Grade 8 | Arkansas Mathematics Standards Correlation to *Eureka Math*®

About *Eureka Math*

Created by Great Minds®, a mission-driven Public Benefit Corporation, *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

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

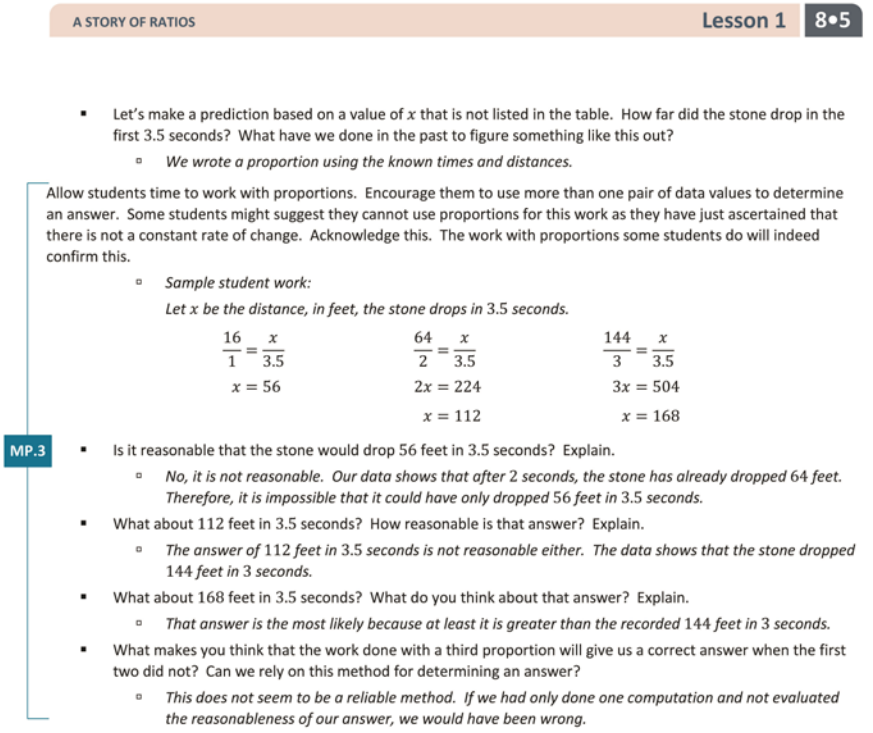
Schools and districts nationwide are experiencing student growth and impressive test scores after using *Eureka Math*. See their stories and data at greatminds.org/data.

Full Suite of Resources

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

Standards for Mathematical Practice	Aligned Components of *Eureka Math*
MP.1 Make sense of problems and persevere in solving them.	Lessons in every module engage students in mathematical practices. These are designated in the Module Overview and labeled in lessons. For example: 
MP.2 Reason abstractly and quantitatively.	
MP.3 Construct viable arguments and critique the reasoning of others.	
MP.4 Model with mathematics.	
MP.5 Use appropriate tools strategically.	
MP.6 Attend to precision.	
MP.7 Look for and make use of structure.	
MP.8 Look for and express regularity in repeated reasoning.	

Number Concepts & Computations

Rational & Irrational Numbers

Students understand relationships among numbers and the real number system.

Arkansas Mathematics Standards	Aligned Components of *Eureka Math*
8.NCC.1 Describe relationships in the real number system (rational and irrational).	G8 M7 Topic B: Decimal Expansions of Numbers
8.NCC.2 Compare the size of irrational numbers and locate them on a number line by finding the rational approximations.	G8 M7 Lesson 1: The Pythagorean Theorem G8 M7 Lesson 2: Square Roots G8 M7 Lesson 3: Existence and Uniqueness of Square Roots and Cube Roots G8 M7 Lesson 4: Simplifying Square Roots 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
8.NCC.3 Know and apply the properties of integer exponents to generate equivalent numerical expressions.	G8 M1 Topic A: Exponential Notation and Properties of Integer Exponents
8.NCC.4 Write very large and very small numbers in scientific notation using positive and negative exponents.	G8 M1 Lesson 7: Magnitude G8 M1 Lesson 8: Estimating Quantities

Arkansas Mathematics Standards	Aligned Components of *Eureka Math*
8.NCC.5 Compare numbers written in scientific notation to determine how many times larger or smaller one number is than the other, using real-world and mathematical problems.	G8 M1 Lesson 9: Scientific Notation G8 M1 Lesson 10: Operations with Numbers in Scientific Notation G8 M1 Lesson 11: Efficacy of Scientific Notation G8 M1 Lesson 12: Choice of Unit G8 M1 Lesson 13: Comparison of Numbers Written in Scientific Notation and Interpreting Scientific Notation Using Technology
8.NCC.6 Solve real-world and mathematical problems by performing operations with numbers written in standard and scientific notation.	G8 M1 Lesson 9: Scientific Notation G8 M1 Lesson 10: Operations with Numbers in Scientific Notation G8 M1 Lesson 11: Efficacy of Scientific Notation G8 M1 Lesson 12: Choice of Unit G8 M1 Lesson 13: Comparison of Numbers Written in Scientific Notation and Interpreting Scientific Notation Using Technology

Number Concepts & Computations

Rational Number Operations

Students work with square and cube roots.

Arkansas Mathematics Standards	Aligned Components of *Eureka Math*
8.NCC.7 Solve equations in the form of $x^2 = p$ or $x^3 = p$ where p is a positive rational number.	G8 M7 Lesson 5: Solving Equations with Radicals
8.NCC.8 Evaluate square roots of perfect squares and cube roots of perfect cubes.	G8 M7 Lesson 2: Square Roots G8 M7 Lesson 5: Solving Equations with Radicals

Functions

Proportional & Linear Relationships

Students understand slope using previous learning of proportional relationships.

Arkansas Mathematics Standards	Aligned Components of *Eureka Math*
8.FN.1 Graph proportional relationships, interpreting the unit rate as the slope of the graph.	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
8.FN.2 Explain, using similar right triangles, how the slope of a line is the same between two points on a non-vertical line or non-horizontal line.	G8 M4 Lesson 16: The Computation of the Slope of a Non-Vertical Line G8 M4 Lesson 17: The Line Joining Two Distinct Points of the Graph $y = mx + b$ has Slope m G8 M4 Lesson 18: There is Only One Line Passing Through a Given Point with a Given Slope G8 M4 Lesson 19: The Graph of a Linear Equation in Two Variables is a Line G8 M4 Lesson 20: Every Line is a Graph of a Linear Equation G8 M4 Lesson 21: Some Facts About Graphs of a Linear Equation in Two Variables G8 M4 Lesson 22: Constant Rates Revisited G8 M4 Lesson 23: The Defining Equation of a Line

Functions

Functions

Students understand that a function is a rule that assigns each input exactly one output.

Arkansas Mathematics Standards	Aligned Components of *Eureka Math*
8.FN.3 Determine whether a relation is a function or not when given a function map, table, graph, equation, or set of ordered pairs.	G8 M5 Lesson 1: The Concept of a Function G8 M5 Lesson 2: Formal Definition of a Function G8 M5 Lesson 4: More Examples of Functions G8 M5 Lesson 5: Graphs of Functions and Equations G8 M5 Lesson 6: Graphs of Linear Functions and Rate of Change G8 M5 Lesson 8: Graphs of Simple Nonlinear Functions Algebra I M3 Lesson 10: Representing, Naming, and Evaluating Functions *Supplemental material is necessary to address determining whether a relation is a function when given a function map.*
8.FN.4 Compare the rate of change (slope) and y-intercept (initial value) of two linear functions each represented in different forms.	G8 M5 Lesson 7: Comparing Linear Functions and Graphs
8.FN.5 Distinguish between linear and nonlinear functions by comparing graphs and equations.	G8 M5 Lesson 5: Graphs of Functions and Equations G8 M5 Lesson 6: Graphs of Linear Functions and Rate of Change G8 M5 Lesson 8: Graphs of Simple Nonlinear Functions

Arkansas Mathematics Standards	Aligned Components of *Eureka Math*
8.FN.6 Determine the rate of change (slope) and y-intercept (initial value) from tables, graphs, equations, and verbal descriptions of linear relationships.	G8 M5 Lesson 6: Graphs of Linear Functions and Rate of Change G8 M5 Lesson 7: Comparing Linear Functions and Graphs G8 M6 Lesson 1: Modeling Linear Relationships G8 M6 Lesson 2: Interpreting Rate of Change and Initial Value G8 M6 Lesson 3: Representations of a Line
8.FN.7 Interpret and explain the meaning of the rate of change (slope) and y-intercept (initial value) of a linear relationship in a real-world context.	G8 M6 Lesson 1: Modeling Linear Relationships G8 M6 Lesson 2: Interpreting Rate of Change and Initial Value G8 M6 Lesson 3: Representations of a Line
8.FN.8 Analyze a graph by describing the functional relationships between two quantities.	G8 M6 Lesson 2: Interpreting Rate of Change and Initial Value G8 M6 Lesson 3: Representations of a Line G8 M6 Lesson 4: Increasing and Decreasing Functions G8 M6 Lesson 5: Increasing and Decreasing Functions
8.FN.9 Sketch a graph that exhibits qualitative features of a function described verbally.	G8 M6 Lesson 2: Interpreting Rate of Change and Initial Value G8 M6 Lesson 3: Representations of a Line G8 M6 Lesson 4: Increasing and Decreasing Functions G8 M6 Lesson 5: Increasing and Decreasing Functions

Algebra

Equations & Inequalities

Students solve linear equations and inequalities.

Arkansas Mathematics Standards	Aligned Components of *Eureka Math*
8.ALG.1 Analyze and solve one-variable linear equations with rational coefficients containing solutions with one, zero, or infinitely many solutions.	G8 M4 Topic A: Writing and Solving Linear Equations
8.ALG.2 Analyze and solve one-variable linear inequalities with rational coefficients.	G7 M3 Lesson 12: Properties of Inequalities G7 M3 Lesson 13: Inequalities G7 M3 Lesson 14: Solving Inequalities G7 M3 Lesson 15: Graphing Solutions to Inequalities

Algebra

Systems of Equations

Students will solve systems of equations.

Arkansas Mathematics Standards	Aligned Components of *Eureka Math*
8.ALG.3 Analyze and solve systems of linear equations in the form $y = mx + b$ in real-world or mathematical contexts, graphically and algebraically.	G8 M4 Topic D: Systems of Equations and Their Solutions G8 M4 Topic E: Pythagorean Theorem

Geometry & Measurement

Area, Volume, & Surface Area

Students solve problems involving area, volume, and surface area.

Arkansas Mathematics Standards	Aligned Components of *Eureka Math*
8.GM.1 Apply the formulas for the volume and surface area of cylinders, cones, and spheres to solve real-world and mathematical problems.	G8 M5 Topic B: Volume G8 M7 Lesson 19: Cones and Spheres G8 M7 Lesson 20: Truncated Cones G8 M7 Lesson 21: Volume of Composite Solids G8 M7 Lesson 22: Average Rate of Change

Geometry & Measurement

Cross Sections

Students describe cross sections of three-dimensional figures.

Arkansas Mathematics Standards	Aligned Components of *Eureka Math*
8.GM.2 Describe the two-dimensional figure that results from slicing a three-dimensional figure parallel and perpendicular to the base.	G7 M6 Lesson 16: Slicing a Right Rectangular Prism with a Plane G7 M6 Lesson 17: Slicing a Right Rectangular Pyramid with a Plane G7 M6 Lesson 19: Understanding Three-Dimensional Figures

Geometry & Measurement

Pythagorean Theorem

Students explore right triangles and apply the Pythagorean Theorem.

Arkansas Mathematics Standards	Aligned Components of *Eureka Math*
8.GM.3 Model or explain an informal proof of the Pythagorean Theorem and its converse.	G8 M2 Lesson 15: Informal Proof of the Pythagorean Theorem G8 M3 Topic C: The Pythagorean Theorem G8 M7 Lesson 15: Pythagorean Theorem, Revisited G8 M7 Lesson 16: Converse of the Pythagorean Theorem
8.GM.4 Apply the Pythagorean Theorem to determine unknown side lengths in right triangles.	G8 M2 Topic D: The Pythagorean Theorem G8 M3 Topic C: The Pythagorean Theorem G8 M7 Lesson 1: The Pythagorean Theorem G8 M7 Lesson 4: Simplifying Square Roots G8 M7 Lesson 5: Solving Equations with Radicals G8 M7 Lesson 17: Distance on the Coordinate Plane G8 M7 Lesson 18: Applications of the Pythagorean Theorem G8 M7 Lesson 19: Cones and Spheres G8 M7 Lesson 23: Nonlinear Motion
8.GM.5 Apply the Pythagorean Theorem to find the distance between two points in a coordinate system.	G8 M2 Lesson 16: Applications of the Pythagorean Theorem G8 M7 Lesson 17: Distance on the Coordinate Plane

Geometry & Measurement

Transformations & Congruence on a Coordinate Plane

Students use concrete models, diagrams, or geometry to understand congruence and similarity.

Arkansas Mathematics Standards	Aligned Components of *Eureka Math*
8.GM.6 Given a figure, draw a congruent figure on a coordinate plane resulting from a rotation, reflection, or translation.	*Supplemental material is necessary to address this standard.*
8.GM.7 Identify a single transformation used to transform one figure onto another on a coordinate plane.	*Supplemental material is necessary to address this standard.*
8.GM.8 Given two congruent figures, describe a sequence of transformations that maps one figure to another.	G8 M2 Topic B: Sequencing the Basic Rigid Motions
8.GM.9 Perform a given sequence of transformations of a figure on the coordinate plane, including rotations, reflections, translations, and dilations.	G8 M2 Topic B: Sequencing the Basic Rigid Motions
8.GM.10 Describe the effects of rotations, reflections, translations, and dilations on two-dimensional figures using coordinates.	G8 M3 Topic A: Dilation G8 M3 Lesson 8: Similarity *Supplemental material is necessary to address the effects of rotations, reflections, and translations on two-dimensional figures using coordinates.*

Arkansas Mathematics Standards	Aligned Components of *Eureka Math*
8.GM.11 Given two similar two-dimensional figures, describe a sequence of transformations that exhibits similarity, including rotations, reflections, translations, and dilations.	G8 M3 Lesson 8: Similarity G8 M3 Lesson 9: Basic Properties of Similarity

Statistics & Probability

Bivariate Data

Students investigate patterns of association to bivariate data.

Arkansas Mathematics Standards	Aligned Components of *Eureka Math*
8.SP.1 Construct scatter plots using bivariate data; determine if the data displays a linear or nonlinear pattern and positive, negative, or no association.	G8 M6 Lesson 6: Scatter Plots G8 M6 Lesson 7: Patterns in Scatter Plots G8 M6 Lesson 11: Using Linear Models in a Data Context G8 M6 Lesson 12: Nonlinear Models in a Data Context
8.SP.2 Construct straight lines to approximately fit data displaying a linear association when presented in scatter plots.	G8 M6 Lesson 8: Informally Fitting a Line G8 M6 Lesson 9: Determining the Equation of a Line Fit to Data G8 M6 Lesson 11: Using Linear Models in a Data Context
8.SP.3 Construct and interpret a relative frequency table, using data from two categorical variables collected from the same subject.	G8 M6 Topic D: Bivariate Categorical Data

Statistics & Probability

Probability

Students understand theoretical and experimental probability for compound experiments using organized lists, tables, or tree diagrams.

Arkansas Mathematics Standards	Aligned Components of *Eureka Math*
8.SP.4 Determine the sample space and use the sample space to determine the theoretical probability of a given set of outcomes for compound experiments, using organized lists, tables, or tree diagrams.	G7 M5 Lesson 6: Using Tree Diagrams to Represent a Sample Space and to Calculate Probabilities G7 M5 Lesson 7: Calculating Probabilities of Compound Events
8.SP.5 Determine theoretical and experimental probabilities of compound experiments.	G7 M5 Lesson 6: Using Tree Diagrams to Represent a Sample Space and to Calculate Probabilities G7 M5 Lesson 7: Calculating Probabilities of Compound Events G7 M5 Lesson 10: Conducting a Simulation to Estimate the Probability of an Event G7 M5 Lesson 11: Conducting a Simulation to Estimate the Probability of an Event
8.SP.6 Use theoretical probability of an event in a compound experiment to predict the number of times that event will occur for a large number of experiments.	*Supplemental material is necessary to address this standard.*