South Carolina Mathematics

Grade 4

Mathematical Process Standards MPS

1 Problem Solving MPS.PS

1a Make sense of problems and persevere in solving them strategically. MPS.PS.1

2 Representation & Communication MPS.RC

2a Explain ideas using precise and contextually appropriate mathematical language, tools, and models. MPS.RC.1

3 Connections MPS.C

3a Demonstrate a deep and flexible conceptual understanding of mathematical ideas, operations, and relationships while making real-world connections. MPS.C.1

4 Analyze & Justify MPS.AJ

4a Use critical thinking skills to reason both abstractly and quantitatively. MPS.AJ.1

5 Structure & Patterns MPS.SP

5a Identify and apply regularity in repeated reasoning to make generalizations. MPS.SP.1

Data, Probability, and Statistical Reasoning 4.DPSR

1 Create questions, collect and analyze data, and communicate interpretations through multiple representations. 4.DPSR.1.

1a Collect and organize numerical and categorical data based on observations, investigations, surveys, and experiments using tables, scaled bar graphs, or dot plots. Use titles and labels. Scales to include whole numbers, halves, and fourths. 4.DPSR.1.1

1b Solve one-step, real-world situations using whole number and fractional data represented in tables, scaled picture graphs, scaled bar graphs, or dot plots. Limit to like denominators of 2, 3, 4, 5, 6, 8, and 10. 4.DPSR.1.2

2 Represent the probability of simple events and determine possible outcomes. 4.DPSR.2.

2a Determine the possible outcomes of a simple event and record the probability as certain, possible, or impossible. 4.DPSR.2.1

Measurement, Geometry, and Spatial Reasoning 4.MGSR

1 Solve area and perimeter problems in real-world and mathematical situations. 4.MGSR.1.

- 1a Apply perimeter formulas for rectangles to solve real-world situations including finding the perimeter, given the side lengths, and finding an unknown side length. 4.MGSR.1.1
- 1b Apply area formulas for rectangles to solve real-world situations. Use square units to label area measurements. 4.MGSR.1.2

2 Estimate and measure using units of length, liquid volume, weight, currency, and intervals of time. 4.MGSR.2.

- 2a Calculate the value of a collection of coins and bills in real-world situations to determine whether there is enough money to make a purchase. Justify based on comparison of money amounts. 4.MGSR.2.1
- 2b Solve real-world situations involving addition and subtraction of time intervals within 60 minutes to find elapsed time, start time, or end time. 4.MGSR.2.2
- 2c Measure length to the nearest quarter inch. 4.MGSR.2.3
- 2d Measure weight in customary units and metric units to the nearest whole unit. Limit to ounces, pounds, grams, and kilograms. 4.MGSR.2.4
- 2e Convert customary units of length, weight, and liquid volume from a larger unit to a smaller unit, given direct comparisons of the two measurements and/or the unit equivalencies within a single system of measurement. Limit to inches, feet, yards, ounces, pounds, fluid ounces, cups, pints, quarts, and gallons when given unit equivalencies. 4.MGSR.2.5

3 Extend geometric reasoning to attributes of polygons and/or polyhedrons. 4.MGSR.3.

- 3a Classify triangles according to side length (isosceles, equilateral, scalene) and angle measure (acute, obtuse, right, equiangular). 4.MGSR.3.1
- 3b Classify quadrilaterals in a hierarchy based on their shared attributes. 4.MGSR.3.2

Numerical Reasoning 4.NR

1 Represent and compare numbers using relationships within the base ten number system. 4.NR.1.

- 1a Read and write whole numbers through the millions period (0 to 999,999,999) in word, standard, and equations in expanded form. 4.NR.1.1
- 1b Estimate sums, differences, products, and quotients of multi-digit whole numbers, using rounding and place value to determine the reasonableness of real-world problem solutions. Write an equation for the estimate. 4.NR.1.2
- 1c Order whole numbers within 999,999 (no more than 3) in ascending or descending order and record the comparison(s) using symbols for is less than (<) and/or is greater than (>).Represent and compare fractions in multiple ways using part-whole relationships 4.NR.1.3

2 Represent and compare fractions in multiple ways using part-whole relationships. 4.NR.2.

2a Represent fractions with denominators of 10 and 100 in words, models, and decimal notations. 4.NR.2.1

2b Compare decimal numbers to the hundredths using the benchmarks 0, 0.5, and 1.0, concrete area, and linear models. Use the symbols for is equal to (=), is less than (<), and/or is greater than (>). 4.NR.2.2

2c Generate equivalent fractions, including fractions greater than 1, using multiple representations. Limit fractions to denominators of 2, 3, 4, 5, 6, 8, 10, 12, 20, 25, 50, and 100. 4.NR.2.3

2d Represent the composition and decomposition of fractions with the same denominator, including mixed numbers and fractions greater than 1, using multiple representations. Limit fractions to denominators of 2, 3, 4, 5, 6, 8, 10, 12, 20, 25, 50, and 100. 4.NR.2.4

2e Explain and demonstrate how a mixed number is equivalent to a fraction greater than 1 and how a fraction greater than 1 is equivalent to a mixed number. Limit fractions to denominators of 2, 3, 4, 5, 6, 8, 10, 12, 20, 25, 50, and 100. 4.NR.2.5

2f Compare fractions and mixed numbers with like and unlike denominators applying benchmark fractions such as 0, 1 2 , and 1 using the symbols for is equal to (=), is less than (<), or is greater than (>). Limit fractions to denominators of 2, 3, 4, 5, 6, 8, 10, 12, 20, 25, 50, and 100. 4.NR.2.6

Patterns, Algebra, and Functional Reasoning 4.PAFR

1 Use multiple representations to reason and solve problems involving operational properties of whole numbers and decimals. 4.PAFR.1.

1a Use a strategy to accurately compute sums and differences of whole numbers up to 100,000 and justify the sum or difference. 4.PAFR.1.1

1b Compute the product of a one-digit whole number times a multiple of 10 (from 10 to 90) and 100 (from 100 to 900) based on place value and properties of operations. 4.PAFR.1.2

1c Decompose numbers by the value of each digit to multiply whole numbers up to four digits by a one-digit number and two 2- digit whole numbers. 4.PAFR.1.3

1d Use a strategy to divide up to a four-digit dividend by a one-digit divisor, with and without remainders. Justify the calculation. 4.PAFR.1.4

2 Use multiple representations to reason and solve problems involving operational properties of fractions. 4.PAFR.2.

2a Use a strategy to accurately compute sums and differences of fractions with like denominators and justify the reasonableness of the answer. Limit denominators to 2, 3, 4, 5, 6, 8, 10, 12, 25, and 100. 4.PAFR.2.1

2b Use fraction and decimal equivalencies to add and subtract tenths and hundredths, to include mixed numbers and fractions greater than 1. 4.PAFR.2.2

2c Represent and compute the product of a whole number times a unit fraction. Limit denominators to 2, 3, 4, 5, 6, 8, 10, 12, 25, and 100. 4.PAFR.2.3

2d Interpret a fraction as an equal sharing division situation, where a quantity (the numerator) is divided into equal parts (the denominator) to include real-world situations. 4.PAFR.2.4

3 Use reasoning to represent and solve algebraic and numerical situations. 4.PAFR.3.

3a Find all factor pairs for a whole number in the range 1–50. Determine whether the whole number is prime or composite. 4.PAFR.3.1

3b Describe and extend a numerical pattern that follows a rule using function tables and real-world situations. 4.PAFR.3.2

3c Solve real-world situations involving multiplicative comparison situations and write equations to represent the problem using a variable for the unknown. 4.PAFR.3.3

3d Solve two-step, real-world situations using the four operations involving whole number answers. Represent the problem using an equation with a variable as the unknown in any position. 4.PAFR.3.4