

2007 Maine Learning Results: Grade 4

- 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: Gr4

- 1 Students understand and use number notation and place value to 100,000 in numerals.**
- Read and write numbers up to 100,000 in numerals and words.
 - Recognize the place value of digits in numbers to 100,000.
 - Compare and order numbers with up to five digits.
 - Round numbers to the nearest 100 or 1000.
- 2 Students understand and use the concepts of factor and multiple.**
- Determine if a single-digit number is a factor of a given whole number.
 - Determine if a whole number is a multiple of a given single-digit number.
 - List the first ten multiples of a given number.
- 3 Students understand and use procedures to multiply and divide whole numbers by two-digit numbers.**
- Multiply up to four-digit numbers by a single-digit number.
 - Multiply three-digit numbers by two-digit numbers.
 - Divide whole numbers up to four digits by a single-digit number and by ten (remainders may be present).

Rational Number: Gr 4

- 4 Students understand, name, compare, illustrate, combine, and use fractions.**
- Add and subtract fractions with like denominators and use repeated addition to multiply a unit fraction by a whole number.
 - List equivalent fractions.
 - Represent fractions greater than one as mixed numbers and mixed numbers as fractions.
- 5 Students understand and use number notation and place value in numbers with two decimal**

places in real-world contexts including money.

- a. Compare, order, read, round, and interpret decimals with up to two decimal places.
- b. Add and subtract decimals with up to two decimal places.
- c. Multiply and divide decimals with up to two decimal places by a one- digit whole number.
- d. Connect equivalent decimals and fractions for $1/10$ s, $1/4$ s and $1/2$ s in meaningful contexts.

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: Gr4**1 Students understand and use measurement of time, capacity, and temperature.**

- a. Select appropriate tools and units for these measures.
- b. Solve and justify problems with these measures.

Data Analysis: Gr4**2 Students collect and represent data in tables, line plots, and bar graphs, and read and interpret these types of data displays.****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: Gr4

- 1 Students identify and name angles, lines, relationships between lines, quadrilaterals, and triangles.**
 - a. Identify perpendicular and parallel lines and sides.
 - b. Identify and sketch the following quadrilaterals: rectangle, square, parallelogram, rhombus, and trapezoid.
 - c. Identify and sketch the following triangles: isosceles, equilateral, acute, obtuse, and right.

Geometric Measurement: Gr4

- 2 Students understand the concept of area of a figure.**
 - a. Find the area of shapes in non-standard units.
 - b. Find the area of squares and other rectangles in standard units.
 - c. Recognize and estimate the relative sizes of one square meter and one square centimeter and one square inch and one square foot.

Transformations: Gr4

- 3 Students recognize congruent figures and line symmetry in figures.**
 - a. Recognize whether a line is a line of symmetry in a figure.
 - b. Recognize congruent figures.

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: Gr4

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 two 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: Gr4

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:

$$3 \bullet b = 12$$

$$3 + 4 = x + 5$$

$$6 \times 5 = 3 \times [\quad].$$

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

Functions and Relations: Gr4

3 Students create, describe, explain and extend patterns with numbers and geometric objects.