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 6 MATHEMATICS

The Grade 6 New Jersey Student Learning Standards for Mathematics are fully covered by the Grade 6 *Eureka Math* curriculum. A detailed analysis of alignment is provided in the table below.

INDICATORS

- Green indicates that the New Jersey standard is fully addressed in *Eureka Math*.
- Yellow indicates that the New Jersey standard may not be completely addressed in *Eureka Math*.
- Red indicates that the New Jersey 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 New Jersey standards and in *Eureka Math*.

Standards for Mathematical Practice	Aligned Components of *Eureka Math*
1: Make sense of problems and persevere in solving them. Mathematically proficient 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. They 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 calculator to get the information they need. Mathematically proficient students can explain correspondences between 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 solving 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: G6 M1: Ratios and Unit Rates G6 M2: Arithmetic Operations Including Division of Fractions G6 M5: Area, Surface Area, and Volume Problems G6 M6: Statistics

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: the ability to *decontextualize*—to abstract a given situation and represent it symbolically and manipulate the representing symbols as if they have a life of their own, without necessarily attending to their referents—and 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: G6 M1: Ratios and Unit Rates G6 M2: Arithmetic Operations Including Division of Fractions G6 M3: Rational Numbers G6 M4: Expressions and Equations G6 M6: Statistics

Standards for Mathematical Practice	Aligned Components of *Eureka Math*
3: Construct viable arguments and critique the reasoning of others. Mathematically proficient 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. They 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 later grades. Later, students learn to determine domains to which an argument applies. Students at all grades can listen 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: G6 M5: Area, Surface Area, and Volume Problems G6 M6: Statistics

Standards for Mathematical Practice	Aligned Components of *Eureka Math*
4: Model with mathematics. Mathematically proficient 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, a student might apply proportional reasoning to plan a school event or analyze a problem in the community. By high school, a student 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. They 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: G6 M3: Rational Numbers G6 M5: Area, Surface Area, and Volume Problems G6 M6: Statistics

Standards for Mathematical Practice	Aligned Components of *Eureka Math*
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.	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: G6 M1: Ratios and Unit Rates

Standards for Mathematical Practice	Aligned Components of *Eureka Math*
6: Attend to precision. 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.	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: G6 M1: Ratios and Unit Rates G6 M2: Arithmetic Operations Including Division of Fractions G6 M3: Rational Numbers G6 M4: Expressions and Equations G6 M5: Area, Surface Area, and Volume Problems G6 M6: Statistics

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 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.	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: G6 M1: Ratios and Unit Rates G6 M2: Arithmetic Operations Including Division of Fractions G6 M3: Rational Numbers G6 M4: Expressions and Equations

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 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.	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: G6 M2: Arithmetic Operations Including Division of Fractions G6 M4: Expressions and Equations

Domain	Standards for Mathematical Content		Aligned Components of *Eureka Math*
Ratios and Proportional Relationships	**Cluster: Understand ratio concepts and use ratio reasoning to solve problems.**		
	6.RP.A.1 Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities.		G6 M1: Ratios and Unit Rates
	6.RP.A.2 Understand the concept of a unit rate a/b associated with a ratio $a:b$ with $b \neq 0$, and use rate language in the context of a ratio relationship.		G6 M1 Topic C: Unit Rates
	6.RP.A.3 Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations.		
	a. Make tables of equivalent ratios relating quantities with whole number measurements, find missing values in the tables, and plot the pairs of values on the coordinate plane. Use tables to compare ratios.		G6 M1 Topic B: Collections of Equivalent Ratios
	b. Solve unit rate problems including those involving unit pricing and constant speed.		G6 M1 Lessons 21–22: Getting the Job Done—Speed, Work, and Measurement Units G6 M1 Lesson 23: Problem-Solving Using Rates, Unit Rates, and Conversions

Domain	Standards for Mathematical Content	Aligned Components of *Eureka Math*
	c. Find a percent of a quantity as a rate per 100 (e.g., 30% of a quantity means 30/100 times the quantity); solve problems involving finding the whole, given a part and the percent.	G6 M1 Topic D: Percent
	d. Use ratio reasoning to convert measurement units; manipulate and transform units appropriately when multiplying or dividing quantities.	G6 M1 Lessons 21–22: Getting the Job Done—Speed, Work, and Measurement Units G6 M1 Lesson 23: Problem-Solving Using Rates, Unit Rates, and Conversions
The Number System	**Cluster: Apply and extend previous understandings of multiplication and division to divide fractions by fractions.**	
	6.NS.A.1 Interpret and compute quotients of fractions, and solve word problems involving division of fractions by fractions, e.g., by using visual fraction models and equations to represent the problem.	G6 M2 Topic A: Arithmetic Operations Including Dividing by a Fraction
	Cluster: Compute fluently with multi-digit numbers and find common factors and multiples.	
	6.NS.B.2 Fluently divide multi-digit numbers using the standard algorithm.	G6 M2 Topic C: Dividing Whole Numbers and Decimals

Domain	Standards for Mathematical Content		Aligned Components of *Eureka Math*
	6.NS.B.3 Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.		G6 M2: Arithmetic Operations Including Division of Fractions
	6.NS.B.4 Find the greatest common factor of two whole numbers less than or equal to 100 and the least common multiple of two whole numbers less than or equal to 12. Use the distributive property to express a sum of two whole numbers 1–100 with a common factor as a multiple of a sum of two whole numbers with no common factor.		G6 M2 Topic D: Number Theory—Thinking Logically About Multiplicative Arithmetic
	Cluster: Apply and extend previous understandings of numbers to the system of rational numbers.		
	6.NS.C.5 Understand that positive and negative numbers are used together to describe quantities having opposite directions or values (e.g., temperature above/below zero, elevation above/below sea level, credits/debits, positive/ negative electric charge); use positive and negative numbers to represent quantities in real-world contexts, explaining the meaning of 0 in each situation.		G6 M3 Topic A: Understanding Positive and Negative Numbers on the Number Line G6 M3 Lesson 13: Statements of Order in the Real World

Domain	Standards for Mathematical Content		Aligned Components of *Eureka Math*
	6.NS.C.6 Understand a rational number as a point on the number line. Extend number line diagrams and coordinate axes familiar from previous grades to represent points on the line and in the plane with negative number coordinates.		
	a. Recognize opposite signs of numbers as indicating locations on opposite sides of 0 on the number line; recognize that the opposite of the opposite of a number is the number itself, e.g., $-(-3) = 3$, and that 0 is its own opposite.		G6 M3 Lesson 4: The Opposite of a Number G6 M3 Lesson 5: The Opposite of a Number's Opposite
	b. Understand signs of numbers in ordered pairs as indicating locations in quadrants of the coordinate plane; recognize that when two ordered pairs differ only by signs, the locations of the points are related by reflections across one or both axes.		G6 M3 Topic C: Rational Numbers and the Coordinate Plane
	c. Find and position integers and other rational numbers on a horizontal or vertical number line diagram; find and position pairs of integers and other rational numbers on a coordinate plane.		G6 M3: Rational Numbers

Domain	Standards for Mathematical Content		Aligned Components of *Eureka Math*
	6.NS.C.7 Understand ordering and absolute value of rational numbers.		
	a. Interpret statements of inequality as statements about the relative position of two numbers on a number line diagram.		G6 M3 Topic B: Order and Absolute Value
	b. Write, interpret, and explain statements of order for rational numbers in real-world contexts.		G6 M3 Topic B: Order and Absolute Value
	c. Understand the absolute value of a rational number as its distance from 0 on the number line; interpret absolute value as magnitude for a positive or negative quantity in a real-world situation.		G6 M3 Lesson 11: Absolute Value—Magnitude and Distance G6 M3 Lesson 13: Statements of Order in the Real World
	d. Distinguish comparisons of absolute value from statements about order.		G6 M3 Lesson 11: Absolute Value—Magnitude and Distance G6 M3 Lesson 12: The Relationship Between Absolute Value and Order G6 M3 Lesson 13: Statements of Order in the Real World
	6.NS.C.8 Solve real-world and mathematical problems by graphing points in all four quadrants of the coordinate plane. Include use of coordinates and absolute value to find distances between points with the same first coordinate or the same second coordinate.		G6 M3 Topic C: Rational Numbers and the Coordinate Plane

Domain	Standards for Mathematical Content	Aligned Components of *Eureka Math*
Expressions and Equations	**Cluster: Apply and extend previous understandings of arithmetic to algebraic expressions.**	
	6.EE.A.1 Write and evaluate numerical expressions involving whole-number exponents.	G6 M4 Topic B: Special Notations of Operations G6 M4 Lesson 16: Write Expressions in Which Letters Stand for Numbers
	6.EE.A.2 Write, read, and evaluate expressions in which letters stand for numbers.	
	a. Write expressions that record operations with numbers and with letters standing for numbers.	G6 M4 Topic D: Expanding, Factoring, and Distributing Expressions G6 M4 Topic E: Expressing Operations in Algebraic Form G6 M4 Topic F: Writing and Evaluating Expressions and Formulas
	b. Identify parts of an expression using mathematical terms (sum, term, product, factor, quotient, coefficient); view one or more parts of an expression as a single entity.	G6 M4 Topic D: Expanding, Factoring, and Distributing Expressions G6 M4 Topic E: Expressing Operations in Algebraic Form

Domain	Standards for Mathematical Content	Aligned Components of *Eureka Math*
	c. Evaluate expressions at specific values of their variables. Include expressions that arise from formulas used in real-world problems. Perform arithmetic operations, including those involving whole number exponents, in the conventional order when there are no parentheses to specify a particular order (Order of Operations).	G6 M4 Topic B: Special Notations of Operations G6 M4 Topic C: Replacing Letters and Numbers
	6.EE.A.3 Apply the properties of operations to generate equivalent expressions.	G6 M4 Topic A: Relationships of the Operations G6 M4 Topic D: Expanding, Factoring, and Distributing Expressions
	6.EE.A.4 Identify when two expressions are equivalent (i.e., when the two expressions name the same number regardless of which value is substituted into them).	G6 M4 Topic C: Replacing Letters and Numbers G6 M4 Topic D: Expanding, Factoring, and Distributing Expressions
	Cluster: Reason about and solve one-variable equations and inequalities.	
	6.EE.B.5 Understand solving an equation or inequality as a process of answering a question: which values from a specified set, if any, make the equation or inequality true? Use substitution to determine whether a given number in a specified set makes an equation or inequality true.	G6 M4 Topic G: Solving Equations G6 M4 Topic H: Applications of Equations

Domain	Standards for Mathematical Content		Aligned Components of *Eureka Math*
	6.EE.B.6 Use variables to represent numbers and write expressions when solving a real-world or mathematical problem; understand that a variable can represent an unknown number, or, depending on the purpose at hand, any number in a specified set.		G6 M4 Topic F: Writing and Evaluating Expressions and Formulas G6 M4 Topic G: Solving Equations G6 M4 Topic H: Applications of Equations
	6.EE.B.7 Solve real-world and mathematical problems by writing and solving equations of the form $x + p = q$ and $px = q$ for cases in which p, q, and x are all nonnegative rational numbers.		G6 M4 Topic G: Solving Equations G6 M4 Topic H: Applications of Equations
	6.EE.B.8 Write an inequality of the form $x > c$ or $x < c$ to represent a constraint or condition in a real-world or mathematical problem. Recognize that inequalities of the form $x > c$ or $x < c$ have infinitely many solutions; represent solutions of such inequalities on number line diagrams.		G6 M4 Lesson 33: From Equations to Inequalities G6 M4 Lesson 34: Writing and Graphing Inequalities in Real-World Problems

Domain	Standards for Mathematical Content	Aligned Components of *Eureka Math*
	Cluster: Represent and analyze quantitative relationships between dependent and independent variables.	
	6.EE.C.9 Use variables to represent two quantities in a real-world problem that change in relationship to one another; write an equation to express one quantity, thought of as the dependent variable, in terms of the other quantity, thought of as the independent variable. Analyze the relationship between the dependent and independent variables using graphs and tables, and relate these to the equation.	G6 M4 Lesson 31: Problems in Mathematical Terms G6 M4 Lesson 32: Multi-Step Problems in the Real World
Geometry	**Cluster: Solve real-world and mathematical problems involving area, surface area, and volume.**	
	6.G.A.1 Find the area of right triangles, other triangles, special quadrilaterals, and polygons by composing into rectangles or decomposing into triangles and other shapes; apply these techniques in the context of solving real-world and mathematical problems.	G6 M5: Area, Surface Area, and Volume Problems

Domain	Standards for Mathematical Content		Aligned Components of *Eureka Math*
	6.G.A.2 Find the volume of a right rectangular prism with fractional edge lengths by packing it with unit cubes of the appropriate unit fraction edge lengths, and show that the volume is the same as would be found by multiplying the edge lengths of the prism. Apply the formulas $V = l\,w\,h$ and $V = B\,h$ to find volumes of right rectangular prisms with fractional edge lengths in the context of solving real-world and mathematical problems.		G6 M5 Topic C: Volume of Right Rectangular Prisms G6 M5 Lesson 19: Surface Area and Volume in the Real World G6 M5 Lesson 19a: Addendum Lesson for Modeling—Applying Surface Area and Volume to Aquariums
	6.G.A.3 Draw polygons in the coordinate plane given coordinates for the vertices; use coordinates to find the length of a side joining points with the same first coordinate or the same second coordinate. Apply these techniques in the context of solving real-world and mathematical problems.		G6 M5 Topic B: Polygons on the Coordinate Plane
	6.G.A.4 Represent three-dimensional figures using nets made up of rectangles and triangles, and use the nets to find the surface area of these figures. Apply these techniques in the context of solving real-world and mathematical problems.		G6 M5 Topic D: Nets and Surface Area

Domain	Standards for Mathematical Content	Aligned Components of *Eureka Math*
Statistics and Probability	**Cluster: Develop understanding of statistical variability.**	
	6.SP.A.1 Recognize a statistical question as one that anticipates variability in the data related to the question and accounts for it in the answers.	G6 M6 Lesson 1: Posing Statistical Questions
	6.SP.A.2 Understand that a set of data collected to answer a statistical question has a distribution which can be described by its center, spread, and overall shape.	G6 M6: Statistics
	6.SP.A.3 Recognize that a measure of center for a numerical data set summarizes all of its values with a single number, while a measure of variation describes how its values vary with a single number.	G6 M6: Statistics
	Cluster: Summarize and describe distributions.	
	6.SP.B.4 Display numerical data in plots on a number line, including dot plots, histograms, and box plots.	G6 M6: Statistics

Domain	Standards for Mathematical Content		Aligned Components of *Eureka Math*
	6.SP.B.5 Summarize numerical data sets in relation to their context, such as by:		
	a. Reporting the number of observations.		G6 M6: Statistics
	b. Describing the nature of the attribute under investigation, including how it was measured and its units of measurement.		G6 M6: Statistics
	c. Giving quantitative measures of center (median and/or mean) and variability (interquartile range and/or mean absolute deviation), as well as describing any overall pattern and any striking deviations from the overall pattern with reference to the context in which the data were gathered.		G6 M6: Statistics
	d. Relating the choice of measures of center and variability to the shape of the data distribution and the context in which the data were gathered.		G6 M6: Statistics