Mathematics I | 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.

Number and Quantity—Quantities (N.Q)

Reason quantitatively and use units to solve problems. Working with quantities and the relationships between them provides grounding for work with expressions, equations, and functions (Standards N.Q.1–3).

Utah Core State Standards for Mathematics	Aligned Components of *Eureka Math²*
9–12.N.Q.1 Use units as a way to understand problems and to guide the solution of multi-step problems; choose and interpret units consistently in formulas; choose and interpret the scale and the origin in graphs and data displays.	Math 1 M6 Lesson 9: Solar System Models
9–12.N.Q.2 Define appropriate quantities for the purpose of descriptive modeling.	Math 1 M6 Lesson 9: Solar System Models
9–12.N.Q.3 Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.	Math 1 M3 Lesson 14: Comparing Models for Situations

Algebra—Seeing Structure in Expressions (A.SSE)

Interpret the structure of expressions (Standard A.SSE.1).

Utah Core State Standards for Mathematics	Aligned Components of *Eureka Math²*
9–12.A.SSE.1 Interpret linear expressions and exponential expressions with integer exponents that represent a quantity in terms of its context.	Math 1 M1 Lesson 4: Interpreting Linear Expressions
9–12.A.SSE.1.a Interpret parts of an expression, such as terms, factors, and coefficients.	Math 1 M1 Lesson 4: Interpreting Linear Expressions
9–12.A.SSE.1.b Interpret complicated expressions by viewing one or more of their parts as a single entity. For example, interpret $P(1+r)^n$ as the product of P and a factor not depending on P.	Math 1 M5 Lesson 7: Exponential Functions Math 1 M5 Lesson 14: Exponential Growth Math 1 M5 Lesson 15: Exponential Decay Math 1 M5 Lesson 16: Modeling Populations Math 1 M5 Lesson 22: Modeling the Temperature of Objects Cooling Over Time

Algebra—Creating Equations (A.CED)

Create equations that describe numbers or relationships. Limit these to linear equations and inequalities, and exponential equations. In the case of exponential equations, limit to situations requiring evaluation of exponential functions at integer inputs (Standards A.CED.1–4).

Utah Core State Standards for Mathematics	Aligned Components of *Eureka Math²*
9–12.A.CED.1 Create equations and inequalities in one variable and use them to solve problems. Include equations arising from linear and simple exponential functions.	Math 1 M1 Lesson 3: The Commutative, Associative, and Distributive Properties Math 1 M1 Lesson 4: Interpreting Linear Expressions Math 1 M1 Lesson 5: Printing Press Math 1 M1 Lesson 6: Solution Sets for Equations and Inequalities in One Variable Math 1 M1 Lesson 9: Writing and Solving Equations in One Variable Math 1 M1 Lesson 11: Solving Linear Inequalities in One Variable Math 1 M1 Lesson 12: Solution Sets of Compound Statements Math 1 M1 Lesson 16: Applying Absolute Value
9–12.A.CED.2 Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.	Math 1 M2 Lesson 1: Solution Sets of Linear Equations in Two Variables Math 1 M2 Lesson 3: Creating Linear Equations in Two Variables Math 1 M2 Lesson 6: Proving the Parallel Criteria Math 1 M2 Lesson 8: Low-Flow Showerhead Math 1 M2 Lesson 12: Applications of Systems of Equations
9–12.A.CED.3 Represent constraints by equations or inequalities and by systems of equations and/or inequalities, and interpret solutions as viable or non-viable options in a modeling context. For example, represent inequalities describing nutritional and cost constraints on combinations of different foods.	Math 1 M2 Lesson 16: Solution Sets of Systems of Linear Inequalities Math 1 M2 Lesson 17: Graphing Solution Sets of Systems of Linear Inequalities Math 1 M2 Lesson 18: Applications of Systems of Linear Inequalities Math 1 M6 Lesson 10: Designing a Fundraiser

Utah Core State Standards for Mathematics	Aligned Components of *Eureka Math²*
9–12.A.CED.4 Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations. For example, rearrange Ohm's Law $V = IR$ to highlight resistance R.	Math 1 M1 Lesson 10: Rearranging Formulas

Algebra—Reasoning With Equations and Inequalities (A.REI)

Understand solving equations as a process of reasoning and explain the reasoning (Standard A.REI.1). Solve equations and inequalities in one variable (Standard A.REI.3). Solve systems of equations. Build on student experiences graphing and solving systems of linear equations from middle school. Include cases where the two equations describe the same line—yielding infinitely many solutions—and cases where two equations describe parallel lines—yielding no solution; connect to GPE.5, which requires students to prove the slope criteria for parallel lines (Standards A.REI.5–6). Represent and solve equations and inequalities graphically (Standards A.REI.10–12).

Utah Core State Standards for Mathematics	Aligned Components of *Eureka Math²*
9–12.A.REI.1 Explain each step in solving a linear equation as following from the equality of numbers asserted at the previous step, starting from the assumption that the original equation has a solution. Construct a viable argument to justify a solution method. Students will solve exponential equations with logarithms in Secondary Mathematics III.	Math 1 M1 Lesson 7: Solving Linear Equations in One Variable

Utah Core State Standards for Mathematics	Aligned Components of *Eureka Math²*
9–12.A.REI.3 Solve equations and inequalities in one variable.	Math 1 M1 Lesson 4: Interpreting Linear Expressions
9–12.A.REI.3.a Solve one-variable equations and literal equations to highlight a variable of interest.	Math 1 M1 Lesson 5: Printing Press Math 1 M1 Lesson 7: Solving Linear Equations in One Variable Math 1 M1 Lesson 8: Some Potential Dangers When Solving Equations Math 1 M1 Lesson 9: Writing and Solving Equations in One Variable Math 1 M1 Lesson 10: Rearranging Formulas Math 1 M1 Lesson 14: Solving Absolute Value Equations Math 1 M1 Lesson 16: Applying Absolute Value
9–12.A.REI.3.b Solve compound inequalities in one variable, including absolute value inequalities.	Math 1 M1 Lesson 13: Solving and Graphing Compound Inequalities Math 1 M1 Lesson 15: Solving Absolute Value Inequalities
9–12.A.REI.3.c Solve simple exponential equations that rely only on application of the laws of exponents (limit solving exponential equations to those that can be solved without logarithms). For example, $5^x = 125$ or $2^x = \frac{1}{16}$.	Math 1 M5 Lesson 11: Solving Equations Containing Exponential Expressions

Utah Core State Standards for Mathematics	Aligned Components of *Eureka Math²*
9–12.A.REI.5 Prove that, given a system of two equations in two variables, replacing one equation by the sum of that equation and a multiple of the other produces a system with the same solutions.	Math 1 M2 Lesson 10: A New Way to Solve Systems Math 1 M2 Lesson 11: The Elimination Method Math 1 M2 Lesson 12: Applications of Systems of Equations
9–12.A.REI.6 Solve systems of linear equations exactly and approximately (numerically, algebraically, graphically), focusing on pairs of linear equations in two variables.	Math 1 M2 Lesson 8: Low-Flow Showerhead Math 1 M2 Lesson 9: Systems of Linear Equations in Two Variables Math 1 M2 Lesson 10: A New Way to Solve Systems Math 1 M2 Lesson 11: The Elimination Method Math 1 M2 Lesson 12: Applications of Systems of Equations Math 1 M3 Lesson 10: Using Graphs to Solve Equations
9–12.A.REI.10 Understand that the graph of an equation in two variables is the set of all its solutions plotted in the coordinate plane, often forming a curve (which could be a line).	Math 1 M2 Lesson 1: Solution Sets of Linear Equations in Two Variables Math 1 M2 Lesson 8: Low-Flow Showerhead

Utah Core State Standards for Mathematics	Aligned Components of *Eureka Math²*
9–12.A.REI.11 Explain why the x-coordinates of the points where the graphs of the equations $y = f(x)$ and $y = g(x)$ intersect are the solutions of the equation $f(x) = g(x)$; find the solutions approximately; e.g., using technology to graph the functions, make tables of values, or find successive approximations. Include cases where $f(x)$ and/or $g(x)$ are linear and exponential functions.	Math 1 M3 Lesson 10: Using Graphs to Solve Equations Math 1 M5 Lesson 11: Solving Equations Containing Exponential Expressions
9–12.A.REI.12 Graph the solutions to a linear inequality in two variables as a half-plane (excluding the boundary in the case of a strict inequality), and graph the solution set to a system of linear inequalities in two variables as the intersection of the corresponding half-planes.	Math 1 M2 Lesson 13: Solution Sets of Linear Inequalities in Two Variables Math 1 M2 Lesson 14: Graphing Linear Inequalities in Two Variables Math 1 M2 Lesson 15: Applications of Linear Inequalities Math 1 M2 Lesson 16: Solution Sets of Systems of Linear Inequalities Math 1 M2 Lesson 17: Graphing Solution Sets of Systems of Linear Inequalities Math 1 M2 Lesson 18: Applications of Systems of Linear Inequalities Math 1 M6 Lesson 10: Designing a Fundraiser

Functions—Interpreting Linear and Exponential Functions (F.IF)

Understand the concept of a linear or exponential function and use function notation. Recognize arithmetic and geometric sequences as examples of linear and exponential functions (Standards F.IF.1–3). Interpret linear or exponential functions that arise in applications in terms of a context (Standards F.IF.4–6). Analyze linear or exponential functions using different representations (Standards F.IF.7, 9).

Utah Core State Standards for Mathematics	Aligned Components of *Eureka Math²*
9–12.F.IF.1 Understand that a function from one set (called the domain) to another set (called the range) assigns to each element of the domain exactly one element of the range. If f is a function and x is an element of its domain, then $f(x)$ denotes the output of f corresponding to the input x. The graph of f is the graph of the equation $y = f(x)$.	Math 1 M3 Lesson 1: The Definition of a Function Math 1 M3 Lesson 2: Interpreting and Using Function Notation Math 1 M3 Lesson 3: Representing, Naming, and Evaluating Functions Math 1 M3 Lesson 4: The Graph of a Function Math 1 M3 Lesson 5: The Graph of the Equation $y = f(x)$ Math 1 M3 Lesson 6: Using Pseudocode to Compare Graphs of Functions and Graphs of Equations Math 1 M3 Lesson 7: Representations of Functions Math 1 M3 Lesson 12: Sketching Graphs of Functions from Verbal Descriptions Math 1 M3 Lesson 14: Comparing Models for Situations
9–12.F.IF.2 Use function notation, evaluate functions for inputs in their domains, and interpret statements that use function notation in terms of a context.	Math 1 M2 Lesson 25: Calculating and Analyzing Residuals Math 1 M3 Lesson 2: Interpreting and Using Function Notation Math 1 M3 Lesson 3: Representing, Naming, and Evaluating Functions Math 1 M3 Lesson 5: The Graph of the Equation $y = f(x)$ Math 1 M3 Lesson 6: Using Pseudocode to Compare Graphs of Functions and Graphs of Equations Math 1 M3 Lesson 7: Representations of Functions

Utah Core State Standards for Mathematics	Aligned Components of *Eureka Math²*
9–12.F.IF.3 Recognize that sequences are functions, sometimes defined recursively, whose domain is a subset of the integers. Emphasize arithmetic and geometric sequences as examples of linear and exponential functions. For example, the Fibonacci sequence is defined recursively by $f(0) = f(1) = 1$, $f(n + 1) = f(n) + f(n - 1)$ for $n \geq 1$.	Math 1 M5 Lesson 1: Exploring Patterns Math 1 M5 Lesson 2: The Recursive Challenge Math 1 M5 Lesson 5: Arithmetic and Geometric Sequences
9–12.F.IF.4 For a function that models a relationship between two quantities, interpret key features of graphs and tables in terms of the quantities, and sketch graphs showing key features given a verbal description of the relationship. Key features include intercepts; intervals where the function is increasing, decreasing, positive, or negative; relative maximums and minimums; symmetries; and end behavior.	Math 1 M2 Lesson 2: Graphing Linear Equations in Two Variables Math 1 M3 Lesson 7: Representations of Functions Math 1 M3 Lesson 8: Exploring Key Features of a Function and Its Graph Math 1 M3 Lesson 9: Identifying Key Features of a Function and Its Graph Math 1 M3 Lesson 12: Sketching Graphs of Functions from Verbal Descriptions Math 1 M3 Lesson 13: Modeling Elevation as a Function of Time Math 1 M3 Lesson 14: Comparing Models for Situations Math 1 M3 Lesson 15: Mars Curiosity Rover

Utah Core State Standards for Mathematics	Aligned Components of *Eureka Math²*
9–12.F.IF.5 Relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes. For example, if the function $h(n)$ gives the number of person-hours it takes to assemble n engines in a factory, then the positive integers would be an appropriate domain for the function.	Math 1 M3 Lesson 7: Representations of Functions Math 1 M3 Lesson 8: Exploring Key Features of a Function and Its Graph Math 1 M3 Lesson 9: Identifying Key Features of a Function and Its Graph Math 1 M3 Lesson 12: Sketching Graphs of Functions from Verbal Descriptions Math 1 M3 Lesson 13: Modeling Elevation as a Function of Time Math 1 M3 Lesson 14: Comparing Models for Situations Math 1 M3 Lesson 15: Mars Curiosity Rover Math 1 M5 Lesson 8: Graphing Exponential Functions Math 1 M5 Lesson 10: Using Transformations to Graph Exponential Functions (Bases Between 0 and 1)
9–12.F.IF.6 Calculate and interpret the average rate of change of a function (presented symbolically or as a table) over a specified interval. Estimate the rate of change from a graph.	Math 1 M5 Lesson 17: Average Rate of Change Math 1 M5 Lesson 18: Analyzing Exponential Growth Math 1 M5 Lesson 23: Modeling an Invasive Species Population
9–12.F.IF.7 Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases.	Math 1 M3 Lesson 5: The Graph of the Equation $y = f(x)$

Utah Core State Standards for Mathematics	Aligned Components of *Eureka Math²*
9–12.F.IF.7.a Graph linear functions and show intercepts.	Math 1 M2 Lesson 2: Graphing Linear Equations in Two Variables Math 1 M3 Lesson 4: The Graph of a Function Math 1 M3 Lesson 5: The Graph of the Equation $y = f(x)$ Math 1 M3 Lesson 6: Using Pseudocode to Compare Graphs of Functions and Graphs of Equations Math 1 M3 Lesson 7: Representations of Functions
9–12.F.IF.7.e Graph exponential functions, showing intercepts and end behavior.	Math 1 M5 Lesson 8: Graphing Exponential Functions Math 1 M5 Lesson 10: Using Transformations to Graph Exponential Functions (Bases Between 0 and 1) Math 1 M5 Lesson 11: Solving Equations Containing Exponential Expressions Math 1 M5 Lesson 22: Modeling the Temperature of Objects Cooling Over Time Math 1 M5 Lesson 23: Modeling an Invasive Species Population
9–12.F.IF.9 Compare properties of two functions, each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). For example, compare the growth of two linear functions, or two exponential functions such as $y = 3^n$ and $y = 100 \times 2^n$.	Math 1 M3 Lesson 11: Comparing Functions Math 1 M5 Lesson 16: Modeling Populations Math 1 M5 Lesson 17: Average Rate of Change Math 1 M5 Lesson 18: Analyzing Exponential Growth Math 1 M5 Lesson 19: Comparing Growth of Functions Math 1 M5 Lesson 20: World Population Prediction Math 1 M5 Lesson 21: A Closer Look at Populations Math 1 M5 Lesson 22: Modeling the Temperature of Objects Cooling Over Time

Functions—Building Linear or Exponential Functions (F.BF)

Build a linear or exponential function that models a relationship between two quantities (Standards F.BF.1–2).
Build new functions from existing functions (Standard F.BF.3).

Utah Core State Standards for Mathematics	Aligned Components of *Eureka Math²*
9–12.F.BF.1 Write a function that describes a relationship between two quantities.	Math 1 M5 Lesson 12: Writing Equations for Exponential Functions from Tables or Graphs
9–12.F.BF.1.a Determine an explicit expression, a recursive process, or steps for calculation from a context.	Math 1 M5 Lesson 2: The Recursive Challenge Math 1 M5 Lesson 4: Explicit Formulas for Sequences Math 1 M5 Lesson 5: Arithmetic and Geometric Sequences Math 1 M5 Lesson 6: Representations of Arithmetic and Geometric Sequences Math 1 M5 Lesson 7: Exponential Functions
9–12.F.BF.1.b Combine standard function types using arithmetic operations. For example, build a function that models the temperature of a cooling body by adding a constant function to a decaying exponential, and relate these functions to the model.	Math 1 M5 Lesson 22: Modeling the Temperature of Objects Cooling Over Time
9–12.F.BF.2 Write arithmetic and geometric sequences both recursively and with an explicit formula, use them to model situations, and translate between the two forms. Limit to linear and exponential functions. Connect arithmetic sequences to linear functions and geometric sequences to exponential functions.	Math 1 M5 Lesson 2: The Recursive Challenge Math 1 M5 Lesson 4: Explicit Formulas for Sequences Math 1 M5 Lesson 5: Arithmetic and Geometric Sequences Math 1 M5 Lesson 6: Representations of Arithmetic and Geometric Sequences Math 1 M5 Lesson 7: Exponential Functions

Utah Core State Standards for Mathematics	Aligned Components of *Eureka Math²*
9–12.F.BF.3 Identify the effect on the graph of replacing $f(x)$ by $f(x) + k$, for specific values of k (both positive and negative); find the value of k given the graphs. Relate the vertical translation of a linear function to its y-intercept. Experiment with cases and illustrate an explanation of the effects on the graph using technology.	Math 1 M3 Lesson 16: Exploring Transformations of the Graphs of Functions Math 1 M3 Lesson 17: Building New Functions—Translations Math 1 M3 Lesson 18: Building New Functions—Reflections Math 1 M3 Lesson 19: Building New Functions—Vertical Scaling Math 1 M3 Lesson 21: A Summary of Transforming the Graph of a Function Math 1 M5 Lesson 9: Using Transformations to Graph Exponential Functions (Bases Greater Than 1) Math 1 M5 Lesson 10: Using Transformations to Graph Exponential Functions (Bases Between 0 and 1)

Functions—Linear and Exponential (F.LE)

Construct and compare linear and exponential models and solve problems (Standards F.LE.1–3).
Interpret expressions for functions in terms of the situation they model (Standard F.LE.5).

Utah Core State Standards for Mathematics	Aligned Components of *Eureka Math²*
9–12.F.LE.1 Distinguish between situations that can be modeled with linear functions and with exponential functions.	Math 1 M5 Lesson 20: World Population Prediction
9–12.F.LE.1.a Prove that linear functions grow by equal differences over equal intervals; exponential functions grow by equal factors over equal intervals.	Math 1 M5 Lesson 19: Comparing Growth of Functions

Utah Core State Standards for Mathematics	Aligned Components of *Eureka Math²*
9–12.F.LE.1.b Recognize situations in which one quantity changes at a constant rate per unit interval relative to another.	Math 1 M5 Lesson 18: Analyzing Exponential Growth Math 1 M5 Lesson 19: Comparing Growth of Functions Math 1 M5 Lesson 20: World Population Prediction
9–12.F.LE.1.c Recognize situations in which a quantity grows or decays by a constant percent rate per unit interval relative to another.	Math 1 M5 Lesson 14: Exponential Growth Math 1 M5 Lesson 15: Exponential Decay Math 1 M5 Lesson 18: Analyzing Exponential Growth Math 1 M5 Lesson 19: Comparing Growth of Functions Math 1 M5 Lesson 20: World Population Prediction
9–12.F.LE.2 Construct linear and exponential functions, including arithmetic and geometric sequences, given a graph, a description of a relationship, or two input-output pairs (include reading these from a table).	Math 1 M1 Lesson 2: Looking for Patterns Math 1 M5 Lesson 1: Exploring Patterns Math 1 M5 Lesson 5: Arithmetic and Geometric Sequences Math 1 M5 Lesson 7: Exponential Functions Math 1 M5 Lesson 12: Writing Equations for Exponential Functions from Tables or Graphs Math 1 M5 Lesson 13: Calculating Interest Math 1 M5 Lesson 15: Exponential Decay Math 1 M5 Lesson 16: Modeling Populations Math 1 M5 Lesson 22: Modeling the Temperature of Objects Cooling Over Time Math 1 M5 Lesson 23: Modeling an Invasive Species Population

Utah Core State Standards for Mathematics	Aligned Components of *Eureka Math²*
9–12.F.LE.3 Observe using graphs and tables that a quantity increasing exponentially eventually exceeds a quantity increasing linearly.	Math 1 M5 Lesson 19: Comparing Growth of Functions
9–12.F.LE.5 Interpret the parameters in a linear or exponential function in terms of a context. Limit exponential functions to those of the form $f(x) = b^x + k$.	Math 1 M5 Lesson 7: Exponential Functions

Geometry—Congruence (G.CO)

Experiment with transformations in the plane. Build on student experience with rigid motions from earlier grades (Standards G.CO.1–5). Understand congruence in terms of rigid motions. Rigid motions are at the foundation of the definition of congruence. Reason from the basic properties of rigid motions (that they preserve distance and angle), which are assumed without proof. Rigid motions and their assumed properties can be used to establish the usual triangle congruence criteria, which can then be used to prove other theorems (Standards G.CO.6–8). Make geometric constructions (Standards G.CO.12–13).

Utah Core State Standards for Mathematics	Aligned Components of *Eureka Math²*
9–12.G.CO.1 Know precise definitions of angle, circle, perpendicular line, parallel line, and line segment, based on the undefined notions of point, line, distance along a line, and distance around a circular arc.	Math 1 M4 Lesson 23: Validating Perpendicular Line Constructions

Utah Core State Standards for Mathematics	Aligned Components of *Eureka Math²*
9–12.G.CO.2 Represent transformations in the plane using, for example, transparencies and geometry software; describe transformations as functions that take points in the plane as inputs and give other points as outputs. Compare transformations that preserve distance and angle to those that do not (e.g., translation versus horizontal stretch).	Math 1 M3 Lesson 20: Building New Functions—Horizontal Scaling Math 1 M4 Lesson 1: Geometric Transformations Math 1 M4 Lesson 2: Translations of the Coordinate Plane Math 1 M4 Lesson 4: Reflections of the Coordinate Plane Math 1 M4 Lesson 14: Transformations of the Coordinate Plane
9–12.G.CO.3 Given a rectangle, parallelogram, trapezoid, or regular polygon, describe the rotations and reflections that carry it onto itself.	Math 1 M4 Lesson 14: Transformations of the Coordinate Plane
9–12.G.CO.4 Develop definitions of rotations, reflections, and translations in terms of angles, circles, perpendicular lines, parallel lines, and line segments.	Math 1 M4 Lesson 3: Rotations of the Coordinate Plane Math 1 M4 Lesson 4: Reflections of the Coordinate Plane Math 1 M4 Lesson 12: Reflective Symmetry and Rotational Symmetry

Utah Core State Standards for Mathematics	Aligned Components of *Eureka Math²*
9–12.G.CO.5 Given a geometric figure and a rotation, reflection, or translation, draw the transformed figure using, for example, graph paper, tracing paper, or geometry software. Specify a sequence of transformations that will carry a given figure onto another. Point out the basis of rigid motions in geometric concepts, for example, translations move points a specified distance along a line parallel to a specified line; rotations move objects along a circular arc with a specified center through a specified angle.	Math 1 M4 Lesson 2: Translations of the Coordinate Plane Math 1 M4 Lesson 3: Rotations of the Coordinate Plane Math 1 M4 Lesson 4: Reflections of the Coordinate Plane Math 1 M4 Lesson 8: Reflections of the Plane Math 1 M4 Lesson 9: Rotations of the Plane Math 1 M4 Lesson 10: Rotations of the Plane with Bisected and Copied Angles Math 1 M4 Lesson 11: Translations of the Plane Math 1 M4 Lesson 12: Reflective Symmetry and Rotational Symmetry Math 1 M4 Lesson 13: Sequences of Basic Rigid Motions Math 1 M4 Lesson 14: Transformations of the Coordinate Plane Math 1 M4 Lesson 15: Designs with Rigid Motions
9–12.G.CO.6 Use geometric descriptions of rigid motions to transform figures and to predict the effect of a given rigid motion on a given figure; given two figures, use the definition of congruence in terms of rigid motions to decide whether they are congruent.	Math 1 M4 Lesson 3: Rotations of the Coordinate Plane Math 1 M4 Lesson 4: Reflections of the Coordinate Plane Math 1 M4 Lesson 16: Congruent Figures Math 1 M4 Lesson 17: Congruent Triangles

Utah Core State Standards for Mathematics	Aligned Components of *Eureka Math²*
9–12.G.CO.7 Use the definition of congruence in terms of rigid motions to show that two triangles are congruent if and only if corresponding pairs of sides and corresponding pairs of angles are congruent.	Math 1 M4 Lesson 16: Congruent Figures Math 1 M4 Lesson 17: Congruent Triangles Math 1 M4 Lesson 18: Side–Angle–Side Triangle Correspondences Math 1 M4 Lesson 19: Angle–Angle–Angle and Side–Side–Side Correspondences Math 1 M4 Lesson 20: Angle–Side–Angle Triangle Correspondences Math 1 M4 Lesson 21: Side–Side–Side and Hypotenuse–Leg
9–12.G.CO.8 Explain how the criteria for triangle congruence (ASA, SAS, and SSS) follow from the definition of congruence in terms of rigid motions.	Math 1 M4 Lesson 18: Side–Angle–Side Triangle Correspondences Math 1 M4 Lesson 19: Angle–Angle–Angle and Side–Side–Side Correspondences Math 1 M4 Lesson 20: Angle–Side–Angle Triangle Correspondences Math 1 M4 Lesson 21: Side–Side–Side and Hypotenuse–Leg
9–12.G.CO.12 Make formal geometric constructions with a variety of tools and methods (compass and straightedge, string, reflective devices, paper folding, dynamic geometric software, etc.). Emphasize the ability to formalize and defend how these constructions result in the desired objects. For example, copying a segment; copying an angle; bisecting a segment; bisecting an angle; constructing perpendicular lines, including the perpendicular bisector of a line segment; and constructing a line parallel to a given line through a point not on the line.	Math 1 M4 Lesson 6: Compass and Straightedge Constructions Math 1 M4 Lesson 7: Constructing Perpendicular Lines Math 1 M4 Lesson 22: Validating Triangle and Angle Constructions

Utah Core State Standards for Mathematics	Aligned Components of *Eureka Math²*
9–12.G.CO.13 Construct an equilateral triangle, a square, and a regular hexagon inscribed in a circle. Emphasize the ability to formalize and defend how these constructions result in the desired objects.	Math 1 M4 Lesson 6: Compass and Straightedge Constructions Math 1 M4 Lesson 24: Squares Inscribed in Circles Math 1 M4 Lesson 25: Regular Hexagons and Equilateral Triangles Inscribed in Circles Math 1 M4 Lesson 26: Sierpinski Triangle

Geometry—Expressing Geometric Properties With Equations (G.GPE)

Use coordinates to prove simple geometric theorems algebraically (Standards G.GPE.4–5, 7).

Utah Core State Standards for Mathematics	Aligned Components of *Eureka Math²*
9–12.G.GPE.4 Use coordinates to prove simple geometric theorems algebraically. For example, prove or disprove that a figure defined by four given points in the coordinate plane is a rectangle; prove or disprove that the point $(1, \sqrt{3})$ lies on the circle centered at the origin and containing the point $(0, 2)$.	Math 1 M4 Lesson 5: Proving the Perpendicular Criterion
9–12.G.GPE.5 Prove the slope criteria for parallel and perpendicular lines; use them to solve geometric problems (e.g., find the equation of a line parallel or perpendicular to a given line that passes through a given point).	Math 1 M2 Lesson 7: Equations of Parallel and Perpendicular Lines Math 1 M4 Lesson 5: Proving the Perpendicular Criterion

Utah Core State Standards for Mathematics	Aligned Components of *Eureka Math²*
9–12.G.GPE.7 Use coordinates to compute perimeters of polygons and areas of triangles and rectangles; connect with The Pythagorean Theorem and the distance formula.	Math 1 M2 Lesson 19: The Distance Formula Math 1 M2 Lesson 20: Proving Geometric Theorems Algebraically Math 1 M2 Lesson 21: Using Coordinates to Determine Perimeters and Areas of Figures

Statistics and Probability—Interpreting Categorical and Quantitative Data (S.ID)

Summarize, represent, and interpret data on a single count or measurement variable (Standards S.ID.1–3). Summarize, represent, and interpret data on two categorical and quantitative variables (Standard S.ID.6). Interpret linear models building on students' work with linear relationships, and introduce the correlation coefficient (Standards S.ID.7–9).

Utah Core State Standards for Mathematics	Aligned Components of *Eureka Math²*
9–12.S.ID.1 Represent data with plots on the real number line (dot plots, histograms, and box plots).	Math 1 M1 Lesson 19: Using Center to Compare Data Distributions
9–12.S.ID.2 Use statistics appropriate to the shape of the data distribution to compare center (median, mean) and spread (interquartile range, standard deviation) of two or more different data sets.	Math 1 M1 Lesson 19: Using Center to Compare Data Distributions Math 1 M1 Lesson 20: Describing Variability in a Univariate Distribution with Standard Deviation Math 1 M1 Lesson 21: Estimating Variability in Data Distributions Math 1 M1 Lesson 22: Comparing Distributions of Univariate Data

Utah Core State Standards for Mathematics	Aligned Components of *Eureka Math²*
9–12.S.ID.3 Interpret differences in shape, center, and spread in the context of the data sets, accounting for possible effects of extreme data points (outliers). Calculate the weighted average of a distribution and interpret it as a measure of center.	Math 1 M1 Lesson 17: Distributions and Their Shapes Math 1 M1 Lesson 18: Describing the Center of a Distribution Math 1 M6 Lesson 1: Using Data to Edit Digital Photography
9–12.S.ID.6 Represent data on two quantitative variables on a scatter plot, and describe how the variables are related.	Math 1 M1 Lesson 1: A Powerful Trio
9–12.S.ID.6.a Fit a linear function to the data; use functions fitted to data to solve problems in the context of the data. Use given functions, or choose a function suggested by the context. Emphasize linear and exponential models.	Math 1 M1 Lesson 1: A Powerful Trio Math 1 M2 Lesson 23: Using Lines to Model Bivariate Quantitative Data Math 1 M2 Lesson 24: Modeling Relationships with a Line Math 1 M2 Lesson 28: Analyzing Bivariate Quantitative Data Math 1 M6 Lesson 2: Using Residual Plots to Select Models for Data
9–12.S.ID.6.b Informally assess the fit of a function by plotting and analyzing residuals. Focus on situations for which linear models are appropriate.	Math 1 M1 Lesson 1: A Powerful Trio Math 1 M2 Lesson 23: Using Lines to Model Bivariate Quantitative Data Math 1 M2 Lesson 24: Modeling Relationships with a Line Math 1 M2 Lesson 26: Analyzing Residuals Math 1 M2 Lesson 28: Analyzing Bivariate Quantitative Data Math 1 M6 Lesson 2: Using Residual Plots to Select Models for Data

Utah Core State Standards for Mathematics	Aligned Components of *Eureka Math²*
9–12.S.ID.6.c Fit a linear function for scatter plots that suggest a linear association.	Math 1 M1 Lesson 1: A Powerful Trio Math 1 M2 Lesson 23: Using Lines to Model Bivariate Quantitative Data Math 1 M2 Lesson 24: Modeling Relationships with a Line Math 1 M2 Lesson 28: Analyzing Bivariate Quantitative Data Math 1 M6 Lesson 2: Using Residual Plots to Select Models for Data Math 1 M6 Lesson 11: A Vanishing Sea
9–12.S.ID.7 Interpret the slope (rate of change) and the intercept (constant term) of a linear model in the context of the data.	Math 1 M2 Lesson 23: Using Lines to Model Bivariate Quantitative Data Math 1 M2 Lesson 24: Modeling Relationships with a Line Math 1 M3 Lesson 7: Representations of Functions Math 1 M6 Lesson 11: A Vanishing Sea
9–12.S.ID.8 Compute (using technology) and interpret the correlation coefficient of a linear fit.	Math 1 M2 Lesson 27: Interpreting Correlation Math 1 M2 Lesson 28: Analyzing Bivariate Quantitative Data
9–12.S.ID.9 Distinguish between correlation and causation.	Math 1 M6 Lesson 6: Conditional Relative Frequencies and Association