7–8 | Utah Core 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.

Ratios and Proportional Relationships

Analyze proportional relationships and use them to solve real-world and mathematical problems.

Utah Core State Standards for Mathematics	Aligned Components of *Eureka Math²*
7.RP.1 Compute unit rates associated with ratios of fractions, including ratios of lengths, areas and other quantities measured in like or different units. For example, if a person walks $\frac{1}{2}$ mile in each $\frac{1}{4}$ hour, compute the unit rate as the complex fraction $\left(\frac{1}{2}\right)/\left(\frac{1}{4}\right)$ miles per hour, equivalently 2 miles per hour.	7–8 M2 Lesson 12: An Experiment with Ratios and Rates 7–8 M2 Lesson 13: Exploring Tables of Proportional Relationships
7.RP.2 Recognize and represent proportional relationships between quantities.	7–8 M2 Lesson 13: Exploring Tables of Proportional Relationships 7–8 M2 Lesson 14: Exploring Graphs of Proportional Relationships 7–8 M2 Lesson 15: Relating Representations of Proportional Relationships
7.RP.2.a Decide whether two quantities are in a proportional relationship, e.g., by testing for equivalent ratios in a table or graphing on a coordinate plane and observing whether the graph is a straight line through the origin.	7–8 M2 Lesson 12: An Experiment with Ratios and Rates 7–8 M2 Lesson 13: Exploring Tables of Proportional Relationships 7–8 M2 Lesson 14: Exploring Graphs of Proportional Relationships 7–8 M2 Lesson 15: Relating Representations of Proportional Relationships 7–8 M2 Lesson 19: Proportional Reasoning and Percents 7–8 M5 Lesson 1: Motion and Speed

Utah Core State Standards for Mathematics	Aligned Components of *Eureka Math²*
7.RP.2.b Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships.	7–8 M2 Lesson 14: Exploring Graphs of Proportional Relationships 7–8 M2 Lesson 15: Relating Representations of Proportional Relationships 7–8 M2 Lesson 16: Applying Proportional Reasoning 7–8 M4 Lesson 4: Comparing Proportional Relationships 7–8 M4 Lesson 5: Proportional Relationships and Slope
7.RP.2.c Represent proportional relationships by equations. For example, if total cost t is proportional to the number n of items purchased at a constant price p, the relationship between the total cost and the number of items can be expressed as $t = pn$.	7–8 M2 Lesson 13: Exploring Tables of Proportional Relationships 7–8 M2 Lesson 15: Relating Representations of Proportional Relationships 7–8 M2 Lesson 16: Applying Proportional Reasoning 7–8 M2 Lesson 17: Using Proportional Reasoning to Solve Multi-Step Problems 7–8 M2 Lesson 18: Handstand Sprint 7–8 M2 Lesson 19: Proportional Reasoning and Percents 7–8 M2 Lesson 20: Commissions, Fees, and Taxes 7–8 M5 Lesson 1: Motion and Speed
7.RP.2.d Explain what a point (x, y) on the graph of a proportional relationship means in terms of the situation, with special attention to the points $(0, 0)$ and $(1, r)$ where r is the unit rate.	7–8 M2 Lesson 14: Exploring Graphs of Proportional Relationships 7–8 M2 Lesson 15: Relating Representations of Proportional Relationships

Utah Core State Standards for Mathematics	Aligned Components of *Eureka Math²*
7.RP.3 Use proportional relationships to solve multi-step ratio and percent problems. Examples: simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease, percent error.	7–8 M2 Lesson 16: Applying Proportional Reasoning 7–8 M2 Lesson 17: Using Proportional Reasoning to Solve Multi-Step Problems 7–8 M2 Lesson 18: Handstand Sprint 7–8 M2 Lesson 19: Proportional Reasoning and Percents 7–8 M2 Lesson 20: Commissions, Fees, and Taxes 7–8 M2 Lesson 21: Discount, Markup, Sales Tax, and Tip 7–8 M2 Lesson 22: Percent Increase and Percent Decrease 7–8 M2 Lesson 23: What Is the Best Deal? 7–8 M2 Lesson 24: Simple Interest 7–8 M2 Lesson 25: Applying Percent Error

The Number System

Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers.

Utah Core State Standards for Mathematics	Aligned Components of *Eureka Math²*
7.NS.1 Apply and extend previous understandings of addition and subtraction to add and subtract rational numbers; represent addition and subtraction on a horizontal or vertical number line diagram.	7–8 M1 Lesson 1: Add and Subtract Rational Numbers 7–8 M1 Lesson 5: Subtracting Rational Numbers

Utah Core State Standards for Mathematics	Aligned Components of *Eureka Math²*
7.NS.1.a Describe situations in which opposite quantities combine to make 0. For example, a hydrogen atom has 0 charge because its two constituents are oppositely charged.	7–8 M1 Lesson 1: Add and Subtract Rational Numbers
7.NS.1.b Understand $p + q$ as the number located a distance $|q|$ from p in the positive or negative direction, depending on whether q is positive or negative. Show that a number and its opposite have a sum of 0 (are additive inverses). Interpret sums of rational numbers by describing real-world contexts.	7–8 M1 Lesson 1: Add and Subtract Rational Numbers
7.NS.1.c Understand subtraction of rational numbers as adding the additive inverse, $p - q = p + (-q)$. Show that the distance between two rational numbers on the number line is the absolute value of their difference, and apply this principle in real-world contexts.	7–8 M1 Lesson 3: Finding Distances to Find Differences 7–8 M1 Lesson 4: Subtracting Integers 7–8 M1 Lesson 5: Subtracting Rational Numbers
7.NS.1.d Apply properties of operations as strategies to add and subtract rational numbers.	7–8 M1 Lesson 2: Kakooma® with Rational Numbers 7–8 M1 Lesson 4: Subtracting Integers 7–8 M1 Lesson 5: Subtracting Rational Numbers

Utah Core State Standards for Mathematics	Aligned Components of *Eureka Math²*
7.NS.2 Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers.	7–8 M1 Lesson 6: Multiplying Integers and Rational Numbers 7–8 M1 Lesson 8: Dividing Integers and Rational Numbers
7.NS.2.a Understand that multiplication is extended from fractions to rational numbers by requiring that operations continue to satisfy the properties of operations, particularly the distributive property, leading to products such as $(-1)(-1) = 1$ and the rules for multiplying signed numbers. Interpret products of rational numbers by describing real-world contexts.	7–8 M1 Lesson 6: Multiplying Integers and Rational Numbers 7–8 M1 Lesson 7: Exponential Expressions and Relating Multiplication to Division
7.NS.2.b Understand that integers can be divided, provided the divisor is not zero, and that every quotient of integers (with non-zero divisor) is a rational number. If p and q are integers, then $-\left(\frac{p}{q}\right) = \frac{-p}{q} = \frac{p}{-q}$. Interpret quotients of rational numbers by describing real-world contexts.	7–8 M1 Lesson 7: Exponential Expressions and Relating Multiplication to Division 7–8 M1 Lesson 8: Dividing Integers and Rational Numbers

Utah Core State Standards for Mathematics	Aligned Components of *Eureka Math²*
7.NS.2.c Apply properties of operations as strategies to multiply and divide rational numbers.	7–8 M1 Lesson 6: Multiplying Integers and Rational Numbers 7–8 M1 Lesson 7: Exponential Expressions and Relating Multiplication to Division 7–8 M1 Lesson 8: Dividing Integers and Rational Numbers
7.NS.2.d Convert a rational number to a decimal using long division; know that the decimal form of a rational number terminates in 0s or eventually repeats.	7–8 M1 Lesson 9: Decimal Expansions of Rational Numbers 7–8 M1 Lesson 22: Rational and Irrational Numbers 7–8 M2 Lesson 6: Expressing Repeating Decimals as Fractions
7.NS.3 Solve real-world and mathematical problems involving the four operations with rational numbers. Computations with rational numbers extend the rules for manipulating fractions to complex fractions.	7–8 M1 Lesson 5: Subtracting Rational Numbers 7–8 M1 Lesson 8: Dividing Integers and Rational Numbers

The Number System

Know that there are numbers that are not rational, and approximate them by rational numbers.

Utah Core State Standards for Mathematics	Aligned Components of *Eureka Math²*
8.NS.1 Know that numbers that are not rational are called irrational. Understand informally that every number has a decimal expansion; for rational numbers, show that the decimal expansion repeats eventually, and convert a decimal expansion which repeats eventually into a rational number.	7–8 M1 Lesson 9: Decimal Expansions of Rational Numbers 7–8 M1 Lesson 22: Rational and Irrational Numbers 7–8 M1 Lesson 23: Revisiting Equations with Squares and Cubes
8.NS.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). For example, by truncating the decimal expansion of $\sqrt{2}$, show that $\sqrt{2}$ is between 1 and 2, then between 1.4 and 1.5, and explain how to continue on to get better approximations.	7–8 M1 Lesson 20: Using the Pythagorean Theorem 7–8 M1 Lesson 21: Approximating Values of Roots 7–8 M1 Lesson 22: Rational and Irrational Numbers
8.NS.3 Understand how to perform operations and simplify radicals with emphasis on square roots.	7–8 M1 Lesson 18: Solving Equations with Squares and Cubes 7–8 M1 Lesson 20: Using the Pythagorean Theorem 7–8 M1 Lesson 23: Revisiting Equations with Squares and Cubes

Expressions and Equations

Use properties of operations to generate equivalent expressions.

Utah Core State Standards for Mathematics	Aligned Components of *Eureka Math²*
7.EE.1 Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients.	7–8 M2 Lesson 2: Using Equivalent Expressions to Solve Equations
7.EE.2 Understand that rewriting an expression in different forms in a problem context can shed light on the problem, and how the quantities in it are related. For example, $a + 0.05a = 1.05a$ means that "increase by 5%" is the same as "multiply by 1.05."	7–8 M2 Lesson 2: Using Equivalent Expressions to Solve Equations 7–8 M2 Lesson 21: Discount, Markup, Sales Tax, and Tip 7–8 M2 Lesson 22: Percent Increase and Percent Decrease

Utah Core State Standards for Mathematics	Aligned Components of *Eureka Math²*
7.EE.3 Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. Apply properties of operations to calculate with numbers in any form, convert between forms as appropriate, and assess the reasonableness of answers using mental computation and estimation strategies. For example: If a woman making \$25 an hour gets a 10% raise, she will make an additional $\frac{1}{10}$ of her salary an hour, or \$2.50, for a new salary of \$27.50. If you want to place a towel bar $9\frac{3}{4}$ inches long in the center of a door that is $27\frac{1}{2}$ inches wide, you will need to place the bar about 9 inches from each edge; this estimate can be used as a check on the exact computation.	7–8 M1 Lesson 8: Dividing Integers and Rational Numbers 7–8 M2 Lesson 10: Another Possible Number of Solutions 7–8 M2 Lesson 11: Using Linear Equations to Solve Real-World Problems 7–8 M2 Lesson 7: Solving Multi-Step Equations 7–8 M2 Lesson 8: Solving Equations with Rational Coefficients 7–8 M2 Lesson 9: Linear Equations with More Than One Solution 7–8 M2 Lesson 17: Using Proportional Reasoning to Solve Multi-Step Problems 7–8 M2 Lesson 18: Handstand Sprint 7–8 M2 Lesson 23: What Is the Best Deal? 7–8 M2 Lesson 24: Simple Interest
7.EE.4 Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities.	7–8 M2 Lesson 3: Solving Equations 7–8 M2 Lesson 5: Solving Problems Involving Equations and Inequalities

Utah Core State Standards for Mathematics	Aligned Components of *Eureka Math²*
7.EE.4.a Solve word problems leading to equations of the form $px + q = r$ and $p(x + q) = r$, where p, q, and r are specific rational numbers. Solve equations of these forms fluently. Compare an algebraic solution to an arithmetic solution, identifying the sequence of the operations used in each approach. For example, the perimeter of a rectangle is 54 cm. Its length is 6 cm. What is its width?	7–8 M2 Lesson 3: Solving Equations 7–8 M2 Lesson 5: Solving Problems Involving Equations and Inequalities
7.EE.4.b Solve word problems leading to inequalities of the form $px + q > r$ or $px + q < r$, where p, q, and r are specific rational numbers. Graph the solution set of the inequality and interpret it in the context of the problem. For example: As a salesperson, you are paid \$50 per week plus \$3 per sale. This week you want your pay to be at least \$100. Write an inequality for the number of sales you need to make, and describe the solutions.	7–8 M2 Lesson 4: Using Equations to Solve Inequalities 7–8 M2 Lesson 5: Solving Problems Involving Equations and Inequalities

Expressions and Equations
Work with radical and integer exponents.

Utah Core State Standards for Mathematics	Aligned Components of *Eureka Math²*
8.EE.1 Know and apply the properties of integer exponents to generate equivalent numerical expressions. For example, $3^2 \times (3^{-5}) = (3^{-3}) = \frac{1}{3^3} = \frac{1}{27}$.	7–8 M1 Lesson 7: Exponential Expressions and Relating Multiplication to Division 7–8 M1 Lesson 11: Products of Exponential Expressions with Positive Whole-Number Exponents 7–8 M1 Lesson 12: More Properties of Exponents 7–8 M1 Lesson 13: Making Sense of Integer Exponents
8.EE.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. Evaluate square roots of small perfect squares and cube roots of small perfect cubes. Know that $\sqrt{2}$ is irrational.	7–8 M1 Lesson 18: Solving Equations with Squares and Cubes 7–8 M1 Lesson 19: The Pythagorean Theorem 7–8 M1 Lesson 20: Using the Pythagorean Theorem 7–8 M1 Lesson 21: Approximating Values of Roots 7–8 M1 Lesson 22: Rational and Irrational Numbers 7–8 M1 Lesson 23: Revisiting Equations with Squares and Cubes
8.EE.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. For example, estimate the population of the United States as 3×10^8 and the population of the world as 7×10^9, and determine that the world population is more than 20 times larger.	7–8 M1 Lesson 10: Large and Small Positive Numbers 7–8 M1 Lesson 14: Writing Very Large and Very Small Numbers in Scientific Notation 7–8 M1 Lesson 15: Operations with Numbers Written in Scientific Notation 7–8 M1 Lesson 16: Applications with Numbers Written in Scientific Notation 7–8 M1 Lesson 17: Get to the Point

Utah Core State Standards for Mathematics	Aligned Components of *Eureka Math²*
8.EE.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 (e.g., use millimeters per year for seafloor spreading). Interpret scientific notation that has been generated by technology.	7–8 M1 Lesson 14: Writing Very Large and Very Small Numbers in Scientific Notation 7–8 M1 Lesson 15: Operations with Numbers Written in Scientific Notation 7–8 M1 Lesson 16: Applications with Numbers Written in Scientific Notation 7–8 M1 Lesson 17: Get to the Point

Expressions and Equations

Understand the connections between proportional relationships, lines, and linear relationships.

Utah Core State Standards for Mathematics	Aligned Components of *Eureka Math²*
8.EE.5 Graph proportional relationships, interpreting the unit rate as the slope of the graph. Compare two different proportional relationships represented in different ways. For example, compare a distance-time graph to a distance-time equation to determine which of two moving objects has greater speed.	7–8 M2 Lesson 15: Relating Representations of Proportional Relationships 7–8 M4 Lesson 4: Comparing Proportional Relationships 7–8 M4 Lesson 5: Proportional Relationships and Slope

Utah Core State Standards for Mathematics	Aligned Components of *Eureka Math²*
8.EE.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 b.	7–8 M4 Lesson 5: Proportional Relationships and Slope 7–8 M4 Lesson 6: Slopes of Rising Lines and Falling Lines 7–8 M4 Lesson 7: Using Coordinates to Find Slope 7–8 M4 Lesson 8: Slope-Intercept Form of the Equation of a Line

Expressions and Equations

Analyze and solve linear equations and inequalities and pairs of simultaneous linear equations.

Utah Core State Standards for Mathematics	Aligned Components of *Eureka Math²*
8.EE.7 Solve linear equations and inequalities in one variable.	7–8 M2 Lesson 4: Using Equations to Solve Inequalities 7–8 M2 Lesson 11: Using Linear Equations to Solve Real-World Problems
8.EE.7.a Give examples of linear equations in one variable with one solution, infinitely many solutions, or no solutions. 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).	7–8 M2 Lesson 10: Another Possible Number of Solutions 7–8 M2 Lesson 11: Using Linear Equations to Solve Real-World Problems 7–8 M2 Lesson 9: Linear Equations with More Than One Solution

Utah Core State Standards for Mathematics	Aligned Components of *Eureka Math²*
8.EE.7.b Solve single-variable linear equations and inequalities with rational number coefficients, including equations and inequalities whose solutions require expanding expressions using the distributive property and collecting like terms.	7–8 M2 Lesson 3: Solving Equations 7–8 M2 Lesson 4: Using Equations to Solve Inequalities 7–8 M2 Lesson 5: Solving Problems Involving Equations and Inequalities 7–8 M2 Lesson 6: Expressing Repeating Decimals as Fractions 7–8 M2 Lesson 10: Another Possible Number of Solutions 7–8 M2 Lesson 11: Using Linear Equations to Solve Real-World Problems 7–8 M2 Lesson 7: Solving Multi-Step Equations 7–8 M2 Lesson 8: Solving Equations with Rational Coefficients 7–8 M2 Lesson 9: Linear Equations with More Than One Solution
8.EE.7.c Solve single-variable absolute value equations.	7–8 M1 Lesson 16: Solving Absolute Value Equations
8.EE.8 Analyze and solve pairs of simultaneous linear equations.	7–8 M4 Lesson 16: Choosing a Solution Method 7–8 M4 Lesson 20: Modeling a Real-World Problem
8.EE.8.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.	7–8 M4 Lesson 11: Introduction to Systems of Linear Equations 7–8 M4 Lesson 12: Identifying Solutions 7–8 M4 Lesson 13: More Than One Solution 7–8 M4 Lesson 16: Choosing a Solution Method 7–8 M4 Lesson 19: Back to the Coordinate Plane 7–8 M4 Lesson 20: Modeling a Real-World Problem

Utah Core State Standards for Mathematics	Aligned Components of *Eureka Math²*
8.EE.8.b Solve systems of two linear equations in two variables graphically, approximating when solutions are not integers and estimate solutions by graphing the equations. Solve simple cases by inspection. For example, $3x + 2y = 5$ and $3x + 2y = 6$ have no solution because $3x + 2y$ cannot simultaneously be 5 and 6.	7–8 M4 Lesson 11: Introduction to Systems of Linear Equations 7–8 M4 Lesson 12: Identifying Solutions 7–8 M4 Lesson 13: More Than One Solution 7–8 M4 Lesson 15: The Substitution Method 7–8 M4 Lesson 16: Choosing a Solution Method 7–8 M4 Lesson 19: Back to the Coordinate Plane 7–8 M4 Lesson 20: Modeling a Real-World Problem
8.EE.8.c Solve real-world and mathematical problems leading to two linear equations in two variables graphically. For example, given coordinates for two pairs of points, determine whether the line through the first pair of points intersects the line through the second pair.	7–8 M4 Lesson 17: Writing and Solving Systems of Equations for Mathematical Problems 7–8 M4 Lesson 18: Writing and Solving Systems of Equations for Real-World Problems 7–8 M4 Lesson 20: Modeling a Real-World Problem

Functions

Define, evaluate, and compare functions.

Utah Core State Standards for Mathematics	Aligned Components of *Eureka Math²*
8.F.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.	7–8 M5 Lesson 1: Motion and Speed 7–8 M5 Lesson 2: Definition of a Function 7–8 M5 Lesson 4: More Examples of Functions 7–8 M5 Lesson 5: Graphs of Functions and Equations
8.F.2 Compare properties of two functions, each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). For example, given a linear function represented by a table of values and a linear function represented by an algebraic expression, determine which function has the greater rate of change.	7–8 M5 Lesson 7: Interpreting Rate of Change and Initial Value 7–8 M5 Lesson 8: Comparing Functions
8.F.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. For example, the function $A = s^2$, giving the area of a square as a function of its side length, is not linear because its graph contains the points (1, 1), (2, 4) and (3, 9), which are not on a straight line.	7–8 M5 Lesson 3: Linear Functions and Proportionality 7–8 M5 Lesson 4: More Examples of Functions 7–8 M5 Lesson 5: Graphs of Functions and Equations 7–8 M5 Lesson 10: Graphs of Nonlinear Functions 7–8 M5 Lesson 6: Linear Functions and Rate of Change

Functions

Use functions to model relationships between quantities

Utah Core State Standards for Mathematics	Aligned Components of *Eureka Math²*
MA.8.F.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 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.	7–8 M5 Lesson 3: Linear Functions and Proportionality 7–8 M5 Lesson 4: More Examples of Functions 7–8 M5 Lesson 6: Linear Functions and Rate of Change 7–8 M5 Lesson 7: Interpreting Rate of Change and Initial Value 7–8 M5 Lesson 23: Applications of Volume
MA.8.F.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.	7–8 M5 Lesson 9: Increasing and Decreasing Functions 7–8 M5 Lesson 10: Graphs of Nonlinear Functions

Geometry

Draw, construct, and describe geometrical figures, and describe the relationships between them.

Utah Core State Standards for Mathematics	Aligned Components of *Eureka Math²*
7.G.1 Solve problems involving scale drawings of geometric figures, such as computing actual lengths and areas from a scale drawing and reproducing a scale drawing at a different scale.	7–8 M3 Lesson 18: Scale Drawings 7–8 M3 Lesson 19: Finding Actual Distances from a Scale Drawing 7–8 M3 Lesson 20: Scale and Scale Factor 7–8 M3 Lesson 21: Modeling with Scale Drawings 7–8 M3 Lesson 22: Dilations 7–8 M3 Lesson 23: Using Lined Paper to Explore Dilations 7–8 M3 Lesson 24: Figures and Dilations 7–8 M5 Lesson 15: Proportionality and Scale Factor of Cross Sections
7.G.2 Draw (freehand, with ruler and protractor, and with technology) geometric shapes with given conditions. Focus on constructing triangles from three measures of angles or sides, noticing when the conditions determine a unique triangle, more than one triangle, or no triangle.	7–8 M3 Lesson 1: Sketching and Constructing Geometric Figures 7–8 M3 Lesson 2: Conditions of Unique Triangles 7–8 M3 Lesson 3: Exploring and Constructing Circles 7–8 M3 Lesson 13: Angle Sum of a Triangle
7.G.3 Describe the two-dimensional figures that result from slicing three-dimensional figures, as in plane sections of right rectangular prisms and right rectangular pyramids.	7–8 M5 Lesson 13: Understanding Planes and Cross Sections 7–8 M5 Lesson 14: Cross Section Scavenger Hunt 7–8 M5 Lesson 15: Proportionality and Scale Factor of Cross Sections

Geometry

Solve real-life and mathematical problems involving angle measure, area, surface area, and volume.

Utah Core State Standards for Mathematics	Aligned Components of *Eureka Math²*
7.G.5 Use facts about supplementary, complementary, vertical, and adjacent angles in a multi-step problem to write, and use them to solve simple equations for an unknown angle in a figure.	7–8 M2 Lesson 1: Finding Unknown Angle Measures 7–8 M2 Lesson 2: Using Equivalent Expressions to Solve Equations 7–8 M2 Lesson 7: Solving Multi-Step Equations 7–8 M3 Lesson 12: Lines Cut by a Transversal 7–8 M3 Lesson 13: Angle Sum of a Triangle 7–8 M3 Lesson 14: Exterior Angles of Triangles
7.G.6 Solve real-world and mathematical problems involving area, volume and surface area of two- and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms.	7–8 M5 Lesson 16: Volume of Prisms 7–8 M5 Lesson 11: Surface Areas of Prisms and Pyramids 7–8 M5 Lesson 17: Volume of Cylinders 7–8 M5 Lesson 18: Designing a Fish Tank 7–8 M5 Lesson 19: Volumes of Pyramids and Cones 7–8 M5 Lesson 21: Volume of Composite Solids 7–8 M5 Lesson 22: Volumes of Truncated Cones and Pyramids 7–8 M5 Lesson 23: Applications of Volume

Geometry

Understand congruence and similarity using physical models, transparencies, or geometry software.

Utah Core State Standards for Mathematics	Aligned Components of *Eureka Math²*
8.G.1 Verify experimentally the properties of rotations, reflections, and translations:	7–8 M3 Lesson 7: Motions of the Plane 7–8 M3 Lesson 8: Translations, Reflections, and Rotations
8.G.1.a Lines are taken to lines, and line segments to line segments of the same length.	7–8 M3 Lesson 7: Motions of the Plane 7–8 M3 Lesson 8: Translations, Reflections, and Rotations
8.G.1.b Angles are taken to angles of the same measure.	7–8 M3 Lesson 7: Motions of the Plane 7–8 M3 Lesson 8: Translations, Reflections, and Rotations 7–8 M3 Lesson 12: Lines Cut by a Transversal
8.G.1.c Parallel lines are taken to parallel lines.	7–8 M3 Lesson 7: Motions of the Plane 7–8 M3 Lesson 8: Translations, Reflections, and Rotations
8.G.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.	7–8 M3 Lesson 10: Sequencing the Rigid Motions 7–8 M3 Lesson 11: Showing Figures Are Congruent 7–8 M3 Lesson 12: Lines Cut by a Transversal

Utah Core State Standards for Mathematics	Aligned Components of *Eureka Math²*
8.G.3 Observe that orientation of the plane is preserved in rotations and translations, but not with reflections. Describe the effect of dilations, translations, rotations, and reflections on two-dimensional figures using coordinates.	7–8 M3 Lesson 7: Motions of the Plane 7–8 M3 Lesson 8: Translations, Reflections, and Rotations 7–8 M3 Lesson 9: Rigid Motions on the Coordinate Plane 7–8 M3 Lesson 23: Using Lined Paper to Explore Dilations 7–8 M3 Lesson 26: Dilations on the Coordinate Plane
8.G.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.	7–8 M3 Lesson 27: Similar Figures 7–8 M3 Lesson 28: Exploring Angles in Similar Triangles
8.G.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. For example, arrange three copies of the same triangle so that the sum of the three angles appears to form a line, and give an argument in terms of transversals why this is so.	7–8 M3 Lesson 12: Lines Cut by a Transversal 7–8 M3 Lesson 13: Angle Sum of a Triangle 7–8 M3 Lesson 14: Exterior Angles of Triangles 7–8 M3 Lesson 28: Exploring Angles in Similar Triangles 7–8 M3 Lesson 29: Using Similar Figures to Find Unknown Side Lengths

Geometry

Understand and apply the Pythagorean Theorem and its converse.

Utah Core State Standards for Mathematics	Aligned Components of *Eureka Math²*
8.G.6 Explore and explain proofs of the Pythagorean Theorem and its converse.	7–8 M3 Lesson 15: Proving the Pythagorean Theorem 7–8 M3 Lesson 16: Proving the Converse of the Pythagorean Theorem
8.G.7 Apply the Pythagorean Theorem to determine unknown side lengths in right triangles in real-world and mathematical problems in two and three dimensions.	7–8 M1 Lesson 19: The Pythagorean Theorem 7–8 M1 Lesson 20: Using the Pythagorean Theorem 7–8 M3 Lesson 16: Proving the Converse of the Pythagorean Theorem 7–8 M3 Lesson 17: Applications of the Pythagorean Theorem 7–8 M3 Lesson 29: Using Similar Figures to Find Unknown Side Lengths 7–8 M5 Lesson 19: Volumes of Pyramids and Cones
8.G.8 Apply the Pythagorean Theorem to find the distance between two points in a coordinate system.	7–8 M3 Lesson 17: Applications of the Pythagorean Theorem

Geometry
Solve real-world and mathematical problems involving volume of cylinders, cones, and spheres.

Utah Core State Standards for Mathematics	Aligned Components of *Eureka Math²*
8.G.9 Know the formulas for the volumes of cones, cylinders, and spheres, and use them to solve real-world and mathematical problems.	7–8 M5 Lesson 17: Volume of Cylinders 7–8 M5 Lesson 18: Designing a Fish Tank 7–8 M5 Lesson 19: Volumes of Pyramids and Cones 7–8 M5 Lesson 20: Volume of Spheres 7–8 M5 Lesson 21: Volume of Composite Solids 7–8 M5 Lesson 22: Volumes of Truncated Cones and Pyramids 7–8 M5 Lesson 23: Applications of Volume

Statistics and Probability
Use random sampling to draw inferences about a population.

Utah Core State Standards for Mathematics	Aligned Components of *Eureka Math²*
7.SP.1 Understand that statistics can be used to gain information about a population by examining a sample of the population, and that generalizations about a population from a sample are valid only if the sample is representative of that population. Understand that random sampling is more likely to produce representative samples and support valid inferences.	7–8 M6 Lesson 10: Populations and Samples 7–8 M6 Lesson 11: Selecting a Sample 7–8 M6 Lesson 12: Sampling Variability When Estimating a Population Mean

Utah Core State Standards for Mathematics	Aligned Components of *Eureka Math²*
7.SP.2 Use data from a random sample to draw inferences about a population with an unknown characteristic of interest. Generate multiple samples (or simulated samples) of the same size to gauge the variation in estimates or predictions. For example, estimate the mean word length in a book by randomly sampling words from the book; predict the winner of a school election based on randomly sampled survey data. Gauge how far off the estimate or prediction might be.	7–8 M6 Lesson 12: Sampling Variability When Estimating a Population Mean 7–8 M6 Lesson 13: Sampling Variability and the Effect of Sample Size 7–8 M6 Lesson 14: Sampling Variability When Estimating a Population Proportion

Statistics and Probability
7.SP Draw informal comparative inferences about two populations.

Utah Core State Standards for Mathematics	Aligned Components of *Eureka Math²*
7.SP.4 Use measures of center and measures of variability for numerical data from random samples to draw informal comparative inferences about two populations. For example, decide whether the words in a chapter of a seventh grade science book are generally longer than the words in a chapter of a fourth grade science book.	7–8 M6 Lesson 15: Comparing Sample Means 7–8 M6 Lesson 16: Comparing Population Means 7–8 M6 Lesson 17: Memory Games

Statistics and Probability

Investigate chance processes and develop, use, and evaluate probability models.

Utah Core State Standards for Mathematics	Aligned Components of *Eureka Math²*
7.SP.6 Approximate the probability of a chance event by collecting data on the chance process that produces it and observing its long-run relative frequency, and predict the approximate relative frequency given the probability. For example, when rolling a number cube 600 times, predict that a 3 or 6 would be rolled roughly 200 times, but probably not exactly 200 times.	7–8 M6 Lesson 1: What Is Probability? 7–8 M6 Lesson 2: Outcomes of Chance Experiments 7–8 M6 Lesson 5: Outcomes That Are Not Equally Likely 7–8 M6 Lesson 7: Picking Blue
7.SP.7 Develop a probability model and use it to find probabilities of events. Compare probabilities from a model to observed frequencies; if the agreement is not good, explain possible sources of the discrepancy.	7–8 M6 Lesson 3: Theoretical Probability
7.SP.7.a Develop a uniform probability model by assigning equal probability to all outcomes, and use the model to determine probabilities of events. For example, if a student is selected at random from a class, find the probability that Jane will be selected and the probability that a girl will be selected.	7–8 M6 Lesson 3: Theoretical Probability 7–8 M6 Lesson 6: The Law of Large Numbers

Utah Core State Standards for Mathematics	Aligned Components of *Eureka Math²*
7.SP.7.b Develop a probability model (which may not be uniform) by observing frequencies in data generated from a chance process. For example, find the approximate probability that a spinning penny will land heads up or that a tossed paper cup will land open-end down. Do the outcomes for the spinning penny appear to be equally likely based on the observed frequencies?	7–8 M6 Lesson 6: The Law of Large Numbers 7–8 M6 Lesson 7: Picking Blue
7.SP.8 Find probabilities of compound events using organized lists, tables, tree diagrams, and simulation.	7–8 M6 Lesson 4: Multistage Experiments 7–8 M6 Lesson 8: Probability Simulations
7.SP.8.a Understand that, just as with simple events, the probability of a compound event is the fraction of outcomes in the sample space for which the compound event occurs.	7–8 M6 Lesson 4: Multistage Experiments 7–8 M6 Lesson 8: Probability Simulations

Utah Core State Standards for Mathematics	Aligned Components of *Eureka Math²*
7.SP.8.b Represent sample spaces for compound events using methods such as organized lists, tables and tree diagrams. For an event described in everyday language (e.g., "rolling double sixes"), identify the outcomes in the sample space which compose the event.	7–8 M6 Lesson 4: Multistage Experiments
7.SP.8.c Design and use a simulation to generate frequencies for compound events. For example, use random digits as a simulation tool to approximate the answer to the question: If 40% of donors have type A blood, what is the probability that it will take at least 4 donors to find one with type A blood?	7–8 M6 Lesson 8: Probability Simulations 7–8 M6 Lesson 9: Simulations with Random Number Tables

Statistics and Probability

Investigate patterns of association in bivariate data.

Utah Core State Standards for Mathematics	Aligned Components of *Eureka Math²*
8.SP.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.	7–8 M6 Lesson 18: Scatter Plots 7–8 M6 Lesson 19: Patterns in Scatter Plots
8.SP.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.	7–8 M6 Lesson 20: Informally Fitting a Line to Data 7–8 M6 Lesson 21: Linear Models

Utah Core State Standards for Mathematics	Aligned Components of *Eureka Math²*
8.SP.3 Use the equation of a linear model to solve problems in the context of bivariate measurement data, interpreting the slope and intercept. For example, in a linear model for a biology experiment, interpret a slope of 1.5 cm/hr as meaning that an additional hour of sunlight each day is associated with an additional 1.5 cm in mature plant height.	7–8 M6 Lesson 20: Informally Fitting a Line to Data 7–8 M6 Lesson 21: Linear Models
8.SP.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. For example, collect data from students in your class on whether or not they have a curfew on school nights and whether or not they have assigned chores at home. Is there evidence that those who have a curfew also tend to have chores?	7–8 M6 Lesson 22: Bivariate Categorical Data 7–8 M6 Lesson 23: Association in Bivariate Categorical Data 7–8 M6 Lesson 24: Analyzing Bivariate Categorical Data