

MATHEMATICS

Grade 4 Mathematics

Operations and Algebraic Thinking

- a. Use the four operations with whole numbers to solve problems
 - i. Solve multi-step word problems using addition, subtraction, multiplication, and division
 - ii. Interpret remainders in division word problems
 - iii. Solve problems involving factors and multiples
 - iv. Identify and generate prime and composite numbers
- b. Gain familiarity with factors and multiples
 - i. Find all factor pairs for a whole number in the range 1-100
 - ii. Determine whether a given whole number is a multiple of another number
- c. Generate and analyze patterns
 - i. Generate a number or shape pattern that follows a given rule
 - ii. Identify apparent features of the pattern

Number and Operations in Base Ten

- a. Generalize place value understanding for multi-digit whole numbers
 - i. Recognize that a digit in one place represents ten times what it represents in the place to its right
 - ii. Read and write multi-digit whole numbers using base-ten numerals, number names, and expanded form
 - iii. Compare two multi-digit numbers using the symbols $>$, $=$, and $<$

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- b. 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
 - ii. Multiply a whole number of up to four digits by a one-digit whole number
 - iii. Multiply two two-digit numbers using strategies based on place value and the properties of operations
 - iv. Find whole-number quotients and remainders with up to four-digit dividends and one-digit divisors

Number and Operations—Fractions

- a. Extend understanding of fraction equivalence and ordering
 - i. Recognize and generate equivalent fractions
 - ii. Compare two fractions with different numerators and denominators
 - iii. Understand and justify why two fractions are equivalent or not
- b. Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers
 - i. Understand addition and subtraction of fractions as joining and separating parts referring to the same whole
 - ii. Decompose a fraction into a sum of fractions with the same denominator
 - iii. Add and subtract mixed numbers with like denominators
 - iv. Solve word problems involving addition and subtraction of fractions with like denominators

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c. Understand decimal notation for fractions, and compare decimal fractions

- i. Express a fraction with denominator 10 or 100 as a decimal
- ii. Compare two decimals to hundredths by reasoning about their size
- iii. Use decimal notation to represent fractions

Measurement and Data

a. Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit

- i. Know relative sizes of measurement units within one system
- ii. Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money
- iii. Apply the area and perimeter formulas for rectangles in real-world and mathematical problems

b. Represent and interpret data

- i. Make a line plot to display a data set of measurements in fractions of a unit
- ii. Solve problems involving addition and subtraction of fractions by using the information presented in line plots

c. Geometric measurement: understand concepts of angle and measure angles

- i. Recognize angles as geometric shapes formed by two rays sharing a common endpoint (the vertex)
- ii. Identify angles as acute, right, or obtuse
- iii. Measure angles in whole-number degrees using a protractor
- iv. Sketch angles of specified measure

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Geometry

- a. Draw and identify lines and angles, and classify shapes by properties of their lines and angles
 - i. Draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines
 - ii. Identify these geometric elements in two-dimensional figures
 - iii. 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

- b. Recognize and draw shapes having specified attributes, such as a given number of angles or a given number of equal faces
 - i. Identify triangles, quadrilaterals, pentagons, hexagons, and cubes
 - ii. Analyze and compare two-dimensional shapes based on their properties

