Algebra I | Arkansas Mathematics 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

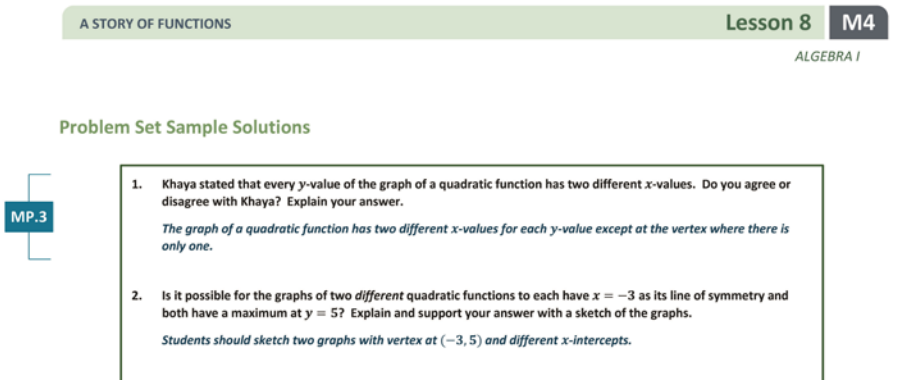
Schools and districts nationwide are experiencing student growth and impressive test scores after using *Eureka Math*. See their stories and data at greatminds.org/data.

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.	

Expressions

Polynomials, Roots, & Exponent Laws

Students simplify algebraic and numerical expressions.

Arkansas Mathematics Standards	Aligned Components of *Eureka Math*
A1.EX.1 Add, subtract, and multiply polynomials; compare the system of polynomials to the system of integers when performing operations.	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
A1.EX.2 Simplify and perform operations with radical expressions without variables; rationalizing denominators should not include conjugates.	G8 M7 Lesson 4: Simplifying Square Roots Algebra II M1 Lesson 9: Radicals and Conjugates *Supplemental material is necessary to address rationalizing denominators without the use of conjugates.*
A1.EX.3 Simplify algebraic expressions using the laws of exponents.	Algebra II M3 Lesson 1: Integer Exponents Algebra II M3 Lesson 2: Base 10 and Scientific Notation Algebra II M3 Lesson 3: Rational Exponents Algebra II M3 Lesson 4: Properties of Exponents and Radicals
A1.EX.4 Interpret the parts of expressions such as terms, factors, and coefficients in terms of a real-world context.	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

Functions

Domain & Range, Function Notation

Students understand the concept of a function, domain and range, and use function notation; students use function notation to solve problems.

Arkansas Mathematics Standards	Aligned Components of *Eureka Math*
A1.FN.1 Explain that a function assigns each element in the domain to exactly one element in the range.	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 $y = f(x)$
A1.FN.2 Use function notation to represent functions, understanding that if f is a function and x is an element of its domain, then $f(x)$ represents the output of f corresponding to the input x.	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
A1.FN.3 Graph functions given in function notation, understanding that the graph contains the points $(x, f(x))$.	Algebra I M3 Lesson 1: Integer Sequences—Should You Believe in Patterns? 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 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 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

Arkansas Mathematics Standards	Aligned Components of *Eureka Math*
A1.FN.4 Evaluate functions expressed in function notation for one or more elements in their domains (inputs); use function notation to describe a contextual situation.	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 Algebra I M3 Topic D: Using Functions and Graphs to Solve Problems 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 Topic B: Completing the Modeling Cycle

Functions

Construct & Compare

Students construct and compare linear, quadratic, and exponential models and solve problems.

Arkansas Mathematics Standards	Aligned Components of *Eureka Math*
A1.FN.5 Differentiate between real-world scenarios that can be modeled by exponential or linear functions by determining whether the relationship has a common difference or a common ratio.	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 Algebra I M3 Lesson 22: Modeling an Invasive Species Population 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

Arkansas Mathematics Standards	Aligned Components of *Eureka Math*
A1.FN.6 Compare the growth pattern of exponential to linear or quadratic functions using graphs and tables and recognize how exponential growth exceeds other functions.	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 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 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

Linear Functions, Equations, & Inequalities

Create & Solve

Students create and solve equations that model linear relationships.

Arkansas Mathematics Standards	Aligned Components of *Eureka Math*
A1.LFE.1 Represent and solve real-world problems, using linear expressions, equations, and inequalities in one variable.	Algebra I M1 Lesson 15: Solution Sets of Two or More Equations (or Inequalities) Joined by "And" or "Or" 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 *Supplemental material is necessary to address solving real-world problems using linear inequalities in one variable.*

Arkansas Mathematics Standards	Aligned Components of *Eureka Math*
A1.LFE.2 Construct linear functions from arithmetic sequences with and without context.	Algebra I M3 Lesson 1: Integer Sequences—Should You Believe in Patterns? Algebra I M3 Lesson 2: Recursive Formulas for Sequences Algebra I M3 Lesson 3: Arithmetic and Geometric Sequences Algebra I M5 Lesson 5: Modeling from a Sequence
A1.LFE.3 Solve linear formulas for a specified variable.	Algebra I M1 Lesson 19: Rearranging Formulas
A1.LFE.4 Solve linear equations, linear inequalities, and absolute value equations in one variable, including those with rational number coefficients, and variables on both sides of the equal or inequality sign; solve them fluently, explaining the process used.	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 *Supplemental material is necessary to address solving absolute value equations in one variable.*

Linear Functions, Equations, & Inequalities

Interpret Key Features

Students interpret key features of equations that model linear relationships.

Arkansas Mathematics Standards	Aligned Components of *Eureka Math*
A1.LFE.5 Determine the domain and range of linear functions in mathematical problems.	Algebra I M3 Lesson 11: The Graph of a Function Algebra I M3 Lesson 12: The Graph of the Equation $y = f(x)$ *Supplemental material is necessary to fully address this standard.*
A1.LFE.6 Determine reasonable domain and range values of linear functions representing real-world situations, both continuous and discrete; interpret the solution as reasonable or unreasonable in context.	*Supplemental material is necessary to address this standard.*
A1.LFE.7 Interpret the key features of a linear and absolute value functions that models a relationship between two quantities in a given context.	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 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 *Supplemental material is necessary to address interpreting the key features of absolute value functions in a given context.*

Arkansas Mathematics Standards	Aligned Components of *Eureka Math*
A1.LFE.8 Flexibly use different representations of a linear function, including graphs, tables, and equations.	G8 M6 Lesson 1: Modeling Linear Relationships G8 M6 Lesson 2: Interpreting Rate of Change and Initial Value G8 M6 Lesson 3: Representations of a Line Algebra I M3 Lesson 3: Arithmetic and Geometric Sequences 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 14: Linear and Exponential Models—Comparing Growth Rates Algebra I M3 Lesson 21: Comparing Linear and Exponential Models Again
A1.LFE.9 Calculate and interpret the rate of change of a linear function represented in a table, graph, or as an equation in context of real-world and mathematical problems.	G8 M6 Lesson 2: Interpreting Rate of Change and Initial Value 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 M5 Lesson 4: Modeling a Context from a Graph
A1.LFE.10 Translate among equivalent forms of equations for linear functions, including standard, point-slope, and slope-intercept forms; recognize that each form reveals key features in a given context.	G8 M4 Lesson 12: Linear Equations in Two Variables G8 M4 Lesson 17: The Line Joining Two Distinct Points of the Graph $y = mx + b$ Has Slope m G8 M4 Lesson 20: Every Line Is a Graph of a Linear Equation G8 M4 Lesson 21: Some Facts About Graphs of Linear Equations in Two Variables G8 M4 Lesson 23: The Defining Equation of a Line

Linear Functions, Equations, & Inequalities

Systems of Equations & Inequalities

Students solve systems of equations and inequalities.

Arkansas Mathematics Standards	Aligned Components of *Eureka Math*
A1.LFE.11 Solve systems of linear equations by substitution, elimination, and graphing with and without a real-world context; understand that the solutions will be the same regardless of the method for solving.	Algebra I M1 Lesson 20: Solution Sets to Equations with Two Variables 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
A1.LFE.12 Solve a system of equations consisting of a linear equation and a quadratic equation in two variables graphically with the assistance of technology.	Algebra II M1 Lesson 31: Systems of Equations Algebra II M1 Lesson 32: Graphing Systems of Equations
A1.LFE.13 Explain why a solution to the equation $f(x) = g(x)$ is the x-coordinate where the y-coordinate of $f(x)$ and $g(x)$ are the same using graphs, tables, or approximations. Include cases where $f(x)$ and/or $g(x)$ are linear, quadratic, absolute value, and exponential.	Algebra I M3 Lesson 16: Graphs Can Solve Equations Too
A1.LFE.14 Solve linear inequalities and systems of linear inequalities in two variables by graphing.	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

Linear Functions, Equations, & Inequalities

Graphing & Transformations

Students graph linear functions, equations, and inequalities.

Arkansas Mathematics Standards	Aligned Components of *Eureka Math*
A1.LFE.15 Write linear equations that model the relationship between two quantities and produce a graph of the equation.	G8 M4 Lesson 5: Writing and Solving Linear Equations G8 M4 Lesson 9: An Application of Linear Equations G8 M4 Lesson 14: The Graph of a Linear Equation—Horizontal and Vertical Lines G8 M4 Lesson 18: There Is Only One Line Passing Through a Given Point with a Given Slope G8 M4 Lesson 19: The Graph of a Linear Equation in Two Variables Is a Line G8 M5 Topic A: Functions Algebra I M3 Lesson 1: Integer Sequences—Should You Believe in Patterns? Algebra I M3 Lesson 3: Arithmetic and Geometric Sequences Algebra I M3 Lesson 21: Comparing Linear and Exponential Models Again 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
A1.LFE.16 Graph linear functions expressed as an equation and show intercepts of the graph without technology.	G8 M4 Lesson 14: The Graph of a Linear Equation—Horizontal and Vertical Lines G8 M4 Lesson 18: There Is Only One Line Passing Through a Given Point with a Given Slope G8 M4 Lesson 19: The Graph of a Linear Equation in Two Variables Is a Line

Arkansas Mathematics Standards	Aligned Components of *Eureka Math*
A1.LFE.17 Graph absolute value functions expressed as an equation with and without technology, showing intercepts and end behavior.	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 M4 Lesson 19: Translating Graphs of Functions Algebra I M4 Lesson 20: Stretching and Shrinking Graphs of Functions
A1.LFE.18 Graph and generalize the effect of transformations on linear and absolute value functions.	Algebra I M3 Lesson 17: Four Interesting Transformations of Functions Algebra I M3 Lesson 18: 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 *Supplemental material is necessary to address the effect of transformations on linear functions.*
A1.LFE.19 Given the graph of a linear function, explain the effects of the transformation from the parent function, $y = x$.	*Supplemental material is necessary to address this standard.*

Linear Functions, Equations, & Inequalities

Statistical Relationships

Students explore linear statistical relationships.

Arkansas Mathematics Standards	Aligned Components of *Eureka Math*
A1.LFE.20 Write linear functions that provide a reasonable fit to data and use them to make predictions, with and without technology; interpret the slope and y-intercept in context.	Algebra I M2 Lesson 14: Modeling Relationships with a Line Algebra I M2 Lesson 19: Interpreting Correlation Algebra I M5 Lesson 7: Modeling a Context from Data

Arkansas Mathematics Standards	Aligned Components of *Eureka Math*
A1.LFE.21 Calculate, using technology, the correlation coefficient between two quantitative variables and interpret this quantity as a measure of the strength of the linear association.	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
A1.LFE.22 Compare and contrast correlation and causation in real-world problems.	Algebra I M2 Lesson 19: Interpreting Correlation Algebra I M2 Lesson 20: Analyzing Data Collected on Two Variables

Quadratic Functions & Equations

Create & Solve

Students create and solve equations that model quadratic relationships.

Arkansas Mathematics Standards	Aligned Components of *Eureka Math*
A1.QFE.1 Represent and solve real-world problems using quadratic expressions and equations in one variable.	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 12: Completing the Square
A1.QFE.2 Write quadratic equations with real number solutions that model the relationship between two quantities and produce a graph of the equation.	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 Lesson 3: Analyzing a Verbal Description Algebra I M5 Lesson 4: Modeling a Context from a Graph Algebra I M5 Lesson 8: Modeling a Context from a Verbal Description

Arkansas Mathematics Standards	Aligned Components of *Eureka Math*
A1.QFE.3 Solve quadratic equations with real number solutions, containing one variable, including those with variables on both sides of the equal sign. Equations should be solved by:	*This standard is addressed by the lessons aligned to its subsections.*
A1.QFE.3.1 Graphing,	*Supplemental material is necessary to address this standard.*
A1.QFE.3.2 Factoring (including perfect square trinomials and difference of squares binomials),	Algebra I M4 Lesson 5: The Zero Product Property Algebra I M4 Lesson 7: Creating and Solving Quadratic Equations in One Variable *Supplemental material is necessary to address solving equations including perfect square trinomials and difference of squares binomials, as well as solving equations with variables on both sides of the equal sign.*
A1.QFE.3.3 Using the quadratic formula,	Algebra I M4 Lesson 14: Deriving the Quadratic Formula Algebra I M4 Lesson 15: Using the Quadratic Formula
A1.QFE.3.4 Completing the square, or	Algebra I M4 Lesson 12: Completing the Square Algebra I M4 Lesson 13: Solving Quadratic Equations by Completing the Square *Supplemental material is necessary to address solving quadratic equations with variables on both sides of the equal sign.*
A1.QFE.3.5 Taking the square root.	Algebra I M4 Lesson 6: Solving Basic One-Variable Quadratic Equations

Quadratic Functions & Equations

Interpret Key Features

Students interpret key features of equations that model quadratic relationships.

Arkansas Mathematics Standards	Aligned Components of *Eureka Math*
A1.QFE.4 Determine the domain and range of quadratic functions in mathematical problems.	Algebra I M4 Lesson 18: Graphing Cubic, Square Root, and Cube Root Functions *Supplemental material is necessary to fully address this standard.*
A1.QFE.5 Determine reasonable domain and range values of quadratic functions representing real-world situations, both continuous and discrete; interpret the solution as reasonable or unreasonable in context.	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 4: Modeling a Context from a Graph
A1.QFE.6 Interpret the key features of a quadratic function that models a relationship between two quantities in a given context.	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 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 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

Arkansas Mathematics Standards	Aligned Components of *Eureka Math*
A1.QFE.7 Flexibly use different representations of a quadratic function, including graphs, tables, and equations.	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 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
A1.QFE.8 Explain how each form of a quadratic expression (standard, factored, and vertex form) identifies different key attributes, using the different forms to interpret quantities in context.	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 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
A1.QFE.9 Use factoring and completing the square to create equivalent forms of quadratic functions to reveal key attributes.	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, $f(x) = ax^2 + bx + c$

Quadratic Functions & Equations

Graphing & Transformations

Students graph quadratic functions and explore different transformations of $f(x) = x^2$.

Arkansas Mathematics Standards	Aligned Components of *Eureka Math*
A1.QFE.10 Graph quadratic functions given as an equation or in function notation, labeling key attributes, without technology.	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 21: Transformations of the Quadratic Parent Function, $f(x) = x^2$ Algebra I M4 Lesson 23: Modeling with Quadratic Functions
A1.QFE.11 Graph and describe the effect of transformations on quadratic 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, $f(x) = x^2$
A1.QFE.12 Given the graph of a quadratic function, explain the effects of the transformation from the parent function, $y = x^2$.	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, $f(x) = x^2$

Quadratic Functions & Equations

Statistical Relationships

Students explore quadratic statistical relationships.

Arkansas Mathematics Standards	Aligned Components of *Eureka Math*
A1.QFE.13 Write quadratic functions that provide a reasonable fit to data and use them to make predictions with technology.	Algebra I M5 Lesson 7: Modeling a Context from Data

Exponential Functions & Equations

Create & Solve

Students create and solve problems that model exponential relationships.

Arkansas Mathematics Standards	Aligned Components of *Eureka Math*
A1.EFE.1 Represent and solve real-world problems, using exponential equations in one variable.	Algebra II M3 Lesson 7: Bacteria and Exponential Growth
A1.EFE.2 Represent real-world problems (growth, decay, and compound interest), using exponential equations.	Algebra I M3 Lesson 8: Why Stay with Whole Numbers? Algebra I M3 Lesson 21: Comparing Linear and Exponential Models Again Algebra I M3 Lesson 22: Modeling an Invasive Species Population Algebra I M5 Topic A: Elements of Modeling Algebra I M5 Topic B: Completing the Modeling Cycle
A1.EFE.3 Construct exponential equations from geometric sequences with and without context.	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 22: Modeling an Invasive Species Population 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 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

Exponential Functions & Equations

Interpret Key Features

Students interpret key features of equations that model exponential relationships.

Arkansas Mathematics Standards	Aligned Components of *Eureka Math*
A1.EFE.4 Determine the domain and range of exponential functions in mathematical problems.	Algebra I M3 Lesson 1: Integer Sequences—Should You Believe in Patterns? Algebra I M5 Lesson 1: Analyzing a Graph *Supplemental material is necessary to fully address this standard.*
A1.EFE.5 Determine reasonable domain and range values of exponential functions representing real-world situations, both continuous and discrete; interpret the solution as reasonable or unreasonable in context.	Algebra I M3 Lesson 8: Why Stay with Whole Numbers? *Supplemental material is necessary to fully address this standard.*
A1.EFE.6 Interpret the key features of an exponential function that models a relationship between two quantities in a given context.	Algebra I M3 Lesson 3: Arithmetic and Geometric Sequences Algebra I M3 Lesson 5: The Power of Exponential Growth Algebra I M3 Lesson 7: Exponential Decay 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 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

Arkansas Mathematics Standards	Aligned Components of *Eureka Math*
A1.EFE.7 Flexibly use different representations of an exponential function, including graphs, tables, and equations.	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 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 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
A1.EFE.8 Interpret the quantities in an exponential equation in the context of a real-world problem, including growth, decay, and compound interest.	Algebra I M3 Lesson 3: Arithmetic and Geometric Sequences Algebra I M3 Lesson 5: The Power of Exponential Growth Algebra I M3 Lesson 7: Exponential Decay 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 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

Exponential Functions & Equations

Graphing

Students graph exponential functions.

Arkansas Mathematics Standards	Aligned Components of *Eureka Math*
A1.EFE.9 Graph exponential functions that model real-world problems (growth, decay, and compound interest), showing key attributes.	Algebra I M3 Lesson 3: Arithmetic and Geometric Sequences Algebra I M3 Lesson 5: The Power of Exponential Growth Algebra I M3 Lesson 7: Exponential Decay 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 6: Modeling a Context from Data Algebra I M5 Lesson 7: Modeling a Context from Data

Exponential Functions & Equations

Statistical Relationships

Students explore exponential statistical relationships.

Arkansas Mathematics Standards	Aligned Components of *Eureka Math*
A1.EFE.10 Write exponential functions that provide a reasonable fit to data and use them to make predictions with technology.	Algebra I M3 Lesson 21: Comparing Linear and Exponential Models Again Algebra I M3 Lesson 22: Modeling an Invasive Species Population 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 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

Statistics & Probability

Numerical Data

Students summarize and describe distributions.

Arkansas Mathematics Standards	Aligned Components of *Eureka Math*
A1.SP.1 Use box plots and histograms to determine the statistics appropriate to the shape of the data distribution; compare the center and spread of two or more data sets.	Algebra I M2 Lesson 1: Distributions and Their Shapes Algebra I M2 Topic B: Describing Variability and Comparing Distributions
A1.SP.2 Interpret differences in shape, center, and spread in the context of the data sets, accounting for possible effects of extreme data points.	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

Statistics & Probability

Bivariate Data

Students will investigate patterns of association in bivariate data.

Arkansas Mathematics Standards	Aligned Components of *Eureka Math*
A1.SP.3 Summarize data from two categorical variables in a frequency table; interpret relative frequencies in the context of the data, recognizing data trends and associations.	Algebra I M2 Topic C: Categorical Data on Two Variables