

# Prince William County Public Schools

## Middle School Mathematics Placement Requirements And Frequently Asked Questions





## **What are the mathematics pathways in middle school?**

PWCS offers three options in middle school mathematics.

### Traditional Pathway

Students in this pathway are in a grade-level appropriate course, learning mathematics at the pace suggested by the Standards of Learning. Students in this path would take Math 6 in grade 6, Math 7 in grade 7, Math 8 in grade 8, and Algebra I in 9<sup>th</sup> grade. Children who take Algebra I in 9<sup>th</sup> grade can master four years of high school mathematics, possibly culminating in a pre-calculus class or AP Statistics, and should be well prepared mathematically to compete for admission to the best colleges and universities.

### Accelerated Pathway

Students in this pathway accelerate the learning of middle school content, learning three years of content in two years. Math 6 Extended contains all the content from Math 6 and approximately half of the content from Math 7. Math 7 Extended contains the rest of the content from Math 7 and all the content from Math 8. Students in this path would take Math 6 Extended in grade 6, Math 7 Extending in grade 7, and Advanced Algebra I in grade 8. As students in this pathway learn math at a more rapid pace, it is necessary that they have demonstrated a high level of mastery of Kindergarten through Grade 5 Mathematics.

### Promoted Pathway

Students in this pathway enter middle school in Math 7 Extended as a sixth grader. This means that the student will not receive formal instruction on the content from Math 6 and some of Math 7. After successful completion of Math 7 Extended, a student would enroll in Advanced Algebra I in grade 7 and Advanced Geometry in grade 8. As students in this pathway will be skipping some content, it is essential that they have demonstrated a high level of mastery of Kindergarten through Grade 5 Mathematics and show evidence of a deep understanding of number relationships.

<b>PWCS Requirements for Mathematics Placement in Middle School</b>	
<b>Accelerated Placement for Rising 6<sup>th</sup> graders</b>	<b>Promoted Placement for Rising 6<sup>th</sup> graders</b>
<p><b>Math 6 Extended</b> Most students who meet the following criteria are likely to be successful in Math 6 Extended:</p> <ul style="list-style-type: none"> <li>• Math 5 SOL test score of <b>475*</b> or higher;</li> <li>• Scored 8 or higher on the classroom performance rubric including common unit assessments, quarter grades, and teacher evaluation of problem solving, mathematical reasoning, and communication.</li> <li>• Parent permission to take an accelerated sequence of courses.</li> </ul> <p>*Students with 465 - 474 SOL test score may be successful.</p>	<p><b>Math 7 Extended</b> <i>This path should be recommended with great care.</i> In order to be <u>screened</u> for placement into Math 7 Extended as a 6<sup>th</sup> grader, a student should have:</p> <ul style="list-style-type: none"> <li>• Math 5 SOL test score of <b>500</b> or higher;</li> <li>• Parent permission to take the Iowa Algebra Aptitude Test. (IAAT)</li> </ul> <p>In order to be placed in Math 7 Extended as a 6<sup>th</sup> grader a student should have:</p> <ul style="list-style-type: none"> <li>• Scored in the 81<sup>st</sup> percentile or higher on the IAAT.</li> <li>• Scored 500 or higher on the Math 5 SOL</li> <li>• Scored 10 or higher on the classroom performance rubric including common unit assessments, quarter grades, and teacher evaluation of problem solving, mathematical reasoning, and communication.</li> </ul>
<b>Accelerated Placement for Rising 7<sup>th</sup> graders</b>	<b>Promoted Placement for Rising 7<sup>th</sup> graders</b>
<p><b>Math 7 Extended</b> Most students who meet the following criteria are likely to be successful in Math 7 Extended:</p> <ul style="list-style-type: none"> <li>• Math 6 SOL test score of <b>460*</b> or higher;</li> <li>• “C” average or better in Math 6 Extended;</li> </ul> <p>Math 6 Extended teacher’s observations and support and parent input is considered.</p> <p>*Students with 450-459 SOL test score may be successful.</p>	<p><b>Advanced Algebra I</b> Most students who meet the following criteria are likely to be successful in Advanced Algebra I:</p> <ul style="list-style-type: none"> <li>• Math 8 SOL test score of <b>465</b> or higher,</li> <li>• Completion of Math 7 Extended with a solid “B” average; and</li> <li>• Math 7 Extended teacher’s observation and support and parent input is considered.</li> </ul>
<b>Accelerated Placement for Rising 8<sup>th</sup> graders</b>	<b>Promoted Placement for Rising 8<sup>th</sup> graders</b>
<p><b>Advanced Algebra I</b> Most students who meet the following criteria are likely to be successful in Advanced Algebra I:</p> <ul style="list-style-type: none"> <li>• Passed the Math 8 SOL test;</li> <li>• Completion of Math 7 Extended with at least a “C” average; and</li> </ul> <p>Math 7 Extended teacher’s observations and support and parent input is considered.</p>	<p><b>Advanced Geometry</b> Most students who meet the following criteria are likely to be successful in Advanced Geometry:</p> <ul style="list-style-type: none"> <li>• Completion of Advanced Algebra I with a verified credit and minimum of a “B” average.</li> </ul>

Each year PWCS will evaluate the criteria and may make adjustments to the criteria to ensure placements meet the needs of students and their future success in mathematics.

### Why does PWCS offer alternative pathways for math in middle school?

As children progress through their study of mathematics, some begin to acquire math concepts and processes more quickly than others. In some instances, these children can be well served by accelerating their study of mathematics, allowing them to engage with more complex concepts sooner than children who might benefit from the traditional amount of time and instruction. These decisions should be made with great consideration of available data and the indication that students will be ready for success at that level.

### What is the Classroom Performance Rubric?

5<sup>th</sup> grade math classroom teachers complete a rubric that includes student performance on common unit assessments, student quarterly grades, and student mathematical behavior as evidenced in problem solving, mathematical reasoning, and mathematical communication. This table shows how points are assigned.

	5	4	3
Unit Assessments	All Above Standard	Combination of Above and Meet	All Meet
	4	3	2
Grades	All Above Standard	Combination of Above and Meet	All Meet
	3	2	1
Teacher input from rubric below	11-12	9-10	7-8

Above Standard, Meet Standard are terms based on [PWCS Regulation 661-2](#)

Rising Sixth Grade Mathematics Rubric for SY 2022-23				
	4	3	2	1
<b>Problem Solving</b> Consider student's approach to word problems using UPSC or other problem solving process.	<b>Independently</b> solves problems, often through <b>multiple</b> solution paths	Solves problems with <b>limited</b> teacher <b>prompting</b> , typically through <b>one</b> solution path	Solves problems, <b>often</b> with teacher <b>prompting</b>	<b>Rarely</b> solves problems, with teacher <b>prompting</b>
<b>Mathematical Reasoning</b>	<b>Consistently and independently</b> makes sense of new ideas	Makes sense of new ideas with <b>limited</b> teacher <b>prompting</b>	Needs <b>additional time and support</b> to make sense of new ideas	With additional time and supports <b>struggles</b> to make sense of new ideas
<b>Communication</b> (Orally, in writing, pictorially, and/or use of models)	<b>Independently</b> justifies ideas with accuracy and precision	Justifies ideas with accuracy and precision with <b>limited</b> teacher <b>prompting</b>	<b>Sometimes</b> justifies ideas with accuracy and precision <b>often</b> with teacher <b>prompting</b>	<b>Rarely</b> justifies ideas with accuracy and precision with teacher <b>prompting</b>

### Which high school credit-bearing courses are offered in middle school?

Advanced Algebra I contains all standards of Algebra I and select extensions in preparation for Advanced Algebra II

Advanced Geometry contains all standards of Geometry and select extensions for Advanced Algebra II.

### How might taking the accelerated or promoted pathway affect future mathematics?

Taking Advanced Algebra I in 8<sup>th</sup> grade opens doors to children interested in taking the most advanced high school math courses available in Prince William County Public Schools (PWCS). With one math credit in middle school and another four years of math, a child may complete AP Calculus or AP Statistics and earn college credit.

Taking Advanced Algebra in 8<sup>th</sup> grade or 7<sup>th</sup> grade positions a child to satisfy the criteria for applying to Thomas Jefferson High School for Science and Technology, a magnet program offered in Fairfax County open to children from Prince William County. It also positions the child to meet the criteria of completing Advanced Algebra II by the end of 10<sup>th</sup> grade.

Children may further accelerate in math by taking Advanced Geometry through Virtual High School during the summer after completion of Algebra I in 8<sup>th</sup> grade. Some high schools offer Geometry and Algebra II concurrently to children who demonstrate a strong understanding of Algebra I. Contact your child's base high school to see if this is offered.

		9 <sup>th</sup> grade	10 <sup>th</sup> grade	11 <sup>th</sup> grade	12 <sup>th</sup> grade
<b>Accelerated Pathway</b>	<b>AP Schools</b>	Advanced Geometry	Advanced Algebra II	Precalculus	AP Calculus
	<b>IB Schools</b>	Advanced Middle Years Programme Geometry	Advanced Middle Years Programme Algebra II	IB Math: Analysis & Approaches I	IB Math: Analysis & Approaches II
	<b>Cambridge Schools</b>	IGCSE Geometry	IGCSE Advanced Algebra II	AICE Mathematics I	AICE Mathematics II
<b>Promoted Pathway</b>	<b>AP Schools</b>	Advanced Algebra II	Precalculus	AP Calculus	Multivariable Calculus
	<b>IB Schools</b>	Advanced Middle Years Programme Algebra II	IB Math: Analysis & Approaches I	IB Math: Analysis & Approaches II	AP Calculus BC
	<b>Cambridge Schools</b>	IGCSE Advanced Algebra II	AICE Mathematics I	AICE Mathematics II	AP Calculus BC

\*Note: After successful completion of Algebra II, students have the following options of courses in addition to those listed above:

- Trigonometry
- Statistics (General or AP)
- Discrete Math

### Which PWCS schools support this acceleration for children who show the need to accelerate in math?

All middle schools offer Math 6 Extended, Math 7 Extended, and Advanced Algebra I to selected children.

**I have heard that some children complete Geometry in 8<sup>th</sup> grade. How do they do that?**

We have a small group of children in Prince William County who are gifted in the area of mathematics to a degree that merits extraordinary levels of advanced mathematics. In these special situations, children may be able to complete Advanced Geometry by the end of grade 8. The decision to go this route requires additional careful study on the part of parents, children, and staff, because doing so means children do not receive formal instruction on a significant amount of the middle school curriculum.

**Do children have to complete Geometry in Grade 8 to get into Thomas Jefferson High School?**

No. There is a common misconception in the community that children interested in applying to Thomas Jefferson High School for Science and Technology must complete Geometry before entering the 9<sup>th</sup> grade. Many children who apply to Thomas Jefferson are currently enrolled in Geometry. Parents with questions about the requirements for [admission](#) to Thomas Jefferson High School should visit the [Fairfax County Public Schools](#) website for more information.

**Do children have to complete Geometry in Grade 8 to get into the Governor's School @ Innovation Park (GS@IP)?**

At a minimum children need to complete Advanced Geometry by the end of 9<sup>th</sup> grade and Advanced Algebra II by the end of 10<sup>th</sup> grade. To access some of the higher-level courses offered at GS@IP, children may further accelerate by taking Geometry through the Virtual High School during the summer before the 9<sup>th</sup> grade. It is still important that your child be placed appropriately in 6<sup>th</sup> grade so that he/she may master the content and be ready for the challenges of GS@IP.

**What are possible outcomes of taking accelerated or advanced classes?**

Taking the "extended" middle school math sequence with Advanced Algebra I in 8<sup>th</sup> grade

- allows a child to earn a high school Algebra I credit in Grade 8,
- puts a child on a path to complete a calculus course by 12<sup>th</sup> grade,
- satisfies a requirement for an 8<sup>th</sup> grader to apply to Thomas Jefferson High School for Science and Technology, and
- places a child on the path to be prepared for GS@IP and may further accelerate by taking Geometry through the Virtual High School during the summer.

**Based on the outcomes above, why would I consider placing my child in the traditional Grade 6 Math?**

- Selecting a course that challenges your child but does not lead to high levels of frustration will promote confidence, engagement in mathematics, and a continued interest.
- If your child is still developing the foundational concepts, there is a benefit from more time to build a deeper understanding of mathematics and avoid developing gaps that would hinder their progress in advanced math classes.
- With a strong foundation, your child will be able to access advanced math courses in high school such as pre-calculus courses and Advanced Placement Statistics. With non-traditional opportunities such as Virtual High School, your child could further accelerate by taking Geometry as a rising 9<sup>th</sup> grader placing them on the path to completing calculus by graduation.

**What information is used to determine a child's placement in mathematics?**

The decision to place a child into an advanced math course sequence should be based on multiple sources of information. Interest in mathematics by the child and parental requests are important considerations that indicate motivation and available encouragement and support to the child taking on the challenge of more rigorous work. Grades in mathematics class and on common unit assessments as well as teacher recommendations also contribute important information about abilities and past achievement, as well as work habits. SOL test results offer insight into a child's performance against standards for which they have received instruction, but it is important to remember that SOL test scores only reflect how a child did relative to completed course work. SOL tests are not designed to provide predictive value of future performance. Nevertheless, it is an additional measure to include in the decision-making process. The Iowa Algebra Aptitude Test (IAAT) is a standardized measure of potential to learn Algebra. It should be given substantial weight in the decision-making process.

**When might my child take the Iowa Algebra Aptitude Test (IAAT)?**

The Iowa Algebra Aptitude Test 5<sup>th</sup> Edition (60 items) will be administered:

- In June to fifth grade children who scored 500 or above on the Grade 5 Math SOL Test. The test will be administered at their elementary school during the school day.

**How can I continuously monitor the appropriateness of my child's placement?**

Children must maintain a "C" average or above in order to be considered for placement in the next sequential advanced course. If a child has a "C" at the end of the Grade 6 Extended Math and a borderline SOL test score, it is recommended the parent discuss with the child and the teacher options for 7<sup>th</sup> grade. The child may either enroll in Grade 7 Math or Grade 7 Extended Math. If a child has a "D" or "F" at the end of the first quarter or semester, the child should be moved to the appropriate grade level course at that time. Parents and children should be made aware of this policy before placement into the course.

A child who demonstrates exceptional mathematics understanding, but was not initially placed in an advanced course, would be identified by the teacher and moved to the appropriate extended course during the school year. Any child completing Math 6 and moved into Math 7 Extended as a seventh-grade child needs a specific plan for accommodations to ensure the seventh-grade curriculum is covered in its entirety. Children should not be moved from Math 7 or Math 6 Extended directly to Algebra I because doing so would mean that they miss all 8<sup>th</sup> grade standards.

When children move into PWCS, determination for placement is made by each school, based on previous assessment scores, grades, classes taken, and the school's assessment of the mastery level of our objectives.

### **What do I need to consider when I think of placing my child in an alternate pathway?**

All children need time to develop an understanding of mathematical concepts, to think strategically, and to develop the mathematical processes they will need for study of higher-level mathematics. During the middle school years, children are expected not only to master skills, but also to:

- develop proficiency in their mathematical reasoning,
- communicate their mathematical ideas orally and in writing with appropriate precise mathematical terminology,
- make connections between mathematical ideas and with other disciplines,
- represent mathematical ideas in different ways (equations, graphs, tables, diagrams, in words, with models, etc.), and
- be proficient in applying all middle school math knowledge and skills to solve never-before-seen multi-step problems involving critical thinking and use of operations with rational numbers (including positive and negative fractions and decimals).

Three pathways through middle school math are available to meet the needs of children. Parents should be aware that accelerating a child too quickly through math classes and/or skipping over material does not allow them to deeply understand the concepts and their relations to each other. Children who rely on memorization often appear to have mastery in math but may have the hardest struggle in higher level classes because they have not had the opportunity to develop deep understandings.

### **What questions should I ask when considering an alternate pathway?**

- Does your child display interest, curiosity, and inventiveness in doing mathematics?
- Is your child intrinsically motivated to succeed in math?
- Does your child ask for extra math problems in class or at home?
- Does your child enjoy playing games involving numbers, puzzles or logic?
- Does your child find math homework easy, or does he/struggle and need extra help?
- How does your child respond when encountering a difficult problem or a new situation in math that does not have a clear method for solving?
- How organized is your child?
- What does your child's teacher say about your child's understanding of mathematics and how he or she interacts with mathematics?
- How has your child performed on math standards of learning tests?
- What other responsibilities and interests does your child have outside of school that require time?