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 8 MATHEMATICS

The Grade 8 Arkansas Mathematics Standards are fully covered by the Grade 8 *Eureka Math* curriculum. A detailed analysis of alignment is provided in the table below.

INDICATORS

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

Domain	Standards for Mathematical Content	Aligned Components of *Eureka Math*
The Number System	**Cluster: Know that there are numbers that are not rational, and approximate them by rational numbers**	
	AR.Math.Content.8.NS.A.1 Know that numbers that are not rational are called irrational: ▪ Understand that every number has a decimal expansion ▪ Write a fraction a/b as a repeating decimal ▪ Write a repeating decimal as a fraction	G8 M7 Topic B: Decimal Expansions of Numbers
	AR.Math.Content.8.NS.A.2 Use rational approximations of *irrational numbers* to compare the size of *irrational numbers*, locate them approximately on a number line diagram, and estimate the value of expressions (e.g., π^2).	G8 M7 Topic A: Square and Cube Roots G8 M7 Lesson 10: Converting Repeating Decimals to Fractions G8 M7 Lesson 11: The Decimal Expansion of Some Irrational Numbers G8 M7 Lesson 13: Comparing Irrational Numbers G8 M7 Lesson 14: Decimal Expansion of π

Domain	Standards for Mathematical Content	Aligned Components of *Eureka Math*
Expressions and Equations	**Cluster: Work with radicals and integer exponents**	
	AR.Math.Content.8.EE.A.1 Know and apply the properties of *integer exponents* to generate equivalent numerical *expressions* using product, quotient, power to a power, or expanded form	G8 M1: Integer Exponents and Scientific Notation
	AR.Math.Content.8.EE.A.2 Use square root and cube root symbols to represent solutions to equations: ▪ Use square root symbols to represent solutions to equations of the form $x^2 = p$, where p is a positive rational number Evaluate square roots of small perfect squares. ▪ Use cube root symbols to represent solutions to equations of the form $x^3 = p$, where p is a rational number. Evaluate square roots and cube roots of small perfect cubes	G8 M7 Lesson 2: Square Roots G8 M7 Lesson 5: Solving Equations with Radicals
	AR.Math.Content.8.EE.A.3 Use numbers expressed in the form of a single digit times an *integer* power of 10 to estimate very large or very small quantities, and to express how many times as much one is than the other	G8 M1 Lesson 7: Magnitude G8 M1 Lesson 8: Estimating Quantities

Domain	Standards for Mathematical Content	Aligned Components of *Eureka Math*
	AR.Math.Content.8.EE.A.4 ▪ Perform operations with numbers expressed in scientific notation, including problems where both standard form and scientific notation are used ▪ Use scientific notation and choose units of appropriate size for measurements of very large or very small quantities (e.g., use millimeters per year for seafloor spreading) ▪ Interpret scientific notation that has been generated by technology	G8 M1: Integer Exponents and Scientific Notation
	Cluster: Understand the connections between proportional relationships, lines, and linear equations	
	AR.Math.Content.8.EE.B.5 ▪ Graph proportional relationships, interpreting the unit rate as the slope of the graph ▪ Compare two different proportional relationships represented in different ways (graphs, tables, equations)	G8 M4 Topic B: Linear Equations in Two Variables and Their Graphs G8 M4 Lesson 15: The Slope of a Non-Vertical Line G8 M4 Lesson 22: Constant Rates Revisited G8 M4 Lesson 24: Introduction to Simultaneous Equations

Domain	Standards for Mathematical Content	Aligned Components of *Eureka Math*
	AR.Math.Content.8.EE.B.6 ▪ Using a non-vertical or non-horizontal line, show why the slope m is the same between any two distinct points by creating similar triangles ▪ Write the equation $y = mx$ for a line through the origin ▪ Be able to write the equation $y = mx + b$ for a line intercepting the vertical axis at b	G8 M4 Topic C: Slope and Equations of Lines
	Cluster: Analyze and solve linear equations and pairs of simultaneous linear equations	
	AR.Math.Content.8.EE.C.7 Solve linear equations in one variable: ▪ Give examples of linear equations in one variable with one solution, infinitely many solutions, or no solutions ▪ Solve linear equations with rational number coefficients, including equations whose solutions require expanding expressions using the distributive property and collecting like terms	G8 M4 Topic A: Writing and Solving Linear Equations

Domain	Standards for Mathematical Content	Aligned Components of *Eureka Math*
	AR.Math.Content.8.EE.C.8 Analyze and solve pairs of simultaneous linear equations: ▪ Find solutions to a system of two linear equations in two variables so they correspond to points of intersection of their graphs ▪ Solve systems of equations in two variables algebraically using simple substitution and by inspection (e.g., $3x + 2y = 5$ and $3x + 2y = 6$ have no solution because $3x + 2y$ cannot simultaneously be 5 and 6) ▪ Solve real-world mathematical problems by utilizing and creating two linear equations in two variables.	G8 M4 Topic D: Systems of Linear Equations and Their Solutions G8 M4 Topic E: Pythagorean Theorem Note: Learning systems of linear equations is extended in Algebra I M1 Topic C.

Domain	Standards for Mathematical Content	Aligned Components of *Eureka Math*
Functions	**Cluster: Define, evaluate, and compare functions**	
	AR.Math.Content.8.F.A.1 ▪ Understand that a *function* is a rule that assigns to each input exactly one output ▪ The graph of a *function* is the set of ordered pairs consisting of an input and the corresponding output	G8 M5: Examples of Functions from Geometry
	AR.Math.Content.8.F.A.2 Compare properties (e.g., *y*-intercept/initial value, slope/rate of change) of two *functions* each represented in a different way (e.g., algebraically, graphically, numerically in tables, or by verbal descriptions)	G8 M5 Lesson 7: Comparing Linear Functions and Graphs
	AR.Math.Content.8.F.A.3 Identify the unique characteristics of *functions* (e.g., linear, quadratic, and exponential) by comparing their graphs, equations, and input/output tables	G8 M6 Topic A: Linear Functions

Domain	Standards for Mathematical Content	Aligned Components of *Eureka Math*
	Cluster: Use functions to model relationships between quantities	
	AR.Math.Content.8.F.B.4 Construct a *function* to model a linear relationship between two quantities: ▪ Determine the rate of change and initial value of the *function* from: ▫ a verbal description of a relationship ▫ two (x, y) values ▫ a table ▫ a graph ▪ Interpret the rate of change and initial value of a linear function in terms of the situation it models, and in terms of its graph or a table of values	G8 M6 Topic A: Linear Functions
	AR.Math.Content.8.F.B.5 ▪ Describe the functional relationship between two quantities by analyzing a graph (e.g., where the *function* is increasing or decreasing, linear or nonlinear) ▪ Sketch a graph that exhibits the features of a function that has been described verbally	G8 M6 Topic A: Linear Functions

Domain	Standards for Mathematical Content	Aligned Components of *Eureka Math*
Geometry	**Cluster: Understand congruence and similarity using physical models, transparencies, or geometry software**	
	AR.Math.Content.8.G.A.1 Verify experimentally the properties of rotations, reflections, and translations: ▪ Lines are taken to lines, and line segments to line segments of the same length ▪ Angles are taken to angles of the same measure ▪ Parallel lines are taken to parallel lines	G8 M2 Topic A: Definitions and Properties of the Basic Rigid Motions
	AR.Math.Content.8.G.A.2 ▪ Understand that a two-dimensional figure is congruent to another if the second can be obtained from the first by a sequence of rotations, reflections, and translations ▪ Given two congruent figures, describe a sequence that exhibits the congruence between them	G8 M2: The Concept of Congruence

Domain	Standards for Mathematical Content	Aligned Components of *Eureka Math*
	AR.Math.Content.8.G.A.3 Given a two-dimensional figure on a *coordinate plane*, identify and describe the effect (rule or new coordinates) of a transformation (dilation, translation, rotation, and reflection): ▪ Image to pre-image ▪ Pre-image to image	G8 M3 Topic A: Dilation G8 M3 Lesson 8: Similarity
	AR.Math.Content.8.G.A.4 ▪ Understand that a two-dimensional figure is similar to another if the second can be obtained from the first by a sequence of rotations, reflections, translations, and dilations ▪ Given two similar two-dimensional figures, describe a sequence that exhibits the similarity between them	G8 M3 Lesson 3: Examples of Dilations G8 M3 Topic B: Similar Figures
	AR.Math.Content.8.G.A.5 Use informal arguments to establish facts about: ▪ The angle sum and exterior angle of triangles ▪ The angles created when parallel lines are cut by a transversal ▪ The angle-angle criterion for similarity of triangles	G8 M2 Topic C: Congruence and Angle Relationships G8 M3 Topic B: Similar Figures

Domain	Standards for Mathematical Content	Aligned Components of *Eureka Math*
	Cluster: Understand and apply the Pythagorean Theorem	
	AR.Math.Content.8.G.B.6 Model or explain an informal proof of the Pythagorean Theorem and its converse	G8 M2 Topic D: The Pythagorean Theorem G8 M3 Topic C: The Pythagorean Theorem G8 M7 Topic C: The Pythagorean Theorem
	AR.Math.Content.8.G.B.7 Apply the Pythagorean Theorem to determine unknown side lengths in right triangles in real-world and mathematical problems in two and three dimensions	G8 M2 Topic D: The Pythagorean Theorem G8 M3 Topic C: The Pythagorean Theorem G8 M4 Topic E: Pythagorean Theorem G8 M7: Introduction to Irrational Numbers Using Geometry
	AR.Math.Content.8.G.B.8 Apply the Pythagorean Theorem to find the distance between two points in a coordinate system	G8 M2 Topic D: The Pythagorean Theorem G8 M7 Lesson 17: Distance on the Coordinate Plane
	Cluster: Solve real-world and mathematical problems involving volume of cylinders, cones, and spheres	
	AR.Math.Content.8.G.C.9 Develop and know the formulas and surface areas of cones, cylinders, and spheres and use them to solve real-world and mathematical problems	G8 M5: Examples of Functions from Geometry G8 M7 Topic D: Applications of Radicals and Roots

Domain	Standards for Mathematical Content	Aligned Components of *Eureka Math*
Statistics and Probability	**Cluster: Investigate patterns of association in bivariate data**	
	AR.Math.Content.8.SP.A.1 ▪ Construct and interpret scatter plots for *bivariate* measurement data to investigate patterns of association between two quantities ▪ Describe patterns such as clustering, outliers, positive or negative association, linear association, and nonlinear association	G8 M6: Linear Functions
	AR.Math.Content.8.SP.A.2 ▪ Know that straight lines are widely used to model relationships between two quantitative variables ▪ For scatter plots that suggest a linear association, informally fit a straight line, and informally assess the model fit by judging the closeness of the data points to the line	G8 M6: Linear Functions
	AR.Math.Content.8.SP.A.3 Use the equation of a linear model to solve problems in the context of *bivariate* measurement data, interpreting the slope and intercepts	G8 M6 Topic C: Linear and Nonlinear Models

Domain	Standards for Mathematical Content		Aligned Components of *Eureka Math*
	AR.Math.Content.8.SP.A.4 ▪ Understand that patterns of association can also be seen in *bivariate* categorical data by displaying frequencies and relative frequencies in a two-way table ▪ Construct and interpret a two-way table on two categorical variables collected from the same subjects ▪ Use relative frequencies calculated for rows or columns to describe possible association between the two variables		G8 M6 Topic D: Bivariate Categorical Data