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

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North Carolina Standard Course of Study Mathematics Correlation to *Eureka Math*®

MATH 3

Eureka Math does not currently offer an integrated curriculum; however, the North Carolina Standard Course of Study for Math 3 is fully covered by the *Eureka Math* curriculum. Standards from this pathway will require the use of *Eureka Math* content from multiple high school courses along with some strategic placement of supplemental materials. A detailed analysis of alignment is provided in the table below.

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Conceptual Category	Domain	Standards for Mathematical Content	Aligned Components of *Eureka Math*
Number and Quantity	**The Complex Number System**	**Cluster: Use complex numbers in polynomial identifies and equations.**	
		NC.M3.N-CN.9 Use the Fundamental Theorem of Algebra to determine the number and potential types of solutions for polynomial functions.	Algebra II M1 Lesson 40: Obstacles Resolved—A Surprising Result Precalculus and Advanced Topics M3 Lesson 1: Solutions to Polynomial Equations Precalculus and Advanced Topics M3 Lesson 2: Does Every Complex Number Have a Square Root? Precalculus and Advanced Topics M3 Lesson 3: Roots of Unity
Algebra	**Seeing Structure in Expressions**	**Cluster: Interpret the structure of expressions.**	
		NC.M3.A-SSE.1 Interpret expressions that represent a quantity in terms of its context. a. Identify and interpret parts of piecewise, absolute value, polynomial, exponential and rational expressions including terms, factors, coefficients, and exponents. b. Interpret expressions composed of multiple parts by viewing one or more of their parts as a single entity to give meaning in terms of a context.	Algebra I M1 Topic D: Creating Equations to Solve Problems Algebra I M3 Topic A: Linear and Exponential Sequences Algebra I M3 Lesson 24: Piecewise and Step Functions in Context Algebra I M4 Lessons 1–2: Multiplying and Factoring Polynomial Expressions Algebra I M4 Lesson 3–4: Advanced Factoring Strategies for Quadratic Expressions

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Conceptual Category	Domain	Standards for Mathematical Content	Aligned Components of *Eureka Math*
			Algebra I M4 Lesson 6: Solving Basic One-Variable Quadratic Equations Algebra I M4 Lesson 12: Completing the Square Algebra I M4 Lesson 17: Graphing Quadratic Functions from the Standard Form, $f(x) = ax^2 + bx + c$ Algebra II M1 Lesson 14: Graphing Factored Polynomials Algebra II M1 Lesson 15: Structure in Graphs of Polynomial Functions Algebra II M1 Lesson 22: Equivalent Rational Expressions Algebra II M1 Lesson 23: Comparing Rational Expressions *Note: Supplemental material may be necessary to completely address absolute values.*
		NC.M3.A-SSE.2 Use the structure of an expression to identify ways to write equivalent expressions.	Algebra I M1 Topic B: The Structure of Expressions Algebra I M1 Lesson 17: Equations Involving Factored Expressions

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Conceptual Category	Domain	Standards for Mathematical Content	Aligned Components of *Eureka Math*
			Algebra I M4 Topic A: Quadratic Expressions, Equations, Functions, and Their Connection to Rectangles Algebra I M4 Lessons 11–12: Completing the Square 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?
		Cluster: Write expressions in equivalent forms to solve problems.	
		NC.M3.A-SSE.3 Write an equivalent form of an exponential expression by using the properties of exponents to transform expressions to reveal rates based on different intervals of the domain.	Algebra I M3 Lesson 23: Newton's Law of Cooling Algebra II M3 Lesson 26: Percent Rate of Change Algebra II M3 Lesson 27: Modeling with Exponential Functions

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Conceptual Category	Domain	Standards for Mathematical Content	Aligned Components of *Eureka Math*
	Arithmetic with Polynomial and Rational Expressions	**Cluster: Understand the relationship between zeros and factors of polynomials.**	
		NC.M3.A-APR.2 Understand and apply the Remainder Theorem.	Algebra II M1 Lesson 19: The Remainder Theorem
		NC.M3.A-APR.3 Understand the relationship among factors of a polynomial expression, the solutions of a polynomial equation and the zeros of a polynomial function.	Algebra I M4 Lesson 9: Graphing Quadratic Functions from Factored Form, $f(x) = a(x - m)(x - n)$ Algebra I M4 Lesson 15: Using the Quadratic Formula Algebra II M1 Lesson 11: The Special Role of Zero in Factoring Algebra II M1 Lesson 14: Graphing Factored Polynomials
		Cluster: Rewrite rational expressions.	
		NC.M3.A-APR.6 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 $b(x)$.	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

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Conceptual Category	Domain	Standards for Mathematical Content	Aligned Components of *Eureka Math*
			Algebra II M1 Lesson 24: Multiplying and Dividing Rational Expressions Algebra II M1 Lesson 25: Adding and Subtracting Rational Expressions
		NC.M3.A-APR.7 Understand the similarities between arithmetic with rational expressions and arithmetic with rational numbers. a. Add and subtract two rational expressions, $a(x)$, and $b(x)$, where the denominators of both $a(x)$, and $b(x)$, are linear expressions. b. Multiply and divide two 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 Precalculus and Advanced Topics M3 Lesson 10: The Structure of Rational Expressions Precalculus and Advanced Topics M3 Lesson 11: Rational Functions
	Creating Equations	**Cluster: Create equations that describe numbers or relationships.**	
		NC.M3.A-CED.1 Create equations and inequalities in one variable that represent absolute value, polynomial, exponential, and rational relationships and use them to solve problems algebraically and graphically.	Algebra I M1 Lesson 18: Equations Involving a Variable Expression in the Denominator Algebra I M1 Topic D: Creating Equations to Solve Problems

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Conceptual Category	Domain	Standards for Mathematical Content	Aligned Components of *Eureka Math*
			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 2: Analyzing a Data Set 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 Lessons 20–21: Modeling Riverbeds with Polynomials 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
		NC.M3.A-CED.2 Create and graph equations in two variables to represent absolute value, polynomial, exponential and rational relationships between quantities.	Algebra I M1 Lesson 5: Two Graphing Stories Algebra I M1 Lesson 20: Solution Sets to Equations with Two Variables

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Conceptual Category	Domain	Standards for Mathematical Content	Aligned Components of *Eureka Math*
			Algebra I M1 Lesson 23: Solution Sets to Simultaneous Equations Algebra I M1 Lesson 24: Applications of Systems of Equations and Inequalities Algebra I M1 Lesson 28: Federal Income Tax 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 16: Graphing Quadratic Equations from the Vertex Form, $y = a(x - h)^2 + k$ Algebra I M4 Lessons 23–24: Modeling with Quadratic Functions Algebra I M5: A Synthesis of Modeling with Equations and Functions 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 M1 Lesson 27: Word Problems Leading to Rational Equations

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Conceptual Category	Domain	Standards for Mathematical Content	Aligned Components of *Eureka Math*
		NC.M3.A-CED.3 Create systems of equations and/or inequalities to model situations in context.	Algebra I M1 Lesson 15: Solution Sets of Two or More Equations (or Inequalities) Joined by “And” or “Or” Algebra I M1 Lesson 20: Solution Sets to Equations with Two Variables Algebra I M1 Lesson 24: Applications of Systems of Equations and Inequalities Algebra I M1 Lesson 27: Recursive Challenge Problem—The Double and Add 5 Game Algebra I M3 Topic B: Functions and Their Graphs Algebra I M3 Lesson 24: Piecewise and Step Functions in Context Algebra II M1 Lessons 20–21: Modeling Riverbeds with Polynomials Algebra II M3 Topic E: Geometric Series and Finance

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Conceptual Category	Domain	Standards for Mathematical Content	Aligned Components of *Eureka Math*
	Reasoning with Equations and Inequalities	**Cluster: Understand solving equations as a process of reasoning and explain the reasoning.**	
		NC.M3.A-REI.1 Justify a solution method for equations and explain each step of the solving process using mathematical reasoning.	Algebra I M1 Lesson 17: Equations Involving Factored Expressions Algebra I M1 Lesson 18: Equations Involving a Variable Expression in the Denominator Algebra II M1 Lesson 26: Solving Rational Equations Algebra II M1 Lesson 28: A Focus on Square Roots
		NC.M3.A-REI.2 Solve and interpret one variable rational equations arising from a context, and explain how extraneous solutions may be produced.	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
	Reasoning with Equations and Inequalities	**Cluster: Represent and solve equations and inequalities graphically.**	
		NC.M3.A-REI.11 Extend the understanding that the x-coordinates of the points where the graphs of two equations $y = f(x)$ and $y = g(x)$ intersect are the solutions of the equation $f(x) = g(x)$ and approximate solutions using a graphing technology or successive approximations with a table of values.	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

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Functions	**Interpreting Fractions**	**Cluster: Understand the concept of a function and use function notation.**	
		NC.M3.F-IF.1 Extend the concept of a function by recognizing that trigonometric ratios are functions of angle measure.	Algebra II M2: Trigonometric Functions
		NC.M3.F-IF.2 Use function notation to evaluate piecewise defined functions for inputs in their domains, and interpret statements that use function notation in terms of a context.	Algebra I M3 Lesson 24: Piecewise and Step Functions in Context
		Cluster: Interpret functions that arise in applications in terms of the context.	
		NC.M3.F-IF.4 Interpret key features of graphs, tables, and verbal descriptions in context to describe functions that arise in applications relating two quantities to include periodicity and discontinuities.	Algebra I M3 Lesson 13: Interpreting the Graph of a Function 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 I M4 Lesson 8: Exploring the Symmetry in Graphs of Quadratic Functions Algebra I M4 Lesson 9: Graphing Quadratic Functions from Factored Form, $f(x) = a(x - m)(x - n)$

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Conceptual Category	Domain	Standards for Mathematical Content	Aligned Components of *Eureka Math*
			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: A Synthesis of Modeling with Equations and Functions Algebra II M1 Lessons 16–17: Modeling with Polynomials—An Introduction

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Conceptual Category	Domain	Standards for Mathematical Content	Aligned Components of *Eureka Math*
		Cluster: Analyze functions using different representations.	
		NC.M3.F-IF.7 Analyze piecewise, absolute value, polynomials, exponential, rational, and trigonometric functions (sine and cosine) using different representations to show key features of the graph, by hand in simple cases and using technology for more complicated cases, including: domain and range; intercepts; intervals where the function is increasing, decreasing, positive, or negative; rate of change; relative maximums and minimums; symmetries; end behavior; period; and discontinuities.	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 I M5: A Synthesis of Modeling with Equations and 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

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Conceptual Category	Domain	Standards for Mathematical Content	Aligned Components of *Eureka Math*
			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 Precalculus and Advanced Topics M3 Topic B: Rational Functions and Composition of Functions Precalculus and Advanced Topics M4 Lesson 11: Revisiting the Graphs of the Trigonometric Functions

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Conceptual Category	Domain	Standards for Mathematical Content	Aligned Components of *Eureka Math*
		NC.M3.F-IF.9 Compare key features of two functions using different representations by comparing properties of two different functions, each with a different representation (symbolically, graphically, numerically in tables, or by verbal descriptions).	Algebra I M4 Lesson 22: Comparing Quadratic, Square Root, and Cube Root Functions Represented in Different Ways 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
	Building Functions	**Cluster: Build a function that models a relationship between two quantities.**	
		NC.M3.F-BF.1 Write a function that describes a relationship between two quantities. a. Build polynomial and exponential functions with real solution(s) given a graph, a description of a relationship, or ordered pairs (include reading these from a table). b. Build a new function, in terms of a context, by combining standard function types using arithmetic operations.	Algebra I M3: Linear and Exponential Functions Algebra I M5: A Synthesis of Modeling with Equations and Functions Algebra II M1 Lesson 1: Successive Differences in Polynomials Algebra II M2 Lesson 12: Ferris Wheels—Using Trigonometric Functions to Model Cyclical Behavior Algebra II M3 Lesson 5: Irrational Exponents Algebra II M3 Lesson 6: Euler's Number, *e* Algebra II M3 Lesson 7: Bacteria and Exponential Growth

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Conceptual Category	Domain	Standards for Mathematical Content	Aligned Components of *Eureka Math*
			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 Precalculus and Advanced Topics M3 Topic B: Rational Functions and Composition of Functions Precalculus and Advanced Topics M4 Lesson 11: Revisiting the Graphs of the Trigonometric Functions
		Cluster: Build new functions from existing functions.	
		NC.M3.F-BF.3 Extend an understanding of the effects on the graphical and tabular representations of a function when replacing $f(x)$ with $k \cdot f(x)$, $f(x) + k$, $f(x + k)$ to include $f(k \cdot x)$ for specific values of k (both positive and negative).	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

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Conceptual Category	Domain	Standards for Mathematical Content	Aligned Components of *Eureka Math*
			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 Precalculus and Advanced Topics M3 Lesson 15: Transforming Rational Functions
		NC.M3.F-BF.4 Find an inverse function. a. Understand the inverse relationship between exponential and logarithmic, quadratic and square root, and linear to linear functions and use this relationship to solve problems using tables, graphs, and equations. b. Determine if an inverse function exists by analyzing tables, graphs, and equations. c. If an inverse function exists for a linear, quadratic and/or exponential function, f, represent the inverse function, f^{-1}, with a table, graph, or equation and use it to solve problems in terms of a context.	Algebra II M3 Lesson 7: Bacteria and Exponential Growth Algebra II M3 Lesson 8: The "WhatPower" Function Algebra II M3 Lesson 19: The Inverse Relationship Between Logarithmic and Exponential Functions Algebra II M3 Lesson 24: Solving Exponential Equations Precalculus and Advanced Topics M3 Topic C: Inverse Functions

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Conceptual Category	Domain	Standards for Mathematical Content	Aligned Components of *Eureka Math*
	Linear, Quadratic, and Exponential Models	**Cluster: Construct and compare linear and exponential models and solve problems.**	
		NC.M3.F-LE.3 Compare the end behavior of functions using their rates of change over intervals of the same length to show that a quantity increasing exponentially eventually exceeds a quantity increasing as a polynomial function.	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 14: Linear and Exponential Models—Comparing Growth Rates Algebra I M3 Lesson 21: Comparing Linear and Exponential Models Again
		NC.M3.F-LE.4 Use logarithms to express the solution to $ab^{ct} = d$ where a, b, c, and d are numbers and evaluate the logarithm using technology.	Algebra II M3 Topic B: Logarithms Algebra II M3 Lesson 19: The Inverse Relationship Between Logarithmic and Exponential Functions Algebra II M3 Topic D: Using Logarithms in Modeling Situations Precalculus and Advanced Topics M3 Lesson 21: Logarithmic and Exponential Problem Solving

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Conceptual Category	Domain	Standards for Mathematical Content	Aligned Components of *Eureka Math*
	Trigonometric Functions	**Cluster: Extend the domain of trigonometric functions using the unit circle.**	
		NC.M3.F-TF.1 Understand radian measure of an angle as: • The ratio of the length of an arc on a circle subtended by the angle to its radius. • A dimensionless measure of length defined by the quotient of arc length and radius that is a real number. • The domain for trigonometric functions.	Algebra II M2 Lesson 5: Extending the Domain of Sine and Cosine to All Real Numbers Algebra II M2 Lesson 9: Awkward! Who Chose the Number 360, Anyway?
		NC.M3.F-TF.2 Build an understanding of trigonometric functions by using tables, graphs and technology to represent the cosine and sine functions. a. Interpret the sine function as the relationship between the radian measure of an angle formed by the horizontal axis and a terminal ray on the unit circle and its *y* coordinate. b. Interpret the cosine function as the relationship between the radian measure of an angle formed by the horizontal axis and a terminal ray on the unit circle and its *x* coordinate.	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

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Conceptual Category	Domain	Standards for Mathematical Content	Aligned Components of *Eureka Math*
		Cluster: Model periodic phenomena with trigonometric functions.	
		NC.M3.F-TF.5 Use technology to investigate the parameters, a, b, and h of a sine function, $f(x) = a \cdot sin(b \cdot x) + h$, to represent periodic phenomena and interpret key features in terms of a context.	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 M2 Lesson 13: Tides, Sound Waves, and Stock Markets Precalculus and Advanced Topics M4 Lesson 6: Waves, Sinusoids, and Identities
Geometry	**Congruence**	**Prove geometric theorems.**	
		NC.M3.G-CO.10 Verify experimentally properties of the centers of triangles (centroid, incenter, and circumcenter).	Geometry M1 Lesson 23: Base Angles of Isosceles Triangles Geometry M1 Topic E: Proving Properties of Geometric Figures Geometry M1 Topic G: Axiomatic Systems *Note: Supplemental material may be necessary to completely address this standard*.

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		NC.M3.G-CO.11 Prove theorems about parallelograms. • Opposite sides of a parallelogram are congruent. • Opposite angles of a parallelogram are congruent. • Diagonals of a parallelogram bisect each other. • If the diagonals of a parallelogram are congruent, then the parallelogram is a rectangle.	Geometry M1 Lesson 28: Properties of Parallelograms Geometry M1 Topic G: Axiomatic Systems
		NC.M3.G-CO.14 Apply properties, definitions, and theorems of two-dimensional figures to prove geometric theorems and solve problems.	Geometry M1: Congruence, Proof, and Constructions
	Circles	**Cluster: Understand and apply theorems about circles.**	
		NC.M3.G-C.2 Understand and apply theorems about circles. Understand and apply theorems about relationships with angles and circles, including central, inscribed and circumscribed angles. Understand and apply theorems about relationships with line segments and circles including, radii, diameter, secants, tangents and chords.	Geometry M5: Circles With and Without Coordinates

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		NC.M3.G-C.5 Using similarity, demonstrate that the length of an arc, *s*, for a given central angle is proportional to the radius, *r*, of the circle. Define radian measure of the central angle as the ratio of the length of the arc to the radius of the circle, *s*/*r*. Find arc lengths and areas of sectors of circles.	Geometry M5 Topic B: Arcs and Sectors
	Expressing Geometric Properties with Equations	**Cluster: Translate between the geometric description and the equation for a conic section.**	
		NC.M3.G-GPE.1 Derive the equation of a circle of given center and radius using the Pythagorean Theorem; complete the square to find the center and radius of a circle given by an equation.	Geometry M5 Topic D: Equations for Circles and Their Tangents
	Geometric Measurement & Dimension	**Cluster: Explain volume formulas and use them to solve problems.**	
		NC.M3.G-GMD.3 Use the volume formulas for prisms, cylinders, pyramids, cones, and spheres to solve problems.	Geometry M3: Extending to Three Dimensions

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Conceptual Category	Domain	Standards for Mathematical Content	Aligned Components of *Eureka Math*
		Cluster: Visualize relationships between two-dimensional and three-dimensional objects.	
		NC.M3.G-GMD.4 Identify the shapes of two-dimensional cross-sections of three-dimensional objects, and identify three-dimensional objects generated by rotations of two-dimensional objects.	Geometry M3: Extending to Three Dimensions
	Modeling with Geometry	**Cluster: Apply geometric concepts in modeling situations.**	
		NC.M3.G-MG.1 Apply geometric concepts in modeling situations • Use geometric and algebraic concepts to solve problems in modeling situations: • Use geometric shapes, their measures, and their properties, to model real-life objects. • Use geometric formulas and algebraic functions to model relationships. • Apply concepts of density based on area and volume. • Apply geometric concepts to solve design and optimization problems.	Geometry M2 Lesson 19: Families of Parallel Lines and the Circumference of the Earth Geometry M2 Lesson 20: How Far Away Is the Moon? Geometry M3 Lesson 5: Three-Dimensional Space Geometry M3 Lesson 6: General Prisms and Cylinders and Their Cross-Sections Geometry M3 Lesson 11: The Volume Formula of a Pyramid and Cone Geometry M3 Lesson 12: The Volume Formula of a Sphere *Note: Supplemental material may be necessary to completely address optimization problems.*

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Statistics and Probability	**Making Inference and Justifying Conclusions**	**Cluster: Understand and evaluate random processes underlying statistical experiments.**	
		NC.M3.S-IC.1 Understand the process of making inferences about a population based on a random sample from that population.	Algebra II M4 Topic C: Drawing Conclusions Using Data from a Sample
		Cluster: Make inference and justify conclusions from sample surveys, experiments, and observational studies.	
		NC.M3.S-IC.3 Recognize the purposes of and differences between sample surveys, experiments, and observational studies and understand how randomization should be used in each.	Algebra II M4 Lesson 12: Types of Statistical Studies Algebra II M4 Topic D: Drawing Conclusions Using Data from an Experiment
		NC.M3.S-IC.4 Use simulation to understand how samples can be used to estimate a population mean or proportion and how to determine a margin of error for the estimate.	Algebra II M4 Topic C: Drawing Conclusions Using Data from a Sample
		NC.M3.S-IC.5 Use simulation to determine whether observed differences between samples from two distinct populations indicate that the two populations are actually different in terms of a parameter of interest.	Algebra II M4 Topic D: Drawing Conclusions Using Data from an Experiment

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		NC.M3.S-IC.6 Evaluate articles and websites that report data by identifying the source of the data, the design of the study, and the way the data are graphically displayed.	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

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