Oklahoma Mathematics

Grade 4

Adopted 2022

Numbers & Operations

1. **Compare and represent whole numbers up to 1,000,000 with an emphasis on place value and equality.** 4.N.1
    1. Read, write, discuss, and represent whole numbers up to 1,000,000. Representations may include numerals, words, pictures, number lines, and manipulatives. 4.N.1.1
    2. Use place value to describe whole numbers between 1,000 and 1,000,000 in terms of millions, hundred thousands, ten thousands, thousands, hundreds, tens, and ones with written, standard, and expanded forms. 4.N.1.2
    3. Applying knowledge of place value, use mental strategies (no written computations) to multiply or divide a number by 10, 100 and 1,000. 4.N.1.3
    4. Use place value to compare and order whole numbers up to 1,000,000, using comparative language, numbers, and symbols. 4.N.1.4

2. **Solve real-world and mathematical problems using multiplication and division.** 4.N.2
    1. Demonstrate fluency with multiplication and division facts with factors up to 12. 4.N.2.1
    2. Multiply 3-digit by 1-digit and 2-digit by 2-digit whole numbers, using various strategies, including but not limited to standard algorithms. 4.N.2.2
    3. Estimate products of 3-digit by 1-digit and 2-digit by 2-digit whole number factors using a variety of strategies (e.g., rounding, front end estimation, adjusting, compatible numbers) to assess the reasonableness of results. Explore larger numbers using technology to investigate patterns. 4.N.2.3
    4. Apply and analyze models to solve multi-step problems requiring the use of addition, subtraction, and multiplication of multi- digit whole numbers. Use various strategies, including the relationship between operations, the use of appropriate technology, and the context of the problem to assess the reasonableness of results. 4.N.2.4
    5. Use strategies and algorithms (e.g., mental strategies, standard algorithms, partial quotients, repeated subtraction, the commutative, associative, and distributive properties) based on knowledge of place value, equality, and properties of operations to divide a 3-digit dividend by a 1-digit whole number divisor, with and without remainders. 4.N.2.5

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Represent and compare fractions and decimals in real-world and mathematical situations; use place value to understand decimal quantities. 4.N.3

1. Represent and rename equivalent fractions using fraction models (e.g., parts of a set, area models, fraction strips, number lines). 4.N.3.1
2. Use benchmark fractions (0, ¼. 1/3, ½, 2/3, ¾, 1) to locate additional fractions with denominators up to twelfths on a number line. 4.N.3.2
3. Use models to order and compare whole numbers and fractions less than and greater than one, using comparative language and symbols. 4.N.3.3
4. Decompose a fraction into a sum of fractions with the same denominator in more than one way, using concrete and pictorial models and recording results with numerical representations (e.g., ¾ = ¼ + ¼ + ¼ and ¾ = 2/4 + ¼). 4.N.3.4
5. Use models to add and subtract fractions with like denominators. 4.N.3.5
6. Represent tenths and hundredths with concrete and pictorial models, making connections between fractions and decimals. 4.N.3.6
7. Read and write decimals in standard, word, and expanded form up to at least the hundredths place in a variety of contexts, including money. 4.N.3.7
8. Compare and order decimals and whole numbers using place value and various models including but not limited to grids, number lines, and base 10 blocks. 4.N.3.8
9. Compare and order benchmark fractions (0, ¼, 1/3, ½, 2/3, ¾, 1) and decimals (0, 0.25, 0.50, 0.75, 1.00) in a variety of representations. 4.N.3.9

4. **Determine the value of bills and coins in order to solve monetary transactions.** 4.N.4
   1. Select the fewest number of coins for a given amount of money up to one dollar. 4.N.4.1
   2. Given a total cost (dollars and coins up to twenty dollars) and amount paid (dollars and coins up to twenty dollars), find the change required in a variety of ways. 4.N.4.2

Algebraic Reasoning & Algebra

1. **Describe, create, and analyze multiple representations of patterns to solve real-world and mathematical problems.** 4.A.1
   1. Create an input/output chart or table to represent or extend a numerical pattern. 4.A.1.1
   2. Describe the single operation rule for a pattern from an input/output table or function machine involving any operation of a whole number. 4.A.1.2
   3. Construct models to show growth patterns involving geometric shapes and define the single operation rule of the pattern. 4.A.1.3
2. **Use multiplication and division with variables to create number sentences representing a given mathematical situation.** 4.A.2
   1. Use the relationships between multiplication and division with the properties of multiplication to solve problems and find values for variables that make number sentences true. 4.A.2.1

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2. Solve for a variable in an equation involving addition, subtraction, multiplication, or division with whole numbers. Analyze models to represent number sentences and vice versa. 4.A.2.2
3. Determine the unknown addend or factor in equivalent and non-equivalent expressions (e.g., 5 + 6 = 4 + __, 3 · 8 < 3 · __). 4.A.2.3

Geometry & Measurement

1. **Name, describe, classify, and construct polygons and three-dimensional figures based on their attributes; recognize polygons and three-dimensional figures in real-life and mathematical situations.** 4.GM.1
   1. Identify points, lines, line segments, rays, angles, endpoints, and parallel and perpendicular lines in various models. 4.GM.1.1
   2. Describe, classify, and construct quadrilaterals, including squares, rectangles, trapezoids, rhombuses, parallelograms, and kites. Recognize quadrilaterals in various models. 4.GM.1.2
   3. Given two three-dimensional shapes, identify each shape. Compare and contrast their similarities and differences based on their attributes. 4.GM.1.3
2. **Recognize and measure attributes in real-world and mathematical situations using various tools.** 4.GM.2
   1. Measure angles in geometric figures and real-world objects with a protractor or angle ruler. 4.GM.2.1
   2. Find the area of polygons by determining if they can be decomposed into rectangles. 4.GM.2.2
   3. Develop the concept that the volume of rectangular prisms with whole-number edge lengths can be found by counting the total number of same-sized unit cubes that fill a shape without gaps or overlaps. Use a variety of tools and create models to determine the volume using appropriate measurements (e.g., cm^3). 4.GM.2.3
   4. Choose an appropriate instrument to measure the length of an object to the nearest whole centimeter or quarter inch. 4.GM.2.4
   5. Recognize and use the relationship between inches, feet, and yards to measure and compare objects. 4.GM.2.5
   6. Recognize and use the relationship between millimeters, centimeters, and meters to measure and compare objects. 4.GM.2.6
   7. Determine and justify the best use of customary and metric measurements in a variety of situations (liquid volumes, mass vs. weight, temperatures above 0 (zero) degrees, and length). 4.GM.2.7
3. **Determine elapsed time and convert between units of time.** 4.GM.3
   1. Determine elapsed time. 4.GM.3.1
   2. Convert one measure of time to another including seconds to minutes, minutes to hours, hours to days, and vice versa, using various models. 4.GM.3.2

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Data & Probability

2. **Summarize, construct, and analyze data.** 4.D.1

1. Create and organize data on a frequency table or line plot marked with whole numbers and fractions using appropriate titles, labels, and units. 4.D.1.1
2. Organize data sets to create tables, bar graphs, timelines, and Venn diagrams. The data may include benchmark fractions or decimals (¼, 1/3, ½, 2/3, ¾, 0.25, 0.50, 0.75). 4.D.1.2
3. Solve one- and two-step problems by analyzing data in whole number, decimal, or fraction form in a frequency table and line plot. 4.D.1.3