Grade 8 | Arkansas Academic Standards – Mathematics Correlation to *Eureka Math²™*

When the original *Eureka Math®* curriculum was released, it quickly became the most widely used K–5 mathematics curriculum in the country. Now, the Great Minds® teacher–writers have created *Eureka Math²™*, a groundbreaking new curriculum that helps teachers deliver exponentially better math instruction while still providing students with the same deep understanding of and fluency in math. *Eureka Math²* carefully sequences mathematical content to maximize vertical alignment—a principle tested and proven to be essential in students' mastery of math—from kindergarten through high school.

While this innovative new curriculum includes all the trademark *Eureka Math* aha moments that have been delighting students and teachers for years, it also boasts these exciting new features:

Teachability

Eureka Math² employs streamlined materials that allow teachers to plan more efficiently and focus their energy on delivering high-quality instruction that meets the individual needs of their students. Differentiation suggestions, slide decks, digital interactives, and multiple forms of assessment are just a few of the resources built right into the teacher materials.

Accessibility

Eureka Math² incorporates Universal Design for Learning principles so all learners can access the mathematics and take on challenging math concepts. Student supports are built into the instructional design and are clearly identified in the *Teach* book. Further, the curriculum carries a focus on readability. By eliminating unnecessary words and using simple, clear sentences, the *Eureka Math²* teacher–writers have created one of the most readable mathematics curricula on the market. The curriculum's readability and accessibility help all students see themselves as mathematical thinkers and doers who are fully capable of owning their mathematics learning.

Digital Engagement

The digital elements of *Eureka Math²* add to students' engagement with the math. The curriculum provides teachers with digital slides for each lesson. In addition, each grade level includes wordless videos that spark students' interest and curiosity. Students at all levels work through mathematical explorations that help lead to their own mathematical discoveries. Digital lessons and videos provide opportunities for students to wonder, explore, and make sense of mathematics, which contributes to the development of a strong, positive mathematical identity.

Standards for Mathematical Practice	Aligned Components of *Eureka Math²*
MP.1 Make sense of problems and persevere in solving them.	Lessons in every module engage students in mathematical practices. These are indicated in margin notes included with every lesson.
MP.2 Reason abstractly and quantitatively.	Lessons in every module engage students in mathematical practices. These are indicated in margin notes included with every lesson.
MP.3 Construct viable arguments and critique the reasoning of others.	Lessons in every module engage students in mathematical practices. These are indicated in margin notes included with every lesson.
MP.4 Model with mathematics.	Lessons in every module engage students in mathematical practices. These are indicated in margin notes included with every lesson.
MP.5 Use appropriate tools strategically.	Lessons in every module engage students in mathematical practices. These are indicated in margin notes included with every lesson.
MP.6 Attend to precision.	Lessons in every module engage students in mathematical practices. These are indicated in margin notes included with every lesson.
MP.7 Look for and make use of structure.	Lessons in every module engage students in mathematical practices. These are indicated in margin notes included with every lesson.
MP.8 Look for and express regularity in repeated reasoning.	Lessons in every module engage students in mathematical practices. These are indicated in margin notes included with every lesson.

The Number System

AR.Math.Content.8.NS.A Know that there are numbers that are not rational, and approximate them by rational numbers.

Arkansas Academic Standards – Mathematics	Aligned Components of *Eureka Math²*
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 $\frac{a}{b}$ as a repeating decimal. Write a repeating decimal as a fraction.	8 M4 Lesson 5: An Interesting Application of Linear Equations, Part 1 8 M4 Lesson 6: An Interesting Application of Linear Equations, Part 2
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).	8 M1 Lesson 21: Approximating Values of Roots and π^2 8 M1 Lesson 23: Ordering Irrational Numbers

Expressions and Equations

AR.Math.Content.8.EE.A Work with radicals and integer exponents.

Arkansas Academic Standards – Mathematics	Aligned Components of *Eureka Math²*
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.	8 M1 Topic B: Properties and Definitions of Exponents

Arkansas Academic Standards – Mathematics	Aligned Components of *Eureka Math²*
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.	8 M1 Lesson 16: Perfect Squares and Perfect Cubes 8 M1 Lesson 17: Solving Equations with Squares and Cubes 8 M1 Lesson 20: Square Roots 8 M1 Lesson 22: Familiar and Not So Familiar Numbers 8 M1 Lesson 24: Revisiting Equations with Squares and Cubes
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.	8 M1 Lesson 1: Large and Small Positive Numbers 8 M1 Lesson 2: Comparing Large Numbers 8 M1 Lesson 3: Time to Be More Precise—Scientific Notation 8 M1 Lesson 7: Making Sense of the Exponent of 0 8 M1 Lesson 11: Small Positive Numbers in Scientific Notation
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.	8 M1 Lesson 2: Comparing Large Numbers 8 M1 Lesson 4: Adding and Subtracting Numbers Written in Scientific Notation 8 M1 Lesson 12: Operations with Numbers in Scientific Notation 8 M1 Lesson 13: Applications with Numbers in Scientific Notation 8 M1 Lesson 14: Choosing Units of Measurement 8 M1 Lesson 15: Get to the Point

Expressions and Equations

AR.Math.Content.8.EE.B Understand the connections between proportional relationships, lines, and linear equations.

Arkansas Academic Standards – Mathematics	Aligned Components of *Eureka Math²*
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).	8 M4 Lesson 15: Comparing Proportional Relationships 8 M4 Lesson 16: Proportional Relationships and Slope
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.	8 M3 Lesson 17: Similar Triangles on a Line 8 M4 Lesson 16: Proportional Relationships and Slope 8 M4 Lesson 17: Slopes of Rising Lines 8 M4 Lesson 18: Slopes of Falling Lines 8 M4 Lesson 19: Using Coordinates to Find Slope 8 M4 Lesson 20: Slope-Intercept Form of the Equation of a Line

Expressions and Equations

AR.Math.Content.8.EE.C Analyze and solve linear equations and pairs of simultaneous linear equations.

Arkansas Academic Standards – Mathematics	Aligned Components of *Eureka Math²*
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.	8 M4 Topic A: Linear Equations in One Variable 8 M4 Topic B: The Structure of Linear Equations in One Variable
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.	8 M5 Topic A: Solving Systems of Linear Equations Graphically 8 M5 Topic B: Solving Systems of Equations Algebraically 8 M5 Topic C: Writing and Solving Systems of Linear Equations

Functions

AR.Math.Content.8.F.A Define, evaluate, and compare functions.

Arkansas Academic Standards – Mathematics	Aligned Components of *Eureka Math²*
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.	8 M6 Lesson 1: Motion and Speed 8 M6 Lesson 2: Definition of a Function 8 M6 Lesson 4: More Examples of Functions 8 M6 Lesson 5: Graphs of Functions and Equations
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).	8 M6 Lesson 7: Interpreting Rate of Change and Initial Value 8 M6 Lesson 8: Comparing Functions
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.	*Supplemental material is necessary to address this standard.*

Functions

AR.Math.Content.8.F.B Use functions to model relationships between quantities.

Arkansas Academic Standards – Mathematics	Aligned Components of *Eureka Math²*
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.	8 M6 Lesson 6: Linear Functions and Rate of Change 8 M6 Lesson 7: Interpreting Rate of Change and Initial Value 8 M6 Lesson 25: Applications of Volume
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.	8 M6 Lesson 9: Increasing and Decreasing Functions 8 M6 Lesson 10: Graphs of Nonlinear Functions

Geometry

AR.Math.Content.8.G.A Understand congruence and similarity using physical models, transparencies, or geometry software.

Arkansas Academic Standards – Mathematics	Aligned Components of *Eureka Math²*
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.	8 M2 Lesson 1: Motions of the Plane 8 M2 Lesson 2: Translations 8 M2 Lesson 3: Reflections 8 M2 Lesson 5: Rotations 8 M2 Lesson 7: Working Backward 8 M2 Lesson 8: Sequencing the 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.	8 M2 Topic B: Rigid Motions and Congruent Figures 8 M2 Lesson 12: Lines Cut by a Transversal
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.	8 M2 Lesson 4: Translations and Reflections on the Coordinate Plane 8 M2 Lesson 6: Rotations on the Coordinate Plane 8 M2 Lesson 9: Ordering Sequences of Rigid Motions 8 M3 Topic A: Dilations 8 M3 Topic B: Properties of Dilations 8 M3 Lesson 9: Describing Dilations 8 M3 Lesson 10: Sequencing Transformations 8 M3 Lesson 16: Similar Right Triangles

Arkansas Academic Standards – Mathematics	Aligned Components of *Eureka Math²*
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.	8 M3 Lesson 11: Similar Figures 8 M3 Lesson 12: Exploring Angles in Similar Triangles 8 M3 Lesson 13: Similar Triangles 8 M3 Lesson 17: Similar Triangles on a Line
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.	8 M2 Topic C: Angle Relationships 8 M3 Lesson 12: Exploring Angles in Similar Triangles 8 M3 Lesson 13: Similar Triangles 8 M3 Lesson 14: Using Similar Figures to Find Unknown Side Lengths 8 M3 Lesson 15: Applications of Similar Figures 8 M3 Lesson 16: Similar Right Triangles

Geometry

AR.Math.Content.8.G.B Understand and apply the Pythagorean Theorem.

Arkansas Academic Standards – Mathematics	Aligned Components of *Eureka Math²*
AR.Math.Content.8.G.B.6 Model or explain an informal proof of the Pythagorean Theorem and its converse.	8 M2 Lesson 17: Proving the Pythagorean Theorem 8 M2 Lesson 18: Proving the Converse of the Pythagorean Theorem 8 M2 Lesson 19: Using the Pythagorean Theorem and Its Converse

Arkansas Academic Standards – Mathematics	Aligned Components of *Eureka Math²*
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.	8 M1 Lesson 18: The Pythagorean Theorem 8 M1 Lesson 19: Using the Pythagorean Theorem 8 M1 Lesson 20: Square Roots 8 M2 Lesson 19: Using the Pythagorean Theorem and Its Converse 8 M2 Lesson 21: Applying the Pythagorean Theorem 8 M2 Lesson 22: On the Right Path 8 M3 Lesson 16: Similar Right Triangles
AR.Math.Content.8.G.B.8 Apply the Pythagorean Theorem to find the distance between two points in a coordinate system.	8 M2 Lesson 20: Distance in the Coordinate Plane 8 M2 Lesson 22: On the Right Path

Geometry

AR.Math.Content.8.G.C Solve real-world and mathematical problems involving volume of cylinders, cones, and spheres.

Arkansas Academic Standards – Mathematics	Aligned Components of *Eureka Math²*
AR.Math.Content.8.G.C.9 Develop and know the formulas for the volumes and surface areas of cones, cylinders, and spheres and use them to solve real-world and mathematical problems.	8 M6 Topic E: Volume

Statistics and Probability

AR.Math.Content.8.SP.A Investigate patterns of association in bivariate data.

Arkansas Academic Standards – Mathematics	Aligned Components of *Eureka Math²*
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.	8 M6 Lesson 11: Scatter Plots 8 M6 Lesson 12: Patterns in Scatter Plots
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.	8 M6 Lesson 13: Informally Fitting a Line to Data 8 M6 Lesson 15: Linear Models 8 M6 Lesson 16: Using the Investigative Process 8 M6 Lesson 17: Analyzing the Model
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.	8 M6 Lesson 6: Linear Functions and Rate of Change 8 M6 Lesson 7: Interpreting Rate of Change and Initial Value 8 M6 Lesson 14: Determining an Equation of a Line Fit to Data 8 M6 Lesson 15: Linear Models 8 M6 Lesson 16: Using the Investigative Process 8 M6 Lesson 17: Analyzing the Model

Arkansas Academic Standards – Mathematics	Aligned Components of *Eureka Math²*
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.	8 M6 Topic D: Bivariate Categorical Data