Maths - USA

COMMON CORE - GRADE 4

Experience Level: ELEMENTARY

Number of Classes: VARIABLE

Age Range: 8 - 9 YEARS

01 Operations and Algebraic Thinking

- Use the four operations with whole numbers to solve problems.
  - Interpret a multiplication equation as a comparison, e.g., interpret 35 = 5 × 7 as a statement that 35 is 5 times as many as 7 and 7 times as many as 5.
  - Multiply or divide to solve word problems involving multiplicative comparison.
  - Solve multistep word problems posed with whole numbers and having whole-number answers using the four operations.
- Gain familiarity with factors and multiples.
  - Find all factor pairs for a whole number in the range 1-100.

01 Operations and Algebraic Thinking (Contd.)

- Generate and analyze patterns.
  - Generate a number or shape pattern that follows a given rule.

02 Number and Operations in Base Ten

- Generalize place value understanding for multi-digit whole numbers.
  - Recognize that in a multi-digit whole number, a digit in one place represents ten times what it represents in the place to its right.
  - Read and write multi-digit whole numbers using base-ten numerals, number names, and expanded form. Compare two multi-digit numbers based on meanings of the digits in each place, using >, =, and < symbols to record the results of comparisons.
  - Use place value understanding to round multi-digit whole numbers to any place.
- Use place value understanding and properties of operations to perform multi-digit arithmetic.
  - Fluently add and subtract multi-digit whole numbers using the standard algorithm.
  - Multiply a whole number of up to four digits by a one-digit whole number, and multiply two two-digit numbers, using strategies based on place value and the properties of operations. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.

02 Number and Operations in Base Ten (Contd.)

- Find whole-number quotients and remainders with up to four-digit dividends and one-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.

03 Number and Operations - Fractions

- Extend understanding of fraction equivalence and ordering.
  - Explain why a fraction a/b is equivalent to a fraction (n × a)/(n × b)
  - Compare two fractions with different numerators and different denominators, e.g., by creating common denominators or numerators, or by comparing to a benchmark fraction such as 1/2.
- Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers.
  - Understand a fraction a/b with a > 1 as a sum of fractions 1/b.
    - Understand addition and subtraction of fractions as joining and separating parts referring to the same whole.
    - Decompose a fraction into a sum of fractions with the same denominator in more than one way, recording each decomposition by an equation.

03 Number and Operations - Fractions (Contd.)

    - Add and subtract mixed numbers with like denominators, e.g., 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 referring to the same whole and having like denominators
  - Apply and extend previous understandings of multiplication to multiply a fraction by a whole number.
    - Understand a fraction a/b as a multiple of 1/b.
    - Understand a multiple of a/b as a multiple of 1/b, and use this understanding to multiply a fraction by a whole number.
    - Solve word problems involving multiplication of a fraction by a whole number, e.g., by using visual fraction models and equations to represent the problem.
- Understand decimal notation for fractions, and compare decimal fractions.
  - Express a fraction with denominator 10 as an equivalent fraction with denominator 100, and use this technique to add two fractions with respective denominators 10 and 100.
  - Use decimal notation for fractions with denominators 10 or 100.
  - Compare two decimals to hundredths by reasoning about their size. Recognize that comparisons are valid only when the two decimals refer to the same whole.

04 Measurement and Data

- Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit.
  - Know relative sizes of measurement units within one system of units including km, m, cm; kg, g; lb, oz.; l, ml; hr, min, sec.
  - Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or decimals.
  - Apply the area and perimeter formulas for rectangles in real world and mathematical problems.
- Represent and interpret data.
  - Make a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8). Solve problems involving addition and subtraction of fractions by using information presented in line plots.
- Geometric measurement: understand concepts of angle and measure angles.
  - Recognize angles as geometric shapes that are formed wherever two rays share a common endpoint, and understand concepts of angle measurement:
    - An angle is measured with reference to a circle with its center at the common endpoint of the rays, by considering the fraction of the circular arc between the points where the two rays intersect the circle.
    - An angle that turns through n one-degree angles is said to have an angle measure of n degrees.

04 Measurement and Data (Contd.)

- Measure angles in whole-number degrees using a protractor. Sketch angles of specified measure.
  - Recognize angle measure as additive. When an angle is decomposed into non-overlapping parts, the angle measure of the whole is the sum of the angle measures of the parts.

05 Geometry

- Draw and identify lines and angles, and classify shapes by properties of their lines and angles.
  - Draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines. Identify these in two-dimensional figures.
  - Classify two-dimensional figures based on the presence or absence of parallel or perpendicular lines, or the presence or absence of angles of a specified size. Recognize right triangles as a category, and identify right triangles.
  - Recognize a line of symmetry for a two-dimensional figure as a line across the figure such that the figure can be folded along the line into matching parts. Identify line-symmetric figures and draw lines of symmetry.