



Using Data to Inform Secondary Math Pathways

*A five-step process for
data-informed course
placement*



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Disclaimer: This document was developed with feedback from individuals with expertise in the specific content area. If you find any errors or information of concern, please let us know by emailing pdepvaas@iu13.org.

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Introduction

This guide provides LEA/district, school, and mathematics content and teacher leaders with a structured, data-informed process to assist in the design and/or re-design of specific components of the secondary (Grades 6-12) mathematics program within an LEA/district. Specifically, this guide is designed to address two broad questions:

- *Is our sequence of mathematics courses (math pathways) meeting the needs of all students?*
- *Are our course placement criteria and decisions, leading up to and including Algebra 1, appropriate for all students?*

The overarching goal for LEAs/districts is to have a math pathway which (1) provides flexibility as students progress through the mathematics curriculum, and (2) ensures that appropriate course placement decision criteria are consistent, reliable, and aligned to students' needs.

LEA/district leaders, math supervisors, school leaders, and teacher leaders may use this guide in whole or part. The Table of Contents provides you with entry points should you be choosing to use only certain portions of this guide.

The work described in this guide is a process, which could span an entire school year or more. This will vary by LEA/district based on the current mathematics program, the experience of the team with data, as well as other factors. An LEA/district may choose to have an external facilitator, such as an IU consultant or Mathematics Higher Education Partner, facilitate the work of the LEA/district team through some or all of this process.

[Appendix A](#) provides a template that teams may complete as they move through the tasks in this guide.

Steps in the Process

1. **Establish and Prep** Your Secondary Mathematics Pathways Committee/Team
2. **Map** Your Current System of Pathways
3. **Inventory and Analyze** Your Data to Adjust Your Pathways and Course Criteria
4. **Analyze and Define** Your Decision Protocol for Course Placements
5. **Bring It All Together!**

STEP 1: Establish and Prep your Secondary Mathematics Pathways Committee/Team

1.1 System-Wide Math Team/Committee

Team Membership: In addressing the process, whole or part, it is recommended that the following roles be considered as members of this team:

Administrators



- LEA/District leaders (Assistant Superintendents, Directors of Curriculum)
- Principal(s) from elementary, middle and high school(s)

Mathematics Leaders



- K-12 math supervisors/coordinators
- Math teacher leaders from both middle and high school

School Counselors



- Representing both middle and high school
- May include elementary representation for 5th grade transition, as appropriate

The composition of each LEA/district's team will be unique based on the school/LEA configuration, roles of individuals and intended outcomes. For example, including other stakeholders such as families, students, local industry representative(s), etc. may be desired in some situations for all or parts of this process.

Getting Started:

It is important that the LEA/district mathematics committee have clarity on the outcomes they plan to achieve and how this guide can be used to inform the work. The committee leader or team facilitator may take the following steps to ensure common understanding and consensus of purpose and mission among the team members:

1. All team members review this guide to familiarize themselves with the purpose and use of the guide, including the fillable workbook in [Appendix A](#).
2. Team members collaboratively identify the intended outcomes for this work.
3. A meeting schedule is established, with short- and long-term action steps delineated.
4. Roles and responsibilities of team members are clearly communicated.
5. Common understandings and beliefs about Algebra readiness are discussed towards consensus building.
6. Members confirm their understandings relative to types of data and measures of student learning.

1.2 Build Shared Beliefs and Understandings

There are varying beliefs about the nature of an effective Algebra program, as well as the preparedness needed for timing of placement in an Algebra course sequence.

It is important to engage in critical conversations regarding beliefs about “algebra for all students.” These conversations are necessary to ensure that the LEA/district practices are fair and equitable so each and every student has opportunities for access to the pathways to achieve the intended outcomes. While committee members may have some differing views and beliefs, it is important for the committee to reach a consensus, meaning all team members can support the decisions and pathways.

ACTIVITY: Questions for Group Discussion and Consensus

The questions below may be used in a facilitated team discussion and are designed to engage committee members in a discussion about Algebra, exploring various beliefs and practices, and coming to consensus in order to ground the team in common language and understandings for the purpose of the work. Some questions may spark lively, but important, discussions. Also remember that you may have data to add to these discussions!

1. *Is there one, single Algebra and/or mathematics pathway that is effective for all students?*
2. *Are all students ready to study a full course of Algebra 1 at the same grade level? Does Algebra 1 take all students the same amount of time?*
3. *Should proficiency in computation be a criterion for placement in Algebra I?*
4. *What possible factors may impede students’ competency with Algebra 1?*
5. *What skills/abilities do students need to be competent in an Algebra I course?*
6. *Should a student’s level of reading and writing be considered in evaluating students’ readiness for placement in an Algebra I course?*
7. *Does Algebra readiness include variables such as organizational skills and perseverance?*



Your Turn: Algebra I Discussion Questions

See the [Appendix A Workbook, Step 1.2](#) for a table you may complete during your team discussion, with space for comments about each question.

1.3 Confirm Shared Understanding of Types of Data & Measures of Student Learning Assessments

As data analysis and use is central to the work outlined in this guide, it is important that team members confirm understanding of various types of data and measures of student learning.

Bernhardt (1998) describes four types of data available to schools, identified as Multiple Measures of Data. Each of these categories include information helpful in the design of a secondary mathematics program, specifically in creating a course pathway and developing effective decision-making criteria for placement within and along the math pathway. These four types of data are:

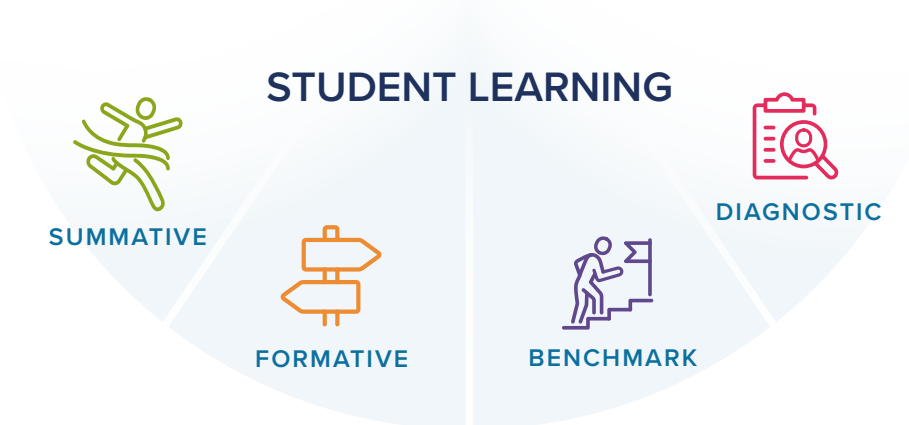
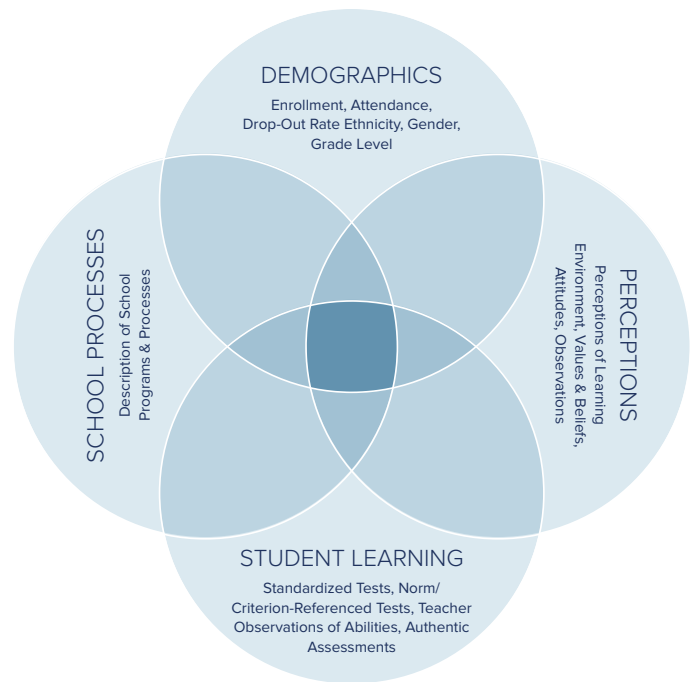
- Demographic,
- Perception,
- Process, and
- Student learning.

Within the category of student learning data, there are four types (measures) of assessment, all of which focus on student achievement and also are helpful in the design of a mathematics pathway and developing effective decision-making criteria for placement within and along the math pathway:

- Summative
- Formative
- Diagnostic
- Benchmark

Four Types of Student Data

Bernhardt, V. L., (1998, March). Invited Monograph No. 4. CASCD https://nces.ed.gov/pubs2007/curriculum/pdf/multiple_measures.pdf

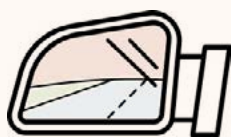


In addition to the four types of student learning data, it is important that team members confirm their understanding of PVAAS! While PVAAS is not an assessment itself, it does provide annual summative measures that are critical to use in this work.

What follows is a brief review of PVAAS, focusing on the aspects of PVAAS that are relative to this work:

Get to Know PVAAS

PVAAS (Pennsylvania's Value-Added Assessment System) provides growth data and projection data – in other words, data that looks back (growth) and data that looks forward (projections). Both looking back at the growth of previous students and looking forward to current students allows educators to analyze what worked, what didn't, and what actions need to be taken to address the needs of the currently enrolled students in the current year and years ahead.



Looking Back

on value-added growth
and testing history



Looking Forward

to achievement
projections

Growth data, looking back at the growth of previous students, when combined with achievement data, provides a more complete picture of student learning data and informs the effectiveness of the math pathway. It speaks to the question: Is our mathematics pathway appropriate for all students? Is it working for all students?

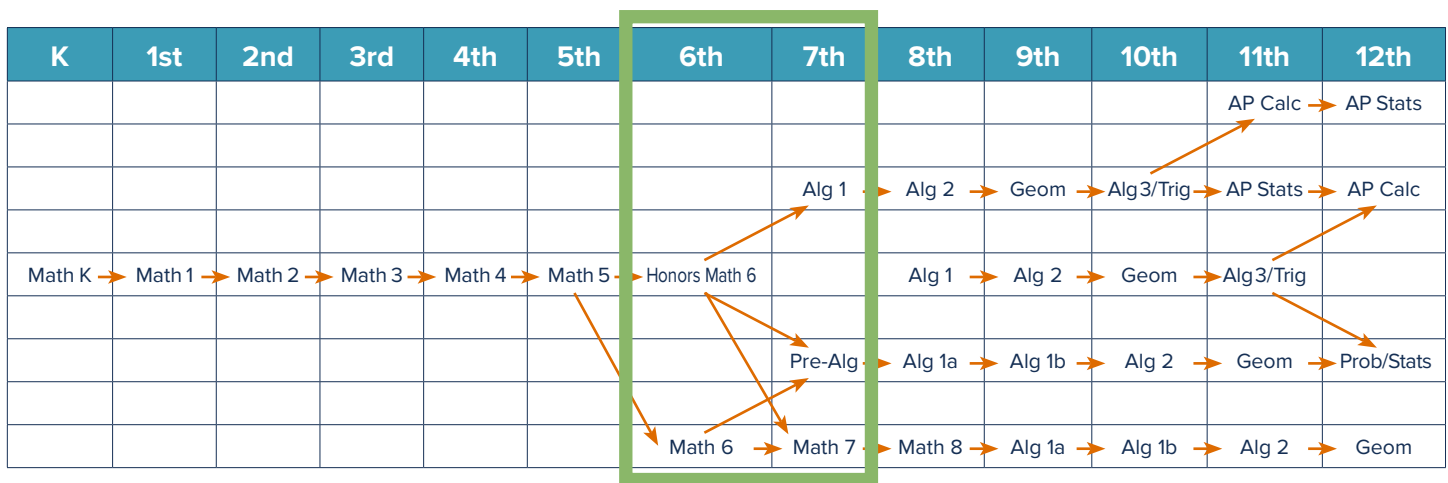
Projection data, looking forward, provides information on current students regarding the probabilities of reaching proficient or higher in upcoming state assessments, –which is also necessary information in the continuous process of designing or redesigning math course pathways and placement criteria.

Anyone in need of foundational information on either PVAAS growth reports and/or PVAAS projection reports may access support from pdepvaas@iu13.org, your local IU PVAAS point of contact, and various resources available on the PVAAS log-in page (pvaas.sas.com).

STEP 2: Map Your Current System of Pathways

To determine if your math pathways are working for all students, a preliminary step is to plot your current sequence of math course options. If you have more than one Middle School or High School in your LEA, and their course offerings and sequences are different, the team will need to create a separate chart for each school.

In mapping your current program, it is helpful to graphically display the sequences in your current pathways and the directions of progress through each sequence. The value in having this type of display is that one can quickly determine the options for each student at a particular level in a sequence. For example, a student enrolled in Honors Math 6 has the option to enroll in Algebra 1 in 7th grade, Pre-Algebra, or Math 7. Likewise, a student enrolled in Math 6 has the option to take Pre-Algebra in 7th grade or Math 7.



Note: The intention of this chart is not to illustrate the “correct” pathway, but is designed as an example of how a team would document their own specific pathway.

Your Turn: Plot Your Current Pathways

Detail graphically how your students proceed through your mathematics education system. Use the [Appendix A Workbook, Step 2.1](#) for a template your team may complete. Be sure to include indications of progression (arrows) through courses/grades based on level of success or lack of success.

Later in Step 3, you will be applying data to evaluate your math pathway in terms of effectiveness for all students and engaging in possible revisions or enhancements. **At this point, you are merely documenting your existing pathways.**

STEP 3: Inventory and Analyze Your Data

Now that the team has plotted the pathways/sequence of math courses, it is time to dig into data. The analysis of data will help to inform the two major purposes of this guide:

- *Is our Mathematics pathway appropriate for all students? Is there sufficient flexibility and stretch to meet the needs of our students? What does our data tell us about the effectiveness of our secondary math program?*
- *Are our criteria for decision-making regarding course placement guiding us to make appropriate course placement decisions for all students? What data do we use for decision making? Are our criteria appropriate to the needs of our students?*

3.1 Achievement and Growth Data

It is helpful to start with a careful analysis of your big picture statewide assessment achievement data (PSSA/Keystones) AND your PVAAS growth and projection data to inform (1) is our math pathway, i.e. course offerings, sequence and flexibility of math courses working for all students? And (2) how does this data help to inform decision-making and/or criterion for course placement?

The following describe steps in analyzing your state assessment data:

Analyze and record patterns in your PVAAS Growth Data:

A variety of growth reports are available through PVAAS, but for the purposes of this step, the focus will be on two key growth reports useful in this work:

1. Value Added Report
2. Growth of Student Groups

(You may also choose to use the PVAAS Diagnostic report, with the various filters, to explore more deeply.)

PVAAS Value Added Report: Data Findings

First, start by analyzing your Value-Added (VA) data at each grade level and/or course level. Begin with the most recent year and then analyze previous years' data, as available to you through the Value Added Report filters.

This chart provides an example of how to record your findings upon analyzing the Value-Added Report.

This chart is provided in the [Appendix A Workbook, Step 3.1](#) for the team to complete.

Record your PVAAS information in that section only. The information below is included as an example only.

Your own VA report will show you the “colors” to be recorded in the appendix worksheet.

| | PVAAS Value Added (refer to VA Report and use filters) | | PSSA Keystone (% Proficient/Advanced) | | |
|------------------------------------|---|--|--|----------------|----------------|
| | Most Recent Year | Previous Years (3-year avg. if available) | Year: Most Recent | Previous Year: | Previous Year: |
| Gr. 5 Math | <i>Light Blue</i> | <i>Green</i> | | | |
| Gr. 6 Math | <i>Green</i> | <i>Green</i> | | | |
| Gr. 7 Math | <i>Dark Blue</i> | <i>Light Blue</i> | | | |
| Gr 8 Math | <i>Red</i> | <i>Green</i> | | | |
| Keystone Alg 1 | <i>Light Blue</i> | <i>Light Blue</i> | | | |
| Growth of Student Groups findings: | | | | | |

Your Turn: Complete the Growth Section

Complete the growth section of the chart (as shown above with the arrow) in [Appendix A Workbook, Step 3.1](#) using your Value-Added report data.

PVAAS Growth of Student Groups Data

This report allows you to dig further into your student group data. Depending on your identified patterns and trends in the Value-Added report, you may choose to also use the Growth of Student Groups report to dig even further. In interpreting this report, it is important to know the demographics of your student population.

Analyze the data you see in the Growth of Student Groups report at the grade/subject levels. If available, use the Select Year tab to see historical data. If team members are not familiar with interpretation of this report, additional resources may be accessed on the [PVAAS log in page](#).

Think:

- Note the colors for each student group and compare to color(s) of ALL students. Where do you see differences between the ALL STUDENTS and each specific student group?
- Where do you see strengths and needs?



Your Turn: Growth of Student Groups Data

Record team responses in the [Appendix A Workbook, Step 3.1](#) table, in the bottom box shown with the arrow.

- What does this data tell you in regard to student groups?
- Record your findings in the section marked Growth of Student Groups in the Appendix A workbook. See below for examples of observational statements. (Reminder that the filled in boxes of this chart are examples only!)

| | PVAAS Value Added (refer to VA Report and use filters) | | PSSA Keystone (% Proficient/Advanced) | | |
|----------------|---|--|--|----------------|----------------|
| | Most Recent Year | Previous Years (3-year avg. if available) | Year: Most Recent | Previous Year: | Previous Year: |
| Gr. 5 Math | <i>Light Blue</i> | <i>Green</i> | | | |
| Gr. 6 Math | <i>Green</i> | <i>Green</i> | | | |
| Gr. 7 Math | <i>Dark Blue</i> | <i>Light Blue</i> | | | |
| Gr 8 Math | <i>Red</i> | <i>Green</i> | | | |
| Keystone Alg 1 | <i>Light Blue</i> | <i>Light Blue</i> | | | |

Growth of Student Groups findings:

Keystone Algebra students with IEPs are green.

Students who are economically disadvantaged are 25% of the 7th grade student population and are dark blue, the same as "all students". (% of students in a student group would be found in a different data source)

Now, to Achievement Data

Growth alone does not tell the entire picture, nor does achievement alone. It is now time for the committee/team to analyze trends and patterns in their achievement data and consider that data along with growth data. In analyzing PSSA and Keystone data, be sure to not only work with the previous year data, but also historical data, as available to you.

Discuss:

- *What percentage of students are achieving proficient or higher at each grade or course?*
- *What percentage of students are achieving advanced at each grade or course?*
- *What achievement patterns and trends do you see in each grade/course, 4-8?*
- *What achievement patterns and trends do you see in Keystone Algebra?*



Your Turn: Achievement Data

Add your achievement information to the table in the [Appendix A Workbook, Step 3.1](#), adding in the three columns marked below by red arrows.

| | PVAAS Value Added (refer to VA Report and use filters) | | PSSA/Keystone (% Proficient/Advanced) | | |
|------------------------------------|---|--|--|----------------|----------------|
| | Most Recent Year | Previous Years (3-year avg. if available) | Year: Most Recent | Previous Year: | Previous Year: |
| Gr. 5 Math | | | | | |
| Gr. 6 Math | | | | | |
| Gr. 7 Math | | | | | |
| Gr 8 Math | | | | | |
| Keystone Alg 1 | | | | | |
| Growth of Student Groups findings: | | | | | |

3.2 Inventory Other Data Sources

In addition to the state assessment growth and achievement data gathered and recorded in Step 3.1, the next step is to inventory all additional data sources used in the mathematics pathway planning /evaluating and course placement criteria.

As there may be differences from school to school within the system, the team must ensure that they are gathering all data used across the system relative to planning and evaluating the mathematics program.

The goal is to inventory all data sources used for math programming.



Your Turn: Data Source Inventory

It is recommended that each team member individually lists the data sources they are aware of as being “in use.” Then as a group, the team can merge their lists into a single, comprehensive list.

Discuss and document all data sources used in decisions about math programming, even if the use is not system-wide and even if team members aren’t in agreement with using those particular sources. The goal is to inventory all data sources in use relative to mathematics across all schools within the LEA.

As needed, refer back to Bernhardt’s four types of data and the four types of student learning assessments. The collective list of data sources can then be listed in the chart provided in [Appendix A, Step 3.2](#).

3.3 Analyze Data Sources

After the combined list has been created, the following questions should be discussed in-depth to begin to analyze the data inventory in terms of its effectiveness in both the evaluation of the math pathways as well as the use of data for course placement. The goal of this step is to engage in a detailed discussion that will lead to the development of a complete data profile!

The following questions may be helpful in framing the team's discussion, beginning with a few overarching questions:

- *Does our data inventory include data sources that we use to make course placement decisions for all students?*
- *Considering all data types/sources, do we have an absence of data in one or more of the data sources that may be useful in planning and evaluating our current mathematics pathways/program?*
- *Do we have repetitive data or data that is not really useful to our secondary math programming?*
- *Are we clear on the purpose of each assessment or data source and using that data effectively?*
- *Do we have quantitative as well as qualitative data sources for course placement decisions?*

Using the data sources listed below, the team may want to go even further in their data inventory discussion by discussing and responding to these specific questions:

- *Do we have this type of data in our profile (inventory)?*
- *Do we need to add this to our data profile?*
- *Are we using this data effectively for pathway/program evaluation and/or course placement decision making?*

Data Sources and Types:

- Benchmark assessments? (e.g. aimsweb, Firefly from PDE, STAR)
- Diagnostic assessments? (e.g., CDT)
- Summative assessments such as mid-terms, finals, chapter and/or unit assessments?
- Student surveys and/or family surveys used to assess beliefs and perceptions regarding mathematics?
- Teacher recommendations (used for course placement decision)?
- Course grades?
- Achievement and growth data disaggregated in any way, e.g., by gender, ethnicity, socioeconomic status, etc.?
- Attendance data: Does that play a role in decision-making?
- Discipline data: Does that play a role in decision-making?
- PVAAS student projection summary data used? Are they used in decisions regarding math pathways?
- Individual student projections used for course placement (PVAAS Child Success Summary, PVAAS Individual Student Report)?

More on PVAAS Projection Data:


It is important that the team engages in a discussion about PVAAS and how it is or can be used in this work and inclusion in the revised Data Profile.

PVAAS projections provide achievement probabilities for students reaching proficient or higher. These probabilities are very helpful in determining if you have appropriate pathways designed that allow for stretch, flexibility, and advancement opportunities. This projection data can be accessed through an analysis of the PVAAS Projection Summary Report. This can be paired with other benchmark data such as the Firefly from PDE.

| Math Pathways |
|---|
| <input type="checkbox"/> What percentage of our students are on a trajectory to reach proficient on the next mathematics state assessment (PSSA Math, Algebra Keystone Exam)? |
| <input type="checkbox"/> What percentage of our students are on a trajectory to reach advanced on the next mathematics state assessment (PSSA Math, Algebra Keystone Exam)? |
| <input type="checkbox"/> What percentage of our students have a moderate to high likelihood of not reaching at least proficiency? |
| <input type="checkbox"/> What percentage of our students are on a trajectory to reaching benchmarks set in regard to AP exams, ACT, SAT, and PSAT? |
| <input type="checkbox"/> Does our projection data warrant an accelerated math course in grade x? |

PVAAS individual student projections are a highly reliable data point for course placement decisions. This data can be accessed through the PVAAS Child Success Summary, PVAAS Projection Summary or the individual Student Report.

| Course Placement |
|---|
| <input type="checkbox"/> Does this student need to advance to a higher-level course next year? |
| <input type="checkbox"/> Does this student need to remain on his/her current pathway? |
| <input type="checkbox"/> When is it best for this student to enroll in Algebra 1? |
| <input type="checkbox"/> If the student remains on this pathway, will he/she be able to advance to the highest level math course offered in our system? |
| <input type="checkbox"/> Does this student warrant a different pathway that provides additional supports resulting in enhanced math achievement and growth? |

 **Your Turn: Create/Refine Your Comprehensive Data Profile**

Now that your team has spent time inventorying and discussing data types and sources, it is time to create or re-create/revise your data profile to reflect a comprehensive data profile for use in math pathways planning and course placement, using the information above and collective knowledge of the team. A template for this work is provided in [Appendix A, Section 3.3](#).

3.4 Use Data Profile to Analyze Math Pathways

Next, the team is ready to use the data profile to make changes to their existing Mathematics pathways. Discuss these five basic questions during your analysis of the pathway you plotted in Step 2:

- *Are the pathways designed to allow students to advance from one pathway to another?*
- *Are the pathways designed to provide opportunities for students to change pathways if they are not successful in their original placement?*
- *Does your data support the current pathways?*
- *Is there consensus among your team that your current sequence addresses the needs of your students and is consistent with the district resources available?*



Your Turn: Revise or Re-Design Your Math Pathway *(as needed)*

Analyze your data chart/profile and revise/enhance or recreate as needed, using the information above and collective knowledge of the team! Space to revise your edited Math Pathway is provided in [Appendix A, Section 3.4](#).

STEP 4: Analyze and Define your Decision Protocol for Course Placement

At this point in the work, the team has mapped a revised pathways and developed a comprehensive data profile. Now it is time to analyze how course placement decisions are made, then create and/or refine criteria for use at each decision point along the revised math pathways.

This work will inform the question: “what criteria will be used for course placement decisions for students?” Decisions are necessary at each course selection step “along the way” to effectively make decisions for each student based on vetted criteria.

There are two main actions in this step:

1. Choose the data sources and the target for each data source to be considered
2. Determine the decision criterion that determines the recommendation

It is also very helpful to test and evaluate the process developed with “live” data. [Appendix B](#) provides an explanation of how that can occur, along with a worksheet template for the team to use in recording their work.

Each of these three actions is outlined below.

4.1 Choose Data Sources and Targets for Placement Criteria

For the sake of uniformity in this activity, let’s assume that your course pathways for 6th grade looks like this:

| 5th | 6th |
|--------|---------------|
| | |
| | Honors Math 6 |
| Math 5 | |
| | Math 6 |
| | |

Successful implementation of this decision requires two ingredients:

1. Appropriate placement criteria
2. Appropriate differences in curriculum, assessment and instruction in each of the 6th grade options and alignment to PA Standards.

Note: If your decision process involves more choices (e.g., an option for Math 6th, then the activities detailed below will need to be replicated for all options.

You may document your decision criteria in a table. Review the example below:

Criteria for Placement into *Honors Math 6*

| Data Source | Criteria for Each Data Source (Target) |
|---|---|
| <i>PSSA Math – 4th Gr</i> | <i>High Proficient – Scale Score \geq 1090</i> |
| <i>PSSA ELA – 4th Gr</i> | <i>High Proficient – Scale Score \geq 1050</i> |
| <i>PVAAS Proj to 5th Gr Math (Proficient)</i> | <i>Probability \geq 70%</i> |
| <i>PVAAS Proj to 6th Gr Math (Proficient)</i> | <i>Probability \geq 70%</i> |
| <i>District Common 4th Gr Math Test</i> | <i>B – or better</i> |
| <i>Class Grade – Midterm 5th Gr</i> | <i>B – or better</i> |
| <i>Attendance</i> | <i>Consistent attendance</i> |

NOTE: LEAs will want to check the scores for high proficient/advanced with PDE cut scores to ensure the use of the appropriate score.

Some notes regarding the sample criteria:

- Scale scores rather than performance levels are suggested since they are more consistent than performance levels and more flexible. However, the team should keep in mind that there is standard error around the scale scores, and they are therefore considered guidelines. The specific values in the template can be chosen by considering performance category cutoffs but can be adjusted within cut point boundaries based on local data team experience with their students. For example, if the current cut scores for Proficient are 1000 and 1107 for 8th grade mathematics, the team may choose a scale score of 1090 so that students scoring in the High Proficient range can meet the stated requirement.
- Refer to [PSSA Cut Scores here](#).
- PVAAS projections provide the likelihood that a student will achieve the specified performance category on a future test and are more reliable than a single test score even 3 years into the future.
- Local assessments included with the assumption that they are common for all candidates for 6th grade Honors Mathematics.

Your Turn: Criteria for Placement: Data Sources & Targets

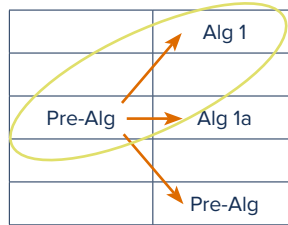
See [Appendix A Workbook, Step 4.1](#) to complete the Criteria for Placement Table. Complete this table for EACH option in your sequence. (Several templates are provided for your convenience.)

4.2 Detail and Critique Your Existing Placement and Decision Protocols

The next task is to detail and critique your decision protocols at each decision-making point within the math pathway. The following example illustrates this process.

Consider the highlighted decision in our pathways from our sample sequence. (Remember, the team should have similar table for each decision.)

In the table, you should identify courses from which and to which the student is being considered to move. In our example, the student is being considered for a move from 6th Pre-Algebra to 7th Algebra. (The other options would be for the student to move from Pre-Algebra in Grade 6 to Algebra 1A or repeat Pre-Algebra in Grade 7.)



Pathway Decision: Placement from 6th Pre-Algebra to 7th Algebra 1

| Data Source | Criteria | Considerations |
|---|--|--|
| <i>PVAAS Projection – 6th to Keystone Algebra</i> | <i>Prob of Proficient $\geq 70\%$</i> | <i>May provide most informative data and insight into future performance</i> |
| <i>PVAAS Projection – 5th to 7th Math</i> | <i>Prob of Proficient $\geq 70\%$</i> | <i>May be too high and exclude potential students</i> |
| <i>PVAAS Projection – 5th to 7th ELA</i> | <i>Prob of Proficient $\geq 70\%$</i> | <i>Consider impact of ELA performance on Mathematics.</i> |
| <i>PSSA 5th Math</i> | <i>Advanced or Proficient</i> | <i>Informative</i> |
| <i>PSSA 5th ELA</i> | <i>Advanced or Proficient</i> | <i>Consider impact of ELA performance on Mathematics.</i> |
| <i>Teacher Recommendation</i> | <i>Algebra 1</i> | <i>Informative</i> |
| <i>District Midyear Benchmark</i> | <i>Above grade level</i> | <i>Informative</i> |

In order to complete the *Considerations* column, the committee should discuss the following questions. The sample answers provided here reflect the completed chart *Considerations* column, shown above. Space is provided in the [Appendix, Step 4.2](#) to record the team’s discussion.

1. *Do the achievement and growth reports of the students who are currently placed in Algebra I indicate that the placement was appropriate? Are all of the students performing and growing as your placement process anticipated?*

Answer: It is recommended that you consider the performance of currently placed students in relation to the data indicators listed in your table. For example, you could find that several students whose PVAAS probabilities of being proficient on 5th grade to 7th grade PSSA Math test were in the 60%-65% level are doing very well in their current course placement. Similarly, all other sources should be investigated utilizing students who have been placed in the selected course.

2. *Are you considering all data that is available and may be helpful in the placement process? If not, what other data are available?*

Answer: May like to include more specific non-academic data, in addition to the teacher recommendation (e.g., attendance, discipline, organizational skills)

3. *What are the changes in the course placement decision protocol that are recommended for implementation?*

Answer: An analysis of the placement decisions of current successful and current unsuccessful students could indicate that this scheme appears to be appropriate for students who have a history of higher achievement, but not working for students who have a history of lower achievement.

A concern has been noted that there are several students who were placed in Algebra IA that could have been successful in Algebra I. These students are performing at a high level and appear not be substantially challenged by the demands of Algebra IA. There appears to be a need for reconsideration of the data sources and criteria.



Your Turn: Detail and Critique Your Existing Placement and Decision Protocols

The team is now ready to critique their current decision-making criteria, using the template provided in [Appendix A, Step 4.2](#). This should be done for every course placement decision throughout the pathway.

Doing this work will establish the consensus needed to revise or refine your LEA/school’s current decision protocols. Remember: this section is merely to provide a forum for discussion of your current criteria.

4.3 Design or Re-Design Your Decision Criterion Protocols

At this point in the process, the team has documented and considered the current course decision protocols for each of the decision points along the way. It is likely that the team has identified areas where the decision criterion may need revised or re-designed in total! The following information offers suggestions for “tightening” decision-making protocols relative to pathway decisions for students.

There are many ways to use the data to determine the recommendation for or against advancement. This guide provides three methods for consideration in enhancing your protocol development to include quantifiable measures. After studying the examples, the team should then discuss and make a tentative choice of methods to use in your LEA/district. Please note that these are examples only, and not intended to be required criteria. LEAs/districts make these determinations. Placement into Honors Math 6 is ONLY used as an example to illustrate the three methods for criteria.

Each of the three method options are illustrated below:

Criteria for Placement into Honors Math 6

| Data Source | Criteria for Each Data Source (Target) |
|---|---|
| <i>PSSA Math – 4th Gr</i> | <i>High Proficient – Scale Score \geq 1090</i> |
| <i>PSSA ELA – 4th Gr</i> | <i>High Proficient – Scale Score \geq 1050</i> |
| <i>PVAAS Projection to 5th Gr Math (Proficient)</i> | <i>Probability \geq 70%</i> |
| <i>PVAAS Projection to 6th Gr Math (Proficient)</i> | <i>Probability \geq 70%</i> |
| <i>District Common 4th Gr Math Test</i> | <i>B – or better</i> |
| <i>Class Grade – Midterm 5th Gr</i> | <i>B – or better</i> |
| <i>Attendance</i> | <i>Consistent Attendance</i> |

NOTE: LEAs will want to check the scores for high proficient/advanced with PDE cut scores to ensure the use of the appropriate score.

Method 1: Decision based on Total Number of Targets

Criteria for Placement into Honors Math 6

Student: _____

| Data Source | Target for Each Data Source | Yes | No |
|---|--|-----|----|
| <i>PVAAS Projection to 5th Gr Math (Proficient)</i> | <i>Probability \geq 70%</i> | | |
| <i>PVAAS Projection to 6th Gr Math (Proficient)</i> | <i>Probability \geq 70%</i> | | |
| <i>PSSA Math – 4th Gr</i> | <i>High Proficient – Scale Score \geq 1090</i> | | |
| <i>PSSA ELA – 4th Gr</i> | <i>High Proficient – Scale Score \geq 1050</i> | | |
| <i>District Uniform 4th Gr Math Test</i> | <i>B – or better</i> | | |
| <i>Class Grade – Midterm 5th Gr</i> | <i>B – or better</i> | | |
| <i>Attendance</i> | <i>Consistent attendance (LEA decision to establish specific criteria)</i> | | |
| <i>Totals</i> | | | |
| Criterion: <i>minimum of 4 Yes's</i> | Decision: | | |

NOTE: LEAs will want to check the scores for high proficient/advanced with PDE cut scores to ensure the use of the appropriate score.

Method 1: This method totals the number of target values that met by the candidate. This total is next compared to the criteria that is set in advance by the LEA/district team.

Advantage: Very simple to tabulate **Disadvantage:** Categories considered of equal weight

Method 2: Decision Based on Total Weighting of Targets

Criteria for Placement into Honors Math 6

Student: _____

| Data Source | Target for Each Data Source | Weight | Achieved |
|---|--|-------------|----------|
| <i>PVAAS Projection to 5th Gr Math (Proficient)</i> | <i>Probability \geq 70%</i> | | |
| <i>PVAAS Projection to 6th Gr Math (Proficient)</i> | <i>Probability \geq 70%</i> | | |
| <i>PSSA Math – 4th Gr</i> | <i>High Proficient – Scale Score \geq 1090</i> | | |
| <i>PSSA ELA – 4th Gr</i> | <i>High Proficient – Scale Score \geq 1050</i> | | |
| <i>Class Grade – Midterm 5th Gr</i> | <i>B – or better</i> | | |
| <i>Attendance</i> | <i>Consistent attendance (LEA decision to establish specific criteria)</i> | | |
| <i>Totals</i> | | <i>100%</i> | |
| Criterion: <i>minimum of 70% Achieved</i> | Decision: | | |

NOTE: LEAs will want to check the scores for high proficient/advanced with PDE cut scores to ensure the use of the appropriate score.

Method 2: This method requires that each category be assigned a weight in advance. The candidate is evaluated in each category and an achievement level is indicated. The level values achieved in each category are totaled and that total is compared to the criteria that is set in advance by the administrative team.

Advantage: Categories can have different possible values; all categories are evaluated with achievement level designations.

Disadvantage: Students either achieve the target, or they don't.

Method 3: Decision based on Weighted Point Values

Criteria for Placement into 6th Honors Math

Student: _____

| Data Source | Possible Values | Points | Weights | Weighted Score |
|--|---|-------------|---------|----------------|
| PSSA Math – 4th Gr | Advanced = 10 Basic = 4 Proficient = 7 Below Basic = 0 | | .15 | |
| PSSA ELA – 4th Gr | Advanced = 10 Basic = 4 Proficient = 7 Below Basic = 0 | | .15 | |
| PVAAS Projection to 5th Gr Math (Proficient) | Between 70–100% = 10 Between 40–50% = 5 Between 0–40% = 0 | | .20 | |
| PVAAS Projection to 6th Gr Math (Proficient) | Between 70–100% = 10 Between 40–50% = 5 Between 0–40% = 0 | | .20 | |
| Class Grade – Midterm 5th Gr | A = 10 B = 7 C = 4 D = 0 F = 0 | | .20* | |
| Attendance | Consistent Attendance (LEA decision to establish specific criteria) | | .10 | |
| Totals | | 100% | | |
| Criterion: Minimum Points Achieved = | Decision: | | | |

*LEAs will want to consider the weighting of grades based on how grades are derived and the relationship of the grade to academic performance.

NOTE: LEAs will want to check the scores for high proficient/advanced with PDE cut scores to ensure the use of the appropriate score.

Method 3: This method requires that the weight of each target data element be assigned in advance. The product of the value and weight in each category are totaled and that total is compared to the criteria that is set in advance by the administrative team.

Advantage: Categories can have different values and weights.

Disadvantage: Best implemented with technology, such as Excel. Detailed process required.

Your Turn: Design or Re-Design Your Decisions Protocol

In [Appendix A, Step 4.3](#), blank templates for all three decision methods are included. The team should determine which of the options work best in your setting and enhance your earlier decision-making protocol using one of these methods. Refer to [Appendix B](#) to also include an important step that details using “live” data to test your decisions.

STEP 5: Bring It All Together!

Merge your math pathways with your decision criteria.

The last step in the process is to merge sequences in your pathways to the placement protocols you develop for each course. Below is a sample of such a merge for middle school mathematics pathways leading to Algebra I. The process can and should be duplicated for all courses.

Sequence Placement Criteria Template

| 5th | 6th | 6th | 7th | 8th |
|--------|---------------|---------------|--------|-------------|
| | | | | Alg 1 |
| | Honors Math 6 | Honors Math 6 | PreAlg | |
| Math 5 | | | | 8th Pre-Alg |
| | Math 6 | Math 6 | Math 7 | |
| | | | | Math 8 |

| 5th to 6th | | 6th to 7th | | | 7th to 8th | | |
|---------------------------|--------------------------|---------------------------|--------------------------|--------------------------|---------------------------|--------------------------|--------------------------|
| Data | Math 5 to Honors Math 6 | Data | Honors Math 6 to Pre-Alg | Math 6 to Pre-Alg | Data | Pre-Alg to Alg 1 | Math 8 to Pre-Alg |
| 5 Proj to 5 Math | Be > 70% Likelihood ADV | 6 Proj to 6 Math | Be > 70% Likelihood ADV | Be > 70% Likelihood ADV | 7 Proj to 7 Math | Be > 70% Likelihood ADV | Be > 70% Likelihood ADV |
| 5 Proj to 6 Math | Be > 70% Likelihood PROF | 6 Pro to 7 Math | Be > 70% Likelihood PROF | Be > 70% Likelihood PROF | 7 Pro to 8 Math | Be > 70% Likelihood PROF | Be > 70% Likelihood PROF |
| | | 6 Proj to Alg 1 | Be > 70% Likelihood PROF | Be > 70% Likelihood PROF | 7 Proj to Alg 1 | Be > 70% Likelihood PROF | Be > 70% Likelihood PROF |
| 5 th Mid Grade | A or A- | 6 th Mid Grade | A or A- | A | 7 th Mid Grade | A or A- | Above C+ |
| 4 th PSSA Math | Advanced | 5 th PSSA Math | Advanced | Advanced | 6 th PSSA Math | Advanced | Proficient |
| 4 th PSSA ELA | Proficient | 5 th PSSA ELA | Proficient | Proficient | 6 th PSSA ELA | Proficient | Proficient |
| 5 th CDT | Blue | 6 th CDT | Blue | Blue | 7 th CDT | Blue | Green |
| Teacher Rec | Honors Math 6 | Teacher Rec | Pre-Alg | Pre-Alg | Teacher Rec | Algebra | Pre-Alg |
| Rule | 5 of 7 | Rule | 6 of 8 | 6 of 8 | Rule | 6 of 8 | 6 of 8 |
| Otherwise | Math 6 | Otherwise | Math 7 | Math 7 | Otherwise | 8th Pre-Alg | Math 8 |

In this sample, note that all decisions are documented: data sources are listed with targets; decision rules and outcomes if criteria are not met are also listed at the bottom of each decision table.

Your Turn: Complete the Sequence Placement Criteria Template

Document and communicate your decision-making sequence and placement decision-making criteria using the templates in the [Appendix A Workbook, Step 5](#).

Determine when the team will review the protocols and assess the effectiveness of the criteria. This review should be completed once per year. Consider information from mathematics teachers, PVAAS scores, PSSA data, and Keynote data to determine if the placement criteria need to be adjusted, or if additional factors must be considered (e.g., attendance record, students' performance in ELA, etc.)

Additional Considerations:

- **Alignment to Mathematics Assessment Anchors and Eligible Content**

Alignment of curriculum, instruction, and assessment to the PA Standards at each grade and course level is essential. Even with a newly revised math pathways and a comprehensive data profile, student outcomes will be negatively impacted if there is a lack of alignment. Alignment work is a necessary and continuous follow-up to the work created here and creates a forum for further collaboration of teachers of mathematics.

- **Curriculum Compacting**

For a flexible math pathway to be effective, it will be necessary that teachers of mathematics are able to compact the curriculum as needed. For example, a student enrolled in Alg 1 in grade 8 must also have critical content in the grade 8 math standards addressed while being advanced into Alg 1 in grade 8.

- **Differentiating Instruction**

Even with multiple flexible math pathways in place, it is still important that math teachers are able to provide differentiated instruction within each classroom.

- **Algebra Across the K-12 Curriculum**

As an extension to the algebra pathways discussions, teams may need to address the extent to which the K-12 mathematics curriculum prepares all students to reason algebraically and engage in algebraic concepts and processes. This is an essential step to ensure each and every student has access to the mathematics content and experiences necessary to develop the competencies needed to be successful in an Algebra 1 course. [PDE's website](#) indicates that with a standards-based system “students who have mastered the content and skills through the seventh grade will be well prepared for algebra in grade 8.

The team may engage in this work by examining the K-8 mathematics curriculum for coherent and cohesive opportunities to engage all students in algebraic reasoning. They may identify areas where tasks/problems can be algebrafied across all grade levels; i.e. where typical arithmetic problems are changed to problems requiring algebraic reasoning.

Some discussion points to consider include:

- *How can algebraic thinking be promoted through physical/concrete manipulatives? Real-world contexts? Structure in patterns? Various technologies?*
- *How does the K-8 curriculum promote a coherent emphasis on the precision of language, specifically the language of algebra?*
- *Do the teachers of mathematics have the knowledge and practices needed to support promoting algebraic reasoning and experiences across elementary and middle classrooms?*

Appendix A:

Templates & Worksheets

Step 1: Prep Your Team

1.2 Build shared beliefs and knowledge base about Algebra 1

Use this worksheet to document relevant discussion points and the final consensus.

| Question | Comments | Consensus |
|--|----------|-----------|
| 1. Is there one, single Algebra and/or mathematics pathway that is effective for all students? | | |
| 2. Are all students ready to study a full course of Algebra 1 at the same grade level? Does Algebra 1 take all students the same amount of time? | | |
| 3. Should proficiency in computation be a criterion for placement in Alg 1? | | |
| 4. What possible factors may impede students' competency with Alg 1? | | |
| 5. What skills/abilities do students need to be competent in an Algebra 1 course? | | |
| 6. Should a student's level of reading and writing be considered in evaluating student readiness for placement in an Algebra 1 course? | | |
| 7. Does Algebra readiness include variables such as organization skills and perseverance? | | |

Step 2.1 Plot Your Current Pathways

Detail graphically how your students proceed through your mathematics education system.

- If possible, include your math content/department chair, and others involved with scheduling (such as school counselors) as you work through this task .
- Include indications of progression (arrows) through courses/grades based on level of success or lack of success.
- Include all optional pathways through each sequence in your program and any opportunities for changing sequences.

| K | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|---|---|---|---|---|---|---|---|---|---|----|----|----|
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
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Step 3.1 Achievement and Growth Data

1

3

| | PVAAS Value Added (refer to VA Report and use filters) | | PSSA Keystone (% Proficient/Advanced) | | |
|----------------|---|--|--|---------------|---------------|
| | Most Recent Year | Previous Years (3-year avg. if available) | Most Recent Year | Previous Year | Previous Year |
| Gr. 5 Math | | | | | |
| Gr. 6 Math | | | | | |
| Gr. 7 Math | | | | | |
| Gr 8 Math | | | | | |
| Keystone Alg 1 | | | | | |
| 2 | Growth of Student Groups findings: | | | | |
| | | | | | |

Step 3.4 Create and/or Revise Your Math Pathways

The questions below are to be discussed as you create or re-create your pathways.

1. Are the pathways designed to allow students to advance from one pathway to another?
2. Are the pathways designed to provide opportunities for students to change pathways if they are not successful in their original placement?
3. Does your data support the current pathways?
4. Is there consensus among your team that your current sequence addresses the needs of your students and is consistent with the district resources available?

Use this template to make changes to your existing Mathematics pathways. Be sure to evaluate this recreated pathway with the discussion points in Step 3.4 of this guide, listed above.

| K | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|---|---|---|---|---|---|---|---|---|---|----|----|----|
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
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Step 4.1 Criteria for Placement: Data Sources and Targets

Criteria for Placement: Data Sources & Targets

Complete a table for EACH option in your sequence.

Note: LEAs will want to check the scores for high proficient/advanced with PDE cut scores to ensure the use of the appropriate score.

Criteria for Placement into:

| Data Source | Criteria for Each Data Source (Target) |
|-------------|--|
| | |
| | |
| | |
| | |
| | |
| | |

Criteria for Placement into:

| Data Source | Criteria for Each Data Source (Target) |
|-------------|--|
| | |
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| | |
| | |
| | |
| | |

Criteria for Placement into:

| Data Source | Criteria for Each Data Source (Target) |
|-------------|--|
| | |
| | |
| | |
| | |
| | |
| | |

Step 4.2 Detail and Critique Your Existing Placement and Decision Protocols

| Data Source | Criteria | Considerations |
|-------------|----------|----------------|
| | | |
| | | |
| | | |
| | | |

Respond to the following questions regarding this decision process. Use the space provided to document the team's discussion.

- 1. Do the achievement and growth reports of the students who were placed in these courses indicated that the placement was appropriate? Are all students performing and growing as your placement process anticipated?*

- 2. Are you considering all data that is available and may be helpful in the placement process? If not, what other data are available?*

- 3. What are the changes in the course placement decision protocol that are recommended for implementation?*

Step 4.3 Design or Re-Design Your Decision Protocol

These templates are provided as options for your use in choosing or designing a process in your setting. The committee may choose to develop a unique one that addresses your needs specifically.

Method 1: Decision based on Total Number of Targets

Criteria for Placement/Continuation into: _____

Student: _____

| Data Source | Target for Each Data Source | Yes | No |
|---|-----------------------------|-----|----|
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| <i>Totals</i> | | | |
| Criterion: Minimum of ____ Yes's | Decision: | | |

NOTE: LEAs will want to check the scores for high proficient/advanced with PDE cut scores to ensure the use of the appropriate score.

Method 2: Decision based on Total Weighting of Targets

Criteria for Placement/Continuation into: _____

Student: _____

| Data Source | Target for Each Data Source | Weight | Achieved |
|--|-----------------------------|--------|----------|
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| <i>Totals</i> | | 100% | |
| Criterion: minimum of _____% Achieved | Decision: | | |

NOTE: LEAs will want to check the scores for high proficient/advanced with PDE cut scores to ensure the use of the appropriate score.

Method 3: Decision based on a Holistic Evaluation of Target Points

Criteria for Placement into: _____

Student: _____

| Data Source | Possible Values | Weights | Points Achieved |
|---|---|---------|-----------------|
| PSSA Gr____ Math | Advanced = Proficient = Basic = | | |
| PSSA Gr____ ELA | Advanced = Proficient = Basic = Below Basic = | | |
| PVAAS Projection to Gr ____ Math (Proficient) | Probability >70% = Probability 40-70% = Probability < 40% = | | |
| PVAAS Projection to Gr ____ Math (Proficient) | Probability >70% = Probability 40-70% = Probability < 40% = | | |
| Class Grade | A = B = C = D = F = | | |
| Attendance | | | |
| <i>Totals</i> | | 100% | |
| Criterion: Minimum Points Achieved = | Decision: | | |

NOTE: LEAs will want to check the scores for high proficient/advanced with PDE cut scores to ensure the use of the appropriate score.

Step 5: Bring It All Together

Merge your math pathways with your decision criteria.

Mathematics Pathway

| K | 1st | 2nd | 3rd | 4th | 5th | 6th | 7th | 8th | 9th | 10th | 11th | 12th |
|---|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|
| | | | | | | | | | | | | |
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If you are using Adobe Reader to complete this chart electronically, you may open the Drawing menu to draw arrows. (Depending on which version you are using, this may be under the "Comment" tool. Click "View", then "Tools", then "Comment", and "Open.")

Sequence Placement Criteria Templates

| _____ to _____ | | |
|------------------|--|--|
| Data | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| Rule | | |
| Otherwise | | |

Appendix B:

Test Your Decision Protocol

After you have developed decision-making protocols for each of the course/pathway decision points along the way, your team may choose to test the decision protocol. Testing your decision protocols is a helpful next step in evaluating the usefulness and even accuracy of your protocols

How do we test our decision protocols?

The key to testing and refining your Decision Protocol is to evaluate the decision that would have been made in the cases of students who have already completed the course.

NOTE: Test both successful and unsuccessful students to see if the protocol will filter students appropriately!

Also, expect that the protocols that are determined will undoubtedly have to be adjusted each year as more information becomes available and as the qualifications and achievement histories of students' changes. For example, if your elementary program shows increased student outcomes (changes in proficiency levels) at some point in the future, criteria for placement in advanced middle school options may need to be adjusted.

It should also be understood that these protocols, no matter how carefully designed, should be considered **ONLY AS A RECOMMENDATION**. Placement of students is a very complex process and should never be determined **ONLY** on the basis of a data-based protocol. The educational professionals ultimately must take responsibility for the decisions; however, protocols provide the best information to inform the educators' decisions.

Case Studies

The case studies on the following pages exemplify the point of the last paragraph above. Placement of students is not an exact science and any profile based only on numerical data should never be considered automatic. Data provide recommendations **ONLY**.

Case 1

Student Current in Grade 5

Decision Time: Spring

| Schedule Decision? 6th Grade Accelerated (Placement) | | | |
|--|--------------------------|---------------------|------------|
| Source | Criteria | Student Data | Evaluation |
| PSSA 4th Grade Math | Scaled Score \geq 1090 | Scaled Score = 1097 | + |
| PVAAS Project (Advanced) • 5th to 6th Math | Prob > 90% | 85% | - |
| Math Class Grade | A- or better | C | - |
| 5th Gr Math Teacher | Positive Rec | No | - |
| Student must meet <u>3</u> of <u>4</u> criteria | | | |

NOTE: LEAs will want to check the scores for high proficient/advanced with PDE cut scores to ensure the use of the appropriate score.

Considerations:

1. This student has met the criterion of performance on the 4th grade PSSA Math test.
2. The PVAAS projection to Advanced from 5th grade to 6th grade is a bit weaker than the standard chosen for that data. It is relatively close.
3. The Math Class Grade is well below the stated criteria. It may be useful to determine how well the overall average of C reflects the student's current level of understanding. This student may have experienced significant issues in the beginning of the year that have been addressed and overcome.
4. It is always suggested to have teachers supply reasons for their recommendation. It is very valuable to have qualities of perseverance, organizational skills, attitudes, etc. considered in the decision process, made as objective as possible through the use of a rubric for those evaluative judgements.

A Closer Look

According to the criteria needed, this student doesn't meet the evaluation criteria for entering 6th Accelerated Math. However, the ultimate decision is to place the student in 6th Accelerated. Why? What might the thinking be to make an exception in this student's case?

1. School team acknowledges that their grading practices are not uniform as to what goes into the final grade – notes that they currently have significant differences in grading practices between the 5th grade teachers.
2. Upon digging deeper, this student's C grade was impacted by a first marking period of a low D average, and grades improved throughout the year, but the averaging resulted in a high C regardless of improvement.
3. Teacher recommendation is NO, but upon further discussion this teacher indicated that she said "NO" based on this student's belief that he was "not good in math". However, achievement history of advanced and 85% probability, along with very strong ELA skills prompted the decision to place in accelerated math, with close monitoring.

Clearly these decisions are not automatic! They require professional discussions.

Case 2

Student Current in 7th Pre-Algebra

Decision Time: Spring

| Schedule Decision? <i>8th Algebra I</i> | | | |
|---|---------------------|---------------------|------------|
| Source | Criteria | Student Data | Evaluation |
| PSSA Math | Scaled Score > 1000 | Scaled Score = 1105 | + |
| PVAAS Project (Prof) • 6th to 8th Math • 6th to Algebra I | Prob > 60% | 55% | - |
| | Prob > 40% | 50% | + |
| District Midterm Exam Grade | A- or better | B+ | - |
| 7th Gr Math Teacher | Positive Rec | No | - |
| Student must meet <u> 3 </u> of <u> 5 </u> criteria | | | |

NOTE: LEAs will want to check the scores for high proficient/advanced with PDE cut scores to ensure the use of the appropriate score.

This example poses a substantial challenge that may not be uncommon in your LEA/district. The student misses the required number of positive indicators by only one category of the established criteria. However, notice that the student is only 5% below the criteria for the PVAAS projection from 6th to 8th Math and the student's District Midterm Exam Grade is slightly below the minimum level. This situation suggests that perhaps more investigation should occur before a decision is made.

Note: this procedure should be repeated regularly (at least once each year) as the profile of the student is quite variable over time. Both achievement, measured by state and local assessments, as well as the robust PVAAS projections for each student and each target change based on new information.

Activity: Case Study Review and Discussion

Your committee may choose to spend time discussing these two case studies in order to establish a common understanding of the importance of flexibility in the decision-making process, even with well-established protocols in place. See the Appendix (Workbook) for space to make notes during your discussion.

Test Your Decision Protocol – Case Study Discussion

Review and discuss the two Case Studies. This task is designed to establish a common understanding of the importance of flexibility in the decision-making process, even with well-established protocols in place. Use the space below to make notes during your discussion.

Case Study 1 Discussion Notes:

Case Study 2 Discussion Notes:

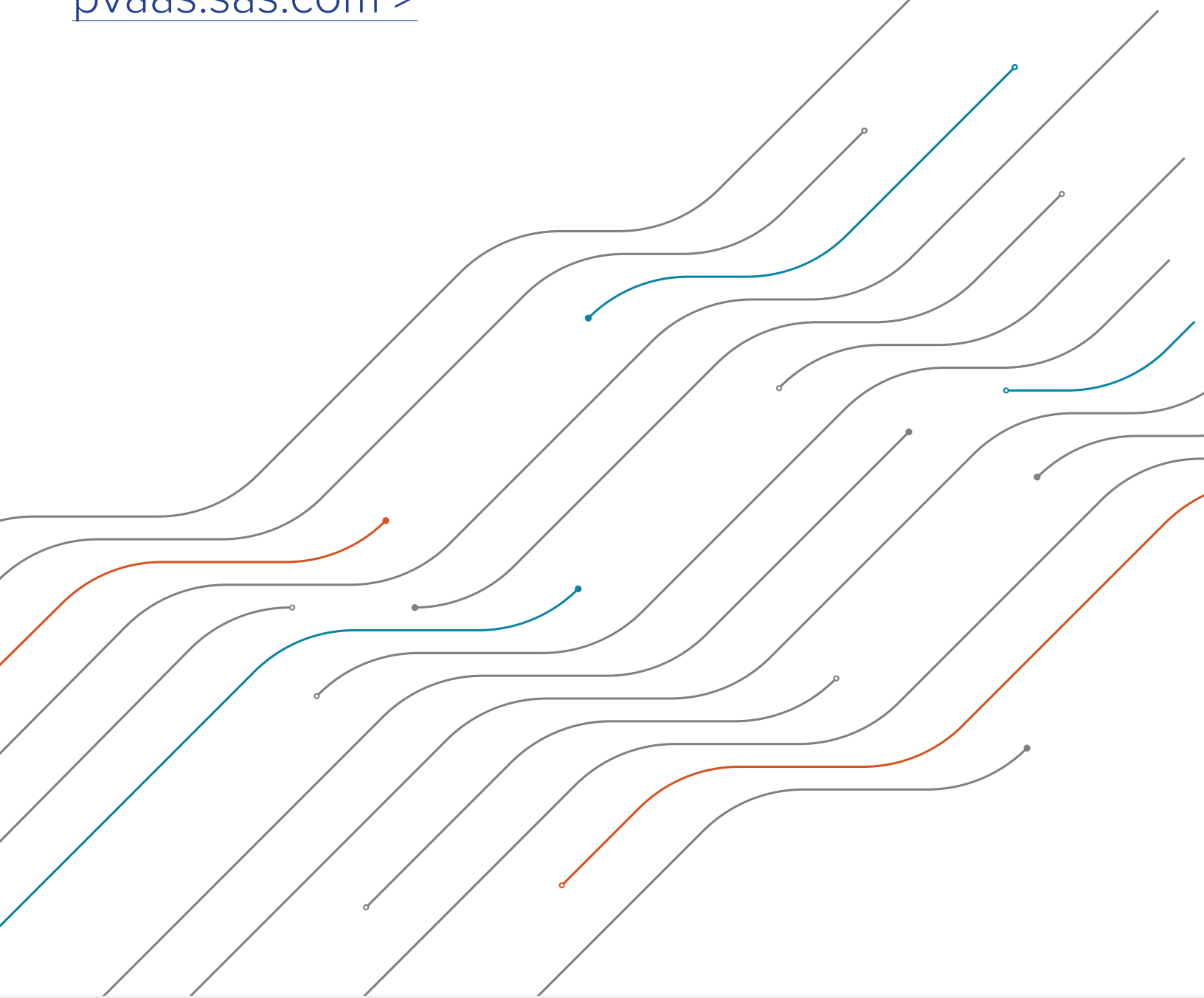
Appendix C:

Resources

1. Education for the Future: edforthefuture.com
2. Hess' Cognitive Matrix/Webb's Depth of Knowledge: static.pdesas.org/content/documents/M2-Activity_2_Handout.pdf
3. Keystone Algebra I Assessment Anchors and Eligible Content: <https://www.education.pa.gov/K-12/Assessment%20and%20Accountability/Keystones/Pages/AssessmentAnchors.aspx>
4. Keystone Algebra I Item Sampler: <https://www.education.pa.gov/Documents/K-12/Assessment%20and%20Accountability/Keystone%20Exams/Keystone%20Exams%20Item%20and%20Scoring%20Samplers/2021%20Keystone%20ISS%20Algebra%20I.pdf>
5. Math Assessment Anchors and Eligible Content: pdesas.org/Page?pagelD=12
6. Math Core Standards: static.pdesas.org/content/documents/PA%20Core%20Standards%20Mathematics%20PreK-12%20March%202014.pdf
7. Math Item Sampler: education.pa.gov/K-12/Assessment%20and%20Accountability/PSSA/Pages/Mathematics.aspx
8. Multiple Measures, by Victoria L. Bernhardt: nces.ed.gov/pubs2007/curriculum/pdf/multiple_measures.pdf
9. National Council of Teachers of Mathematics: nctm.org
10. PA Standards Aligned System (SAS) Portal: pdesas.org
11. Principles to Actions Executive Summary: nctm.org/uploadedFiles/Standards_and_Positions/PtAExecutiveSummary.pdf
12. PVAAS Reporting Site: pvaas.sas.com
13. Standards for Mathematical Practice: static.pdesas.org/content/documents/Bulleed_Mathematical_Practices.pdf

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