Grade 7 | Mathematics Standards of Learning for Virginia Public Schools Correlation to *Eureka Math²®*

When the original *Eureka Math®* curriculum was released, it quickly became the most widely used K–5 mathematics curriculum in the country. Now, the Great Minds® teacher–writers have created *Eureka Math²®*, a groundbreaking new curriculum that helps teachers deliver *exponentially better* math instruction while still providing students with the same deep understanding of and fluency in math. *Eureka Math²* carefully sequences mathematical content to maximize vertical alignment—a principle tested and proven to be essential in students' mastery of math—from kindergarten through high school.

While this innovative new curriculum includes all the trademark *Eureka Math* aha moments that have been delighting students and teachers for years, it also boasts these exciting new features:

Teachability

Eureka Math² employs streamlined materials that allow teachers to plan more efficiently and focus their energy on delivering high-quality instruction that meets the individual needs of their students. Differentiation suggestions, slide decks, digital interactives, and multiple forms of assessment are just a few of the resources built right into the teacher materials.

Accessibility

Eureka Math² incorporates Universal Design for Learning principles so all learners can access the mathematics and take on challenging math concepts. Student supports are built into the instructional design and are clearly identified in the *Teach* book. Further, the curriculum carries a focus on readability. By eliminating unnecessary words and using simple, clear sentences, the *Eureka Math²* teacher–writers have created one of the most readable mathematics curricula on the market. The curriculum's readability and accessibility help all students see themselves as mathematical thinkers and doers who are fully capable of owning their mathematics learning.

Digital Engagement

The digital elements of *Eureka Math²* add to students' engagement with the math. The curriculum provides teachers with digital slides for each lesson. In addition, each grade level includes wordless videos that spark students' interest and curiosity. Students at all levels work through mathematical explorations that help lead to their own mathematical discoveries. Digital lessons and videos provide opportunities for students to wonder, explore, and make sense of mathematics, which contributes to the development of a strong, positive mathematical identity.

Mathematical Process Goals for Students	Aligned Components of *Eureka Math²*
Mathematical Problem Solving	Lessons in every module engage students in mathematical processes. These are indicated in margin notes included with every lesson.
Mathematical Communication	Lessons in every module engage students in mathematical processes. These are indicated in margin notes included with every lesson.
Mathematical Reasoning	Lessons in every module engage students in mathematical processes. These are indicated in margin notes included with every lesson.
Mathematical Connections	Lessons in every module engage students in mathematical processes. These are indicated in margin notes included with every lesson.
Mathematical Representations	Lessons in every module engage students in mathematical processes. These are indicated in margin notes included with every lesson.

Number and Number Sense

7.NS.1 The student will investigate and describe the concept of exponents for powers of ten and compare and order numbers greater than zero written in scientific notation.

Mathematics Standards of Learning for Virginia Public Schools	Aligned Components of *Eureka Math²*
7.NS.1.a Investigate and describe powers of 10 with negative exponents by examining patterns.	8 M1 Topic B: Properties and Definitions of Exponents
7.NS.1.b Represent a power of 10 with a negative exponent in fraction and decimal form.	8 M1 Topic B: Properties and Definitions of Exponents
7.NS.1.c Convert between numbers greater than 0 written in scientific notation and decimals.	8 M1 Topic A: Introduction to Scientific Notation 8 M1 Lesson 7: Making Sense of the Exponent of 0 8 M1 Topic C: Applications of the Properties and Definitions of Exponents
7.NS.1.d Compare and order no more than four numbers greater than 0 written in scientific notation. Ordering may be in ascending or descending order.	8 M1 Lesson 1: Large and Small Positive Numbers 8 M1 Lesson 2: Comparing Large Numbers 8 M1 Lesson 3: Time to Be More Precise—Scientific Notation 8 M1 Lesson 7: Making Sense of the Exponent of 0 8 M1 Lesson 11: Small Positive Numbers in Scientific Notation

Number and Number Sense

7.NS.2 The student will reason and use multiple strategies to compare and order rational numbers.

Mathematics Standards of Learning for Virginia Public Schools	Aligned Components of *Eureka Math²*
7.NS.2.a Use multiple strategies (e.g., benchmarks, number line, equivalency) to compare (using symbols $<$, $>$, $=$) and order (a set of no more than four) rational numbers expressed as integers, fractions (proper or improper), mixed numbers, decimals, and percents. Fractions and mixed numbers may be positive or negative. Decimals may be positive or negative and are limited to the thousandths place. Ordering may be in ascending or descending order. Justify solutions orally, in writing or with a model.	7 M2 Lesson 18: Understanding Negative Divisors 7 M2 Lesson 21: Comparing and Ordering Rational Numbers

Number and Number Sense

7.NS.3 The student will recognize and describe the relationship between square roots and perfect squares.

Mathematics Standards of Learning for Virginia Public Schools	Aligned Components of *Eureka Math²*
7.NS.3.a Determine the positive square root of a perfect square from 0 to 400.	8 M1 Lesson 16: Perfect Squares and Perfect Cubes 8 M1 Lesson 17: Solving Equations with Squares and Cubes 8 M1 Lesson 20: Square Roots 8 M1 Lesson 22: Familiar and Not So Familiar Numbers 8 M1 Lesson 24: Revisiting Equations with Squares and Cubes

Mathematics Standards of Learning for Virginia Public Schools	Aligned Components of *Eureka Math²*
7.NS.3.b Describe the relationship between square roots and perfect squares.	8 M1 Lesson 16: Perfect Squares and Perfect Cubes 8 M1 Lesson 17: Solving Equations with Squares and Cubes 8 M1 Lesson 20: Square Roots 8 M1 Lesson 22: Familiar and Not So Familiar Numbers 8 M1 Lesson 24: Revisiting Equations with Squares and Cubes

Computation and Estimation

7.CE.1 The student will estimate, solve, and justify solutions to multistep contextual problems involving operations with rational numbers.

Mathematics Standards of Learning for Virginia Public Schools	Aligned Components of *Eureka Math²*
7.CE.1.a Estimate, solve, and justify solutions to contextual problems involving addition, subtraction, multiplication, and division with rational numbers expressed as integers, fractions (proper or improper), mixed numbers, and decimals. Fractions may be positive or negative. Decimals may be positive or negative and are limited to the thousandths place.	7 M2 Lesson 25: Writing and Evaluating Expressions with Rational Numbers, Part 1 7 M2 Lesson 26: Writing and Evaluating Expressions with Rational Numbers, Part 2 7 M3 Lesson 9: Solving Equations to Determine Unknown Angle Measures 7 M3 Lesson 10: Problem Solving with Unknown Angle Measures 7 M3 Lesson 11: Dominoes and Dominoes 7 M3 Lesson 16: Using Equations to Solve Rate Problems 7 M3 Lesson 17: Using Equations to Solve Problems

Computation and Estimation

7.CE.2 The student will solve problems, including those in context, involving proportional relationships.

Mathematics Standards of Learning for Virginia Public Schools	Aligned Components of *Eureka Math²*
7.CE.2.a Given a proportional relationship between two quantities, create and use a ratio table to determine missing values.	7 M1 Topic A: Understanding Proportional Relationships 7 M1 Lesson 14: Extreme Bicycles
7.CE.2.b Write and solve a proportion that represents a proportional relationship between two quantities to find a missing value, including problems in context.	7 M1 Lesson 2: Exploring Tables of Proportional Relationships 7 M1 Lesson 3: Identifying Proportional Relationships in Tables 7 M1 Lesson 8: Relating Representations of Proportional Relationships 7 M1 Lesson 10: Applying Proportional Reasoning 7 M1 Lesson 11: Constant Rates 7 M1 Lesson 12: Multi-Step Ratio Problems, Part 1 7 M1 Lesson 13: Multi-Step Ratio Problems, Part 2 7 M5 Lesson 1: Proportionality and Scale Factor 7 M5 Lesson 4: Proportion and Percent 7 M5 Lesson 5: Common Denominators or Common Numerators
7.CE.2.c Apply proportional reasoning to solve problems in context, including converting units of measurement, when given the conversion factor.	7 M1 Lesson 2: Exploring Tables of Proportional Relationships 7 M1 Lesson 3: Identifying Proportional Relationships in Tables 7 M1 Lesson 7: Handstand Sprint 7 M1 Lesson 8: Relating Representations of Proportional Relationships 7 M1 Lesson 10: Applying Proportional Reasoning 7 M1 Lesson 11: Constant Rates

Mathematics Standards of Learning for Virginia Public Schools	Aligned Components of *Eureka Math²*
7.CE.2.c *continued*	7 M1 Lesson 12: Multi-Step Ratio Problems, Part 1 7 M1 Lesson 13: Multi-Step Ratio Problems, Part 2 7 M5 Topic A: Proportion and Percent 7 M5 Topic B: Part of 100 7 M5 Lesson 10: Percent Increase 7 M5 Lesson 11: Percent Decrease 7 M5 Lesson 12: More Discounts 7 M5 Lesson 13: What Is the Best Deal? 7 M5 Topic D: Applications of Percent 7 M5 Lesson 20: Making Money, Day 1 7 M5 Lesson 21: Making Money, Day 2 7 M5 Lesson 22: Making Mixtures 7 M5 Lesson 23: Percents of Percents
7.CE.2.d Estimate and determine the percentage of a given whole number, including but not limited to the use of benchmark percentages.	6 M1 Topic E: Percents

Measurement and Geometry

7.MG.1 The student will investigate and determine the volume formula for right cylinders and the surface area formulas for rectangular prisms and right cylinders and apply the formulas in context.

Mathematics Standards of Learning for Virginia Public Schools	Aligned Components of *Eureka Math²*
7.MG.1.a Develop the formulas for determining the volume of right cylinders and solve problems, including those in contextual situations, using concrete objects, diagrams, and formulas.	8 M6 Topic E: Volume
7.MG.1.b Develop the formulas for determining the surface area of rectangular prisms and right cylinders and solve problems, including those in contextual situations, using concrete objects, two-dimensional diagrams, nets, and formulas.	7 M4 Lesson 14: Composite Figures with Circular Regions 7 M4 Lesson 16: Solving Area Problems by Composition and Decomposition 7 M4 Lesson 17: Surface Area of Right Rectangular and Right Triangular Prisms 7 M4 Lesson 18: Surface Area of Right Prisms 7 M4 Lesson 20: Surface Area of Right Pyramids 7 M4 Lesson 21: Surface Area of Other Solids 7 M4 Lesson 24: Volume of Prisms 7 M4 Lesson 25: Volume of Composite Solids 7 M4 Lesson 26: Designing a Fish Tank

Mathematics Standards of Learning for Virginia Public Schools	Aligned Components of *Eureka Math²*
7.MG.1.c Determine if a problem in context, involving a rectangular prism or right cylinder, represents the application of volume or surface area.	7 M4 Lesson 14: Composite Figures with Circular Regions 7 M4 Lesson 16: Solving Area Problems by Composition and Decomposition 7 M4 Lesson 17: Surface Area of Right Rectangular and Right Triangular Prisms 7 M4 Lesson 18: Surface Area of Right Prisms 7 M4 Lesson 20: Surface Area of Right Pyramids 7 M4 Lesson 21: Surface Area of Other Solids 7 M4 Lesson 24: Volume of Prisms 7 M4 Lesson 25: Volume of Composite Solids 7 M4 Lesson 26: Designing a Fish Tank
7.MG.1.d Describe how the volume of a rectangular prism is affected when one measured attribute is multiplied by a factor of $\frac{1}{4}, \frac{1}{3}, \frac{1}{2}, 2, 3$, or 4, including those in contextual situations.	*Supplemental material is necessary to address this standard.*
7.MG.1.e Describe how the surface area of a rectangular prism is affected when one measured attribute is multiplied by a factor of $\frac{1}{2}$ or 2, including those in contextual situations.	*Supplemental material is necessary to address this standard.*

Measurement and Geometry

7.MG.2 The student will solve problems and justify relationships of similarity using proportional reasoning.

Mathematics Standards of Learning for Virginia Public Schools	Aligned Components of *Eureka Math²*
7.MG.2.a Identify corresponding congruent angles of similar quadrilaterals and triangles, through the use of geometric markings.	8 M3 Lesson 11: Similar Figures 8 M3 Lesson 12: Exploring Angles in Similar Triangles 8 M3 Lesson 13: Similar Triangles 8 M3 Lesson 17: Similar Triangles on a Line
7.MG.2.b Identify corresponding sides of similar quadrilaterals and triangles.	8 M3 Lesson 11: Similar Figures 8 M3 Lesson 12: Exploring Angles in Similar Triangles 8 M3 Lesson 13: Similar Triangles 8 M3 Lesson 17: Similar Triangles on a Line
7.MG.2.c Given two similar quadrilaterals or triangles, write similarity statements using symbols.	8 M3 Lesson 11: Similar Figures 8 M3 Lesson 12: Exploring Angles in Similar Triangles 8 M3 Lesson 13: Similar Triangles 8 M3 Lesson 17: Similar Triangles on a Line
7.MG.2.d Write proportions to express the relationships between the lengths of corresponding sides of similar quadrilaterals and triangles.	8 M3 Lesson 11: Similar Figures 8 M3 Lesson 12: Exploring Angles in Similar Triangles 8 M3 Lesson 13: Similar Triangles 8 M3 Lesson 17: Similar Triangles on a Line
7.MG.2.e Recognize and justify if two quadrilaterals or triangles are similar using the ratios of corresponding side lengths.	8 M3 Lesson 11: Similar Figures 8 M3 Lesson 12: Exploring Angles in Similar Triangles 8 M3 Lesson 13: Similar Triangles 8 M3 Lesson 17: Similar Triangles on a Line

Mathematics Standards of Learning for Virginia Public Schools	Aligned Components of *Eureka Math²*
7.MG.2.f Solve a proportion to determine a missing side length of similar quadrilaterals or triangles.	8 M3 Lesson 14: Using Similar Figures to Find Unknown Side Lengths
7.MG.2.g Given angle measures in a quadrilateral or triangle, determine unknown angle measures in a similar quadrilateral or triangle.	8 M2 Topic C: Angle Relationships 8 M3 Lesson 12: Exploring Angles in Similar Triangles 8 M3 Lesson 13: Similar Triangles 8 M3 Lesson 14: Using Similar Figures to Find Unknown Side Lengths 8 M3 Lesson 15: Applications of Similar Figures 8 M3 Lesson 16: Similar Right Triangles
7.MG.2.h Apply proportional reasoning to solve problems in context including scale drawings. Scale factors shall have denominators no greater than 12 and decimals no less than tenths.	7 M1 Lesson 15: Scale Drawings 7 M1 Lesson 16: Using a Scale Factor 7 M1 Lesson 17: Finding Actual Distances from a Scale Drawing 7 M1 Lesson 18: Relating Areas of Scale Drawings 7 M1 Lesson 19: Scale and Scale Factor 7 M1 Lesson 20: Creating Multiple Scale Drawings 7 M5 Lesson 1: Proportionality and Scale Factor 7 M5 Lesson 14: Scale Factor—Percent Increase and Decrease

Measurement and Geometry

7.MG.3 The student will compare and contrast quadrilaterals based on their properties and determine unknown side lengths and angle measures of quadrilaterals.

Mathematics Standards of Learning for Virginia Public Schools	Aligned Components of *Eureka Math²*
7.MG.3.a Compare and contrast properties of the following quadrilaterals: parallelogram, rectangle, square, rhombus, and trapezoid:	*This standard is addressed by the lessons aligned to its subsections.*
7.MG.3.a.i parallel/perpendicular sides and diagonals;	7 M4 Topic A: Constructing Geometric Figures 7 M4 Topic B: Constructing Triangles 7 M4 Lesson 9: Constructing a Circle
7.MG.3.a.ii congruence of angle measures, side, and diagonal lengths; and	7 M4 Topic A: Constructing Geometric Figures 7 M4 Topic B: Constructing Triangles 7 M4 Lesson 9: Constructing a Circle
7.MG.3.a.iii lines of symmetry.	*Supplemental material is necessary to address this standard.*
7.MG.3.b Sort and classify quadrilaterals as parallelograms, rectangles, trapezoids, rhombi, and/or squares based on their properties:	*This standard is addressed by the lessons aligned to its subsections.*

Mathematics Standards of Learning for Virginia Public Schools	Aligned Components of *Eureka Math²*
7.MG.3.b.i parallel/perpendicular sides and diagonals;	7 M4 Topic A: Constructing Geometric Figures 7 M4 Topic B: Constructing Triangles 7 M4 Lesson 9: Constructing a Circle
7.MG.3.b.ii congruence of angle measures, side, and diagonal lengths; and	7 M4 Topic A: Constructing Geometric Figures 7 M4 Topic B: Constructing Triangles 7 M4 Lesson 9: Constructing a Circle
7.MG.3.b.iii lines of symmetry.	*Supplemental material is necessary to address this standard.*
7.MG.3.c Given a diagram, determine an unknown angle measure in a quadrilateral, using properties of quadrilaterals.	*Supplemental material is necessary to address this standard.*
7.MG.3.d Given a diagram, determine an unknown side length in a quadrilateral using properties of quadrilaterals.	*Supplemental material is necessary to address this standard.*

Measurement and Geometry

7.MG.4 The student will apply dilations of polygons in the coordinate plane.

Mathematics Standards of Learning for Virginia Public Schools	Aligned Components of *Eureka Math²*
7.MG.4.a Given a preimage in the coordinate plane, identify the coordinates of the image of a polygon that has been dilated. Scale factors are limited to $\frac{1}{4}$, $\frac{1}{2}$, 2, 3, or 4. The center of the dilation will be the origin.	8 M3 Lesson 11: Similar Figures 8 M3 Lesson 12: Exploring Angles in Similar Triangles 8 M3 Lesson 13: Similar Triangles 8 M3 Lesson 17: Similar Triangles on a Line
7.MG.4.b Sketch the image of a dilation of a polygon limited to a scale factor of $\frac{1}{4}$, $\frac{1}{2}$, 2, 3, or 4. The center of the dilation will be the origin.	8 M3 Lesson 11: Similar Figures 8 M3 Lesson 12: Exploring Angles in Similar Triangles 8 M3 Lesson 13: Similar Triangles 8 M3 Lesson 17: Similar Triangles on a Line
7.MG.4.c Identify and describe dilations in context including, but not limited to, scale drawings and graphic design.	8 M3 Lesson 11: Similar Figures 8 M3 Lesson 12: Exploring Angles in Similar Triangles 8 M3 Lesson 13: Similar Triangles 8 M3 Lesson 17: Similar Triangles on a Line

Probability and Statistics

7.PS.1 The student will use statistical investigation to determine the probability of an event and investigate and describe the difference between the experimental and theoretical probability.

Mathematics Standards of Learning for Virginia Public Schools	Aligned Components of *Eureka Math²*
7.PS.1.a Determine the theoretical probability of an event.	7 M6 Lesson 4: Theoretical Probability 7 M6 Lesson 7: The Law of Large Numbers
7.PS.1.b Given the results of a statistical investigation, determine the experimental probability of an event.	7 M6 Lesson 2: Empirical Probability 7 M6 Lesson 3: Outcomes of Chance Experiments 7 M6 Lesson 6: Outcomes That Are Not Equally Likely 7 M6 Lesson 7: The Law of Large Numbers 7 M6 Lesson 8: Picking Blue
7.PS.1.c Describe changes in the experimental probability as the number of trials increases.	7 M6 Lesson 4: Theoretical Probability 7 M6 Lesson 7: The Law of Large Numbers 7 M6 Lesson 8: Picking Blue
7.PS.1.d Investigate and describe the difference between the probability of an event found through experiment or simulation versus the theoretical probability of that same event.	7 M6 Lesson 7: The Law of Large Numbers

Probability and Statistics

7.PS.2 The student will apply the data cycle (formulate questions; collect or acquire data; organize and represent data; and analyze data and communicate results) with a focus on histograms.

Mathematics Standards of Learning for Virginia Public Schools	Aligned Components of *Eureka Math²*
7.PS.2.a Formulate questions that require the collection or acquisition of data with a focus on histograms.	6 M6 Lesson 1: Posing Statistical Questions 6 M6 Lesson 6: Selecting a Data Display 6 M6 Lesson 17: Developing a Statistical Project
7.PS.2.b Determine the data needed to answer a formulated question and collect the data (or acquire existing data) using various methods (e.g., observations, measurement, surveys, experiments).	7 M6 Lesson 11: Populations and Samples 7 M6 Lesson 12: Selecting a Sample 7 M6 Lesson 13: Variability Between Samples 7 M6 Lesson 14: Sampling Variability When Estimating a Population Mean
7.PS.2.c Determine how sample size and randomness will ensure that the data collected is a sample that is representative of a larger population.	7 M6 Lesson 11: Populations and Samples 7 M6 Lesson 12: Selecting a Sample 7 M6 Lesson 13: Variability Between Samples 7 M6 Lesson 14: Sampling Variability When Estimating a Population Mean
7.PS.2.d Organize and represent numerical data using histograms with and without the use of technology.	6 M6 Lesson 4: Creating a Histogram 6 M6 Lesson 5: Comparing Data Displays 6 M6 Lesson 19: Comparing Data Distributions 6 M6 Lesson 22: Presenting Statistical Projects

Mathematics Standards of Learning for Virginia Public Schools	Aligned Components of *Eureka Math²*
7.PS.2.e Investigate and explain how using different intervals could impact the representation of the data in a histogram.	6 M6 Lesson 4: Creating a Histogram 6 M6 Lesson 19: Comparing Data Distributions 6 M6 Lesson 22: Presenting Statistical Projects
7.PS.2.f Compare data represented in histograms with the same data represented in other graphs, including but not limited to line plots (dot plots), circle graphs, and stem-and-leaf plots, and justify which graphical representation best represents the data.	6 M6 Lesson 4: Creating a Histogram 6 M6 Lesson 5: Comparing Data Displays 6 M6 Lesson 6: Selecting a Data Display 6 M6 Lesson 19: Comparing Data Distributions 6 M6 Lesson 22: Presenting Statistical Projects *Supplemental material is necessary to address comparing data represented in histograms to the same data represented in circle graphs and stem-and-leaf plots.*
7.PS.2.g Analyze data represented in histograms by making observations and drawing conclusions. Determine how histograms reveal patterns in data that cannot be easily seen by looking at the corresponding given data set.	6 M6 Lesson 4: Creating a Histogram 6 M6 Lesson 5: Comparing Data Displays 6 M6 Lesson 19: Comparing Data Distributions 6 M6 Lesson 22: Presenting Statistical Projects

Patterns, Functions, and Algebra

7.PFA.1 The student will investigate and analyze proportional relationships between two quantities using verbal descriptions, tables, equations in $y = mx$ form, and graphs, including problems in context.

Mathematics Standards of Learning for Virginia Public Schools	Aligned Components of *Eureka Math²*
7.PFA.1.a Determine the slope, m, as the rate of change in a proportional relationship between two quantities given a table of values, graph, or contextual situation and write an equation in the form $y = mx$ to represent the direct variation relationship. Slope may include positive or negative values (slope will be limited to positive values in a contextual situation).	8 M4 Lesson 15: Comparing Proportional Relationships 8 M4 Lesson 16: Proportional Relationships and Slope
7.PFA.1.b Identify and describe a line with a slope that is positive, negative, or zero (0), given a graph.	8 M3 Lesson 17: Similar Triangles on a Line 8 M4 Lesson 16: Proportional Relationships and Slope 8 M4 Lesson 17: Slopes of Rising Lines 8 M4 Lesson 18: Slopes of Falling Lines 8 M4 Lesson 19: Using Coordinates to Find Slope 8 M4 Lesson 20: Slope-Intercept Form of the Equation of a Line
7.PFA.1.c Graph a line representing a proportional relationship, between two quantities given an ordered pair on the line and the slope, m, as rate of change. Slope may include positive or negative values.	8 M4 Lesson 15: Comparing Proportional Relationships 8 M4 Lesson 16: Proportional Relationships and Slope

Mathematics Standards of Learning for Virginia Public Schools	Aligned Components of *Eureka Math²*
7.PFA.1.d Graph a line representing a proportional relationship between two quantities given the equation of the line in the form $y = mx$, where m represents the slope as rate of change. Slope may include positive or negative values.	8 M4 Lesson 15: Comparing Proportional Relationships 8 M4 Lesson 16: Proportional Relationships and Slope
7.PFA.1.e Make connections between and among representations of a proportional relationship between two quantities using problems in context, tables, equations, and graphs. Slope may include positive or negative values (slope will be limited to positive values in a contextual situation).	7 M1 Lesson 4: Exploring Graphs of Proportional Relationships 7 M1 Lesson 5: Analyzing Graphs of Proportional Relationships 7 M1 Lesson 6: Identifying Proportional Relationships in Written Descriptions 7 M1 Lesson 8: Relating Representations of Proportional Relationships 7 M1 Lesson 9: Comparing Proportional Relationships 7 M1 Lesson 11: Constant Rates 7 M1 Lesson 12: Multi-Step Ratio Problems, Part 1 7 M1 Lesson 13: Multi-Step Ratio Problems, Part 2 7 M1 Lesson 16: Using a Scale Factor 7 M1 Lesson 18: Relating Areas of Scale Drawings

Patterns, Functions, and Algebra

7.PFA.2 The student will simplify numerical expressions, simplify and generate equivalent algebraic expressions in one variable, and evaluate algebraic expressions for given replacement values of the variables.

Mathematics Standards of Learning for Virginia Public Schools	Aligned Components of *Eureka Math²*
7.PFA.2.a Use the order of operations and apply the properties of real numbers to simplify numerical expressions. Exponents are limited to 1, 2, 3, or 4 and bases are limited to positive integers. Expressions should not include braces { } but may include brackets [ ] and absolute value bars | |. Square roots are limited to perfect squares.	6 M4 Topic A: Numerical Expressions
7.PFA.2.b Represent equivalent algebraic expressions in one variable using concrete manipulatives and pictorial representations (e.g., colored chips, algebra tiles).	6 M4 Topic C: Equivalent Expressions Using the Properties of Operations 6 M5 Lesson 4: Areas of Triangles in Real-World Situations 6 M5 Lesson 6: Problem Solving with Area in the Coordinate Plane 6 M5 Lesson 7: Areas of Trapezoids and Other Polygons
7.PFA.2.c Simplify and generate equivalent algebraic expressions in one variable by applying the order of operations and properties of real numbers. Expressions may require combining like terms to simplify. Expressions will include only linear and numeric terms. Coefficients and numeric terms may be positive or negative rational numbers.	7 M3 Topic A: Equivalent Expressions

Mathematics Standards of Learning for Virginia Public Schools	Aligned Components of *Eureka Math²*
7.PFA.2.d Use the order of operations and apply the properties of real numbers to evaluate algebraic expressions for given replacement values of the variables. Exponents are limited to 1, 2, 3, or 4 and bases are limited to positive integers. Expressions should not include braces { } but may include brackets [ ] and absolute value bars | |. Square roots are limited to perfect squares. Limit the number of replacements to no more than three per expression. Replacement values may be positive or negative rational numbers.	7 M3 Topic A: Equivalent Expressions

Patterns, Functions, and Algebra

7.PFA.3 The student will write and solve two-step linear equations in one variable, including problems in context, that require the solution of a two-step linear equation in one variable.

Mathematics Standards of Learning for Virginia Public Schools	Aligned Components of *Eureka Math²*
7.PFA.3.a Represent and solve two-step linear equations in one variable using a variety of concrete materials and pictorial representations.	*Supplemental material is necessary to address this standard.*

Mathematics Standards of Learning for Virginia Public Schools	Aligned Components of *Eureka Math²*
7.PFA.3.b Apply properties of real numbers and properties of equality to solve two-step linear equations in one variable. Coefficients and numeric terms will be rational.	7 M3 Lesson 7: Angle Relationships and Unknown Angle Measures 7 M3 Lesson 8: Strategies to Determine Unknown Angle Measures 7 M3 Lesson 12: Solving Problems Algebraically and Arithmetically 7 M3 Lesson 13: Solving Equations—Puzzles 7 M3 Lesson 14: Solving Equations—Scavenger Hunt 7 M3 Lesson 15: Solving Equations Fluently 7 M3 Lesson 16: Using Equations to Solve Rate Problems
7.PFA.3.c Confirm algebraic solutions to linear equations in one variable.	7 M3 Lesson 7: Angle Relationships and Unknown Angle Measures 7 M3 Lesson 8: Strategies to Determine Unknown Angle Measures 7 M3 Lesson 12: Solving Problems Algebraically and Arithmetically 7 M3 Lesson 13: Solving Equations—Puzzles 7 M3 Lesson 14: Solving Equations—Scavenger Hunt 7 M3 Lesson 15: Solving Equations Fluently 7 M3 Lesson 16: Using Equations to Solve Rate Problems
7.PFA.3.d Write a two-step linear equation in one variable to represent a verbal situation, including those in context.	7 M3 Lesson 7: Angle Relationships and Unknown Angle Measures 7 M3 Lesson 8: Strategies to Determine Unknown Angle Measures 7 M3 Lesson 12: Solving Problems Algebraically and Arithmetically 7 M3 Lesson 13: Solving Equations—Puzzles 7 M3 Lesson 14: Solving Equations—Scavenger Hunt 7 M3 Lesson 15: Solving Equations Fluently 7 M3 Lesson 16: Using Equations to Solve Rate Problems

Mathematics Standards of Learning for Virginia Public Schools	Aligned Components of *Eureka Math²*
7.PFA.3.e Create a verbal situation in context given a two-step linear equation in one variable.	7 M3 Lesson 11: Dominoes and Dominoes 7 M3 Lesson 12: Solving Problems Algebraically and Arithmetically 7 M3 Lesson 13: Solving Equations—Puzzles 7 M3 Lesson 16: Using Equations to Solve Rate Problems 7 M3 Lesson 17: Using Equations to Solve Problems 7 M3 Lesson 18: Understanding Inequalities and Their Solutions 7 M3 Lesson 19: Using Equations to Solve Inequalities 7 M3 Lesson 21: Solving Two-Step Inequalities 7 M3 Lesson 22: Solving Problems Involving Inequalities 7 M3 Lesson 23: Inequalities vs. Equations
7.PFA.3.f Solve problems in context that require the solution of a two-step linear equation.	7 M3 Lesson 7: Angle Relationships and Unknown Angle Measures 7 M3 Lesson 8: Strategies to Determine Unknown Angle Measures 7 M3 Lesson 12: Solving Problems Algebraically and Arithmetically 7 M3 Lesson 13: Solving Equations—Puzzles 7 M3 Lesson 14: Solving Equations—Scavenger Hunt 7 M3 Lesson 15: Solving Equations Fluently 7 M3 Lesson 16: Using Equations to Solve Rate Problems

Patterns, Functions, and Algebra

7.PFA.4 The student will write and solve one- and two-step linear inequalities in one variable, including problems in context, that require the solution of a one- and two-step linear inequality in one variable.

Mathematics Standards of Learning for Virginia Public Schools	Aligned Components of *Eureka Math²*
7.PFA.4.a Apply properties of real numbers and the addition, subtraction, multiplication, and division properties of inequality to solve one- and two-step inequalities in one variable. Coefficients and numeric terms will be rational.	7 M3 Topic D: Inequalities
7.PFA.4.b Investigate and explain how the solution set of a linear inequality is affected by multiplying or dividing both sides of the inequality statement by a rational number less than zero.	7 M3 Topic D: Inequalities
7.PFA.4.c Represent solutions to one- or two-step linear inequalities in one variable algebraically and graphically using a number line.	7 M3 Topic D: Inequalities
7.PFA.4.d Write one- or two-step linear inequalities in one variable to represent a verbal situation, including those in context.	7 M3 Topic D: Inequalities

Mathematics Standards of Learning for Virginia Public Schools	Aligned Components of *Eureka Math²*
7.PFA.4.e Create a verbal situation in context given a one- or two-step linear inequality in one variable.	7 M3 Lesson 11: Dominoes and Dominoes 7 M3 Lesson 12: Solving Problems Algebraically and Arithmetically 7 M3 Lesson 13: Solving Equations—Puzzles 7 M3 Lesson 16: Using Equations to Solve Rate Problems 7 M3 Lesson 17: Using Equations to Solve Problems 7 M3 Lesson 18: Understanding Inequalities and Their Solutions 7 M3 Lesson 19: Using Equations to Solve Inequalities 7 M3 Lesson 21: Solving Two-Step Inequalities 7 M3 Lesson 22: Solving Problems Involving Inequalities 7 M3 Lesson 23: Inequalities vs. Equations
7.PFA.4.f Solve problems in context that require the solution of a one- or two-step inequality.	7 M3 Topic D: Inequalities
7.PFA.4.g Identify a numerical value(s) that is part of the solution set of a given one- or two-step linear inequality in one variable.	7 M3 Topic D: Inequalities
7.PFA.4.h Describe the differences and similarities between solving linear inequalities in one variable and linear equations in one variable.	7 M3 Topic D: Inequalities