Algebra I | Maine Mathematics Standards 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*
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.
2. Reason abstractly and quantitatively.	Lessons in every module engage students in mathematical practices. These are indicated in margin notes included with every lesson.
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.
4. Model with mathematics.	Lessons in every module engage students in mathematical practices. These are indicated in margin notes included with every lesson.
5. Use appropriate tools strategically.	Lessons in every module engage students in mathematical practices. These are indicated in margin notes included with every lesson.
6. Attend to precision.	Lessons in every module engage students in mathematical practices. These are indicated in margin notes included with every lesson.
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.
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.

Algebraic Reasoning—Algebra: Seeing Structure in Expressions

AR.A.1 Interpret the structure of expressions.

Maine Mathematics Standards	Aligned Components of *Eureka Math²*
AR.A.1.HSA.SSE.A.1 Interpret expressions that represent a quantity in terms of its context.	*This standard is fully addressed by the lessons aligned to its subsections.*
AR.A.1.SSE.A.1a Interpret parts of an expression, such as terms, factors, and coefficients.	A1 M4 Lesson 3: Analyzing Functions That Model Projectile Motion
AR.A.1.SSE.A.1b Interpret multi-part expressions by viewing one or more of their parts as a single entity.	A1 M5 Lesson 8: Exponential Functions A1 M5 Lesson 16: Exponential Growth A1 M5 Lesson 17: Exponential Decay A1 M5 Lesson 18: Modeling Populations A1 M5 Lesson 23: Modeling the Temperature of Objects Cooling Over Time
AR.A.1.HSA.SSE.A.2 Use the structure of an expression to identify ways to rewrite it.	A1 M1 Lesson 1: The Growing Pattern of Ducks A1 M1 Lesson 2: The Commutative, Associative, and Distributive Properties A1 M1 Lesson 3: Polynomial Expressions A1 M4 Lesson 3: Analyzing Functions That Model Projectile Motion A1 M4 Topic B: Factoring A1 M4 Lesson 14: Solving Quadratic Equations by Completing the Square A1 M4 Lesson 15: Deriving the Quadratic Formula A1 M5 Lesson 11: Graphing Exponential Functions A1 M5 Lesson 12: Using Transformations to Graph Exponential Functions (Bases Greater Than 1) A1 M5 Lesson 18: Modeling Populations

Algebraic Reasoning—Algebra: Seeing Structure in Expressions

AR.A.2 Write expressions in equivalent forms to reveal information and to solve problems.

Maine Mathematics Standards	Aligned Components of *Eureka Math²*
AR.A.2.HSA.SSE.B.3 Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression.	*This standard is fully addressed by the lessons aligned to its subsections.*
AR.A.2.HSA.SSE.B.3a Rewrite a quadratic expression (such as by factoring) to reveal the zeros of the function it defines.	A1 M4 Lesson 10: Zeros of Functions A1 M4 Lesson 11: Graphing Quadratic Functions from Factored Form A1 M4 Lesson 22: A Summary of Graphing Quadratic Functions
AR.A.2.HSA.SSE.B.3b Rewrite a quadratic expression (such as by completing the square) to reveal the maximum or minimum value of the function it defines.	A1 M4 Lesson 21: Completing the Square to Graph Quadratic Functions A1 M4 Lesson 22: A Summary of Graphing Quadratic Functions
AR.A.2.HSA.SSE.B.3c Use the properties of exponents to transform expressions for exponential functions.	A1 M5 Lesson 11: Graphing Exponential Functions A1 M5 Lesson 12: Using Transformations to Graph Exponential Functions (Bases Greater Than 1) A1 M5 Lesson 18: Modeling Populations

Algebraic Reasoning—Algebra: Arithmetic with Polynomials & Rational Expressions

AR.A.3 Perform arithmetic operations on polynomials.

Maine Mathematics Standards	Aligned Components of *Eureka Math²*
AR.A.3.HSA.APR.A.1 Understand that polynomials form a system analogous to the integers, namely, they are closed under certain operations.	*This standard is fully addressed by the lessons aligned to its subsections.*
AR.A.3.HSA.APR.A.1a Perform operations on polynomial expressions (addition, subtraction, multiplication, and division), and compare the system of polynomials to the system of integers.	A1 M1 Lesson 3: Polynomial Expressions A1 M1 Lesson 4: Adding and Subtracting Polynomial Expressions A1 M1 Lesson 5: Multiplying Polynomial Expressions A1 M1 Lesson 6: Polynomial Identities
AR.A.3.HSA.APR.A.1b Factor and/or expand polynomial expressions, identify and combine like terms, and apply the Distributive Property.	A1 M1 Lesson 1: The Growing Pattern of Ducks A1 M1 Lesson 2: The Commutative, Associative, and Distributive Properties A1 M1 Lesson 3: Polynomial Expressions A1 M4 Lesson 3: Analyzing Functions That Model Projectile Motion A1 M4 Topic B: Factoring A1 M4 Lesson 14: Solving Quadratic Equations by Completing the Square

Algebraic Reasoning—Algebra: Creating Equations and/or Inequalities

AR.A.7 Create equations and/or inequalities that describe numbers or relationships.

Maine Mathematics Standards	Aligned Components of *Eureka Math²*
AR.A.7.HSA.CED.A.1 Create equations and inequalities in one variable and use them to solve problems. *Include equations arising from linear and quadratic functions, and simple rational and exponential functions.*	A1 M1 Lesson 7: Printing Presses A1 M1 Lesson 11: Writing and Solving Equations in One Variable A1 M1 Lesson 13: Solving Linear Inequalities in One Variable A1 M1 Lesson 15: Solving and Graphing Compound Inequalities A1 M4 Lesson 9: Creating and Solving Quadratic Equations in One Variable
AR.A.7.HSA.CED.A.2 Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.	A1 M2 Lesson 1: Solution Sets of Linear Equations in Two Variables A1 M2 Lesson 2: Graphing Linear Equations in Two Variables A1 M2 Lesson 3: Creating Linear Equations in Two Variables A1 M2 Lesson 6: Applications of Linear Equations and Inequalities A1 M4 Lesson 11: Graphing Quadratic Functions from Factored Form A1 M4 Lesson 12: Using Symmetry to Graph Quadratic Functions from Standard Form A1 M4 Lesson 23: Creating Equations of Quadratic Functions to Model Contexts A1 M4 Lesson 25: Maximizing Area A1 M4 Lesson 26: Modeling Data with Quadratic Functions A1 M4 Lesson 27: Search and Rescue Helicopter
AR.A.7.HSA.CED.A.3 Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions as viable or nonviable options in a modeling context.	A1 M1 Lesson 11: Writing and Solving Equations in One Variable A1 M1 Lesson 14: Solution Sets of Compound Statements A1 M1 Lesson 15: Solving and Graphing Compound Inequalities A1 M2 Lesson 1: Solution Sets of Linear Equations in Two Variables A1 M2 Lesson 6: Applications of Linear Equations and Inequalities A1 M6 Lesson 5: Solar System Models

Maine Mathematics Standards	Aligned Components of *Eureka Math²*
AR.A.7.HSA.CED.A.4 Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations.	A1 M1 Lesson 12: Rearranging Formulas A1 M4 Lesson 13: Using Square Roots to Solve Quadratic Equations

Algebraic Reasoning—Algebra: Reasoning with Equations & Inequalities

AR.A.8 Understand solving equations as a process of reasoning and explain the reasoning.

Maine Mathematics Standards	Aligned Components of *Eureka Math²*
AR.A.8.HSA.REI.A.1 Explain each step in solving a simple 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 or refute a solution method.	A1 M1 Lesson 9: Solving Linear Equations in One Variable A1 M1 Lesson 10: Some Potential Dangers When Solving Equations A1 M1 Lesson 11: Writing and Solving Equations in One Variable

Algebraic Reasoning—Algebra: Reasoning with Equations & Inequalities

AR.A.9 Solve equations and inequalities in one variable.

Maine Mathematics Standards	Aligned Components of *Eureka Math²*
AR.A.9.HSA.REI.B.3 Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters.	A1 M1 Lesson 7: Printing Presses A1 M1 Lesson 8: Solution Sets for Equations and Inequalities in One Variable A1 M1 Lesson 9: Solving Linear Equations in One Variable A1 M1 Lesson 10: Some Potential Dangers When Solving Equations A1 M1 Lesson 11: Writing and Solving Equations in One Variable A1 M1 Lesson 13: Solving Linear Inequalities in One Variable A1 M1 Lesson 15: Solving and Graphing Compound Inequalities A1 M1 Lesson 16: Solving Absolute Value Equations A1 M1 Lesson 17: Solving Absolute Value Inequalities
AR.A.9.HSA.REI.B.4 Solve quadratic equations in one variable.	*This standard is fully addressed by the lessons aligned to its subsections.*
AR.A.9.HSA.REI.B.4a Use the method of completing the square to transform any quadratic equation in x into an equation of the form $(x - p)^2 = q$ that has the same solutions. Derive the quadratic formula from this form.	A1 M4 Lesson 14: Solving Quadratic Equations by Completing the Square A1 M4 Lesson 15: Deriving the Quadratic Formula

Maine Mathematics Standards	Aligned Components of *Eureka Math²*
AR.A.9.HSA.REI.B.4b.i Solve quadratic equations by inspection (e.g., for $x^2 = 49$), taking square roots, completing the square, the quadratic formula and factoring, as appropriate to the initial form of the equation.	A1 M4 Lesson 5: Solving Equations That Contain Factored Expressions A1 M4 Lesson 6: Solving Quadratic Equations by Factoring: Identities and Guess and Check A1 M4 Lesson 7: Solving Quadratic Equations by Factoring: Splitting the Linear Term A1 M4 Lesson 8: A Summary of Solving Quadratic Equations by Factoring A1 M4 Lesson 9: Creating and Solving Quadratic Equations in One Variable A1 M4 Lesson 13: Using Square Roots to Solve Quadratic Equations A1 M4 Lesson 14: Solving Quadratic Equations by Completing the Square A1 M4 Lesson 15: Deriving the Quadratic Formula A1 M4 Lesson 16: Solving Quadratic Equations A1 M4 Lesson 18: The Quadratic Formula and Zeros of a Function

Algebraic Reasoning—Algebra: Reasoning with Equations & Inequalities

AR.A.10 Solve systems of equations.

Maine Mathematics Standards	Aligned Components of *Eureka Math²*
AR.A.10.HSA.REI.C.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.	A1 M2 Lesson 9: A New Way to Solve Systems

Maine Mathematics Standards	Aligned Components of *Eureka Math²*
AR.A.10.HSA.REI.C.6 Solve systems of linear equations exactly and approximately (e.g., with graphs), focusing on pairs of linear equations in two variables.	A1 M2 Lesson 7: Low-Flow Showerhead A1 M2 Lesson 8: Systems of Linear Equations in Two Variables A1 M2 Lesson 9: A New Way to Solve Systems A1 M2 Lesson 10: The Elimination Method A1 M2 Lesson 11: Applications of Systems of Equations
AR.A.10.HSA.REI.C.7 Solve a simple system consisting of a linear equation and a quadratic equation in two variables algebraically and graphically.	A1 M4 Lesson 24: Another Look at Systems of Equations

Algebraic Reasoning—Algebra: Reasoning with Equations & Inequalities

AR.A.11 Represent and solve equations and inequalities graphically.

Maine Mathematics Standards	Aligned Components of *Eureka Math²*
AR.A.11.HSA.REI.D.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). Show that any point on the graph of an equation in two variables is a solution to the equation.	A1 M2 Lesson 1: Solution Sets of Linear Equations in Two Variables A1 M2 Lesson 2: Graphing Linear Equations in Two Variables

Maine Mathematics Standards	Aligned Components of *Eureka Math²*
AR.A.11.HSA.REI.D.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, polynomial, rational, absolute value, exponential, and logarithmic functions.	A1 M3 Lesson 10: Using Graphs to Solve Equations A1 M3 Lesson 15: The Absolute Value Function A1 M4 Lesson 24: Another Look at Systems of Equations A1 M5 Lesson 13: Using Transformations to Graph Exponential Functions (Bases Between 0 and 1) A1 M5 Lesson 20: Comparing Growth of Functions
AR.A.11.HSA.REI.D.12 Graph the solutions of 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 of a system of linear inequalities in two variables as the intersection of the corresponding half-planes.	A1 M2 Lesson 4: Solution Sets of Linear Inequalities in Two Variables A1 M2 Lesson 5: Graphing Linear Inequalities in Two Variables A1 M2 Lesson 12: Solution Sets of Systems of Linear Inequalities A1 M2 Lesson 13: Graphing Solution Sets of Systems of Linear Inequalities A1 M2 Lesson 14: Applications of Systems of Linear Inequalities

Algebraic Reasoning—Functions: Interpreting Functions

AR.A.12 Understand the concept of a function and use function notation.

Maine Mathematics Standards	Aligned Components of *Eureka Math²*
AR.A.12.HSF.IF.A.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 $y = f(x)$.	A1 M3 Topic A: Functions and Their Graphs
AR.A.12.HSF.IF.A.2 Use function notation, evaluate functions for inputs in their domains, and interpret statements that use function notation in terms of a context.	A1 M3 Lesson 1: The Definition of a Function A1 M3 Lesson 2: Representing, Naming, and Evaluating Functions A1 M3 Lesson 6: Representations of Functions A1 M3 Lesson 16: Step Functions A1 M5 Lesson 1: Exploring Patterns A1 M5 Lesson 2: The Recursive Challenge A1 M5 Lesson 3: Recursive Formulas for Sequences A1 M5 Lesson 4: Explicit Formulas for Sequences A1 M5 Lesson 7: Sierpinski Triangle

Maine Mathematics Standards	Aligned Components of *Eureka Math²*
AR.A.12.HSF.IF.A.3 Recognize that sequences are functions, sometimes defined recursively, whose domain is a subset of the integers.	A1 M5 Lesson 1: Exploring Patterns A1 M5 Lesson 2: The Recursive Challenge A1 M5 Lesson 3: Recursive Formulas for Sequences A1 M5 Lesson 4: Explicit Formulas for Sequences A1 M5 Lesson 5: Arithmetic and Geometric Sequences A1 M5 Lesson 6: Representations of Arithmetic and Geometric Sequences

Algebraic Reasoning—Functions: Interpreting Functions

AR.A.13 Interpret functions that arise in applications in terms of the context.

Maine Mathematics Standards	Aligned Components of *Eureka Math²*
AR.A.13.HSF.IF.B.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 may include: intercepts; intervals where the function is increasing, decreasing, positive, or negative; relative and absolute maximums and minimums; symmetries; end behavior; and periodicity.*	A1 M3 Lesson 7: Exploring Key Features of a Function and Its Graph A1 M3 Lesson 8: Identifying Key Features of a Function and Its Graph A1 M3 Lesson 9: Representing Functions from Verbal Descriptions A1 M3 Lesson 11: Comparing Functions A1 M3 Lesson 12: Mars Curiosity Rover A1 M3 Lesson 13: Modeling Elevation as a Function of Time A1 M4 Lesson 1: Falling Objects A1 M4 Lesson 2: Projectile Motion A1 M4 Lesson 3: Analyzing Functions That Model Projectile Motion A1 M4 Lesson 11: Graphing Quadratic Functions from Factored Form A1 M4 Lesson 12: Using Symmetry to Graph Quadratic Functions from Standard Form A1 M4 Lesson 21: Completing the Square to Graph Quadratic Functions A1 M4 Lesson 23: Creating Equations of Quadratic Functions to Model Contexts A1 M4 Lesson 25: Maximizing Area

Maine Mathematics Standards	Aligned Components of *Eureka Math²*
AR.A.13.HSF.IF.B.5 Relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes.	A1 M3 Lesson 3: The Graph of a Function A1 M3 Lesson 13: Modeling Elevation as a Function of Time A1 M3 Lesson 16: Step Functions A1 M4 Lesson 2: Projectile Motion A1 M4 Lesson 3: Analyzing Functions That Model Projectile Motion A1 M4 Lesson 23: Creating Equations of Quadratic Functions to Model Contexts
AR.A.13.HSF.IF.B.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.	A1 M4 Lesson 1: Falling Objects A1 M4 Lesson 3: Analyzing Functions That Model Projectile Motion A1 M4 Lesson 12: Using Symmetry to Graph Quadratic Functions from Standard Form A1 M5 Lesson 19: Analyzing Exponential Growth A1 M5 Lesson 20: Comparing Growth of Functions A1 M5 Lesson 24: Modeling an Invasive Species Population

Algebraic Reasoning—Functions: Interpreting Functions

AR.A.14 Analyze functions using different representations.

Maine Mathematics Standards	Aligned Components of *Eureka Math²*
AR.A.14.HSF.IF.C.7 Graph functions expressed symbolically as well as show and describe key features of the graph, by hand in simple cases and using technology for more complicated cases.	*This standard is fully addressed by the lessons aligned to its subsections.*

Maine Mathematics Standards	Aligned Components of *Eureka Math²*
AR.A.14.HSF.IF.C.7a Graph linear and quadratic functions and show intercepts, maxima, and minima.	A1 M3 Lesson 4: The Graph of the Equation $y = f(x)$ A1 M3 Lesson 5: Using Pseudocode to Compare Graphs of Functions and Graphs of Equations A1 M3 Lesson 6: Representations of Functions A1 M4 Lesson 4: Graphs of Quadratic Functions A1 M4 Lesson 11: Graphing Quadratic Functions from Factored Form A1 M4 Lesson 12: Using Symmetry to Graph Quadratic Functions from Standard Form A1 M4 Lesson 19: Transforming the Graphs of Quadratic Functions A1 M4 Lesson 23: Creating Equations of Quadratic Functions to Model Contexts
AR.A.14.HSF.IF.C.7b.i Graph square root and piecewise-defined functions (including step functions and absolute value functions), as well as show and describe key features of the graph.	A1 M3 Topic C: Piecewise-Defined Linear Functions A1 M3 Lesson 19: Building New Functions—Translations A1 M3 Lesson 23: A Summary of Transforming the Graph of a Function *Supplementary material is necessary to address graphing square root functions.*
AR.A.14.HSF.IF.C.7e.i Graph exponential functions, showing intercepts and end behavior.	A1 M5 Lesson 11: Graphing Exponential Functions A1 M5 Lesson 12: Using Transformations to Graph Exponential Functions (Bases Greater Than 1) A1 M5 Lesson 13: Using Transformations to Graph Exponential Functions (Bases Between 0 and 1)
AR.A.14.HSF.IF.C.8 Write a function defined by an expression in different but equivalent forms to reveal and explain different properties of the function.	*This standard is fully addressed by the lessons aligned to its subsections.*

Maine Mathematics Standards	Aligned Components of *Eureka Math²*
AR.A.14.HSF.IF.C.8a Use the process of factoring and completing the square in a quadratic function to show zeros, maximum and minimum values, and symmetry of the graph, and interpret these in terms of a context.	A1 M4 Lesson 10: Zeros of Functions A1 M4 Lesson 11: Graphing Quadratic Functions from Factored Form A1 M4 Lesson 22: A Summary of Graphing Quadratic Functions
AR.A.14.HSF.IF.C.8b Use the properties of exponents to interpret expressions for exponential functions.	A1 M5 Lesson 11: Graphing Exponential Functions A1 M5 Lesson 12: Using Transformations to Graph Exponential Functions (Bases Greater Than 1) A1 M5 Lesson 18: Modeling Populations
AR.A.14.HSF.IF.C.9 Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions).	A1 M3 Lesson 11: Comparing Functions A1 M4 Lesson 12: Using Symmetry to Graph Quadratic Functions from Standard Form A1 M4 Lesson 21: Completing the Square to Graph Quadratic Functions

Algebraic Reasoning—Functions: Building Functions

AR.A.15 Build a function that models a relationship between two quantities.

Maine Mathematics Standards	Aligned Components of *Eureka Math²*
AR.A.15.HSF.BF.A.1 Write a function that describes a relationship between two quantities.	A1 M6 Lesson 5: Solar System Models

Maine Mathematics Standards	Aligned Components of *Eureka Math²*
AR.A.15.HSF.BF.A.1a Determine an explicit expression, a recursive process, or steps for calculation from a context.	A1 M3 Lesson 17: Piecewise Linear Functions in Context A1 M4 Lesson 23: Creating Equations of Quadratic Functions to Model Contexts A1 M4 Lesson 25: Maximizing Area A1 M4 Lesson 26: Modeling Data with Quadratic Functions A1 M4 Lesson 27: Search and Rescue Helicopter A1 M5 Topic A: Arithmetic and Geometric Sequences A1 M5 Lesson 8: Exponential Functions A1 M5 Lesson 15: Calculating Interest A1 M6 Topic B: Developing Models for Contexts
AR.A.15.HSF.BF.A.1b Combine standard function types using arithmetic operations.	A1 M6 Lesson 4: The Deal A1 M6 Lesson 6: Designing a Fundraiser A1 M6 Lesson 7: World Record Doughnut
AR.A.15.HSF.BF.A.2 Write arithmetic and geometric sequences both recursively and with an explicit formula, use them to model situations, and translate between the two forms.	A1 M5 Lesson 5: Arithmetic and Geometric Sequences A1 M5 Lesson 6: Representations of Arithmetic and Geometric Sequences A1 M5 Lesson 7: Sierpinski Triangle

Algebraic Reasoning—Functions: Building Functions

AR.A.16 Build new functions from existing functions.

Maine Mathematics Standards	Aligned Components of *Eureka Math²*
AR.A.16.HSF.BF.B.3 Identify the effect on the graph of replacing $f(x)$ by $f(x) + k$, $kf(x)$, $f(kx)$, and $f(x + k)$ for specific values of k (both positive and negative); find the value of k given the graphs. Experiment with cases and illustrate an explanation of the effects on the graph using technology. Include recognizing even and odd functions from their graphs and algebraic expressions for them.	A1 M3 Topic D: Transformations of Functions A1 M4 Lesson 20: Art with Transformations A1 M5 Lesson 12: Using Transformations to Graph Exponential Functions (Bases Greater Than 1) A1 M5 Lesson 13: Using Transformations to Graph Exponential Functions (Bases Between 0 and 1) A1 M5 Lesson 14: Writing Equations for Exponential Functions from Tables or Graphs A1 M5 Lesson 23: Modeling the Temperature of Objects Cooling Over Time

Algebraic Reasoning—Functions: Linear, Quadratic, & Exponential Models

AR.A.17 Construct and compare linear, quadratic, and exponential models and solve problems.

Maine Mathematics Standards	Aligned Components of *Eureka Math²*
AR.A.17.HSF.LE.A.1 Distinguish between situations that can be modeled with linear functions and with exponential functions.	A1 M5 Lesson 15: Calculating Interest A1 M5 Lesson 18: Modeling Populations A1 M5 Lesson 21: World Population Prediction A1 M5 Lesson 22: A Closer Look at Populations A1 M5 Lesson 24: Modeling an Invasive Species Population A1 M6 Topic A: Modeling Bivariate Quantitative Data

Maine Mathematics Standards	Aligned Components of *Eureka Math²*
AR.A.17.HSF.LE.A.1a Prove that linear functions grow by equal differences over equal intervals, and that exponential functions grow by equal factors over equal intervals.	A1 M5 Lesson 19: Analyzing Exponential Growth
AR.A.17.HSF.LE.A.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).	A1 M5 Lesson 8: Exponential Functions A1 M5 Lesson 14: Writing Equations for Exponential Functions from Tables or Graphs A1 M5 Lesson 16: Exponential Growth A1 M5 Lesson 17: Exponential Decay A1 M5 Topic D: Comparing Linear and Exponential Models A1 M6 Topic B: Developing Models for Contexts
AR.A.17.HSF.LE.A.3 Observe using graphs and tables that a quantity increasing exponentially eventually exceeds a quantity increasing linearly, quadratically, or (more generally) as a polynomial function.	A1 M5 Lesson 20: Comparing Growth of Functions

Algebraic Reasoning—Functions: Linear, Quadratic, & Exponential Models

AR.A.18 Interpret expressions for function in terms of the situation they model.

Maine Mathematics Standards	Aligned Components of *Eureka Math²*
AR.A.18.HSF.LE.B.5 Interpret the parameters in a linear or exponential function in terms of a context.	A1 M5 Lesson 18: Modeling Populations A1 M5 Lesson 19: Analyzing Exponential Growth A1 M5 Lesson 23: Modeling the Temperature of Objects Cooling Over Time A1 M5 Lesson 24: Modeling an Invasive Species Population

Quantitative Reasoning—Number and Quantity: The Real Number System

QR.A.1 Extend the properties of exponents to rational exponents.

Maine Mathematics Standards	Aligned Components of *Eureka Math²*
QR.A.1.HSN.RN.A.1 Explain how the definition of the meaning of rational exponents follows from extending the properties of integer exponents to those values, allowing for a notation for radicals in terms of rational exponents.	A1 M5 Lesson 9: Unit Fraction Exponents A1 M5 Lesson 10: Rational Exponents
QR.A.1.HSN.RN.A.2 Rewrite expressions involving radicals and rational exponents using the properties of exponents.	A1 M5 Lesson 9: Unit Fraction Exponents A1 M5 Lesson 10: Rational Exponents

Quantitative Reasoning—Number and Quantity: The Real Number System

QR.A.2 Use properties of rational and irrational numbers.

Maine Mathematics Standards	Aligned Components of *Eureka Math²*
QR.A.2.HSN.RN.B.3 Explain when and why the sum or product of two rational and/or irrational numbers is rational or irrational.	A1 M4 Lesson 13: Using Square Roots to Solve Quadratic Equations A1 M4 Lesson 17: Rewriting Square Roots

Quantitative Reasoning—Number and Quantity: Quantities

QR.A.3 Reason quantitatively and use units to solve problems.

Maine Mathematics Standards	Aligned Components of *Eureka Math²*
QR.A.3.HSN.Q.A.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.	A1 M6 Lesson 5: Solar System Models
QR.A.3.HSN.Q.A.2 Define appropriate quantities for the purpose of descriptive modeling.	A1 M4 Lesson 25: Maximizing Area A1 M6 Lesson 5: Solar System Models
QR.A.3.HSN.Q.A.3 Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.	A1 M6 Lesson 5: Solar System Models

Statistical Reasoning—Statistics & Probability: Interpreting Categorical & Quantitative Data

SR.A.1 Summarize, represent, and interpret data on a single count or measurement variable.

Maine Mathematics Standards	Aligned Components of *Eureka Math²*
SR.A.1.HSS.ID.A.1 Represent data with plots on the real number line (dot plots, histograms, and box plots).	A1 M1 Lesson 18: Distributions and Their Shapes A1 M1 Lesson 19: Describing the Center of a Distribution A1 M1 Lesson 20: Using Center to Compare Data Distributions

Maine Mathematics Standards	Aligned Components of *Eureka Math²*
SR.A.1.HSS.ID.A.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.	A1 M1 Topic D: Univariate Data
SR.A.1.HSS.ID.A.3 Interpret differences in shape, center, and spread in the context of the data sets, accounting for possible effects of extreme data points (outliers).	A1 M1 Topic D: Univariate Data

Statistical Reasoning—Statistics & Probability: Interpreting Categorical & Quantitative Data

SR.A.2 Summarize, represent, and interpret data on two categorical variables and two quantitative variables.

Maine Mathematics Standards	Aligned Components of *Eureka Math²*
SR.A.2.HSS.ID.B.5 Summarize categorical data for two categories in two-way frequency tables. Interpret relative frequencies in the context of the data (including joint, marginal, and conditional relative frequencies). Recognize possible associations and trends in the data.	A1 M2 Topic D: Categorical Data on Two Variables

Maine Mathematics Standards	Aligned Components of *Eureka Math²*
SR.A.2.HSS.ID.B.6 Represent data on two quantitative variables on a scatter plot, and describe how the variables are related.	A1 M2 Lesson 15: Relationships Between Quantitative Variables A1 M2 Lesson 21: Analyzing Bivariate Quantitative Data
SR.A.2.HSS.ID.B.6a Fit a 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, quadratic, and exponential models.	A1 M2 Lesson 16: Using Lines to Model Bivariate Quantitative Data A1 M2 Lesson 17: Modeling Relationships with a Line A1 M4 Lesson 23: Creating Equations of Quadratic Functions to Model Contexts A1 M4 Lesson 26: Modeling Data with Quadratic Functions A1 M4 Lesson 27: Search and Rescue Helicopter A1 M6 Topic A: Modeling Bivariate Quantitative Data
SR.A.2.HSS.ID.B.6b Informally assess the fit of a function by plotting and analyzing residuals.	A1 M2 Lesson 18: Calculating and Analyzing Residuals A1 M2 Lesson 19: Analyzing Residuals A1 M6 Topic A: Modeling Bivariate Quantitative Data
SR.A.2.HSS.ID.B.6c Fit a linear function for a scatter plot that suggests a linear association.	A1 M2 Lesson 17: Modeling Relationships with a Line A1 M2 Lesson 18: Calculating and Analyzing Residuals A1 M2 Lesson 20: Interpreting Correlation A1 M6 Topic A: Modeling Bivariate Quantitative Data

Statistical Reasoning—Statistics & Probability: Interpreting Categorical & Quantitative Data

SR.A.3 Interpret linear models.

Maine Mathematics Standards	Aligned Components of *Eureka Math²*
SR.A.3.HSS.ID.C.7 Interpret the slope (rate of change) and the intercept (constant term) of a linear model in the context of the data.	A1 M2 Lesson 16: Using Lines to Model Bivariate Quantitative Data A1 M2 Lesson 21: Analyzing Bivariate Quantitative Data
SR.A.3.HSS.ID.C.8 Compute (using technology) and interpret the correlation coefficient of a linear fit.	A1 M2 Lesson 20: Interpreting Correlation A1 M2 Lesson 21: Analyzing Bivariate Quantitative Data
SR.A.3.HSS.ID.C.9 Distinguish between correlation and causation.	A1 M2 Lesson 20: Interpreting Correlation A1 M2 Lesson 21: Analyzing Bivariate Quantitative Data