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 majority of the Grade 8 Arizona Mathematics Standards are fully covered by the Grade 8 *Eureka Math* curriculum. The primary area where the Grade 8 Arizona Mathematics Standards and Grade 8 *Eureka Math* do not align is in the domain of Statistics and Probability. Standards from this domain will require the use of *Eureka Math* content from another grade level. A detailed analysis of alignment is provided in the table below.

INDICATORS

Green indicates that the Arizona standard is fully addressed in *Eureka Math*.

Yellow indicates that the Arizona standard may not be completely addressed in *Eureka Math*.

Red indicates that the Arizona 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 Arizona 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 explain to themselves the meaning of a problem, look for entry points to begin work on the problem, and plan and choose a solution pathway. While engaging in productive struggle to solve a problem, they continually ask themselves, "Does this make sense?" to monitor and evaluate their progress and change course if necessary. Once they have a solution, they look back at the problem to determine if the solution is reasonable and accurate. Mathematically proficient students check their solutions to problems using different methods, approaches, or representations. They also compare and understand different representations of problems and different solution pathways, both their own and those of others.	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: G8 M1: Integer Exponents and Scientific Notation G8 M4: Linear Equations
2: Reason abstractly and quantitatively. Mathematically proficient students make sense of quantities and their relationships in problem situations. Students can contextualize and decontextualize problems involving quantitative relationships. They contextualize quantities, operations, and expressions by describing a corresponding situation. They decontextualize a situation by representing it symbolically. As they manipulate the symbols, they can pause as needed to access the meaning of the numbers, the units, and the operations that the symbols represent. Mathematically proficient students know and flexibly use different properties of operations, numbers, and geometric objects and when appropriate they interpret their solution in terms of the context.	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: G8 M1: Integer Exponents and Scientific Notation G8 M2: The Concept of Congruence G8 M4: Linear Equations G8 M5: Examples of Functions from Geometry G8 M6: Linear Functions

Standards for Mathematical Practice	Aligned Components of *Eureka Math*
3: Construct viable arguments and critique the reasoning of others. Mathematically proficient students construct mathematical arguments (explain the reasoning underlying a strategy, solution, or conjecture) using concrete, pictorial, or symbolic referents. Arguments may also rely on definitions, assumptions, previously established results, properties, or structures. Mathematically proficient students 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. Mathematically proficient students present their arguments in the form of representations, actions on those representations, and explanations in words (oral or written). Students critique others by affirming or questioning the reasoning of others. They can listen to or read the reasoning of others, decide whether it makes sense, ask questions to clarify or improve the reasoning, and validate or build on it. Mathematically proficient students can communicate their arguments, compare them to others, and reconsider their own arguments in response to the critiques of others.	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: G8 M1: Integer Exponents and Scientific Notation G8 M2: The Concept of Congruence G8 M3: Similarity G8 M4: Linear Equations

Standards for Mathematical Practice	Aligned Components of *Eureka Math*
4: Model with mathematics. Mathematically proficient students apply the mathematics they know to solve problems arising in everyday life, society, and the workplace. When given a problem in a contextual situation, they identify the mathematical elements of a situation and create a mathematical model that represents those mathematical elements and the relationships among them. Mathematically proficient students use their model to analyze the relationships and draw conclusions. They 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: G8 M3: Similarity G8 M4: Linear Equations G8 M6: Linear Functions
5: Use appropriate tools strategically. Mathematically proficient students consider available tools when solving a mathematical problem. They choose tools that are relevant and useful to the problem at hand. 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. Students deepen their understanding of mathematical concepts when using tools to visualize, explore, compare, communicate, make and test predictions, and understand the thinking of others.	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: G8 M3: Similarity G8 M4: Linear Equations G8 M6: Linear Functions

Standards for Mathematical Practice	Aligned Components of *Eureka Math*
6: Attend to precision. Mathematically proficient students clearly communicate to others using appropriate mathematical terminology, and craft explanations to convey their reasoning. When making mathematical arguments about a solution, strategy, or conjecture, they describe mathematical relationships and connect their words clearly to their representations. Mathematically proficient students understand meanings of symbols used in mathematics, calculate accurately and efficiently, label quantities appropriately, and record their work clearly and concisely.	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: G8 M1: Integer Exponents and Scientific Notation G8 M2: The Concept of Congruence G8 M3: Similarity G8 M4: Linear Equations G8 M5: Examples of Functions from Geometry G8 M6: Linear Functions G8 M7: Introduction to Irrational Numbers Using Geometry

Standards for Mathematical Practice	Aligned Components of *Eureka Math*
7: Look for and make use of structure. Mathematically proficient students use structure and patterns to assist in making connections among mathematical ideas or concepts when making sense of mathematics. Students recognize and apply general mathematical rules to complex situations. They are able to compose and decompose mathematical ideas and notations into familiar relationships. Mathematically proficient students manage their own progress, stepping back for an overview and shifting perspective when needed.	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: G8 M1: Integer Exponents and Scientific Notation G8 M4: Linear Equations G8 M6: Linear Functions G8 M7: Introduction to Irrational Numbers Using Geometry
8: Look for and express regularity in repeated reasoning. Mathematically proficient students look for and describe regularities as they solve multiple related problems. They formulate conjectures about what they notice and communicate observations with precision. While solving problems, students maintain oversight of the process and continually evaluate the reasonableness of their results. This informs and strengthens their understanding of the structure of mathematics which leads to fluency.	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: G8 M1: Integer Exponents and Scientific Notation G8 M3: Similarity G8 M5: Examples of Functions from Geometry G8 M7: Introduction to Irrational Numbers Using Geometry

Domain	Standards for Mathematical Content	Aligned Components of *Eureka Math*
The Number System	**Cluster: Understand that there are irrational numbers, and approximate them using rational numbers.**	
	8.NS.A.1 Know that numbers that are not rational are called irrational. Understand informally that every number has a decimal expansion. Know that numbers whose decimal expansions do not terminate in zeros or in a repeating sequence of fixed digits are called irrational.	G8 M7 Topic B: Decimal Expansions of Numbers
	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 their values.	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
	8.NS.A.3 Understand that given any two distinct rational numbers, $a < b$, there exist a rational number c and an irrational number d such that $a < c < b$ and $a < d < b$. Given any two distinct irrational numbers, $a < b$, there exist a rational number c and an irrational number d such that $a < c < b$ and $a < d < b$.	G8 M7 Lesson 7: Infinite Decimals G8 M7 Lesson 11: The Decimal Expansion of Some Irrational Numbers G8 M7 Lesson 13: Comparing Irrational Numbers

Domain	Standards for Mathematical Content		Aligned Components of *Eureka Math*
Expressions and Equations	**Cluster: Work with radicals and integer exponents.**		
	8.EE.A.1 Understand and apply the properties of integer exponents to generate equivalent numerical expressions.		G8 M1: Integer Exponents and Scientific Notation
	8.EE.A.2 Use square root and cube root symbols to represent solutions to equations of the form $x^2 = p$ and $x^3 = p$, where p is a positive rational number. Know that $\sqrt{2}$ is irrational.		
	a. Evaluate square roots of perfect squares less than or equal to 225.		G8 M7 Lesson 2: Square Roots G8 M7 Lesson 5: Solving Equations with Radicals
	b. Evaluate cube roots of perfect cubes less than or equal to 1,000.		G8 M7 Lesson 2: Square Roots G8 M7 Lesson 5: Solving Equations with Radicals
	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 express how many times larger or smaller 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*
	8.EE.A.4 Perform operations with numbers expressed in scientific notation including problems where both decimal and scientific notation are used. Use scientific notation and choose units of appropriate size for measurements of very large or very small quantities.	G8 M1: Integer Exponents and Scientific Notation
	Cluster: Understand the connections between proportional relationships, lines, and linear equations.	
	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.	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
	8.EE.B.6 Use similar triangles to explain why the slope m is the same between any two distinct points on a non-vertical line in the coordinate plane. Derive the equation $y = mx$ for a line through the origin and the equation $y = mx + b$ for a line intercepting the vertical axis at $(0, b)$.	G8 M4 Topic C: Slope and Equations of Lines

Domain	Standards for Mathematical Content		Aligned Components of *Eureka Math*
	Cluster: Analyze and solve linear equations and pairs of simultaneous linear equations.		
	8.EE.C.7 Fluently solve linear equations and inequalities in one variable.		
	a. Give examples of linear equations in one variable with one solution, infinitely many solutions, or no solution. 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).		G8 M4 Topic A: Writing and Solving Linear Equations
	b. Solve linear equations and inequalities with rational number coefficients, including solutions that require expanding expressions using the distributive property and collecting like terms		G8 M4 Topic A: Writing and Solving Linear Equations
	8.EE.C.8 Analyze and solve pairs of simultaneous linear equations.		
	a. Understand that solutions to a system of two linear equations in two variables correspond to points of intersection of their graphs, because points of intersection satisfy both equations simultaneously.		G8 M4 Topic D: Systems of Linear Equations and Their Solutions Note: Learning systems of linear equations is extended in Algebra I M1 Topic C.

Domain	Standards for Mathematical Content	Aligned Components of *Eureka Math*
	b. Solve systems of two linear equations in two variables algebraically, and estimate solutions by graphing the equations including cases of no solution and infinite number of solutions. Solve simple cases by inspection.	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.
	c. Solve mathematical problems and problems in real-world context leading to 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.
Functions	**Cluster: Define, evaluate, and compare functions.**	
	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. (Function notation is not required in Grade 8.)	G8 M5: Examples of Functions from Geometry
	8.F.A.2 Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions).	G8 M5 Lesson 7: Comparing Linear Functions and Graphs

Domain	Standards for Mathematical Content	Aligned Components of *Eureka Math*
	8.F.A.3 Interpret the equation $y = mx + b$ as defining a linear function, whose graph is a straight line; give examples of functions that are not linear.	G8 M5: Examples of Functions from Geometry
	Cluster: Use functions to model relationships between quantities.	
	8.F.B.4 Given a description of a situation, generate 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. 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
	8.F.B.5 Describe qualitatively 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 qualitative 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.**	
	8.G.A.1 Verify experimentally the properties of rotations, reflections, and translations. Properties include: lines are taken to lines, line segments are taken 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
	8.G.A.2 Understand that a two-dimensional figure is congruent to another if one can be obtained from the other by a sequence of rotations, reflections, and translations; given two congruent figures, describe a sequence that demonstrates congruence.	G8 M2: The Concept of Congruence
	8.G.A.3 Describe the effect of dilations, translations, rotations, and reflections on two-dimensional figures using coordinates.	G8 M3 Topic A: Dilation G8 M3 Lesson 8: Similarity

Domain	Standards for Mathematical Content	Aligned Components of *Eureka Math*
	8.G.A.4 Understand that a two-dimensional figure is similar to another if, and only if, one can be obtained from the other by a sequence of rotations, reflections, translations, and dilations; given two similar two-dimensional figures, describe a sequence that demonstrates similarity.	G8 M3 Lesson 3: Examples of Dilations G8 M3 Topic B: Similar Figures
	8.G.A.5 Use informal arguments to establish facts about the angle sum and exterior angle of triangles, about the angles created when parallel lines are cut by a transversal, and the angle-angle criterion for similarity of triangles.	G8 M2 Topic C: Congruence and Angle Relationships G8 M3 Topic B: Similar Figures
	Cluster: Understand and apply the Pythagorean Theorem.	
	8.G.B.6 Understand 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

Domain	Standards for Mathematical Content	Aligned Components of *Eureka Math*
	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
	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.	
	8.G.C.9 Understand and use formulas for volumes of cones, cylinders, and spheres and use them to solve real-world context 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.**	
	8.SP.A.1 Construct and interpret scatter plots for bivariate measurement data to investigate and describe patterns such as clustering, outliers, positive or negative association, linear association, and nonlinear association.	G8 M6: Linear Functions
	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
	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 intercept.	G8 M6 Topic C: Linear and Nonlinear Models

Domain	Standards for Mathematical Content	Aligned Components of *Eureka Math*
	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 summarizing data 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
	Cluster: Investigate chance processes and develop, use, and evaluate probability models.	
	8.SP.B.5 Find probabilities of compound events using organized lists, tables, tree diagrams, and simulation.	
	a. Understand that the probability of a compound event is the fraction of outcomes in the sample space for which the compound event occurs.	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 Lessons 10–11: Conducting a Simulation to Estimate the Probability of an Event

Domain	Standards for Mathematical Content	Aligned Components of *Eureka Math*
	b. Represent sample spaces for compound events using organized lists, tables, tree diagrams, and other methods. Identify the outcomes in the sample space which compose the event.	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
	c. Design and use a simulation to generate frequencies for compound events.	G7 M5 Lessons 10–11: Conducting a Simulation to Estimate the Probability of an Event