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 2

Many of the Algebra 2 Oklahoma Academic Standards for Mathematics will require the use of *Eureka Math* content from other grade levels or 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 Oklahoma Academic Standards for Mathematics while still benefiting from the coherence and rigor of *Eureka Math*.

INDICATORS

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

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

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

Mathematical Actions and Processes	Aligned Components of *Eureka Math*
Develop a Deep and Flexible Conceptual Understanding Demonstrate a deep and flexible conceptual understanding of mathematical concepts, operations, and relations while making mathematical and real-world connections. Students will develop an understanding of how and when to apply and use the mathematics they know to solve problems.	Lessons in every module engage students in making sense of problems and persevering in solving them as required by this standard. This Mathematical Action and Process is analogous to the CCSSM Standards for Mathematical Practice 1 and 2, 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 Algebra II M4: Inferences and Conclusions from Data
Develop Accurate and Appropriate Procedural Fluency Learn efficient procedures and algorithms for computations and repeated processes based on a strong sense of numbers. Develop fluency in addition, subtraction, multiplication, and division of numbers and expressions. Students will generate a sophisticated understanding of the development and application of algorithms and procedures.	Lessons in every module engage students in reasoning abstractly and quantitatively as required by this standard. This Mathematical Action and Process 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

Mathematical Actions and Processes	Aligned Components of *Eureka Math*
Develop Strategies for Problem Solving Analyze the parts of complex mathematical tasks and identify entry points to begin the search for a solution. Students will select from a variety of problem solving strategies and use corresponding multiple representations (verbal, physical, symbolic, pictorial, graphical, tabular) when appropriate. They will pursue solutions to various tasks from real-world situations and applications that are often interdisciplinary in nature. They will find methods to verify their answers in context and will always question the reasonableness of solutions.	Lessons in every module engage students in constructing viable arguments and critiquing the reasoning of others as required by this standard. This Mathematical Action and Process is analogous to the CCSSM Standards for Mathematical Practice 1, 2, 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 Algebra II M4: Inferences and Conclusions from Data
Develop Mathematical Reasoning Explore and communicate a variety of reasoning strategies to think through problems. Students will apply their logic to critique the thinking and strategies of others to develop and evaluate mathematical arguments, including making arguments and counterarguments and making connections to other contexts.	Lessons in every module engage students in modeling with mathematics as required by this standard. This Mathematical Action and Process 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

Mathematical Actions and Processes	Aligned Components of *Eureka Math*
Develop a Productive Mathematical Disposition Hold the belief that mathematics is sensible, useful, and worthwhile. Students will develop the habit of looking for and making use of patterns and mathematical structures. They will persevere and become resilient, effective problem solvers.	Lessons in every module engage students in using appropriate tools strategically as required by this standard. This Mathematical Action and Process is analogous to the CCSSM Standards for Mathematical Practice 1, 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 Algebra II M4: Inferences and Conclusions from Data
Develop the Ability to Make Conjectures, Model, and Generalize Make predictions and conjectures and draw conclusions throughout the problem solving process based on patterns and the repeated structures in mathematics. Students will create, identify, and extend patterns as a strategy for solving and making sense of problems.	Lessons in every module engage students in attending to precision as required by this standard. This Mathematical Action and Process is analogous to the CCSSM Standards for Mathematical Practice 4, 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 Algebra II M4: Inferences and Conclusions from Data

Mathematical Actions and Processes	Aligned Components of *Eureka Math*
Develop the Ability to Communicate Mathematically Students will discuss, write, read, interpret and translate ideas and concepts mathematically. As they progress, students' ability to communicate mathematically will include their increased use of mathematical language and terms and analysis of mathematical definitions.	Lessons in every module engage students in looking for and making use of structure as required by this standard. This Mathematical Action and Process is analogous to the CCSSM Standards for Mathematical Practice 3 and 6, which are specifically addressed in the following modules: Algebra II M2: Trigonometric Functions Algebra II M4: Inferences and Conclusions from Data

Strand	Objectives for Mathematical Content	Aligned Components of *Eureka Math*
Number & Operations	**Standard: Extend the understanding of number and operations to include complex numbers, matrices, radical expressions, and expressions written with rational exponents.**	
	A2.N.1.1 Find the value of i^n for any whole number n.	Algebra II M1 Lesson 37: A Surprising Boost from Geometry
	A2.N.1.2 Simplify, 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.N.1.3 Use matrices to organize and represent data. Identify the order (dimension) of a matrix, add and subtract matrices of appropriate dimensions, and multiply a matrix by a scalar to create a new matrix to solve problems.	Precalculus and Advanced Topics M1 Lesson 22: Modeling Video Game Motion with Matrices Precalculus and Advanced Topics M1 Lesson 24: Matrix Notation Encompasses New Transformations! Precalculus and Advanced Topics M1 Lesson 25: Matrix Multiplication and Addition Precalculus and Advanced Topics M2: Vectors and Matrices
	A2.N.1.4 Understand and apply the relationship of rational exponents to integer exponents and radicals to solve problems.	Algebra II M3 Topic A: Real Numbers

Strand	Objectives for Mathematical Content	Aligned Components of *Eureka Math*
Algebraic Reasoning & Algebra	**Standard: Represent and solve mathematical and real-world problems using nonlinear equations and systems of linear equations; interpret the solutions in the original context.**	
	A2.A.1.1 Represent real-world or mathematical problems using quadratic equations and solve using various methods (including graphing calculator or other appropriate technology), factoring, completing the square, and the quadratic formula. Find non-real roots when they exist.	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.A.1.2 Represent real-world or mathematical problems using exponential equations, such as compound interest, depreciation, and population growth, and solve these equations graphically (including graphing calculator or other appropriate technology) or algebraically.	Algebra II M3 Lesson 7: Bacteria and Exponential Growth Algebra II M3 Topic D: Using Logarithms in Modeling Situations Algebra II M3 Topic E: Geometric Series and Finance

Strand	Objectives for Mathematical Content	Aligned Components of *Eureka Math*
	A2.A.1.3 Solve one-variable rational equations and check for extraneous solutions.	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
	A2.A.1.4 Solve polynomial equations with real roots using various methods and tools that may include factoring, polynomial division, synthetic division, graphing calculators or other appropriate technology.	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 14: Graphing Factored Polynomials Algebra II M1 Lesson 18: Overcoming a Second Obstacle in Factoring—What If There Is a Remainder? Algebra II M1 Lesson 19: The Remainder Theorem Note: Supplemental material is necessary to incorporate synthetic division.
	A2.A.1.5 Solve square root equations with one variable and check for extraneous solutions.	Algebra II M1 Lesson 28: A Focus on Square Roots Algebra II M1 Lesson 29: Solving Radical Equations
	A2.A.1.6 Solve common and natural logarithmic equations using the properties of logarithms.	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

Strand	Objectives for Mathematical Content	Aligned Components of *Eureka Math*
	A2.A.1.7 Solve real-world and mathematical problems that can be modeled using arithmetic or finite geometric sequences or series given the n^{th} terms and sum formulas. Graphing calculators or other appropriate technology may be used.	Algebra II M1 Lesson 1: Successive Differences in Polynomials Algebra II M3 Lesson 25: Geometric Sequences and Exponential Growth and Decay Algebra II M3 Topic E: Geometric Series and Finance
	A2.A.1.8 Represent real-world or mathematical problems using systems of linear equations with a maximum of three variables and solve using various methods that may include substitution, elimination, and graphing (may include graphing calculators or other appropriate technology).	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?
	A2.A.1.9 Solve systems of equations containing one linear equation and one quadratic equation using tools that may include graphing calculators or other appropriate technology.	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?
	Standard: Represent and analyze mathematical situations and structures using algebraic symbols using various strategies to write equivalent forms of expressions.	
	A2.A.2.1 Factor polynomial expressions including but not limited to trinomials, differences of squares, sum and difference of cubes, and factoring by grouping using a variety of tools and strategies.	Algebra II M1 Lesson 8: The Power of Algebra—Finding Primes Algebra II M1 Lesson 11: The Special Role of Zero in Factoring Algebra II M1 Topic B: Factoring—Its Use and Its Obstacles

Strand	Objectives for Mathematical Content	Aligned Components of *Eureka Math*
	A2.A.2.2 Add, subtract, multiply, divide, and simplify polynomial and rational expressions.	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 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.A.2.3 Recognize that a quadratic function has different equivalent representations [$f(x) = ax^2 + bx + c$, $f(x) = a(x - h)^2 + k$, and $f(x) = (x - h)(x - k)$]. Identify and use the representation that is most appropriate to solve real-world and mathematical problems.	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 I M5: A Synthesis of Modeling with Equations and Functions

Strand	Objectives for Mathematical Content	Aligned Components of *Eureka Math*
	A2.A.2.4 Rewrite expressions involving radicals and rational exponents using the properties of exponents.	Algebra II M3 Topic A: Real Numbers
Functions	**Standard: Understand functions as descriptions of covariation (how related quantities vary together).**	
	A2.F.1.1 Use algebraic, interval, and set notations to specify the domain and range of functions of various types and evaluate a function at a given point in its domain.	Algebra I M1 Lesson 10: True and False Equations Algebra I M3 Lesson 1: Integer Sequences—Should You Believe in Patterns? Algebra I M3 Lesson 10: Representing, Naming, and Evaluating Functions Algebra I M3 Lesson 11: The Graph of a Function Algebra I M3 Lesson 12: The Graph of the Equation $y = f(x)$

Strand	Objectives for Mathematical Content	Aligned Components of *Eureka Math*
	A2.F.1.2 Recognize the graphs of exponential, radical (square root and cube root only), quadratic, and logarithmic functions. Predict the effects of transformations [$f(x + c)$, $f(x) + c$, $f(cx)$, and $cf(x)$, where c is a positive or negative real-valued constant] algebraically and graphically, using various methods and tools that may include graphing calculators or other appropriate technology.	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 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

Strand	Objectives for Mathematical Content	Aligned Components of *Eureka Math*
	A2.F.1.3 Graph a quadratic function. Identify the x- and y-intercepts, maximum or minimum value, axis of symmetry, and vertex using various methods and tools that may include a graphing calculator or appropriate technology.	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 M1 Lesson 14: Graphing Factored Polynomials Algebra II M1 Lesson 34: Are All Parabolas Congruent? Algebra II M1 Lesson 35: Are All Parabolas Similar? Algebra II M3 Lesson 22: Choosing a Model Algebra II M3 Lesson 23: Bean Counting
	A2.F.1.4 Graph exponential and logarithmic functions. Identify asymptotes and x- and y-intercepts using various methods and tools that may include graphing calculators or other appropriate technology. Recognize exponential decay and growth graphically and algebraically.	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

Strand	Objectives for Mathematical Content	Aligned Components of *Eureka Math*
	A2.F.1.5 Analyze the graph of a polynomial function by identifying the domain, range, intercepts, zeros, relative maxima, relative minima, and intervals of increase and decrease.	Algebra II M1 Lesson 11: The Special Role of Zero in Factoring 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
	A2.F.1.6 Graph a rational function and identify the x- and y-intercepts, vertical and horizontal asymptotes, using various methods and tools that may include a graphing calculator or other appropriate technology. (Excluding slant or oblique asymptotes and holes.)	Precalculus and Advanced Topics M3 Topic B: Rational Functions and Composition of Functions
	A2.F.1.7 Graph a radical function (square root and cube root only) and identify the x- and y-intercepts using various methods and tools that may include a graphing calculator or other appropriate technology.	Algebra I M4 Topic C: Function Transformations and Modeling Algebra I M5 Lesson 1: Analyzing a Graph Note: Supplemental material is necessary to interpret the intersection points.

Strand	Objectives for Mathematical Content	Aligned Components of *Eureka Math*
	A2.F.1.8 Graph piecewise functions with no more than three branches (including linear, quadratic, or exponential branches) and analyze the function by identifying the domain, range, intercepts, and intervals for which it is increasing, decreasing, and constant.	Algebra I M1 Lesson 1: Graphs of Piecewise Linear Functions Algebra I M1 Lesson 5: Two Graphing Stories Algebra I M3 Topic C: Transformations of Functions Algebra I M3 Lesson 24: Piecewise and Step Functions in Context Algebra I M4 Lesson 19: Translating Graphs of Functions
	Standard: Analyze functions through algebraic combinations, compositions, and inverses, if they exist.	
	A2.F.2.1 Add, subtract, multiply, and divide functions using function notation and recognize domain restrictions.	Algebra I M3 Lesson 10: Representing, Naming, and Evaluating Functions Note: Supplemental material is necessary to address multiplication and division using function notation and domain restrictions.
	A2.F.2.2 Combine functions by composition and recognize that $g(x) = f^{-1}(x)$, the inverse function of $f(x)$, if and only if $f(g(x)) = g(f(x)) = x$.	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

Strand	Objectives for Mathematical Content	Aligned Components of *Eureka Math*
	A2.F.2.3 Find and graph the inverse of a function, if it exists, in real-world and mathematical situations. Know that the domain of a function f is the range of the inverse function f^{-1}, and the range of the function f is the domain of the inverse function f^{-1}.	Precalculus and Advanced Topics M3 Topic C: Inverse Functions
	A2.F.2.4 Apply the inverse relationship between exponential and logarithmic functions to convert from one form to another.	Algebra II M3: Exponential and Logarithmic Functions
Data & Probability	**Standard: Display, describe, and compare data. For linear and nonlinear relationships, make predictions and assess the reliability of those predictions.**	
	A2.D.1.1 Use the mean and standard deviation of a data set to fit it to a normal distribution (bell-shaped curve).	Algebra II M4 Topic B: Modeling Data Distributions
	A2.D.1.2 Collect data and use scatterplots to analyze patterns and describe linear, exponential or quadratic relationships between two variables. Using graphing calculators or other appropriate technology, determine regression equation and correlation coefficients; use regression equations to make predictions and correlation coefficients to assess the reliability of those predictions.	Algebra I M2 Topic D: Numerical Data on Two Variables Algebra I M5 Lesson 7: Modeling a Context from Data Algebra II M3 Lesson 23: Bean Counting Algebra II M3 Lesson 27: Modeling with Exponential Functions

Strand	Objectives for Mathematical Content	Aligned Components of *Eureka Math*
	A2.D.1.3 Based upon a real-world context, recognize whether a discrete or continuous graphical representation is appropriate and then create the graph.	G8 M5 Lesson 4: More Examples of Functions Algebra I M1 Lesson 20: Solution Sets to Equations with Two Variables Algebra I M3 Lesson 1: Integer Sequences—Should You Believe in Patterns? Algebra I M3 Lesson 3: Arithmetic and Geometric Sequences Algebra I M3 Lesson 8: Why Stay with Whole Numbers?
	Standard: Analyze statistical thinking to draw inferences, make predictions, and justify conclusions.	
	A2.D.2.1 Evaluate reports based on data published in the media by identifying the source of the data, the design of the study, and the way the data are analyzed and displayed. Given spreadsheets, tables, or graphs, recognize and analyze distortions in data displays. Show how graphs and data can be distorted to support different points of view.	Algebra II M4 Lesson 12: Types of Statistical Studies 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
	A2.D.2.2 Identify and explain misleading uses of data. Recognize when arguments based on data confuse correlation and causation.	Algebra I M2 Lesson 11: Conditional Relative Frequencies and Association Algebra I M2 Lesson 19: Interpreting Correlation Algebra I M2 Lesson 20: Analyzing Data Collected on Two Variables