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 EdReports.org 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 greatminds.org/state-studies.

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 4 MATHEMATICS

The majority of the Grade 4 Alabama Course of Study: Mathematics are fully covered by the Grade 4 *Eureka Math* curriculum. There is one standard from the content area of Data Analysis that will require the use of *Eureka Math* content from another grade level. 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*.

Standards for Mathematical Practice	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: G4 M1: Place Value, Rounding, and Algorithms for Addition and Subtraction G4 M2: Unit Conversions and Problem Solving with Metric Measurement

Standards for Mathematical Practice	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: G4 M1: Place Value, Rounding, and Algorithms for Addition and Subtraction G4 M3: Multi-Digit Multiplication and Division G4 M4: Angle Measure and Plane Figures G4 M5: Fraction Equivalence, Ordering, and Operations G4 M6: Decimal Fractions G4 M7: Exploring Measurement with Multiplication

Standards for Mathematical Practice	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: G4 M1: Place Value, Rounding, and Algorithms for Addition and Subtraction G4 M4: Angle Measure and Plane Figures G4 M5: Fraction Equivalence, Ordering, and Operations G4 M7: Exploring Measurement with Multiplication

Standards for Mathematical Practice	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: G4 M3: Multi-Digit Multiplication and Division G4 M5: Fraction Equivalence, Ordering, and Operations G4 M6: Decimal Fractions

Standards for Mathematical Practice	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: G4 M1: Place Value, Rounding, and Algorithms for Addition and Subtraction G4 M3: Multi-Digit Multiplication and Division G4 M4: Angle Measure and Plane Figures

Standards for Mathematical Practice	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: G4 M1: Place Value, Rounding, and Algorithms for Addition and Subtraction G4 M4: Angle Measure and Plane Figures G4 M6: Decimal Fractions

Standards for Mathematical Practice	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: G4 M2: Unit Conversions and Problem Solving with Metric Measurement G4 M5: Fraction Equivalence, Ordering, and Operations G4 M7: Exploring Measurement with Multiplication

Standards for Mathematical Practice	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: G4 M2: Unit Conversions and Problem Solving with Metric Measurement G4 M3: Multi-Digit Multiplication and Division G4 M6: Decimal Fractions G4 M7: Exploring Measurement with Multiplication

Content Area	Standards for Mathematical Content	Aligned Components of *Eureka Math*
Operations and Algebraic Thinking	**Cluster: Solve problems with whole numbers using the four operations.**	
	1. Interpret and write equations for multiplicative comparisons.	G4 M3 Topic A: Multiplicative Comparison Word Problems G4 M3 Topic D: Multiplication Word Problems G4 M7 Topic A: Measurement Conversion Tables
	2. Solve word problems involving multiplicative comparison using drawings and write equations to represent the problem, using a symbol for the unknown number.	G4 M3 Topic A: Multiplicative Comparison Word Problems G4 M3 Topic D: Multiplication Word Problems G4 M7 Topic A: Measurement Conversion Tables G4 M7 Topic B: Problem Solving with Measurement
	3. Determine and justify solutions for multi-step word problems, including problems where remainders must be interpreted. a. Write equations to show solutions for multi-step word problems with a letter standing for the unknown quantity.	G4 M1 Topic D: Multi-Digit Whole Number Addition G4 M1 Topic E: Multi-Digit Whole-Number Subtraction G4 M1 Topic F: Addition and Subtraction Word Problems

Content Area	Standards for Mathematical Content	Aligned Components of *Eureka Math*
	b. Determine reasonableness of answers for multi-step word problems, using mental computation and estimation strategies including rounding.	G4 M3 Topic D: Multiplication Word Problems G4 M3 Topic G: Division of Thousands, Hundreds, Tens, and Ones G4 M7 Topic B: Problem Solving with Measurement G4 M7 Topic C: Investigation of Measurements Expressed as Mixed Numbers
	Cluster: Gain familiarity with factors and multiples.	
	4. For whole numbers in the range 1 to 100, find all factor pairs, identifying a number as a multiple of each of its factors. a. Determine whether a whole number in the range 1 to 100 is a multiple of a given one-digit number. b. Determine whether a whole number in the range 1 to 100 is prime or composite.	G4 M3 Topic F: Reasoning with Divisibility
	Cluster: Generate and analyze patterns.	
	5. Generate and analyze a number or shape pattern that follows a given rule.	G4 M5 Topic H: Exploring a Fraction Pattern

Content Area	Standards for Mathematical Content	Aligned Components of *Eureka Math*
Operations with Numbers: Base Ten	**Cluster: Generalize place value understanding for multi-digit whole numbers.**	
	6. Using models and quantitative reasoning, explain that in a multi-digit whole number, a digit in any place represents ten times what it represents in the place to its right.	G4 M1 Topic A: Place Value of Multi-Digit Whole Numbers
	7. Read and write multi-digit whole numbers using standard form, word form, and expanded form.	G4 M1 Topic A: Place Value of Multi-Digit Whole Numbers
	8. Use place value understanding to compare two multi-digit numbers using >, =, and < symbols.	G4 M1 Topic B: Comparing Multi-Digit Whole Numbers
	9. Round multi-digit whole numbers to any place using place value understanding.	G4 M1 Topic C: Rounding Multi-Digit Whole Numbers
	Cluster: Use place value understanding and properties of operations to perform multi-digit arithmetic with whole numbers.	
	10. Use place value strategies to fluently add and subtract multi-digit whole numbers and connect strategies to the standard algorithm.	G4 M1 Topic D: Multi-Digit Whole Number Addition G4 M1 Topic E: Multi-Digit Whole Number Subtraction

Content Area	Standards for Mathematical Content	Aligned Components of *Eureka Math*
	11. Find the product of two factors (up to four digits by a one-digit number and two two-digit numbers), using strategies based on place value and the properties of operations. a. Illustrate and explain the product of two factors using equations, rectangular arrays, and area models.	G4 M3 Topic B: Multiplication by 10, 100, and 1,000 G4 M3 Topic C: Multiplication of up to Four Digits by Single-Digit Numbers G4 M3 Topic D: Multiplication Word Problems G4 M3 Topic H: Multiplication of Two-Digit by Two-Digit Numbers
	12. Use strategies based on place value, properties of operations, and/or the relationship between multiplication and division to find whole-number quotients and remainders with one-digit divisors and up to four-digit dividends. a. Illustrate and/or explain quotients using equations, rectangular arrays, and/or area models.	G4 M3 Topic E: Division of Tens and Ones with Successive Remainders
Operations with Numbers: Fractions	**Cluster: Extend understanding of fraction equivalence and ordering.**	
	13. Using area and length fraction models, explain why one fraction is equivalent to another, taking into account that the number and size of the parts differ even though the two fractions themselves are the same size. a. Apply principles of fraction equivalence to recognize and generate equivalent fractions.	G4 M5 Topic B: Fraction Equivalence Using Multiplication and Division G4 M5 Topic E: Extending Fraction Equivalence to Fractions Greater than 1

Content Area	Standards for Mathematical Content	Aligned Components of *Eureka Math*
	14. Compare two fractions with different numerators and different denominators using concrete models, benchmarks (0, $\frac{1}{2}$, 1), common denominators, and/or common numerators, recording the comparisons with symbols >, =, or <, and justifying the conclusions. a. Explain that comparison of two fractions is valid only when the two fractions refer to the same whole.	G4 M5 Topic C: Fraction Comparison G4 M5 Topic E: Extending Fraction Equivalence to Fractions Greater than 1
	Cluster: Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers.	
	15. Model and justify decompositions of fractions and explain addition and subtraction of fractions as joining or separating parts referring to the same whole. a. Decompose a fraction as a sum of unit fractions and as a sum of fractions with the same denominator in more than one way using area models, length models, and equations. b. Add and subtract fractions and mixed numbers with like denominators using fraction equivalence, properties of operations, and the relationship between addition and subtraction. c. Solve word problems involving addition and subtraction of fractions and mixed numbers having likedenominators, using drawings, visual fraction models, and equations to represent the problem.	G4 M5 Topic A: Decomposition and Fraction Equivalence G4 M5 Topic D: Fraction Addition and Subtraction G4 M5 Topic E: Extending Fraction Equivalence to Fractions Greater Than 1 G4 M5 Topic F: Addition and Subtraction of Fractions by Decomposition

Content Area	Standards for Mathematical Content	Aligned Components of *Eureka Math*
	16. Apply and extend previous understandings of multiplication to multiply a whole number times a fraction. a. Model and explain how a non-unit fraction can be represented by a whole number times the unit fraction. b. Extend previous understanding of multiplication to multiply a whole number times any fraction less than one. c. Solve word problems involving multiplying a whole number times a fraction using visual fraction models and equations to represent the problem.	G4 M5 Topic A: Decomposition and Fraction Equivalence G4 M5 Topic G: Repeated Addition of Fractions as Multiplication
	Cluster: Understand decimal notation for fractions, and compare decimal fractions.	
	17. Express, model, and explain the equivalence between fractions with denominators of 10 and 100. a. Use fraction equivalency to add two fractions with denominators of 10 and 100.	G4 M6 Topic B: Tenths and Hundredths G4 M6 Topic D: Addition with Tenths and Hundredths
	18. Use models and decimal notation to represent fractions with denominators of 10 and 100.	G4 M6 Topic A: Exploration of Tenths G4 M6 Topic B: Tenths and Hundredths G4 M6 Topic D: Addition with Tenths and Hundredths

Content Area	Standards for Mathematical Content	Aligned Components of *Eureka Math*
	19. Use visual models and reasoning to compare two decimals to hundredths (referring to the same whole), recording comparisons using symbols >, =, or <, and justifying the conclusions.	G4 M6 Topic C: Decimal Comparison
Data Analysis	**Cluster: Represent and interpret data.**	
	20. Interpret data in graphs (picture, bar, and line plots) to solve problems using numbers and operations. a. Create a line plot to display a data set of measurements in fractions of a unit. b. Solve problems involving addition and subtraction of fractions using information presented in line plots.	G2 M7 Lesson 2: Draw and label a picture graph to represent data with up to four categories. G4 M5 Topic E: Extending Fraction Equivalence to Fractions Greater than 1 G4 M5 Topic F: Addition and Subtraction of Fractions by Decomposition G4 M5 Topic G: Repeated Addition of Fractions as Multiplication
Measurement	**Cluster: Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit**	
	21. Select and use an appropriate unit of measurement for a given attribute (length, mass, liquid volume, time) within one system of units: metric—km, m, cm; kg, g, l, ml; customary—lb, oz; time—hr, min, sec. a. Within one system of units, express measurements of a larger unit in terms of a smaller unit. Record measurement equivalents in a two-column table.	G4 M2 Topic A: Metric Unit Conversions G4 M2 Topic B: Application of Metric Unit Conversions G4 M7 Topic A: Measurement Conversion Tables

Content Area	Standards for Mathematical Content	Aligned Components of *Eureka Math*
		G4 M7 Topic B: Problem Solving with Measurement G4 M7 Topic C: Investigation of Measurements Expressed as Mixed Numbers
	22. Use the four operations to solve measurement word problems with distance, intervals of time, liquid volume, mass of objects, and money. a. Solve measurement problems involving simple fractions or decimals. b. Solve measurement problems that require expressing measurements given in a larger unit in terms of a smaller unit. c. Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale.	G4 M2 Topic A: Metric Unit Conversions G4 M2 Topic B: Application of Metric Unit Conversions G4 M6 Topic E: Money Amounts as Decimal Numbers G4 M7 Topic B: Problem Solving with Measurement G4 M7 Topic C: Investigation of Measurements Expressed as Mixed Numbers
	23. Apply area and perimeter formulas for rectangles in real-world and mathematical situations.	G4 M3 Topic A: Multiplicative Comparison Word Problems
	Cluster: Geometric measurement—understand concepts of angle and measure angles.	
	24. Identify an angle as a geometric shape formed wherever two rays share a common endpoint.	G4 M4 Topic B: Angle Measurement

Content Area	Standards for Mathematical Content	Aligned Components of *Eureka Math*
	25. Use a protractor to measure angles in whole-number degrees and sketch angles of specified measure.	G4 M4 Topic B: Angle Measurement
	26. Decompose an angle into non-overlapping parts to demonstrate that the angle measure of the whole is the sum of the angle measures of the parts. a. Solve addition and subtraction problems on a diagram to find unknown angles in real-world or mathematical problems.	G4 M4 Topic C: Problem Solving with the Addition of Angle Measures
Geometry	**Cluster: Draw and identify lines and angles, and identify shapes by properties of their lines and angles.**	
	27. Draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines, and identify these in two-dimensional figures.	G4 M4 Topic A: Lines and Angles G4 M4 Topic D: Two-Dimensional Figures and Symmetry
	28. Identify two-dimensional figures based on the presence or absence of parallel or perpendicular lines or the presence or absence of angles of a specified size. a. Describe right triangles as a category, and identify right triangles.	G4 M4 Topic A: Lines and Angles G4 M4 Topic D: Two-Dimensional Figures and Symmetry
	29. Define a line of symmetry for a two-dimensional figure as a line across the figure such that the figure can be folded along the line into matching parts. a. Identify line-symmetric figures and draw lines of symmetry.	G4 M4 Topic D: Two-Dimensional Figures and Symmetry