

2007 Maine Learning Results: Grade 5

- A. **NUMBER:** Students use numbers in everyday and mathematical contexts to quantify or describe phenomena, develop concepts of operations with different types of numbers, use the structure and properties of numbers with operations to solve problems, and perform mathematical computations. Students develop number sense related to magnitude, estimation, and the effects of mathematical operations on different types of numbers. It is expected that students use numbers flexibly, using forms of numbers that best match a situation. Students compute efficiently and accurately. Estimation should always be used when computing with numbers or solving problems.

Whole Number: Gr5

- 1 Students understand and use number notation to 10 million in numerals and words.**
 - a. Read and write numbers to 10 million in numerals.
 - b. Round numbers to the place value appropriate for given contexts.
 - c. Compare and order numbers up to 10 million.
- 2 Students multiply and divide numbers up to four digits by numbers up to two digits, and by tens, hundreds, and thousands and interpret any remainders.**
- 3 Students solve problems requiring multiple operations (addition, subtraction, multiplication, and division) and use the conventions of order of operations (no exponents expected).**

Rational Number: Gr 5

- 4 Students understand, name, compare, illustrate, compute with, and use fractions.**
 - a. Add and subtract fractions with unlike denominators.
 - b. Multiply a fraction by a whole number.
- 5 Students understand and use number notation and place value in numbers with three decimal places.**
 - a. Compare, order, read, round, and interpret decimals with up to three decimal places.
 - b. Add and subtract decimals with up to three decimal places.
 - c. Multiply and divide decimals with up to three decimal places by a two-digit whole number.
 - d. Develop the concept of a fraction as division through expressing fractions with denominators of two, four, five, and 10, as decimals and decimals as fractions.

Real Number: Gr 3-5 *Although no performance indicators are stated, students are expected to have instructional experiences in which they use only rational numbers.*

- B. **DATA:** Students make measurements and collect, display, evaluate, analyze, and compute with data to describe or model phenomena and to make decisions based on data. Students compute statistics to summarize data sets and use concepts of probability to make predictions and describe the uncertainty inherent in data collection and measurement. It is expected that when working with measurements students:
- understand that most measurements are approximations and that taking repeated measurements reveals this variability;
 - understand that a number without a unit is not a measurement, and that an appropriate unit must always be attached to a number to provide a measurement;
 - understand that the precision and accuracy of a measurement depends on selecting the appropriate tools and units; and
 - use estimation comparing measures to benchmarks appropriate to the type of measure and units.

Measurement and Approximation: Gr5

- 1 Students understand and use measures of elapsed time, temperature, capacity, mass, and use measures of mass and weight.**
 - a. Select and use appropriate tools and units (mass in grams, weight in pounds) for these measures.
 - b. Solve and justify problems with these measures.

Data Analysis: Gr5

- 2 Students read, construct, and interpret line graphs.**
- 3 Students find and use median, mode, and range for a set of data.**

Probability: Gr3-6

Although no performance indicators are stated, students are expected to have experiences with probability in these grades, but it is not expected that the knowledge will be secure.

C. GEOMETRY: Students use measurement and observation to describe objects based on their sizes and shapes; model or construct two-dimensional and three-dimensional objects; solve problems involving geometric properties; compute areas and volumes based on object properties and dimensions; and perform transformations on geometric figures. When making or calculating measures students use estimation to check the reasonableness of results.

Geometric Figures: Gr5

1 Students identify, describe, and classify solid figures.

- a. Identify edges, vertices, and faces in three-dimensional figures.
- b. Describe and classify solid figures according to the number of edges, faces, and vertices as well as the shapes of faces.

Geometric Measurement: Gr5

2 Students find the area of triangles and quadrilaterals.

- a. Know how to derive and use the formula, $A = (1/2) bh$ for the area of a triangle.
- b. Find the area of parallelograms.

3 Students understand how to find the volume and surface area of rectangular prisms.

- a. Know how to build solids with unit cubes and find their volume.
- b. Recognize and estimate the relative sizes of one cubic meter and one cubic centimeter or one cubic inch and one cubic foot.
- a. Know how to derive and use the formula (length x width x height) for the volume of a rectangular prism.
- d. Create nets to aid visualization and computation.

4 Students understand how to describe position and direction in two dimensions.

- a. Locate points on the Cartesian plane.
- b. Determine horizontal and vertical distance on the coordinate plane.
- c. Measure angles in degrees.

Transformations: Gr5

5 Students reflect, slide, and rotate plane figures.

- a. Identify figures with rotational or line symmetry.
- b. Create figures with rotational or line symmetry.
- c. Slide, rotate, or reflect figures to create patterns or demonstrate congruence.

D. **ALGEBRA:** Students use symbols to represent or model quantities, patterns, and relationships and use symbolic manipulation to evaluate expressions and solve equations. Students solve problems using symbols, tables, graphs, and verbal rules choosing the most effective representation and converting among representations.

Symbols and Expressions: Gr5

1 Students create and evaluate simple expressions in the context of numbers and operations as described in Standard 2.1: Number * for this grade level.

a. Create and evaluate expressions with no more than three variables.

* Standard 2.1 referenced herein the language of Me. Dept. of Ed. Reg. 131 refers to Standard A of this document.

Equations and Inequalities: Gr5

2 Students find the unknown in simple equations in the context of numbers and operations as described in Standard 2.1: Number * for this grade level such as:

$$39 - k = 39 - 40$$

$$78 + b = 57 + 79$$

$$30 \times A = 276$$

$$(3 + 4) \times 6 = 6 \times []$$

$$3 \times 15 = 3 \times (10 + []).$$

* Standard 2.1 referenced herein the language of Me. Dept. of Ed. Reg. 131 refers to Standard A of this document.

Functions and Relations: Gr5

3 Students use tables, rules, diagrams, and patterns to represent the relationship between quantities and to extend sequences.