Grade 8 | Georgia State Standards for 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.

Numerical Reasoning

8.NR.1 Solve problems involving irrational numbers and rational approximations of irrational numbers to explain realistic applications.

Georgia State Standards for Mathematics	Aligned Components of *Eureka Math²*
8.NR.1.1 Distinguish between rational and irrational numbers using decimal expansion. Convert a decimal expansion which repeats eventually into a rational number.	8 M1 Lesson 22: Familiar and Not So Familiar Numbers 8 M4 Lesson 5: An Interesting Application of Linear Equations, Part 1 8 M4 Lesson 6: An Interesting Application of Linear Equations, Part 2
8.NR.1.2 Approximate irrational numbers to compare the size of irrational numbers, locate them approximately on a number line, and estimate the value of expressions.	8 M1 Topic E: Irrational Numbers

Numerical Reasoning

8.NR.2 Solve problems involving radicals and integer exponents including relevant application situations; apply place value understanding with scientific notation and use scientific notation to explain real phenomena.

Georgia State Standards for Mathematics	Aligned Components of *Eureka Math²*
8.NR.2.1 Apply the properties of integer exponents to generate equivalent numerical expressions.	8 M1 Topic A: Introduction to Scientific Notation 8 M1 Topic B: Properties and Definitions of Exponents

Georgia State Standards for Mathematics	Aligned Components of *Eureka Math²*
8.NR.2.2 Use square root and cube root symbols to represent solutions to equations. Recognize that $x^2 = p$ (where p is a positive rational number and $\lvert x \rvert \leq 25$) has two solutions and $x^3 = p$ (where p is a negative or positive rational number and $\lvert x \rvert \leq 10$) has one solution. Evaluate square roots of perfect squares ≤ 625 and cube roots of perfect cubes ≥ -1000 and ≤ 1000.	8 M1 Topic D: Perfect Squares, Perfect Cubes, and the Pythagorean Theorem 8 M1 Topic E: Irrational Numbers
8.NR.2.3 Use numbers expressed in scientific notation to estimate very large or very small quantities, and to express how many times as much one is than the other.	8 M1 Topic A: Introduction to Scientific Notation 8 M1 Lesson 7: Making Sense of the Exponent of 0 8 M1 Lesson 11: Small Positive Numbers in Scientific Notation
8.NR.2.4 Add, subtract, multiply, and divide numbers expressed in scientific notation, including problems where both decimal and scientific notation are used. Interpret scientific notation that has been generated by technology (e.g., calculators or online technology tools).	8 M1 Topic A: Introduction to Scientific Notation 8 M1 Topic C: Applications of the Properties and Definitions of Exponents

Patterning and Algebraic Reasoning

8.PAR.3 Create and interpret expressions within relevant situations. Create, interpret, and solve linear equations and linear inequalities in one variable to model and explain real phenomena.

Georgia State Standards for Mathematics	Aligned Components of *Eureka Math²*
8.PAR.3.1 Interpret expressions and parts of an expression, in context, by utilizing formulas or expressions with multiple terms and/or factors.	Algebra I M5: Linear and Exponential Functions
8.PAR.3.2 Describe and solve linear equations in one variable with one solution ($x = a$), infinitely many solutions ($a = a$), or no solutions ($a = b$). Show which of these possibilities is the case by successively transforming the given equation into simpler forms, until an equivalent equation of the form $x = a$, $a = a$, or $a = b$ results (where a and b are different numbers).	8 M4 Topic B: The Structure of Linear Equations in One Variable
8.PAR.3.3 Create and solve linear equations and inequalities in one variable within a relevant application.	7 M3 Topic D: Inequalities

Georgia State Standards for Mathematics	Aligned Components of *Eureka Math²*
8.PAR.3.4 Using algebraic properties and the properties of real numbers, justify the steps of a one-solution equation or inequality.	8 M4 Topic A: Linear Equations in One Variable 8 M4 Lesson 10: Using Linear Equations to Solve Real-World Problems 8 M4 Lesson 11: Planning a Trip
8.PAR.3.5 Solve linear equations and inequalities in one variable with coefficients represented by letters and explain the solution based on the contextual, mathematical situation.	7 M3 Topic D: Inequalities 8 M4 Topic A: Linear Equations in One Variable 8 M4 Topic B: The Structure of Linear Equations in One Variable
8.PAR.3.6 Use algebraic reasoning to fluently manipulate linear and literal equations expressed in various forms to solve relevant, mathematical problems.	Algebra I M1: Expressions, Equations, and Inequalities in One Variable Algebra I M4: Quadratic Functions

Patterning and Algebraic Reasoning

8.PAR.4 Show and explain the connections between proportional and non-proportional relationships, lines, and linear equations; create and interpret graphical mathematical models and use the graphical, mathematical model to explain real phenomena represented in the graph.

Georgia State Standards for Mathematics	Aligned Components of *Eureka Math²*
8.PAR.4.1 Use the equation $y = mx$ (proportional) for a line through the origin to derive the equation $y = mx + b$ (non-proportional) for a line intersecting the vertical axis at b.	8 M6 Lesson 3: Linear Functions and Proportionality 8 M6 Lesson 6: Linear Functions and Rate of Change 8 M6 Lesson 10: Graphs of Nonlinear Functions
8.PAR.4.2 Show and explain that the graph of an equation representing an applicable situation in two variables is the set of all its solutions plotted in the coordinate plane.	Algebra I M2: Equations and Inequalities in Two Variables

Functional and Graphical Reasoning

8.FGR.5 Describe the properties of functions to define, evaluate, and compare relationships, and use functions and graphs of functions to model and explain real phenomena.

Georgia State Standards for Mathematics	Aligned Components of *Eureka Math²*
8.FGR.5.1 Show and explain that a function is a rule that assigns to each input exactly one output.	8 M6 Topic A: Functions

Georgia State Standards for Mathematics	Aligned Components of *Eureka Math²*
8.FGR.5.2 Within realistic situations, identify and describe examples of functions that are linear or nonlinear. Sketch a graph that exhibits the qualitative 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
8.FGR.5.3 Relate the domain of a linear function to its graph and where applicable to the quantitative relationship it describes.	Algebra I M3 Topic A: Functions and Their Graphs
8.FGR.5.4 Compare properties (rate of change and initial value) of two functions used to model an authentic situation each represented in a different way (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
8.FGR.5.5 Write and explain the equations $y = mx + b$ (slope-intercept form), $Ax + By = C$ (standard form), and $(y - y_1) = m(x - x_1)$ (point-slope form) as defining a linear function whose graph is a straight line to reveal and explain different properties of the function.	8 M4 Topic E: Different Forms of Linear Equations

Georgia State Standards for Mathematics	Aligned Components of *Eureka Math²*
8.FGR.5.6 Write a linear function defined by an expression in different but equivalent forms to reveal and explain different properties of the function.	8 M6 Topic A: Functions
8.FGR.5.7 Construct a function to model a linear relationship between two quantities. Determine the rate of change and initial value of the function from a description of a relationship or from two (x, y) values, including reading these from a table or from a graph.	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
8.FGR.5.8 Explain the meaning of 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: Functions and Bivariate Statistics

Georgia State Standards for Mathematics	Aligned Components of *Eureka Math²*
8.FGR.5.9 Graph and analyze linear functions expressed in various algebraic forms and show key characteristics of the graph to describe applicable situations.	Algebra I M2 Lesson 2: Graphing Linear Equations in Two Variables Algebra I M2 Lesson 3: Creating Linear Equations in Two Variables Algebra I M3 Lesson 6: Representations of Functions Algebra I M3 Lesson 8: Identifying Key Features of a Function and Its Graph Algebra I M3 Lesson 14: Piecewise Linear Functions Algebra I M3 Lesson 15: The Absolute Value Function Algebra I M3 Lesson 19: Building New Functions—Translations Algebra I M3 Lesson 21: Building New Functions—Vertical Scaling

Functional and Graphical Reasoning

8.FGR.6 Solve practical, linear problems involving situations using bivariate quantitative data.

Georgia State Standards for Mathematics	Aligned Components of *Eureka Math²*
8.FGR.6.1 Show that straight lines are widely used to model relationships between two quantitative variables. For scatter plots that suggest a linear association, visually fit a straight line, and informally assess the model fit by judging the closeness of the data points to the line of best fit.	8 M6 Topic C: Bivariate Numerical Data

Georgia State Standards for Mathematics	Aligned Components of *Eureka Math²*
8.FGR.6.2 Use the equation of a linear model to solve problems in the context of bivariate measurement data, interpreting the slope and intercepts.	8 M6 Topic C: Bivariate Numerical Data
8.FGR.6.3 Explain the meaning of the predicted slope (rate of change) and the predicted intercept (constant term) of a linear model in the context of the data.	8 M6 Topic C: Bivariate Numerical Data
8.FGR.6.4 Use appropriate graphical displays from data distributions involving lines of best fit to draw informal inferences and answer the statistical investigative question posed in an unbiased statistical study.	8 M6 Lesson 16: Using the Investigative Process 8 M6 Lesson 17: Analyzing the Model

Functional and Graphical Reasoning

8.FGR.7 Justify and use various strategies to solve systems of linear equations to model and explain realistic phenomena.

Georgia State Standards for Mathematics	Aligned Components of *Eureka Math²*
8.FGR.7.1 Interpret and solve relevant mathematical problems leading to two linear equations in two variables.	8 M5 Lesson 1: Solving Problems with Equations and Their Graphs 8 M5 Topic C: Writing and Solving Systems of Linear Equations

Georgia State Standards for Mathematics	Aligned Components of *Eureka Math²*
8.FGR.7.2 Show and explain that solutions to a system of two linear equations in two variables correspond to points of intersection of their graphs, because the points of intersection satisfy both equations simultaneously.	8 M5 Topic A: Solving Systems of Linear Equations Graphically 8 M5 Lesson 7: The Substitution Method 8 M5 Lesson 10: Choosing a Solution Method 8 M5 Lesson 14: Back to the Coordinate Plane
8.FGR.7.3 Approximate solutions of two linear equations in two variables by graphing the equations and solving simple cases by inspection.	8 M5: Systems of Linear Equations
8.FGR.7.4 Analyze and solve systems of two linear equations in two variables algebraically to find exact solutions.	8 M5 Topic B: Solving Systems of Linear Equations Algebraically
8.FGR.7.5 Create and compare the equations of two lines that are either parallel to each other, perpendicular to each other, or neither parallel nor perpendicular.	8 M5 Lesson 3: Identifying Solutions

Geometric and Spatial Reasoning

8.GSR.8 Solve geometric problems involving the Pythagorean Theorem and the volume of geometric figures to explain real phenomena.

Georgia State Standards for Mathematics	Aligned Components of *Eureka Math²*
8.GSR.8.1 Explain a proof of the Pythagorean Theorem and its converse using visual models.	8 M2 Topic D: Congruent Figures and the Pythagorean Theorem
8.GSR.8.2 Apply the Pythagorean Theorem to determine unknown side lengths in right triangles within authentic, mathematical problems in two and three dimensions.	8 M1 Topic D: Perfect Squares, Perfect Cubes, and the Pythagorean Theorem 8 M2 Topic D: Congruent Figures and the Pythagorean Theorem 8 M3 Lesson 16: Similar Right Triangles
8.GSR.8.3 Apply the Pythagorean Theorem to find the distance between two points in a coordinate system in practical, mathematical problems.	8 M2 Lesson 20: Distance in the Coordinate Plane 8 M2 Lesson 22: On the Right Path
8.GSR.8.4 Apply the formulas for the volume of cones, cylinders, and spheres and use them to solve in relevant problems.	8 M6 Topic E: Volume