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| 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.<br><br>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.<br><br>The teacher–writers who created the curriculum have also developed essential resources, available only from Great Minds, including the following:<br><br>• Printed material in English and Spanish<br>• Digital resources<br>• Professional development<br>• Classroom tools and manipulatives<br>• Teacher support materials<br>• Parent resources |

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

## GRADE 4 MATHEMATICS

The majority of the Grade 4 North Carolina Course of Study for Mathematics is covered by the Grade 4 *Eureka Math* curriculum. The areas where the Grade 4 North Carolina Course of Study for Mathematics and Grade 4 *Eureka Math* do not align are in the domain of Measurement and Data. Standards from this domain 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 Grade 4 North Carolina Course of Study for Mathematics while still benefiting from the coherence and rigor of *Eureka Math*.

## INDICATORS

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| **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* |
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| **1. Make sense of problems and persevere in solving them.**<br><br>Mathematically proficient students in grade 4 know that doing mathematics involves solving problems and discussing how they solved them. Students explain to themselves the meaning of a problem and look for ways to solve it. Fourth graders may use concrete objects or pictures to help them conceptualize and solve problems. They may check their thinking by asking themselves, "Does this make sense?" They listen to the strategies of others and will try different approaches. They often will use another method to check their answers. | 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:<br><br>G4 M1: Place Value, Rounding, and Algorithms for Addition and Subtraction<br><br>G4 M2: Unit Conversions and Problem Solving with Metric Measurement |
| **2. Reason abstractly and quantitatively.**<br><br>Mathematically proficient fourth grade students should recognize that a number represents a specific quantity. They connect the quantity to written symbols and create a logical representation of the problem at hand, considering both the appropriate units involved and the meaning of quantities. They extend this understanding from whole numbers to their work with fractions and decimals. Students write simple expressions, record calculations with numbers, and represent or round numbers using place value concepts. | 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:<br><br>G4 M1: Place Value, Rounding, and Algorithms for Addition and Subtraction<br><br>G4 M3: Multi-Digit Multiplication and Division<br><br>G4 M4: Angle Measure and Plane Figures<br><br>G4 M5: Fraction Equivalence, Ordering, and Operations<br><br>G4 M6: Decimal Fractions<br><br>G4 M7: Exploring Measurement with Multiplication |

| Standards for Mathematical Practice | Aligned Components of *Eureka Math* |
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| **3. Construct viable arguments and critique the reasoning of others.**<br><br>In fourth grade mathematically proficient students may construct arguments using concrete referents, such as objects, pictures, and drawings. They explain their thinking and make connections between models and equations. They refine their mathematical communication skills as they participate in mathematical discussions involving questions like “How did you get that?” and “Why is that true?” 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:<br><br>G4 M1: Place Value, Rounding, and Algorithms for Addition and Subtraction<br><br>G4 M4: Angle Measure and Plane Figures<br><br>G4 M5: Fraction Equivalence, Ordering, and Operations<br><br>G4 M7: Exploring Measurement with Multiplication |
| **4. Model with mathematics.**<br><br>Mathematically proficient fourth grade students experiment with representing problem situations in multiple ways including numbers, words (mathematical language), drawing pictures, using objects, making a chart, list, or graph, creating equations, etc. Students need opportunities to connect the different representations and explain the connections. They should be able to use all of these representations as needed. Fourth graders should evaluate their results in the context of the situation and reflect on whether the results make sense. | 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:<br><br>G4 M3: Multi-Digit Multiplication and Division<br><br>G4 M5: Fraction Equivalence, Ordering, and Operations<br><br>G4 M6: Decimal Fractions |

| Standards for Mathematical Practice | Aligned Components of *Eureka Math* |
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| **5. Use appropriate tools strategically.**<br><br>Mathematically proficient fourth grade students consider the available tools (including estimation) when solving a mathematical problem and decide when certain tools might be helpful. For instance, they may use graph paper or a number line to represent and compare decimals and protractors to measure angles. They use other measurement tools to understand the relative size of units within a system and express measurements given in larger units in terms of smaller units. | 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:<br><br>G4 M1: Place Value, Rounding, and Algorithms for Addition and Subtraction<br><br>G4 M3: Multi-Digit Multiplication and Division<br><br>G4 M4: Angle Measure and Plane Figures<br><br>G4 M5: Fraction Equivalence, Ordering, and Operations<br><br>G4 M6: Decimal Fractions |
| **6. Attend to precision.**<br><br>As fourth grade students develop their mathematical communication skills, they try to use clear and precise language in their discussions with others and in their own reasoning. They are careful about specifying units of measure and state the meaning of the symbols they choose. For instance, they use appropriate labels when creating a line plot. | 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:<br><br>G4 M1: Place Value, Rounding, and Algorithms for Addition and Subtraction<br><br>G4 M4: Angle Measure and Plane Figures<br><br>G4 M5: Fraction Equivalence, Ordering, and Operations<br><br>G4 M6: Decimal Fractions |

| Standards for Mathematical Practice | Aligned Components of *Eureka Math* |
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| **7. Look for and make use of structure.**<br><br>In fourth grade mathematically proficient students look closely to discover a pattern or structure. For instance, students use properties of operations to explain calculations (partial products model). They relate representations of counting problems such as tree diagrams and arrays to the multiplication principal of counting. They generate number or shape patterns that follow a given rule. | 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:<br><br>G4 M2: Unit Conversions and Problem Solving with Metric Measurement<br><br>G4 M5: Fraction Equivalence, Ordering, and Operations<br><br>G4 M7: Exploring Measurement with Multiplication |
| **8. Look for and express regularity in repeated reasoning.**<br><br>Students in fourth grade should notice repetitive actions in computation to make generalizations. Students use models to explain calculations and understand how algorithms work. They also use models to examine patterns and generate their own algorithms. For example, students use visual fraction models to write equivalent fractions. | 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:<br><br>G4 M2: Unit Conversions and Problem Solving with Metric Measurement<br><br>G4 M3: Multi-Digit Multiplication and Division<br><br>G4 M5: Fraction Equivalence, Ordering, and Operations<br><br>G4 M6: Decimal Fractions<br><br>G4 M7: Exploring Measurement with Multiplication |

| Domain | Standards for Mathematical Content | Aligned Components of *Eureka Math* |
|---|---|---|
| **Operations and Algebraic Thinking** | **Cluster: Represent and solve problems involving multiplication and division.** | |
| | **NC.4.OA.1**<br>Interpret a multiplication equation as a comparison. Multiply or divide to solve word problems involving multiplicative comparisons using models and equations with a symbol for the unknown number. Distinguish multiplicative comparison from additive comparison. | G4 M3 Topic A: Multiplicative Comparison Word Problems<br>G4 M3 Topic D: Multiplication Word Problems<br>G4 M7 Topic A: Measurement Conversion Tables |
| | **Cluster: Use the four operations with whole numbers to solve problems.** | |
| | **NC.4.OA.3**<br>Solve two-step word problems involving the four operations with whole numbers.<br>Use estimation strategies to assess reasonableness of answers.<br>Interpret remainders in word problems. Represent problems using equations with a letter standing for the unknown quantity. | G4 M1 Topic D: Multi-Digit Whole-Number Addition<br>G4 M1 Topic E: Multi-Digit Whole-Number Subtraction<br>G4 M1 Topic F: Addition and Subtraction Word Problems<br>G4 M3 Topic D: Multiplication Word Problems<br>G4 M3 Topic G: Division of Thousands, Hundreds, Tens, and Ones<br>G4 M7 Topic B: Problem Solving with Measurement |

| Domain | Standards for Mathematical Content | Aligned Components of *Eureka Math* |
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| | **Cluster: Gain familiarity with factors and multiples.** | |
| | **NC.4.OA.4**<br>Find all factor pairs for whole numbers up to and including 50 to:<br>• Recognize that a whole number is a multiple of each of its factors.<br>• Determine whether a given whole number is a multiple of a given one-digit number.<br>• Determine if the number is prime or composite. | G4 M3 Topic F: Reasoning with Divisibility |
| | **Cluster: Generate and analyze patterns.** | |
| | **NC.4.OA.5**<br>Generate and analyze a number or shape pattern that follows a given rule. | G4 M5 Topic H: Explore a Fraction Pattern |
| **Number and Operations in Base Ten** | **Cluster: Generalize place value understanding for multi-digit whole numbers.** | |
| | **NC.4.NBT.1**<br>Explain that in a multi-digit whole number, a digit in one place represents 10 times as much as it represents in the place to its right, up to 100,000. | G4 M1 Topic A: Place Value of Multi-Digit Whole Numbers |
| | **NC.4.NBT.2**<br>Read and write multi-digit whole numbers up to and including 100,000 using numerals, number names, and expanded form. | G4 M1 Topic A: Place Value of Multi-Digit Whole Numbers |

| Domain | Standards for Mathematical Content | Aligned Components of *Eureka Math* |
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| | **NC.4.NBT.7**<br>Compare two multi-digit numbers up to and including 100,000 based on the values of the digits in each place, using >, =, and < symbols to record the results of comparisons. | G4 M1 Topic B: Comparing Multi-Digit Whole Numbers |
| | **Cluster: Use place value understanding and properties of operations to perform multi-digit arithmetic.** | |
| | **NC.4.NBT.4**<br>Add and subtract multi-digit whole numbers up to and including 100,000 using the standard algorithm with place value understanding. | G4 M1 Topic D: Multi-Digit Whole-Number Addition<br>G4 M1 Topic E: Multi-Digit Whole-Number Subtraction |
| | **NC.4.NBT.5**<br>Multiply a whole number of up to three digits by a one-digit whole number, and multiply up to two two-digit numbers with place value understanding using area models, partial products, and the properties of operations. Use models to make connections and develop the algorithm. | G4 M3 Topic B: Multiplication by 10, 100, and 1,000<br>G4 M3 Topic C: Multiplication of Up to Four Digits by Single-Digit Numbers<br>G4 M3 Topic D: Multiplication Word Problems<br>G4 M3 Topic H: Multiplication of Two-Digit by Two-digit Numbers |
| | **NC.4.NBT.6**<br>Find whole-number quotients and remainders with up to three-digit dividends and one-digit divisors with place value understanding using rectangular arrays, area models, repeated subtraction, partial quotients, properties of operations, and/or the relationship between multiplication and division. | G4 M3 Topic E: Division of Tens and Ones with Successive Remainders<br>G4 M3 Topic G: Division of Thousands, Hundreds, Tens, and Ones |

| Domain | Standards for Mathematical Content | Aligned Components of *Eureka Math* |
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| **Number and Operations — Fractions** | **Cluster: Extend understanding of fractions.** | |
| | **NC.4.NF.1**<br>Explain why a fraction is equivalent to another fraction by using area and length fraction models, with attention to how the number and size of the parts differ even though the two fractions themselves are the same size. | G4 M5 Topic B: Fraction Equivalence Using Multiplication and Division<br>G4 M5 Topic E: Extending Fraction Equivalence to Fractions Greater than 1 |
| | **NC.4.NF.2**<br>Compare two fractions with different numerators and different denominators, using the denominators 2, 3, 4, 5, 6, 8, 10, 12, and 100. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with symbols >, =, or <, and justify the conclusions by:<br>• Reasoning about their size and using area and length models.<br>• Using benchmark fractions 0, 1/2, and a whole.<br>• Comparing common numerator or common denominators. | G4 M5 Topic C: Fraction Comparison<br>G4 M5 Topic E: Extending Fraction Equivalence to Fractions Greater than 1 |

| Domain | Standards for Mathematical Content | Aligned Components of *Eureka Math* |
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| | **Cluster: Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers.** | |
| | **NC.4.NF.3**<br>Understand and justify decompositions of fractions with denominators of 2, 3, 4, 5, 6, 8, 10, 12, and 100.<br>• Understand addition and subtraction of fractions as joining and separating parts referring to the same whole.<br>• Decompose a fraction into a sum of unit fractions and a sum of fractions with the same denominator in more than one way using area models, length models, and equations.<br>• Add and subtract fractions, including mixed numbers with like denominators, by replacing each mixed number with an equivalent fraction, and/or by using properties of operations and the relationship between addition and subtraction.<br>• Solve word problems involving addition and subtraction of fractions, including mixed numbers by writing equations from a visual representation of the problem. | G4 M5 Topic A: Decomposition and Fraction Equivalence<br>G4 M5 Topic D: Fraction Addition and Subtraction<br>G4 M5 Topic E: Extending Fraction Equivalence to Fractions Greater than 1<br>G4 M5 Topic F: Addition and Subtraction of Fractions by Decomposition |

| Domain | Standards for Mathematical Content | Aligned Components of *Eureka Math* |
|---|---|---|
| | **Cluster: Use unit fractions to understand operations of fractions.** | |
| | **NC.4.NF.4**<br>Apply and extend previous understandings of multiplication to:<br>• Model and explain how fractions can be represented by multiplying a whole number by a unit fraction, using this understanding to multiply a whole number by any fraction less than one.<br>• Solve word problems involving multiplication of a fraction by a whole number. | G4 M5 Topic A: Decomposition and Fraction Equivalence<br>G4 M5 Topic G: Repeated Addition of Fractions as Multiplication |
| | **Cluster: Understand decimal notation for fractions, and compare decimal fractions.** | |
| | **NC.4.NF.6**<br>Use decimal notation to represent fractions.<br>• Express, model and explain the equivalence between fractions with denominators of 10 and 100.<br>• Use equivalent fractions to add two fractions with denominators of 10 or 100.<br>• Represent tenths and hundredths with models, making connections between fractions and decimals. | G4 M6 Topic A: Exploration of Tenths<br>G4 M6 Topic B: Tenths and Hundredths<br>G4 M6 Topic D: Addition with Tenths and Hundredths |

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| | **NC.4.NF.7**<br>Compare two decimals to hundredths by reasoning about their size using area and length models, and recording the results of comparisons with the symbols >, =, or <. Recognize that comparisons are valid only when the two decimals refer to the same whole. | G4 M6 Topic C: Decimal Comparison |
| **Measurement and Data** | **Cluster: Solve problems involving measurement.** | |
| | **NC.4.MD.1**<br>Know relative sizes of measurement units. Solve problems involving metric measurement.<br>• Measure to solve problems involving metric units: centimeter, meter, gram, kilogram, liter, milliliter.<br>• Add, subtract, multiply, and divide to solve one-step word problems involving whole-number measurements of length, mass, and capacity that are given in metric units. | G4 M2 Topic A: Metric Unit Conversions<br>G4 M2 Topic B: Application of Metric Unit Conversions<br>G4 M7 Topic A: Measurement Conversion Tables<br>G4 M7 Topic B: Problem Solving with Measurement<br>G4 M7 Topic C: Investigation of Measurements Expressed as Mixed Numbers |
| | **NC.4.MD.2**<br>Use multiplicative reasoning to convert metric measurements from a larger unit to a smaller unit using place value understanding, two-column tables, and length models. | G4 M2 Topic A: Metric Unit Conversions<br>G4 M2 Topic B: Application of Metric Unit Conversions<br>G4 M6 Topic E: Money Amounts as Decimal Numbers<br>G4 M7 Topic B: Problem Solving with Measurement<br>G4 M7 Topic C: Investigation of Measurements Expressed as Mixed Numbers |

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| | **NC.4.MD.8**<br>Solve word problems involving addition and subtraction of time intervals that cross the hour. | G3 M2 Lesson 4: Solve word problems involving time intervals within 1 hour by counting backward and forward using the number line and clock.<br>G3 M2 Lesson 5: Solve word problems involving time intervals within 1 hour by adding and subtracting on the number line. |
| | **Cluster: Solve problems involving area and perimeter.** | |
| | **NC.4.MD.3**<br>Solve problems with area and perimeter.<br>• Find areas of rectilinear figures with known side lengths.<br>• Solve problems involving a fixed area and varying perimeters and a fixed perimeter and varying areas.<br>• Apply the area and perimeter formulas for rectangles in real world and mathematical problems. | G2 M7 Topic D: Recording Perimeter and Area Data on Line Plots<br>G2 M7 Topic E: Problem Solving with Perimeter and Area<br>G3 M7 Topic C: Problem Solving with Perimeter |
| | **Cluster: Represent and interpret data.** | |
| | **NC.4.MD.4**<br>Represent and interpret data using whole numbers.<br>• Collect data by asking a question that yields numerical data.<br>• Make a representation of data and interpret data in a frequency table, scaled bar graph, and/or line plot.<br>• Determine whether a survey question will yield categorical or numerical data. | G3 M6 Lesson 3: Create scaled bar graphs. |

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| | **Cluster: Understand concepts of angle and measure angles.** | |
| | **NC.4.MD.6**<br>Develop an understanding of angles and angle measurement.<br>• Understand angles as geometric shapes that are formed wherever two rays share a common endpoint, and are measured in degrees.<br>• Measure and sketch angles in whole-number degrees using a protractor.<br>• Solve addition and subtraction problems to find unknown angles on a diagram in real-world and mathematical problems. | G4 M4 Topic B: Angle Measurement<br>G4 M4 Topic C: Problem Solving with the Addition of Angle Measures |
| **Geometry** | **Cluster: Classify shapes based on lines and angles in two-dimensional figures.** | |
| | **NC.4.G.1**<br>Draw and identify points, lines, line segments, rays, angles, and perpendicular and parallel lines. | G4 M4 Topic A: Lines and Angles<br>G4 M4 Topic D: Two-Dimensional Figures and Symmetry |
| | **NC.4.G.2**<br>Classify quadrilaterals and triangles based on angle measure, side lengths, and the presence or absence of parallel or perpendicular lines. | G4 M4 Topic D: Two-Dimensional Figures and Symmetry |
| | **NC.4.G.3**<br>Recognize symmetry in a two-dimensional figure, and identify and draw lines of symmetry. | G4 M4 Topic D: Two-Dimensional Figures and Symmetry |