North Carolina Mathematics

Grade 4

Adopted 2018

Standards for Mathematical Practice

1. **Make sense of problems and persevere in solving them.** MP.1
2. **Reason abstractly and quantitatively.** MP.2
3. **Construct viable arguments and critique the reasoning of others.** MP.3
4. **Model with mathematics.** MP.4
5. **Use appropriate tools strategically.** MP.5
6. **Attend to precision.** MP.6
7. **Look for and make use of structure.** MP.7
8. **Look for and express regularity in repeated reasoning.** MP.8

Operations and Algebraic Thinking

Use the four operations with whole numbers to solve problems.

3. Solve two-step word problems involving the four operations with whole numbers. Use estimation strategies to assess reasonableness of answers.
Interpret remainders in word problems.
Represent problems using equations with a letter standing for the unknown quantity. NC.4.OA.3

Gain familiarity with factors and multiples.

4. Find all factor pairs for whole numbers up to and including 50 to:
Recognize that a whole number is a multiple of each of its factors.
Determine whether a given whole number is a multiple of a given one-digit number.
Determine if the number is prime or composite. NC.4.OA.4

Generate and analyze patterns.

5. Generate and analyze a number or shape pattern that follows a given rule. NC.4.OA.5

Number and Operations in Base Ten

Generalize place value understanding for multi-digit numbers whole numbers.

1. 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. NC.4.NBT.1

Skip to main content

Read and write multi-digit whole numbers up to and including 100,000 using numerals, number names, and expanded form. NC.4.NBT.2

7. 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. NC.4.NBT.7

Use place value understanding and properties of operations to perform multi-digit arithmetic.

4. Add and subtract multi-digit whole numbers up to and including 100,000 using the standard algorithm with place value understanding. NC.4.NBT.4
5. 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. NC.4.NBT.5
6. 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. NC.4.NBT.6

Measurement and Data

Represent and interpret data.

4. Represent and interpret data using whole numbers.
Collect data by asking a question that yields numerical data.
Make a representation of data and interpret data in a frequency table, scaled bar graph, and/or line plot.
Determine whether a survey question will yield categorical or numerical data. NC.4.MD.4

Solve problems involving measurement.

1. Know relative sizes of measurement units. Solve problems involving metric measurement.
Measure to solve problems involving metric units: centimeter, meter, gram, kilogram, Liter, milliliter.
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. NC.4.MD.1
2. 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. NC.4.MD.2
8. Solve word problems involving addition and subtraction of time intervals that cross the hour. NC.4.MD.8

Solve problems involving area and perimeter.

3. Solve problems with area and perimeter.
Find areas of rectilinear figures with known side lengths.
Solve problems involving a fixed area and varying perimeters and a fixed perimeter and varying areas.
Apply the area and perimeter formulas for rectangles in real world and mathematical problems. NC.4.MD.3

nderstand concepts of angle and measure angles.

Skip to main content

6. Develop an understanding of angles and angle measurement.
Understand angles as geometric shapes that are formed wherever two rays share a common endpoint, and are measured in degrees.
Measure and sketch angles in whole-number degrees using a protractor.
Solve addition and subtraction problems to find unknown angles on a diagram in real-world and mathematical problems. NC.4.MD.6

Geometry

Classify shapes based on lines and angles in two-dimensional figures.

1. Draw and identify points, lines, line segments, rays, angles, and perpendicular and parallel lines. NC.4.G.1
2. Classify quadrilaterals and triangles based on angle measure, side lengths, and the presence or absence of parallel or perpendicular lines. NC.4.G.2
3. Recognize symmetry in a two-dimensional figure, and identify and draw lines of symmetry. NC.4.G.3

Number and Operations – Fractions

Extend understanding of fractions.

1. 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. NC.4.NF.1
2. 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:
Reasoning about their size and using area and length models.
Using benchmark fractions 0, ½, and a whole.
Comparing common numerator or common denominators. NC.4.NF.2

Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers.

3. Understand and justify decompositions of fractions with denominators of 2, 3, 4, 5, 6, 8, 10, 12, and 100.
Understand addition and subtraction of fractions as joining and separating parts referring to the same whole.
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.
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.
Solve word problems involving addition and subtraction of fractions, including mixed numbers by writing equations from a visual representation of the problem. NC.4.NF.3

Use unit fractions to understand operations of fractions.

Skip to main content

4. Apply and extend previous understandings of multiplication to:
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.
Solve word problems involving multiplication of a fraction by a whole number. NC.4.NF.4

Understand decimal notation for fractions, and compare decimal fractions.

6. Use decimal notation to represent fractions.
Express, model and explain the equivalence between fractions with denominators of 10 and 100.
Use equivalent fractions to add two fractions with denominators of 10 or 100.
Represent tenths and hundredths with models, making connections between fractions and decimals. NC.4.NF.6

7. 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. NC.4.NF.7