

## FIFTH GRADE MATH

### Goal

Students in the fifth grade mathematics program will increase their ability to work the four operations when applied to whole numbers, fractions, decimals, and negative numbers. Students will apply patterns, relations, and algebraic thinking to solve a wide variety of problems. They will use common measuring units to determine length, area, mass, and volume. By the end of fifth grade, students will use formulas to determine area, perimeter, and volume of basic geometric shapes. In addition, students will use grids, tables, graphs, and charts to record and analyze data.

While learning mathematics, students should be actively engaged and using concrete materials. Students should correctly use the concepts, skills, symbols, and vocabulary associated with mathematics.

### Number Sense and Operations

#### 1. The student will compute with whole numbers, fractions, decimals, and percents.

- a. Read, write, and compare numbers very large (billions) and very small (thousandths) numbers.
- b. Identify and order decimals, fractions, and mixed numbers.
- c. Identify equivalent decimals, fractions, and percents.
- d. Identify prime and composite numbers through 50.
- e. Determine the greatest common factor and the least common multiple of given numbers.

#### 2. The student will solve problems involving addition, subtraction, multiplication, and division of fractions and decimals.

- a. Demonstrate commutative and associative properties of addition and multiplication and the distributive property of multiplication.
- b. Identify, and use, the rules for divisibility.
- c. Explain the inverse nature of multiplication and division.
- d. Find the least common denominator of fractions with unlike denominators.
- e. Add, subtract, and multiply fractions and mixed numbers with like and unlike denominators.
- f. Add, subtract, and multiply with decimals. Divide decimals by whole numbers.
- g. Solve multi-step word problems and equations with more than one operation.

### Patterns, Relations, and Algebra

#### 1. The student will solve basic equations using variables.

- a. Use information taken from a graph or equation to solve problems.
- b. Write and evaluate simple algebraic expressions with one variable.
- c. Write and solve equations for word problems.

### Geometry

#### 1. The student will identify and classify the properties of and relationships between geometric figures.

- a. Compare/contrast and classify geometric figures (e.g. polygons, circles, three-dimensional shapes) by their attributes.

- b. Identify and describe equilateral, right, and isosceles triangles.
- c. Identify ordered pairs of data from a graph. Write ordered pairs correctly (e.g.  $x, y$ ).

## **Measurement**

### **1. The student will determine the volume and area of simple objects.**

- a. Measure, identify, and draw angles. Determine that the sum of the angles of any triangle is 180 degrees and the sum of the angles of any quadrilateral is 360 degrees.
- b. Develop and use formulas to find the perimeter and area of squares and rectangles.
- c. Identify the arc, chord, radius, and diameter of a circle.
- d. Understand the concept of volume.
- e. Differentiate between, and use appropriate units of measures for two- and three- dimensional objects.

### **2. The student will select and use appropriate units for measurement.**

- a. Convert measurements within the same system (e.g. inches to feet, hours to minutes, and centimeters to meters).
- b. Use the appropriate tools to measure length, weight, temperature, volume, and area.
- c. Estimate conversions between Fahrenheit and Celsius.

## **Data Analysis, Statistics, and Probability**

### **1. The student will demonstrate an understanding of data collection, display, and interpretation.**

- a. Organize and display data in appropriate graphs and representations (e.g. bar graph, line graph, circle graph). Explain which types of graphs are appropriate for various data sets.
- b. Interpret and compare complex displays of data (e.g. multiple sets of data on the same graph, Venn diagrams, a combination of diagrams, charts, tables, graphs).

### **2. The student will explore probability and chance.**

- a. Use collected data to compare actual results to theoretical results, such as a hundred coin tosses predicted verses actual results in a coin toss.
- b. Express probabilities as fractions.