EUREKA MATH™

GREAT MINDS

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 which 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 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

GRADE 5 MATHEMATICS

The Grade 5 Utah Core Standards for Mathematics are fully covered by the Grade 5 *Eureka Math* curriculum. A detailed analysis of alignment is provided in the table below.

INDICATORS

- Green indicates that the Utah standard is fully addressed in *Eureka Math*.
- Yellow indicates that the Utah standard may not be completely addressed in *Eureka Math*.
- Red indicates that the Utah standard is not addressed in *Eureka Math*.
- Blue indicates there is a discrepancy between the grade level at which this standard is addressed in the Utah standards and in *Eureka Math*.

Standards for Mathematical Practice	Aligned Components of *Eureka Math*
1: Make sense of problems and persevere in solving them. Explain the meaning of a problem, look for entry points to begin work on the problem, and plan and choose a solution pathway. When a solution pathway does not make sense, look for another pathway that does. Explain connections between various solution strategies and representations. Upon finding a solution, look back at the problem to determine whether the solution is reasonable and accurate, often checking answers to problems using a different method or approach.	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: G5 M2: Multi-Digit Whole Number and Decimal Fraction Operations G5 M3: Addition and Subtraction of Fractions G5 M5: Addition and Multiplication with Volume and Area G5 M6: Problem Solving with the Coordinate Plane
2: Reason abstractly and quantitatively. Make sense of quantities and their relationships in problem situations. Contextualize quantities and operations by using images or stories. Decontextualize a given situation and represent it symbolically. Interpret symbols as having meaning, not just as directions to carry out a procedure. Know and flexibly use different properties of operations, numbers, and geometric 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: G5 M2: Multi-Digit Whole Number and Decimal Fraction Operations G5 M4: Multiplication and Division of Fractions and Decimal Fractions G5 M5: Addition and Multiplication with Volume and Area G5 M6: Problem Solving with the Coordinate Plane

Standards for Mathematical Practice	Aligned Components of *Eureka Math*
3: Construct viable arguments and critique the reasoning of others. Use stated assumptions, definitions, and previously established results to construct arguments. Explain and justify the mathematical reasoning underlying a strategy, solution, or conjecture by using concrete referents such as objects, drawings, diagrams, and actions. Listen to or read the arguments of others, decide whether they make sense, ask useful questions to clarify or improve the arguments, and build on those 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: G5 M3: Addition and Subtraction of Fractions G5 M4: Multiplication and Division of Fractions and Decimal Fractions G5 M5: Addition and Multiplication with Volume and Area G5 M6: Problem Solving with the Coordinate Plane
4: Model with mathematics. Identify the mathematical elements of a situation and create a mathematical model that shows the relationships among them. Identify important quantities in a contextual situation, use mathematical models to show the relationships of those quantities, analyze the relationships, and draw conclusions. Models may be verbal, contextual, visual, symbolic, or physical.	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: G5 M4: Multiplication and Division of Fractions and Decimal Fractions G5 M5: Addition and Multiplication with Volume and Area

Standards for Mathematical Practice	Aligned Components of *Eureka Math*
5: Use appropriate tools strategically. Consider the tools that are available when solving a mathematical problem, whether in a real-world or mathematical context. Choose tools that are relevant and useful to the problem at hand, such as physical objects, drawings, diagrams, physical tools, technologies, or mathematical tools such as estimation or a particular strategy or algorithm.	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: G5 M3: Addition and Subtraction of Fractions G5 M4: Multiplication and Division of Fractions and Decimal Fractions
6: Attend to precision. Communicate precisely to others by crafting careful explanations that communicate mathematical reasoning by referring specifically to each important mathematical element, describing the relationships among them, and connecting their words clearly to representations. Calculate accurately and efficiently, and use clear and concise notation to record work.	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: G5 M1: Place Value and Decimal Fractions G5 M5: Addition and Multiplication with Volume and Area G5 M6: Problem Solving with the Coordinate Plane

Standards for Mathematical Practice	Aligned Components of *Eureka Math*
7: Look for and make use of structure. Recognize and apply the structures of mathematics such as patterns, place value, the properties of operations, or the flexibility of numbers. See complicated things as single objects or as being composed of several objects.	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: G5 M1: Place Value and Decimal Fractions G5 M2: Multi-Digit Whole Number and Decimal Fraction Operations G5 M3: Addition and Subtraction of Fractions G5 M4: Multiplication and Division of Fractions and Decimal Fractions G5 M5: Addition and Multiplication with Volume and Area G5 M6: Problem Solving with the Coordinate Plane
8: Look for and express regularity in repeated reasoning. Notice repetitions in mathematics when solving multiple related problems. Use observations and reasoning to find shortcuts or generalizations. Evaluate the reasonableness of 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: G5 M1: Place Value and Decimal Fractions G5 M2: Multi-Digit Whole Number and Decimal Fraction Operations G5 M3: Addition and Subtraction of Fractions

Strand	Standards for Mathematical Content		Aligned Components of *Eureka Math*
Operations and Algebraic Thinking	**Cluster: Write and interpret numerical expressions.**		
	5.OA.1 Use parentheses, brackets, or braces in numerical expressions, and evaluate expressions with these symbols.		G5 M2 Lesson 3: Write and interpret numerical expressions, and compare expressions using a visual model. G5 M2 Lesson 4: Convert numerical expressions into unit form as a mental strategy for multi-digit multiplication. G5 M4 Lesson 10: Compare and evaluate expressions with parentheses. G5 M4 Topic H: Interpretation of Numerical Expressions
	5.OA.2 Write and interpret simple numerical expressions.		
	a. Write simple expressions that record calculations with numbers.		G5 M2 Lesson 3: Write and interpret numerical expressions, and compare expressions using a visual model. G5 M2 Lesson 4: Convert numerical expressions into unit form as a mental strategy for multi-digit multiplication. G5 M4 Lesson 10: Compare and evaluate expressions with parentheses. G5 M6 Topic B: Patterns in the Coordinate Plane and Graphing Number Patterns from Rules
	b. Interpret numerical expressions without evaluating them.		G5 M4 Lesson 10: Compare and evaluate expressions with parentheses. G5 M4 Topic H: Interpretation of Numerical Expressions

Strand	Standards for Mathematical Content	Aligned Components of *Eureka Math*
	Cluster: Analyze patterns and relationships.	
	5.OA.3 Generate two numerical patterns using two given rules. Identify apparent relationships between corresponding terms. Form ordered pairs consisting of corresponding terms from the two patterns, and graph the ordered pairs on a coordinate plane.	G5 M6 Topic B: Patterns in the Coordinate Plane and Graphing Number Patterns from Rules G5 M6 Lesson 18: Draw symmetric figures on the coordinate plane.
Number and Operations in Base Ten	**Cluster: Understand the place value system.**	
	5.NBT.1 Recognize that in a multi-digit number, a digit in one place represents 10 times as much as it represents in the place to its right and 1/10 of what it represents in the place to its left.	G5 M1 Topic A: Multiplicative Patterns on the Place Value Chart G5 M2 Topic A: Mental Strategies for Multi-Digit Whole Number Multiplication G5 M2 Lesson 16: Use *divide by 10* patterns for multi-digit whole number division.

Strand	Standards for Mathematical Content		Aligned Components of *Eureka Math*
	5.NBT.2 Explain patterns in the number of zeros of the product when multiplying a number by powers of 10, and explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10. Use whole-number exponents to denote powers of 10.		G5 M1 Topic A: Multiplicative Patterns on the Place Value Chart G5 M1 Topic E: Multiplying Decimals G5 M2 Topic A: Mental Strategies for Multi-Digit Whole Number Multiplication G5 M2 Lesson 16: Use *divide by 10* patterns for multi-digit whole number division. G5 M2 Lesson 24: Divide decimal dividends by multiples of 10, reasoning about the placement of the decimal point and making connections to a written method.
	5.NBT.3 Read, write, and compare decimals to thousandths.		
	a. Read and write decimals to thousandths using base-ten numerals, number names, and expanded form.		G5 M1: Place Value and Decimal Fractions
	b. Compare two decimals to thousandths based on meanings of the digits in each place, using >, =, and < symbols to record the results of comparisons.		G5 M1 Lesson 6: Compare decimal fractions to the thousandths using like units, and express comparisons with >, <, =.
	5.NBT.4 Use place value understanding to round decimals to any place.		G5 M1 Topic C: Place Value and Rounding Decimal Fractions

Strand	Standards for Mathematical Content	Aligned Components of *Eureka Math*
	Cluster: Perform operations with multi-digit whole numbers and with decimals to hundredths.	
	5.NBT.5 Fluently multiply multi-digit whole numbers using the standard algorithm.	G5 M2 Topic B: The Standard Algorithm for Multi-Digit Whole Number Multiplication G5 M2 Topic D: Measurement Word Problems with Whole Number and Decimal Multiplication
	5.NBT.6 Find whole-number quotients of whole numbers with up to four-digit dividends and two- digit divisors, using strategies based on place value, the properties of operations, and/ or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.	G5 M2 Topic E: Mental Strategies for Multi-Digit Whole Number Division G5 M2 Topic F: Partial Quotients and Multi-Digit Whole Number Division G5 M2 Topic H: Measurement Word Problems with Multi-Digit Division
	5.NBT.7 Add, subtract, multiply, and divide decimals to hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used. In this standard, dividing decimals is limited to a whole number dividend with a decimal divisor or a decimal dividend with a whole number divisor. Compare the value of the quotient on the basis of the values of the dividend and divisor.	G5 M1: Place Value and Decimal Fractions G5 M2: Multi-Digit Whole Number and Decimal Fraction Operations G5 M4 Lessons 17–18: Relate decimal and fraction multiplication. G5 M4 Lesson 29: Connect division by a unit fraction to division by 1 tenth and 1 hundredth. G5 M4 Lessons 30–31: Divide decimal dividends by non-unit decimal divisors.

Strand	Standards for Mathematical Content	Aligned Components of *Eureka Math*
Number and Operations—Fractions	**Cluster: Use equivalent fractions as a strategy to add and subtract fractions.**	
	5.NF.1 Add and subtract fractions with unlike denominators (including mixed numbers) by replacing given fractions with equivalent fractions in such a way as to produce an equivalent sum or difference of fractions with like denominators.	G5 M3: Addition and Subtraction of Fractions
	5.NF.2 Solve real-world problems involving addition and subtraction of fractions referring to the same whole, including cases of unlike denominators. Use benchmark fractions and number sense of fractions to estimate mentally and assess the reasonableness of answers.	G5 M3 Lesson 7: Solve two-step word problems. G5 M3 Lesson 9: Add fractions making like units numerically. G5 M3 Topic D: Further Applications
	Cluster: Apply and extend previous understandings of multiplication and division to multiply and divide fractions.	
	5.NF.3 Interpret a fraction as division of the numerator by the denominator ($a/b = a \div b$). Solve real-world problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers, through the use of visual fraction models or equations to represent the problem.	G5 M4 Topic B: Fractions as Division

Strand	Standards for Mathematical Content		Aligned Components of *Eureka Math*
	5.NF.4 Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction.		
	a. Interpret the product $(a/b) \times q$ as a parts of a partition of q into b equal parts; equivalently, as the result of a sequence of operations $a \times q \div b$ using a visual fraction model.		G5 M4 Topic C: Multiplication of a Whole Number by a Fraction G5 M4 Lesson 10: Compare and evaluate expressions with parentheses. G5 M4 Topic E: Multiplication of a Fraction by a Fraction G5 M4 Topic H: Interpretation of Numerical Expressions
	b. Find the area of a rectangle with fractional side lengths by tiling it with unit squares of the appropriate unit fraction side lengths, and show that the area is the same as would be found by multiplying the side lengths. Multiply fractional side lengths to find areas of rectangles, and represent fraction products as rectangular areas.		G5 M5 Topic C: Area of Rectangular Figures with Fractional Side Lengths
	5.NF.5 Interpret multiplication as scaling.		
	a. Compare the size of a product to the size of one factor on the basis of the size of the other factor, without performing the indicated multiplication.		G5 M4 Topic F: Multiplication with Fractions and Decimals as Scaling and Word Problems

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	b. Explain why multiplying a given number by a fraction greater than one results in a product greater than the given number (recognizing multiplication by whole numbers greater than one as a familiar case); explain why multiplying a given number by a fraction less than one results in a product smaller than the given number; and relate the principle of fraction equivalence.		G5 M4 Topic F: Multiplication with Fractions and Decimals as Scaling and Word Problems
	5.NF.6 Solve real-world problems involving multiplication of fractions and mixed numbers.		G5 M4 Topic D: Fraction Expressions and Word Problems G5 M4 Lesson 16: Solve word problems using tape diagrams and fraction-by-fraction multiplication. G5 M4 Lesson 24: Solve word problems using fraction and decimal multiplication. G5 M5 Lessons 14–15: Solve real-world problems involving area of figures with fractional side lengths using visual models and/or equations.

Strand	Standards for Mathematical Content		Aligned Components of *Eureka Math*
	5.NF.7 Apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions. Use strategies to divide fractions by reasoning about the relationship between multiplication and division. Division of a fraction by a fraction is not a requirement at this grade.		
	a. Interpret division of a unit fraction by a non-zero whole number, and compute such quotients.		G5 M4 Lesson 26: Divide a unit fraction by a whole number.
	b. Interpret division of a whole number by a unit fraction, and compute such quotients.		G5 M4 Lesson 25: Divide a whole number by a unit fraction.
	c. Solve real-world problems involving division of unit fractions by non-zero whole numbers and division of whole numbers by unit fractions.		G5 M4 Lesson 27: Solve problems involving fraction division. G5 M4 Lesson 28: Write equations and word problems corresponding to tape and number line diagrams. G5 M4 Topic H: Interpretation of Numerical Expressions

Strand	Standards for Mathematical Content	Aligned Components of *Eureka Math*
Measurement and Data	**Cluster: Convert like measurement units within a given measurement system.**	
	5.MD.1 Convert among different-sized standard measurement units within a given measurement system; use these conversions in solving multi-step, real-world problems.	G5 M1 Lesson 4: Use exponents to denote powers of 10 with application to metric conversions. G5 M2 Topic D: Measurement Word Problems with Whole Number and Decimal Multiplication G5 M4 Topic C: Multiplication of a Whole Number by a Fraction G5 M4 Lesson 19: Convert measures involving whole numbers, and solve multi-step word problems. G5 M4 Lesson 20: Convert mixed unit measurements, and solve multi-step word problems.
	Cluster: Represent and interpret data.	
	5.MD.2 Make a line plot to display a data set of measurements in fractions of a unit (halves, quarters, eighths). Use operations on fractions for this grade to solve problems involving information presented in line plots.	G5 M4 Topic A: Line Plots of Fraction Measurements

Strand	Standards for Mathematical Content		Aligned Components of *Eureka Math*
	Cluster: Understand concepts of geometric measurement and volume, as well as how multiplication and addition relate to volume.		
	5.MD.3 Recognize volume as an attribute of solid figures and understand concepts of volume measurement.		
	a. A cube with side length one unit, called a "unit cube," is said to have "one cubic unit" of volume, and can be used to measure volume.		G5 M5 Lesson 1: Explore volume by building with and counting unit cubes.
	b. A solid figure which can be packed without gaps or overlaps using *n* unit cubes is said to have a volume of *n* cubic units.		G5 M5 Lesson 2: Find the volume of a right rectangular prism by packing with cubic units and counting.
	5.MD.4 Measure volumes by counting unit cubes, using cubic cm, cubic in., cubic ft., and improvised units.		G5 M5 Topic A: Concepts of Volume

Strand	Standards for Mathematical Content		Aligned Components of *Eureka Math*
	5.MD.5 Relate volume to the operations of multiplication and addition and solve real-world and mathematical problems involving volume.		
	a. Find the volume of a right rectangular prism with whole-number side lengths by packing it with unit cubes, and show that the volume is the same as would be found by multiplying the edge lengths, equivalently by multiplying the height by the area of the base. Represent threefold whole-number products as volumes.		G5 M5 Lesson 3: Compose and decompose right rectangular prisms using layers. G5 M5 Lesson 4: Use multiplication to calculate volume. G5 M5 Lesson 5: Use multiplication to connect volume as *packing* with volume as *filling*.
	b. Apply the formulas $V = l \times w \times h$ and $V = b \times h$ for rectangular prisms to find volumes of right rectangular prisms with whole-number edge lengths in the context of solving real-world and mathematical problems.		G5 M5 Lesson 7: Solve word problems involving the volume of rectangular prisms with whole number edge lengths.
	c. Recognize volume as additive. Find volumes of solid figures composed of two non-overlapping right rectangular prisms by adding the volumes of the non-overlapping parts, applying this technique to solve real-world problems.		G5 M5 Topic B: Volume and the Operations of Multiplication and Addition

Strand	Standards for Mathematical Content		Aligned Components of *Eureka Math*
Geometry	**Cluster: Graph points on the coordinate plane to solve real-world and mathematical problems in quadrant one.**		
	5.G.1 Compose and understand the coordinate plane.		
	a. Use a pair of perpendicular number lines, called axes, to define a coordinate system, with the intersection of the lines (the origin) arranged to coincide with the zero on each line and a given point in the plane located by using an ordered pair of numbers, called its coordinates.		G5 M6 Topic A: Coordinate Systems
	b. Using quadrant one on the coordinate plane, understand that the first number in a coordinate pair indicates how far to travel from the origin in the direction of the horizontal axis, and the second number indicates how far to travel in the direction of the vertical axis, with the convention that the names of the two axes and the coordinates correspond (*x*-axis and *x*-coordinate, *y*-axis and *y*-coordinate).		G5 M6 Topic A: Coordinate Systems G5 M6 Lesson 7: Plot points, use them to draw lines in the plane, and describe patterns within the coordinate pairs. G5 M6 Lesson 14: Construct parallel line segments, and analyze relationships of the coordinate pairs. G5 M6 Lesson 16: Construct perpendicular line segments, and analyze relationships of the coordinate pairs.

Strand	Standards for Mathematical Content	Aligned Components of *Eureka Math*
	5.G.2 Represent real-world and mathematical problems by graphing points in the first quadrant of the coordinate plane, and interpret coordinate values of points in the context of the situation.	G5 M6 Lesson 14: Construct parallel line segments, and analyze relationships of the coordinate pairs. G5 M6 Lesson 16: Construct perpendicular line segments, and analyze relationships of the coordinate pairs. G5 M6 Topic D: Problem Solving in the Coordinate Plane
	Cluster: Classify two-dimensional figures into categories based on their properties.	
	5.G.3 Understand that attributes belonging to a category of two-dimensional figures also belong to all subcategories of that category.	G5 M5 Topic D: Drawing, Analysis, and Classification of Two-Dimensional Shapes
	5.G.4 Classify two-dimensional figures in a hierarchy based on properties.	G5 M5 Lesson 20: Classify two-dimensional figures in a hierarchy based on properties. G5 M5 Lesson 21: Draw and identify varied two-dimensional figures from given attributes.