

## Grade Five

The fifth-grade standards place emphasis on number sense with whole numbers, fractions, and decimals. This focus includes concepts of prime and composite numbers, identifying even and odd numbers, and solving problems using order of operations for positive whole numbers. Students will develop proficiency in the use of fractions and decimals to solve practical problems. Students will collect, display, and analyze data in a variety of ways and solve probability problems, using a sample space, a tree diagram, or the Fundamental Counting Principle. Students will also solve problems involving volume, area, and perimeter. Students will be introduced to expressions with a variable. Students will solve problems using strategies including place value and the properties of addition and multiplication. All of these skills assist in the development of the algebraic concepts needed for success in the middle grades.

The use of appropriate technology and the interpretation of the results from applying technology tools must be an integral part of teaching, learning, and assessment. While learning mathematics, students will be actively engaged, using concrete materials and appropriate technologies to facilitate problem solving. However, facility in the use of technology shall not be regarded as a substitute for a student's understanding of quantitative and algebraic concepts or for proficiency in basic computations.

The acquisition of specialized mathematical vocabulary and language is crucial to a student's understanding and appreciation of the subject and fosters confidence in mathematics communication and problem solving.

Problem solving is integrated throughout the content strands. The development of problem-solving skills is a major goal of the mathematics program at every grade level. The development of skills and problem-solving strategies must be integrated early and continuously into each student's mathematics education.

### Number and Number Sense

- 5.1 The student, given a decimal through thousandths, will round to the nearest whole number, tenth, or hundredth.
  
- 5.2 The student will
  - a) represent and identify equivalencies among fractions and decimals, with and without models; and
  - b) compare and order fractions, mixed numbers, and/or decimals in a given set, from least to greatest and greatest to least.
  
- 5.3 The student will
  - a) identify and describe the characteristics of prime and composite numbers; and
  - b) identify and describe the characteristics of even and odd numbers.

### Computation and Estimation

- 5.4 The student will create and solve single-step and multistep practical problems involving addition, subtraction, multiplication, and division of whole numbers.
  
- 5.5 The student will
  - a) estimate and determine the product and quotient of two numbers involving decimals; and
  - b) create and solve single-step and multistep practical problems involving addition, subtraction, and multiplication of decimals, and create and solve single-step practical problems involving division of decimals.

- 5.6 The student will
- solve single-step and multistep practical problems involving addition and subtraction with fractions and mixed numbers; and
  - solve single-step practical problems involving multiplication of a whole number, limited to 12 or less, and a proper fraction, with models.
- 5.7 The student will simplify whole number numerical expressions using the order of operations.

### **Measurement and Geometry**

- 5.8 The student will
- solve practical problems that involve perimeter, area, and volume in standard units of measure; and
  - differentiate among perimeter, area, and volume and identify whether the application of the concept of perimeter, area, or volume is appropriate for a given situation.
- 5.9 The student will
- given the equivalent measure of one unit, identify equivalent measurements within the metric system; and
  - solve practical problems involving length, mass, and liquid volume using metric units.
- 5.10 The student will identify and describe the diameter, radius, chord, and circumference of a circle.
- 5.11 The student will solve practical problems related to elapsed time in hours and minutes within a 24-hour period.
- 5.12 The student will classify and measure right, acute, obtuse, and straight angles.
- 5.13 The student will
- classify triangles as right, acute, or obtuse and equilateral, scalene, or isosceles; and
  - investigate the sum of the interior angles in a triangle and determine an unknown angle measure.
- 5.14 The student will
- recognize and apply transformations, such as translation, reflection, and rotation; and
  - investigate and describe the results of combining and subdividing polygons.

### **Probability and Statistics**

- 5.15 The student will determine the probability of an outcome by constructing a sample space or using the Fundamental (Basic) Counting Principle.
- 5.16 The student, given a practical problem, will
- represent data in line plots and stem-and-leaf plots;
  - interpret data represented in line plots and stem-and-leaf plots; and
  - compare data represented in a line plot with the same data represented in a stem-and-leaf plot.

- 5.17 The student, given a practical context, will
- a) describe mean, median, and mode as measures of center;
  - b) describe mean as fair share;
  - c) describe the range of a set of data as a measure of spread; and
  - d) determine the mean, median, mode, and range of a set of data.

**Patterns, Functions, and Algebra**

- 5.18 The student will identify, describe, create, express, and extend number patterns found in objects, pictures, numbers and tables.
- 5.19 The student will
- a) investigate and describe the concept of variable;
  - b) write an equation to represent a given mathematical relationship, using a variable;
  - c) use an expression with a variable to represent a given verbal expression involving one operation; and
  - d) create a problem situation based on a given equation, using a single variable and one operation.