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 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 academic 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

Alabama Course of Study: Mathematics Correlation to *Eureka Math*®

Precalculus

The majority of the Precalculus Alabama Course of Study: Mathematics Learning Standards are fully covered by the Precalculus *Eureka Math* curriculum. The areas where Alabama's Precalculus course and *Eureka Math* Precalculus do not align will require the use of *Eureka Math* content from other courses. A detailed analysis of alignment is provided in the table below.

INDICATORS

GREEN	indicates the Alabama standard is addressed in *Eureka Math*.
YELLOW	indicates the Alabama standard may not be completely addressed in *Eureka Math*.
RED	indicates the Alabama standard is not addressed in *Eureka Math*.
BLUE	indicates there is a discrepancy between the grade level at which this standard is addressed in Alabama and in *Eureka Math*.

Standards for Mathematical Practice	Aligned Components of *Eureka Math*
1. Make sense of problems and persevere in solving them. These students start by explaining to themselves the meaning of a problem and looking for entry points to its solution. They analyze givens, constraints, relationships, and goals. They make conjectures about the form and meaning of the solution and plan a solution pathway rather than simply jumping into a solution attempt. These students consider analogous problems and try special cases and simpler forms of the original problem in order to gain insight into its solution. They monitor and evaluate their progress and change course if necessary. Older students might, depending on the context of the problem, transform algebraic expressions or change the viewing window on their graphing calculators to obtain the information they need. Mathematically proficient students can explain correspondences among equations, verbal descriptions, tables, and graphs, or draw diagrams of important features and relationships, graph data, and search for regularity or trends. Younger students might rely on using concrete objects or pictures to help conceptualize and solve a problem. Mathematically proficient students check their answers to problems using a different method, and they continually ask themselves, “Does this make sense?” They can understand the approaches of others to solve complex problems and identify correspondences between different approaches.	Lessons in every module engage students in making sense of problems and persevering in solving them as required by this standard. This practice standard is analogous to the CCSSM Standards for Mathematical Practice 1, which is specifically addressed in the following modules: Precalculus and Advanced Topics M1: Complex Numbers and Transformations Precalculus and Advanced Topics M4: Trigonometry

Standards for Mathematical Practice	Aligned Components of *Eureka Math*
2. Reason abstractly and quantitatively. Mathematically proficient students make sense of quantities and their relationships in problem situations. They bring two complementary abilities to bear on problems involving quantitative relationships. One is the ability to *decontextualize*, to abstract a given situation, represent it symbolically, and manipulate the representing symbols as if they have a life of their own, without necessarily attending to their referents. The second is the ability to *contextualize*, to pause as needed during the manipulation process in order to probe into the referents for the symbols involved. Quantitative reasoning entails habits of creating a coherent representation of the problem at hand; considering the units involved; attending to the meaning of quantities, not just how to compute them; and knowing and flexibly using different properties of operations and objects.	Lessons in every module engage students in reasoning abstractly and quantitatively as required by this standard. This practice standard is analogous to the CCSSM Standards for Mathematical Practice 2, which is specifically addressed in the following modules: Precalculus and Advanced Topics M1: Complex Numbers and Transformations Precalculus and Advanced Topics M2: Vectors and Matrices Precalculus and Advanced Topics M5: Probability and Statistics

Standards for Mathematical Practice	Aligned Components of *Eureka Math*
3. Construct viable arguments and critique the reasoning of others. These students understand and use stated assumptions, definitions, and previously established results in constructing arguments. They make conjectures and build a logical progression of statements to explore the truth of their conjectures. They are able to analyze situations by breaking them into cases, and can recognize and use counterexamples. These students justify their conclusions, communicate them to others, and respond to the arguments of others. They reason inductively about data, making plausible arguments that take into account the context from which the data arose. Mathematically proficient students are also able to compare the effectiveness of two plausible arguments; distinguish correct logic or reasoning from that which is flawed; and, if there is a flaw in an argument, explain what it is. Elementary students can construct arguments using concrete referents such as objects, drawings, diagrams, and actions. Such arguments can make sense and be correct, even though they are not generalized or made formal until the middle or upper grades. Later, students learn to determine domains to which an argument applies. Students in all grades can listen to or read the arguments of others, decide whether they make sense, and ask useful questions to clarify or improve the arguments.	Lessons in every module engage students in constructing viable arguments and critiquing the reasoning of others as required by this standard. This practice standard is analogous to the CCSSM Standards for Mathematical Practice 3, which is specifically addressed in the following modules: Precalculus and Advanced Topics M1: Complex Numbers and Transformations Precalculus and Advanced Topics M3: Rational and Exponential Functions Precalculus and Advanced Topics M4: Trigonometry Precalculus and Advanced Topics M5: Probability and Statistics

Standards for Mathematical Practice	Aligned Components of *Eureka Math*
4. Model with mathematics. These students can apply the mathematics they know to solve problems arising in everyday life, society, and the workplace. In early grades, this might be as simple as writing an addition equation to describe a situation. In middle grades, students might apply proportional reasoning to plan a school event or analyze a problem in the community. By high school, students might use geometry to solve a design problem or use a function to describe how one quantity of interest depends on another. Mathematically proficient students who can apply what they know are comfortable making assumptions and approximations to simplify a complicated situation, realizing that these may need revision later. They are able to identify important quantities in a practical situation and map their relationships using such tools as diagrams, two-way tables, graphs, flowcharts, and formulas and can analyze those relationships mathematically to draw conclusions. They routinely interpret their mathematical results in the context of the situation and reflect on whether the results make sense, possibly improving the model if it has not served its purpose.	Lessons in every module engage students in modeling with mathematics as required by this standard. This practice standard is analogous to the CCSSM Standards for Mathematical Practice 4, which is specifically addressed in the following modules: Precalculus and Advanced Topics M1: Complex Numbers and Transformations Precalculus and Advanced Topics M2: Vectors and Matrices Precalculus and Advanced Topics M4: Trigonometry Precalculus and Advanced Topics M5: Probability and Statistics

Standards for Mathematical Practice	Aligned Components of *Eureka Math*
5. Use appropriate tools strategically. Mathematically proficient students consider available tools when solving a mathematical problem. These tools might include pencil and paper, concrete models, a ruler, a protractor, a calculator, a spreadsheet, a computer algebra system, a statistical package, or dynamic geometry software. Proficient students are sufficiently familiar with tools appropriate for their grade or course to make sound decisions about when each of these tools might be helpful, recognizing both the insight to be gained and the tools' limitations. For example, mathematically proficient high school students analyze graphs of functions and solutions generated using a graphing calculator. They detect possible errors by strategically using estimation and other mathematical knowledge. When making mathematical models, they know that technology can enable them to visualize the results of varying assumptions, explore consequences, and compare predictions with data. Mathematically proficient students at various grade levels are able to identify relevant external mathematical resources, such as digital content located on a Web site, and use these to pose or solve problems. They are able to use technological tools to explore and deepen their understanding of concepts.	Lessons in every module engage students in using appropriate tools strategically as required by this standard. This practice standard is analogous to the CCSSM Standards for Mathematical Practice 5, which is specifically addressed in the following modules: Precalculus and Advanced Topics M2: Vectors and Matrices Precalculus and Advanced Topics M4: Trigonometry Precalculus and Advanced Topics M5: Probability and Statistics

Standards for Mathematical Practice	Aligned Components of *Eureka Math*
6. Attend to precision. These students try to communicate mathematical ideas and concepts precisely. They try to use clear definitions in discussion with others and in their own reasoning. They state the meaning of the symbols they choose, including using the equal sign consistently and appropriately. Mathematically proficient students are careful about specifying units of measure and labeling axes to clarify the correspondence with quantities in a problem. They calculate accurately and efficiently, and express numerical answers with a degree of precision appropriate for the problem context. In the elementary grades, students give carefully formulated explanations to each other. By the time they reach high school they have learned to examine claims and make explicit use of definitions.	Lessons in every module engage students in attending to precision as required by this standard. This practice standard is analogous to the CCSSM Standards for Mathematical Practice 6, which is specifically addressed in the following modules: Precalculus and Advanced Topics M1: Complex Numbers and Transformations Precalculus and Advanced Topics M2: Vectors and Matrices Precalculus and Advanced Topics M3: Rational and Exponential Functions

Standards for Mathematical Practice		Aligned Components of *Eureka Math*
7. Look for and make use of structure. Mathematically proficient students look closely to discern a pattern or structure. Young students, for example, might notice that three and seven more is the same amount as seven and three more, or they may sort a collection of shapes according to how many sides the shapes have. Later, students will see 7 × 8 equals 7 × 5 + 7 × 3, in preparation for learning about the distributive property. In the expression $x^2 + 9x + 14$, older students can see the 14 as 2 × 7 and the 9 as 2 + 7. They recognize the significance of an existing line in a geometric figure and can use the strategy of drawing an auxiliary line for solving problems. These students also can pause and reflect for an overview or a shift in perspective. They can observe the complexities of mathematics, such as seeing some algebraic expressions as single objects or as being composed of several objects. For example, they can see $5 – 3(x – y)^2$ as 5 minus a positive number times a square and use that mental picture to realize that the value of the expression cannot be more than 5 for any real numbers x and y.		Lessons in every module engage students in looking for and making use of structure as required by this standard. This practice standard is analogous to the CCSSM Standards for Mathematical Practice 7, which is specifically addressed in the following module: Precalculus and Advanced Topics M3: Rational and Exponential Functions

Standards for Mathematical Practice	Aligned Components of *Eureka Math*
8. Look for and express regularity in repeated reasoning. Mathematically proficient students notice if calculations are repeated, and look both for general methods and for shortcuts. Upper elementary students might notice when dividing 25 by 11 that they are repeating the same calculations over and over again and conclude they have a repeating decimal. By paying attention to the calculation of slope as they repeatedly check whether points are on the line through (1, 2) with slope 3, middle school students might abstract the equation $(y – 2)/(x – 1) = 3$. Noticing the regularity in the way terms cancel when expanding $(x – 1)(x + 1)$, $(x – 1)(x^2 + x + 1)$, and $(x – 1)(x^3 + x^2 + x + 1)$ might lead them to the general formula for the sum of a geometric series. As students work to solve a problem, mathematically proficient students maintain oversight of the process while attending to the details and continually evaluate the reasonableness of their intermediate results.	Lessons in every module engage students in looking for and expressing regularity in repeated reasoning as required by this standard. This practice standard is analogous to the CCSSM Standards for Mathematical Practice 8, which is specifically addressed in the following modules: Precalculus and Advanced Topics M3: Rational and Exponential Functions Precalculus and Advanced Topics M5: Probability and Statistics

Content Area	Focus	Standards for Mathematical Content	Aligned Components of *Eureka Math*
Number and Quantity	**The Complex Number System**	**Essential Concept: Perform arithmetic operations with complex numbers.**	
		1. Define the constant *e* in a variety of contexts. a. Explore the behavior of the function $y = e^x$ and its applications. b. Explore the behavior of *ln*(*x*), the logarithmic function with base *e*, and its applications.	Algebra II M3 Lesson 6: Euler's Number, *e* Algebra II M3 Topic C: Exponential and Logarithmic Functions and their Graphs
		2. Find the conjugate of a complex number; use conjugates to find moduli and quotients of complex numbers.	Precalculus and Advanced Topics M1 Lesson 8: Complex Number Division
		Essential Concept: Represent complex numbers and their operations on the complex plane.	
		3. Represent complex numbers on the complex plane in rectangular and polar form (including real and imaginary numbers), and explain why the rectangular and polar forms of a given complex number represent the same number.	Precalculus and Advanced Topics M1 Topic B: Complex Number Operations and Transformations
		4. Represent addition, subtraction, multiplication, and conjugation of complex numbers geometrically on the complex	Precalculus and Advanced Topics M1 Topic B: Complex Number Operations and Transformations

Content Area	Focus	Standards for Mathematical Content	Aligned Components of *Eureka Math*
		plane; use properties of this representation for computation.	
		5. Calculate the distance between numbers in the complex plane as the modulus of the difference, and the midpoint of a segment as the average of the numbers at its endpoints.	Precalculus and Advanced Topics M1 Lesson 8: Complex Number Division Precalculus and Advanced Topics M1 Lesson 11: Distance and Complex Numbers Precalculus and Advanced Topics M1 Lesson 12: Distance and Complex Numbers
		Essential Concept: Use complex numbers in polynomial identities and equations.	
		6. Analyze possible zeros for a polynomial function over the complex numbers by applying the Fundamental Theorem of Algebra, using a graph of the function, or factoring with algebraic identities.	Precalculus and Advanced Topics M3 Topic A: Polynomial Functions and the Fundamental Theorem of Algebra
	Limits	**Essential Concept: Understand limits of functions.**	
		7. Determine numerically, algebraically, and graphically the limits of functions at specific values and at infinity.	Precalculus and Advanced Topics M3 Topic B: Rational Functions and Composition of Functions

Content Area	Focus	Standards for Mathematical Content	Aligned Components of *Eureka Math*
		a. Apply limits of functions at specific values and at infinity in problems involving convergence and divergence.	
	Vector and Matrix Quantities	**Essential Concept: Represent and model with vector quantities.**	
		8. Explain that vector quantities have both magnitude and direction. Represent vector quantities by directed line segments, and use appropriate symbols for vectors and their magnitudes.	Precalculus and Advanced Topics M2 Topic D: Vectors in Plane and Space
		9. Find the components of a vector by subtracting the coordinates of an initial point from the coordinates of a terminal point.	Precalculus and Advanced Topics M2 Lesson 17: Vectors in the Coordinate Plane Precalculus and Advanced Topics M2 Lesson 18: Vectors and Translation Maps
		10. Solve problems involving velocity and other quantities that can be represented by vectors.	Precalculus and Advanced Topics M2 Lesson 23: Why Are Vectors Useful? Precalculus and Advanced Topics M2 Lesson 24: Why Are Vectors Useful?

Content Area	Focus	Standards for Mathematical Content	Aligned Components of *Eureka Math*
		11. Find the scalar (dot) product of two vectors as the sum of the products of corresponding components and explain its relationship to the cosine of the angle formed by two vectors.	Precalculus and Advanced Topics M2 Topic D: Vectors in Plane and Space
		Essential Concept: Perform operations on vectors.	
		12. Add and subtract vectors. a. Add vectors end-to-end, component-wise, and by the parallelogram rule, understanding that the magnitude of a sum of two vectors is not always the sum of the magnitudes. b. Given two vectors in magnitude and direction form, determine the magnitude and direction of their sum c. Explain vector subtraction, $v – w$, as $v + (-w)$, where $-w$ is the additive inverse of w, with the same magnitude as w and pointing in the opposite direction. Represent vector subtraction graphically by connecting the tips in the appropriate order, and perform vector subtraction component-wise.	Precalculus and Advanced Topics M2 Lesson 17: Vectors in the Coordinate Plane Precalculus and Advanced Topics M2 Lesson 18: Vectors and Translation Maps Precalculus and Advanced Topics M2 Lesson 19: Directed Line Segments and Vectors

Content Area	Focus	Standards for Mathematical Content		Aligned Components of *Eureka Math*
		13. Multiply a vector by a scalar. a. Represent scalar multiplication graphically by scaling vectors and possibly reversing their direction; perform scalar multiplication component-wise. b. Compute the magnitude of a scalar multiple cv using $\|\|c\boldsymbol{v}\|\| = \|c\|v$. Compute the direction of $c\boldsymbol{v}$ knowing that when $\|c\|v \neq 0$, the direction of $c\boldsymbol{v}$ is either along $\boldsymbol{v}$ (for $c > 0$) or against $\boldsymbol{v}$ (for $c < 0$).		Precalculus and Advanced Topics M2 Lesson 5: Coordinates of Points in Space Precalculus and Advanced Topics M2 Lesson 17: Vectors in the Coordinate Plane
		14. Multiply a vector (regarded as a matrix with one column) by a matrix of suitable dimensions to produce another vector. Work with matrices as transformations of vectors.		Precalculus and Advanced Topics M2 Lesson 17: Vectors in the Coordinate Plane Precalculus and Advanced Topics M2 Lesson 18: Vectors and Translation Maps Precalculus and Advanced Topics M2 Lesson 19: Directed Line Segments and Vectors
Algebra		**Essential Concept: Write expressions in equivalent forms to solve problems.**		

Content Area	Focus	Standards for Mathematical Content		Aligned Components of *Eureka Math*
	Seeing Structure in Expressions	15. Derive the formula for the sum of a finite geometric series (when the common ratio is not 1), and use the formula to solve problems, extending to infinite geometric series.		Precalculus and Advanced Topics M3 Topic A: Polynomial Functions and the Fundamental Theorem of Algebra

Content Area	Focus	Standards for Mathematical Content	Aligned Components of *Eureka Math*
	Arithmetic with Polynomials and Rational Expressions	**Essential Concept: Understand the relationship between zeros and factors of polynomials.**	
		16. Derive and apply the Remainder Theorem: For a polynomial $p(x)$ and a number a, the remainder on division by $x - a$ is $p(a)$, so $p(a) = 0$ if and only if $(x - a)$ is a factor of $p(x)$.	Algebra II M1 Lesson 19: The Remainder Theorem
		Essential Concept: Use polynomial identities to solve problems.	
		17. Know and apply the Binomial Theorem for the expansion of $(x + y)^n$ in powers of x and y for a positive integer, n, where x and y are any numbers.	Precalculus and Advanced Topics M3 Lesson 4: The Binomial Theorem Precalculus and Advanced Topics M3 Lesson 5: The Binomial Theorem
		Essential Concept: Rewrite rational expressions.	
		18. Rewrite simple rational expressions in different forms; write $a(x)/b(x)$ in the form $q(x) + r(x)/b(x)$, where $a(x)$, $b(x)$, $q(x)$, and $r(x)$ are polynomials with the degree of $r(x)$ less than the degree of $b(x)$, using inspection, long division, or, for the more complicated cases, a computer algebra system.	Precalculus and Advanced Topics M3 Topic B: Rational Functions and Composition of Functions

Content Area	Focus	Standards for Mathematical Content		Aligned Components of *Eureka Math*
		19. Add, subtract, multiply, and divide rational expressions. a. Explain why rational expressions form a system analogous to the rational numbers, which is closed under addition, subtraction, multiplication, and division by a non-zero rational expression.		Precalculus and Advanced Topics M3 Lesson 10: The Structure of Rational Expressions Precalculus and Advanced Topics M3 Lesson 11: Rational Functions
	Reasoning with Equations and Inequalities	**Essential Concept: Understand solving equations as a process of reasoning and explain the reasoning.**		
		20. Explain each step in solving an equation as following from the equality of numbers asserted at the previous step, starting from the assumption that the original equation has a clear-cut solution. Construct a viable argument to justify a solution method. Include equations that may involve linear, quadratic, polynomial, exponential, logarithmic, absolute value, radical, rational, piecewise, and trigonometric functions, and their inverses.		Precalculus and Advanced Topics M3: Rational and Exponential Functions
		21. Solve simple rational equations in one variable, and give examples showing how extraneous solutions may arise.		Precalculus and Advanced Topics M3 Topic B: Rational Functions and Composition of Functions

Content Area	Focus	Standards for Mathematical Content	Aligned Components of *Eureka Math*
		Essential Concept: Solve systems of equations.	
		22. Represent a system of linear equations as a single matrix equation in a vector variable.	Precalculus and Advanced Topics M2 Topic C: Systems of Linear Equations
		23. Find the inverse of a matrix if it exists and use it to solve systems of linear equations (using technology for matrices of dimension 3 × 3 or greater).	Precalculus and Advanced Topics M2 Topic C: Systems of Linear Equations
Functions	**Interpreting Functions**	**Essential Concept: Interpret functions that arise in applications in terms of the context.**	
		24. Compare and contrast families of functions and their representations algebraically, graphically, numerically, and verbally in terms of their key features. Note: Key features include intercepts; intervals where the function is increasing, decreasing, positive, or negative; maximums and minimums; symmetries (including even and odd); end behavior; asymptotes; and periodicity. Families of functions include but are not limited to linear, quadratic, polynomial, exponential, logarithmic, absolute value, radical, rational, piecewise, trigonometric, and their inverses.	Precalculus and Advanced Topics M3 Topic B: Rational Functions and Composition of Functions

Content Area	Focus	Standards for Mathematical Content	Aligned Components of *Eureka Math*
		25. Calculate and interpret the average rate of change of a function (presented symbolically or as a table) over a specified interval. Estimate the rate of change from a graph. Extend from polynomial, exponential, logarithmic, and radical to rational and all trigonometric functions. a. Find the difference quotient $\frac{f(x+\Delta x)-f(x)}{\Delta x}$ of a function and use it to evaluate the average rate of change at a point. b. Explore how the average rate of change of a function over an interval (presented symbolically or as a table) can be used to approximate the instantaneous rate of change at a point as the interval decreases.	Precalculus and Advanced Topics M3 Topic A: Polynomial Functions and the Fundamental Theorem of Algebra Precalculus and Advanced Topics M3 Topic B: Rational Functions and Composition of Functions
		Essential Concept: Analyze functions using different representations.	
		26. Graph functions expressed symbolically and show key features of the graph, by hand and using technology. Use the equation of functions to identify key features in order to generate a graph. a. Graph rational functions, identifying zeros and asymptotes when suitable factorizations are available, and showing end behavior.	Precalculus and Advanced Topics M3 Lesson 12: End Behavior of Rational Functions Precalculus and Advanced Topics M3 Lesson 13: Horizontal and Vertical Asymptotes of Graphs of Rational Functions

Content Area	Focus	Standards for Mathematical Content		Aligned Components of *Eureka Math*
		b. Graph trigonometric functions and their inverses, showing period, midline, amplitude, and phase shift.		Precalculus and Advanced Topics M3 Lesson 14: Graphing Rational Functions Precalculus and Advanced Topics M3 Topic C: Inverse Functions

Content Area	Focus	Standards for Mathematical Content	Aligned Components of *Eureka Math*
	Building Functions	**Essential Concept: Build a function that models a relationship between two quantities.**	
		27. Compose functions. Extend to polynomial, trigonometric, radical, and rational functions.	Precalculus and Advanced Topics M3 Lesson 16: Function Composition Precalculus and Advanced Topics M3 Lesson 17: Solving Problems by Functions Composition
		Essential Concept: Build new functions from existing functions.	
		28. Find inverse functions. a. Given that a function has an inverse, write an expression for the inverse of the function. b. Verify by composition that one function is the inverse of another. c. Read values of an inverse function from a graph or a table, given that the function has an inverse. d. Produce an invertible function from a non-invertible function by restricting the domain.	Precalculus and Advanced Topics M3 Topic C: Inverse Functions
		29. Use the inverse relationship between exponents and logarithms to solve problems involving logarithms and	Precalculus and Advanced Topics M3 Lesson 21: Logarithmic and Exponential Problem Solving

Content Area	Focus	Standards for Mathematical Content		Aligned Components of *Eureka Math*
		exponents. ***Extend from logarithms with base 2 and 10 to a base of e.***		
		30. Identify the effect on the graph of replacing $f(x)$ by $f(x) + k$, $k \cdot f(x)$, $f(k \cdot x)$, and $f(x + k)$ for specific values of k (both positive and negative); find the value of k given the graphs. Extend the analysis to include all trigonometric, rational, and general piecewise-defined functions with and without technology.		Precalculus and Advanced Topics M3 Lesson 15: Transforming Rational Functions
		31. Graph conic sections from second-degree equations, extending from circles and parabolas to ellipses and hyperbolas, using technology to discover patterns. a. Graph conic sections given their standard form. b. Identify the conic section that will be formed, given its equation in general form.		Algebra 2 M1 Lessons 34–35: Are All Parabolas Similar? Precalculus and Advanced Topics M3 Lesson 9: Volume and Cavalieri's Principle
	Trigonometric Functions	**Essential Concept: Recognize attributes of trigonometric functions and solve problems involving trigonometry.**		
		32. Solve application-based problems involving parametric and polar equations. a. Graph parametric and polar equations. b. Convert parametric and polar equations to rectangular form.		Precalculus and Advanced Topics M3 Topic A: Polynomial Functions and the Fundamental Theorem of Algebra

Content Area	Focus	Standards for Mathematical Content	Aligned Components of *Eureka Math*
			Precalculus and Advanced Topics M2 Lesson 21: Vectors and the Equation of a Line Precalculus and Advanced Topics M2 Lesson 22: Linear Transformations of Lines
		Essential Concept: Extend the domain of trigonometric functions using the unit circle.	
		33. Use special triangles to determine geometrically the values of sine, cosine, and tangent for $\pi/3$, $\pi/4$, and $\pi/6$, and use the unit circle to express the values of sine, cosine, and tangent for $\pi - x$, $\pi + x$, and $2\pi - x$ in terms of their values for x, where x is any real number	Precalculus and Advanced Topics M4 Topic B: Trigonometry and Triangles
		34. Use the unit circle to explain symmetry (odd and even) and periodicity of trigonometric functions.	Precalculus and Advanced Topics M4 Topic A: Trigonometric Functions
		Essential Concept: Model periodic phenomena with trigonometric functions.	
		35. Demonstrate that restricting a trigonometric function to a domain on which it is always increasing or always decreasing allows its inverse to be constructed.	Precalculus and Advanced Topics M4 Lesson 2: Properties of Trigonometric Functions

Content Area	Focus	Standards for Mathematical Content		Aligned Components of *Eureka Math*
		36. Use inverse functions to solve trigonometric equations that arise in modeling contexts; evaluate the solutions using technology, and interpret them in terms of the context.		Precalculus and Advanced Topics M4 Topic C: Inverse Trigonometric Functions

Content Area	Focus	Standards for Mathematical Content	Aligned Components of *Eureka Math*
		Essential Concept: Model periodic phenomena with trigonometric functions.	
		37. Use trigonometric identities to solve problems.	Precalculus and Advanced Topics M4 Topic A: Trigonometric Functions
		a. Use the Pythagorean identity $sin^2(\theta) + cos^2(\theta) = 1$ to derive the other forms of the identity.	Precalculus and Advanced Topics M4 Lesson 10: Putting the Law of Cosines and the Law of Sines to Use
		b. Use the angle sum formulas for sine, cosine, and tangent to derive the double angle formulas.	Precalculus and Advanced Topics M4 Lesson 13: Modeling with Inverse Trigonometric Functions
		c. Use the Pythagorean and double angle identities to prove other simple identities.	Precalculus and Advanced Topics M4 Lesson 14: Modeling with Inverse Trigonometric Functions