



ABOUT EUREKA MATH

Created by the nonprofit Great Minds, *Eureka Math* helps teachers deliver unparalleled math instruction that provides students with a deep understanding and fluency in math. Crafted by teachers and math scholars, the curriculum carefully sequences the mathematical progressions to maximize coherence from Prekindergarten through Precalculus—a principle tested and proven to be essential in students' mastery of math.

Teachers and students using *Eureka Math* find the trademark "Aha!" moments in *Eureka Math* to be a source of joy and inspiration, lesson after lesson, year after year.

ALIGNED

Eureka Math is the only curriculum found by <u>EdReports.org</u> to align fully with the Common Core State Standards for Mathematics for all grades, Kindergarten through Grade 8. Great Minds offers detailed analyses that demonstrate how each grade of *Eureka Math* aligns with specific state standards. Access these free alignment studies at <u>greatminds.org/state-studies</u>.

DATA

Schools and districts nationwide are experiencing student academic growth and impressive test scores after using *Eureka Math*. See their stories and data at greatminds.org/data.

FULL SUITE OF RESOURCES

As a nonprofit, Great Minds offers the *Eureka Math* curriculum as PDF downloads for free, noncommercial use. Access the free PDFs at greatminds.org/math/curriculum.

The teacher–writers who created the curriculum have also developed essential resources, available only from Great Minds, including the following:

- Printed material in English and Spanish
- Digital resources
- Professional development
- Classroom tools and manipulatives
- Teacher support materials
- Parent resources

Alabama Course of Study: Mathematics Correlation to Eureka Math®

GRADE 3 MATHEMATICS

The Grade 3 Alabama Course of Study: Mathematics are fully covered by the Grade 3 *Eureka Math* curriculum. A detailed analysis of alignment is provided in the table below.

INDICATORS

GREEN indicates the Alabama standard is addressed in Eureka Math.

YELLOW indicates the Alabama standard may not be completely addressed in Eureka Math.

RED indicates the Alabama standard is not addressed in Eureka Math.

BLUE indicates there is a discrepancy between the grade level at which this standard is addressed in Alabama and in *Eureka Math*.

Aligned Components of Eureka Math

1. Make sense of problems and persevere in solving them.

These students start by explaining to themselves the meaning of a problem and looking for entry points to its solution. They analyze givens, constraints, relationships, and goals. They make conjectures about the form and meaning of the solution and plan a solution pathway rather than simply jumping into a solution attempt. These students consider analogous problems and try special cases and simpler forms of the original problem in order to gain insight into its solution. They monitor and evaluate their progress and change course if necessary. Older students might, depending on the context of the problem, transform algebraic expressions or change the viewing window on their graphing calculators to obtain the information they need. Mathematically proficient students can explain correspondences among equations, verbal descriptions, tables, and graphs, or draw diagrams of important features and relationships, graph data, and search for regularity or trends. Younger students might rely on using concrete objects or pictures to help conceptualize and solve a problem. Mathematically proficient students check their answers to problems using a different method, and they continually ask themselves, "Does this make sense?" They can understand the approaches of others to solve complex problems and identify correspondences between different approaches.

Lessons in every module engage students in making sense of problems and persevering in solving them as required by this standard. This practice standard is analogous to the CCSSM Standards for Mathematical Practice 1, which is specifically addressed in the following modules:

G3 M1: Properties of Multiplication and Division and Solving Problems with Units of 2–5 and 10

G3 M3: Multiplication and Division with Units of 0, 1, 6–9, and Multiples of 10

Aligned Components of Eureka Math

2. Reason abstractly and quantitatively.

Mathematically proficient students make sense of quantities and their relationships in problem situations. They bring two complementary abilities to bear on problems involving quantitative relationships. One is the ability to *decontextualize*, to abstract a given situation, represent it symbolically, and manipulate the representing symbols as if they have a life of their own, without necessarily attending to their referents. The second is the ability to *contextualize*, to pause as needed during the manipulation process in order to probe into the referents for the symbols involved. Quantitative reasoning entails habits of creating a coherent representation of the problem at hand; considering the units involved; attending to the meaning of quantities, not just how to compute them; and knowing and flexibly using different properties of operations and objects.

Lessons in every module engage students in reasoning abstractly and quantitatively as required by this standard. This practice standard is analogous to the CCSSM Standards for Mathematical Practice 2, which is specifically addressed in the following modules:

G3 M1: Properties of Multiplication and Division and Solving Problems with Units of 2–5 and 10

G3 M2: Place Value and Problem Solving with Units of Measure

G3 M4: Multiplication and Area

G3 M5: Fractions as Numbers on the Number Line

G3 M6: Collecting and Displaying Data

Aligned Components of Eureka Math

3. Construct viable arguments and critique the reasoning of others.

These students understand and use stated assumptions. definitions, and previously established results in constructing arguments. They make conjectures and build a logical progression of statements to explore the truth of their conjectures. They are able to analyze situations by breaking them into cases, and can recognize and use counterexamples. These students justify their conclusions. communicate them to others, and respond to the arguments of others. They reason inductively about data, making plausible arguments that take into account the context from which the data arose. Mathematically proficient students are also able to compare the effectiveness of two plausible arguments; distinguish correct logic or reasoning from that which is flawed; and, if there is a flaw in an argument, explain what it is. Elementary students can construct arguments using concrete referents such as objects. drawings, diagrams, and actions. Such arguments can make sense and be correct, even though they are not generalized or made formal until the middle or upper grades. Later, students learn to determine domains to which an argument applies. Students in all grades can listen to or read the arguments of others, decide whether they make sense, and ask useful questions to clarify or improve the arguments.

Lessons in every module engage students in constructing viable arguments and critiquing the reasoning of others as required by this standard. This practice standard is analogous to the CCSSM Standards for Mathematical Practice 3, which is specifically addressed in the following modules:

G3 M1: Properties of Multiplication and Division and Solving Problems with Units of 2–5 and 10

G3 M3: Multiplication and Division with Units of 0, 1, 6–9, and Multiples of 10

G3 M4: Multiplication and Area

G3 M5: Fractions as Numbers on the Number Line

Aligned Components of Eureka Math

4. Model with mathematics.

These students can apply the mathematics they know to solve problems arising in everyday life, society, and the workplace. In early grades, this might be as simple as writing an addition equation to describe a situation. In middle grades, students might apply proportional reasoning to plan a school event or analyze a problem in the community. By high school, students might use geometry to solve a design problem or use a function to describe how one quantity of interest depends on another. Mathematically proficient students who can apply what they know are comfortable making assumptions and approximations to simplify a complicated situation, realizing that these may need revision later. They are able to identify important quantities in a practical situation and map their relationships using such tools as diagrams, two-way tables, graphs, flowcharts, and formulas and can analyze those relationships mathematically to draw conclusions. They routinely interpret their mathematical results in the context of the situation and reflect on whether the results make sense, possibly improving the model if it has not served its purpose.

Lessons in every module engage students in modeling with mathematics as required by this standard. This practice standard is analogous to the CCSSM Standards for Mathematical Practice 4, which is specifically addressed in the following modules:

G3 M1: Properties of Multiplication and Division and Solving Problems with Units of 2–5 and 10

G3 M2: Place Value and Problem Solving with Units of Measure

G3 M3: Multiplication and Division with Units of 0, 1, 6–9, and Multiples of 10

Aligned Components of Eureka Math

5. Use appropriate tools strategically.

Mathematically proficient students consider 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 the tools' 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 Web site. and use these to pose or solve problems. They are able to use technological tools to explore and deepen their understanding of concepts.

Lessons in every module engage students in using appropriate tools strategically as required by this standard. This practice standard is analogous to the CCSSM Standards for Mathematical Practice 5, which is specifically addressed in the following modules:

G3 M3: Multiplication and Division with Units of 0, 1, 6–9, and Multiples of 10

G3 M6: Collecting and Displaying Data

Aligned Components of Eureka Math

6. Attend to precision.

These students try to communicate mathematical ideas and concepts precisely. 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. Mathematically proficient students are careful about specifying units of measure and labeling axes to clarify the correspondence with quantities in a problem. They calculate accurately and efficiently, and 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.

Lessons in every module engage students in attending to precision as required by this standard. This practice standard is analogous to the CCSSM Standards for Mathematical Practice 6, which is specifically addressed in the following modules:

G3 M2: Place Value and Problem Solving with Units of Measure

G3 M4: Multiplication and Area

G3 M5: Fractions as Numbers on the Number Line

G3 M6: Collecting and Displaying Data

Aligned Components of Eureka Math

7. Look for and make use of structure.

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 $7 \times 5 + 7 \times 3$, 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. These students also can pause and reflect for an overview or a shift in perspective. They can observe the complexities of mathematics, such as seeing 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 mental picture to realize that the value of the expression cannot be more than 5 for any real numbers x and y.

Lessons in every module engage students in looking for and making use of structure as required by this standard. This practice standard is analogous to the CCSSM Standards for Mathematical Practice 7, which is specifically addressed in the following modules:

G3 M1: Properties of Multiplication and Division and Solving Problems with Units of 2–5 and 10

G3 M2: Place Value and Problem Solving with Units of Measure

G3 M3: Multiplication and Division with Units of 0, 1, 6–9, and Multiples of 10

G3 M4: Multiplication and Area

G3 M5: Fractions as Numbers on the Number Line

G3 M6: Collecting and Displaying Data

Aligned Components of Eureka Math

8. Look for and express regularity in repeated reasoning.

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 students work to solve a problem, mathematically proficient students maintain oversight of the process while attending to the details and continually evaluate the reasonableness of their intermediate results.

Lessons in every module engage students in looking for and expressing regularity in repeated reasoning as required by this standard. This practice standard is analogous to the CCSSM Standards for Mathematical Practice 8, which is specifically addressed in the following modules:

G3 M4: Multiplication and Area

Operations and Algebraic	Cluster: Represent and solve problems involving multiplic	and solve problems involving multiplication and division.		
Thinking	Illustrate the product of two whole numbers as equal groups by identifying the number of groups and the number in each group and represent as a written expression.	G3 M1 Topic A: Multiplication and the Meaning of the Factors G3 M1 Topic C: Multiplication Using Units of 2 and 3		
	Illustrate and interpret the quotient of two whole numbers as the number of objects in each group or the number of groups when the whole is partitioned into equal shares.	G3 M1 Topic B: Division as an Unknown Factor Problem G3 M1 Topic D: Division Using Units of 2 and 3		
	3. Solve word situations using multiplication and division within 100 involving equal groups, arrays, and measurement quantities; represent the situation using models, drawings, and equations with a symbol for the unknown number.	G3 M1 Topic D: Division Using Units of 2 and 3 G3 M1 Topic E: Multiplication and Division Using Units of 4 G3 M1 Topic F: Distributive Property and Problem Solving Using Units of 2–5 and 10 G3 M3 Topic A: The Properties of Multiplication and Division G3 M3 Topic B: Multiplication and Division Using Units of 6 and 7 G3 M3 Topic C: Multiplication and Division Using Units up to 8		

Content Area	Standards for Mathematical Content		Aligned Components of Eureka Math
			G3 M3 Topic D: Multiplication and Division Using Units of 9 G3 M3 Topic E: Analysis of Patterns and Problem Solving Including Units of 0 and 1
	Determine the unknown whole number in a multiplication or division equation relating three whole numbers.		G3 M1 Topic D: Division Using Units of 2 and 3 G3 M3 Topic A: The Properties of Multiplication and Division G3 M3 Topic B: Multiplication and Division
			Using Units of 6 and 7 G3 M3 Topic C: Multiplication and Division Using Units Up to 8 G3 M3 Topic D: Multiplication and Division Using Units of 9
	Cluster: Understand properties of multiplication and the real and division.	ela	tionship between multiplication
	Develop and apply properties of operations as strategies to multiply and divide.		G3 M1 Topic C: Multiplication Using Units of 2 and 3
			G3 M1 Topic E: Multiplication and Division Using Units of 4
			G3 M1 Topic F: Distributive Property and Problem Solving Using Units of 2–5 and 10

Content Area	Standards for Mathematical Content	Aligned Components of Eureka Math
		G3 M3 Topic A: The Properties of Multiplication and Division
		G3 M3 Topic B: Multiplication and Division Using Units of 6 and 7
		G3 M3 Topic C: Multiplication and Division Using Units up to 8
		G3 M3 Topic D: Multiplication and Division Using Units of 9
		G3 M3 Topic F: Multiplication of Single-Digit Factors and Multiples of 10
	Use the relationship between multiplication and division to represent division as an equation with an unknown factor.	G3 M1 Topic B: Division as an Unknown Factor Problem
	factor.	G3 M1 Topic D: Division Using Units of 2 and 3
	Cluster: Multiply and divide within 100.	
	Use strategies based on properties and patterns of multiplication to demonstrate fluency with multiplication and division within 100.	G3 M1 Topic C: Multiplication Using Units of 2 and 3
	a. Fluently determine all products obtained by multiplying two one-digit numbers.	G3 M1 Topic E: Multiplication and Division Using Units of 4
	b. State automatically all products of two one-digit numbers by the end of third grade.	G3 M1 Topic F: Distributive Property and Problem Solving Using Units of 2–5 and 10

Content Area	Standards for Mathematical Content		Aligned Components of Eureka Math
			G3 M3 Topic A: The Properties of Multiplication and Division
			G3 M3 Topic B: Multiplication and Division Using Units of 6 and 7
			G3 M3 Topic C: Multiplication and Division Using Units up to 8
			G3 M3 Topic D: Multiplication and Division Using Units of 9
			G3 M3 Topic E: Analysis of Patterns and Problem Solving Including Units of 0 and 1
			G3 M3 Topic F: Multiplication of Single-Digit Factors and Multiples of 10
	Cluster: Solve problems involving the four operations and	l id	lentify and explain patterns in arithmetic.
	Determine and justify solutions for two-step word problems using the four operations and write an equation with a letter standing for the unknown quantity.		G3 M1 Topic F: Distributive Property and Problem Solving Using Units of 2–5 and 10
	Determine reasonableness of answers using number sense, context, mental computation, and estimation strategies including rounding.		G3 M3 Topic E: Analysis of Patterns and Problem Solving Including Units of 0 and 1
			G3 M3 Topic F: Multiplication of Single-Digit Factors and Multiples of 10
			G3 M7 Topic A: Solving Word Problems

Content Area	Standards for Mathematical Content		Aligned Components of Eureka Math	
	Recognize and explain arithmetic patterns using properties of operations.		G3 M3 Topic A: The Properties of Multiplication and Division	
			G3 M3 Topic B: Multiplication and Division Using Units of 6 and 7	
			G3 M3 Topic D: Multiplication and Division Using Units of 9	
			G3 M3 Topic E: Analysis of Patterns and Problem Solving, Including Units of 0 and 1	
			G3 M3 Topic F: Multiplication of Single-Digit Factors and Multiples of 10	
Operations with Numbers: Base	Cluster: Use place value understanding and properties of operations to perform multi-digit arithmetic.			
Ten	10. Identify the nearest 10 or 100 when rounding whole numbers, using place value understanding.		G3 M2 Topic C: Rounding to the Nearest Ten and Hundred	
	11.Use various strategies to add and subtract fluently within 1000.		G3 M2 Topic A: Time Measurement and Problem Solving	
			G3 M2 Topic B: Measuring Weight and Liquid Volume in Metric Units	
			G3 M2 Topic D: Two- and Three-Digit Measurement Addition Using the Standard Algorithm	
			G3 M2 Topic E: Two- and Three-Digit Measurement Subtraction Using the	

		Standard Algorithm
	12. Use concrete materials and pictorial models based on place value and properties of operations to find the product of a one-digit whole number by a multiple of ten (from 10 to 90).	G3 M3 Topic F: Multiplication of Single-Digit Factors and Multiples of 10
Operations with Numbers: Fractions	Cluster: Develop understanding of fractions as numbers. Denominators are limited to 2, 3, 4, 6, and 8.	
	13. Demonstrate that a unit fraction represents one part of an area model or length model of a whole that has been equally partitioned; explain that a numerator greater than one indicates the number of unit pieces represented by the fraction.	G3 M5 Topic A: Partition a Whole into Equal Parts G3 M5 Topic B: Unit Fractions and Their Relation to the Whole
	 14. Interpret a fraction as a number on the number line; locate or represent fractions on a number line diagram. a. Represent a unit fraction (¹/_b) on a number line by defining the interval from 0 to 1 as the whole and partitioning it into b equal parts as specified by the denominator. b. Represent a fraction (^a/_b) on a number line by marking off a lengths of size (¹/_b) from zero. 	G3 M5 Topic D: Fractions on the Number Line

Content Area	Standards for Mathematical Content	Aligned Components of Eureka Math
	 15. Explain equivalence and compare fractions by reasoning about their size using visual fraction models and number lines. a. Express whole numbers as fractions and recognize fractions that are equivalent to whole numbers. b. Compare two fractions with the same numerator or with the same denominator by reasoning about their size (recognizing that fractions must refer to the same whole for the comparison to be valid). Record comparisons using < , >, or = and justify conclusions. 	G3 M5 Topic C: Comparing Unit Fractions and Specifying the Whole G3 M5 Topic D: Fractions on the Number Line G3 M5 Topic E: Equivalent Fractions G3 M5 Topic F: Comparison, Order, and Size of Fractions
Data Analysis	Cluster: Represent and interpret data.	
	 16. For a given or collected set of data, create a scaled (one-to-many) picture graph and scaled bar graph to represent a data set with several categories. a. Determine a simple probability from a context that includes a picture. b. Solve one- and two-step "how many more" and "how many less" problems using information presented in scaled graphs. 	G3 M6 Topic A: Generate and Analyze Categorical Data
	17. Measure lengths using rulers marked with halves and fourths of an inch to generate data and create a line plot marked off in appropriate units to display the data.	G3 M6 Topic B: Generate and Analyze Measurement Data G3 M7 Topic D: Recording Perimeter and Area Data on Line Plots

Measurement	Cluster: Solve problems involving measurement and estimation of intervals of time, liquid volumes, and masses of objects.				
	18. Tell and write time to the nearest minute; measure time intervals in minutes (within 90 minutes).	G3 M2 Topic C: Rounding to the Nearest Ten and Hundred			
	Solve real-world problems involving addition and subtraction of time intervals in minutes by representing the problem on a number line diagram.				
	19. Estimate and measure liquid volumes and masses of objects using liters (I), grams (g), and kilograms (kg).	G3 M2 Topic B: Measuring Weight and Liquid Volume in Metric Units			
	a. Use the four operations to solve one-step word problems involving masses or volumes given in the same metric units.	G3 M2 Topic C: Rounding to the Nearest Ten and Hundred			
	Cluster: Geometric measurement—understand concepts of area and relate area to multiplication and to addition.				
	20. Find the area of a rectangle with whole number side lengths by tiling without gaps or overlays and counting unit squares.	G3 M4 Topic B: Concepts of Area Measurement			
		G3 M4 Topic C: Arithmetic Properties Using Area Models			
		G3 M4 Topic D: Applications of Area Using Side Lengths of Figures			

21. Count unit squares (square cm, square m, square in, square ft, and improvised or non-standard units) to determine area.	G3 M4 Topic B: Concepts of Area Measurement G3 M4 Topic C: Arithmetic Properties Using Area Models G3 M4 Topic D: Applications of Area Using Side Lengths of Figures
22. Relate area to the operations of multiplication using real-world problems, concrete materials, mathematical reasoning, and the distributive property.	G3 M4 Topic B: Concepts of Area Measurement G3 M4 Topic C: Arithmetic Properties Using Area Models G3 M4 Topic D: Applications of Area Using Side Lengths of Figures
23. Decompose rectilinear figures into smaller rectangles to find the area, using concrete materials.	G3 M4 Topic B: Concepts of Area Measurement G3 M4 Topic C: Arithmetic Properties Using Area Models G3 M4 Topic D: Applications of Area Using Side Lengths of Figures

	Cluster: Geometric measurement—recognize perimeter as an attribute of plane figures and distinguish between linear and area measures.		
	24. Construct rectangles with the same perimeter and different areas or the same area and different perimeters.		G3 M7 Topic C: Problem Solving with Perimeter
			G3 M7 Topic D: Recording Perimeter and Area Data on Line Plots
			G3 M7 Topic E: Problem Solving with Perimeter and Area
	25. Solve real-world problems involving perimeters of polygons, including finding the perimeter given the side lengths and finding an unknown side length of		G3 M7 Topic C: Problem Solving with Perimeter
	rectangles.		G3 M7 Topic D: Recording Perimeter and Area Data on Line Plots
			G3 M7 Topic E: Problem Solving with Perimeter and Area
Geometry	Cluster: Reason with shapes and their attributes.		
	26. Recognize and describe polygons (up to 8 sides), triangles, and quadrilaterals (rhombuses, rectangles, and squares) based on the number of sides and the presence or absence of square corners.		G3 M7 Topic B: Attributes of Two-Dimensional Figures G3 M7 Topic E: Problem Solving with
	a. Draw examples of quadrilaterals that are and are not rhombuses, rectangles, and squares.		Perimeter and Area