Algebra II | South Carolina College- and Career-Ready Mathematics Standards Correlation to *Eureka Math*®

About *Eureka Math*

Created by Great Minds®, a mission-driven Public Benefit Corporation, *Eureka Math*® helps teachers deliver unparalleled math instruction that provides students with a deep understanding and fluency in math. Crafted by teachers and math scholars, the curriculum carefully sequences the mathematical progressions to maximize coherence from Prekindergarten through Precalculus—a principle tested and proven to be essential in students' mastery of math.

Teachers and students using *Eureka Math* find the trademark "Aha!" moments in *Eureka Math* to be a source of joy and inspiration, lesson after lesson, year after year.

Aligned

Great Minds offers detailed analyses that demonstrate how each grade of *Eureka Math* aligns with specific state standards. Access these free alignment studies at greatminds.org/state-studies.

Data

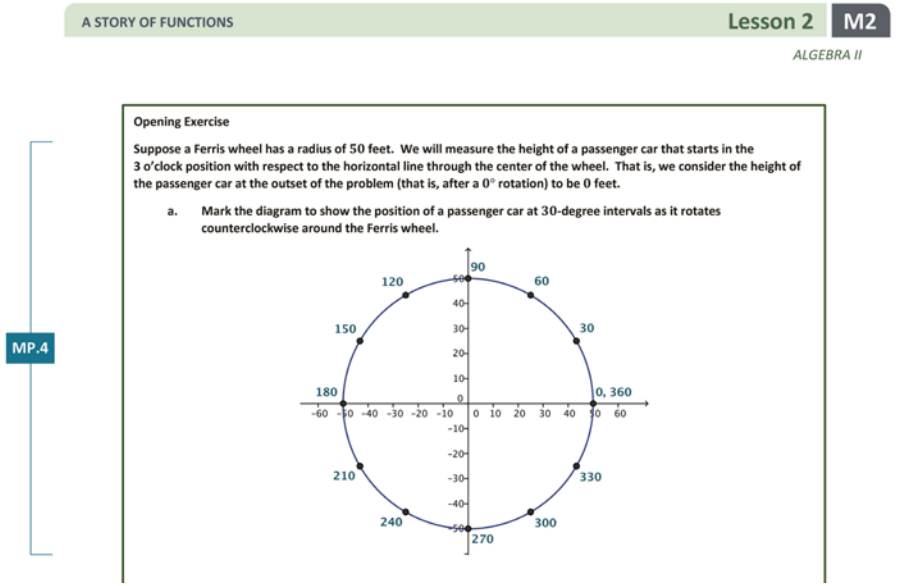
Schools and districts nationwide are experiencing student growth and impressive test scores after using *Eureka Math*. See their stories and data at greatminds.org/data.

Full Suite of Resources

Great Minds offers the *Eureka Math* curriculum as PDF downloads for free, noncommercial use. Access the free PDFs at greatminds.org/math/curriculum.

The teacher–writers who created the curriculum have also developed essential resources, available only from Great Minds, including the following:

- Printed material in English and Spanish
- Digital resources
- Professional development
- Classroom tools and manipulatives
- Teacher support materials
- Parent resources

Mathematical Process Standards	Aligned Components of *Eureka Math*
MPS.PS.1 Make sense of problems and persevere in solving them strategically.	Lessons in every module engage students in mathematical processes. These are designated in the Module Overview and labeled in lessons. For example: 
MPS.RC.1 Explain ideas using precise and contextually appropriate mathematical language, tools, and models.	
MPS.C.1 Demonstrate a deep and flexible conceptual understanding of mathematical ideas, operations, and relationships while making real-world connections.	
MPS.AJ.1 Use critical thinking skills to reason both abstractly and quantitatively.	
MPS.SP.1 Identify and apply regularity in repeated reasoning to make generalizations.	

Data, Probability, and Statistical Reasoning

A2P.DPSR.1 Understand independence and conditional probability and use them to interpret data.

South Carolina College- and Career-Ready Mathematics Standards	Aligned Components of *Eureka Math*
A2P.DPSR.1.1 Describe events as subsets of a sample space using characteristics or categories of the outcomes, or as *unions*, *intersections*, or *complements of other events*.	Algebra II M4 Lesson 1: Chance Experiments, Sample Spaces, and Events Algebra II M4 Lesson 3: Calculating Conditional Probabilities and Evaluating Independence Using Two-Way Tables Algebra II M4 Lesson 4: Calculating Conditional Probabilities and Evaluating Independence Using Two-Way Tables Algebra II M4 Lesson 5: Events and Venn Diagrams Algebra II M4 Lesson 6: Probability Rules Algebra II M4 Lesson 7: Probability Rules
A2P.DPSR.1.2 Explain whether two events, A and B, are independent if and only if the probability of A and B occurring together is the product of their probabilities and use this characterization to determine if they are independent.	Algebra II M4 Lesson 6: Probability Rules

South Carolina College- and Career-Ready Mathematics Standards	Aligned Components of *Eureka Math*
A2P.DPSR.1.3 Determine whether the conditional probability of A given B as $P(A \text{ and } B)/P(B)$ and interpret independence of A and B as saying that the conditional probability of A given B is the same as the probability of A, and the conditional probability of B given A is the same as the probability of B in mathematical and real-world situations.	Algebra II M4 Lesson 4: Calculating Conditional Probabilities and Evaluating Independence Using Two-Way Tables Algebra II M4 Lesson 6: Probability Rules
A2P.DPSR.1.4 Recognize and explain the concepts of conditional probability and independence.	Algebra II M4 Lesson 2: Calculating Probabilities of Events Using Two-Way Tables Algebra II M4 Lesson 3: Calculating Conditional Probabilities and Evaluating Independence Using Two-Way Tables Algebra II M4 Lesson 4: Calculating Conditional Probabilities and Evaluating Independence Using Two-Way Tables Algebra II M4 Lesson 6: Probability Rules

Data, Probability, and Statistical Reasoning

A2P.DPSR.2 Use the rules of probability to compute probabilities of compound events in a uniform probability model.

South Carolina College- and Career-Ready Mathematics Standards	Aligned Components of *Eureka Math*
A2P.DPSR.2.1 Find the conditional probability of A given B as the fraction of B's outcomes that also belong to A and interpret the answer in terms of the model.	Algebra II M4 Lesson 3: Calculating Conditional Probabilities and Evaluating Independence Using Two-Way Tables Algebra II M4 Lesson 4: Calculating Conditional Probabilities and Evaluating Independence Using Two-Way Tables
A2P.DPSR.2.2 Apply the *Addition Rule*, $P(A \text{ or } B) = P(A) + P(B) - P(A \text{ and } B)$ and interpret the answer in terms of the model.	Algebra II M4 Lesson 7: Probability Rules
A2P.DPSR.2.3 Apply the general *Multiplication Rule* in a uniform probability model, $P(A \text{ and } B) = P(A) \cdot P(B \mid A) = P(B) \cdot P(A \mid B)$ and interpret the answer in terms of the model.	Precalculus and Advanced Topics M5 Lesson 1: The General Multiplication Rule Precalculus and Advanced Topics M5 Lesson 13: Games of Chance and Expected Value Precalculus and Advanced Topics M5 Lesson 14: Games of Chance and Expected Value Precalculus and Advanced Topics M5 Lesson 15: Using Expected Values to Compare Strategies
A2P.DPSR.2.4 Use permutations and combinations to determine the number of possible outcomes in a sample space.	Precalculus and Advanced Topics M5 Lesson 2: Counting Rules—The Fundamental Counting Principle and Permutations Precalculus and Advanced Topics M5 Lesson 3: Counting Rules—Combinations Precalculus and Advanced Topics M5 Lesson 4: Using Permutations and Combinations to Compute Probabilities

Measurement, Geometry, and Spatial Reasoning

A2P.MGSR.1 Explore and analyze sine and cosine functions using the unit circle, right triangle definitions, and models of periodic phenomena.

South Carolina College- and Career-Ready Mathematics Standards	Aligned Components of *Eureka Math*
A2P.MGSR.1.1 Build the unit circle for sine and cosine functions using right triangle definitions.	Algebra II M2 Lesson 1: Ferris Wheels—Tracking the Height of a Passenger Car Algebra II M2 Lesson 2: The Height and Co-Height Functions of a Ferris Wheel Algebra II M2 Lesson 3: The Motion of the Moon, Sun, and Stars—Motivating Mathematics Algebra II M2 Lesson 4: From Circle-ometry to Trigonometry Algebra II M2 Lesson 5: Extending the Domain of Sine and Cosine to All Real Numbers
A2P.MGSR.1.2 Use models of periodic phenomena to evaluate and analyze the graph of sine and cosine functions.	Algebra II M2 Lesson 8: Graphing the Sine and Cosine Functions Algebra II M2 Lesson 10: Basic Trigonometric Identities from Graphs

Numerical Reasoning

A2P.NR.1 Recognize that the complex number system extends the real number system to allow for solution to all polynomial equations.

South Carolina College- and Career-Ready Mathematics Standards	Aligned Components of *Eureka Math*
A2P.NR.1.1 Understand that there is an imaginary unit i such that $i^2 = -1$ and explain the structure of a complex number as $a + bi$, where a and b are real.	Algebra II M1 Lesson 37: A Surprising Boost from Geometry

South Carolina College- and Career-Ready Mathematics Standards	Aligned Components of *Eureka Math*
A2P.NR.1.2 Add, subtract, and multiply complex numbers.	Algebra II M1 Lesson 37: A Surprising Boost from Geometry

Numerical Reasoning

A2P.NR.2 Represent and manipulate data using matrices.

South Carolina College- and Career-Ready Mathematics Standards	Aligned Components of *Eureka Math*
A2P.NR.2.1 Perform operations with matrices including addition, subtraction, and scalar multiplication.	Precalculus and Advanced Topics M2 Lesson 2: Networks and Matrix Arithmetic Precalculus and Advanced Topics M2 Lesson 11: Matrix Addition Is Commutative

Patterns, Algebra, and Functional Reasoning

A2P.PAFR.1 Explore and analyze quadratic and polynomial functions and inequalities and use them to model real-world situations.

South Carolina College- and Career-Ready Mathematics Standards	Aligned Components of *Eureka Math*
A2P.PAFR.1.1 Graph, identify roots, and analyze quadratic functions in mathematical and real-world situations.	Algebra I M4 Lesson 8: Exploring the Symmetry in Graphs of Quadratic Functions Algebra I M4 Lesson 9: Graphing Quadratic Functions from Factored Form, $f(x) = a(x - m)(x - n)$ Algebra I M4 Lesson 12: Completing the Square Algebra I M4 Lesson 15: Using the Quadratic Formula

South Carolina College- and Career-Ready Mathematics Standards	Aligned Components of *Eureka Math*
A2P.PAFR.1.1 ***continued***	Algebra I M4 Lesson 16: Graphing Quadratic Equations from the Vertex Form, $y = a(x - h)^2 + k$ Algebra I M4 Lesson 17: Graphing Quadratic Functions from the Standard Form, $f(x) = ax^2 + bx + c$ Algebra I M4 Lesson 19: Translating Graphs of Functions Algebra I M4 Lesson 20: Stretching and Shrinking Graphs of Functions Algebra I M4 Lesson 21: Transformations of the Quadratic Parent Function, $f(x) = x^2$ Algebra I M4 Lesson 23: Modeling with Quadratic Functions Algebra II M1 Lesson 38: Complex Numbers as Solutions to Equations
A2P.PAFR.1.2 Solve quadratic inequalities that model mathematical and real-world situations.	*Supplemental material is necessary to address this standard.*
A2P.PAFR.1.3 Graph and analyze polynomial functions in mathematical and real-world situations.	Algebra II M1 Lesson 15: Structure in Graphs of Polynomial Functions Algebra II M1 Lesson 16: Modeling with Polynomials—An Introduction Algebra II M1 Lesson 39: Factoring Extended to the Complex Realm Algebra II M1 Lesson 40: Obstacles Resolved—A Surprising Result
A2P.PAFR.1.4 Solve polynomial inequalities that model mathematical and real-world situations.	*Supplemental material is necessary to address this standard.*
A2P.PAFR.1.5 Recognize perfect squares and perfect cubes and use them to describe the structure of polynomials.	Algebra II M1 Lesson 39: Factoring Extended to the Complex Realm Algebra II M1 Lesson 40: Obstacles Resolved—A Surprising Result

Patterns, Algebra, and Functional Reasoning

A2P.PAFR.2 Explore and analyze rational and radical functions and use them to model real-world phenomena.

South Carolina College- and Career-Ready Mathematics Standards	Aligned Components of *Eureka Math*
A2P.PAFR.2.1 Graph rational and radical functions and describe their key features. Limit to square roots and cube roots only.	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 *Supplemental material is necessary to address describing key features by using interval notation.*
A2P.PAFR.2.2 Perform arithmetic operations on rational expressions, including problems in context, and express rational expressions in irreducible form.	Algebra II M1 Lesson 4: Comparing Methods—Long Division, Again? Algebra II M1 Lesson 18: Overcoming a Second Obstacle in Factoring—What If There Is a Remainder? Algebra II M1 Lesson 22: Equivalent Rational Expressions Algebra II M1 Lesson 24: Multiplying and Dividing Rational Expressions Algebra II M1 Lesson 25: Adding and Subtracting Rational Expressions Precalculus and Advanced Topics M3 Lesson 10: The Structure of Rational Expressions
A2P.PAFR.2.3 Create and solve rational and radical equations in one variable, including those that model real-life situations, and verify solutions to identify extraneous solutions if they appear.	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

Patterns, Algebra, and Functional Reasoning

A2P.PAFR.3 Explore and analyze exponential functions and use them to model real-world phenomena.

South Carolina College- and Career-Ready Mathematics Standards	Aligned Components of *Eureka Math*
A2P.PAFR.3.1 Create, solve, and graph exponential functions, including those that model real-life situations.	Algebra I M3 Lesson 6: Exponential Growth—U.S. Population and World Population Algebra I M3 Lesson 7: Exponential Decay Algebra I M3 Lesson 8: Why Stay with Whole Numbers? Algebra I M3 Lesson 14: Linear and Exponential Models—Comparing Growth Rates Algebra I M3 Topic D: Using Functions and Graphs to Solve Problems 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
A2P.PAFR.3.2 Find the sum of the terms of arithmetic and geometric sequences.	Algebra II M3 Topic E: Geometric Series and Finance *Supplemental material is necessary to address finding the sum of terms in arithmetic sequences.*

Patterns, Algebra, and Functional Reasoning

A2P.PAFR.4 Reason with parent functions to find families of functions that all have similar distinguishing attributes common to the family and use common characteristics to aid in rewriting and identifying functions.

South Carolina College- and Career-Ready Mathematics Standards	Aligned Components of *Eureka Math*
A2P.PAFR.4.1 Identify the effect on the graph of replacing $f(x)$ by $kf(x)$, $f(x)+k$, $f(x-k)$, $f(kx)$ for any real number k including multiple transformations; write an equation of a transformed parent function given its graph. Extend to equations involving rational, polynomial, radical, exponential, and piecewise.	Algebra I M3 Lesson 17: Four Interesting Transformations of Functions Algebra I M3 Lesson 18: Four Interesting Transformations of Functions Algebra I M3 Lesson 19: Four Interesting Transformations of Functions Algebra I M3 Lesson 20: Four Interesting Transformations of Functions Algebra I M4 Lesson 19: Translating Graphs of Functions Algebra I M4 Lesson 20: Stretching and Shrinking Graphs of Functions Algebra I M4 Lesson 21: Transformations of the Quadratic Parent Function, $f(x)=x^2$ Algebra II M3 Lesson 20: Transformations of the Graphs of Logarithmic and Exponential Functions Precalculus and Advanced Topics M3 Lesson 15: Transforming Rational Functions

Patterns, Algebra, and Functional Reasoning

A2P.PAFR.5 Explore and analyze piecewise functions and linear absolute value inequalities and use them to model real-world phenomena.

South Carolina College- and Career-Ready Mathematics Standards	Aligned Components of *Eureka Math*
A2P.PAFR.5.1 Graph piecewise functions and describe their key features.	Algebra I M3 Lesson 15: Piecewise Functions Algebra I M3 Lesson 17: Four Interesting Transformations of Functions Algebra I M3 Lesson 18: Four Interesting Transformations of Functions Algebra I M3 Lesson 20: Four Interesting Transformations of Functions

South Carolina College- and Career-Ready Mathematics Standards	Aligned Components of *Eureka Math*
A2P.PAFR.5.2 Solve linear absolute value inequalities.	*Supplemental material is necessary to address this standard.*

Patterns, Algebra, and Functional Reasoning

A2P.PAFR.6 Represent and interpret functions symbolically and graphically.

South Carolina College- and Career-Ready Mathematics Standards	Aligned Components of *Eureka Math*
A2P.PAFR.6.1 Find the inverse of functions and verify graphically.	Algebra II M3 Lesson 19: The Inverse Relationship Between Logarithmic and Exponential Functions Precalculus and Advanced Topics M3 Topic C: Inverse Functions
A2P.PAFR.6.2 Calculate and interpret the average rate of change of the function over a specified interval, given a function in graphical, symbolic, or numerical form.	Algebra I M3 Lesson 6: Exponential Growth—U.S. Population and World Population Algebra I M3 Lesson 21: Comparing Linear and Exponential Models Again Algebra I M3 Lesson 22: Modeling an Invasive Species Population Algebra I M4 Lesson 8: Exploring the Symmetry in Graphs of Quadratic Functions Algebra I M4 Lesson 10: Interpreting Quadratic Functions from Graphs and Tables Algebra I M4 Lesson 17: Graphing Quadratic Functions from the Standard Form, $f(x) = ax^2 + bx + c$ Algebra I M4 Lesson 22: Comparing Quadratic, Square Root, and Cube Root Functions Represented in Different Ways Algebra I M5 Lesson 4: Modeling a Context from a Graph Algebra II M3 Lesson 6: Euler's Number, e Algebra II M3 Lesson 27: Modeling with Exponential Functions

South Carolina College- and Career-Ready Mathematics Standards	Aligned Components of *Eureka Math*
A2P.PAFR.6.3 Use linear programming to solve systems of equations and inequalities by addressing the constraints that arise in real-world situations.	Algebra I M1 Lesson 24: Applications of Systems of Equations and Inequalities