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 7 MATHEMATICS

The majority of the North Carolina Standard Course of Study Grade 7 Mathematics is fully covered by the Grade 7 *Eureka Math* curriculum. The areas where the North Carolina Standard Course of Study Grade 7 Mathematics and Grade 7 *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 7 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 7, students solve problems involving ratios and rates and discuss how they solved the problems. 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: G7 M1: Ratios and Proportional Relationships G7 M2: Rational Numbers G7 M4: Percent and Proportional Relationships G7 M6: Geometry
2. Reason abstractly and quantitatively. In grade 7, students represent a wide variety of real world contexts through the use of real numbers and variables in mathematical expressions, equations, and inequalities. 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: G7 M1: Ratios and Proportional Relationships G7 M2: Rational Numbers G7 M3: Expressions and Equations G7 M4: Percent and Proportional Relationships G7 M5: Statistics and Probability

Standards for Mathematical Practice	Aligned Components of *Eureka Math*
3. Construct viable arguments and critique the reasoning of others. In grade 7, 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.). The students 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: G7 M5: Statistics and Probability G7 M6: Geometry
4. Model with mathematics. In grade 7, 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 explore covariance and represent two quantities simultaneously. They use measures of center and variability and data displays (i.e., box plots and histograms) to draw inferences, make comparisons and formulate predictions. Students use experiments or simulations to generate data sets and create probability models. 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 any problem’s 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: G7 M2: Rational Numbers G7 M3: Expressions and Equations G7 M5: Statistics and Probability

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 7 may decide to represent similar data sets using dot plots with the same scale to visually compare the center and variability of the data. Students might use physical objects or applets to generate probability data and use graphing calculators or spreadsheets to manage and represent data in different forms.	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: G7 M4: Percent and Proportional Relationships G7 M5: Statistics and Probability G7 M6: Geometry
6. Attend to precision. In grade 7, 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 define variables, specify units of measure, and label axes accurately. Students use appropriate terminology when referring to rates, ratios, probability models, geometric figures, data displays, and components of expressions, equations or inequalities.	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: G7 M1: Ratios and Proportional Relationships G7 M2: Rational Numbers G7 M3: Expressions and Equations G7 M4: Percent and Proportional Relationships G7 M5: Statistics and Probability

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. Students apply properties to generate equivalent expressions (i.e., $6 + 2x = 3(2 + x)$ by distributive property) and solve equations (i.e., $2c + 3 = 15$, $2c = 12$ by subtraction property of equality), $c = 6$ by division property of equality). Students compose and decompose two- and three-dimensional figures to solve real world problems involving scale drawings, surface area, and volume. Students examine tree diagrams or systematic lists to determine the sample space for compound events and verify that they have listed all possibilities.	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: G7 M2: Rational Numbers G7 M3: Expressions and Equations G7 M4: Percent and Proportional Relationships G7 M6: Geometry
8. Look for and express regularity in repeated reasoning. In grade 7, students use repeated reasoning to understand algorithms and make generalizations about patterns. During multiple opportunities to solve and model problems, they may notice that $a/b \div c/d = ac/cd$ and construct other examples and models that confirm their generalization. They extend their thinking to include complex fractions and rational numbers. Students formally begin to make connections between covariance, rates, and representations showing the relationships between quantities. They create, explain, evaluate, and modify probability models to describe simple and compound events.	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: G7 M3: Expressions and Equations G7 M5: Statistics and Probability

Domain	Standards for Mathematical Content	Aligned Components of *Eureka Math*
Ratio and Proportional Relationship	**Cluster: Analyze proportional relationships and use them to solve real-world and mathematical problems.**	
	NC.7.RP.1 Compute unit rates associated with ratios of fractions to solve real-world and mathematical problems.	G7 M1 Lesson 7: Unit Rate as the Constant of Proportionality G7 M1 Lesson 11: Ratios of Fractions and Their Unit Rates G7 M1 Lesson 12: Ratios of Fractions and Their Unit Rates
	NC.7.RP.2 Recognize and represent proportional relationships between quantities. a. Understand that a proportion is a relationship of equality between ratios. • Represent proportional relationships using tables and graphs. • Recognize whether ratios are in a proportional relationship using tables and graphs. • Compare two different proportional relationships using tables, graphs, equations, and verbal descriptions. b. Identify the unit rate (constant of proportionality) within two quantities in a proportional relationship using tables, graphs, equations, and verbal descriptions.	G7 M1 Topic A: Proportional Relationships G7 M1 Topic B: Unit Rate and the Constant of Proportionality G7 M1 Lesson 11: Ratios of Fractions and Their Unit Rates G7 M1 Lesson 12: Ratios of Fractions and Their Unit Rates G7 M1 Lesson 15: Equations of Graphs of Proportional Relationships Involving Fractions G7 M1 Lesson 16: Relating Scale Drawings to Ratios and Rates G7 M4 Lesson 12: The Scale Factor as a Percent for a Scale Drawing

Domain	Standards for Mathematical Content		Aligned Components of *Eureka Math*
	c. Create equations and graphs to represent proportional relationships. d. Use a graphical representation of a proportional relationship in context to: • Explain the meaning of any point (*x*,*y*). • Explain the meaning of (0, 0) and why it is included. • Understand that the *y*-coordinate of the ordered pair (1,*r*) corresponds to the unit rate and explain its meaning.		
	NC.7.RP.3 Use scale factors and unit rates in proportional relationships to solve ratio and percent problems.		G7 M1 Topic C: Ratios and Rates Involving Fractions G7 M1 Topic D**:** Ratios of Scale Drawings

Domain	Standards for Mathematical Content	Aligned Components of *Eureka Math*
The Number System	**Cluster: Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers.**	
	NC.7.NS.1 Apply and extend previous understandings of addition and subtraction to add and subtract rational numbers, using the properties of operations, and describing real-world contexts using sums and differences.	G7 M2 Topic A: Addition and Subtraction of Integers and Rational Numbers
	NC.7.NS.2 Apply and extend previous understandings of multiplication and division. a. Understand that a rational number is any number that can be written as a quotient of integers with a non-zero divisor. b. Apply properties of operations as strategies, including the standard algorithms, to multiply and divide rational numbers and describe the product and quotient in real-world contexts. c. Use division and previous understandings of fractions and decimals. • Convert a fraction to a decimal using long division. • Understand that the decimal form of a rational number terminates in 0s or eventually repeats.	G7 M2 Topic B: Multiplication and Division of Integers and Rational Numbers

Domain	Standards for Mathematical Content	Aligned Components of *Eureka Math*
Ratio and Proportional Relationship	**Cluster: Analyze proportional relationships and use them to solve real-world and mathematical problems.**	
	NC.7.RP.1 Compute unit rates associated with ratios of fractions to solve real-world and mathematical problems.	G7 M1 Lesson 7: Unit Rate as the Constant of Proportionality G7 M1 Lesson 11: Ratios of Fractions and Their Unit Rates G7 M1 Lesson 12: Ratios of Fractions and Their Unit Rates
	NC.7.RP.2 Recognize and represent proportional relationships between quantities. a. Understand that a proportion is a relationship of equality between ratios. • Represent proportional relationships using tables and graphs. • Recognize whether ratios are in a proportional relationship using tables and graphs. • Compare two different proportional relationships using tables, graphs, equations, and verbal descriptions. b. Identify the unit rate (constant of proportionality) within two quantities in a proportional relationship using tables, graphs, equations, and verbal descriptions.	G7 M1 Topic A: Proportional Relationships G7 M1 Topic B: Unit Rate and the Constant of Proportionality G7 M1 Lesson 11: Ratios of Fractions and Their Unit Rates G7 M1 Lesson 12: Ratios of Fractions and Their Unit Rates G7 M1 Lesson 15: Equations of Graphs of Proportional Relationships Involving Fractions G7 M1 Lesson 16: Relating Scale Drawings to Ratios and Rates G7 M4 Lesson 12: The Scale Factor as a Percent for a Scale Drawing

Domain	Standards for Mathematical Content	Aligned Components of *Eureka Math*
	NC.7.NS.3 Solve real-world and mathematical problems involving numerical expressions with rational numbers using the four operations.	G7 M2 Topic C: Applying Operations with Rational Numbers to Expressions and Equations
Expressions and Equations	**Cluster: Use properties of operations to generate equivalent expressions.**	
	NC.7.EE.1 Apply properties of operations as strategies to: • Add, subtract, and expand linear expressions with rational coefficients. • Factor linear expression with an integer GCF.	G7 M3 Topic A: Use Properties of Operations to Generate Equivalent Expressions
	NC.7.EE.2 Understand that equivalent expressions can reveal real-world and mathematical relationships. Interpret the meaning of the parts of each expression in context.	G7 M2 Lessons 18–19: Writing, Evaluating, and Finding Equivalent Expressions with Rational Numbers G7 M3 Lessons 3–4: Writing Products as Sums and Sums as Products

Domain	Standards for Mathematical Content	Aligned Components of *Eureka Math*
	Cluster: Solve real-world and mathematical problems using numerical and algebraic expressions, equations, and inequalities.	
	NC.7.EE.3 Solve multi-step real-world and mathematical problems posed with rational numbers in algebraic expressions. • Apply properties of operations to calculate with positive and negative numbers in any form. • Convert between different forms of a number and equivalent forms of the expression as appropriate.	G7 M3 Topic B: Solve Problems Using Expressions, Equations, and Inequalities

Domain	Standards for Mathematical Content	Aligned Components of *Eureka Math*
	NC.7.EE.4 Use variables to represent quantities to solve real-world or mathematical problems. a. Construct equations to solve problems by reasoning about the quantities. • Fluently solve multi-step equations with the variable on one side, including those generated by word problems. • Compare an algebraic solution to an arithmetic solution, identifying the sequence of the operations used in each approach. • Interpret the solution in context. b. Construct inequalities to solve problems by reasoning about the quantities. • Fluently solve multi-step inequalities with the variable on one side, including those generated by word problems. • Compare an algebraic solution process for equations and an algebraic solution process for inequalities.	G7 M2 Lesson 17: Comparing Tape Diagram Solutions to Algebraic Solutions G7 M2 Lessons 22–23: Solving Equations Using Algebra G7 M3 Topic B: Solve Problems Using Expressions, Equations, and Inequalities G7 M4 Lesson 10: Simple Interest G7 M4 Lesson 11: Tax, Commissions, Fees, and Other Real-World Percent Applications G7 M4 Lesson 17: Mixture Problems

Domain	Standards for Mathematical Content	Aligned Components of *Eureka Math*
Geometry	**Cluster: Draw, construct, and describe geometrical figures and describe the relationships between them.**	
	NC.7.G.1 Solve problems involving scale drawings of geometric figures by: • Building an understanding that angle measures remain the same and side lengths are proportional. • Using a scale factor to compute actual lengths and areas from a scale drawing. • Creating a scale drawing.	G7 M1 Topic D: Ratios of Scale Drawings G8 M2 Lesson 11: Definition of Congruence and Some Basic Properties G8 Lesson 1: What Lies Behind “Same Shape”?
	NC.7.G.2 Understand the characteristics of angles and side lengths that create a unique triangle, more than one triangle or no triangle. Build triangles from three measures of angles and/or sides.	G7 M6 Topic B: Constructing Triangles

Domain	Standards for Mathematical Content	Aligned Components of *Eureka Math*
	Cluster: Solve real-world and mathematical problems involving angle measure, area, surface area, and volume.	
	NC.7.G.4 Understand area and circumference of a circle. • Understand the relationships between the radius, diameter, circumference, and area. • Apply the formulas for area and circumference of a circle to solve problems.	G7 M3 Lesson 16: The Most Famous Ratio of All G7 M3 Lesson 17: The Area of a Circle G7 M3 Lesson 18: More Problems on Area and Circumference G7 M3 Lesson 20: Composite Area Problems
	NC.7.G.5 Use facts about supplementary, complementary, vertical, and adjacent angles in a multi-step problem to write and solve equations for an unknown angle in a figure.	G7 M3 Lesson 10: Angle Problems and Solving Equations G7 M3 Lesson 11: Angle Problems and Solving Equations G7 M6 Topic A: Unknown Angles
	NC.7.G.6 Solve real-world and mathematical problems involving: • Area and perimeter of two-dimensional objects composed of triangles, quadrilaterals, and polygons. • Volume and surface area of pyramids, prisms, or three-dimensional objects composed of cubes, pyramids, and right prisms.	G7 M6 Topic D: Problems Involving Area and Surface Area

Domain	Standards for Mathematical Content	Aligned Components of *Eureka Math*
Statistics and Probability	**Cluster: Use random sampling to draw inferences about a population.**	
	NC.7.SP.1 Understand that statistics can be used to gain information about a population by: • Recognizing that generalizations about a population from a sample are valid only if the sample is representative of that population. • Using random sampling to produce representative samples to support valid inferences.	G7 M5 Topic C: Random Sampling and Estimating Population Characteristics
	NC.7.SP.2 Generate multiple random samples (or simulated samples) of the same size to gauge the variation in estimates or predictions, and use this data to draw inferences about a population with an unknown characteristic of interest.	G7 M5 Lesson 15: Random Sampling G7 M5 Lesson 16: Methods for Selecting a Random Sample G7 M5 Topic C: Random Sampling and Estimating Population Characteristics

Domain	Standards for Mathematical Content	Aligned Components of *Eureka Math*
	NC.7.SP.3 Recognize the role of variability when comparing two populations. a. Calculate the measure of variability of a data set and understand that it describes how the values of the data set vary with a single number. • Understand the mean absolute deviation of a data set is a measure of variability that describes the average distance that points within a data set are from the mean of the data set. • Understand that the range describes the spread of the entire data set. • Understand that the interquartile range describes the spread of the middle 50% of the data. b. Informally assess the difference between two data sets by examining the overlap and separation between the graphical representations of two data sets.	G6 M6 Lesson 2: Displaying a Data Distribution G6 M6 Topic B: Summarizing a Distribution that Is Approximately Symmetric Using the Mean and Mean Absolute Deviation G6 M6 Topic C: Summarizing a Distribution that is Skewed Using the Median and the Interquartile Range G6 M6 Lesson 20: Describing Center, Variability, and Shape of a Data Distribution from a Graphic Representation G6 M6 Lesson 21: Summarizing a Data Distribution by Describing Center, Variability, and Shape G7 M5 Lesson 17: Sampling Variability G7 M5 Lesson 18: Sampling Variability and the Effect of Sample Size G7 M5 Topic D: Comparing Populations
	NC.7.SP.4 Use measures of center and measures of variability for numerical data from random samples to draw comparative inferences about two populations.	G7 M5 Lesson 13: Populations, Samples, and Generalizing from a Sample to a Population

Domain	Standards for Mathematical Content	Aligned Components of *Eureka Math*
	Cluster: Investigate chance processes and develop, use, and evaluate probability models.	
	NC.7.SP.5 Understand that the probability of a chance event is a number between 0 and 1 that expresses the likelihood of the event occurring.	G7 M5 Lesson 1: Chance Experiments
	NC.7.SP.6 Collect data to calculate the experimental probability of a chance event, observing its long-run relative frequency. Use this experimental probability to predict the approximate relative frequency.	G7 M5 Lesson 2: Estimating Probabilities by Collecting Data G7 M5 Lesson 3: Chance Experiments with Equally Likely Outcomes G7 M5 Lesson 4: Calculating Probabilities for Chance Experiments with Equally Likely Outcomes
	NC.7.SP.7 Develop a probability model and use it to find probabilities of simple events. a. Develop a uniform probability model by assigning equal probability to all outcomes, and use the model to determine probabilities of events. b. Develop a probability model (which may not be uniform) by repeatedly performing a chance process and observing frequencies in the data generated. c. Compare theoretical and experimental probabilities from a model to observed frequencies; if the agreement is not good, explain possible sources of the discrepancy.	G7 M5 Lesson 3: Chance Experiments with Equally Likely Outcomes G7 M5 Lesson 4: Calculating Probabilities for Chance Experiments with Equally Likely Outcomes G7 M5 Lesson 6: Using Tree Diagrams to Represent a Sample Space and to Calculate Probabilities G7 M5 Lesson 7: Calculating Probabilities of Compound Events G7 M5 Topic B: Estimating Probabilities

Domain	Standards for Mathematical Content	Aligned Components of *Eureka Math*
	NC.7.SP.8 Determine probabilities of compound events using organized lists, tables, tree diagrams, and simulation. a. Understand that, just as with simple events, the probability of a compound event is the fraction of outcomes in the sample space for which the compound event occurs. b. For an event described in everyday language, identify the outcomes in the sample space which compose the event, when the sample space is represented using organized lists, tables, and tree diagrams. c. Design and use a simulation to generate frequencies for compound events.	G7 M5 Topic A: Calculating and Interpreting Probabilities G7 M5 Lesson 10: Conducting a Simulation to Estimate the Probability of an Event G7 M5 Lesson 11: Conducting a Simulation to Estimate the Probability of an Event