ABOUT *EUREKA MATH*

Created by the nonprofit Great Minds, *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

Eureka Math is the only curriculum found by EdReports.org to align fully with the Common Core State Standards for Mathematics for all grades, Kindergarten through Grade 8. Great Minds offers detailed analyses which 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

As a nonprofit, 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

ALGEBRA 2

The majority of the Algebra 2 South Carolina College- and Career-Ready Standards for Mathematics are fully covered by the Algebra II *Eureka Math* curriculum. The areas where the Algebra 2 South Carolina College- and Career-Ready Standards for Mathematics and Algebra II *Eureka Math* do not align will require the use of *Eureka Math* content from another course. A detailed analysis of alignment is provided in the table below.

INDICATORS

- Green indicates that the South Carolina standard is fully addressed in *Eureka Math*.
- Yellow indicates that the South Carolina standard may not be completely addressed in *Eureka Math*.
- Red indicates that the South Carolina standard is not addressed in *Eureka Math*.
- Blue indicates there is a discrepancy between the grade level at which this standard is addressed in the South Carolina standards and in *Eureka Math*.

Mathematical Process Standards	Aligned Components of *Eureka Math*
1: Make sense of problems and persevere in solving them. a. Relate a problem to prior knowledge. b. Recognize there may be multiple entry points to a problem and more than one path to a solution. c. Analyze what is given, what is not given, what is being asked, and what strategies are needed, and make an initial attempt to solve a problem. d. Evaluate the success of an approach to solve a problem and refine it if necessary.	Lessons in every module engage students in making sense of problems and persevering in solving them as required by this standard. This process standard is analogous to the CCSSM Standards for Mathematical Practice 1, which is specifically addressed in the following modules: Algebra II M1: Polynomial, Rational, and Radical Relationships Algebra II M2: Trigonometric Functions Algebra II M3: Exponential and Logarithmic Functions
2: Reason both contextually and abstractly. a. Make sense of quantities and their relationships in mathematical and real-world situations. b. Describe a given situation using multiple mathematical representations. c. Translate among multiple mathematical representations and compare the meanings each representation conveys about the situation. d. Connect the meaning of mathematical operations to the context of a given situation.	Lessons in every module engage students in reasoning abstractly and quantitatively as required by this standard. This process standard is analogous to the CCSSM Standards for Mathematical Practice 2, which is specifically addressed in the following modules: Algebra II M1: Polynomial, Rational, and Radical Relationships Algebra II M2: Trigonometric Functions Algebra II M3: Exponential and Logarithmic Functions Algebra II M4: Inferences and Conclusions from Data

Mathematical Process Standards	Aligned Components of *Eureka Math*
3: Use critical thinking skills to justify mathematical reasoning and critique the reasoning of others. a. Construct and justify a solution to a problem. b. Compare and discuss the validity of various reasoning strategies. c. Make conjectures and explore their validity. d. Reflect on and provide thoughtful responses to the reasoning of others.	Lessons in every module engage students in constructing viable arguments and critiquing the reasoning of others as required by this standard. This process standard is analogous to the CCSSM Standards for Mathematical Practice 3, which is specifically addressed in the following modules: Algebra II M2: Trigonometric Functions Algebra II M4: Inferences and Conclusions from Data
4: Connect mathematical ideas and real-world situations through modeling. a. Identify relevant quantities and develop a model to describe their relationships. b. Interpret mathematical models in the context of the situation. c. Make assumptions and estimates to simplify complicated situations. d. Evaluate the reasonableness of a model and refine if necessary.	Lessons in every module engage students in modeling with mathematics as required by this standard. This process standard is analogous to the CCSSM Standards for Mathematical Practice 4, which is specifically addressed in the following modules: Algebra II M1: Polynomial, Rational, and Radical Relationships Algebra II M2: Trigonometric Functions Algebra II M3: Exponential and Logarithmic Functions Algebra II M4: Inferences and Conclusions from Data

Mathematical Process Standards	Aligned Components of *Eureka Math*
5: Use a variety of mathematical tools effectively and strategically. a. Select and use appropriate tools when solving a mathematical problem. b. Use technological tools and other external mathematical resources to explore and deepen understanding of concepts.	Lessons in every module engage students in using appropriate tools strategically as required by this standard. This process standard is analogous to the CCSSM Standards for Mathematical Practice 5, which is specifically addressed in the following modules: Algebra II M1: Polynomial, Rational, and Radical Relationships Algebra II M4: Inferences and Conclusions from Data
6: Communicate mathematically and approach mathematical situations with precision. a. Express numerical answers with the degree of precision appropriate for the context of a situation. b. Represent numbers in an appropriate form according to the context of the situation. c. Use appropriate and precise mathematical language. d. Use appropriate units, scales, and labels.	Lessons in every module engage students in attending to precision as required by this standard. This process standard is analogous to the CCSSM Standards for Mathematical Practice 6, which is specifically addressed in the following modules: Algebra II M1: Polynomial, Rational, and Radical Relationships Algebra II M2: Trigonometric Functions Algebra II M3: Exponential and Logarithmic Functions Algebra II M4: Inferences and Conclusions from Data

Mathematical Process Standards	Aligned Components of *Eureka Math*
7: Identify and utilize structure and patterns. a. Recognize complex mathematical objects as being composed of more than one simple object. b. Recognize mathematical repetition in order to make generalizations. c. Look for structures to interpret meaning and develop solution strategies.	Lessons in every module engage students in looking for and making use of structure as required by this standard. This process standard is analogous to the CCSSM Standards for Mathematical Practice 7 and 8, which are specifically addressed in the following modules: Algebra II M1: Polynomial, Rational, and Radical Relationships Algebra II M2: Trigonometric Functions Algebra II M3: Exponential and Logarithmic Functions

Key Concepts	Content Standards for Mathematics		Aligned Components of *Eureka Math*
Arithmetic with Polynomials and Rational Expressions	**A2.AAPR.1** Add, subtract, and multiply polynomials and understand that polynomials are closed under these operations.		Algebra I M1 Topic B: The Structure of Expressions Algebra I M4 Lessons 1–2: Multiplying and Factoring Polynomial Expressions Algebra I M4 Lessons 3–4: Advanced Factoring Strategies for Quadratic Expressions
	A2.AAPR.3 Graph polynomials identifying zeros when suitable factorizations are available and indicating end behavior. Write a polynomial function of least degree corresponding to a given graph. (Limit to polynomials with degrees 3 or less.)		Algebra II M1 Lesson 14: Graphing Factored Polynomials Algebra II M1 Lesson 15: Structure in Graphs of Polynomial Functions Algebra II M1 Lesson 16: Modeling with Polynomials—An Introduction

Key Concepts	Content Standards for Mathematics	Aligned Components of *Eureka Math*
Creating Equations	**A2.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.	Algebra I M1 Lesson 18: Equations Involving a Variable Expression in the Denominator Algebra I M1 Topic D: Creating Equations to Solve Problems Algebra I M4 Lesson 6: Solving Basic One-Variable Quadratic Equations Algebra I M4 Lesson 7: Creating and Solving Quadratic Equations in One Variable Algebra I M5 Lesson 6: Modeling a Context from Data Algebra I M5 Lesson 9: Modeling a Context from a Verbal Description Algebra II M1 Lesson 27: Word Problems Leading to Rational Equations Algebra II M3 Lesson 7: Bacteria and Exponential Growth Algebra II M3 Lesson 26: Percent Rate of Change Algebra II M3 Lesson 27: Modeling with Exponential Functions

Key Concepts	Content Standards for Mathematics		Aligned Components of *Eureka Math*
	A2.ACE.2 Create equations in two or more variables to represent relationships between quantities. Graph the equations on coordinate axes using appropriate labels, units, and scales.		Algebra II M1 Lesson 1: Successive Differences in Polynomials Algebra II M1 Lessons 16–17: Modeling with Polynomials—An Introduction Algebra II M1 Lessons 20–21: Modeling Riverbeds with Polynomials Algebra II M2 Lesson 12: Ferris Wheels—Using Trigonometric Functions to Model Cyclical Behavior Algebra II M2 Lesson 13: Tides, Sound Waves, and Stock Markets
	A2.ACE.3 Use systems of equations and inequalities to represent constraints arising in real-world situations. Solve such systems using graphical and analytical methods, including linear programing. Interpret the solution within the context of the situation. (Limit to linear programming.)		Algebra II M1 Lessons 20–21: Modeling Riverbeds with Polynomials Algebra II M3 Topic E: Geometric Series and Finance
	A2.ACE.4 Solve literal equations and formulas for a specified variable including equations and formulas that arise in a variety of disciplines.		Algebra I M1 Lesson 19: Rearranging Formulas

Key Concepts	Content Standards for Mathematics	Aligned Components of *Eureka Math*
Reasoning with Equations and Inequalities	**A2.AREI.2** Solve simple rational and radical equations in one variable and understand how extraneous solutions may arise.	Algebra II M1 Lesson 22: Equivalent Rational Expressions Algebra II M1 Lesson 23: Comparing Rational Expressions Algebra II M1 Lesson 26: Solving Rational Equations Algebra II M1 Lesson 27: Word Problems Leading to Rational Equations Algebra II M1 Lesson 28: A Focus on Square Roots Algebra II M1 Lesson 29: Solving Radical Equations

Key Concepts	Content Standards for Mathematics		Aligned Components of *Eureka Math*
	A2.AREI.4 Solve mathematical and real-world problems involving quadratic equations in one variable.		
	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 $a + bi$ for real numbers a and b.		Algebra I M4 Lesson 5: The Zero Product Property Algebra I M4 Lesson 6: Solving Basic One-Variable Quadratic Equations Algebra I M4 Lesson 7: Creating and Solving Quadratic Equations in One Variable Algebra I M4 Lesson 13: Solving Quadratic Equations by Completing the Square Algebra I M4 Lesson 14: Deriving the Quadratic Formula Algebra I M4 Lesson 15: Using the Quadratic Formula Algebra II M1 Lesson 31: Systems of Equations Algebra II M1 Lesson 38: Complex Numbers as Solutions to Equations
	A2.AREI.7 Solve a simple system consisting of a linear equation and a quadratic equation in two variables algebraically and graphically. Understand that such systems may have zero, one, two, or infinitely many solutions. (Limit to linear equations and quadratic functions.)		Algebra II M1 Lesson 31: Systems of Equations Algebra II M1 Lesson 32: Graphing Systems of Equations Algebra II M1 Lesson 36: Overcoming a Third Obstacle to Factoring—What If There Are No Real Number Solutions?

Key Concepts	Content Standards for Mathematics	Aligned Components of *Eureka Math*
	A1.AREI.11 Solve an equation of the form $f(x) = g(x)$ graphically by identifying the x-coordinate(s) of the point(s) of intersection of the graphs of $y = f(x)$ and $y = g(x)$.	Algebra I M3 Lesson 16: Graphs Can Solve Equations Too Algebra II M1 Lesson 36: Overcoming a Third Obstacle to Factoring—What If There Are No Real Number Solutions? Algebra II M3 Lesson 24: Solving Exponential Equations
Structure and Expressions	**A2.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.	Algebra II M1 Lesson 14: Graphing Factored Polynomials Algebra II M1 Lesson 15: Structure in Graphs of Polynomial Functions Algebra II M3 Topic D: Using Logarithms in Modeling Situations
	A2.ASE.2 Analyze the structure of binomials, trinomials, and other polynomials in order to rewrite equivalent expressions.	Algebra II M1 Topic A: Polynomials—From Base Ten to Base X Algebra II M1 Lesson 12: Overcoming Obstacles in Factoring Algebra II M1 Lesson 13: Mastering Factoring Algebra II M3 Lesson 12: Properties of Logarithms Algebra II M3 Lesson 14: Solving Logarithmic Equations Algebra II M3 Lesson 15: Why Were Logarithms Developed?

Key Concepts	Content Standards for Mathematics		Aligned Components of *Eureka Math*
	A2.ASE.3 Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression.		
	b. Determine the maximum or minimum value of a quadratic function by completing the square.		Algebra I M4 Lesson 12: Completing the Square Algebra I M4 Lesson 17: Graphing Quadratic Functions from the Standard Form, $f(x) = ax^2 + bx + c$
	c. Use the properties of exponents to transform expressions for exponential functions.		Algebra II M3 Lesson 23: Bean Counting Algebra II M3 Lesson 27: Modeling with Exponential Functions Algebra II M3 Topic E: Geometric Series and Finance
Building Functions	**A2.FBF.1** Write a function that describes a relationship between two quantities.		
	a. Write a function that models a relationship between two quantities using both explicit expressions and a recursive process and by combining standard forms using addition, subtraction, multiplication, and division to build new functions.		Algebra II M1 Lesson 1: Successive Differences in Polynomials Algebra II M3 Lesson 6: Euler's Number, *e* Algebra II M3 Lesson 25: Geometric Sequences and Exponential Growth and Decay Algebra II M3 Lesson 26: Percent Rate of Change Algebra II M3 Topic E: Geometric Series and Finance

Key Concepts	Content Standards for Mathematics		Aligned Components of *Eureka Math*
	b. Combine functions using the operations addition, subtraction, multiplication, and division to build new functions that describe the relationship between two quantities in mathematical and real-world situations.		Algebra II M2 Lesson 12: Ferris Wheels—Using Trigonometric Functions to Model Cyclical Behavior Algebra II M3 Lesson 28: Newton's Law of Cooling, Revisited Algebra II M3 Lesson 30: Buying a Car Algebra II M3 Lesson 33: The Million Dollar Problem
	A2.FBF.2 Write arithmetic and geometric sequences both recursively and with an explicit formula, use them to model situations, and translate between the two forms.		Algebra I M3 Topic A: Linear and Exponential Sequences Algebra II M3 Lesson 25: Geometric Sequences and Exponential Growth and Decay Algebra II M3 Lesson 26: Percent Rate of Change
	A2.FBF.3 Describe the effect of the transformations $kf(x)$, $f(x) + k$, $f(x + k)$, 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.		Algebra II M2 Lesson 11: Transforming the Graph of the Sine Function Algebra II M2 Lesson 12: Ferris Wheels—Using Trigonometric Functions to Model Cyclical Behavior Algebra II M3 Lesson 20: Transformations of the Graphs of Logarithmic and Exponential Functions

Key Concepts	Content Standards for Mathematics	Aligned Components of *Eureka Math*
Interpreting Functions	**A2.FIF.3** Define functions recursively and recognize that sequences are functions, sometimes defined recursively, whose domain is a subset of the integers.	Algebra I M3 Lesson 2: Recursive Formulas for Sequences Algebra I M3 Lesson 3: Arithmetic and Geometric Sequences Algebra I M3 Lesson 4: Why Do Banks Pay YOU to Provide Their Services? Algebra II M3 Lesson 6: Euler's Number, *e* Algebra II M3 Lesson 25: Geometric Sequences and Exponential Growth and Decay Algebra II M3 Lesson 26: Percent Rate of Change
	A2.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.	Algebra II M1 Lessons 16–17: Modeling with Polynomials—An Introduction Algebra II M2 Lesson 12: Ferris Wheels—Using Trigonometric Functions to Model Cyclical Behavior Algebra II M2 Lesson 13: Tides, Sound Waves, and Stock Markets Algebra II M3 Lesson 18: Graphs of Exponential Functions and Logarithmic Functions Algebra II M3 Lesson 20: Transformations of the Graphs of Logarithmic and Exponential Functions Algebra II M3 Lesson 21: The Graph of the Natural Logarithm Function

Key Concepts	Content Standards for Mathematics		Aligned Components of *Eureka Math*
	A2.FIF.5 Relate the domain and range of a function to its graph and, where applicable, to the quantitative relationship it describes.		Algebra II M1 Lessons 16–17: Modeling with Polynomials—An Introduction Algebra II M3 Lesson 17: Graphing the Logarithm Function
	A2.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.		Algebra II M3 Lesson 6: Euler's Number, *e* Algebra II M3 Lesson 27: Modeling with Exponential Functions

Key Concepts	Content Standards for Mathematics	Aligned Components of *Eureka Math*
	A2.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.	Algebra I M3 Topic C: Transformations of Functions Algebra I M4 Lesson 18: Graphing Cubic, Square Root, and Cube Root Functions Algebra I M4 Lesson 19: Translating Graphs of Functions Algebra I M4 Lesson 20: Stretching and Shrinking Graphs of Functions Algebra II M1 Lesson 14: Graphing Factored Polynomials Algebra II M1 Lesson 15: Structure in Graphs of Polynomial Functions Algebra II M1 Lesson 16: Modeling with Polynomials—An Introduction Algebra II M2 Lesson 8: Graphing the Sine and Cosine Functions Algebra II M2 Lesson 11: Transforming the Graph of the Sine Function Algebra II M2 Lesson 12: Ferris Wheels—Using Trigonometric Functions to Model Cyclical Behavior Algebra II M3 Lesson 16: Rational and Irrational Numbers Algebra II M3 Lesson 18: Graphs of Exponential Functions and Logarithmic Functions Algebra II M3 Lesson 20: Transformations of the Graphs of Logarithmic and Exponential Functions Algebra II M3 Lesson 33: The Million Dollar Problem

Key Concepts	Content Standards for Mathematics		Aligned Components of *Eureka Math*
	A2.FIF.8 Translate between different but equivalent forms of a function equation to reveal and explain different properties of the function.		
	b. Interpret expressions for exponential functions by using the properties of exponents.		Algebra II M3 Lesson 23: Bean Counting Algebra II M3 Lesson 27: Modeling with Exponential Functions Algebra II M3 Topic E: Geometric Series and Finance
	A2.FIF.9 Compare properties of two functions given in different representations such as algebraic, graphical, tabular, or verbal.		Algebra II M3 Lesson 27: Modeling with Exponential Functions Algebra II M3 Lesson 28: Newton's Law of Cooling, Revisited Algebra II M3 Topic E: Geometric Series and Finance

Key Concepts	Content Standards for Mathematics		Aligned Components of *Eureka Math*
Linear, Quadratic, and Exponential	**A2.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.		
	b. Recognize situations in which a quantity grows or decays by a constant percent rate per unit interval relative to another.		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 M5: A Synthesis of Modeling with Equations and Functions Algebra II M3 Lesson 7: Bacteria and Exponential Growth Algebra II M3 Lesson 18: Graphs of Exponential Functions and Logarithmic Functions Algebra II M3 Lesson 20: Transformations of the Graphs of Logarithmic and Exponential Functions Algebra II M3 Topic D: Using Logarithms in Modeling Situations Algebra II M3 Topic E: Geometric Series and Finance

Key Concepts	Content Standards for Mathematics		Aligned Components of *Eureka Math*
	A2.FLQE.2 Create symbolic representations of linear and exponential functions, including arithmetic and geometric sequences, given graphs, verbal descriptions, and tables.		Algebra I M3: Linear and Exponential Functions Algebra I M5: A Synthesis of Modeling with Equations and Functions Algebra II M3 Lesson 1: Integer Exponents
	A2.FLQE.5 Interpret the parameters in a linear or exponential function in terms of the context.		Algebra II M3 Lesson 23: Bean Counting Algebra II M3 Topic E: Geometric Series and Finance
Complex Number System	**A2.NCNS.1** Know there is a complex number i such that $i^2 = -1$, and every complex number has the form $a + bi$ with a and b real.		Algebra II M1 Lesson 37: A Surprising Boost from Geometry
	A2.NCNS.7 Solve quadratic equations in one variable that have complex solutions.		Algebra II M1 Lesson 38: Complex Numbers as Solutions to Equations Algebra II M1 Lesson 39: Factoring Extended to the Complex Realm