

5. Use appropriate tools strategically.

Common Core Curriculum Standards

5. Use appropriate tools strategically.

Mathematically proficient students consider the available tools when solving a mathematical problem. These tools might include pencil and paper, concrete models, a ruler, a protractor, a calculator, a spreadsheet, a computer algebra system, a statistical package, or dynamic geometry software. Proficient students are sufficiently familiar with tools appropriate for their grade or course to make sound decisions about when each of these tools might be helpful, recognizing both the insight to be gained and their limitations. For example, mathematically proficient high school students analyze graphs of functions and solutions generated using a graphing calculator. They detect possible errors by strategically using estimation and other mathematical knowledge. When making mathematical models, they know that technology can enable them to visualize the results of varying assumptions, explore consequences, and compare predictions with data. Mathematically proficient students at various grade levels are able to identify relevant external mathematical resources, such as digital content located on a website, and use them to pose or solve problems. They are able to use technological tools to explore and deepen their understanding of concepts.

AVID Curriculum

The Write Path I: Mathematics

- 1.7 Crossing the River
- 1.8 Technical Writing
- 2.3 Socratic Seminar
- 2.5 Geometric Spaghetti
- 3.1 Math Tutorials
- 3.2 Family of Functions
- 3.3 A Dicey Game of Numbers
- 4.7 Sentence Frames

The Write Path II: Mathematics

- 1.1 Cornell Notes – Power Notes
- 1.2 Math Bookmark
- 1.3 Nonlinguistic Representations
- 1.4 Test Corrections
- 2.5 Philosophical Chairs- Investigation of Cone Volume
- 2.6 On Demand Socratic Seminar
- 2.7 The Difference of Two Squares
- 2.8 Networks
- 3.1 Math Tutorials
- 4.3 Reading Comprehension – Looking for Clues
- 4.4 The Whole Picture
- 4.5 Advanced Sentence Frames

6. Attend to precision.

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<p>6. Attend to precision.</p> <p>Mathematically proficient students try to communicate precisely to others. They try to use clear definitions in discussion with others and in their own reasoning. They state the meaning of the symbols they choose, including using the equal sign consistently and appropriately. They are careful about specifying units of measure, and labeling axes to clarify the correspondence with quantities in a problem. They calculate accurately and efficiently, express numerical answers with a degree of precision appropriate for the problem context. In the elementary grades, students give carefully formulated explanations to each other. By the time they reach high school they have learned to examine claims and make explicit use of definitions.</p>	<p><i>The Write Path I: Mathematics</i></p> <ul style="list-style-type: none"> 1.1 Cornell Notes 1.2 Practicing Cornell Notes 1.3 Learning Logs 1.4 Let me think – Reflective Journal 1.7 Crossing the River 1.8 Technical Writing 2.2 Philosophical Chairs 2.3 Socratic Seminar 2.4 Mathematic Symbols 2.5 Geometric Spaghetti 3.1 Math Tutorials 3.2 Family of Functions 3.3 A Dicey Game of Numbers 3.4 Algebra Aerobics 3.5 Four Color Activity 4.1 General Reading 4.2 Text Structures 4.3 KWL 4.4 Concept Definition Map 4.5 PQ5R 4.6 Jigsaw 4.7 Sentence Frames 4.8 Think Aloud 4.9 I Have – Who Has 4.10 Math Dictionary <p><i>The Write Path II: Mathematics</i></p> <ul style="list-style-type: none"> 1.1 Cornell Notes – Interactive Notebooks, Two Column Quiz 1.2 Math Bookmark 1.4 Writing Prompts – Five Ws 1.6 The “Dominant Hand” Exploration 1.7 Three Column Proofs 2.3 Test Preparation: Why, Why, Why, Why? 2.5 Philosophical Chairs- Investigation of Cone Volume 2.6 On Demand Socratic Seminar

Standard 6 (continued)

- 2.7 The Difference of Two Squares
- 3.1 Math Tutorials
- 3.2 Clustering
- 3.3 Algebra Charades
- 3.5 Four Color Functions
- 3.6 Investigating Area under a Curve
- 4.1 Test-Processing Strategies
- 4.2 Highlighting and Annotating a Math Text
- 4.4 The Whole Picture
- 4.5 Advanced Sentence Frames

7. Look for and make use of structure.

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<p>7. Look for and make use of structure.</p> <p>Mathematically proficient students look closely to discern a pattern or structure. Young students, for example, might notice that three and seven more is the same amount as seven and three more, or they may sort a collection of shapes according to how many sides the shapes have. Later, students will see 7×8 equals the well remembered $7 \times 5 + 7 \times 3$, in preparation for learning about the distributive property. In the expression $x^2 + 9x + 14$, older students can see the 14 as 2×7 and the 9 as $2 + 7$. They recognize the significance of an existing line in a geometric figure and can use the strategy of drawing an auxiliary line for solving problems. They also can step back for an overview and shift perspective. They can see complicated things, such as some algebraic expressions, as single objects or as being composed of several objects. For example, they can see $5 - 3(x - y)^2$ as 5 minus a positive number times a square and use that to realize that its value cannot be more than 5 for any real numbers x and y.</p>	<p><i>The Write Path I: Mathematics</i></p> <ul style="list-style-type: none"> 1.7 Crossing the River 2.5 Geometric Spaghetti 3.1 Math Tutorials 3.2 Family of Functions 3.3 A Dicey Game of Numbers 3.5 Four Color Activity 4.7 Sentence Frames 4.9 I Have – Who Has <p><i>The Write Path II: Mathematics</i></p> <ul style="list-style-type: none"> 1.1 Cornell Notes – Interactive Notebook 2.4 Inquiry Cube 2.5 Philosophical Chairs- Investigation of Cone Volume 2.7 The Difference of Two Squares 2.8 Networks 3.1 Math Tutorials 3.4 Complicating Equations 3.5 Four Color Functions 3.6 Investigating Area under a Curve 3.7 Deriving the Quadratic Equation 4.4 The Whole Picture 4.5 Advanced Sentence Frames

8. Look for and express regularity in repeated reasoning.

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Mathematically proficient students notice if calculations are repeated, and look both for general methods and for shortcuts. Upper elementary students might notice when dividing 25 by 11 that they are repeating the same calculations over and over again, and conclude they have a repeating decimal. By paying attention to the calculation of slope as they repeatedly check whether points are on the line through (1, 2) with slope 3, middle school students might abstract the equation $(y - 2)/(x - 1) = 3$. Noticing the regularity in the way terms cancel when expanding $(x - 1)(x + 1)$, $(x - 1)(x^2 + x + 1)$, and $(x - 1)(x^3 + x^2 + x + 1)$ might lead them to the general formula for the sum of a geometric series. As they work to solve a problem, mathematically proficient students maintain oversight of the process, while attending to the details. They continually evaluate the reasonableness of their intermediate results.

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- 2.4 Inquiry Cube
- 2.5 Philosophical Chairs- Investigation of Cone Volume
- 2.7 The Difference of Two Squares
- 2.8 Networks
- 3.1 Math Tutorials
- 3.6 Investigating Area under a Curve