Grade 4 | 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

4.NS.1 The student will use place value understanding to read, write, and identify the place and value of each digit in a nine-digit whole number.

Mathematics Standards of Learning for Virginia Public Schools	Aligned Components of *Eureka Math²*
4.NS.1.a Read nine-digit whole numbers, presented in standard form, and represent the same number in written form.	4 M1 Lesson 5: Organize, count, and represent a collection of objects. 4 M1 Lesson 7: Write numbers to 1,000,000 in unit form and expanded form by using place value structure. 4 M1 Lesson 8: Write numbers to 1,000,000 in standard form and word form. 4 M1 Lesson 10: Name numbers by using place value understanding. 4 M1 Lesson 11: Find 1, 10, and 100 thousand more than and less than a given number. *Supplemental material is necessary to address eight- and nine-digit whole numbers.*
4.NS.1.b Write nine-digit whole numbers in standard form when the numbers are presented orally or in written form.	4 M1 Lesson 5: Organize, count, and represent a collection of objects. 4 M1 Lesson 7: Write numbers to 1,000,000 in unit form and expanded form by using place value structure. 4 M1 Lesson 8: Write numbers to 1,000,000 in standard form and word form. 4 M1 Lesson 10: Name numbers by using place value understanding. 4 M1 Lesson 11: Find 1, 10, and 100 thousand more than and less than a given number. *Supplemental material is necessary to address eight- and nine-digit whole numbers.*
4.NS.1.c Apply patterns within the base 10 system to determine and communicate, orally and in written form, the place and value of each digit in a nine-digit whole number (e.g., in 568,165,724, the 8 represents 8 millions and its value is 8,000,000).	4 M1 Topic B: Place Value and Comparison Within 1,000,000 4 M1 Lesson 10: Name numbers by using place value understanding. 4 M1 Lesson 11: Find 1, 10, and 100 thousand more than and less than a given number. *Supplemental material is necessary to address eight- and nine-digit whole numbers.*

Number and Number Sense

4.NS.2 The student will demonstrate an understanding of the base 10 system to compare and order whole numbers up to seven digits.

Mathematics Standards of Learning for Virginia Public Schools	Aligned Components of *Eureka Math²*
4.NS.2.a Compare two whole numbers up to seven digits each, using words (*greater than*, *less than*, *equal to*, *not equal to*) and/or using symbols ($>$, $<$, $=$, $\neq$).	4 M1 Lesson 9: Compare numbers within $1{,}000{,}000$ by using $>$, $=$, and $<$. *Supplemental material is necessary to address using the not equal to symbol.*
4.NS.2.b Order up to four whole numbers up to seven digits each, from least to greatest or greatest to least.	4 M1 Lesson 9: Compare numbers within $1{,}000{,}000$ by using $>$, $=$, and $<$.

Number and Number Sense

4.NS.3 The student will use mathematical reasoning and justification to represent, compare, and order fractions (proper, improper, and mixed numbers with denominators 12 or less), with and without models.

Mathematics Standards of Learning for Virginia Public Schools	Aligned Components of *Eureka Math²*
4.NS.3.a Compare and order no more than four fractions (proper or improper), and/or mixed numbers, with like denominators by comparing the number of parts (numerators) using fractions with denominators of 12 or less (e.g., $\frac{1}{5} < \frac{3}{5}$). Justify comparisons orally, in writing, or with a model.	4 M4 Lesson 14: Compare fractions with related denominators. *Supplemental material is necessary to address ordering fractions.*

Mathematics Standards of Learning for Virginia Public Schools	Aligned Components of *Eureka Math²*
4.NS.3.b Compare and order no more than four fractions (proper or improper), and/or mixed numbers, with like numerators and unlike denominators by comparing the size of the parts using fractions with denominators of 12 or less (e.g., $\frac{3}{8} < \frac{3}{5}$). Justify comparisons orally, in writing, or with a model.	4 M4 Lesson 15: Compare fractions with related numerators. *Supplemental material is necessary to address ordering fractions.*
4.NS.3.c Use benchmarks (e.g., 0, $\frac{1}{2}$, or 1) to compare and order no more than four fractions (proper or improper), and/or mixed numbers, with like and unlike denominators of 12 or less. Justify comparisons orally, in writing, or with a model.	4 M4 Lesson 13: Compare fractions by using the benchmarks 0, $\frac{1}{2}$, and 1. *Supplemental material is necessary to address ordering fractions.*
4.NS.3.d Compare two fractions (proper or improper) and/or mixed numbers using fractions with denominators of 12 or less, using the symbols $>$, $<$, and $=$ (e.g., $\frac{2}{3} < \frac{1}{7}$). Justify comparisons orally, in writing, or with a model.	4 M4 Lesson 16: Generate a common numerator or denominator to compare fractions. 4 M4 Lesson 17: Apply fraction comparison strategies to compare fractions greater than 1. *Supplemental material is necessary to address ordering fractions.*

Mathematics Standards of Learning for Virginia Public Schools	Aligned Components of *Eureka Math²*
4.NS.3.e Represent equivalent fractions with denominators of 12 or less, with and without models.	4 M4 Topic B: Equivalent Fractions 4 M4 Lesson 16: Generate a common numerator or denominator to compare fractions.
4.NS.3.f Compose and decompose fractions (proper and improper) and/or mixed numbers with denominators of 12 or less, in multiple ways, with and without models.	4 M4 Topic A: Fraction Decomposition and Equivalence 4 M4 Lesson 7: Rename fractions as a sum of equivalent smaller unit fractions. 4 M4 Topic D: Add and Subtract Fractions
4.NS.3.g Represent the division of two whole numbers as a fraction given a contextual situation and a model (e.g., $\frac{3}{5}$ means the same as 3 divided by 5 or $\frac{3}{5}$ represents the amount of muffin each of five children will receive when sharing three muffins equally).	5 M2 Topic A: Fractions and Division

Number and Number Sense

4.NS.4 The student will use mathematical reasoning and justification to represent, compare, and order decimals through thousandths, with and without models.

Mathematics Standards of Learning for Virginia Public Schools	Aligned Components of *Eureka Math²*
4.NS.4.a Investigate and describe the ten-to-one place value relationship for decimals through thousandths, using concrete models (e.g., place value mats/charts, decimal squares, base 10 blocks).	4 M5 Topic B: Tenths and Hundredths 5 M4 Lesson 1: Model and relate decimal place value units to thousandths. 5 M4 Lesson 2: Represent thousandths as a place value unit. 5 M4 Lesson 3: Represent decimal numbers to the thousandths place in different forms. 5 M4 Lesson 4: Relate the values of digits in a decimal number by using place value understanding.
4.NS.4.b Represent and identify decimals expressed through thousandths, using concrete, pictorial, and numerical representations.	4 M5 Topic A: Exploration of Tenths 4 M5 Topic B: Tenths and Hundredths 5 M4 Lesson 1: Model and relate decimal place value units to thousandths. 5 M4 Lesson 2: Represent thousandths as a place value unit. 5 M4 Lesson 3: Represent decimal numbers to the thousandths place in different forms.
4.NS.4.c Read and write decimals expressed through thousandths, using concrete, pictorial, and numerical representations.	4 M5 Topic A: Exploration of Tenths 4 M5 Topic B: Tenths and Hundredths 5 M4 Lesson 1: Model and relate decimal place value units to thousandths. 5 M4 Lesson 2: Represent thousandths as a place value unit. 5 M4 Lesson 3: Represent decimal numbers to the thousandths place in different forms.

Mathematics Standards of Learning for Virginia Public Schools	Aligned Components of *Eureka Math²*
4.NS.4.d Identify and communicate, both orally and in written form, the place and value of each digit in a decimal through thousandths (e.g., given 0.385, the 8 is in the hundredths place and has a value of 0.08).	4 M5 Topic A: Exploration of Tenths 4 M5 Topic B: Tenths and Hundredths 4 M5 Lesson 8: Represent decimal numbers in expanded form. 5 M4 Lesson 3: Represent decimal numbers to the thousandths place in different forms. 5 M4 Lesson 4: Relate the values of digits in a decimal number by using place value understanding.
4.NS.4.e Compare using symbols ($<$, $>$, $=$) and/or words (*greater than*, *less than*, *equal to*) and order (least to greatest and greatest to least), a set of no more than four decimals expressed through thousandths, using multiple strategies (e.g., benchmarks, place value, number lines). Justify comparisons with a model, orally, and in writing.	4 M5 Topic C: Comparison of Decimal Numbers 5 M4 Lesson 6: Compare decimal numbers to the thousandths place.

Number and Number Sense

4.NS.5 The student will reason about the relationship between fractions and decimals (limited to halves, fourths, fifths, tenths, and hundredths) to identify and represent equivalencies.

Mathematics Standards of Learning for Virginia Public Schools	Aligned Components of *Eureka Math²*
4.NS.5.a Represent fractions (proper or improper) and/or mixed numbers as decimals through hundredths, using multiple representations, limited to halves, fourths, fifths, tenths, and hundredths.	4 M5 Lesson 2: Decompose 1 one and express tenths in fraction form and decimal form. 4 M5 Lesson 3: Represent tenths as a place value unit. 4 M5 Lesson 4: Write mixed numbers in decimal form with tenths. 4 M5 Topic B: Tenths and Hundredths *Supplemental material is necessary to address representing halves, fourths, and fifths as decimals.*
4.NS.5.b Identify and model equivalent relationships between fractions (proper or improper) and/or mixed numbers and decimals, using halves, fourths, fifths, tenths, and hundredths.	4 M5 Topic A: Exploration of Tenths 4 M5 Topic B: Tenths and Hundredths *Supplemental material is necessary to address identifying and modeling halves, fourths, and fifths as decimals.*
4.NS.5.c Write the decimal and fraction equivalent for a given model (e.g., $\frac{1}{4} = 0.25$ or $0.25 = \frac{1}{4}$; $1.25 = \frac{5}{4}$ or $1\frac{1}{4}$; $1.02 = \frac{102}{100}$ or $1\frac{2}{100}$).	4 M5 Topic A: Exploration of Tenths 4 M5 Topic B: Tenths and Hundredths *Supplemental material is necessary to address writing halves, fourths, and fifths as decimals.*

Computation and Estimation

4.CE.1 The student will estimate, represent, solve, and justify solutions to single-step and multistep problems, including those in context, using addition and subtraction with whole numbers.

Mathematics Standards of Learning for Virginia Public Schools	Aligned Components of *Eureka Math²*
4.CE.1.a Determine and justify whether an estimate or an exact answer is appropriate when solving contextual problems involving addition and subtraction with whole numbers. Refine estimates by adjusting the final amount, using terms such as *closer to*, *between*, and *a little more than*.	4 M1 Lesson 15: Apply estimation to real-world situations by using rounding. *Supplemental material is necessary to fully address this standard.*
4.CE.1.b Apply strategies (e.g., rounding to the nearest 100 or $1{,}000$, using compatible numbers, other number relationships) to estimate a solution for single-step or multistep addition or subtraction problems with whole numbers, where addends or minuends do not exceed $10{,}000$.	4 M1 Lesson 12: Round to the nearest thousand. 4 M1 Lesson 14: Round multi-digit numbers to any place. 4 M1 Lesson 15: Apply estimation to real-world situations by using rounding. 4 M1 Lesson 16: Add by using the standard algorithm. 4 M1 Lesson 17: Solve multi-step addition word problems by using the standard algorithm. 4 M1 Lesson 21: Solve two-step word problems by using addition and subtraction. 4 M1 Lesson 22: Solve multi-step word problems by using addition and subtraction.
4.CE.1.c Apply strategies (e.g., place value, properties of addition, other number relationships) and algorithms, including the standard algorithm, to determine the sum or difference of two whole numbers, where addends and minuends do not exceed $10{,}000$.	4 M1 Topic D: Multi-Digit Whole Number Addition and Subtraction

Mathematics Standards of Learning for Virginia Public Schools	Aligned Components of *Eureka Math²*
4.CE.1.d Estimate, represent, solve, and justify solutions to single-step and multistep contextual problems involving addition and subtraction with whole numbers where addends and minuends do not exceed 1,000,000.	4 M1 Lesson 15: Apply estimation to real-world situations by using rounding. 4 M1 Topic D: Multi-Digit Whole Number Addition and Subtraction

Computation and Estimation

4.CE.2 The student will estimate, represent, solve, and justify solutions to single-step and multistep problems, including those in context, using multiplication with whole numbers, and single-step problems, including those in context, using division with whole numbers; and recall with automaticity the multiplication facts through 12×12 and the corresponding division facts.

Mathematics Standards of Learning for Virginia Public Schools	Aligned Components of *Eureka Math²*
4.CE.2.a Determine and justify whether an estimate or an exact answer is appropriate when solving contextual problems involving multiplication and division of whole numbers. Refine estimates by adjusting the final amount, using terms such as *closer to*, *between*, and *a little more than*.	*Supplemental material is necessary to address this standard.*
4.CE.2.b Recall with automaticity the multiplication facts through 12×12 and the corresponding division facts.	3 M3 Lesson 23: Identify patterns and apply strategies to multiply with units of 11 and 12. *Supplemental material is necessary to fully address this standard.*

Mathematics Standards of Learning for Virginia Public Schools	Aligned Components of *Eureka Math²*
4.CE.2.c Create an equation using addition, subtraction, multiplication, and division to represent the relationship between equivalent mathematical expressions (e.g., $4 \times 3 = 2 \times 6$; $10 + 8 = 36 \div 2$; $12 \times 4 = 60 - 12$).	*Supplemental material is necessary to address this standard.*
4.CE.2.d Identify and use the appropriate symbol to distinguish between expressions that are equal and expressions that are not equal, using addition, subtraction, multiplication, and division (e.g., $4 \times 12 = 8 \times 6$ and $64 \div 8 \neq 8 \times 8$).	*Supplemental material is necessary to address this standard.*
4.CE.2.e Determine all factor pairs for a whole number 1 to 100, using concrete, pictorial, and numerical representations.	4 M2 Lesson 21: Find factor pairs for numbers up to 100 and use factors to identify numbers as prime or composite. 4 M2 Lesson 22: Use division and the associative property of multiplication to find factors. 4 M2 Lesson 24: Recognize that a number is a multiple of each of its factors.
4.CE.2.f Determine common factors and the greatest common factor of no more than three numbers.	*Supplemental material is necessary to address this standard.*

Mathematics Standards of Learning for Virginia Public Schools	Aligned Components of *Eureka Math²*
4.CE.2.g Apply strategies (e.g., rounding, place value, properties of multiplication and/or addition) and algorithms, including the standard algorithm, to estimate and determine the product of two whole numbers when given:	*This standard is addressed by the lessons aligned to its subsections.*
4.CE.2.g.i a two-digit factor and a one-digit factor;	4 M2 Lesson 1: Multiply multiples of 10 by one-digit numbers by using the associative property of multiplication. 4 M2 Topic B: Multiplication of Tens and Ones by One-Digit Numbers
4.CE.2.g.ii a three-digit factor and a one-digit factor; or	4 M3 Lesson 2: Multiply by multiples of 100 and 1,000. 4 M3 Topic C: Multiplication of up to Four-Digit Numbers by One-Digit Numbers 5 M1 Lesson 2: Multiply and divide by 10, 100, and 1,000 and identify patterns in the products and quotients.
4.CE.2.g.iii a two-digit factor and a two-digit factor.	4 M3 Lesson 3: Multiply a two-digit multiple of 10 by a two-digit multiple of 10. 4 M3 Topic D: Multiplication of Two-Digit Numbers by Two-Digit Numbers
4.CE.2.h Estimate, represent, solve, and justify solutions to single-step and multistep contextual problems that involve multiplication with whole numbers.	4 M1 Topic A: Multiplication as Multiplicative Comparison 4 M2 Lesson 1: Multiply multiples of 10 by one-digit numbers by using the associative property of multiplication. 4 M2 Topic B: Multiplication of Tens and Ones by One-Digit Numbers 4 M3 Lesson 2: Multiply by multiples of 100 and 1,000. 4 M3 Lesson 3: Multiply a two-digit multiple of 10 by a two-digit multiple of 10. 4 M3 Topic C: Multiplication of up to Four-Digit Numbers by One-Digit Numbers 4 M3 Topic D: Multiplication of Two-Digit Numbers by Two-Digit Numbers 4 M3 Topic E: Problem Solving with Measurement

Mathematics Standards of Learning for Virginia Public Schools	Aligned Components of *Eureka Math²*
4.CE.2.i Apply strategies (e.g., rounding, compatible numbers, place value) and algorithms, including the standard algorithm, to estimate and determine the quotient of two whole numbers, given a one-digit divisor and a two-or three-digit dividend, with and without remainders.	4 M2 Lesson 2: Divide two- and three-digit multiples of 10 by one-digit numbers. 4 M2 Topic C: Division of Tens and Ones by One-Digit Numbers 4 M3 Lesson 1: Divide multiples of 100 and 1,000. 4 M3 Topic B: Division of Thousands, Hundreds, Tens, and Ones 4 M3 Lesson 21: Find whole-number quotients and remainders. 4 M3 Lesson 22: Represent, estimate, and solve division word problems. 5 M1 Lesson 2: Multiply and divide by 10, 100, and 1,000 and identify patterns in the products and quotients.
4.CE.2.j Estimate, represent, solve, and justify solutions to single-step contextual problems involving division with whole numbers.	4 M3 Topic F: Remainders, Estimating, and Problem Solving
4.CE.2.k Interpret the quotient and remainder when solving a contextual problem.	4 M3 Topic F: Remainders, Estimating, and Problem Solving

Computation and Estimation

4.CE.3 The student will estimate, represent, solve, and justify solutions to single-step problems, including those in context, using addition and subtraction of fractions (proper, improper, and mixed numbers with like denominators of 2, 3, 4, 5, 6, 8, 10, and 12), with and without models; and solve single-step contextual problems involving multiplication of a whole number (12 or less) and a unit fraction, with models.

Mathematics Standards of Learning for Virginia Public Schools	Aligned Components of *Eureka Math²*
4.CE.3.a Estimate and determine the sum or difference of two fractions (proper or improper) and/or mixed numbers, having like denominators limited to 2, 3, 4, 5, 6, 8, 10, and 12 (e.g., $\frac{3}{8}+\frac{3}{8}$, $2\frac{1}{5}+\frac{4}{5}$, $\frac{7}{4}-\frac{5}{4}$) and simplify the resulting fraction. Addition and subtraction with fractions may include regrouping.	4 M4 Lesson 18: Estimate sums and differences of fractions by using benchmarks. 4 M4 Lesson 19: Add and subtract fractions with like units. 4 M4 Lesson 20: Subtract a fraction from a whole number. 4 M4 Lesson 23: Add a fraction to a mixed number. 4 M4 Lesson 24: Add a mixed number to a mixed number. 4 M4 Lesson 25: Subtract a fraction from a mixed number, part 1. 4 M4 Lesson 26: Subtract a fraction from a mixed number, part 2. 4 M4 Lesson 27: Subtract a mixed number from a mixed number. *Supplemental material is necessary to address simplifying the resulting fraction.*
4.CE.3.b Estimate, represent, solve, and justify solutions to single-step contextual problems using addition and subtraction with fractions (proper or improper) and/or mixed numbers, having like denominators limited to 2, 3, 4, 5, 6, 8, 10, and 12, and simplify the resulting fraction. Addition and subtraction with fractions may include regrouping.	4 M4 Lesson 18: Estimate sums and differences of fractions by using benchmarks. 4 M4 Lesson 19: Add and subtract fractions with like units. 4 M4 Lesson 20: Subtract a fraction from a whole number. 4 M4 Lesson 21: Solve addition and subtraction word problems and estimate the reasonableness of the answers. 4 M4 Lesson 24: Add a mixed number to a mixed number. 4 M4 Lesson 27: Subtract a mixed number from a mixed number. 4 M4 Lesson 28: Represent and solve word problems with mixed numbers by using drawings and equations. *Supplemental material is necessary to address simplifying the resulting fraction.*

Mathematics Standards of Learning for Virginia Public Schools	Aligned Components of *Eureka Math²*
4.CE.3.c Solve single-step contextual problems involving multiplication of a whole number, limited to 12 or less, and a unit fraction (e.g., $6 \times \frac{1}{3}$, $\frac{1}{5} \times 8$, $2 \times \frac{1}{10}$), with models.	4 M4 Lesson 31: Decompose non-unit fractions into a product of a whole number and a unit fraction. 4 M4 Lesson 32: Multiply a fraction by a whole number by using the associative property. 4 M4 Lesson 33: Solve word problems involving multiplication of a fraction by a whole number.
4.CE.3.d Apply the inverse property of multiplication in models (e.g., use a visual fraction model to represent $\frac{4}{4}$ or 1 as the product of $4 \times \frac{1}{4}$).	*Supplemental material is necessary to address this standard.*

Computation and Estimation

4.CE.4 The student will estimate, represent, solve, and justify solutions to single-step and multistep problems, including those in context, using addition and subtraction of decimals through the thousandths, with and without models.

Mathematics Standards of Learning for Virginia Public Schools	Aligned Components of *Eureka Math²*
4.CE.4.a Apply strategies (e.g., rounding to the nearest whole number, using compatible numbers) and algorithms, including the standard algorithm, to estimate and determine the sum or difference of two decimals through the thousandths, with and without models, in which:	*This standard is addressed by the lessons aligned to its subsections.*

Mathematics Standards of Learning for Virginia Public Schools	Aligned Components of *Eureka Math²*
4.CE.4.a.i decimals do not exceed the thousandths; and	5 M4 Lesson 7: Round decimal numbers to the nearest one, tenth, or hundredth. 5 M4 Lesson 8: Round decimal numbers to any place value unit. 5 M4 Lesson 9: Add decimal numbers by using different methods. 5 M4 Lesson 10: Add decimal numbers by using place value understanding. 5 M4 Lesson 11: Subtract decimal numbers by using different methods. 5 M4 Lesson 12: Subtract decimal numbers by using place value understanding.
4.CE.4.a.ii addends, subtrahends, and minuends are limited to four digits.	5 M4 Lesson 7: Round decimal numbers to the nearest one, tenth, or hundredth. 5 M4 Lesson 8: Round decimal numbers to any place value unit. 5 M4 Lesson 9: Add decimal numbers by using different methods. 5 M4 Lesson 10: Add decimal numbers by using place value understanding. 5 M4 Lesson 11: Subtract decimal numbers by using different methods. 5 M4 Lesson 12: Subtract decimal numbers by using place value understanding.
4.CE.4.b Estimate, represent, solve, and justify solutions to single-step and multistep contextual problems using addition and subtraction of decimals through the thousandths.	5 M4 Lesson 9: Add decimal numbers by using different methods. 5 M4 Lesson 10: Add decimal numbers by using place value understanding. 5 M4 Lesson 11: Subtract decimal numbers by using different methods. 5 M4 Lesson 12: Subtract decimal numbers by using place value understanding. *Supplemental material is necessary to address addition and subtraction of decimals to the thousandths.*

Measurement and Geometry

4.MG.1 The student will reason mathematically to solve problems, including those in context, that involve length, weight/mass, and liquid volume using U.S. Customary and metric units.

Mathematics Standards of Learning for Virginia Public Schools	Aligned Components of *Eureka Math²*
4.MG.1.a Determine an appropriate unit of measure to use when measuring:	*Supplemental material is necessary to address this standard.*
4.MG.1.a.i length in both U.S. Customary (inch, foot, yard, mile) and metric units (millimeter, centimeter, meter);	*Supplemental material is necessary to address this standard.*
4.MG.1.a.ii weight/mass in both U.S. Customary (ounce, pound) and metric units (gram, kilogram); and	*Supplemental material is necessary to address this standard.*
4.MG.1.a.iii liquid volume in both U.S. Customary (cup, pint, quart, gallon) and metric units (milliliter, liter).	*Supplemental material is necessary to address this standard.*
4.MG.1.b Estimate and measure:	*This standard is addressed by the lessons aligned to its subsections.*
4.MG.1.b.i length of an object to the nearest U.S. Customary unit ($\frac{1}{2}$ inch, $\frac{1}{4}$ inch, $\frac{1}{8}$ inch, foot, yard) and nearest metric unit (millimeter, centimeter, or meter);	*Supplemental material is necessary to address this standard.*

Mathematics Standards of Learning for Virginia Public Schools	Aligned Components of *Eureka Math²*
4.MG.1.b.ii weight/mass of an object to the nearest U.S. Customary unit (ounce, pound) and nearest metric unit (gram, kilogram); and	3 M2 Topic A: Understanding Place Value Concepts Through Metric Measurement *Supplemental material is necessary to address U.S. customary units.*
4.MG.1.b.iii liquid volume to the nearest U.S. Customary unit (cup, pint, quart, gallon) and nearest metric unit (milliliter, liter).	3 M2 Topic A: Understanding Place Value Concepts Through Metric Measurement *Supplemental material is necessary to address U.S. customary units.*
4.MG.1.c Compare estimates of length, weight/mass, or liquid volume with the actual measurements.	3 M2 Lesson 2: Estimate the weight of familiar objects and read scales when weighing objects. 3 M2 Lesson 5: Estimate and measure liquid volume using a vertical number line and connect composition of 1 liter to composition of 1 thousand.
4.MG.1.d Given the equivalent measure of one unit, solve problems, including those in context, by determining the equivalent measures within the U.S. Customary system for:	*This standard is fully addressed by the lessons aligned to its subsections.*
4.MG.1.d.i length (inches and feet, feet and yards, inches and yards);	4 M2 Lesson 17: Express measurements of length in terms of smaller units. 4 M2 Lesson 20: Solve word problems involving additive and multiplicative comparisons. 4 M4 Lesson 18: Estimate sums and differences of fractions by using benchmarks. 4 M4 Lesson 21: Solve addition and subtraction word problems and estimate the reasonableness of the answers.

Mathematics Standards of Learning for Virginia Public Schools	Aligned Components of *Eureka Math²*
4.MG.1.d.ii weight/mass (ounces and pounds); and	4 M3 Lesson 19: Express customary measurements of weight in terms of smaller units. 4 M4 Lesson 21: Solve addition and subtraction word problems and estimate the reasonableness of the answers.
4.MG.1.d.iii liquid volume (cups, pints, quarts, and gallons).	4 M3 Lesson 20: Express customary measurements of liquid volume in terms of smaller units. 4 M4 Lesson 18: Estimate sums and differences of fractions by using benchmarks.

Measurement and Geometry

4.MG.2 The student will solve single-step and multistep contextual problems involving elapsed time (limited to hours and minutes within a 12-hour period).

Mathematics Standards of Learning for Virginia Public Schools	Aligned Components of *Eureka Math²*
4.MG.2.a Solve single-step and multistep contextual problems involving elapsed time in hours and minutes, within a 12-hour period (within a.m., within p.m., and across a.m. and p.m.) when given:	3 M6 Lesson 6: Solve time word problems and use time data to create a line plot.
4.MG.2.a.i the starting time and the ending time, determine the amount of time that has elapsed in hours and minutes;	3 M6 Lesson 5: Solve time word problems where the change in time is unknown.

Mathematics Standards of Learning for Virginia Public Schools	Aligned Components of *Eureka Math²*
4.MG.2.a.ii the starting time and amount of elapsed time in hours and minutes, determine the ending time; or	3 M6 Lesson 3: Solve time word problems where the end time is unknown.
4.MG.2.a.iii the ending time and the amount of elapsed time in hours and minutes, determine the starting time.	3 M6 Lesson 4: Solve time word problems where the start time is unknown.

Measurement and Geometry

4.MG.3 The student will use multiple representations to develop and use formulas to solve problems, including those in context, involving area and perimeter limited to rectangles and squares (in both U.S. Customary and metric units).

Mathematics Standards of Learning for Virginia Public Schools	Aligned Components of *Eureka Math²*
4.MG.3.a Use concrete materials and pictorial models to develop a formula for the area and perimeter of a rectangle (including a square).	4 M2 Lesson 3: Investigate and use a formula for the area of a rectangle. 4 M2 Lesson 18: Investigate and use formulas for the perimeter of a rectangle. 4 M2 Lesson 19: Apply area and perimeter formulas to solve problems.
4.MG.3.b Determine the area and perimeter of a rectangle when given the measure of two adjacent sides (in whole number units), with and without models.	4 M2 Lesson 3: Investigate and use a formula for the area of a rectangle. 4 M2 Lesson 7: Multiply by using an area model and the distributive property. 4 M2 Lesson 18: Investigate and use formulas for the perimeter of a rectangle. 4 M2 Lesson 19: Apply area and perimeter formulas to solve problems.

Mathematics Standards of Learning for Virginia Public Schools	Aligned Components of *Eureka Math²*
4.MG.3.c Determine the area and perimeter of a square when given the measure of one side (in whole number units), with and without models.	*Supplemental material is necessary to address this standard.*
4.MG.3.d Use concrete materials and pictorial models to explore the relationship between area and perimeter of rectangles.	3 M6 Topic C: Problem Solving with Perimeter 4 M2 Lesson 3: Investigate and use a formula for the area of a rectangle. 4 M2 Lesson 18: Investigate and use formulas for the perimeter of a rectangle. 4 M2 Lesson 19: Apply area and perimeter formulas to solve problems.
4.MG.3.e Identify and represent rectangles with the same perimeter and different areas or with the same area and different perimeters.	3 M6 Lesson 16: Solve problems to determine the perimeter of rectangles with the same area. 3 M6 Lesson 17: Solve problems to determine the areas of rectangles with the same perimeter.
4.MG.3.f Solve contextual problems involving area and perimeter of rectangles and squares.	4 M2 Lesson 3: Investigate and use a formula for the area of a rectangle. 4 M2 Lesson 18: Investigate and use formulas for the perimeter of a rectangle. 4 M2 Lesson 19: Apply area and perimeter formulas to solve problems. 4 M2 Lesson 20: Solve word problems involving additive and multiplicative comparisons.

Measurement and Geometry

4.MG.4 The student will identify, describe, and draw points, rays, line segments, angles, and lines, including intersecting, parallel, and perpendicular lines.

Mathematics Standards of Learning for Virginia Public Schools	Aligned Components of *Eureka Math²*
4.MG.4.a Identify and describe points, lines, line segments, rays, and angles, including endpoints and vertices.	4 M6 Topic A: Lines and Angles
4.MG.4.b Describe endpoints and vertices in relation to lines, line segments, rays, and angles.	4 M6 Topic A: Lines and Angles
4.MG.4.c Draw representations of points, line segments, rays, angles, and lines, using a ruler or straightedge.	4 M6 Topic A: Lines and Angles
4.MG.4.d Identify parallel, perpendicular, and intersecting lines and line segments in plane and solid figures, including those in context.	4 M6 Lesson 4: Identify, define, and draw perpendicular lines. 4 M6 Lesson 5: Identify, define, and draw parallel lines. *Supplemental material is necessary to address intersecting lines in plane figures and all lines in solid figures.*
4.MG.4.e Use symbolic notation to name points, lines, line segments, rays, angles, and to describe parallel and perpendicular lines.	4 M6 Topic A: Lines and Angles

Measurement and Geometry

4.MG.5 The student will classify and describe quadrilaterals (parallelograms, rectangles, squares, rhombi, and/or trapezoids) using specific properties and attributes.

Mathematics Standards of Learning for Virginia Public Schools	Aligned Components of *Eureka Math²*
4.MG.5.a Develop definitions for parallelograms, rectangles, squares, rhombi, and trapezoids through the exploration of properties and attributes.	3 M4 Lesson 1: Explore attributes of squares, rectangles, and trapezoids. 3 M6 Topic B: Attributes of Two-Dimensional Figures
4.MG.5.b Identify and describe points, line segments, angles, and vertices in quadrilaterals.	4 M6 Topic A: Lines and Angles
4.MG.5.c Identify and describe parallel, intersecting, perpendicular, and congruent sides in quadrilaterals.	4 M6 Lesson 4: Identify, define, and draw perpendicular lines. 4 M6 Lesson 5: Identify, define, and draw parallel lines. *Supplemental material is necessary to address intersecting sides.*
4.MG.5.d Compare, contrast, and classify quadrilaterals (parallelograms, rectangles, squares, rhombi, and/or trapezoids) based on the following properties and attributes:	3 M6 Topic B: Attributes of Two-Dimensional Figures 5 M5 Topic A: Drawing, Analysis, and Classification of Two-Dimensional Figures
4.MG.5.d.i parallel sides;	3 M6 Topic B: Attributes of Two-Dimensional Figures

Mathematics Standards of Learning for Virginia Public Schools	Aligned Components of *Eureka Math²*
4.MG.5.d.ii perpendicular sides;	*Supplemental material is necessary to address this standard.*
4.MG.5.d.iii congruence of sides; and	3 M6 Topic B: Attributes of Two-Dimensional Figures
4.MG.5.d.iv number of right angles.	3 M6 Topic B: Attributes of Two-Dimensional Figures
4.MG.5.e Denote properties of quadrilaterals and identify parallel sides, congruent sides, and right angles by using geometric markings.	4 M6 Topic A: Lines and Angles *Supplemental material is necessary to address denoting congruent sides by using geometric markings.*
4.MG.5.f Use symbolic notation to name line segments and angles in quadrilaterals.	4 M6 Topic A: Lines and Angles

Measurement and Geometry

4.MG.6 The student will identify, describe, compare, and contrast plane and solid figures according to their characteristics (number of angles, vertices, edges, and the number and shape of faces), with and without models.

Mathematics Standards of Learning for Virginia Public Schools	Aligned Components of *Eureka Math²*
4.MG.6.a Identify concrete models and pictorial representations of solid figures (cube, rectangular prism, square pyramid, sphere, cone, and cylinder).	*Supplemental material is necessary to address this standard.*
4.MG.6.b Identify and describe solid figures (cube, rectangular prism, square pyramid, and sphere) according to their characteristics (number of angles, vertices, edges, and by the number and shape of faces).	*Supplemental material is necessary to address this standard.*
4.MG.6.c Compare and contrast plane and solid figures (limited to circles, squares, triangles, rectangles, spheres, cubes, square pyramids, and rectangular prisms) according to their characteristics (number of sides, angles, vertices, edges, and the number and shape of faces).	*Supplemental material is necessary to address this standard.*

Probability and Statistics

4.PS.1 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 line graphs.

Mathematics Standards of Learning for Virginia Public Schools	Aligned Components of *Eureka Math²*
4.PS.1.a Formulate questions that require the collection or acquisition of data.	*Supplemental material is necessary to address this standard.*
4.PS.1.b Determine the data needed to answer a formulated question and collect or acquire existing data (limited to 10 or fewer data points) using various methods (e.g., observations, measurements, experiments).	*Supplemental material is necessary to address this standard.*
4.PS.1.c Organize and represent a data set using line graphs with a title and labeled axes with whole number increments, with and without the use of technology tools.	*Supplemental material is necessary to address this standard.*
4.PS.1.d Analyze data represented in line graphs and communicate results orally and in writing:	5 M6 Lesson 18: Interpret line graphs.

Mathematics Standards of Learning for Virginia Public Schools	Aligned Components of *Eureka Math²*
4.PS.1.d.i describe the characteristics of the data represented in a line graph and the data as a whole (e.g., the time period when the temperature increased the most);	5 M6 Lesson 18: Interpret line graphs.
4.PS.1.d.ii identify parts of the data that have special characteristics and explain the meaning of the greatest, the least, or the same (e.g., the highest temperature shows the warmest day);	5 M6 Lesson 18: Interpret line graphs.
4.PS.1.d.iii make inferences about data represented in line graphs;	5 M6 Lesson 18: Interpret line graphs.
4.PS.1.d.iv draw conclusions about the data and make predictions based on the data to answer questions; and	5 M6 Lesson 18: Interpret line graphs.
4.PS.1.d.v solve single-step and multistep addition and subtraction problems using data from line graphs.	*Supplemental material is necessary to address this standard.*

Probability and Statistics

4.PS.2 The student will model and determine the probability of an outcome of a simple event.

Mathematics Standards of Learning for Virginia Public Schools	Aligned Components of *Eureka Math²*
4.PS.2.a Describe probability as the degree of likelihood of an outcome occurring using terms such as *impossible*, *unlikely*, *equally likely*, *likely*, and *certain*.	*Supplemental material is necessary to address this standard.*
4.PS.2.b Model and determine all possible outcomes of a given simple event where there are no more than 24 possible outcomes, using a variety of manipulatives (e.g., coins, two-sided counters, number cubes, spinners).	*Supplemental material is necessary to address this standard.*
4.PS.2.c Write the probability of a given simple event as a fraction between 0 and 1, where there are no more than 24 possible outcomes.	*Supplemental material is necessary to address this standard.*
4.PS.2.d Determine the likelihood of an event occurring and relate it to its whole number or fractional representation (e.g., impossible or zero; equally likely; certain or one).	*Supplemental material is necessary to address this standard.*

Mathematics Standards of Learning for Virginia Public Schools	Aligned Components of *Eureka Math²*
4.PS.2.e Create a model or contextual problem to represent a given probability.	*Supplemental material is necessary to address this standard.*

Patterns, Functions, and Algebra

4.PFA.1 The student will identify, describe, extend, and create increasing and decreasing patterns (limited to addition, subtraction, and multiplication of whole numbers), including those in context, using various representations.

Mathematics Standards of Learning for Virginia Public Schools	Aligned Components of *Eureka Math²*
4.PFA.1.a Identify, describe, extend, and create increasing and decreasing patterns using various representations (e.g., objects, pictures, numbers, number lines, input/output tables, and function machines).	3 M3 Lesson 17: Identify and complete patterns with input–output tables. 4 M1 Lesson 1: Interpret multiplication as multiplicative comparison. 4 M1 Lesson 2: Solve multiplicative comparison problems with unknowns in various positions. 4 M2 Lesson 26: Use relationships within a pattern to find an unknown term in the sequence.
4.PFA.1.b Analyze an increasing or decreasing single-operation numerical pattern found in lists, input/output tables, or function machines and generalize the change to identify the rule, extend the pattern, or identify missing terms.	3 M3 Lesson 17: Identify and complete patterns with input–output tables. 4 M2 Lesson 26: Use relationships within a pattern to find an unknown term in the sequence.

Mathematics Standards of Learning for Virginia Public Schools	Aligned Components of *Eureka Math²*
4.PFA.1.c Given a rule, create increasing and decreasing patterns using numbers and input/output tables (including function machines).	3 M3 Lesson 17: Identify and complete patterns with input–output tables. 4 M2 Lesson 26: Use relationships within a pattern to find an unknown term in the sequence.
4.PFA.1.d Solve contextual problems that involve identifying, describing, and extending increasing and decreasing patterns using single-operation input and output rules.	3 M3 Lesson 17: Identify and complete patterns with input–output tables. 4 M2 Lesson 26: Use relationships within a pattern to find an unknown term in the sequence.