Algebra I | New York Next Generation Mathematics Learning Standards Correlation to *Eureka Math*®

About *Eureka Math*

Created by Great Minds®, a mission-driven Public Benefit Corporation, *Eureka Math*® helps teachers deliver unparalleled math instruction that provides students with a deep understanding and fluency in math. Crafted by teachers and math scholars, the curriculum carefully sequences the mathematical progressions to maximize coherence from Prekindergarten through Precalculus—a principle tested and proven to be essential in students' mastery of math.

Teachers and students using *Eureka Math* find the trademark "Aha!" moments in *Eureka Math* to be a source of joy and inspiration, lesson after lesson, year after year.

Aligned

Great Minds offers detailed analyses that demonstrate how each grade of *Eureka Math* aligns with specific state standards. Access these free alignment studies at greatminds.org/state-studies.

Data

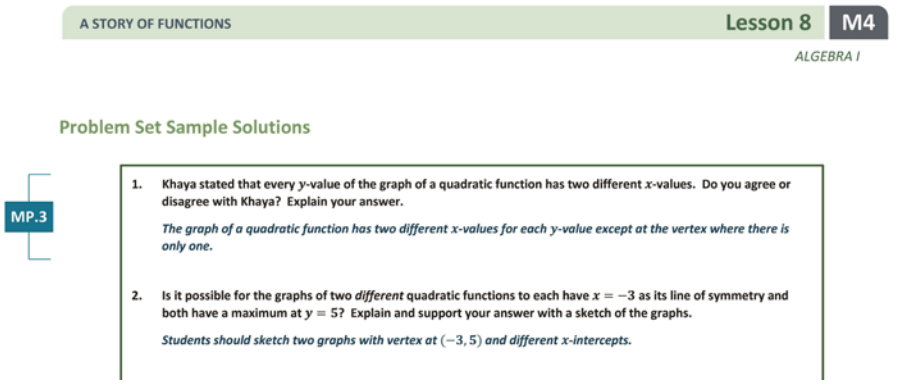
Schools and districts nationwide are experiencing student growth and impressive test scores after using *Eureka Math*. See their stories and data at greatminds.org/data.

Full Suite of Resources

Great Minds offers the *Eureka Math* curriculum as PDF downloads for free, noncommercial use. Access the free PDFs at greatminds.org/math/curriculum.

The teacher–writers who created the curriculum have also developed essential resources, available only from Great Minds, including the following:

- Printed material in English and Spanish
- Digital resources
- Professional development
- Classroom tools and manipulatives
- Teacher support materials
- Parent resources

Standards for Mathematical Practice	Aligned Components of *Eureka Math*
MP.1 Make sense of problems and persevere in solving them.	Lessons in every module engage students in mathematical practices. These are designated in the Module Overview and labeled in lessons. For example: 
MP.2 Reason abstractly and quantitatively.	
MP.3 Construct viable arguments and critique the reasoning of others.	
MP.4 Model with mathematics.	
MP.5 Use appropriate tools strategically.	
MP.6 Attend to precision.	
MP.7 Look for and make use of structure.	
MP.8 Look for and express regularity in repeated reasoning.	

The Real Number System

Use properties of rational and irrational numbers.

New York Next Generation Mathematics Learning Standards	Aligned Components of *Eureka Math*
AI-N.RN.3 Use properties and operations to understand the different forms of rational and irrational numbers.	G8 M7 Lesson 4: Simplifying Square Roots Algebra I M4 Lesson 13: Solving Quadratic Equations by Completing the Square Geometry M2 Lesson 22: Multiplying and Dividing Expressions with Radicals Geometry M2 Lesson 23: Adding and Subtracting Expressions with Radicals
AI-N.RN.3.a Perform all four arithmetic operations and apply properties to generate equivalent forms of rational numbers and square roots.	G8 M7 Lesson 4: Simplifying Square Roots Geometry M2 Lesson 22: Multiplying and Dividing Expressions with Radicals Geometry M2 Lesson 23: Adding and Subtracting Expressions with Radicals
AI-N.RN.3.b Categorize the sum or product of rational or irrational numbers. The sum and product of two rational numbers is rational. The sum of a rational number and an irrational number is irrational. The product of a nonzero rational number and an irrational number is irrational. The sum and product of two irrational numbers could be either rational or irrational.	Algebra I M4 Lesson 13: Solving Quadratic Equations by Completing the Square *Supplemental material is necessary to address categorizing the sum and product of two irrational numbers.*

Quantities

Reason quantitatively and use units to solve problems.

New York Next Generation Mathematics Learning Standards	Aligned Components of *Eureka Math*
AI-N.Q.1 Select quantities and use units as a way to: i) interpret and guide the solution of multi-step problems; ii) choose and interpret units consistently in formulas; and iii) choose and interpret the scale and the origin in graphs and data displays.	Algebra I M1 Topic A: Introduction to Functions Studied This Year—Graphing Stories Algebra I M1 Lesson 25: Solving Problems in Two Ways—Rates and Algebra Algebra I M1 Lesson 28: Federal Income Tax
AI-N.Q.3 Choose a level of accuracy appropriate to limitations on measurement and context when reporting quantities.	Algebra I M1 Topic A: Introduction to Functions Studied This Year—Graphing Stories Algebra I M5 Lesson 6: Modeling a Context from Data Algebra I M5 Lesson 7: Modeling a Context from Data Algebra I M5 Lesson 9: Modeling a Context from a Verbal Description

Seeing Structure in Expressions

Interpret the structure of expressions.

New York Next Generation Mathematics Learning Standards	Aligned Components of *Eureka Math*
AI-A.SSE.1 Interpret expressions that represent a quantity in terms of its context.	Algebra I M1 Lesson 26: Recursive Challenge Problem—The Double and Add 5 Game Algebra I M1 Lesson 27: Recursive Challenge Problem—The Double and Add 5 Game Algebra I M3 Lesson 4: Why Do Banks Pay YOU to Provide Their Services? Algebra I M3 Lesson 5: The Power of Exponential Growth Algebra I M3 Lesson 6: Exponential Growth—U.S. Population and World Population Algebra I M3 Lesson 7: Exponential Decay Algebra I M4 Lesson 1: Multiplying and Factoring Polynomial Expressions Algebra I M4 Lesson 2: Multiplying and Factoring Polynomial Expressions Algebra I M4 Lesson 3: Advanced Factoring Strategies for Quadratic Expressions Algebra I M4 Lesson 4: Advanced Factoring Strategies for Quadratic Expressions Algebra I M4 Lesson 6: Solving Basic One-Variable Quadratic Equations Algebra I M4 Lesson 12: Completing the Square Algebra I M4 Lesson 17: Graphing Quadratic Functions from the Standard Form, $f(x) = ax^2 + bx + c$
AI-A.SSE.1.a Write the standard form of a given polynomial and identify the terms, coefficients, degree, leading coefficient, and constant term.	Algebra I M4 Lesson 1: Multiplying and Factoring Polynomial Expressions Algebra I M4 Lesson 2: Multiplying and Factoring Polynomial Expressions Algebra I M4 Lesson 3: Advanced Factoring Strategies for Quadratic Expressions Algebra I M4 Lesson 4: Advanced Factoring Strategies for Quadratic Expressions

New York Next Generation Mathematics Learning Standards	Aligned Components of *Eureka Math*
AI-A.SSE.1.b Interpret expressions by viewing one or more of their parts as a single entity.	Algebra I M3 Lesson 4: Why Do Banks Pay YOU to Provide Their Services? Algebra I M3 Lesson 5: The Power of Exponential Growth Algebra I M3 Lesson 6: Exponential Growth—U.S. Population and World Population Algebra I M3 Lesson 7: Exponential Decay Algebra I M4 Lesson 6: Solving Basic One-Variable Quadratic Equations Algebra I M4 Lesson 12: Completing the Square Algebra I M4 Lesson 17: Graphing Quadratic Functions from the Standard Form, $f(x) = ax^2 + bx + c$
AI-A.SSE.2 Recognize and use the structure of an expression to identify ways to rewrite it.	Algebra I M1 Lesson 6: Algebraic Expressions—The Distributive Property Algebra I M1 Lesson 7: Algebra Expressions—The Commutative and Associative Properties Algebra I M1 Lesson 17: Equations Involving Factored Expressions Algebra I M4 Lesson 1: Multiplying and Factoring Polynomial Expressions Algebra I M4 Lesson 2: Multiplying and Factoring Polynomial Expressions Algebra I M4 Lesson 3: Advanced Factoring Strategies for Quadratic Expressions Algebra I M4 Lesson 4: Advanced Factoring Strategies for Quadratic Expressions Algebra I M4 Lesson 5: The Zero Product Property Algebra I M4 Lesson 11: Completing the Square Algebra I M4 Lesson 12: Completing the Square

Seeing Structure in Expressions

Write expressions in equivalent forms to reveal their characteristics.

New York Next Generation Mathematics Learning Standards	Aligned Components of *Eureka Math*
AI-A.SSE.3 Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression.	Algebra I M3 Lesson 23: Newton's Law of Cooling Algebra I M4 Lesson 9: Graphing Quadratic Functions from Factored Form, $f(x) = a(x - m)(x - n)$ Algebra I M4 Lesson 12: Completing the Square Algebra I M4 Lesson 15: Using the Quadratic Formula Algebra I M4 Lesson 17: Graphing Quadratic Functions from the Standard Form, $f(x) = ax^2 + bx + c$
AI-A.SSE.3.c Use the properties of exponents to rewrite exponential expressions.	Algebra I M3 Lesson 23: Newton's Law of Cooling

Arithmetic with Polynomials and Rational Expressions

Perform arithmetic operations on polynomials.

New York Next Generation Mathematics Learning Standards	Aligned Components of *Eureka Math*
AI-A.APR.1 Add, subtract, and multiply polynomials and recognize that the result of the operation is also a polynomial. This forms a system analogous to the integers.	Algebra I M1 Lesson 8: Adding and Subtracting Polynomials Algebra I M1 Lesson 9: Multiplying Polynomials Algebra I M4 Lesson 1: Multiplying and Factoring Polynomial Expressions Algebra I M4 Lesson 2: Multiplying and Factoring Polynomial Expressions Algebra I M4 Lesson 3: Advanced Factoring Strategies for Quadratic Expressions Algebra I M4 Lesson 4: Advanced Factoring Strategies for Quadratic Expressions

Arithmetic with Polynomials and Rational Expressions

Understand the relationship between zeros and factors of polynomials.

New York Next Generation Mathematics Learning Standards	Aligned Components of *Eureka Math*
AI-A.APR.3 Identify zeros of polynomial functions when suitable factorizations are available.	Algebra I M4 Lesson 9: Graphing Quadratic Functions from Factored Form, $f(x) = a(x - m)(x - n)$ Algebra I M4 Lesson 15: Using the Quadratic Formula

Creating Equations

Create equations that describe numbers or relationships.

New York Next Generation Mathematics Learning Standards	Aligned Components of *Eureka Math*
AI-A.CED.1 Create equations and inequalities in one variable to represent a real-world context.	Algebra I M1 Lesson 18: Equations Involving a Variable Expression in the Denominator Algebra I M1 Lesson 25: Solving Problems in Two Ways—Rates and Algebra Algebra I M1 Lesson 26: Recursive Challenge Problem—The Double and Add 5 Game Algebra I M1 Lesson 27: Recursive Challenge Problem—The Double and Add 5 Game Algebra I M4 Lesson 6: Solving Basic One-Variable Quadratic Equations Algebra I M4 Lesson 7: Creating and Solving Quadratic Equations in One Variable Algebra I M5 Lesson 6: Modeling a Context from Data Algebra I M5 Lesson 9: Modeling a Context from a Verbal Description

New York Next Generation Mathematics Learning Standards	Aligned Components of *Eureka Math*
AI-A.CED.2 Create equations and linear inequalities in two variables to represent a real-world context.	Algebra I M1 Lesson 5: Two Graphing Stories Algebra I M1 Lesson 20: Solution Sets to Equations with Two Variables Algebra I M1 Lesson 23: Solution Sets to Simultaneous Equations Algebra I M1 Lesson 24: Applications of Systems of Equations and Inequalities Algebra I M1 Lesson 28: Federal Income Tax Algebra I M4 Lesson 9: Graphing Quadratic Functions from Factored Form, $f(x) = a(x - m)(x - n)$ Algebra I M4 Lesson 12: Completing the Square Algebra I M4 Lesson 16: Graphing Quadratic Equations from the Vertex Form, $y = a(x - h)^2 + k$ Algebra I M4 Lesson 23: Modeling with Quadratic Functions Algebra I M4 Lesson 24: Modeling with Quadratic Functions Algebra I M5 Topic A: Elements of Modeling Algebra I M5 Lesson 4: Modeling a Context from a Graph Algebra I M5 Lesson 5: Modeling from a Sequence Algebra I M5 Lesson 6: Modeling a Context from Data Algebra I M5 Lesson 8: Modeling a Context from a Verbal Description
AI-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.	Algebra I M1 Lesson 15: Solution Sets of Two or More Equations (or Inequalities) Joined by "And" or "Or" Algebra I M1 Lesson 20: Solution Sets to Equations with Two Variables Algebra I M1 Lesson 24: Applications of Systems of Equations and Inequalities Algebra I M1 Lesson 27: Recursive Challenge Problem—The Double and Add 5 Game Algebra I M3 Lesson 8: Why Stay with Whole Numbers? Algebra I M3 Lesson 24: Piecewise and Step Functions in Context

New York Next Generation Mathematics Learning Standards	Aligned Components of *Eureka Math*
AI-A.CED.4 Rewrite formulas to highlight a quantity of interest, using the same reasoning as in solving equations.	Algebra I M1 Lesson 19: Rearranging Formulas

Reasoning with Equations and Inequalities

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

New York Next Generation Mathematics Learning Standards	Aligned Components of *Eureka Math*
AI-A.REI.1a Explain each step when solving a linear or quadratic 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.	Algebra I M1 Lesson 12: Solving Equations Algebra I M1 Lesson 13: Some Potential Dangers when Solving Equations Algebra I M1 Lesson 17: Equations Involving Factored Expressions Algebra I M1 Lesson 18: Equations Involving a Variable Expression in the Denominator

Reasoning with Equations and Inequalities

Solve equations and inequalities in one variable.

New York Next Generation Mathematics Learning Standards	Aligned Components of *Eureka Math*
AI-A.REI.3 Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters.	Algebra I M1 Lesson 10: True and False Equations Algebra I M1 Lesson 11: Solution Sets for Equations and Inequalities Algebra I M1 Lesson 12: Solving Equations Algebra I M1 Lesson 13: Some Potential Dangers when Solving Equations Algebra I M1 Lesson 14: Solving Inequalities Algebra I M1 Lesson 15: Solution Sets of Two or More Equations (or Inequalities) Joined by "And" or "Or" Algebra I M1 Lesson 16: Solving and Graphing Inequalities Joined by "And" or "Or" Algebra I M1 Lesson 17: Equations Involving Factored Expressions Algebra I M1 Lesson 18: Equations Involving a Variable Expression in the Denominator Algebra I M1 Lesson 19: Rearranging Formulas Algebra I M1 Lesson 25: Solving Problems in Two Ways—Rates and Algebra Algebra I M1 Lesson 27: Recursive Challenge Problem—The Double and Add 5 Game
AI-A.REI.4 Solve quadratic equations in one variable.	*This standard is fully addressed by the lessons aligned to its subsections.*
AI-A.REI.4.a 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. Understand that the quadratic formula is a derivative of this process.	Algebra I M4 Lesson 13: Solving Quadratic Equations by Completing the Square Algebra I M4 Lesson 14: Deriving the Quadratic Formula

New York Next Generation Mathematics Learning Standards	Aligned Components of *Eureka Math*
AI-A.REI.4.b Solve quadratic equations by: i) inspection, ii) taking square roots, iii) factoring, iv) completing the square, v) the quadratic formula, and vi) graphing. Recognize when the process yields no real solutions.	Algebra I M4 Lesson 5: The Zero Product Property Algebra I M4 Lesson 6: Solving Basic One-Variable Quadratic Equations Algebra I M4 Lesson 7: Creating and Solving Quadratic Equations in One Variable Algebra I M4 Lesson 13: Solving Quadratic Equations by Completing the Square Algebra I M4 Lesson 14: Deriving the Quadratic Formula Algebra I M4 Lesson 15: Using the Quadratic Formula

Reasoning with Equations and Inequalities

Solve systems of equations.

New York Next Generation Mathematics Learning Standards	Aligned Components of *Eureka Math*
AI-A.REI.6a Solve systems of linear equations in two variables both algebraically and graphically.	Algebra I M1 Lesson 22: Solution Sets to Simultaneous Equations Algebra I M1 Lesson 23: Solution Sets to Simultaneous Equations Algebra I M1 Lesson 24: Applications of Systems of Equations and Inequalities Algebra I M4 Lesson 24: Modeling with Quadratic Functions
AI-A.REI.7a Solve a system, with rational solutions, consisting of a linear equation and a quadratic equation (parabolas only) in two variables algebraically and graphically.	Algebra II M1 Lesson 31: Systems of Equations

Reasoning with Equations and Inequalities

Represent and solve equations and inequalities graphically.

New York Next Generation Mathematics Learning Standards	Aligned Components of *Eureka Math*
AI-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.	Algebra I M1 Lesson 20: Solution Sets to Equations with Two Variables
AI-A.REI.11 Given the equations $y = f(x)$ and $y = g(x)$: i) recognize that each x-coordinate of the intersection(s) is the solution to the equation $f(x) = g(x)$; ii) find the solutions approximately using technology to graph the functions or make tables of values; and iii) interpret the solution in context.	Algebra I M3 Lesson 16: Graphs Can Solve Equations Too
AI-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.	Algebra I M1 Lesson 21: Solution Sets to Inequalities with Two Variables Algebra I M1 Lesson 22: Solution Sets to Simultaneous Equations Algebra I M1 Lesson 24: Applications of Systems of Equations and Inequalities

Interpreting Functions

Understand the concept of a function and use function notation.

New York Next Generation Mathematics Learning Standards	Aligned Components of *Eureka Math*
AI-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 $y = f(x)$.	Algebra I M3 Lesson 1: Integer Sequences—Should You Believe in Patterns? Algebra I M3 Lesson 9: Representing, Naming, and Evaluating Functions Algebra I M3 Lesson 10: Representing, Naming, and Evaluating Functions Algebra I M3 Lesson 11: The Graph of a Function Algebra I M3 Lesson 12: The Graph of the Equation $y = f(x)$
AI-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.	Algebra I M3 Topic A: Linear and Exponential Sequences Algebra I M3 Lesson 8: Why Stay with Whole Numbers? Algebra I M3 Lesson 9: Representing, Naming, and Evaluating Functions Algebra I M3 Lesson 10: Representing, Naming, and Evaluating Functions Algebra I M3 Lesson 11: The Graph of a Function
AI-F.IF.3 Recognize that a sequence is a function whose domain is a subset of the integers.	Algebra I M3 Lesson 2: Recursive Formulas for Sequences Algebra I M3 Lesson 3: Arithmetic and Geometric Sequences Algebra I M3 Lesson 4: Why Do Banks Pay YOU to Provide Their Services?

Interpreting Functions

Interpret functions that arise in applications in terms of the context.

New York Next Generation Mathematics Learning Standards	Aligned Components of *Eureka Math*
AI-F.IF.4 For a function that models a relationship between two quantities: i) interpret key features of graphs and tables in terms of the quantities; and ii) sketch graphs showing key features given a verbal description of the relationship.	Algebra I M3 Lesson 13: Interpreting the Graph of a Function Algebra I M3 Lesson 14: Linear and Exponential Models—Comparing Growth Rates Algebra I M3 Lesson 23: Newton's Law of Cooling Algebra I M4 Lesson 8: Exploring the Symmetry in Graphs of Quadratic Functions Algebra I M4 Lesson 9: Graphing Quadratic Functions from Factored Form, $f(x) = a(x - m)(x - n)$ Algebra I M4 Lesson 10: Interpreting Quadratic Functions from Graphs and Tables Algebra I M4 Lesson 17: Graphing Quadratic Functions from the Standard Form, $f(x) = ax^2 + bx + c$ Algebra I M4 Lesson 22: Comparing Quadratic, Square Root, and Cube Root Functions Represented in Different Ways Algebra I M5 Lesson 2: Analyzing a Data Set Algebra I M5 Lesson 4: Modeling a Context from a Graph Algebra I M5 Lesson 6: Modeling a Context from Data Algebra I M5 Lesson 7: Modeling a Context from Data
AI-F.IF.5 Determine the domain of a function from its graph and, where applicable, identify the appropriate domain for a function in context.	Algebra I M3 Lesson 8: Why Stay with Whole Numbers? Algebra I M3 Lesson 9: Representing, Naming, and Evaluating Functions Algebra I M3 Lesson 10: Representing, Naming, and Evaluating Functions Algebra I M3 Lesson 11: The Graph of a Function Algebra I M3 Lesson 12: The Graph of the Equation $y = f(x)$ Algebra I M4 Lesson 9: Graphing Quadratic Functions from Factored Form, $f(x) = a(x - m)(x - n)$ Algebra I M5 Lesson 1: Analyzing a Graph Algebra I M5 Lesson 4: Modeling a Context from a Graph

New York Next Generation Mathematics Learning Standards	Aligned Components of *Eureka Math*
AI-F.IF.6 Calculate and interpret the average rate of change of a function over a specified interval.	Algebra I M3 Lesson 6: Exponential Growth—U.S. Population and World Population Algebra I M3 Lesson 21: Comparing Linear and Exponential Models Again Algebra I M3 Lesson 22: Modeling an Invasive Species Population Algebra I M4 Lesson 8: Exploring the Symmetry in Graphs of Quadratic Functions Algebra I M4 Lesson 10: Interpreting Quadratic Functions from Graphs and Tables Algebra I M4 Lesson 17: Graphing Quadratic Functions from the Standard Form, $f(x) = ax^2 + bx + c$ Algebra I M4 Lesson 22: Comparing Quadratic, Square Root, and Cube Root Functions Represented in Different Ways Algebra I M5 Lesson 4: Modeling a Context from a Graph

Interpreting Functions

Analyze functions using different representations.

New York Next Generation Mathematics Learning Standards	Aligned Components of *Eureka Math*
AI-F.IF.7 Graph functions and show key features of the graph by hand and by using technology where appropriate.	*This standard is fully addressed by the lessons aligned to its subsections.*
AI-F.IF.7.a Graph linear, quadratic, and exponential functions and show key features.	Algebra I M1 Lesson 2: Graphs of Quadratic Functions Algebra I M1 Lesson 3: Graphs of Exponential Functions Algebra I M3 Lesson 11: The Graph of a Function Algebra I M3 Lesson 12: The Graph of the Equation $y = f(x)$ Algebra I M3 Lesson 16: Graphs Can Solve Equations Too

New York Next Generation Mathematics Learning Standards	Aligned Components of *Eureka Math*
AI-F.IF.7.a ***continued***	Algebra I M3 Lesson 19: Four Interesting Transformations of Functions Algebra I M4 Lesson 8: Exploring the Symmetry in Graphs of Quadratic Functions Algebra I M4 Lesson 9: Graphing Quadratic Functions from Factored Form, $f(x) = a(x - m)(x - n)$ Algebra I M4 Lesson 16: Graphing Quadratic Equations from the Vertex Form, $y = a(x - h)^2 + k$ Algebra I M4 Lesson 17: Graphing Quadratic Functions from the Standard Form, $f(x) = ax^2 + bx + c$ Algebra I M4 Lesson 19: Translating Graphs of Functions Algebra I M4 Lesson 20: Stretching and Shrinking Graphs of Functions Algebra I M4 Lesson 21: Transformations of the Quadratic Parent Function, $f(x) = x^2$ Algebra I M4 Lesson 23: Modeling with Quadratic Functions
AI-F.IF.7.b Graph square root and piecewise-defined functions, including step functions and absolute value functions, and show key features.	Algebra I M1 Lesson 1: Graphs of Piecewise Linear Functions Algebra I M3 Lesson 15: Piecewise Functions Algebra I M3 Lesson 17: Four Interesting Transformations of Functions Algebra I M3 Lesson 18: Four Interesting Transformations of Functions Algebra I M3 Lesson 20: Four Interesting Transformations of Functions Algebra I M4 Lesson 18: Graphing Cubic, Square Root, and Cube Root Functions Algebra I M4 Lesson 19: Translating Graphs of Functions Algebra I M4 Lesson 20: Stretching and Shrinking Graphs of Functions
AI-F.IF.8 Write a function 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 subsection.*

New York Next Generation Mathematics Learning Standards	Aligned Components of *Eureka Math*
AI-F.IF.8.a For a quadratic function, use an algebraic process to find zeros, maxima, minima, and symmetry of the graph, and interpret these in terms of context.	Algebra I M4 Lesson 9: Graphing Quadratic Functions from Factored Form, $f(x) = a(x - m)(x - n)$ Algebra I M4 Lesson 12: Completing the Square Algebra I M4 Lesson 15: Using the Quadratic Formula Algebra I M4 Lesson 16: Graphing Quadratic Equations from the Vertex Form, $y = a(x - h)^2 + k$ Algebra I M4 Lesson 17: Graphing Quadratic Functions from the Standard Form, $f(x) = ax^2 + bx + c$ Algebra I M4 Lesson 21: Transformations of the Quadratic Parent Function, $f(x) = x^2$ Algebra I M4 Lesson 23: Modeling with Quadratic Functions
AI-F.IF.9 Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions).	Algebra I M4 Lesson 22: Comparing Quadratic, Square Root, and Cube Root Functions Represented in Different Ways

Building Functions

Build a function that models a relationship between two quantities.

New York Next Generation Mathematics Learning Standards	Aligned Components of *Eureka Math*
AI-F.BF.1 Write a function that describes a relationship between two quantities.	*This standard is fully addressed by the lessons aligned to its subsection.*

New York Next Generation Mathematics Learning Standards	Aligned Components of *Eureka Math*
AI-F.BF.1.a Determine a function from context. Define a sequence explicitly or steps for calculation from a context.	Algebra I M3 Topic A: Linear and Exponential Sequences Algebra I M3 Topic D: Using Functions and Graphs to Solve Problems Algebra I M5 Topic A: Elements of Modeling Algebra I M5 Lesson 5: Modeling from a Sequence Algebra I M5 Lesson 6: Modeling a Context from Data Algebra I M5 Lesson 7: Modeling a Context from Data Algebra I M5 Lesson 8: Modeling a Context from a Verbal Description Algebra I M5 Lesson 9: Modeling a Context from a Verbal Description

Building Functions

Build new functions from existing functions.

New York Next Generation Mathematics Learning Standards	Aligned Components of *Eureka Math*
AI-F.BF.3a Using $f(x) + k$, $kf(x)$, and $f(x + k)$: i) identify the effect on the graph when replacing $f(x)$ by $f(x) + k$, $kf(x)$, and $f(x + k)$ for specific values of k (both positive and negative); ii) find the value of k given the graphs; iii) write a new function using the value of k; and iv) use technology to experiment with cases and explore the effects on the graph.	Algebra I M3 Lesson 17: Four Interesting Transformations of Functions Algebra I M3 Lesson 18: Four Interesting Transformations of Functions Algebra I M3 Lesson 19: Four Interesting Transformations of Functions Algebra I M3 Lesson 20: Four Interesting Transformations of Functions Algebra I M4 Lesson 19: Translating Graphs of Functions Algebra I M4 Lesson 20: Stretching and Shrinking Graphs of Functions Algebra I M4 Lesson 21: Transformations of the Quadratic Parent Function, $f(x) = x^2$

Linear, Quadratic, and Exponential Models

Construct and compare linear, quadratic, and exponential models and solve problems.

New York Next Generation Mathematics Learning Standards	Aligned Components of *Eureka Math*
AI-F.LE.1 Distinguish between situations that can be modeled with linear functions and with exponential functions.	Algebra I M3 Lesson 5: The Power of Exponential Growth Algebra I M3 Lesson 6: Exponential Growth—U.S. Population and World Population Algebra I M3 Lesson 14: Linear and Exponential Models—Comparing Growth Rates Algebra I M5 Lesson 2: Analyzing a Data Set Algebra I M5 Lesson 3: Analyzing a Verbal Description Algebra I M5 Lesson 5: Modeling from a Sequence Algebra I M5 Lesson 6: Modeling a Context from Data Algebra I M5 Lesson 8: Modeling a Context from a Verbal Description
AI-F.LE.1.a Justify that a function is linear because it grows by equal differences over equal intervals, and that a function is exponential because it grows by equal factors over equal intervals.	Algebra I M3 Lesson 14: Linear and Exponential Models—Comparing Growth Rates
AI-F.LE.1.b Recognize situations in which one quantity changes at a constant rate per unit interval relative to another, and therefore can be modeled linearly.	Algebra I M5 Lesson 2: Analyzing a Data Set Algebra I M5 Lesson 3: Analyzing a Verbal Description Algebra I M5 Lesson 5: Modeling from a Sequence Algebra I M5 Lesson 6: Modeling a Context from Data

New York Next Generation Mathematics Learning Standards	Aligned Components of *Eureka Math*
AI-F.LE.1.c Recognize situations in which a quantity grows or decays by a constant percent rate per unit interval relative to another, and therefore can be modeled exponentially.	Algebra I M5 Lesson 2: Analyzing a Data Set Algebra I M5 Lesson 3: Analyzing a Verbal Description Algebra I M5 Lesson 5: Modeling from a Sequence Algebra I M5 Lesson 6: Modeling a Context from Data Algebra I M5 Lesson 8: Modeling a Context from a Verbal Description
AI-F.LE.2 Construct a linear or exponential function symbolically given: i) a graph; ii) a description of the relationship; and iii) two input-output pairs (include reading these from a table).	Algebra I M3 Lesson 3: Arithmetic and Geometric Sequences Algebra I M3 Lesson 4: Why Do Banks Pay YOU to Provide Their Services? Algebra I M3 Lesson 5: The Power of Exponential Growth Algebra I M3 Lesson 6: Exponential Growth—U.S. Population and World Population Algebra I M3 Lesson 7: Exponential Decay Algebra I M3 Lesson 14: Linear and Exponential Models—Comparing Growth Rates Algebra I M3 Lesson 21: Comparing Linear and Exponential Models Again Algebra I M3 Lesson 22: Modeling an Invasive Species Population Algebra I M3 Lesson 23: Newton's Law of Cooling Algebra I M5 Lesson 2: Analyzing a Data Set Algebra I M5 Lesson 3: Analyzing a Verbal Description Algebra I M5 Lesson 5: Modeling from a Sequence Algebra I M5 Lesson 6: Modeling a Context from Data Algebra I M5 Lesson 8: Modeling a Context from a Verbal Description Algebra I M5 Lesson 9: Modeling a Context from a Verbal Description

New York Next Generation Mathematics Learning Standards	Aligned Components of *Eureka Math*
AI-F.LE.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.	Algebra I M3 Lesson 5: The Power of Exponential Growth Algebra I M3 Lesson 6: Exponential Growth—U.S. Population and World Population Algebra I M3 Lesson 14: Linear and Exponential Models—Comparing Growth Rates Algebra I M3 Lesson 21: Comparing Linear and Exponential Models Again

Linear, Quadratic, and Exponential Models

Interpret expressions for functions in terms of the situation they model.

New York Next Generation Mathematics Learning Standards	Aligned Components of *Eureka Math*
AI-F.LE.5 Interpret the parameters in a linear or exponential function in terms of a context.	Algebra I M3 Lesson 21: Comparing Linear and Exponential Models Again Algebra I M3 Lesson 22: Modeling an Invasive Species Population

Interpreting Categorical and Quantitative Data

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

New York Next Generation Mathematics Learning Standards	Aligned Components of *Eureka Math*
AI-S.ID.1 Represent data with plots on the real number line (dot plots, histograms, and box plots).	Algebra I M2 Topic A: Shapes and Centers of Distributions Algebra I M2 Topic B: Describing Variability and Comparing Distributions

New York Next Generation Mathematics Learning Standards	Aligned Components of *Eureka Math*
AI-S.ID.2 Use statistics appropriate to the shape of the data distribution to compare center (median, mean) and spread (interquartile range, sample standard deviation) of two or more different data sets.	Algebra I M2 Lesson 3: Estimating Centers and Interpreting the Mean as a Balance Point Algebra I M2 Lesson 4: Summarizing Deviations from the Mean Algebra I M2 Lesson 5: Measuring Variability for Symmetrical Distributions Algebra I M2 Lesson 6: Interpreting the Standard Deviation Algebra I M2 Lesson 8: Comparing Distributions
AI-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).	Algebra I M2 Lesson 2: Describing the Center of a Distribution Algebra I M2 Lesson 3: Estimating Centers and Interpreting the Mean as a Balance Point Algebra I M2 Topic B: Describing Variability and Comparing Distributions

Interpreting Categorical and Quantitative Data

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

New York Next Generation Mathematics Learning Standards	Aligned Components of *Eureka Math*
AI-S.ID.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.	Algebra I M2 Topic C: Categorical Data on Two Variables

New York Next Generation Mathematics Learning Standards	Aligned Components of *Eureka Math*
AI-S.ID.6 Represent bivariate data on a scatter plot, and describe how the variables' values are related.	Algebra I M2 Topic D: Numerical Data on Two Variables Algebra I M5 Lesson 7: Modeling a Context from Data
AI-S.ID.6.a Fit a function to real-world data; use functions fitted to data to solve problems in the context of the data.	Algebra I M2 Lesson 12: Relationships Between Two Numerical Variables Algebra I M2 Lesson 13: Relationships Between Two Numerical Variables Algebra I M2 Lesson 19: Interpreting Correlation Algebra I M5 Lesson 7: Modeling a Context from Data

Interpreting Categorical and Quantitative Data

Interpret linear models.

New York Next Generation Mathematics Learning Standards	Aligned Components of *Eureka Math*
AI-S.ID.7 Interpret the slope (rate of change) and the intercept (constant term) of a linear model in the context of the data.	Algebra I M2 Lesson 14: Modeling Relationships with a Line
AI-S.ID.8 Calculate (using technology) and interpret the correlation coefficient of a linear fit.	Algebra I M2 Lesson 19: Interpreting Correlation Algebra I M2 Lesson 20: Analyzing Data Collected on Two Variables Algebra I M5 Lesson 7: Modeling a Context from Data

New York Next Generation Mathematics Learning Standards	Aligned Components of *Eureka Math*
AI-S.ID.9 Distinguish between correlation and causation.	Algebra I M2 Lesson 11: Conditional Relative Frequencies and Association Algebra I M2 Lesson 19: Interpreting Correlation Algebra I M2 Lesson 20: Analyzing Data Collected on Two Variables