## Algebra I | South Carolina College and Career Ready Standards for Mathematics Correlation to Eureka Math ${ }^{\text {® }}$

When the original Eureka Math ${ }^{\circledR}$ curriculum was released, it quickly became the most widely used $\mathrm{K}-5$ mathematics curriculum in the country. Now, the Great Minds ${ }^{\circledR}$ teacher-writers have created Eureka Math ${ }^{2 ®}$, 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 Math ${ }^{2}$ 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 Math ${ }^{2}$ employs streamlined materials that allow teachers to plan more efficiently and focus their energy on delivering highquality 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 Math ${ }^{2}$ 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 Math ${ }^{2}$ 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.

## Aligned Components of Eureka Math²

1. 

Make sense of problems and persevere in solving them
2.

Reason both contextually and abstractly.
3.

Use critical thinking skills to justify mathematical reasoning and critique the reasoning of others.
4.

Connect mathematical ideas and real-world situations through modeling.
5.

Use a variety of mathematical tools effectively and strategically.
6.

Communicate mathematically and approach mathematical situations with precision.

## 7.

Identify and utilize structure and patterns.

Lessons in every module engage students in mathematical practices.
These are indicated in margin notes included with every lesson.

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## Algebra

## Arithmetic with Polynomials and Rational Expressions

## South Carolina College and Career

 Ready Standards for Mathematics
## Aligned Components of Eureka Math ${ }^{2}$

## A1.AAPR. 1

Add, subtract, and multiply polynomials and understand that polynomials are closed under these operations.

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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
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## Algebra

## Creating Equations

## South Carolina College and Career Ready Standards for Mathematics

## Aligned Components of Eureka Math ${ }^{2}$

## A1.ACE. 1

Create and solve equations and inequalities in one variable that model real-world problems involving linear, quadratic, simple rational, and exponential relationships. Interpret the solutions and determine whether they are reasonable.

## South Carolina College and Career Ready Standards for Mathematics

## Aligned Components of Eureka Math ${ }^{2}$

| A1.ACE.2 |  |
| :--- | :--- |
| Create equations in two or more variables <br> to represent relationships between <br> quantities. Graph the equations on <br> coordinate axes using appropriate <br> labels, units, and scales. | A1 M2 Lesson 1: Solution Sets of 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 |  |

## Algebra

Reasoning with Equations and Inequalities

## South Carolina College and Career Ready Standards for Mathematics

## Aligned Components of Eureka Math ${ }^{2}$

## A1.AREI. 1

Understand and justify that the steps taken when solving simple equations in one variable create new equations that have the same solution as the original.

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

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## Aligned Components of Eureka Math²

A1.AREI. 3
Solve linear equations and inequalities in
one variable, including equations with
coefficients represented by letters.
A1.AREI.4
Solve mathematical and real-world
problems involving quadratic equations
in one variable.

## A1.AREI.4.a

Use the method of completing the square to transform any quadratic equation in $x$ into an equation of the form $(x-h)^{2}=k$ that has the same solutions. Derive the quadratic formula from this form.
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
This standard is fully addressed by the lessons aligned to its subsections.

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A1 M4 Lesson 14: Solving Quadratic Equations by Completing the Square
A1 M4 Lesson 15: Deriving the Quadratic Formula

## South Carolina College and Career Ready Standards for Mathematics

## Aligned Components of Eureka Math²

## A1.AREI.4.b

Solve quadratic equations by inspection, taking square roots, completing the square, 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 $a+b i$ 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

A1 M2 Lesson 9: A New Way to Solve Systems

This standard is fully addressed by the lessons aligned to its subsections.

## South Carolina College and Career <br> Ready Standards for Mathematics

Aligned Components of Eureka Math ${ }^{2}$

| A1.AREI.6.a <br> Solve systems of linear equations using <br> the substitution method. | 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 |  |

## South Carolina College and Career

Ready Standards for Mathematics

## Aligned Components of Eureka Math²

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
A1 M6 Lesson 5: Solar System Models

## Algebra

## Structure and Expressions

South Carolina College and Career Ready Standards for Mathematics

## A1.ASE. 1

Interpret the meanings of coefficients, factors, terms, and expressions based on their real-world contexts. Interpret complicated expressions as being composed of simpler expressions.

## Aligned Components of Eureka Math ${ }^{2}$

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
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

## South Carolina College and Career Ready Standards for Mathematics

## Aligned Components of Eureka Math ${ }^{2}$

| A1.ASE. 2 continued | 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 |  |
| A1.ASE.3 | This standard is fully addressed by the lessons aligned to its subsection. |
| Choose and produce an equivalent form |  |
| of an expression to reveal and explain |  |
| properties of the quantity represented |  |
| by the expression. |  |
| A1.ASE.3.a |  |
| Find the zeros of a quadratic function by <br> rewriting it in equivalent factored form <br> and explain the connection between the <br> zeros of the function, its linear factors, <br> the $x$-intercepts of its graph, and <br> the solutions to the corresponding <br> quadratic equation. | A1 M4 Lesson 22: A Summary of Graphing Quadratic Functions |

## Functions

Building Functions

## South Carolina College and Career Ready Standards for Mathematics

## Aligned Components of Eureka Math ${ }^{2}$

## A1.FBF. 3

Describe the effect of the transformations $k f(x), f(x)+k, f(x+k)$, and combinations of such transformations on the graph of $y=f(x)$ for any real number $k$. Find the value of $k$ given the graphs and write the equation of a transformed parent function given its graph.

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

## Functions

## Interpreting Functions

## South Carolina College and Career Ready Standards for Mathematics

## Aligned Components of Eureka Math ${ }^{2}$

## A1.FIF. 1

Extend previous knowledge of a function to apply to general behavior and features of a function.

## A1.FIF.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.

This standard is fully addressed by the lessons aligned to its subsections.

A1 M3 Topic A: Functions and Their Graphs

## South Carolina College and Career Ready Standards for Mathematics

## Aligned Components of Eureka Math²

## A1.FIF.1.b <br> A1 M3 Topic A: Functions and Their Graphs

Represent a function using function notation and explain that $f(x)$ denotes the output of function $f$ that corresponds to the input $x$.

## A1.FIF.1.c

Understand that the graph of a function labeled as $f$ is the set of all ordered pairs $(x, y)$ that satisfy the equation $y=f(x)$.

## A1.FIF. 2

Evaluate functions and interpret the meaning of expressions involving function notation from a mathematical perspective and in terms of the context when the function describes a real-world situation.

A1 M3 Topic A: Functions and Their Graphs

## 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

## South Carolina College and Career Ready Standards for Mathematics

## Aligned Components of Eureka Math²

## A1.FIF. 4

Interpret key features of a function that models the relationship between two quantities when given in graphical or tabular form. Sketch the graph of a function from a verbal description showing key features. Key features include intercepts; intervals where the function is increasing, decreasing, constant, positive, or negative; relative maximums and minimums; symmetries; end behavior and periodicity.

A1 M3 Lesson 7: Exploring Key Features of a Function and Its Graph
A1 M3 Lesson 8: Identifying Key Features of a Function and Its Graph
A1 M3 Lesson 9: Representing Functions from Verbal Descriptions
A1 M3 Lesson 11: Comparing Functions
A1 M3 Lesson 12: Mars Curiosity Rover
A1 M3 Lesson 13: Modeling Elevation as a Function of Time
A1 M4 Lesson 1: Falling Objects
A1 M4 Lesson 2: Projectile Motion
A1 M4 Lesson 3: Analyzing Functions That Model Projectile Motion
A1 M4 Lesson 11: Graphing Quadratic Functions from Factored Form
A1 M4 Lesson 12: Using Symmetry to Graph Quadratic Functions from Standard Form
A1 M4 Lesson 21: Completing the Square to Graph Quadratic Functions
A1 M4 Lesson 23: Creating Equations of Quadratic Functions to Model Contexts
A1 M4 Lesson 25: Maximizing Area

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

## South Carolina College and Career Ready Standards for Mathematics

## Aligned Components of Eureka Math²

## A1.FIF. 6

Given a function in graphical, symbolic, or tabular form, determine the average rate of change of the function over a specified interval. Interpret the meaning of the average rate of change in a given context.

## A1.FIF. 7

Graph functions from their symbolic representations. Indicate key features including intercepts; intervals where the function is increasing, decreasing, positive, or negative; relative maximums and minimums; symmetries; end behavior and periodicity. Graph simple cases by hand and use technology for complicated cases.

## 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

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
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)

## South Carolina College and Career Ready Standards for Mathematics

## Aligned Components of Eureka Math ${ }^{2}$

| A1.FIF. 8 | This standard is fully addressed by the lessons aligned to its subsection. |
| :--- | :--- |

Translate between different but equivalent forms of a function equation to reveal and explain different properties of the function.

## A1.FIF.8.a

Use the process of factoring and completing the square in a quadratic function to show zeros, extreme values, and symmetry of the graph, and interpret these in terms of a context.

## A1.FIF. 9

Compare properties of two functions given in different representations such as algebraic, graphical, tabular, or verbal.

## Functions

Linear, Quadratic, and Exponential

## South Carolina College and Career <br> Ready Standards for Mathematics

## Aligned Components of Eureka Math ${ }^{2}$

## A1.FLQE. 1

Distinguish between situations that can be modeled with linear functions or exponential functions by recognizing situations in which one quantity changes at a constant rate per unit interval as opposed to those in which a quantity changes by a constant percent rate per unit interval.

## A1.FLQE.1.a

Prove that linear functions grow by equal differences over equal intervals and that exponential functions grow by equal factors over equal intervals.

## A1.FLQE. 2

Create symbolic representations of linear and exponential functions, including arithmetic and geometric sequences, given graphs, verbal descriptions, and tables.

A1 M5 Lesson 15: Calculating Interest
A1 M5 Lesson 18: Modeling Populations
A1 M5 Lesson 21: World Population Prediction
A1 M5 Lesson 22: A Closer Look at Populations
A1 M5 Lesson 24: Modeling an Invasive Species Population
A1 M6 Topic A: Modeling Bivariate Quantitative Data

A1 M5 Lesson 19: Analyzing Exponential Growth

## 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

## South Carolina College and Career Ready Standards for Mathematics

Aligned Components of Eureka Math ${ }^{2}$

## A1.FLQE. 3

Observe using graphs and tables that a quantity increasing exponentially eventually exceeds a quantity increasing linearly, quadratically, or more generally as a polynomial function.

## A1.FLQE. 5

Interpret the parameters in a linear or exponential function in terms of the context.

A1 M5 Lesson 20: Comparing Growth of Functions

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

## Number and Quantity

## Quantities

South Carolina College and Career Ready Standards for Mathematics

Aligned Components of Eureka Math ${ }^{2}$

## A1.NQ. 1

Use units of measurement to guide the solution of multi-step tasks. Choose and interpret appropriate labels, units, and scales when constructing graphs and other data displays.

## A1.NQ. 2

Label and define appropriate quantities in descriptive modeling contexts.

A1 M6 Lesson 5: Solar System Models

A1 M4 Lesson 25: Maximizing Area
A1 M6 Lesson 5: Solar System Models
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## South Carolina College and Career

 Ready Standards for MathematicsAligned Components of Eureka Math ${ }^{2}$

A1 M6 Lesson 5: Solar System Models

Choose a level of accuracy appropriate to limitations on measurement when reporting quantities in context.

## Number and Quantity

## Real Number System

South Carolina College and Career Ready Standards for Mathematics

## A1.NRNS. 1

Rewrite expressions involving simple radicals and rational exponents in different forms.

## A1.NRNS. 2

Use the definition of the meaning of rational exponents to translate between rational exponent and radical forms.

## A1.NRNS. 3

Explain why the sum or product of 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

## Statistics and Probability Interpreting Data

## South Carolina College and Career Ready Standards for Mathematics

## Aligned Components of Eureka Math ${ }^{2}$

## A1.SPID. 6

Using technology, create scatterplots and analyze those plots to compare the fit of linear, quadratic, or exponential models to a given data set. Select the appropriate model, fit a function to the data set, and use the function to solve problems in the context of the data.

A1 M2 Lesson 15: Relationships Between Quantitative Variables<br>A1 M2 Lesson 16: Using Lines to Model Bivariate Quantitative Data<br>A1 M2 Lesson 17: Modeling Relationships with a Line<br>A1 M2 Lesson 18: Calculating and Analyzing Residuals<br>A1 M2 Lesson 20: Interpreting Correlation<br>A1 M2 Lesson 21: Analyzing Bivariate Quantitative Data<br>A1 M4 Lesson 23: Creating Equations of Quadratic Functions to Model Contexts<br>A1 M4 Lesson 26: Modeling Data with Quadratic Functions<br>A1 M4 Lesson 27: Search and Rescue Helicopter<br>A1 M6 Topic A: Modeling Bivariate Quantitative Data

A1.SPID. 7
Create a linear function to graphically model data from a real-world problem and interpret the meaning of the slope and intercept(s) in the context of the given problem.

## A1.SPID. 8

Using technology, compute and interpret
A1 M2 Lesson 20: Interpreting Correlation
A1 M2 Lesson 21: Analyzing Bivariate Quantitative Data

