	N/A	N/A
1450 to 1499	0	N/A	N/A	N/A	N/A
1500 to 1549	0	N/A	N/A	N/A	N/A
1550 to 1599	0	N/A	N/A	N/A	N/A
1600 to 1649	0	N/A	N/A	N/A	N/A
1650 to 1699	0	N/A	N/A	N/A	N/A
1700 to 1749	0	N/A	N/A	N/A	N/A
1750 to 1799	0	N/A	N/A	N/A	N/A
1800 to 1849	0	N/A	N/A	N/A	N/A
1850 to 1899	0	N/A	N/A	N/A	N/A
1900 to 1949	0	N/A	N/A	N/A	N/A

Table E-51 (continued). Retest Classification Percent for Various Scale Score Ranges – Science Grade 5

Scale Score Range	Number of Students	Red (% Chance in Category if Retested*)	Green (% Chance in Category if Retested*)	Blue (% Chance in Category if Retested*)	% Chance in Same Category if Retested*
1950 to 1999	0	N/A	N/A	N/A	N/A
>= 2000	0	N/A	N/A	N/A	N/A
TOTAL	4,452				

* Retest assuming no additional instruction

Table E-52. Retest Classification Percent for Various Scale Score Ranges – Science Grade 6

Scale Score Range	Number of Students	Red (% Chance in Category if Retested*)	Green (% Chance in Category if Retested*)	Blue (% Chance in Category if Retested*)	% Chance in Same Category if Retested*
< 200	0	N/A	N/A	N/A	N/A
200 to 249	0	N/A	N/A	N/A	N/A
250 to 299	0	N/A	N/A	N/A	N/A
300 to 349	0	N/A	N/A	N/A	N/A
350 to 399	1	>99.9%	0.0%	0.0%	>99.9%
400 to 449	6	>99.9%	0.0%	0.0%	>99.9%
450 to 499	58	>99.9%	0.0%	0.0%	>99.9%
500 to 549	193	>99.9%	0.0%	0.0%	>99.9%
550 to 599	542	>99.9%	0.0%	0.0%	>99.9%
600 to 649	894	>99.9%	0.0%	0.0%	>99.9%
650 to 699	1,268	>99.9%	0.0%	0.0%	>99.9%
700 to 749	1,452	99.9%	0.1%	0.0%	99.9%
750 to 799	1,946	97.8%	2.2%	0.0%	97.8%
800 to 849	2,551	79.2%	20.8%	0.0%	79.2%
850 to 899 (Red/Green cut = 861)	3,204	35.6%	64.4%	0.0%	66.4%
900 to 949	3,449	6.2%	93.4%	0.4%	93.4%
950 to 999	2,827	0.3%	92.4%	7.2%	92.4%
1000 to 1049 (Green/Blue cut = 1034)	1,544	0.0%	62.2%	37.8%	65.3%
1050 to 1099	556	0.0%	19.9%	80.1%	80.1%
1100 to 1149	142	0.0%	1.9%	98.1%	98.1%
1150 to 1199	23	0.0%	0.1%	99.9%	99.9%
1200 to 1249	2	0.0%	0.0%	>99.9%	>99.9%
1250 to 1299	1	0.0%	0.0%	>99.9%	>99.9%
1300 to 1349	0	N/A	N/A	N/A	N/A
1350 to 1399	0	N/A	N/A	N/A	N/A
1400 to 1449	0	N/A	N/A	N/A	N/A
1450 to 1499	0	N/A	N/A	N/A	N/A
1500 to 1549	0	N/A	N/A	N/A	N/A
1550 to 1599	0	N/A	N/A	N/A	N/A
1600 to 1649	0	N/A	N/A	N/A	N/A
1650 to 1699	0	N/A	N/A	N/A	N/A
1700 to 1749	0	N/A	N/A	N/A	N/A
1750 to 1799	0	N/A	N/A	N/A	N/A
1800 to 1849	0	N/A	N/A	N/A	N/A
1850 to 1899	0	N/A	N/A	N/A	N/A
1900 to 1949	0	N/A	N/A	N/A	N/A

Table E-52 (continued). Retest Classification Percent for Various Scale Score Ranges – Science Grade 6

Scale Score Range	Number of Students	Red (% Chance in Category if Retested*)	Green (% Chance in Category if Retested*)	Blue (% Chance in Category if Retested*)	% Chance in Same Category if Retested*
1950 to 1999	0	N/A	N/A	N/A	N/A
>= 2000	0	N/A	N/A	N/A	N/A
TOTAL	20,659				

* Retest assuming no additional instruction

Table E–53. Retest Classification Percent for Various Scale Score Ranges – Science Grade 7

Scale Score Range	Number of Students	Red (% Chance in Category if Retested*)	Green (% Chance in Category if Retested*)	Blue (% Chance in Category if Retested*)	% Chance in Same Category if Retested*
< 200	0	N/A	N/A	N/A	N/A
200 to 249	0	N/A	N/A	N/A	N/A
250 to 299	0	N/A	N/A	N/A	N/A
300 to 349	0	N/A	N/A	N/A	N/A
350 to 399	0	N/A	N/A	N/A	N/A
400 to 449	4	>99.9%	0.0%	0.0%	>99.9%
450 to 499	35	>99.9%	0.0%	0.0%	>99.9%
500 to 549	219	>99.9%	0.0%	0.0%	>99.9%
550 to 599	639	>99.9%	0.0%	0.0%	>99.9%
600 to 649	1,315	>99.9%	0.0%	0.0%	>99.9%
650 to 699	1,673	>99.9%	0.0%	0.0%	>99.9%
700 to 749	2,021	>99.9%	0.0%	0.0%	>99.9%
750 to 799	2,513	99.9%	0.1%	0.0%	99.9%
800 to 849	3,249	97.4%	2.6%	0.0%	97.4%
850 to 899	4,326	77.5%	22.5%	0.0%	77.5%
900 to 949 (Red/Green cut = 908)	5,486	33.5%	66.5%	0.0%	67.6%
950 to 999	5,489	5.5%	94.0%	0.5%	94.0%
1000 to 1049	3,860	0.3%	91.7%	8.0%	91.7%
1050 to 1099 (Green/Blue cut = 1081)	1,690	0.0%	60.1%	39.9%	64.4%
1100 to 1149	477	0.0%	18.1%	81.9%	81.9%
1150 to 1199	117	0.0%	1.8%	98.2%	98.2%
1200 to 1249	32	0.0%	0.0%	>99.9%	>99.9%
1250 to 1299	6	0.0%	0.0%	>99.9%	>99.9%
1300 to 1349	0	N/A	N/A	N/A	N/A
1350 to 1399	0	N/A	N/A	N/A	N/A
1400 to 1449	0	N/A	N/A	N/A	N/A
1450 to 1499	0	N/A	N/A	N/A	N/A
1500 to 1549	0	N/A	N/A	N/A	N/A
1550 to 1599	0	N/A	N/A	N/A	N/A
1600 to 1649	0	N/A	N/A	N/A	N/A
1650 to 1699	0	N/A	N/A	N/A	N/A
1700 to 1749	0	N/A	N/A	N/A	N/A
1750 to 1799	0	N/A	N/A	N/A	N/A
1800 to 1849	0	N/A	N/A	N/A	N/A
1850 to 1899	0	N/A	N/A	N/A	N/A
1900 to 1949	0	N/A	N/A	N/A	N/A

Table E-53 (continued). Retest Classification Percent for Various Scale Score Ranges – Science Grade 7

Scale Score Range	Number of Students	Red (% Chance in Category if Retested*)	Green (% Chance in Category if Retested*)	Blue (% Chance in Category if Retested*)	% Chance in Same Category if Retested*
1950 to 1999	0	N/A	N/A	N/A	N/A
>= 2000	0	N/A	N/A	N/A	N/A
TOTAL	33,151				

* Retest assuming no additional instruction

Table E-54. Retest Classification Percent for Various Scale Score Ranges – Science Grade 8

Scale Score Range	Number of Students	Red (% Chance in Category if Retested*)	Green (% Chance in Category if Retested*)	Blue (% Chance in Category if Retested*)	% Chance in Same Category if Retested*
< 200	0	N/A	N/A	N/A	N/A
200 to 249	0	N/A	N/A	N/A	N/A
250 to 299	0	N/A	N/A	N/A	N/A
300 to 349	0	N/A	N/A	N/A	N/A
350 to 399	0	N/A	N/A	N/A	N/A
400 to 449	5	>99.9%	0.0%	0.0%	>99.9%
450 to 499	46	>99.9%	0.0%	0.0%	>99.9%
500 to 549	194	>99.9%	0.0%	0.0%	>99.9%
550 to 599	752	>99.9%	0.0%	0.0%	>99.9%
600 to 649	1,444	>99.9%	0.0%	0.0%	>99.9%
650 to 699	1,972	>99.9%	0.0%	0.0%	>99.9%
700 to 749	2,385	>99.9%	0.0%	0.0%	>99.9%
750 to 799	3,197	>99.9%	0.0%	0.0%	>99.9%
800 to 849	4,185	99.8%	0.2%	0.0%	99.8%
850 to 899	5,784	95.8%	4.2%	0.0%	95.8%
900 to 949 (Red/Green cut = 949)	7,972	70.4%	29.6%	0.0%	70.4%
950 to 999	9,514	26.3%	73.6%	0.0%	73.6%
1000 to 1049	7,851	3.7%	95.4%	0.9%	95.4%
1050 to 1099	4,154	0.2%	88.8%	11.1%	88.8%
1100 to 1149 (Green/Blue cut = 1122)	1,435	0.0%	52.5%	47.5%	61.8%
1150 to 1199	414	0.0%	12.8%	87.2%	87.2%
1200 to 1249	95	0.0%	0.9%	99.1%	99.1%
1250 to 1299	20	0.0%	0.0%	>99.9%	>99.9%
1300 to 1349	5	0.0%	0.0%	>99.9%	>99.9%
1350 to 1399	1	0.0%	0.0%	>99.9%	>99.9%
1400 to 1449	1	0.0%	0.0%	>99.9%	>99.9%
1450 to 1499	0	N/A	N/A	N/A	N/A
1500 to 1549	0	N/A	N/A	N/A	N/A
1550 to 1599	0	N/A	N/A	N/A	N/A
1600 to 1649	0	N/A	N/A	N/A	N/A
1650 to 1699	0	N/A	N/A	N/A	N/A
1700 to 1749	0	N/A	N/A	N/A	N/A
1750 to 1799	0	N/A	N/A	N/A	N/A
1800 to 1849	0	N/A	N/A	N/A	N/A
1850 to 1899	0	N/A	N/A	N/A	N/A
1900 to 1949	0	N/A	N/A	N/A	N/A

Table E-54 (continued). Retest Classification Percent for Various Scale Score Ranges – Science Grade 8

Scale Score Range	Number of Students	Red (% Chance in Category if Retested*)	Green (% Chance in Category if Retested*)	Blue (% Chance in Category if Retested*)	% Chance in Same Category if Retested*
1950 to 1999	0	N/A	N/A	N/A	N/A
>= 2000	0	N/A	N/A	N/A	N/A
TOTAL	51,426				

* Retest assuming no additional instruction

Table E–55. Retest Classification Percent for Various Scale Score Ranges – Science High School

Scale Score Range	Number of Students	Red (% Chance in Category if Retested*)	Green (% Chance in Category if Retested*)	Blue (% Chance in Category if Retested*)	% Chance in Same Category if Retested*
< 200	0	N/A	N/A	N/A	N/A
200 to 249	0	N/A	N/A	N/A	N/A
250 to 299	0	N/A	N/A	N/A	N/A
300 to 349	0	N/A	N/A	N/A	N/A
350 to 399	0	N/A	N/A	N/A	N/A
400 to 449	0	N/A	N/A	N/A	N/A
450 to 499	1	>99.9%	0.0%	0.0%	>99.9%
500 to 549	12	>99.9%	0.0%	0.0%	>99.9%
550 to 599	59	>99.9%	0.0%	0.0%	>99.9%
600 to 649	88	>99.9%	0.0%	0.0%	>99.9%
650 to 699	99	>99.9%	0.0%	0.0%	>99.9%
700 to 749	96	>99.9%	0.0%	0.0%	>99.9%
750 to 799	138	>99.9%	0.0%	0.0%	>99.9%
800 to 849	104	99.8%	0.2%	0.0%	99.8%
850 to 899	106	96.1%	3.9%	0.0%	96.1%
900 to 949 (Red/Green cut = 949)	140	72.1%	27.9%	0.0%	72.2%
950 to 999	138	26.7%	73.2%	0.0%	73.2%
1000 to 1049	134	3.3%	95.8%	0.9%	95.8%
1050 to 1099	102	0.1%	88.5%	11.3%	88.5%
1100 to 1149 (Green/Blue cut = 1122)	47	0.0%	52.1%	47.9%	60.1%
1150 to 1199	20	0.0%	14.0%	86.0%	86.0%
1200 to 1249	2	0.0%	1.2%	98.8%	98.8%
1250 to 1299	1	0.0%	0.0%	>99.9%	>99.9%
1300 to 1349	0	N/A	N/A	N/A	N/A
1350 to 1399	0	N/A	N/A	N/A	N/A
1400 to 1449	0	N/A	N/A	N/A	N/A
1450 to 1499	0	N/A	N/A	N/A	N/A
1500 to 1549	0	N/A	N/A	N/A	N/A
1550 to 1599	0	N/A	N/A	N/A	N/A
1600 to 1649	0	N/A	N/A	N/A	N/A
1650 to 1699	0	N/A	N/A	N/A	N/A
1700 to 1749	0	N/A	N/A	N/A	N/A
1750 to 1799	0	N/A	N/A	N/A	N/A
1800 to 1849	0	N/A	N/A	N/A	N/A
1850 to 1899	0	N/A	N/A	N/A	N/A
1900 to 1949	0	N/A	N/A	N/A	N/A

Table E-55 (continued). Retest Classification Percent for Various Scale Score Ranges – Science High School

Scale Score Range	Number of Students	Red (% Chance in Category if Retested*)	Green (% Chance in Category if Retested*)	Blue (% Chance in Category if Retested*)	% Chance in Same Category if Retested*
1950 to 1999	0	N/A	N/A	N/A	N/A
>= 2000	0	N/A	N/A	N/A	N/A
TOTAL	1,287				

* Retest assuming no additional instruction

Table E-56. Retest Classification Percent for Various Scale Score Ranges – Biology

Scale Score Range	Number of Students	Red (% Chance in Category if Retested*)	Green (% Chance in Category if Retested*)	Blue (% Chance in Category if Retested*)	% Chance in Same Category if Retested*
< 400	0	N/A	N/A	N/A	N/A
400 to 449	5	99.9%	0.1%	0.0%	99.9%
450 to 499	15	>99.9%	0.0%	0.0%	>99.9%
500 to 549	93	>99.9%	0.0%	0.0%	>99.9%
550 to 599	367	>99.9%	0.0%	0.0%	>99.9%
600 to 649	1,186	>99.9%	0.0%	0.0%	>99.9%
650 to 699	2,678	>99.9%	0.0%	0.0%	>99.9%
700 to 749	4,217	>99.9%	0.0%	0.0%	>99.9%
750 to 799	5,763	>99.9%	0.0%	0.0%	>99.9%
800 to 849	7,621	>99.9%	0.0%	0.0%	>99.9%
850 to 899	10,596	99.9%	0.1%	0.0%	99.9%
900 to 949	15,205	97.9%	2.1%	0.0%	97.9%
950 to 999	20,825	80.3%	19.7%	0.0%	80.3%
1000 to 1049 (Red/Green cut = 1012)	22,435	37.8%	62.2%	0.0%	65.0%
1050 to 1099	17,749	6.9%	92.8%	0.4%	92.8%
1100 to 1149	11,387	0.4%	93.0%	6.6%	93.0%
1150 to 1199 (Green/Blue cut = 1185)	6,054	0.0%	62.9%	37.1%	66.0%
1200 to 1249	2,941	0.0%	18.9%	81.1%	81.1%
1250 to 1299	1,381	0.0%	1.8%	98.2%	98.2%
1300 to 1349	573	0.0%	0.1%	99.9%	99.9%
1350 to 1399	213	0.0%	0.0%	>99.9%	>99.9%
1400 to 1449	83	0.0%	0.0%	>99.9%	>99.9%
1450 to 1499	31	0.0%	0.0%	>99.9%	>99.9%
1500 to 1549	9	0.0%	0.0%	>99.9%	>99.9%
1550 to 1599	3	0.0%	0.0%	>99.9%	>99.9%
1600 to 1649	1	0.0%	0.0%	>99.9%	>99.9%
1650 to 1699	1	0.0%	0.0%	>99.9%	>99.9%
1700 to 1749	0	N/A	N/A	N/A	N/A
1750 to 1799	0	N/A	N/A	N/A	N/A
1800 to 1849	0	N/A	N/A	N/A	N/A
1850 to 1899	0	N/A	N/A	N/A	N/A
1900 to 1949	0	N/A	N/A	N/A	N/A
1950 to 1999	0	N/A	N/A	N/A	N/A
>= 2000	0	N/A	N/A	N/A	N/A
TOTAL	131,432				

* Retest assuming no additional instruction

Table E-57. Retest Classification Percent for Various Scale Score Ranges – Chemistry

Scale Score Range	Number of Students	Red (% Chance in Category if Retested*)	Green (% Chance in Category if Retested*)	Blue (% Chance in Category if Retested*)	% Chance in Same Category if Retested*
< 400	0	N/A	N/A	N/A	N/A
400 to 449	1	>99.9%	0.0%	0.0%	>99.9%
450 to 499	0	N/A	N/A	N/A	N/A
500 to 549	2	>99.9%	0.0%	0.0%	>99.9%
550 to 599	2	>99.9%	0.0%	0.0%	>99.9%
600 to 649	14	>99.9%	0.0%	0.0%	>99.9%
650 to 699	46	>99.9%	0.0%	0.0%	>99.9%
700 to 749	107	>99.9%	0.0%	0.0%	>99.9%
750 to 799	227	>99.9%	0.0%	0.0%	>99.9%
800 to 849	440	>99.9%	0.0%	0.0%	>99.9%
850 to 899	678	>99.9%	0.0%	0.0%	>99.9%
900 to 949	997	99.8%	0.2%	0.0%	99.8%
950 to 999	1,382	95.0%	5.0%	0.0%	95.0%
1000 to 1049 (Red/Green cut = 1045)	1,520	68.0%	32.0%	0.0%	68.6%
1050 to 1099	1,261	23.8%	76.2%	0.0%	76.2%
1100 to 1149	819	3.0%	96.0%	1.0%	96.0%
1150 to 1199	295	0.1%	88.1%	11.8%	88.1%
1200 to 1249 (Green/Blue cut = 1218)	108	0.0%	49.9%	50.1%	62.6%
1250 to 1299	33	0.0%	10.6%	89.4%	89.4%
1300 to 1349	10	0.0%	0.9%	99.1%	99.1%
1350 to 1399	5	0.0%	0.0%	>99.9%	>99.9%
1400 to 1449	5	0.0%	0.0%	>99.9%	>99.9%
1450 to 1499	1	0.0%	0.0%	>99.9%	>99.9%
1500 to 1549	0	N/A	N/A	N/A	N/A
1550 to 1599	0	N/A	N/A	N/A	N/A
1600 to 1649	0	N/A	N/A	N/A	N/A
1650 to 1699	0	N/A	N/A	N/A	N/A
1700 to 1749	0	N/A	N/A	N/A	N/A
1750 to 1799	0	N/A	N/A	N/A	N/A
1800 to 1849	0	N/A	N/A	N/A	N/A
1850 to 1899	0	N/A	N/A	N/A	N/A
1900 to 1949	0	N/A	N/A	N/A	N/A
1950 to 1999	0	N/A	N/A	N/A	N/A
>= 2000	0	N/A	N/A	N/A	N/A
TOTAL	7,953				

* Retest assuming no additional instruction

Table E–58. Retest Classification Percent for Various Scale Score Ranges – Writing Grade 3

Scale Score Range	Number of Students	Red (% Chance in Category if Retested*)	Green (% Chance in Category if Retested*)	Blue (% Chance in Category if Retested*)	% Chance in Same Category if Retested*
< 200	0	N/A	N/A	N/A	N/A
200 to 249	0	N/A	N/A	N/A	N/A
250 to 299	7	>99.9%	0.0%	0.0%	>99.9%
300 to 349	46	>99.9%	0.0%	0.0%	>99.9%
350 to 399	157	>99.9%	0.0%	0.0%	>99.9%
400 to 449	267	>99.9%	0.0%	0.0%	>99.9%
450 to 499	293	>99.9%	0.0%	0.0%	>99.9%
500 to 549	327	>99.9%	0.0%	0.0%	>99.9%
550 to 599	328	>99.9%	0.0%	0.0%	>99.9%
600 to 649	468	>99.9%	0.0%	0.0%	>99.9%
650 to 699	584	99.4%	0.6%	0.0%	99.4%
700 to 749	718	90.2%	9.8%	0.0%	90.2%
750 to 799 (Red/Green cut = 780)	843	53.5%	46.5%	0.0%	62.4%
800 to 849	862	14.0%	85.9%	0.1%	85.9%
850 to 899	856	1.3%	95.8%	3.0%	95.8%
900 to 949	646	0.0%	76.7%	23.3%	76.7%
950 to 999 (Green/Blue cut = 953)	346	0.0%	31.8%	68.2%	68.4%
1000 to 1049	136	0.0%	5.3%	94.7%	94.7%
1050 to 1099	49	0.0%	0.3%	99.7%	99.7%
1100 to 1149	8	0.0%	0.0%	>99.9%	>99.9%
1150 to 1199	2	0.0%	0.0%	>99.9%	>99.9%
1200 to 1249	0	N/A	N/A	N/A	N/A
1250 to 1299	0	N/A	N/A	N/A	N/A
1300 to 1349	0	N/A	N/A	N/A	N/A
1350 to 1399	0	N/A	N/A	N/A	N/A
1400 to 1449	0	N/A	N/A	N/A	N/A
1450 to 1499	0	N/A	N/A	N/A	N/A
1500 to 1549	0	N/A	N/A	N/A	N/A
1550 to 1599	0	N/A	N/A	N/A	N/A
1600 to 1649	0	N/A	N/A	N/A	N/A
1650 to 1699	0	N/A	N/A	N/A	N/A
1700 to 1749	0	N/A	N/A	N/A	N/A
1750 to 1799	0	N/A	N/A	N/A	N/A
1800 to 1849	0	N/A	N/A	N/A	N/A
1850 to 1899	0	N/A	N/A	N/A	N/A
1900 to 1949	0	N/A	N/A	N/A	N/A

Table E-58 (continued). Retest Classification Percent for Various Scale Score Ranges – Writing Grade 3

Scale Score Range	Number of Students	Red (% Chance in Category if Retested*)	Green (% Chance in Category if Retested*)	Blue (% Chance in Category if Retested*)	% Chance in Same Category if Retested*
1950 to 1999	0	N/A	N/A	N/A	N/A
>= 2000	0	N/A	N/A	N/A	N/A
TOTAL	6,943				

* Retest assuming no additional instruction

Table E–59. Retest Classification Percent for Various Scale Score Ranges – Writing Grade 4

Scale Score Range	Number of Students	Red (% Chance in Category if Retested*)	Green (% Chance in Category if Retested*)	Blue (% Chance in Category if Retested*)	% Chance in Same Category if Retested*
< 200	0	N/A	N/A	N/A	N/A
200 to 249	0	N/A	N/A	N/A	N/A
250 to 299	0	N/A	N/A	N/A	N/A
300 to 349	11	>99.9%	0.0%	0.0%	>99.9%
350 to 399	52	>99.9%	0.0%	0.0%	>99.9%
400 to 449	133	>99.9%	0.0%	0.0%	>99.9%
450 to 499	223	>99.9%	0.0%	0.0%	>99.9%
500 to 549	240	>99.9%	0.0%	0.0%	>99.9%
550 to 599	255	>99.9%	0.0%	0.0%	>99.9%
600 to 649	332	>99.9%	0.0%	0.0%	>99.9%
650 to 699	433	>99.9%	0.0%	0.0%	>99.9%
700 to 749	562	99.9%	0.1%	0.0%	99.9%
750 to 799	678	96.7%	3.3%	0.0%	96.7%
800 to 849	853	72.5%	27.5%	0.0%	72.5%
850 to 899 (Red/Green cut = 852)	981	28.1%	71.9%	0.0%	72.0%
900 to 949	1,022	4.0%	95.2%	0.8%	95.2%
950 to 999	884	0.2%	88.8%	11.0%	88.8%
1000 to 1049 (Green/Blue cut = 1025)	537	0.0%	53.2%	46.8%	62.6%
1050 to 1099	231	0.0%	14.5%	85.5%	85.5%
1100 to 1149	60	0.0%	1.0%	99.0%	99.0%
1150 to 1199	12	0.0%	0.0%	>99.9%	>99.9%
1200 to 1249	5	0.0%	0.0%	>99.9%	>99.9%
1250 to 1299	0	N/A	N/A	N/A	N/A
1300 to 1349	0	N/A	N/A	N/A	N/A
1350 to 1399	0	N/A	N/A	N/A	N/A
1400 to 1449	0	N/A	N/A	N/A	N/A
1450 to 1499	0	N/A	N/A	N/A	N/A
1500 to 1549	0	N/A	N/A	N/A	N/A
1550 to 1599	0	N/A	N/A	N/A	N/A
1600 to 1649	0	N/A	N/A	N/A	N/A
1650 to 1699	0	N/A	N/A	N/A	N/A
1700 to 1749	0	N/A	N/A	N/A	N/A
1750 to 1799	0	N/A	N/A	N/A	N/A
1800 to 1849	0	N/A	N/A	N/A	N/A
1850 to 1899	0	N/A	N/A	N/A	N/A
1900 to 1949	0	N/A	N/A	N/A	N/A

Table E-59 (continued). Retest Classification Percent for Various Scale Score Ranges – Writing Grade 4

Scale Score Range	Number of Students	Red (% Chance in Category if Retested*)	Green (% Chance in Category if Retested*)	Blue (% Chance in Category if Retested*)	% Chance in Same Category if Retested*
1950 to 1999	0	N/A	N/A	N/A	N/A
>= 2000	0	N/A	N/A	N/A	N/A
TOTAL	7,504				

* Retest assuming no additional instruction

Table E–60. Retest Classification Percent for Various Scale Score Ranges – Writing Grade 5

Scale Score Range	Number of Students	Red (% Chance in Category if Retested*)	Green (% Chance in Category if Retested*)	Blue (% Chance in Category if Retested*)	% Chance in Same Category if Retested*
< 200	0	N/A	N/A	N/A	N/A
200 to 249	0	N/A	N/A	N/A	N/A
250 to 299	0	N/A	N/A	N/A	N/A
300 to 349	7	>99.9%	0.0%	0.0%	>99.9%
350 to 399	16	>99.9%	0.0%	0.0%	>99.9%
400 to 449	75	>99.9%	0.0%	0.0%	>99.9%
450 to 499	165	>99.9%	0.0%	0.0%	>99.9%
500 to 549	222	>99.9%	0.0%	0.0%	>99.9%
550 to 599	278	>99.9%	0.0%	0.0%	>99.9%
600 to 649	279	>99.9%	0.0%	0.0%	>99.9%
650 to 699	373	>99.9%	0.0%	0.0%	>99.9%
700 to 749	514	>99.9%	0.0%	0.0%	>99.9%
750 to 799	652	99.9%	0.1%	0.0%	99.9%
800 to 849	862	96.0%	4.0%	0.0%	96.0%
850 to 899	1,162	70.1%	29.9%	0.0%	70.1%
900 to 949 (Red/Green cut = 900)	1,387	27.4%	72.6%	0.0%	72.6%
950 to 999	1,467	3.6%	95.5%	0.9%	95.5%
1000 to 1049	1,212	0.1%	87.9%	12.0%	87.9%
1050 to 1099 (Green/Blue cut = 1073)	648	0.0%	51.8%	48.2%	62.1%
1100 to 1149	298	0.0%	12.9%	87.1%	87.1%
1150 to 1199	84	0.0%	1.1%	98.9%	98.9%
1200 to 1249	37	0.0%	0.0%	>99.9%	>99.9%
1250 to 1299	4	0.0%	0.0%	>99.9%	>99.9%
1300 to 1349	0	N/A	N/A	N/A	N/A
1350 to 1399	0	N/A	N/A	N/A	N/A
1400 to 1449	0	N/A	N/A	N/A	N/A
1450 to 1499	0	N/A	N/A	N/A	N/A
1500 to 1549	0	N/A	N/A	N/A	N/A
1550 to 1599	0	N/A	N/A	N/A	N/A
1600 to 1649	0	N/A	N/A	N/A	N/A
1650 to 1699	0	N/A	N/A	N/A	N/A
1700 to 1749	0	N/A	N/A	N/A	N/A
1750 to 1799	0	N/A	N/A	N/A	N/A
1800 to 1849	0	N/A	N/A	N/A	N/A
1850 to 1899	0	N/A	N/A	N/A	N/A
1900 to 1949	0	N/A	N/A	N/A	N/A

Table E-60 (continued). Retest Classification Percent for Various Scale Score Ranges – Writing Grade 5

Scale Score Range	Number of Students	Red (% Chance in Category if Retested*)	Green (% Chance in Category if Retested*)	Blue (% Chance in Category if Retested*)	% Chance in Same Category if Retested*
1950 to 1999	0	N/A	N/A	N/A	N/A
>= 2000	0	N/A	N/A	N/A	N/A
TOTAL	9,742				

* Retest assuming no additional instruction

Table E–61. Retest Classification Percent for Various Scale Score Ranges – Writing Grade 6

Scale Score Range	Number of Students	Red (% Chance in Category if Retested*)	Green (% Chance in Category if Retested*)	Blue (% Chance in Category if Retested*)	% Chance in Same Category if Retested*
< 200	0	N/A	N/A	N/A	N/A
200 to 249	0	N/A	N/A	N/A	N/A
250 to 299	0	N/A	N/A	N/A	N/A
300 to 349	0	N/A	N/A	N/A	N/A
350 to 399	0	N/A	N/A	N/A	N/A
400 to 449	3	>99.9%	0.0%	0.0%	>99.9%
450 to 499	21	>99.9%	0.0%	0.0%	>99.9%
500 to 549	148	>99.9%	0.0%	0.0%	>99.9%
550 to 599	402	>99.9%	0.0%	0.0%	>99.9%
600 to 649	590	>99.9%	0.0%	0.0%	>99.9%
650 to 699	644	>99.9%	0.0%	0.0%	>99.9%
700 to 749	800	>99.9%	0.0%	0.0%	>99.9%
750 to 799	971	>99.9%	0.0%	0.0%	>99.9%
800 to 849	1,078	99.7%	0.3%	0.0%	99.7%
850 to 899	1,557	93.4%	6.6%	0.0%	93.4%
900 to 949 (Red/Green cut = 938)	1,961	61.0%	39.0%	0.0%	64.6%
950 to 999	2,383	17.5%	82.5%	0.0%	82.5%
1000 to 1049	2,175	1.6%	96.9%	1.6%	96.9%
1050 to 1099	1,495	0.0%	83.0%	16.9%	83.0%
1100 to 1149 (Green/Blue cut = 1111)	831	0.0%	40.1%	59.9%	63.8%
1150 to 1199	337	0.0%	7.3%	92.7%	92.7%
1200 to 1249	123	0.0%	0.5%	99.5%	99.5%
1250 to 1299	19	0.0%	0.0%	>99.9%	>99.9%
1300 to 1349	4	0.0%	0.0%	>99.9%	>99.9%
1350 to 1399	0	N/A	N/A	N/A	N/A
1400 to 1449	1	0.0%	0.0%	>99.9%	>99.9%
1450 to 1499	0	N/A	N/A	N/A	N/A
1500 to 1549	0	N/A	N/A	N/A	N/A
1550 to 1599	0	N/A	N/A	N/A	N/A
1600 to 1649	0	N/A	N/A	N/A	N/A
1650 to 1699	0	N/A	N/A	N/A	N/A
1700 to 1749	0	N/A	N/A	N/A	N/A
1750 to 1799	0	N/A	N/A	N/A	N/A
1800 to 1849	0	N/A	N/A	N/A	N/A
1850 to 1899	0	N/A	N/A	N/A	N/A
1900 to 1949	0	N/A	N/A	N/A	N/A

Table E-61 (continued). Retest Classification Percent for Various Scale Score Ranges – Writing Grade 6

Scale Score Range	Number of Students	Red (% Chance in Category if Retested*)	Green (% Chance in Category if Retested*)	Blue (% Chance in Category if Retested*)	% Chance in Same Category if Retested*
1950 to 1999	0	N/A	N/A	N/A	N/A
>= 2000	0	N/A	N/A	N/A	N/A
TOTAL	15,543				

* Retest assuming no additional instruction

Table E–62. Retest Classification Percent for Various Scale Score Ranges – Writing Grade 7

Scale Score Range	Number of Students	Red (% Chance in Category if Retested*)	Green (% Chance in Category if Retested*)	Blue (% Chance in Category if Retested*)	% Chance in Same Category if Retested*
< 200	0	N/A	N/A	N/A	N/A
200 to 249	0	N/A	N/A	N/A	N/A
250 to 299	0	N/A	N/A	N/A	N/A
300 to 349	0	N/A	N/A	N/A	N/A
350 to 399	0	N/A	N/A	N/A	N/A
400 to 449	3	>99.9%	0.0%	0.0%	>99.9%
450 to 499	31	>99.9%	0.0%	0.0%	>99.9%
500 to 549	139	>99.9%	0.0%	0.0%	>99.9%
550 to 599	381	>99.9%	0.0%	0.0%	>99.9%
600 to 649	606	>99.9%	0.0%	0.0%	>99.9%
650 to 699	653	>99.9%	0.0%	0.0%	>99.9%
700 to 749	779	>99.9%	0.0%	0.0%	>99.9%
750 to 799	905	>99.9%	0.0%	0.0%	>99.9%
800 to 849	1,146	>99.9%	0.0%	0.0%	>99.9%
850 to 899	1,487	99.2%	0.8%	0.0%	99.2%
900 to 949	2,002	87.7%	12.3%	0.0%	87.7%
950 to 999 (Red/Green cut = 974)	2,539	48.2%	51.8%	0.0%	62.4%
1000 to 1049	2,791	10.2%	89.7%	0.1%	89.7%
1050 to 1099	2,296	0.6%	96.1%	3.3%	96.1%
1100 to 1149 (Green/Blue cut = 1147)	1,343	0.0%	73.3%	26.7%	73.3%
1150 to 1199	620	0.0%	28.6%	71.4%	71.4%
1200 to 1249	204	0.0%	3.7%	96.3%	96.3%
1250 to 1299	40	0.0%	0.2%	99.8%	99.8%
1300 to 1349	6	0.0%	0.0%	>99.9%	>99.9%
1350 to 1399	0	N/A	N/A	N/A	N/A
1400 to 1449	0	N/A	N/A	N/A	N/A
1450 to 1499	0	N/A	N/A	N/A	N/A
1500 to 1549	0	N/A	N/A	N/A	N/A
1550 to 1599	0	N/A	N/A	N/A	N/A
1600 to 1649	0	N/A	N/A	N/A	N/A
1650 to 1699	0	N/A	N/A	N/A	N/A
1700 to 1749	0	N/A	N/A	N/A	N/A
1750 to 1799	0	N/A	N/A	N/A	N/A
1800 to 1849	0	N/A	N/A	N/A	N/A
1850 to 1899	0	N/A	N/A	N/A	N/A
1900 to 1949	0	N/A	N/A	N/A	N/A

Table E-62 (continued). Retest Classification Percent for Various Scale Score Ranges – Writing Grade 7

Scale Score Range	Number of Students	Red (% Chance in Category if Retested*)	Green (% Chance in Category if Retested*)	Blue (% Chance in Category if Retested*)	% Chance in Same Category if Retested*
1950 to 1999	0	N/A	N/A	N/A	N/A
>= 2000	0	N/A	N/A	N/A	N/A
TOTAL	17,971				

* Retest assuming no additional instruction

Table E–63. Retest Classification Percent for Various Scale Score Ranges – Writing Grade 8

Scale Score Range	Number of Students	Red (% Chance in Category if Retested*)	Green (% Chance in Category if Retested*)	Blue (% Chance in Category if Retested*)	% Chance in Same Category if Retested*
< 200	0	N/A	N/A	N/A	N/A
200 to 249	0	N/A	N/A	N/A	N/A
250 to 299	0	N/A	N/A	N/A	N/A
300 to 349	0	N/A	N/A	N/A	N/A
350 to 399	0	N/A	N/A	N/A	N/A
400 to 449	2	>99.9%	0.0%	0.0%	>99.9%
450 to 499	21	>99.9%	0.0%	0.0%	>99.9%
500 to 549	119	>99.9%	0.0%	0.0%	>99.9%
550 to 599	321	>99.9%	0.0%	0.0%	>99.9%
600 to 649	497	>99.9%	0.0%	0.0%	>99.9%
650 to 699	581	>99.9%	0.0%	0.0%	>99.9%
700 to 749	670	>99.9%	0.0%	0.0%	>99.9%
750 to 799	819	>99.9%	0.0%	0.0%	>99.9%
800 to 849	1,061	>99.9%	0.0%	0.0%	>99.9%
850 to 899	1,324	99.6%	0.4%	0.0%	99.6%
900 to 949	1,877	92.2%	7.8%	0.0%	92.2%
950 to 999 (Red/Green cut = 985)	2,417	57.8%	42.2%	0.0%	63.5%
1000 to 1049	2,837	16.1%	83.8%	0.0%	83.8%
1050 to 1099	2,494	1.3%	96.9%	1.8%	96.9%
1100 to 1149	1,626	0.0%	81.6%	18.3%	81.6%
1150 to 1199 (Green/Blue cut = 1158)	778	0.0%	37.9%	62.1%	64.3%
1200 to 1249	264	0.0%	6.3%	93.7%	93.7%
1250 to 1299	92	0.0%	0.4%	99.6%	99.6%
1300 to 1349	18	0.0%	0.0%	>99.9%	>99.9%
1350 to 1399	8	0.0%	0.0%	>99.9%	>99.9%
1400 to 1449	0	N/A	N/A	N/A	N/A
1450 to 1499	2	0.0%	0.0%	>99.9%	>99.9%
1500 to 1549	0	N/A	N/A	N/A	N/A
1550 to 1599	0	N/A	N/A	N/A	N/A
1600 to 1649	0	N/A	N/A	N/A	N/A
1650 to 1699	0	N/A	N/A	N/A	N/A
1700 to 1749	0	N/A	N/A	N/A	N/A
1750 to 1799	0	N/A	N/A	N/A	N/A
1800 to 1849	0	N/A	N/A	N/A	N/A
1850 to 1899	0	N/A	N/A	N/A	N/A
1900 to 1949	0	N/A	N/A	N/A	N/A

Table E-63 (continued). Retest Classification Percent for Various Scale Score Ranges – Writing Grade 8

Scale Score Range	Number of Students	Red (% Chance in Category if Retested*)	Green (% Chance in Category if Retested*)	Blue (% Chance in Category if Retested*)	% Chance in Same Category if Retested*
1950 to 1999	0	N/A	N/A	N/A	N/A
>= 2000	0	N/A	N/A	N/A	N/A
TOTAL	17,828				

* Retest assuming no additional instruction

Table E–64. Retest Classification Percent for Various Scale Score Ranges – English Composition

Scale Score Range	Number of Students	Red (% Chance in Category if Retested*)	Green (% Chance in Category if Retested*)	Blue (% Chance in Category if Retested*)	% Chance in Same Category if Retested*
< 200	0	N/A	N/A	N/A	N/A
200 to 249	0	N/A	N/A	N/A	N/A
250 to 299	0	N/A	N/A	N/A	N/A
300 to 349	0	N/A	N/A	N/A	N/A
350 to 399	0	N/A	N/A	N/A	N/A
400 to 449	1	>99.9%	0.0%	0.0%	>99.9%
450 to 499	6	>99.9%	0.0%	0.0%	>99.9%
500 to 549	39	>99.9%	0.0%	0.0%	>99.9%
550 to 599	109	>99.9%	0.0%	0.0%	>99.9%
600 to 649	163	>99.9%	0.0%	0.0%	>99.9%
650 to 699	197	>99.9%	0.0%	0.0%	>99.9%
700 to 749	204	>99.9%	0.0%	0.0%	>99.9%
750 to 799	244	>99.9%	0.0%	0.0%	>99.9%
800 to 849	340	>99.9%	0.0%	0.0%	>99.9%
850 to 899	422	99.8%	0.2%	0.0%	99.8%
900 to 949	589	95.0%	5.0%	0.0%	95.0%
950 to 999 (Red/Green cut = 994)	804	66.5%	33.5%	0.0%	67.4%
1000 to 1049	1,180	21.1%	78.8%	0.0%	78.8%
1050 to 1099	1,171	2.2%	96.7%	1.0%	96.7%
1100 to 1149	880	0.1%	86.5%	13.5%	86.5%
1150 to 1199 (Green/Blue cut = 1167)	430	0.0%	46.2%	53.8%	62.8%
1200 to 1249	201	0.0%	9.5%	90.5%	90.5%
1250 to 1299	106	0.0%	0.6%	99.4%	99.4%
1300 to 1349	48	0.0%	0.0%	>99.9%	>99.9%
1350 to 1399	22	0.0%	0.0%	>99.9%	>99.9%
1400 to 1449	8	0.0%	0.0%	>99.9%	>99.9%
1450 to 1499	0	N/A	N/A	N/A	N/A
1500 to 1549	0	N/A	N/A	N/A	N/A
1550 to 1599	0	N/A	N/A	N/A	N/A
1600 to 1649	0	N/A	N/A	N/A	N/A
1650 to 1699	0	N/A	N/A	N/A	N/A
1700 to 1749	0	N/A	N/A	N/A	N/A
1750 to 1799	0	N/A	N/A	N/A	N/A
1800 to 1849	0	N/A	N/A	N/A	N/A
1850 to 1899	0	N/A	N/A	N/A	N/A
1900 to 1949	0	N/A	N/A	N/A	N/A

Table E-64(continued). Retest Classification Percent for Various Scale Score Ranges – English Composition

Scale Score Range	Number of Students	Red (% Chance in Category if Retested*)	Green (% Chance in Category if Retested*)	Blue (% Chance in Category if Retested*)	% Chance in Same Category if Retested*
1950 to 1999	0	N/A	N/A	N/A	N/A
>= 2000	0	N/A	N/A	N/A	N/A
TOTAL	7,164				

* Retest assuming no additional instruction

APPENDIX F: CDT LEARNING PROGRESSIONS

The CDT learning progressions were developed by the Pennsylvania Department of Education (PDE) and its curriculum consultants, including staff from Data Recognition Corporation (DRC), to show the developmental sequences or building blocks of content/skills students need to master as they progress toward career and college readiness. The progressions were developed for each content area (i.e., English language arts, mathematics, and science.) They served and continue to serve as roadmaps or the pathways (K-12) that students travel as they progress toward mastery of the skills needed for career and college readiness. As such, each learning progression was developed to provide teachers with the opportunity to determine whether students have navigated successfully through the building blocks and are able to move forward along the road to career and college readiness for a given content area. Each progression also provides teachers with the opportunity to identify students who may need additional instruction in a given content area, as well as to identify students who have navigated successfully beyond the building blocks or mileposts for each grade and/or course and are in need of accelerated curriculum. The learning progressions are directly aligned and based upon the Pennsylvania Academic Standards, the Assessment Anchors, and the Eligible Contents and as such provide evidence of the linkage between the CDT and the Pennsylvania PSSA and Keystone assessments addressing career and college readiness success with interpretations.

The learning progressions were first developed in 2009. Upon the initial development of the learning progression, the progressions were reviewed by Pennsylvania educators to confirm alignment to the Pennsylvania Standards and to confirm that the progressions, do, in fact, serve to show the development sequences of content/skills students need to master as they progress toward career and college readiness. At this meeting with educators, PDE and DRC provided information about the development of the learning progressions, the purpose of the progressions, and the actual progressions for each content area. The committees of Pennsylvania educators reviewed the progressions, which serve to show the vertical articulation of the Pennsylvania Academic Standards, Assessment Anchors and Eligible Content across grades within a given subject area (e.g., reading, mathematics). Pennsylvania educators were asked to confirm that the progressions were an accurate representation of how the content/skills included in the Pennsylvania Academic Standards progressed across grades and provided a broad description of the essential content and general sequencing for student learning and skill development as each student progresses toward college and career readiness.

Beginning 2010, the learning progressions have continued to be used during item reviews for the CDT, as well as for the PSSA and the Keystone assessments. For example, during each subsequent review of items for potential use on these assessments, including the CDT, Pennsylvania educators, in addition to reviewing items for alignment to the standards, cognitive complexity, technical quality, etc. also review items for alignment to the learning progressions. The learning progressions are included in this evidence to demonstrate the content/skills linkage between the CDT to address career and college readiness success.

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APPENDIX G: DEVELOPMENT OF THE PENNSYLVANIA ACADEMIC STANDARDS, ASSESSMENT ANCHOR CONTENT STANDARDS, AND ELIGIBLE CONTENT

The Assessment Anchor Content Standards and Eligible Content statements are based on the Pennsylvania Academic Standards in English language arts and mathematics and the Pennsylvania Academic Standards in science. Although the Academic Standards indicated in broad terms what students should know and be able to do, educator concerns regarding the number and breadth of the Academic Standards led to an initiative by the Pennsylvania Department of Education (PDE) to develop Assessment Anchor Content Standards to indicate which parts of the Academic Standards (Instructional Content Standards) would be assessed on the summative assessments. Based on recommendations from Pennsylvania educators, the Assessment Anchor Content Standards were designed to improve the articulation of curricular, instructional, and assessment practices. The anchors clarify what is expected across each grade and content area and focus the content of the standards into what is assessable on a large-scale test. The Assessment Anchor Content Standards also serve to communicate Eligible Content or assessment limits. The Eligible Content statements also provide for the range of knowledge and skills from which the summative assessments and the CDT is designed.

The Assessment Anchor Content Standards' structure includes the content, grade level, Reporting Category, Assessment Anchor, descriptor (Sub-Assessment Anchor), and Eligible Content. Each of the Assessment Anchor Content Standards has one or more descriptors (Sub-Assessment Anchors) and Eligible Content to reflect grade-level appropriateness. The Assessment Anchor Content Standards form the basis of the test design. In turn, this hierarchy is the basis for organizing the total content scores (based on the core [common] sections). The Assessment Anchor Content Standards, therefore, are the general descriptions of what students should know and be able to do. The Eligible Content statements are the more specific statements of the knowledge and/or skills that students are expected to demonstrate in a given grade and content area. The Eligible Content statements are considered the granular level to which items are written. As such, they serve to define at a more granular level what students should know and be able to do. They also serve as the checkpoints that monitor progress toward meeting the board Pennsylvania Academic Standards. In other states' structures of content standards, the Assessment Anchor Content Standards are often labeled Benchmarks, and the Eligible Content statements are often labeled grade-level expectations.

The complete set of Assessment Anchor Content Standards and Eligible Content statements aligned to the board Pennsylvania Academic Standards can be found at the PDE's website: www.education.pa.gov. Hover over K-12 in the blue banner at the top of the page and select "Assessment and Accountability." Then select "Pennsylvania System of School Assessment (PSSA)" followed by "Assessment Anchors" in the column on the right under "Other Materials."

DEVELOPMENT OF THE ASSESSMENT ANCHOR CONTENT STANDARDS AND THE ELIGIBLE CONTENT STATEMENTS

With Pennsylvania's decision to adopt the Pennsylvania Academic Standards in July, 2010, committees of Pennsylvania educators then met in October 3-6, 2011 to write and review the Assessment Anchor Content Standards and Eligible Content statements aligned to the new Pennsylvania Academic Standards. Members of the committees included representatives from the PDE curriculum and instruction, the PDE assessment, Pennsylvania educators, and a team of expert consultants appointed by the PDE. The consultants were Pennsylvania known and nationally known experts representing specific areas of expertise. These appointed consultants were members of the Pennsylvania Quality Review Team, and their function was to oversee the process, ensuring quality throughout.

Prior to the beginning of the development of the Assessment Anchor Content Standards and the Eligible Content statements, the PDE-selected Quality Review Team consultants and the PDE assessment and curriculum staff analyzed pertinent national career- and college-ready standards and curriculum framework documents including frameworks from the National Assessment of Educational Progress (NAEP). Once the analysis was completed, members of the PDE-selected Quality Review Team met with the testing vendor, Data Recognition Corporation (DRC) to provide recommendations as to what materials and documents would be needed to facilitate the committees of Pennsylvania educators in the development and review of the Assessment Anchor Content Standards and the Eligible Content statements. In addition, the purpose of this meeting with the Quality Review

Team was to come to agreement on the Assessment Anchor Content Standards and Eligible Content development process, including the role of the Pennsylvania educators, the PDE assessment staff, the PDE curriculum staff, the Quality Review Team members, and the testing vendor, DRC.

To provide initial focus at the October 2011 meetings, each content and grade committee of Pennsylvania educators was presented with materials specific to the content and grade to which the anchors and Eligible Content statements were to be developed, including a basic blueprint structure of the summative assessment and the CDT. The Pennsylvania Academic Standards, the 2005 version of the Pennsylvania Assessment Anchor Content Standards and Eligible Content aligned to the previous Pennsylvania Academic Standards, other career- and college-ready state standards, and draft Eligible Content statements aligned to the newly revised Pennsylvania Academic Standards were also provided. Committees then completed an iterative process of developing, reviewing, and revising the Assessment Anchor Content Standards and Eligible Content statements followed by discussions across grade-level committees to ensure vertical articulation across the grades. The results from the committee work were recorded and eventually evaluated by national, state, and local subject experts as noted in the sections below.

To begin the process, a general training session was held for all meeting participants. The training included welcome remarks, setting of the context for the task by the PDE staff and the PDE Quality Review Team member staff, and a presentation of the procedural training and meeting logistics by the testing vendor, DRC. Each meeting began with an introduction to Pennsylvania's Standards Aligned System and an overview of the assessment program. The PDE staff and the PDE Quality Review Team members articulated Pennsylvania's vision for the content standards, including the role that the Assessment Anchor Content Standards and Eligible Content statements would play in defining what students should know and be able to do. The opening presentation also included providing educators with the definition, structure, and purpose of the content standards, including definitions of Assessment Anchor Content Standards and Eligible Content statements. Training was also provided concerning writing, reviewing, and revising the Assessment Anchor Content Standards and Eligible Content statements. The focus of the training was to follow the design parameters to include clear, focused, rigorous, manageable, and subject-area statements.

The following materials were provided at the meeting:

- **Pennsylvania Curriculum Framework:** The Curriculum Framework specifies what is to be taught for each subject in the curriculum. In Pennsylvania, Curriculum Frameworks include Big Ideas, Concepts, Competencies, and Essential Questions aligned to standards. They are defined as follows:
 - Big Ideas:** The big ideas are the declarative statements that describe concepts that transcend grade levels. Big Ideas are essential to provide focus on specific content for all students.
 - Concepts:** The concepts are what students should know (key knowledge) as a result of this instruction specific to grade level.
 - Competencies:** The competences are what students should be able to do (key skills) as a result of this instruction, specific to grade level.
 - Essential Questions:** The essential questions are connected to the Standards Aligned System (SAS) framework and are specifically linked to the big ideas. They frame student inquiry, promote critical thinking, and assist in learning transfer
- Pennsylvania Academic Standards
- Other documents as relevant, including hard copy working documents with adequate white space

After the training, committee members were instructed to begin the development process. Committee members were provided with hard copy working documents. Using their background knowledge and the materials they were provided during the meeting (e.g., documents from the Standards Aligned System, curriculum framework, Pennsylvania's Academic Standards), Pennsylvania educators created their own short list of the critical concepts that Pennsylvania students must know and be able to do for each grade and content area. Beginning with one concept at a time, concepts or Eligible Content statements were recorded on the master list; Assessment Anchor

Content Standards were then developed and reviewed. As the Assessment Anchor Content Standards and Eligible Content statements were developed, they were displayed using a laptop and projector. A scribe from the testing vendor, DRC, served to record the committee members' work as well as other comments. The scribe also recorded changes or additions to the anchors and/or statements as directed from the consensus of the group.

Next, the entire group reviewed and discussed the recommendations for the anchors and the Eligible Content statements. Consensus was reached. The committee of Pennsylvania educators proceeded in this manner until all Assessment Anchor Content Standards and Eligible Content statements for each grade and content area were developed, reviewed, and discussed. DRC's facilitator took notes verbatim regarding the intent and direction of the committee. The notes were prepared for use in subsequent meetings.

FOLLOW-UP MEETINGS WITH THE QUALITY REVIEW TEAM AND PDE

A series of follow-up meetings took place with the PDE-appointed team of consultants, PDE assessment staff, and PDE-appointed Quality Review Team members. Prior to the follow-up meetings, a draft of the Assessment Anchor Content Standards and Eligible Content statements for each grade and content area were prepared for review, including all notes from the meeting with Pennsylvania educators. During the follow-up meetings, the Assessment Anchor Content Standards and Eligible Content statements were reviewed, and revisions were suggested. After the follow-up meetings, the Assessment Anchor Content Standards and Eligible Content statements were revised by the PDE and the PDE Quality Review Team per agreed-upon feedback. This revised draft was then posted on the Pennsylvania System of Aligned Standards (SAS) website for public review and opinion. All additional feedback from the public review was reviewed again by the PDE and the PDE-appointed Quality Review Team, and agreed upon revisions to the Assessment Anchor Content Standards and Eligible Content statements were made. The Assessment Anchor Content Standards and Eligible Content statements were then finalized and prepared for the Pennsylvania Board of Education for approval as the official Pennsylvania Academic Content Standards.

PENNSYLVANIA BOARD OF EDUCATION APPROVAL

The Assessment Anchor Content Standards and Eligible Content statements were presented to the State Board of Education in September 2013. They were subsequently approved by the State Board at the September 2013 State Board meeting as Pennsylvania Content Standards.

APPENDIX H: CDT PASSAGE DEVELOPMENT PROCESS

The task of writing passages or securing passages and or other stimuli for the CDT is conducted by Data Recognition Corporation (DRC) professionals with classroom experience in reading/language arts as well as experience writing the various types of passages and/or stimuli required by the CDT and the Pennsylvania Academic Standards, Assessment Anchors, and Eligible Content. Guidelines provided to writers for passage/stimulus writing for the CDT include appropriate length, text structure, density, and vocabulary for the grade level as reviewed and approved by the Pennsylvania Department of Education (PDE) and as aligned to the Pennsylvania Academic Standards, Assessment Anchors, and Eligible Content. Passage/stimulus writers are given a specified number of passages/stimuli to write for each genre/standard per grade. Passage/stimulus training includes training writers to develop passages/stimuli to meet the following requirements:

- Grade appropriateness
- Appropriate readability for the assigned grade
- Interest value for students
- Freedom from bias, fairness, and sensitivity issues
- Representation of different cultures
- Ability to generate a variety of item types
- Avoidance of dated subject matter, unless a relevant historical context is provided
- No need for extensive background knowledge in a certain discipline or subject area

While DRC does train passage writers to be knowledgeable of each passage's readability, for the CDT we also statistically analyze readability of each passage, using Lexile, Flesch-Kincaid, Powers, and Spache measurements. The process that DRC's item and test development team uses to determine text complexity involves (1) the quantitative evaluation of the text, and (2) the qualitative evaluation of the text. This analysis is documented on a passage placemat. (See example passage placemat at the end of this section.) A third component, matching reader to text and task, is also taken into consideration during passage evaluation and internal reviews.

QUANTITATIVE EVALUATION

Evaluating the complexity of a passage is a judgment process conducted by DRC passage writers and internal reviewers who are familiar with the classroom context and what is developmentally and linguistically appropriate for students at a given grade level. DRC uses common readability formulas along with the qualitative information when selecting passages during development.

QUALITATIVE EVALUATION

For programs such as the CDT, DRC also implements qualitative measures to help determine placement and appropriateness of passages. These measures include rubric-based qualitative evaluations and external reviewers to provide expert opinions on grade-level appropriateness, as part of considerations for matching the reader to text and task. Rubrics provide the qualitative measures for literary and informational passages. As indicated on the placemats, the quantitative rubrics suggest the appropriate grade band of the passage, while the qualitative rubrics help to further clarify the specific grade level of the passage. These rubrics provide a powerful and comprehensive way of evaluating a range of stimulus materials that cover the literary and informational scope outlined in the client state's standards.

TEXT COMPLEXITY: QUALITATIVE-MEASURES RUBRIC—LITERARY TEXTS

The English Language Arts State Collaborative on Assessment and Student Standards (SCASS) developed the following qualitative-measures rubric for determining the text complexity of literary passages. The rubric examines criteria judged as central to students' successful comprehension of text meaning, text structure, language features, and knowledge demands. Each of these categories is ranked based on descriptors associated with the following levels: slightly complex, moderately complex, very complex, and exceedingly complex.

Qualitative-Measures Rubric—Literary Passages

Features	Exceedingly Complex	Very Complex	Moderately Complex	Slightly Complex
Meaning	Several levels and competing elements of meaning that are difficult to identify, separate, and interpret; theme is implicit or subtle, often ambiguous and revealed over the entirety of the text	Several levels of meaning that may be difficult to identify or separate; theme is implicit or subtle and may be revealed over the entirety of the text	More than one level of meaning with levels clearly distinguished from each other; theme is clear but may be conveyed with some subtlety	One level of meaning; theme is obvious and revealed early in the text
Organization	Organization is intricate with regard to elements such as narrative viewpoint, time shifts, multiple characters, storylines, and detail	Organization may include subplots, time shifts, and more complex characters	Organization may have two or more storylines and is occasionally difficult to predict	Organization of text is clear, chronological, or easy to predict
Use of images	If used, minimal illustrations that support the text	If used, a few illustrations that support the text	If used, a range of illustrations that support selected parts of the text	If used, extensive illustrations that directly support and assist in interpreting the written text
Language Features	Conventionality Dense and complex; contains abstract, ironic, and/or figurative language	Conventionality Complex; contains some abstract, ironic, and/or figurative language	Conventionality Largely explicit and easy to understand, with some occasions for more complex meaning	Conventionality Explicit, literal, straightforward, easy to understand
	Vocabulary Generally unfamiliar, archaic, subject-specific, or overly academic language; may be ambiguous or purposefully misleading	Vocabulary Somewhat complex language that is sometimes unfamiliar, archaic, subject-specific, or overly academic	Vocabulary Mostly contemporary, familiar, conversational; rarely unfamiliar or overly academic	Vocabulary Contemporary, familiar, conversational language
	Sentence Structure Mainly complex sentences, often containing multiple concepts	Sentence Structure Many complex sentences with several subordinate phrases or clauses and transition words	Sentence Structure Simple and compound sentences, with some more complex constructions	Sentence Structure Mainly simple sentences
Knowledge Demands	Life Experiences Explores complex, sophisticated themes; experiences are distinctly different from those of the common reader	Life Experiences Explores themes of varying levels of complexity; experiences portrayed are uncommon to most readers	Life Experiences Explores a single theme; experiences portrayed are common to many readers	Life Experiences Explores a single theme; experiences portrayed are everyday and common to most readers
	Intertextuality and Cultural Knowledge Many references or allusions to other texts or cultural elements	Intertextuality and Cultural Knowledge Some references or allusions to other texts or cultural elements	Intertextuality and Cultural Knowledge A few references or allusions to other texts or cultural elements	Intertextuality and Cultural Knowledge No references or allusions to other texts or cultural elements

Qualitative-Measures Rubric—Informational Texts

Features	Exceedingly Complex	Very Complex	Moderately Complex	Slightly Complex
Purpose	Purpose Subtle, implied, difficult to determine; intricate, theoretical elements	Purpose Implied but fairly easy to infer; more theoretical than concrete	Purpose Implied but easy to identify based upon context or source	Purpose Explicitly stated; clear, concrete with a narrow focus
Text Structure	Organization of Main Ideas Connections between an extensive range of ideas, processes, or events are deep and often implicit or subtle; organization of the text is intricate or specialized for a particular discipline	Organization of Main Ideas Connections between an expanded range of ideas, processes, or events are deeper and often implicit or subtle; organization may contain multiple pathways and may exhibit traits common to a specific discipline	Organization of Main Ideas Connections between some ideas or events are implicit or subtle; organization is evident and generally sequential	Organization of Main Ideas Connections between ideas, processes, or events are explicit and clear; organization of text is clear or chronological or easy to predict
	Text Features If used, are essential in understanding content	Text Features If used, greatly enhance the reader's understanding of content	Text Features If used, enhance the reader's understanding of content	Text Features If used, help the reader navigate and understand content but are not essential
	Use of Images If used, extensive, intricate, essential integrated images, tables, charts, etc., necessary to make meaning of text; also may provide information not otherwise conveyed in the text	Use of Images If used, essential integrated images, tables, charts, etc., may occasionally be essential to understanding the text	Use of Images If used, images such as indexes and glossaries are mostly supplementary to understanding of the text; graphs, pictures, tables, and charts directly support the text	Use of Images If used, images are simple and unnecessary to understanding the text but directly support and assist in interpreting the written text
Language Features	Conventionality Dense and complex; contains abstract, ironic, and/or figurative language	Conventionality Complex; contains some abstract, ironic, and/or figurative language	Conventionality Largely explicit and easy to understand, with some occasions for more complex meaning	Conventionality Explicit, literal, straightforward, easy to understand
	Vocabulary Generally unfamiliar, archaic, subject-specific, or overly academic language; may be ambiguous or purposefully misleading	Vocabulary Somewhat complex language that is sometimes unfamiliar, archaic, subject-specific, or overly academic	Vocabulary Mostly contemporary, familiar, conversational; rarely unfamiliar or overly academic	Vocabulary Contemporary, familiar, conversational language
	Sentence Structure Mainly complex sentences, often containing multiple concepts	Sentence Structure Many complex sentences with several subordinate phrases or clauses and transition words	Sentence Structure Simple and compound sentences, with some more complex constructions	Sentence Structure Mainly simple sentences
Knowledge Demands	Subject Matter Knowledge Extensive, perhaps specialized or even theoretical discipline-specific content knowledge; range of challenging abstract and theoretical concepts	Subject Matter Knowledge Moderate levels of discipline-specific content knowledge; some theoretical knowledge may enhance understanding; range of recognizable ideas and challenging abstract concepts	Subject Matter Knowledge Everyday practical knowledge and some discipline-specific content knowledge; both simple and more complicated, abstract ideas	Subject Matter Knowledge Everyday, practical knowledge; simple, concrete ideas
	Intertextuality Many references or allusions to other texts or outside ideas, theories, etc.	Intertextuality Some references or allusions to other texts or outside ideas, theories, etc.	Intertextuality A few references or allusions to other texts or outside ideas, theories, etc.	Intertextuality No references or allusions to other texts, or outside ideas, theories, etc.

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Passage Placemat

Below is an example of a passage placemat for item writer use.

Worksheet: Text Complexity Analysis		
Title	Author	Text Description



Recommended Placement for Assessment: Grade X

Qualitative Measures	Quantitative Measures												
<p>PURPOSE :</p> <p>TEXT STRUCTURE Organization of Main Ideas: : Text Features: N/A Use of Images: N/A</p> <p>LANGUAGE FEATURES Conventionality: : Vocabulary: : Sentence Structure: :</p> <p>KNOWLEDGE DEMANDS Subject Matter Knowledge: : Intertextuality: :</p>	<p>Common Core State Standards Appendix A Complexity Band Level (if applicable): Lexile or Other Quantitative Measure of the Text: Lexile: Flesch-Kincaid:</p> <p style="background-color: #ADD8E6; text-align: center;">Considerations for Passage Selection</p> <p>Passage selection should be based on the ELA Content Specifications targets and the cognitive demands of the assessment tasks.</p> <p>Potential Challenges This Text May Pose (check all that apply):</p> <table border="1"> <tbody> <tr> <td><input type="checkbox"/></td> <td>Accessibility</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Sentence and text structures</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Archaic language, slang, idioms, or other language challenges</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Background knowledge</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Bias and sensitivity issues</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Word count</td> </tr> </tbody> </table>	<input type="checkbox"/>	Accessibility	<input type="checkbox"/>	Sentence and text structures	<input type="checkbox"/>	Archaic language, slang, idioms, or other language challenges	<input type="checkbox"/>	Background knowledge	<input type="checkbox"/>	Bias and sensitivity issues	<input type="checkbox"/>	Word count
<input type="checkbox"/>	Accessibility												
<input type="checkbox"/>	Sentence and text structures												
<input type="checkbox"/>	Archaic language, slang, idioms, or other language challenges												
<input type="checkbox"/>	Background knowledge												
<input type="checkbox"/>	Bias and sensitivity issues												
<input type="checkbox"/>	Word count												

Adapted from Smarter Balanced and the 2012 ELASCASS work

APPENDIX I: DEPTH OF KNOWLEDGE

Diagnostic Categories-Mathematics

Item Grade/Course	Eligible Content	Diagnostic Category	Number of Items
3	M03.A-F.1.1.1	Numbers and Operations	15
3	M03.A-F.1.1.2	Numbers and Operations	6
3	M03.A-F.1.1.3	Numbers and Operations	8
3	M03.A-F.1.1.4	Numbers and Operations	6
3	M03.A-F.1.1.5	Numbers and Operations	6
3	M03.A-T.1.1.1	Numbers and Operations	8
3	M03.A-T.1.1.2	Numbers and Operations	10
3	M03.A-T.1.1.3	Numbers and Operations	6
3	M03.A-T.1.1.4	Numbers and Operations	10
3	M03.B-0.1.1.1	Algebraic Concepts	7
3	M03.B-0.1.1.2	Algebraic Concepts	5
3	M03.B-0.1.2.1	Algebraic Concepts	10
3	M03.B-0.1.2.2	Algebraic Concepts	9
3	M03.B-0.2.1.1	Algebraic Concepts	8
3	M03.B-0.2.1.2	Algebraic Concepts	4
3	M03.B-0.2.2.1	Algebraic Concepts	6
3	M03.B-0.3.1.1	Algebraic Concepts	8
3	M03.B-0.3.1.2	Algebraic Concepts	6
3	M03.B-0.3.1.3	Algebraic Concepts	5
3	M03.B-0.3.1.4	Algebraic Concepts	5
3	M03.B-0.3.1.5	Algebraic Concepts	4
3	M03.B-0.3.1.6	Algebraic Concepts	15
3	M03.B-0.3.1.7	Algebraic Concepts	8
3	M03.C-G.1.1.1	Geometry	12
3	M03.C-G.1.1.2	Geometry	12
3	M03.C-G.1.1.3	Geometry	11
3	M03.D-M.1.1.1	Measurement Data and Probability	9
3	M03.D-M.1.1.2	Measurement Data and Probability	17
3	M03.D-M.1.2.1	Measurement Data and Probability	6
3	M03.D-M.1.2.2	Measurement Data and Probability	5
3	M03.D-M.1.2.3	Measurement Data and Probability	17
3	M03.D-M.1.3.1	Measurement Data and Probability	9
3	M03.D-M.1.3.2	Measurement Data and Probability	7
3	M03.D-M.1.3.3	Measurement Data and Probability	7
3	M03.D-M.2.1.1	Measurement Data and Probability	5

Item Grade/Course	Eligible Content	Diagnostic Category	Number of Items
3	M03.D-M.2.1.2	Measurement Data and Probability	15
3	M03.D-M.2.1.3	Measurement Data and Probability	8
3	M03.D-M.2.1.4	Measurement Data and Probability	9
3	M03.D-M.3.1.1	Measurement Data and Probability	5
3	M03.D-M.3.1.2	Measurement Data and Probability	3
3	M03.D-M.4.1.1	Measurement Data and Probability	14
4	M04.A-F.1.1.1	Numbers and Operations	6
4	M04.A-F.1.1.2	Numbers and Operations	7
4	M04.A-F.2.1.1	Numbers and Operations	6
4	M04.A-F.2.1.2	Numbers and Operations	13
4	M04.A-F.2.1.3	Numbers and Operations	6
4	M04.A-F.2.1.4	Numbers and Operations	8
4	M04.A-F.2.1.5	Numbers and Operations	5
4	M04.A-F.2.1.6	Numbers and Operations	11
4	M04.A-F.2.1.7	Numbers and Operations	5
4	M04.A-F.3.1.1	Numbers and Operations	1
4	M04.A-F.3.1.2	Numbers and Operations	6
4	M04.A-F.3.1.3	Numbers and Operations	5
4	M04.A-T.1.1.1	Numbers and Operations	4
4	M04.A-T.1.1.2	Numbers and Operations	9
4	M04.A-T.1.1.3	Numbers and Operations	4
4	M04.A-T.1.1.4	Numbers and Operations	11
4	M04.A-T.2.1.1	Numbers and Operations	7
4	M04.A-T.2.1.2	Numbers and Operations	7
4	M04.A-T.2.1.3	Numbers and Operations	6
4	M04.A-T.2.1.4	Numbers and Operations	8
4	M04.B-0.1.1.1	Algebraic Concepts	5
4	M04.B-0.1.1.2	Algebraic Concepts	5
4	M04.B-0.1.1.3	Algebraic Concepts	11
4	M04.B-0.1.1.4	Algebraic Concepts	9
4	M04.B-0.2.1.1	Algebraic Concepts	17
4	M04.B-0.3.1.1	Algebraic Concepts	17
4	M04.B-0.3.1.2	Algebraic Concepts	36
4	M04.B-0.3.1.3	Algebraic Concepts	30
4	M04.C-G.1.1.1	Geometry	38
4	M04.C-G.1.1.2	Geometry	15
4	M04.C-G.1.1.3	Geometry	21
4	M04.D-M.1.1.1	Measurement Data and Probability	3

Item Grade/Course	Eligible Content	Diagnostic Category	Number of Items
4	M04.D-M.1.1.2	Measurement Data and Probability	5
4	M04.D-M.1.1.3	Measurement Data and Probability	8
4	M04.D-M.1.1.4	Measurement Data and Probability	13
4	M04.D-M.2.1.1	Measurement Data and Probability	14
4	M04.D-M.2.1.2	Measurement Data and Probability	12
4	M04.D-M.2.1.3	Measurement Data and Probability	2
4	M04.D-M.3.1.1	Measurement Data and Probability	14
4	M04.D-M.3.1.2	Measurement Data and Probability	1
5	M05.A-F.1.1.1	Numbers and Operations	10
5	M05.A-F.2.1.1	Numbers and Operations	7
5	M05.A-F.2.1.2	Numbers and Operations	8
5	M05.A-F.2.1.3	Numbers and Operations	7
5	M05.A-F.2.1.4	Numbers and Operations	9
5	M05.A-T.1.1.1	Numbers and Operations	11
5	M05.A-T.1.1.2	Numbers and Operations	8
5	M05.A-T.1.1.3	Numbers and Operations	11
5	M05.A-T.1.1.4	Numbers and Operations	15
5	M05.A-T.1.1.5	Numbers and Operations	7
5	M05.A-T.2.1.1	Numbers and Operations	7
5	M05.A-T.2.1.2	Numbers and Operations	7
5	M05.A-T.2.1.3	Numbers and Operations	9
5	M05.B-0.1.1.1	Algebraic Concepts	10
5	M05.B-0.1.1.2	Algebraic Concepts	10
5	M05.B-0.2.1.1	Algebraic Concepts	10
5	M05.B-0.2.1.2	Algebraic Concepts	8
5	M05.C-G.1.1.1	Geometry	21
5	M05.C-G.1.1.2	Geometry	13
5	M05.C-G.2.1.1	Geometry	20
5	M05.D-M.1.1.1	Measurement Data and Probability	22
5	M05.D-M.2.1.1	Measurement Data and Probability	8
5	M05.D-M.2.1.2	Measurement Data and Probability	23
5	M05.D-M.3.1.1	Measurement Data and Probability	11
5	M05.D-M.3.1.2	Measurement Data and Probability	9
6	M06.A-N.1.1.1	Numbers and Operations	7
6	M06.A-N.2.1.1	Numbers and Operations	16
6	M06.A-N.2.2.1	Numbers and Operations	19
6	M06.A-N.2.2.2	Numbers and Operations	16
6	M06.A-N.3.1.1	Numbers and Operations	7

Item Grade/Course	Eligible Content	Diagnostic Category	Number of Items
6	M06.A-N.3.1.2	Numbers and Operations	8
6	M06.A-N.3.1.3	Numbers and Operations	34
6	M06.A-N.3.2.1	Numbers and Operations	9
6	M06.A-N.3.2.2	Numbers and Operations	8
6	M06.A-N.3.2.3	Numbers and Operations	7
6	M06.A-R.1.1.1	Numbers and Operations	9
6	M06.A-R.1.1.2	Numbers and Operations	11
6	M06.A-R.1.1.3	Numbers and Operations	7
6	M06.A-R.1.1.4	Numbers and Operations	11
6	M06.A-R.1.1.5	Numbers and Operations	19
6	M06.B-E.1.1.1	Algebraic Concepts	16
6	M06.B-E.1.1.2	Algebraic Concepts	15
6	M06.B-E.1.1.3	Algebraic Concepts	14
6	M06.B-E.1.1.4	Algebraic Concepts	15
6	M06.B-E.1.1.5	Algebraic Concepts	15
6	M06.B-E.2.1.1	Algebraic Concepts	26
6	M06.B-E.2.1.2	Algebraic Concepts	22
6	M06.B-E.2.1.3	Algebraic Concepts	31
6	M06.B-E.2.1.4	Algebraic Concepts	15
6	M06.B-E.3.1.1	Algebraic Concepts	15
6	M06.B-E.3.1.2	Algebraic Concepts	26
6	M06.C-G.1.1.1	Geometry	11
6	M06.C-G.1.1.2	Geometry	13
6	M06.C-G.1.1.3	Geometry	11
6	M06.C-G.1.1.4	Geometry	10
6	M06.C-G.1.1.5	Geometry	12
6	M06.C-G.1.1.6	Geometry	10
6	M06.D-S.1.1.1	Measurement Data and Probability	19
6	M06.D-S.1.1.2	Measurement Data and Probability	33
6	M06.D-S.1.1.3	Measurement Data and Probability	42
6	M06.D-S.1.1.4	Measurement Data and Probability	19
7	M07.A-N.1.1.1	Numbers and Operations	9
7	M07.A-N.1.1.2	Numbers and Operations	9
7	M07.A-N.1.1.3	Numbers and Operations	10
7	M07.A-R.1.1.1	Numbers and Operations	9
7	M07.A-R.1.1.2	Numbers and Operations	10
7	M07.A-R.1.1.3	Numbers and Operations	13
7	M07.A-R.1.1.4	Numbers and Operations	10

Item Grade/Course	Eligible Content	Diagnostic Category	Number of Items
7	M07.A-R.1.1.5	Numbers and Operations	9
7	M07.A-R.1.1.6	Numbers and Operations	20
7	M07.B-E.1.1.1	Algebraic Concepts	13
7	M07.B-E.2.1.1	Algebraic Concepts	29
7	M07.B-E.2.2.1	Algebraic Concepts	11
7	M07.B-E.2.2.2	Algebraic Concepts	9
7	M07.B-E.2.3.1	Algebraic Concepts	9
7	M07.C-G.1.1.1	Geometry	23
7	M07.C-G.1.1.2	Geometry	14
7	M07.C-G.1.1.3	Geometry	12
7	M07.C-G.1.1.4	Geometry	13
7	M07.C-G.2.1.1	Geometry	13
7	M07.C-G.2.1.2	Geometry	12
7	M07.C-G.2.2.1	Geometry	13
7	M07.C-G.2.2.2	Geometry	12
7	M07.D-S.1.1.1	Measurement Data and Probability	18
7	M07.D-S.1.1.2	Measurement Data and Probability	19
7	M07.D-S.2.1.1	Measurement Data and Probability	18
7	M07.D-S.3.1.1	Measurement Data and Probability	22
7	M07.D-S.3.2.1	Measurement Data and Probability	18
7	M07.D-S.3.2.2	Measurement Data and Probability	30
7	M07.D-S.3.2.3	Measurement Data and Probability	33
8	M08.A-N.1.1.1	Numbers and Operations	10
8	M08.A-N.1.1.2	Numbers and Operations	15
8	M08.A-N.1.1.3	Numbers and Operations	12
8	M08.A-N.1.1.4	Numbers and Operations	7
8	M08.A-N.1.1.5	Numbers and Operations	10
8	M08.B-E.1.1.1	Algebraic Concepts	9
8	M08.B-E.1.1.2	Algebraic Concepts	10
8	M08.B-E.1.1.3	Algebraic Concepts	7
8	M08.B-E.1.1.4	Algebraic Concepts	20
8	M08.B-E.2.1.1	Algebraic Concepts	9
8	M08.B-E.2.1.2	Algebraic Concepts	10
8	M08.B-E.2.1.3	Algebraic Concepts	12
8	M08.B-E.3.1.1	Algebraic Concepts	9
8	M08.B-E.3.1.2	Algebraic Concepts	10
8	M08.B-E.3.1.3	Algebraic Concepts	9
8	M08.B-E.3.1.4	Algebraic Concepts	10

Item Grade/Course	Eligible Content	Diagnostic Category	Number of Items
8	M08.B-E.3.1.5	Algebraic Concepts	9
8	M08.B-F.1.1.1	Algebraic Concepts	9
8	M08.B-F.1.1.2	Algebraic Concepts	10
8	M08.B-F.1.1.3	Algebraic Concepts	10
8	M08.B-F.2.1.1	Algebraic Concepts	10
8	M08.B-F.2.1.2	Algebraic Concepts	17
8	M08.C-G.1.1.1	Geometry	25
8	M08.C-G.1.1.2	Geometry	7
8	M08.C-G.1.1.3	Geometry	10
8	M08.C-G.1.1.4	Geometry	11
8	M08.C-G.2.1.1	Geometry	12
8	M08.C-G.2.1.2	Geometry	19
8	M08.C-G.2.1.3	Geometry	12
8	M08.C-G.3.1.1	Geometry	13
8	M08.D-S.1.1.1	Measurement Data and Probability	14
8	M08.D-S.1.1.2	Measurement Data and Probability	15
8	M08.D-S.1.1.3	Measurement Data and Probability	12
8	M08.D-S.1.2.1	Measurement Data and Probability	13
A1	A1.1.1.1.1	Numbers and Operations	11
A1	A1.1.1.1.2	Numbers and Operations	11
A1	A1.1.1.2.1	Numbers and Operations	11
A1	A1.1.1.3.1	Algebraic Concepts	11
A1	A1.1.1.4.1	Numbers and Operations	11
A1	A1.1.1.5.1	Algebraic Concepts	12
A1	A1.1.1.5.2	Algebraic Concepts	10
A1	A1.1.1.5.3	Algebraic Concepts	11
A1	A1.1.2.1.1	Algebraic Concepts	13
A1	A1.1.2.1.2	Algebraic Concepts	12
A1	A1.1.2.1.3	Algebraic Concepts	12
A1	A1.1.2.2.1	Algebraic Concepts	12
A1	A1.1.2.2.2	Algebraic Concepts	12
A1	A1.1.3.1.1	Algebraic Concepts	13
A1	A1.1.3.1.2	Algebraic Concepts	11
A1	A1.1.3.1.3	Algebraic Concepts	12
A1	A1.1.3.2.1	Algebraic Concepts	12
A1	A1.1.3.2.2	Algebraic Concepts	13
A1	A1.2.1.1.1	Algebraic Concepts	14
A1	A1.2.1.1.2	Algebraic Concepts	14

Item Grade/Course	Eligible Content	Diagnostic Category	Number of Items
A1	A1.2.1.1.3	Algebraic Concepts	16
A1	A1.2.1.2.1	Algebraic Concepts	14
A1	A1.2.1.2.2	Algebraic Concepts	14
A1	A1.2.2.1.1	Algebraic Concepts	12
A1	A1.2.2.1.2	Algebraic Concepts	13
A1	A1.2.2.1.3	Algebraic Concepts	14
A1	A1.2.2.1.4	Algebraic Concepts	14
A1	A1.2.2.2.1	Measurement Data and Probability	14
A1	A1.2.3.1.1	Measurement Data and Probability	11
A1	A1.2.3.2.1	Measurement Data and Probability	10
A1	A1.2.3.2.2	Measurement Data and Probability	11
A1	A1.2.3.2.3	Measurement Data and Probability	10
A1	A1.2.3.3.1	Measurement Data and Probability	11
A2	A2.1.1.1.1	Numbers and Operations	26
A2	A2.1.1.1.2	Numbers and Operations	24
A2	A2.1.1.2.1	Algebraic Concepts	26
A2	A2.1.1.2.2	Algebraic Concepts	24
A2	A2.1.2.1.1	Algebraic Concepts	6
A2	A2.1.2.1.2	Algebraic Concepts	6
A2	A2.1.2.1.3	Algebraic Concepts	6
A2	A2.1.2.1.4	Algebraic Concepts	6
A2	A2.1.2.2.1	Algebraic Concepts	6
A2	A2.1.2.2.2	Algebraic Concepts	6
A2	A2.1.3.1.1	Algebraic Concepts	7
A2	A2.1.3.1.2	Algebraic Concepts	7
A2	A2.1.3.1.3	Algebraic Concepts	7
A2	A2.1.3.1.4	Algebraic Concepts	7
A2	A2.1.3.2.1	Algebraic Concepts	9
A2	A2.1.3.2.2	Algebraic Concepts	7
A2	A2.2.1.1.1	Algebraic Concepts	13
A2	A2.2.1.1.2	Algebraic Concepts	13
A2	A2.2.1.1.3	Algebraic Concepts	13
A2	A2.2.1.1.4	Algebraic Concepts	13
A2	A2.2.2.1.1	Algebraic Concepts	13
A2	A2.2.2.1.2	Algebraic Concepts	12
A2	A2.2.2.1.3	Algebraic Concepts	13
A2	A2.2.2.1.4	Algebraic Concepts	13
A2	A2.2.2.2.1	Algebraic Concepts	13

Item Grade/Course	Eligible Content	Diagnostic Category	Number of Items
A2	A2.2.3.1.1	Measurement Data and Probability	8
A2	A2.2.3.1.2	Measurement Data and Probability	6
A2	A2.2.3.2.1	Measurement Data and Probability	11
A2	A2.2.3.2.2	Measurement Data and Probability	10
A2	A2.2.3.2.3	Measurement Data and Probability	12
G	G.1.1.1.1	Geometry	22
G	G.1.1.1.2	Geometry	14
G	G.1.1.1.3	Geometry	10
G	G.1.1.1.4	Geometry	10
G	G.1.2.1.1	Geometry	15
G	G.1.2.1.2	Geometry	15
G	G.1.2.1.3	Geometry	9
G	G.1.2.1.4	Geometry	10
G	G.1.2.1.5	Geometry	15
G	G.1.3.1.1	Geometry	23
G	G.1.3.1.2	Geometry	24
G	G.1.3.2.1	Geometry	24
G	G.2.1.1.1	Geometry	9
G	G.2.1.1.2	Geometry	9
G	G.2.1.2.1	Geometry	9
G	G.2.1.2.2	Geometry	14
G	G.2.1.2.3	Geometry	9
G	G.2.2.1.1	Geometry	6
G	G.2.2.1.2	Geometry	6
G	G.2.2.2.1	Geometry	6
G	G.2.2.2.2	Geometry	6
G	G.2.2.2.3	Geometry	6
G	G.2.2.2.4	Geometry	6
G	G.2.2.2.5	Geometry	6
G	G.2.2.3.1	Geometry	6
G	G.2.2.4.1	Measurement Data and Probability	6
G	G.2.3.1.1	Geometry	9
G	G.2.3.1.2	Geometry	6
G	G.2.3.1.3	Geometry	6
G	G.2.3.2.1	Geometry	10

Diagnostic Categories-Reading

Item Grade/Course	Eligible Content	Diagnostic Category	Number of Items
K	CC.1.2.K.A	Key Ideas and Details-Informational Text	6
K	CC.1.2.K.B	Key Ideas and Details-Informational Text	7
K	CC.1.2.K.C	Key Ideas and Details-Informational Text	8
K	CC.1.2.K.E	Craft and Structure and Integration of Knowledge and Ideas –Informational Text	6
K	CC.1.2.K.G	Craft and Structure and Integration of Knowledge and Ideas –Informational Text	5
K	CC.1.2.K.H	Craft and Structure and Integration of Knowledge and Ideas –Informational Text	6
K	CC.1.2.K.I	Craft and Structure and Integration of Knowledge and Ideas –Informational Text	4
K	CC.1.2.K.K	Vocabulary Acquisition and Use	6
K	CC.1.3.K.A	Key Ideas and Details-Literature Text	6
K	CC.1.3.K.B	Key Ideas and Details-Literature Text	6
K	CC.1.3.K.C	Key Ideas and Details-Literature Text	6
K	CC.1.3.K.D	Craft and Structure and Integration of Knowledge and Ideas –Literature Text	6
K	CC.1.3.K.H	Craft and Structure and Integration of Knowledge and Ideas –Literature Text	6
K	CC.1.3.K.I	Vocabulary Acquisition and Use	6
1	CC.1.2.1.A	Key Ideas and Details-Informational Text	7
1	CC.1.2.1.B	Key Ideas and Details-Informational Text	7
1	CC.1.2.1.C	Key Ideas and Details-Informational Text	7
1	CC.1.2.1.E	Craft and Structure and Integration of Knowledge and Ideas –Informational Text	7
1	CC.1.2.1.G	Craft and Structure and Integration of Knowledge and Ideas –Informational Text	7
1	CC.1.2.1.H	Craft and Structure and Integration of Knowledge and Ideas –Informational Text	7
1	CC.1.2.1.I	Craft and Structure and Integration of Knowledge and Ideas –Informational Text	6
1	CC.1.2.1.K	Vocabulary Acquisition and Use	7
1	CC.1.3.1.A	Key Ideas and Details-Literature Text	6
1	CC.1.3.1.B	Key Ideas and Details-Literature Text	7
1	CC.1.3.1.C	Key Ideas and Details-Literature Text	7
1	CC.1.3.1.D	Craft and Structure and Integration of Knowledge and Ideas –Literature Text	7
1	CC.1.3.1.H	Craft and Structure and Integration of Knowledge and Ideas –Literature Text	7
1	CC.1.3.1.I	Vocabulary Acquisition and Use	6
2	CC.1.2.2.A	Key Ideas and Details-Informational Text	7

Item Grade/Course	Eligible Content	Diagnostic Category	Number of Items
2	CC.1.2.2.B	Key Ideas and Details-Informational Text	7
2	CC.1.2.2.C	Key Ideas and Details-Informational Text	7
2	CC.1.2.2.E	Craft and Structure and Integration of Knowledge and Ideas –Informational Text	7
2	CC.1.2.2.G	Craft and Structure and Integration of Knowledge and Ideas –Informational Text	7
2	CC.1.2.2.H	Craft and Structure and Integration of Knowledge and Ideas –Informational Text	7
2	CC.1.2.2.I	Craft and Structure and Integration of Knowledge and Ideas –Informational Text	7
2	CC.1.2.2.K	Vocabulary Acquisition and Use	7
2	CC.1.3.2.A	Key Ideas and Details-Literature Text	7
2	CC.1.3.2.B	Key Ideas and Details-Literature Text	7
2	CC.1.3.2.C	Key Ideas and Details-Literature Text	7
2	CC.1.3.2.D	Craft and Structure and Integration of Knowledge and Ideas –Literature Text	7
2	CC.1.3.2.H	Craft and Structure and Integration of Knowledge and Ideas –Literature Text	7
2	CC.1.3.2.I	Vocabulary Acquisition and Use	7
3	E03.A-C.2.1.1	Craft and Structure and Integration of Knowledge and Ideas –Literature Text	15
3	E03.A-C.3.1.1	Craft and Structure and Integration of Knowledge and Ideas –Literature Text	14
3	E03.A-K.1.1.1	Key Ideas and Details-Literature Text	14
3	E03.A-K.1.1.2	Key Ideas and Details-Literature Text	14
3	E03.A-K.1.1.3	Key Ideas and Details-Literature Text	13
3	E03.A-V.4.1.1	Vocabulary Acquisition and Use	24
3	E03.A-V.4.1.2	Vocabulary Acquisition and Use	22
3	E03.B-C.2.1.1	Craft and Structure and Integration of Knowledge and Ideas –Informational Text	13
3	E03.B-C.2.1.2	Craft and Structure and Integration of Knowledge and Ideas –Informational Text	14
3	E03.B-C.3.1.1	Craft and Structure and Integration of Knowledge and Ideas –Informational Text	13
3	E03.B-C.3.1.2	Craft and Structure and Integration of Knowledge and Ideas –Informational Text	10
3	E03.B-C.3.1.3	Craft and Structure and Integration of Knowledge and Ideas –Informational Text	12
3	E03.B-K.1.1.1	Key Ideas and Details-Informational Text	15
3	E03.B-K.1.1.2	Key Ideas and Details-Informational Text	14
3	E03.B-K.1.1.3	Key Ideas and Details-Informational Text	14
3	E03.B-V.4.1.1	Vocabulary Acquisition and Use	29

Item Grade/Course	Eligible Content	Diagnostic Category	Number of Items
3	E03.B-V.4.1.2	Vocabulary Acquisition and Use	22
4	E04.A-C.2.1.1	Craft and Structure and Integration of Knowledge and Ideas –Literature Text	13
4	E04.A-C.3.1.1	Craft and Structure and Integration of Knowledge and Ideas –Literature Text	16
4	E04.A-K.1.1.1	Key Ideas and Details-Literature Text	17
4	E04.A-K.1.1.2	Key Ideas and Details-Literature Text	14
4	E04.A-K.1.1.3	Key Ideas and Details-Literature Text	14
4	E04.A-V.4.1.1	Vocabulary Acquisition and Use	23
4	E04.A-V.4.1.2	Vocabulary Acquisition and Use	28
4	E04.B-C.2.1.1	Craft and Structure and Integration of Knowledge and Ideas –Informational Text	14
4	E04.B-C.2.1.2	Craft and Structure and Integration of Knowledge and Ideas –Informational Text	11
4	E04.B-C.3.1.1	Craft and Structure and Integration of Knowledge and Ideas –Informational Text	13
4	E04.B-C.3.1.2	Craft and Structure and Integration of Knowledge and Ideas –Informational Text	9
4	E04.B-C.3.1.3	Craft and Structure and Integration of Knowledge and Ideas –Informational Text	14
4	E04.B-K.1.1.1	Key Ideas and Details-Informational Text	20
4	E04.B-K.1.1.2	Key Ideas and Details-Informational Text	16
4	E04.B-K.1.1.3	Key Ideas and Details-Informational Text	14
4	E04.B-V.4.1.1	Vocabulary Acquisition and Use	27
4	E04.B-V.4.1.2	Vocabulary Acquisition and Use	22
5	E05.A-C.2.1.1	Craft and Structure and Integration of Knowledge and Ideas –Literature Text	16
5	E05.A-C.3.1.1	Craft and Structure and Integration of Knowledge and Ideas –Literature Text	12
5	E05.A-K.1.1.1	Key Ideas and Details-Literature Text	18
5	E05.A-K.1.1.2	Key Ideas and Details-Literature Text	11
5	E05.A-K.1.1.3	Key Ideas and Details-Literature Text	7
5	E05.A-V.4.1.1	Vocabulary Acquisition and Use	17
5	E05.A-V.4.1.2	Vocabulary Acquisition and Use	25
5	E05.B-C.2.1.1	Craft and Structure and Integration of Knowledge and Ideas –Informational Text	7
5	E05.B-C.2.1.2	Craft and Structure and Integration of Knowledge and Ideas –Informational Text	6
5	E05.B-C.3.1.1	Craft and Structure and Integration of Knowledge and Ideas –Informational Text	15
5	E05.B-C.3.1.2	Craft and Structure and Integration of Knowledge and Ideas –Informational Text	4

Item Grade/Course	Eligible Content	Diagnostic Category	Number of Items
5	E05.B-C.3.1.3	Craft and Structure and Integration of Knowledge and Ideas –Informational Text	13
5	E05.B-K.1.1.1	Key Ideas and Details-Informational Text	20
5	E05.B-K.1.1.2	Key Ideas and Details-Informational Text	9
5	E05.B-K.1.1.3	Key Ideas and Details-Informational Text	13
5	E05.B-V.4.1.1	Vocabulary Acquisition and Use	23
5	E05.B-V.4.1.2	Vocabulary Acquisition and Use	16
6	E06.A-C.2.1.1	Craft and Structure and Integration of Knowledge and Ideas –Literature Text	25
6	E06.A-C.2.1.2	Craft and Structure and Integration of Knowledge and Ideas –Literature Text	11
6	E06.A-C.2.1.3	Craft and Structure and Integration of Knowledge and Ideas –Literature Text	12
6	E06.A-C.3.1.1	Craft and Structure and Integration of Knowledge and Ideas –Literature Text	8
6	E06.A-K.1.1.1	Key Ideas and Details-Literature Text	25
6	E06.A-K.1.1.2	Key Ideas and Details-Literature Text	18
6	E06.A-K.1.1.3	Key Ideas and Details-Literature Text	13
6	E06.A-V.4.1.1	Vocabulary Acquisition and Use	27
6	E06.A-V.4.1.2	Vocabulary Acquisition and Use	41
6	E06.B-C.2.1.1	Craft and Structure and Integration of Knowledge and Ideas –Informational Text	10
6	E06.B-C.2.1.2	Craft and Structure and Integration of Knowledge and Ideas –Informational Text	24
6	E06.B-C.2.1.3	Craft and Structure and Integration of Knowledge and Ideas –Informational Text	16
6	E06.B-C.3.1.1	Craft and Structure and Integration of Knowledge and Ideas –Informational Text	14
6	E06.B-C.3.1.2	Craft and Structure and Integration of Knowledge and Ideas –Informational Text	8
6	E06.B-K.1.1.1	Key Ideas and Details-Informational Text	38
6	E06.B-K.1.1.2	Key Ideas and Details-Informational Text	20
6	E06.B-K.1.1.3	Key Ideas and Details-Informational Text	12
6	E06.B-V.4.1.1	Vocabulary Acquisition and Use	32
6	E06.B-V.4.1.2	Vocabulary Acquisition and Use	20
7	E07.A-C.2.1.1	Craft and Structure and Integration of Knowledge and Ideas –Literature Text	14
7	E07.A-C.2.1.2	Craft and Structure and Integration of Knowledge and Ideas –Literature Text	12
7	E07.A-C.2.1.3	Craft and Structure and Integration of Knowledge and Ideas –Literature Text	18

Item Grade/Course	Eligible Content	Diagnostic Category	Number of Items
7	E07.A-C.3.1.1	Craft and Structure and Integration of Knowledge and Ideas –Literature Text	8
7	E07.A-K.1.1.1	Key Ideas and Details-Literature Text	38
7	E07.A-K.1.1.2	Key Ideas and Details-Literature Text	17
7	E07.A-K.1.1.3	Key Ideas and Details-Literature Text	13
7	E07.A-V.4.1.1	Vocabulary Acquisition and Use	26
7	E07.A-V.4.1.2	Vocabulary Acquisition and Use	23
7	E07.B-C.2.1.1	Craft and Structure and Integration of Knowledge and Ideas –Informational Text	13
7	E07.B-C.2.1.2	Craft and Structure and Integration of Knowledge and Ideas –Informational Text	17
7	E07.B-C.2.1.3	Craft and Structure and Integration of Knowledge and Ideas –Informational Text	12
7	E07.B-C.3.1.1	Craft and Structure and Integration of Knowledge and Ideas –Informational Text	14
7	E07.B-C.3.1.2	Craft and Structure and Integration of Knowledge and Ideas –Informational Text	6
7	E07.B-K.1.1.1	Key Ideas and Details-Informational Text	44
7	E07.B-K.1.1.2	Key Ideas and Details-Informational Text	16
7	E07.B-K.1.1.3	Key Ideas and Details-Informational Text	13
7	E07.B-V.4.1.1	Vocabulary Acquisition and Use	33
7	E07.B-V.4.1.2	Vocabulary Acquisition and Use	17
8	E08.A-C.2.1.1	Craft and Structure and Integration of Knowledge and Ideas –Literature Text	13
8	E08.A-C.2.1.2	Craft and Structure and Integration of Knowledge and Ideas –Literature Text	8
8	E08.A-C.2.1.3	Craft and Structure and Integration of Knowledge and Ideas –Literature Text	14
8	E08.A-C.3.1.1	Craft and Structure and Integration of Knowledge and Ideas –Literature Text	11
8	E08.A-K.1.1.1	Key Ideas and Details-Literature Text	33
8	E08.A-K.1.1.2	Key Ideas and Details-Literature Text	17
8	E08.A-K.1.1.3	Key Ideas and Details-Literature Text	13
8	E08.A-V.4.1.1	Vocabulary Acquisition and Use	28
8	E08.A-V.4.1.2	Vocabulary Acquisition and Use	30
8	E08.B-C.2.1.1	Craft and Structure and Integration of Knowledge and Ideas –Informational Text	18
8	E08.B-C.2.1.2	Craft and Structure and Integration of Knowledge and Ideas –Informational Text	23
8	E08.B-C.2.1.3	Craft and Structure and Integration of Knowledge and Ideas –Informational Text	12

Item Grade/Course	Eligible Content	Diagnostic Category	Number of Items
8	E08.B-C.3.1.1	Craft and Structure and Integration of Knowledge and Ideas –Informational Text	10
8	E08.B-C.3.1.2	Craft and Structure and Integration of Knowledge and Ideas –Informational Text	8
8	E08.B-K.1.1.1	Key Ideas and Details-Informational Text	30
8	E08.B-K.1.1.2	Key Ideas and Details-Informational Text	21
8	E08.B-K.1.1.3	Key Ideas and Details-Informational Text	12
8	E08.B-V.4.1.1	Vocabulary Acquisition and Use	34
8	E08.B-V.4.1.2	Vocabulary Acquisition and Use	21
Lit	L.F.1.1.1	Craft and Structure and Integration of Knowledge and Ideas –Literature Text	8
Lit	L.F.1.1.2	Craft and Structure and Integration of Knowledge and Ideas –Literature Text	8
Lit	L.F.1.1.3	Craft and Structure and Integration of Knowledge and Ideas –Literature Text	8
Lit	L.F.1.2.1	Vocabulary Acquisition and Use	7
Lit	L.F.1.2.2	Vocabulary Acquisition and Use	7
Lit	L.F.1.2.3	Vocabulary Acquisition and Use	7
Lit	L.F.1.2.4	Craft and Structure and Integration of Knowledge and Ideas –Literature Text	7
Lit	L.F.1.3.1	Key Ideas and Details-Literature Text	10
Lit	L.F.1.3.2	Key Ideas and Details-Literature Text	8
Lit	L.F.2.1.1	Key Ideas and Details-Literature Text	8
Lit	L.F.2.1.2	Key Ideas and Details-Literature Text	8
Lit	L.F.2.2.1	Craft and Structure and Integration of Knowledge and Ideas –Literature Text	7
Lit	L.F.2.2.2	Craft and Structure and Integration of Knowledge and Ideas –Literature Text	8
Lit	L.F.2.2.3	Craft and Structure and Integration of Knowledge and Ideas –Literature Text	8
Lit	L.F.2.2.4	Craft and Structure and Integration of Knowledge and Ideas –Literature Text	8
Lit	L.F.2.3.1	Key Ideas and Details-Literature Text	8
Lit	L.F.2.3.2	Key Ideas and Details-Literature Text	8
Lit	L.F.2.3.3	Key Ideas and Details-Literature Text	10
Lit	L.F.2.3.4	Key Ideas and Details-Literature Text	8
Lit	L.F.2.3.5	Craft and Structure and Integration of Knowledge and Ideas –Literature Text	8
Lit	L.F.2.3.6	Craft and Structure and Integration of Knowledge and Ideas –Literature Text	8
Lit	L.F.2.4.1	Craft and Structure and Integration of Knowledge and Ideas –Literature Text	8

Item Grade/Course	Eligible Content	Diagnostic Category	Number of Items
Lit	L.F.2.5.1	Craft and Structure and Integration of Knowledge and Ideas –Literature Text	8
Lit	L.F.2.5.2	Craft and Structure and Integration of Knowledge and Ideas –Literature Text	9
Lit	L.F.2.5.3	Craft and Structure and Integration of Knowledge and Ideas –Literature Text	8
Lit	L.N.1.1.1	Craft and Structure and Integration of Knowledge and Ideas –Informational Text	7
Lit	L.N.1.1.2	Craft and Structure and Integration of Knowledge and Ideas –Informational Text	7
Lit	L.N.1.1.3	Craft and Structure and Integration of Knowledge and Ideas –Informational Text	8
Lit	L.N.1.1.4	Craft and Structure and Integration of Knowledge and Ideas –Informational Text	8
Lit	L.N.1.2.1	Vocabulary Acquisition and Use	7
Lit	L.N.1.2.2	Vocabulary Acquisition and Use	7
Lit	L.N.1.2.3	Vocabulary Acquisition and Use	7
Lit	L.N.1.2.4	Craft and Structure and Integration of Knowledge and Ideas –Informational Text	7
Lit	L.N.1.3.1	Key Ideas and Details-Informational Text	8
Lit	L.N.1.3.2	Key Ideas and Details-Informational Text	8
Lit	L.N.1.3.3	Key Ideas and Details-Informational Text	8
Lit	L.N.2.1.1	Key Ideas and Details-Informational Text	7
Lit	L.N.2.1.2	Key Ideas and Details-Informational Text	8
Lit	L.N.2.2.1	Craft and Structure and Integration of Knowledge and Ideas –Informational Text	8
Lit	L.N.2.2.2	Craft and Structure and Integration of Knowledge and Ideas –Informational Text	10
Lit	L.N.2.2.3	Craft and Structure and Integration of Knowledge and Ideas –Informational Text	8
Lit	L.N.2.3.1	Key Ideas and Details-Informational Text	8
Lit	L.N.2.3.2	Key Ideas and Details-Informational Text	8
Lit	L.N.2.3.3	Key Ideas and Details-Informational Text	9
Lit	L.N.2.3.4	Key Ideas and Details-Informational Text	9
Lit	L.N.2.3.5	Craft and Structure and Integration of Knowledge and Ideas –Informational Text	10
Lit	L.N.2.3.6	Craft and Structure and Integration of Knowledge and Ideas –Informational Text	9
Lit	L.N.2.4.1	Craft and Structure and Integration of Knowledge and Ideas –Informational Text	7
Lit	L.N.2.4.2	Key Ideas and Details-Informational Text	8
Lit	L.N.2.4.3	Craft and Structure and Integration of Knowledge and Ideas –Informational Text	8

Item Grade/Course	Eligible Content	Diagnostic Category	Number of Items
Lit	L.N.2.4.4	Craft and Structure and Integration of Knowledge and Ideas –Informational Text	9
Lit	L.N.2.4.5	Craft and Structure and Integration of Knowledge and Ideas –Informational Text	8
Lit	L.N.2.5.1	Key Ideas and Details-Informational Text	7
Lit	L.N.2.5.2	Craft and Structure and Integration of Knowledge and Ideas –Informational Text	8
Lit	L.N.2.5.3	Key Ideas and Details-Informational Text	8
Lit	L.N.2.5.4	Craft and Structure and Integration of Knowledge and Ideas –Informational Text	9
Lit	L.N.2.5.5	Craft and Structure and Integration of Knowledge and Ideas –Informational Text	8
Lit	L.N.2.5.6	Craft and Structure and Integration of Knowledge and Ideas –Informational Text	8

Depth of Knowledge-Mathematics

Grade	Diagnostic Category	DOK 1	DOK 2	DOK 3
3	Numbers and Operations	27	48	0
3	Algebraic Concepts	30	70	0
3	Geometry	17	18	0
3	Measurement Data and Probability	35	101	0
4	Numbers and Operations	37	98	0
4	Algebraic Concepts	26	104	0
4	Geometry	33	41	0
4	Measurement Data and Probability	21	51	0
5	Numbers and Operations	32	84	0
5	Algebraic Concepts	7	31	0
5	Geometry	17	37	0
5	Measurement Data and Probability	7	66	0
6	Numbers and Operations	120	68	0
6	Algebraic Concepts	108	102	0
6	Geometry	15	51	1
6	Measurement Data and Probability	31	82	0
7	Numbers and Operations	21	78	0
7	Algebraic Concepts	26	45	0
7	Geometry	26	86	0
7	Measurement Data and Probability	6	150	2
8	Numbers and Operations	31	23	0
8	Algebraic Concepts	44	135	1
8	Geometry	15	92	2
8	Measurement Data and Probability	9	44	1

Depth of Knowledge-Reading

Grade	Diagnostic Category	DOK 1	DOK 2	DOK 3
K	Key Ideas and Details-Informational Text	7	7	7
K	Craft and Structure and Integration of Knowledge and Ideas –Informational Text	6	10	5
K	Vocabulary Acquisition and Use	0	6	0
		1	11	6
K	Craft and Structure and Integration of Knowledge and Ideas –Literature Text	6	0	6
K	Vocabulary Acquisition and Use	0	6	0
1	Key Ideas and Details-Informational Text	6	8	7
1	Craft and Structure and Integration of Knowledge and Ideas –Informational Text	0	19	8
1	Vocabulary Acquisition and Use	0	7	0
1	Key Ideas and Details-Literature Text	7	8	5
1	Craft and Structure and Integration of Knowledge and Ideas –Literature Text	2	6	6
1	Vocabulary Acquisition and Use	0	6	0
2	Key Ideas and Details-Informational Text	3	14	4
2	Craft and Structure and Integration of Knowledge and Ideas –Informational Text	0	22	6
2	Vocabulary Acquisition and Use	1	6	0
2	Key Ideas and Details-Literature Text	5	10	6
2	Craft and Structure and Integration of Knowledge and Ideas –Literature Text	0	2	12
2	Vocabulary Acquisition and Use	0	7	0
3	Key Ideas and Details-Informational Text	0	8	21
3	Craft and Structure and Integration of Knowledge and Ideas –Informational Text	2	23	16
3	Vocabulary Acquisition and Use	0	44	2
3	Key Ideas and Details-Literature Text	0	40	22
3	Craft and Structure and Integration of Knowledge and Ideas –Literature Text	7	25	11
3	Vocabulary Acquisition and Use	1	48	2
4	Key Ideas and Details-Informational Text	0	2	26
4	Craft and Structure and Integration of Knowledge and Ideas –Informational Text	3	27	15
4	Vocabulary Acquisition and Use	7	41	3
4	Key Ideas and Details-Literature Text	0	25	36

Grade	Diagnostic Category	DOK 1	DOK 2	DOK 3
4	Craft and Structure and Integration of Knowledge and Ideas –Literature Text	8	26	16
4	Vocabulary Acquisition and Use	5	42	2
5	Key Ideas and Details-Informational Text	0	8	20
5	Craft and Structure and Integration of Knowledge and Ideas –Informational Text	1	21	13
5	Vocabulary Acquisition and Use	5	36	1
5	Key Ideas and Details-Literature Text	0	18	27
5	Craft and Structure and Integration of Knowledge and Ideas –Literature Text	2	20	20
5	Vocabulary Acquisition and Use	4	32	3
6	Key Ideas and Details-Informational Text	0	23	33
6	Craft and Structure and Integration of Knowledge and Ideas –Informational Text	1	38	17
6	Vocabulary Acquisition and Use	7	60	1
6	Key Ideas and Details-Literature Text	0	47	25
6	Craft and Structure and Integration of Knowledge and Ideas –Literature Text	4	38	28
6	Vocabulary Acquisition and Use	10	39	3
7	Key Ideas and Details-Informational Text	0	24	28
7	Craft and Structure and Integration of Knowledge and Ideas –Informational Text	1	34	33
7	Vocabulary Acquisition and Use	7	41	1
7	Key Ideas and Details-Literature Text	0	37	25
7	Craft and Structure and Integration of Knowledge and Ideas –Literature Text	4	44	25
7	Vocabulary Acquisition and Use	5	45	0
8	Key Ideas and Details-Informational Text	0	16	30
8	Craft and Structure and Integration of Knowledge and Ideas –Informational Text	3	40	20
8	Vocabulary Acquisition and Use	10	47	1
8	Key Ideas and Details-Literature Text	0	39	32
8	Craft and Structure and Integration of Knowledge and Ideas –Literature Text	3	44	16
8	Vocabulary Acquisition and Use	4	50	1

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