

# Mathematics

## Grade 3

It is essential that these standards be addressed in contexts that promote problem solving, reasoning, communication, making connections, and designing and analyzing representations.

### 3.1 Number and Operations: **Develop an understanding of fractions and fraction equivalence.**

- 3.1.1 Represent common fractions (e.g., halves, thirds, fourths, tenths) as equal parts of a whole, parts of a set, or points or distances on a number line.
- 3.1.2 Recognize and demonstrate that sizes of fractional parts are relative to the size of the whole.
- 3.1.3 Use fractions to represent numbers that are equal to, less than, or greater than one.
- 3.1.4 Solve problems that involve comparing and ordering fractions by using models, benchmarks (0,  $\frac{1}{2}$ , 1), or common numerators or denominators.
- 3.1.5 Identify equivalent fractions using models, including the number line.
- 3.1.6 Add common fractions with like denominators.

### 3.2 Number and Operations, Algebra, and Data Analysis: **Develop understandings of multiplication and division, and strategies for basic multiplication facts and related division facts.**

- 3.2.1 Represent and apply the concept of multiplication as repeated addition.
- 3.2.2 Represent and apply the concept of division as repeated subtraction and forming equal groups.
- 3.2.3 Apply models of multiplication (e.g., equal-sized groups, arrays, area models, equal “jumps” on number lines and hundreds charts) and division (e.g., repeated subtraction, partitioning, and sharing) to solve problems.
- 3.2.4 Apply increasingly sophisticated strategies based on the number properties (e.g., place value, commutative, associative, distributive, identity, and zero) to solve multiplication and division problems involving basic facts.
- 3.2.5 Apply the inverse relationship between multiplication and division (e.g.,  $5 \times 6 = 30$ ,  $30 \div 6 = 5$ ) and the relationship between multiples and factors.
- 3.2.6 Represent, analyze and extend number patterns using rules that involve multiplication and/or addition (e.g.,  $\{3, 6, 9, 12, \dots\}$ ,  $\{1, 2, 4, 8, \dots\}$ ).
- 3.2.7 Analyze frequency tables, bar graphs, picture graphs, and line plots; and use them to solve problems involving addition, subtraction, multiplication, and division.

### 3.3 Geometry and Measurement: **Describe and analyze properties of two-dimensional shapes, including perimeters.**

- 3.3.1 Identify right angles in two-dimensional shapes and determine if angles are greater than or less than a right angle (obtuse and acute).
- 3.3.2 Identify, describe, compare, analyze, and informally classify triangles by their sides and angles.
- 3.3.3 Identify, describe, compare, analyze, and classify quadrilaterals (square, rectangle, parallelogram, rhombus, and trapezoid) by their sides and angles.
- 3.3.4 Identify, describe, and compare pentagons, hexagons, and octagons by the number of sides or angles.
- 3.3.5 Investigate and describe the results of decomposing, combining, and transforming polygons to make other polygons.

3.3.6 Build, draw, and analyze two-dimensional shapes to understand attributes and properties of two-dimensional space.

3.3.7 Determine an appropriate unit, tool, or strategy to find the perimeter of polygons.

3.3.8 Use attributes and properties of two-dimensional shapes to solve problems including applications involving parallel and perpendicular lines, congruence, symmetry, and perimeter.