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

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

GRADE 8 MATHEMATICS

The majority of the North Carolina Standard Course of Study Grade 8 Mathematics is fully covered by the Grade 8 *Eureka Math* curriculum. The areas where the North Carolina Standard Course of Study Grade 8 Mathematics and Grade 8 *Eureka Math* do not align will require the use of *Eureka Math* content from other grade levels 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 North Carolina Standard Course of Study Grade 8 Mathematics while still benefiting from the coherence and rigor of *Eureka Math*.

INDICATORS

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

Standards for Mathematical Practice	Aligned Components of *Eureka Math*
1. Make sense of problems and persevere in solving them. In grade 8, students solve real world problems through the application of algebraic and geometric concepts. Students seek the meaning of a problem and look for efficient ways to represent and solve it. They may check their thinking by asking themselves, "What is the most efficient way to solve the problem?", "Does this make sense?", and "Can I solve the problem in a different way?"	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: G8 M1: Integer Exponents and Scientific Notation G8 M4: Linear Equations
2. Reason abstractly and quantitatively. In grade 8, students represent a wide variety of real world contexts through the use of real numbers and variables in mathematical expressions, equations, and inequalities. They examine patterns in data and assess the degree to which the pattern models a line. Students contextualize to understand the meaning of the number or variable as related to the problem and decontextualize to manipulate symbolic representations by applying properties of operations.	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: G8 M1: Integer Exponents and Scientific Notation G8 M2: The Concept of Congruence G8 M4: Linear Equations G8 M5: Examples of Functions from Geometry G8 M6: Linear Functions

Standards for Mathematical Practice	Aligned Components of *Eureka Math*
3. Construct viable arguments and critique the reasoning of others. In grade 8, students construct arguments using verbal or written explanations accompanied by expressions, equations, inequalities, models, and graphs, tables, and other data displays (i.e., box plots, dot plots, histograms, etc.). They further refine their mathematical communication skills through mathematical discussions in which they critically evaluate their own thinking and the thinking of other students. They pose questions like "How did you get that?", "Why is that true?" "Does that always work?" They explain their thinking to others and respond to others' thinking.	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: G8 M1: Integer Exponents and Scientific Notation G8 M2: The Concept of Congruence G8 M3: Similarity G8 M4: Linear Equations
4. Model with mathematics. In grade 8, students model problem situations symbolically, graphically, tabularly, and contextually. Students form expressions, equations, or inequalities from real world contexts and connect symbolic and graphical representations. Students solve systems of linear equations and compare properties of functions provided in different forms. Students use scatterplots to represent data and describe associations between variables. Students need many opportunities to connect and explain the connections between the different representations. They should be able to use all of these representations as appropriate to a problem context.	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: G8 M3: Similarity G8 M4: Linear Equations G8 M6: Linear Functions

Standards for Mathematical Practice	Aligned Components of *Eureka Math*
5. Use appropriate tools strategically Students consider available tools (including estimation and technology) when solving a mathematical problem and decide when certain tools might be helpful. For instance, students in grade 8 may translate a set of data given in tabular form to a graphical representation to compare it to another data set. Students might draw pictures, use applets, or write equations to show the relationships between the angles created by a transversal.	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: G8 M3: Similarity G8 M4: Linear Equations G8 M6: Linear Functions
6. Attend to precision. In grade 8, students continue to refine their mathematical communication skills by using clear and precise language in their discussions with others and in their own reasoning. Students use appropriate terminology when referring to the number system, functions, geometric figures, and data displays.	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: G8 M1: Integer Exponents and Scientific Notation G8 M2: The Concept of Congruence G8 M3: Similarity G8 M4: Linear Equations G8 M5: Examples of Functions from Geometry G8 M6: Linear Functions G8 M7: Introduction to Irrational Numbers Using Geometry

Standards for Mathematical Practice	Aligned Components of *Eureka Math*
7. Look for and make use of structure. Students routinely seek patterns or structures to model and solve problems. In grade 8, students apply properties to generate equivalent expressions and solve equations. Students examine patterns in tables and graphs to generate equations and describe relationships. Additionally, students experimentally verify the effects of transformations and describe them in terms of congruence and similarity.	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 modules: G8 M1: Integer Exponents and Scientific Notation G8 M2: The Concept of Congruence G8 M4: Linear Equations G8 M6: Linear Functions G8 M7: Introduction to Irrational Numbers Using Geometry
8. Look for and express regularity in repeated reasoning. In grade 8, students use repeated reasoning to understand algorithms and make generalizations about patterns. Students use iterative processes to determine more precise rational approximations for irrational numbers. They analyze patterns of repeating decimals to identify the corresponding fraction. Students flexibly make connections between covariance, rates, and representations showing the relationships between quantities.	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: G8 M1: Integer Exponents and Scientific Notation G8 M3: Similarity G8 M5: Examples of Functions from Geometry G8 M7: Introduction to Irrational Numbers Using Geometry

Domain	Standards for Mathematical Content	Aligned Components of *Eureka Math*
The Number System	**Cluster: Know that there are numbers that are not rational, and approximate them by rational numbers.**	
	NC.8.NS.1 Understand that every number has a decimal expansion. Building upon the definition of a rational number, know that an irrational number is defined as a non-repeating, non-terminating decimal.	G8 M7 Lesson 6: Finite and Infinite Decimals G8 M7 Lesson 7: Infinite Decimals
	NC.8.NS.2 Use rational approximations of irrational numbers to compare the size of irrational numbers and locate them approximately on a number line. Estimate the value of expressions involving: • Square roots and cube roots to the tenths. • π to the hundredths.	G8 M7 Lesson 2: Square Roots G8 M7 Lesson 3: Existence and Uniqueness of Square Roots and Cube Roots G8 M7 Lesson 4: Simplifying Square Roots G8 M7 Lesson 13: Comparing Irrational Numbers G8 M7 Lesson 14: Decimal Expansion of pi
Expressions and Equations	**Cluster: Work with radicals and integer exponents.**	
	NC.8.EE.1 Develop and apply the properties of integer exponents to generate equivalent numerical expressions.	G8 M1 Topic A: Exponential Notation and Properties of Integer Exponents
	NC.8.EE.2 Use square root and cube root symbols to: • Represent solutions to equations of the form $x^2 = p$ and $x^3 = p$, where p is a positive rational number. • Evaluate square roots of perfect squares and cube roots of perfect cubes for positive numbers less than or equal to 400.	G8 M7 Lesson 2: Square Roots G8 M7 Lesson 3: Existence and Uniqueness of Square Roots and Cube Roots G8 M7 Lesson 4: Simplifying Square Roots G8 M7 Lesson 5: Solving Equations with Radicals

Domain	Standards for Mathematical Content	Aligned Components of *Eureka Math*
	NC.8.EE.3 Use numbers expressed in scientific notation to estimate very large or very small quantities and to express how many times as much one is than the other.	G8 M1 Lesson 7: Magnitude G8 M1 Lesson 8: Estimating Quantities G8 M1 Lesson 9: Scientific Notation
	NC.8.EE.4 Perform multiplication and division with numbers expressed in scientific notation to solve real-world problems, including problems where both decimal and scientific notation are used.	G8 M1 Lesson 10: Operations with Numbers in Scientific Notation G8 M1 Lesson 11: Efficacy of Scientific Notation G8 M1 Lesson 12: Choice of Unit G8 M1 Lesson 13: Comparison of Numbers Written in Scientific Notation and Interpreting Scientific Notation Using Technology
	Cluster: Analyze and solve linear equations and inequalities.	
	NC.8.EE.7 Solve real-world and mathematical problems by writing and solving equations and inequalities in one variable. • Recognize linear equations in one variable as having one solution, infinitely many solutions, or no solutions. • Solve linear equations and inequalities including multi-step equations and inequalities with the same variable on both sides.	G7 M3 Lesson 12: Properties of Inequalities G7 M3 Lesson 13: Inequalities G7 M3 Lesson 14: Solving Inequalities G7 M3 Lesson 15: Graphing Solutions to Inequalities G8 M4 Topic A: Writing and Solving Linear Equations

Domain	Standards for Mathematical Content	Aligned Components of *Eureka Math*
	Cluster: Analyze and solve pairs of simultaneous linear equations.	
	NC.8.EE.8 Analyze and solve a system of two linear equations in two variables in slope-intercept form. • Understand that solutions to a system of two linear equations correspond to the points of intersection of their graphs because the point of intersection satisfies both equations simultaneously. • Solve real-world and mathematical problems leading to systems of linear equations by graphing the equations. Solve simple cases by inspection.	G8 M4 Topic D: Systems of Linear Equations and Their Solutions
Functions	**Cluster: Define, evaluate, and compare functions.**	
	NC.8.F.1 Understand that a function is a rule that assigns to each input exactly one output. • Recognize functions when graphed as the set of ordered pairs consisting of an input and exactly one corresponding output. • Recognize functions given a table of values or a set of ordered pairs.	G8 M5 Topic A: Functions

Domain	Standards for Mathematical Content	Aligned Components of *Eureka Math*
	NC.8.F.2 Compare properties of two linear functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions).	G8 M6 Topic A: Linear Functions
	NC.8.F.3 Identify linear functions from tables, equations, and graphs.	G8 M5 Lesson 5: Graphs of Functions and Equations G8 M5 Lesson 6: Graphs of Linear Functions and Rate of Change G8 M5 Lesson 7: Comparing Linear Functions and Graphs G8 M5 Lesson 8: Graphs of Simple Nonlinear Functions
	NC.8.F.4 Analyze functions that model linear relationships. • Understand that a linear relationship can be generalized by $y = mx + b$. • Write an equation in slope-intercept form to model a linear relationship by determining the rate of change and the initial value, given at least two (x,y) values or a graph. • Construct a graph of a linear relationship given an equation in slope-intercept form. • Interpret the rate of change and initial value of a linear function in terms of the situation it models, and in terms of the slope and y-intercept of its graph or a table of values.	G8 M5 Topic A: Functions

Domain	Standards for Mathematical Content	Aligned Components of *Eureka Math*
	NC.8.F.5 Qualitatively analyze the functional relationship between two quantities. • Analyze a graph determining where the function is increasing or decreasing; linear or non-linear. • Sketch a graph that exhibits the qualitative features of a real-world function.	G8 M5 Lesson 7: Comparing Linear Functions and Graphs G8 M5 Lesson 8: Graphs of Simple Nonlinear Functions G8 M5 Lesson 9: Examples of Functions from Geometry G8 M6 Lesson 4: Increasing and Decreasing Functions G8 M6 Lesson 5: Increasing and Decreasing Functions
Geometry	**Cluster: Understand congruence and similarity using physical models, transparencies, or geometry software.**	
	NC.8.G.2 Use transformations to define congruence. • Verify experimentally the properties of rotations, reflections, and translations that create congruent figures. • Understand that a two-dimensional figure is congruent to another if the second can be obtained from the first by a sequence of rotations, reflections, and translations. • Given two congruent figures, describe a sequence that exhibits the congruence between them.	G8 M2 Topic A: Definitions and Properties of the Basic Rigid Motions G8 M2 Topic B: Sequencing the Basic Rigid Motions G8 M2 Lesson 11: Definition of Congruence and Some Basic Properties

Domain	Standards for Mathematical Content	Aligned Components of *Eureka Math*
	NC.8.G.3 Describe the effect of dilations about the origin, translations, rotations about the origin in 90 degree increments, and reflections across the *x*-axis and *y*-axis on two-dimensional figures using coordinates.	G8 M3 Topic A: Dilation
	NC.8.G.4 Use transformations to define similarity. • Verify experimentally the properties of dilations that create similar figures. • Understand that a two-dimensional figure is similar to another if the second can be obtained from the first by a sequence of rotations, reflections, translations, and dilations. • Given two similar two-dimensional figures, describe a sequence that exhibits the similarity between them.	G8 M3 Topic B: Similar Figures
	Cluster: Analyze angle relationships.	
	NC.8.G.5 Use informal arguments to analyze angle relationships. • Recognize relationships between interior and exterior angles of a triangle. • Recognize the relationships between the angles created when parallel lines are cut by a transversal. • Recognize the angle-angle criterion for similarity of triangles. • Solve real-world and mathematical problems involving angles.	G8 M2 Topic C: Congruence and Angle Relationships

Domain	Standards for Mathematical Content	Aligned Components of *Eureka Math*
	Cluster: Understand and apply the Pythagorean Theorem.	
	NC.8.G.6 Explain the Pythagorean Theorem and its converse.	G8 M2 Lesson 15: Informal Proof of the Pythagorean Theorem
	NC.8.G.7 Apply the Pythagorean Theorem and its converse to solve real-world and mathematical problems.	G8 M2 Lesson 16: Applications of the Pythagorean Theorem
	NC.8.G.8 Apply the Pythagorean Theorem to find the distance between two points in a coordinate system.	G8 M2 Lesson 16: Applications of the Pythagorean Theorem
	Cluster: Solve real-world and mathematical problems involving volume of cylinders, cones, and spheres.	
	NC.8.G.9 Understand how the formulas for the volumes of cones, cylinders, and spheres are related and use the relationship to solve real-world and mathematical problems.	G8 M5 Topic B: Volume

Domain	Standards for Mathematical Content	Aligned Components of *Eureka Math*
Statistics and Probability	**Cluster: Investigate patterns of association in bivariate data.**	
	NC.8.SP.1 Construct and interpret scatter plots for bivariate measurement data to investigate patterns of association between two quantities. Investigate and describe patterns such as clustering, outliers, positive or negative association, linear association, and nonlinear association.	G8 M6 Topic B: Bivariate Numerical Data
	NC.8.SP.2 Model the relationship between bivariate quantitative data to: • Informally fit a straight line for a scatter plot that suggests a linear association. • Informally assess the model fit by judging the closeness of the data points to the line.	G8 M6 Lesson 8: Informally Fitting a Line G8 M6 Lesson 9: Determining the Equation of a Line Fit to Data
	NC.8.SP.3 Use the equation of a linear model to solve problems in the context of bivariate quantitative data, interpreting the slope and *y*-intercept.	G8 M6 Topic C: Linear and Nonlinear Models
	NC.8.SP.4 Understand that patterns of association can also be seen in bivariate categorical data by displaying frequencies and relative frequencies in a two-way table. • Construct and interpret a two-way table summarizing data on two categorical variables collected from the same subjects. • Use relative frequencies calculated for rows or columns to describe possible association between the two variables.	G8 M6 Topic D: Bivariate Categorical Data