Algebra I | Arkansas Academic Standards – Mathematics Correlation to *Eureka Math²®*

When the original *Eureka Math®* curriculum was released, it quickly became the most widely used K–5 mathematics curriculum in the country. Now, the Great Minds® teacher–writers have created *Eureka Math²®*, a groundbreaking new curriculum that helps teachers deliver exponentially better math instruction while still providing students with the same deep understanding of and fluency in math. *Eureka Math²* carefully sequences mathematical content to maximize vertical alignment—a principle tested and proven to be essential in students' mastery of math—from kindergarten through high school.

While this innovative new curriculum includes all the trademark *Eureka Math* aha moments that have been delighting students and teachers for years, it also boasts these exciting new features:

Teachability

Eureka Math² employs streamlined materials that allow teachers to plan more efficiently and focus their energy on delivering high-quality instruction that meets the individual needs of their students. Differentiation suggestions, slide decks, digital interactives, and multiple forms of assessment are just a few of the resources built right into the teacher materials.

Accessibility

Eureka Math² incorporates Universal Design for Learning principles so all learners can access the mathematics and take on challenging math concepts. Student supports are built into the instructional design and are clearly identified in the *Teach* book. Further, the curriculum carries a focus on readability. By eliminating unnecessary words and using simple, clear sentences, the *Eureka Math²* teacher–writers have created one of the most readable mathematics curricula on the market. The curriculum's readability and accessibility help all students see themselves as mathematical thinkers and doers who are fully capable of owning their mathematics learning.

Digital Engagement

The digital elements of *Eureka Math²* add to students' engagement with the math. The curriculum provides teachers with digital slides for each lesson. In addition, each grade level includes wordless videos that spark students' interest and curiosity. Students at all levels work through mathematical explorations that help lead to their own mathematical discoveries. Digital lessons and videos provide opportunities for students to wonder, explore, and make sense of mathematics, which contributes to the development of a strong, positive mathematical identity.

Standards for Mathematical Practice	Aligned Components of *Eureka Math²*
MP.1 Make sense of problems and persevere in solving them.	Lessons in every module engage students in mathematical practices. These are indicated in margin notes included with every lesson.
MP.2 Reason abstractly and quantitatively.	Lessons in every module engage students in mathematical practices. These are indicated in margin notes included with every lesson.
MP.3 Construct viable arguments and critique the reasoning of others.	Lessons in every module engage students in mathematical practices. These are indicated in margin notes included with every lesson.
MP.4 Model with mathematics.	Lessons in every module engage students in mathematical practices. These are indicated in margin notes included with every lesson.
MP.5 Use appropriate tools strategically.	Lessons in every module engage students in mathematical practices. These are indicated in margin notes included with every lesson.
MP.6 Attend to precision.	Lessons in every module engage students in mathematical practices. These are indicated in margin notes included with every lesson.
MP.7 Look for and make use of structure.	Lessons in every module engage students in mathematical practices. These are indicated in margin notes included with every lesson.
MP.8 Look for and express regularity in repeated reasoning.	Lessons in every module engage students in mathematical practices. These are indicated in margin notes included with every lesson.

The Real Number System

1. Use properties of rational and irrational numbers.

Arkansas Academic Standards – Mathematics	Aligned Components of *Eureka Math²*
HSN.RN.B.3 Explain why: • The sum/difference or product/quotient (where defined) of two rational numbers is rational. • The sum/difference of a rational number and an irrational number is irrational. • The product/quotient of a nonzero rational number and an irrational number is irrational. • The product/quotient of two nonzero rational numbers is a nonzero rational number.	A1 M4 Lesson 13: Using Square Roots to Solve Quadratic Equations A1 M4 Lesson 17: Rewriting Square Roots
HSN.RN.B.4 • Simplify radical expressions. • Perform operations (add, subtract, multiply, and divide) with radical expressions. • Rationalize denominators and/or numerators.	*Supplemental material is necessary to address this standard.*

Quantities

2. Reason quantitatively and use units to solve problems.

Arkansas Academic Standards – Mathematics	Aligned Components of *Eureka Math²*
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
HSN.Q.A.2 Define appropriate quantities for the purpose of descriptive modeling (i.e., use units appropriate to the problem being solved).	A1 M4 Lesson 25: Maximizing Area A1 M6 Lesson 5: Solar System Models
HSN.Q.A.3 Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.	A1 M6 Lesson 5: Solar System Models

Seeing Structure in Expressions

3. Interpret the structure of expressions.

Arkansas Academic Standards – Mathematics	Aligned Components of *Eureka Math²*
HSA.SSE.A.1 Interpret expressions that represent a quantity in terms of its context: • Interpret parts of an expression using appropriate vocabulary, such as *terms*, *factors*, and *coefficients*. • Interpret complicated expressions by viewing one or more of their parts as a single entity.	A1 M4 Lesson 3: Analyzing Functions That Model Projectile Motion 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
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

Seeing Structure in Expressions

4. Write expressions in equivalent forms to solve problems.

Arkansas Academic Standards – Mathematics	Aligned Components of *Eureka Math²*
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: • Factor a quadratic expression to reveal the zeros of the function it defines. • Complete the square in a quadratic expression to reveal the maximum or minimum value 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 21: Completing the Square to Graph Quadratic Functions A1 M4 Lesson 22: A Summary of Graphing Quadratic Functions

Arithmetic with Polynomials and Rational Expressions

5. Perform arithmetic operations on polynomials.

Arkansas Academic Standards – Mathematics	Aligned Components of *Eureka Math²*
HSA.APR.A.1 • Add, subtract, and multiply polynomials. • Understand that polynomials, like the integers, are closed under addition, subtraction, and multiplication.	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

Arithmetic with Polynomials and Rational Expressions

6. Understand the relationship between zeros and factors of polynomials.

Arkansas Academic Standards – Mathematics	Aligned Components of *Eureka Math²*
HSA.APR.B.3 • Identify zeros of polynomials (linear, quadratic only) when suitable factorizations are available. • Use the zeros to construct a rough graph of the function defined by the polynomial.	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

Arithmetic with Polynomials and Rational Expressions

7. Use polynomial identities to solve problems.

Arkansas Academic Standards – Mathematics	Aligned Components of *Eureka Math²*
HSA.APR.C.4 Prove polynomial identities and use them to describe numerical relationships.	*Supplemental material is necessary to address this standard.*

Arithmetic with Polynomials and Rational Expressions

8. Rewrite rational expressions.

Arkansas Academic Standards – Mathematics	Aligned Components of *Eureka Math²*
HSA.APR.D.7 • Add, subtract, multiply, and divide by nonzero rational expressions. • Understand that rational expressions, like the integers, are closed under addition, subtraction, and multiplication.	*Supplemental material is necessary to address this standard.*

Creating Equations

9. Create equations that describe numbers or relationships.

Arkansas Academic Standards – Mathematics	Aligned Components of *Eureka Math²*
HSA.CED.A.1 Create equations and inequalities in one variable and use them to solve problems.	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

Arkansas Academic Standards – Mathematics	Aligned Components of *Eureka Math²*
HSA.CED.A.2 • Create equations in two or more variables to represent relationships between quantities. • Graph equations, in two variables, on a coordinate plane.	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
HSA.CED.A.3 • Represent and interpret constraints by equations or inequalities, and by systems of equations and/or inequalities. • Interpret solutions as viable or nonviable options in a modeling and/or real-world 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
HSA.CED.A.4 Rearrange literal equations using the properties of equality.	A1 M1 Lesson 12: Rearranging Formulas A1 M4 Lesson 13: Using Square Roots to Solve Quadratic Equations

Reasoning with Equations and Inequalities

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

Arkansas Academic Standards – Mathematics	Aligned Components of *Eureka Math²*
HSA.REI.A.1 Assuming that equations have a solution, construct a solution and justify the reasoning used.	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
HSA.REI.A.2 Solve simple rational and radical equations in one variable, and give examples showing how extraneous solutions may arise.	*Supplemental material is necessary to address this standard.*

Reasoning with Equations and Inequalities

11. Solve equations and inequalities in one variable.

Arkansas Academic Standards – Mathematics	Aligned Components of *Eureka Math²*
HSA.REI.B.3 Solve linear equations, inequalities and absolute value equations 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

Arkansas Academic Standards – Mathematics	Aligned Components of *Eureka Math²*
HSA.REI.B.4 Solve quadratic equations in one variable: • 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. • Solve quadratic equations (as appropriate to the initial form of the equation) by: - inspection of a graph - taking square roots - completing the square - using the quadratic formula - factoring	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

Reasoning with Equations and Inequalities

12. Solve systems of equations and inequalities graphically.

Arkansas Academic Standards – Mathematics	Aligned Components of *Eureka Math²*
HSA.REI.C.5 • Solve systems of equations in two variables using substitution and elimination. • Understand that the solution to a system of equations will be the same when using substitution and elimination.	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
HSA.REI.C.6 Solve systems of equations algebraically and graphically.	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
HSA.REI.C.7 Solve systems of equations consisting of linear equations and nonlinear equations in two variables algebraically and graphically.	A1 M4 Lesson 24: Another Look at Systems of Equations

Reasoning with Equations and Inequalities

13. Solve systems of equations.

Arkansas Academic Standards – Mathematics	Aligned Components of *Eureka Math²*
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.	A1 M2 Lesson 1: Solution Sets of Linear Equations in Two Variables A1 M2 Lesson 2: Graphing Linear Equations in Two Variables
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 by: • using technology to graph the functions • making tables of values • finding successive approximations Include cases (but not limited to) where $f(x)$ and/or $g(x)$ are: • linear • polynomial • absolute value • exponential	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

Arkansas Academic Standards – Mathematics	Aligned Components of *Eureka Math²*
HSA.REI.D.12 Solve linear inequalities and systems of linear inequalities in two variables by graphing.	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

Interpreting Functions

14. Understand the concept of a function and use function notation.

Arkansas Academic Standards – Mathematics	Aligned Components of *Eureka Math²*
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. • Understand that 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. • Understand that the graph of f is the graph of the equation $y = f(x)$.	A1 M3 Topic A: Functions and Their Graphs

Arkansas Academic Standards – Mathematics	Aligned Components of *Eureka Math²*
HSF.IF.A.2 In terms of a real-world context: • Use function notation. • Evaluate functions for inputs in their domains. • Interpret statements that use function notation.	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
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

Interpreting Functions

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

Arkansas Academic Standards – Mathematics	Aligned Components of *Eureka Math²*
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. • Sketch graphs showing key features given a verbal description of the relationship.	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
HSF.IF.B.5 • Relate the domain of a function to its graph. • Relate the domain of a function 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

Arkansas Academic Standards – Mathematics	Aligned Components of *Eureka Math²*
HSF.IF.B.6 • Calculate and interpret the average rate of change of a function (presented algebraically 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

Interpreting Functions

16. Analyze functions using different representations.

Arkansas Academic Standards – Mathematics	Aligned Components of *Eureka Math²*
HSF.IF.C.7 Graph functions expressed algebraically and show key features of the graph, with and without technology: • Graph linear and quadratic functions and, when applicable, show intercepts, maxima, and minima. • Graph square root, cube root, and piecewise-defined functions, including step functions and absolute value functions. • Graph exponential functions, showing intercepts and end behavior.	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 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 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 A1 M5 Lesson 11: Graphing Exponential Functions

Arkansas Academic Standards – Mathematics	Aligned Components of *Eureka Math²*
HSF.IF.C.7 ***continued***	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) *Supplemental material is necessary to address graphing square root and cube root functions.*
HSF.IF.C.8 Write expressions for functions in different but equivalent forms to reveal key features of the function: • Use the process of factoring and completing the square in a quadratic function to show zeros, extreme values (vertex), 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
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

Building Functions

17. Build a function that models a relationship between two quantities.

Arkansas Academic Standards – Mathematics	Aligned Components of *Eureka Math²*
HSF.BF.A.1 Write a function that describes a relationship between two quantities: • From a context, determine an explicit expression, a recursive process, or steps for calculation.	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

Building Functions

18. Build new functions from existing functions.

Arkansas Academic Standards – Mathematics	Aligned Components of *Eureka Math²*
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 (k, a constant both positive and negative). • Find the value of k given the graphs of the transformed functions. • Experiment with multiple transformations and illustrate an explanation of the effects on the graph with or without technology. Note: 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 *Supplemental material is necessary to address recognizing even and odd functions.*

Linear, Quadratic, and Exponential Models

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

Arkansas Academic Standards – Mathematics	Aligned Components of *Eureka Math²*
HSF.LE.A.1 Distinguish between situations that can be modeled with linear functions and with exponential functions: • Show that linear functions grow by equal differences over equal intervals, and that exponential functions grow by equal factors over equal intervals. • Recognize situations in which one quantity changes at a constant rate per unit interval relative to another. • Recognize situations in which a quantity grows or decays by a constant percent rate per unit interval relative to another.	A1 M5 Lesson 15: Calculating Interest A1 M5 Lesson 18: Modeling Populations A1 M5 Lesson 19: Analyzing Exponential Growth 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
HSF.LE.A.2 Construct linear and exponential equations, including arithmetic and geometric sequences: • given a graph • a description of a relationship • 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

Arkansas Academic Standards – Mathematics	Aligned Components of *Eureka Math²*
HSF.LE.A.3 Observe using graphs and tables that a quantity increasing exponentially eventually exceeds a quantity increasing linearly, quadratically, or any polynomial function.	A1 M5 Lesson 20: Comparing Growth of Functions

Linear, Quadratic, and Exponential Models

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

Arkansas Academic Standards – Mathematics	Aligned Components of *Eureka Math²*
HSF.LE.B.5 In terms of a context, interpret the parameters (rates of growth or decay, domain and range restrictions where applicable, etc.) in a function.	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

Interpreting Categorical and Quantitative Data

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

Arkansas Academic Standards – Mathematics	Aligned Components of *Eureka Math²*
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

Arkansas Academic Standards – Mathematics	Aligned Components of *Eureka Math²*
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
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

Interpreting Categorical and Quantitative Data

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

Arkansas Academic Standards – Mathematics	Aligned Components of *Eureka Math²*
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

Arkansas Academic Standards – Mathematics	Aligned Components of *Eureka Math²*
HSS.ID.B.6 Represent data on two quantitative variables on a scatter plot, and describe how the variables are related: • Fit a function to the data; use functions fitted to data to solve problems in the context of the data.	A1 M2 Lesson 15: Relationships Between Quantitative Variables A1 M2 Lesson 16: Using Lines to Model Bivariate Quantitative Data A1 M2 Lesson 17: Modeling Relationships with a Line A1 M2 Lesson 18: Calculating and Analyzing Residuals A1 M2 Lesson 20: Interpreting Correlation A1 M2 Lesson 21: Analyzing Bivariate Quantitative Data 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

Interpreting Categorical and Quantitative Data

23. Interpret linear models.

Arkansas Academic Standards – Mathematics	Aligned Components of *Eureka Math²*
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
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
HSS.ID.C.9 Distinguish between correlation and causation.	A1 M2 Lesson 20: Interpreting Correlation A1 M2 Lesson 21: Analyzing Bivariate Quantitative Data