EUREKA MATH™

GREAT MINDS

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 II

The majority of the Algebra II Missouri Learning Standards: Mathematics are fully covered by the Algebra II *Eureka Math* curriculum. The areas where the Algebra II Missouri Learning Standards: Mathematics and Algebra II *Eureka Math* do not align will require the use of *Eureka Math* content from other courses or supplemental materials. A detailed analysis of alignment is provided in the table below. With strategic placement of supplemental materials, *Eureka Math* can ensure students are successful in achieving the proficiencies of the Algebra II Missouri Learning Standards: Mathematics while still benefiting from the coherence and rigor of *Eureka Math*.

INDICATORS

Green indicates that the Missouri standard is fully addressed in *Eureka Math*.

Yellow indicates that the Missouri standard may not be completely addressed in *Eureka Math*.

Red indicates that the Missouri 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 Missouri standards and in *Eureka Math*.

Domain	Standards for Mathematical Content		Aligned Components of *Eureka Math*
Number and Quantity	**Cluster: Extend and use the relationship between rational exponents and radicals.**		
	A2.NQ.A.1 Extend the system of powers and roots to include rational exponents.		Algebra II M3 Topic A: Real Numbers
	A2.NQ.A.2 Create and recognize equivalent expressions involving radical and exponential forms of expressions.		Algebra II M3 Topic A: Real Numbers
	A2.NQ.A.3 Add, subtract, multiply, and divide radical expressions.		Geometry M2 Topic D: Applying Similarity to Right Triangles Algebra II M1 Lesson 9: Radicals and Conjugates Algebra II M3 Lesson 4: Properties of Exponents and Radicals
	A2.NQ.A.4 Solve equations involving rational exponents and/or radicals and identify situations where extraneous solutions may result.		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

Domain	Standards for Mathematical Content		Aligned Components of *Eureka Math*
	Cluster: Use complex numbers.		
	A2.NQ.B.5 Represent complex numbers.		Algebra II M1 Lesson 37: A Surprising Boost from Geometry
	A2.NQ.B.6 Add, subtract, multiply, and divide complex numbers.		Algebra II M1 Topic D: A Surprise from Geometry—Complex Numbers Overcome All Obstacles Precalculus and Advanced Topics M1 Lessons 7–8: Complex Number Division
	A2.NQ.B.7 Know and apply the Fundamental Theorem of Algebra.		Algebra II M1 Lesson 40: Obstacles Resolved—A Surprising Result
Seeing Structure in Expressions	**Cluster: Define and use logarithms.**		
	A2.SSE.A.1 Develop the definition of logarithms based on properties of exponents.		Algebra II M3 Topic B: Logarithms Algebra II M3 Lesson 16: Rational and Irrational Numbers Algebra II M3 Lesson 19: The Inverse Relationship Between Logarithmic and Exponential Functions Algebra II M3 Lesson 28: Newton's Law of Cooling, Revisited
	A2.SSE.A.2 Use the inverse relationship between exponents and logarithms to solve exponential and logarithmic equations.		Algebra II M3: Exponential and Logarithmic Functions

Domain	Standards for Mathematical Content		Aligned Components of *Eureka Math*
	A2.SSE.A.3 Use properties of logarithms to solve equations or find equivalent expressions.		Algebra II M3 Topic B: Logarithms Algebra II M3 Topic C: Exponential and Logarithmic Functions and their Graphs Algebra II M3 Lesson 28: Newton's Law of Cooling, Revisited
	A2.SSE.A.4 Understand why logarithmic scales are used, and use them to solve problems.		Algebra II M3 Lesson 9: Logarithms—How Many Digits Do You Need?
Reasoning with Equations and Inequalities	**Cluster: Solve equations and inequalities.**		
	A2.REI.A.1 Create and solve equations and inequalities, including those that involve absolute value.		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 Note: Supplemental material is necessary to completely address solving absolute value equations.

Domain	Standards for Mathematical Content		Aligned Components of *Eureka Math*
	A2.REI.A.2 Solve rational equations where numerators and denominators are polynomials and where extraneous solutions may result.		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
	Cluster: Solve general systems of equations and inequalities.		
	A2.REI.B.3 Create and solve systems of equations that may include non-linear equations and inequalities.		Algebra II M1 Lesson 30: Linear Systems in Three Variables 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?
Arithmetic with Polynomials and Rational Expressions	**Cluster: Perform operations on polynomials and rational expressions.**		
	A2.APR.A.1 Extend the knowledge of factoring to include factors with complex coefficients.		Algebra II M1 Topic D: A Surprise from Geometry—Complex Numbers Overcome All Obstacles
	A2.APR.A.2 Understand the Remainder Theorem and use it to solve problems.		Algebra II M1 Lesson 19: The Remainder Theorem

Domain	Standards for Mathematical Content		Aligned Components of *Eureka Math*
	A2.APR.A.3 Find the least common multiple of two or more polynomials.		Algebra II M1 Lesson 25: Adding and Subtracting Rational Expressions Algebra II M1 Lesson 26: Solving Rational Equations
	A2.APR.A.4 Add, subtract, multiply, and divide rational expressions.		Algebra II M1 Lesson 22: Equivalent Rational Expressions Algebra II M1 Lesson 23: Comparing Rational Expressions Algebra II M1 Lesson 24: Multiplying and Dividing Rational Expressions Algebra II M1 Lesson 25: Adding and Subtracting Rational Expressions
	A2.APR.A.5 Identify zeros of polynomials when suitable factorizations are available, and use the zeros to sketch the function defined by the polynomial.		Algebra II M1 Lesson 11: The Special Role of Zero in Factoring Algebra II M1 Lesson 14: Graphing Factored Polynomials

Domain	Standards for Mathematical Content	Aligned Components of *Eureka Math*
Interpreting Functions	**Cluster: Use and interpret functions.**	
	A2.IF.A.1 Identify and interpret key characteristics of functions represented graphically, with tables and with algebraic symbolism to solve problems.	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

Domain	Standards for Mathematical Content	Aligned Components of *Eureka Math*
	A2.IF.A.2 Translate between equivalent forms of functions.	Algebra I M4 Lesson 9: Graphing Quadratic Functions from Factored Form, $f(x) = a(x-m)(x-n)$ Algebra I M4 Topic B: Using Different Forms for Quadratic 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 M3 Lesson 23: Bean Counting Algebra II M3 Lesson 27: Modeling with Exponential Functions Algebra II M3 Topic E: Geometric Series and Finance

Domain	Standards for Mathematical Content	Aligned Components of *Eureka Math*
Building Functions	**Cluster: Create new functions from existing functions.**	
	A2.BF.A.1 Create new functions by applying the four arithmetic operations and composition of functions (modifying the domain and range as necessary).	Algebra I M3 Lesson 10: Representing, Naming, and Evaluating Functions 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 Precalculus and Advanced Topics M3 Lesson 16: Function Composition Precalculus and Advanced Topics M3 Lesson 17: Solving Problems by Function Composition Precalculus and Advanced Topics M3 Topic C: Inverse Functions
	A2.BF.A.2 Derive inverses of functions, and compose the inverse with the original function to show that the functions are inverses.	Precalculus and Advanced Topics M3 Topic C: Inverse Functions

Domain	Standards for Mathematical Content	Aligned Components of *Eureka Math*
	A2.BF.A.3 Describe the effects of transformations algebraically and graphically, creating vertical and horizontal translations, vertical and horizontal reflections and dilations (expansions/compressions) for linear, quadratic, cubic, square and cube root, absolute value, exponential and logarithmic functions.	Algebra I M3 Topic C: 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 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
Modeling	**Cluster: Use functions to model real-world problems.**	
	A2.FM.A.1 Create functions and use them to solve applications of quadratic and exponential function model problems.	Algebra I M4 Lessons 23–24: Modeling with Quadratic Functions Algebra I M5: A Synthesis of Modeling with Equations and Functions 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

Domain	Standards for Mathematical Content	Aligned Components of *Eureka Math*
Data and Statistical Analysis	**Cluster: Make inferences and justify conclusions.**	
	A2.DS.A.1 Analyze how random sampling could be used to make inferences about population parameters.	Algebra II M4 Topic C: Drawing Conclusions Using Data from a Sample
	A2.DS.A.2 Determine whether a specified model is consistent with a given data set.	Algebra II M4 Lesson 1: Chance Experiments, Sample Spaces, and Events
	A2.DS.A.3 Describe and explain the purposes, relationship to randomization and differences among sample surveys, experiments, and observational studies.	Algebra II M4 Lesson 12: Types of Statistical Studies Algebra II M4 Topic D: Drawing Conclusions Using Data from an Experiment
	A2.DS.A.4 Use data from a sample to estimate characteristics of the population and recognize the meaning of the margin of error in these estimates.	Algebra II M4 Topic C: Drawing Conclusions Using Data from a Sample
	A2.DS.A.5 Describe and explain how the relative sizes of a sample and the population affect the margin of error of predictions.	Algebra II M4 Lessons 16–17: Margin of Error When Estimating a Population Proportion Algebra II M4 Lessons 20–21: Margin of Error When Estimating a Population Mean

Domain	Standards for Mathematical Content	Aligned Components of *Eureka Math*
	A2.DS.A.6 Analyze decisions and strategies using probability concepts.	Precalculus and Advanced Topics M5 Lessons 13–14: Games of Chance and Expected Value Precalculus and Advanced Topics M5 Lesson 15: Using Expected Values to Compare Strategies
	A2.DS.A.7 Evaluate reports based on data.	Algebra II M4 Lesson 22: Evaluating Reports Based on Data from a Sample Algebra II M4 Topic D: Drawing Conclusions Using Data from an Experiment
Cluster: Fit a data set to a normal distribution.		
	A2.DS.B.8 Know and use the characteristics of normally distributed data sets; predict what percentage of the data will be above or below a given value that is a multiple of standard deviations above or below the mean.	Algebra II M4 Topic B: Modeling Data Distributions
	A2.DS.B.9 Fit a data set to a distribution using its mean and standard deviation to determine whether the data is approximately normally distributed.	Algebra II M4 Topic B: Modeling Data Distributions