Algebra I | Kentucky Mathematics Course Standards Correlation to *Eureka Math²®*

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

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

Teachability

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

Accessibility

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

Digital Engagement

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

Standards for Mathematical Practice	Aligned Components of *Eureka Math²*
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

Extend the properties of exponents to rational exponents.

Kentucky Mathematics Course Standards	Aligned Components of *Eureka Math²*
KY.HS.N.1 Extend the properties of integer exponents to rational exponents, allowing for the expression of radicals in terms of rational exponents.	A1 M5 Lesson 9: Unit Fraction Exponents A1 M5 Lesson 10: Rational Exponents
KY.HS.N.2 Rewrite expressions involving radicals and rational exponents using the properties of exponents.	A1 M5 Lesson 9: Unit Fraction Exponents A1 M5 Lesson 10: Rational Exponents

The Real Number System

Use properties of rational and irrational numbers.

Kentucky Mathematics Course Standards	Aligned Components of *Eureka Math²*
KY.HS.N.3 Justify why the sum or product of two rational numbers is rational; that the sum of a rational number and an irrational number is irrational; and that the product of a nonzero rational number and an irrational number is irrational.	A1 M4 Lesson 13: Using Square Roots to Solve Quadratic Equations A1 M4 Lesson 17: Rewriting Square Roots

Quantities

Reason quantitatively and use units to solve problems.

Kentucky Mathematics Course Standards	Aligned Components of *Eureka Math²*
KY.HS.N.4 Use units in context as a way to understand problems and to guide the solution of multi-step problems;	*This standard is fully addressed by the lesson aligned to its subsections.*
KY.HS.N.4.a Choose and interpret units consistently in formulas;	A1 M6 Lesson 5: Solar System Models
KY.HS.N.4.b Choose and interpret the scale and the origin in graphs and data displays.	A1 M6 Lesson 5: Solar System Models
KY.HS.N.5 Define appropriate units in context for the purpose of descriptive modeling.	A1 M4 Lesson 25: Maximizing Area A1 M6 Lesson 5: Solar System Models
KY.HS.N.6 Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.	A1 M6 Lesson 5: Solar System Models

Seeing Structure in Expressions

Interpret the structure of expressions.

Kentucky Mathematics Course Standards	Aligned Components of *Eureka Math²*
KY.HS.A.1 Interpret expressions that represent a quantity in terms of its context.	*This standard is fully addressed by the lessons aligned to its subsections.*
KY.HS.A.1.a Interpret parts of an expression, such as terms, factors and coefficients.	A1 M4 Lesson 3: Analyzing Functions That Model Projectile Motion
KY.HS.A.1.b Interpret complicated expressions, given a context, by viewing one or more of their parts as a single entity.	A1 M5 Lesson 8: Exponential Functions A1 M5 Lesson 16: Exponential Growth A1 M5 Lesson 17: Exponential Decay A1 M5 Lesson 18: Modeling Populations A1 M5 Lesson 23: Modeling the Temperature of Objects Cooling Over Time
KY.HS.A.2 Use the structure of an expression to identify ways to rewrite it and consistently look for opportunities to rewrite expressions in equivalent forms.	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

Write expressions in equivalent forms to solve problems.

Kentucky Mathematics Course Standards	Aligned Components of *Eureka Math²*
KY.HS.A.3 Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression.	*This standard is fully addressed by the lessons aligned to its subsections.*
KY.HS.A.3.a Write the standard form of a given polynomial and identify the terms, coefficients, degree, leading coefficient and constant term.	A1 M1 Lesson 3: Polynomial Expressions
KY.HS.A.3.b Factor a quadratic expression to reveal the zeros of the function it defines.	A1 M4 Lesson 10: Zeros of Functions A1 M4 Lesson 11: Graphing Quadratic Functions from Factored Form A1 M4 Lesson 22: A Summary of Graphing Quadratic Functions
KY.HS.A.3.c Use the properties of exponents to rewrite exponential expressions.	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
KY.HS.A.3.d Complete the square in a quadratic expression to reveal the maximum or minimum value of the function it defines.	A1 M4 Lesson 21: Completing the Square to Graph Quadratic Functions A1 M4 Lesson 22: A Summary of Graphing Quadratic Functions

Arithmetic with Polynomials and Rational Expressions

Perform arithmetic operations on polynomials.

Kentucky Mathematics Course Standards	Aligned Components of *Eureka Math²*
KY.HS.A.5 Add, subtract and multiply polynomials.	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

Understand the relationship between zeros and factors of polynomials.

Kentucky Mathematics Course Standards	Aligned Components of *Eureka Math²*
KY.HS.A.7 Identify roots of polynomials when suitable factorizations are available. Know these roots become the zeros (x-intercepts) for the corresponding polynomial function.	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

Creating Equations

Create equations that describe numbers or relationships.

Kentucky Mathematics Course Standards	Aligned Components of *Eureka Math²*
KY.HS.A.12 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
KY.HS.A.13 Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.	A1 M2 Lesson 1: Solution Sets of Linear Equations in Two Variables A1 M2 Lesson 2: Graphing Linear Equations in Two Variables A1 M2 Lesson 3: Creating Linear Equations in Two Variables A1 M2 Lesson 6: Applications of Linear Equations and Inequalities A1 M4 Lesson 11: Graphing Quadratic Functions from Factored Form A1 M4 Lesson 12: Using Symmetry to Graph Quadratic Functions from Standard Form A1 M4 Lesson 23: Creating Equations of Quadratic Functions to Model Contexts A1 M4 Lesson 25: Maximizing Area A1 M4 Lesson 26: Modeling Data with Quadratic Functions A1 M4 Lesson 27: Search and Rescue Helicopter
KY.HS.A.14 Create a system of equations or inequalities to represent constraints within a modeling context. Interpret the solution(s) to the corresponding system as viable or nonviable options within the context.	A1 M2 Lesson 14: Applications of Systems of Equations A1 M6 Lesson 6: Designing a Fundraiser

Kentucky Mathematics Course Standards	Aligned Components of *Eureka Math²*
KY.HS.A.15 Rearrange formulas to solve a literal equation, highlighting a quantity of interest, using the same reasoning as in solving equations.	A1 M1 Lesson 12: Rearranging Formulas A1 M4 Lesson 13: Using Square Roots to Solve Quadratic Equations

Reasoning with Equations and Inequalities

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

Kentucky Mathematics Course Standards	Aligned Components of *Eureka Math²*
KY.HS.A.16 Understand each step in solving a simple equation as following from the equality of numbers asserted at the previous step, starting from the assumption that the original equation has a solution. Construct a viable argument to justify a solution method.	A1 M1 Lesson 9: Solving Linear Equations in One Variable A1 M1 Lesson 10: Some Potential Dangers When Solving Equations A1 M1 Lesson 11: Writing and Solving Equations in One Variable

Reasoning with Equations and Inequalities

Solve equations and inequalities in one variable.

Kentucky Mathematics Course Standards	Aligned Components of *Eureka Math²*
KY.HS.A.18 Solve linear equations and inequalities in one variable, including literal equations with coefficients represented by letters.	A1 M1 Topic B: Solving Equations and Inequalities in One Variable A1 M1 Topic C: Compound Statements Involving Equations and Inequalities in One Variable
KY.HS.A.19 Solve quadratic equations in one variable.	*This standard is addressed by the lessons aligned to its subsections.*
KY.HS.A.19.a Solve quadratic equations by taking square roots, the quadratic formula and factoring, as appropriate to the initial form of the equation. Recognize when the quadratic formula gives complex solutions and write them as $a \pm bi$ for real numbers a and b.	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 *Supplemental material is necessary to address writing complex solutions.*

Kentucky Mathematics Course Standards	Aligned Components of *Eureka Math²*
KY.HS.A.19.b Use the method of completing the square to transform any quadratic equation in x into an equation of the form $(x - p)^2 = q$ that has the same solutions. Derive the quadratic formula from this form.	A1 M4 Lesson 14: Solving Quadratic Equations by Completing the Square A1 M4 Lesson 15: Deriving the Quadratic Formula

Reasoning with Equations and Inequalities

Solve systems of equations.

Kentucky Mathematics Course Standards	Aligned Components of *Eureka Math²*
KY.HS.A.20 Solve systems of linear equations in two variables.	*This standard is fully addressed by the lessons aligned to its subsections.*
KY.HS.A.20.a Understand a system of two equations in two variables has the same solution as a new system formed by replacing one of the original equations with an equivalent equation.	A1 M2 Lesson 9: A New Way to Solve Systems

Kentucky Mathematics Course Standards	Aligned Components of *Eureka Math²*
KY.HS.A.20.b Solve systems of linear equations with graphs, substitution and elimination, focusing on pairs of linear equations in two variables.	A1 M2 Lesson 7: Low-Flow Showerhead A1 M2 Lesson 8: Systems of Linear Equations in Two Variables A1 M2 Lesson 9: A New Way to Solve Systems A1 M2 Lesson 10: The Elimination Method A1 M2 Lesson 11: Applications of Systems of Equations
KY.HS.A.21 Solve a simple system consisting of a linear equation and a quadratic equation in two variables algebraically and graphically.	A1 M4 Lesson 24: Another Look at Systems of Equations

Reasoning with Equations and Inequalities

Represent and solve equations and inequalities graphically.

Kentucky Mathematics Course Standards	Aligned Components of *Eureka Math²*
KY.HS.A.23 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

Kentucky Mathematics Course Standards	Aligned Components of *Eureka Math²*
KY.HS.A.24 Justify that the solutions of the equations $f(x) = g(x)$ are the x-coordinates of the points where the graphs of $y = f(x)$ and $y = g(x)$ intersect. Find the approximate solutions graphically, using technology or tables.	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
KY.HS.A.25 Graph linear inequalities in two variables.	*This standard is fully addressed by the lessons aligned to its subsections.*
KY.HS.A.25.a Graph the solutions to a linear inequality as a half-plane (excluding the boundary in the case of a strict inequality).	A1 M2 Lesson 4: Solution Sets of Linear Inequalities in Two Variables A1 M2 Lesson 5: Graphing Linear Inequalities in Two Variables A1 M6 Lesson 6: Designing a Fundraiser
KY.HS.A.25.b Graph the solution set to a system of linear inequalities as the intersection of the corresponding half-planes.	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

Understand the concept of a function and use function notation.

Kentucky Mathematics Course Standards	Aligned Components of *Eureka Math²*
KY.HS.F.1 Understand properties and key features of functions and the different ways functions can be represented.	*This standard is fully addressed by the lessons aligned to its subsections.*
KY.HS.F.1.a 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.	A1 M3 Topic A: Functions and Their Graphs
KY.HS.F.1.b Using appropriate function notation, evaluate functions for inputs in their domains and interpret statements that use function notation in terms of a context.	A1 M3 Lesson 1: The Definition of a Function A1 M3 Lesson 2: Representing, Naming, and Evaluating Functions A1 M3 Lesson 6: Representations of Functions A1 M3 Lesson 16: Step Functions A1 M5 Lesson 1: Exploring Patterns A1 M5 Lesson 2: The Recursive Challenge A1 M5 Lesson 3: Recursive Formulas for Sequences A1 M5 Lesson 4: Explicit Formulas for Sequences A1 M5 Lesson 7: Sierpinski Triangle

Kentucky Mathematics Course Standards	Aligned Components of *Eureka Math²*
KY.HS.F.1.c For a function that models a relationship between two quantities, interpret key features of graphs and tables in terms of the quantities and sketch graphs showing key features given a verbal description of the relationship.	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
KY.HS.F.1.d Relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes.	A1 M3 Lesson 3: The Graph of a Function A1 M3 Lesson 13: Modeling Elevation as a Function of Time A1 M3 Lesson 16: Step Functions A1 M4 Lesson 2: Projectile Motion A1 M4 Lesson 3: Analyzing Functions That Model Projectile Motion A1 M4 Lesson 23: Creating Equations of Quadratic Functions to Model Contexts

Kentucky Mathematics Course Standards	Aligned Components of *Eureka Math²*
KY.HS.F.1.e 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
KY.HS.F.2 Recognize that arithmetic and geometric 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

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

Kentucky Mathematics Course Standards	Aligned Components of *Eureka Math²*
KY.HS.F.3 Understand average rate of change of a function over an interval.	*This standard is addressed by the lessons aligned to its subsections.*

Kentucky Mathematics Course Standards	Aligned Components of *Eureka Math²*
KY.HS.F.3.a Calculate and interpret the average rate of change of a function (presented symbolically or as a table) over a specified interval.	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
KY.HS.F.3.b Estimate the rate of change from a graph.	*Supplementary material is necessary to address this standard.*

Interpreting Functions

Analyze functions using different representations.

Kentucky Mathematics Course Standards	Aligned Components of *Eureka Math²*
KY.HS.F.4 Graph functions expressed symbolically and show key features of the graph, with and without using technology (computer, graphing calculator).	*This standard is addressed by the lessons aligned to its subsections.*

Kentucky Mathematics Course Standards	Aligned Components of *Eureka Math²*
KY.HS.F.4.a Graph linear and quadratic functions and show intercepts, maxima and minima.	A1 M3 Lesson 4: The Graph of the Equation $y = f(x)$ A1 M3 Lesson 5: Using Pseudocode to Compare Graphs of Functions and Graphs of Equations A1 M3 Lesson 6: Representations of Functions A1 M4 Lesson 4: Graphs of Quadratic Functions A1 M4 Lesson 11: Graphing Quadratic Functions from Factored Form A1 M4 Lesson 12: Using Symmetry to Graph Quadratic Functions from Standard Form A1 M4 Lesson 19: Transforming the Graphs of Quadratic Functions
KY.HS.F.4.b Graph square root, cube root and absolute value functions.	A1 M3 Lesson 15: The Absolute Value Function A1 M3 Lesson 19: Building New Functions—Translations A1 M3 Lesson 23: A Summary of Transforming the Graph of a Function *Supplemental material is necessary to address graphing cube root functions.*
KY.HS.F.4.d Graph exponential and logarithmic functions, showing intercepts and end behavior.	A1 M5 Lesson 11: Graphing Exponential Functions A1 M5 Lesson 12: Using Transformations to Graph Exponential Functions (Bases Greater Than 1) A1 M5 Lesson 13: Using Transformations to Graph Exponential Functions (Bases Between 0 and 1) *Supplemental material is necessary to address graphing logarithmic functions.*
KY.HS.F.5 Write a function defined by an expression in different but equivalent forms to reveal and explain different properties of the function.	*This standard is fully addressed by the lessons aligned to its subsections.*

Kentucky Mathematics Course Standards	Aligned Components of *Eureka Math²*
KY.HS.F.5.a Identify zeros, extreme values and symmetry of the graph within the context of a quadratic function.	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
KY.HS.F.5.b Use the properties of exponents to interpret expressions for exponential functions and classify the exponential function as representing growth or decay.	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

Building Functions

Build a function that models a relationship between two quantities.

Kentucky Mathematics Course Standards	Aligned Components of *Eureka Math²*
KY.HS.F.6 Write a function that describes a relationship between two quantities.	*This standard is fully addressed by the lessons aligned to its subsections.*
KY.HS.F.6.a Determine an explicit expression, a recursive process, or steps for calculation from a context.	A1 M3 Lesson 17: Piecewise Linear Functions in Context A1 M4 Lesson 23: Creating Equations of Quadratic Functions to Model Contexts A1 M4 Lesson 25: Maximizing Area A1 M4 Lesson 26: Modeling Data with Quadratic Functions A1 M4 Lesson 27: Search and Rescue Helicopter A1 M5 Topic A: Arithmetic and Geometric Sequences A1 M5 Lesson 8: Exponential Functions

Kentucky Mathematics Course Standards	Aligned Components of *Eureka Math²*
KY.HS.F.6.a *continued*	A1 M5 Lesson 15: Calculating Interest A1 M6 Lesson 4: The Deal A1 M6 Lesson 7: World Record Doughnut
KY.HS.F.6.b Combine standard function types using arithmetic operations.	A1 M6 Lesson 4: The Deal A1 M6 Lesson 7: World Record Doughnut
KY.HS.F.7 Use arithmetic and geometric sequences to model situations and scenarios.	*This standard is fully addressed by the lessons aligned to its subsections.*
KY.HS.F.7.a Use formulas (explicit and recursive) to generate terms for arithmetic and geometric sequences.	A1 M5 Lesson 5: Arithmetic and Geometric Sequences A1 M5 Lesson 6: Representations of Arithmetic and Geometric Sequences A1 M5 Lesson 7: Sierpinski Triangle
KY.HS.F.7.b Write formulas to model arithmetic and geometric sequences and apply those formulas in realistic situations.	A1 M5 Lesson 6: Representations of Arithmetic and Geometric Sequences A1 M5 Lesson 7: Sierpinski Triangle

Building Functions

Build new functions from existing functions.

Kentucky Mathematics Course Standards	Aligned Components of *Eureka Math²*
KY.HS.F.8 Understand the effects of transformations on the graph of a function.	*This standard is fully addressed by the lessons aligned to its subsections.*
KY.HS.F.8.a Identify the effect on the graph of replacing $f(x)$ by $f(x) + k$, $kf(x)$, $f(kx)$, and $f(x + k)$ for specific values of k (both positive and negative); find the value of k given the graphs.	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
KY.HS.F.8.b Experiment with cases and illustrate an explanation of the effects on the graph using technology.	A1 M3 Lesson 18: Exploring Transformations of the Graphs of Functions A1 M4 Lesson 20: Art with Transformations

Linear, Quadratic and Exponential Functions

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

Kentucky Mathematics Course Standards	Aligned Components of *Eureka Math²*
KY.HS.F.11 Distinguish between situations that can be modeled with linear functions and with exponential functions.	A1 M6 Topic A: Modeling Bivariate Quantitative Data

Kentucky Mathematics Course Standards	Aligned Components of *Eureka Math²*
KY.HS.F.11.a Recognize and justify that linear functions grow by equal differences over equal intervals and that exponential functions grow by equal factors over equal intervals.	A1 M5 Lesson 15: Calculating Interest A1 M5 Lesson 19: Analyzing Exponential Growth
KY.HS.F.11.b Recognize situations in which one quantity changes at a constant rate per unit interval relative to another.	A1 M5 Lesson 15: Calculating Interest A1 M5 Lesson 18: Modeling Populations A1 M5 Lesson 21: World Population Prediction A1 M5 Lesson 22: A Closer Look at Populations A1 M5 Lesson 24: Modeling an Invasive Species Population
KY.HS.F.11.c 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 21: World Population Prediction A1 M5 Lesson 22: A Closer Look at Populations A1 M5 Lesson 24: Modeling an Invasive Species Population
KY.HS.F.12 Construct linear and exponential functions, including arithmetic and geometric sequences, given a graph, a description of a relationship, or two input-output pairs (include reading these from a table).	A1 M5 Lesson 8: Exponential Functions A1 M5 Lesson 14: Writing Equations for Exponential Functions from Tables or Graphs A1 M5 Lesson 16: Exponential Growth A1 M5 Lesson 17: Exponential Decay A1 M5 Topic D: Comparing Linear and Exponential Models A1 M6 Lesson 4: The Deal A1 M6 Lesson 7: World Record Doughnut

Kentucky Mathematics Course Standards	Aligned Components of *Eureka Math²*
KY.HS.F.13 Observe using graphs and tables that a quantity increasing exponentially eventually exceeds a quantity increasing linearly, quadratically, or (more generally) as a polynomial function.	A1 M5 Lesson 20: Comparing Growth of Functions

Linear, Quadratic and Exponential Functions

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

Kentucky Mathematics Course Standards	Aligned Components of *Eureka Math²*
KY.HS.F.14 Interpret the parameters in a linear or exponential function in terms of a context.	A1 M5 Lesson 18: Modeling Populations A1 M5 Lesson 19: Analyzing Exponential Growth A1 M5 Lesson 23: Modeling the Temperature of Objects Cooling Over Time A1 M5 Lesson 24: Modeling an Invasive Species Population

Interpreting Categorical and Quantitative Data

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

Kentucky Mathematics Course Standards	Aligned Components of *Eureka Math²*
KY.HS.SP.1 Represent the distribution of data with plots on the real number line (stem plots, 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 *Supplemental material is necessary to address stem plots.*

Kentucky Mathematics Course Standards	Aligned Components of *Eureka Math²*
KY.HS.SP.2 Use statistics appropriate to the shape of the numerical data distribution to compare center (median, mean) and spread (interquartile range when comparing medians and standard deviation when comparing means) of different data distributions.	A1 M1 Topic D: Univariate Data
KY.HS.SP.3 Interpret differences in shape, center and spread in the context of the distributions of the numerical data, accounting for the presence and possible effects of extreme data points (outliers).	A1 M1 Topic D: Univariate Data

Interpreting Categorical and Quantitative Data

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

Kentucky Mathematics Course Standards	Aligned Components of *Eureka Math²*
KY.HS.SP.5 Summarize categorical data for two or more categories in frequency tables. Calculate and interpret joint, marginal and conditional relative frequencies (probabilities) in the context of the data, recognizing possible associations and trends in the data.	A1 M2 Topic D: Categorical Data on Two Variables

Kentucky Mathematics Course Standards	Aligned Components of *Eureka Math²*
KY.HS.SP.6 Represent data on two quantitative variables on a scatter plot and describe how the explanatory and response variables are related.	A1 M2 Lesson 15: Relationships Between Quantitative Variables A1 M2 Lesson 21: Analyzing Bivariate Quantitative Data
KY.HS.SP.6.a Calculate an appropriate mathematical model, or use a given mathematical model, for data to solve problems in context.	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 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
KY.HS.SP.6.b Informally assess the fit of a model (through calculating correlation for linear data, plotting, calculating and/or analyzing residuals).	A1 M2 Lesson 18: Calculating and Analyzing Residuals A1 M2 Lesson 19: Analyzing Residuals A1 M6 Topic A: Modeling Bivariate Quantitative Data

Interpreting Categorical and Quantitative Data

Interpret linear models.

Kentucky Mathematics Course Standards	Aligned Components of *Eureka Math²*
KY.HS.SP.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 17: Modeling Relationships with a Line A1 M2 Lesson 21: Analyzing Bivariate Quantitative Data
KY.HS.SP.8 Understand the role and purpose of correlation in linear regression.	*This standard is fully addressed by the lessons aligned to its subsections.*
KY.HS.SP.8.a Use technology to compute correlation coefficient of a linear fit.	A1 M2 Lesson 20: Interpreting Correlation A1 M2 Lesson 21: Analyzing Bivariate Quantitative Data
KY.HS.SP.8.b Interpret the meaning of the correlation within the context of the data.	A1 M2 Lesson 20: Interpreting Correlation A1 M2 Lesson 21: Analyzing Bivariate Quantitative Data
KY.HS.SP.8.c Describe the limitations of correlation when establishing causation.	A1 M2 Lesson 20: Interpreting Correlation A1 M2 Lesson 21: Analyzing Bivariate Quantitative Data