

Math – Grade 4

(4.1) Number, operation, and quantitative reasoning. The student uses place value to represent whole numbers and decimals. The student is expected to:

- (A) use place value to read, write, compare, and order whole numbers through the millions place; and
- (B) use place value to read, write, compare, and order decimals involving tenths and hundredths, including money, using concrete models.

(4.2) Number, operation, and quantitative reasoning. The student describes and compares fractional parts of whole objects or sets of objects. The student is expected to:

- (A) generate equivalent fractions using concrete and pictorial models;
- (B) model fraction quantities greater than, less than, and equal to one using concrete materials and pictures;
- (C) compare and order fractions using concrete and pictorial models; and
- (D) relate decimals to fractions that name tenths and hundredths using models.
- (E) percents to describe parts of a whole
- (F) renaming simplifying fractions
- (G) naming a fraction of a whole

(4.3) Number, operation, and quantitative reasoning. The student adds and subtracts to solve meaningful problems involving whole numbers and decimals. The student is expected to:

- (A) use addition and subtraction to solve problems involving whole numbers and fractions with like denominators; and
- (B) add and subtract decimals to the hundredths place using concrete and pictorial models.

(4.4) Number, operation, and quantitative reasoning. The student multiplies and divides to solve meaningful problems involving whole numbers. The student is expected to:

- (A) model factors and products using
- (B) represent multiplication and division situations in picture, word, and number form;
- (C) recall and apply multiplication facts through 12×12 ;
- (D) use multiplication to solve problems involving two-digit numbers; and
- (E) use division to solve problems involving one-digit divisors.

(4.5) Number, operation, and quantitative reasoning. The student estimates to determine reasonable results. The student is expected to:

- (A) round whole numbers to the nearest ten, hundred, or thousand to approximate reasonable results in problem situations; and
- (B) estimate a product or quotient beyond basic facts.

(4.6) Patterns, relationships, and algebraic thinking. The student uses patterns in multiplication and division. The student is expected to:

- (A) use patterns to develop strategies to remember basic multiplication facts;
- (B) solve division problems related to multiplication facts (fact families) such as $9 \times 9 = 81$ and $81 \div 9 = 9$; and
- (C) use patterns to multiply by 10 and 100.
- (D) identify associative property
- (F) find missing variables to solve

(4.7) Patterns, relationships, and algebraic thinking. The student uses organizational structures to analyze and describe patterns and relationships. The student is expected to

- (A) describe the relationship between two sets of related data such as ordered pairs in a table.

(4.8) Geometry and spatial reasoning. The student identifies and describes lines, shapes, and solids using formal geometric language. The student is expected to:

- (A) identify right, acute, and obtuse angles;
- (B) identify models of parallel and perpendicular lines; and
- (C) describe shapes and solids in terms of vertices, edges, and faces.

(4.9) Geometry and spatial reasoning. The student connects transformations to congruence and symmetry. The student is expected to:

- (A) demonstrate translations, reflections, and rotations using concrete models;
- (B) use translations, reflections, and rotations to verify that two shapes are congruent; and
- (C) use reflections to verify that a shape has symmetry.

(4.10) Geometry and spatial reasoning. The student recognizes the connection between numbers and points on a number line. The student is expected to

- (A) locate and name points on a number line using whole numbers, fractions such as halves and fourths, and decimals such as tenths.

(4.11) Measurement. The student selects and uses appropriate units and procedures to measure weight and capacity. The student is expected to:
(A) estimate and measure weight using standard units including ounces, pounds, grams, and kilograms; and
(B) estimate and measure capacity using standard units including milliliters, liters, cups, pints, quarts, and gallons.
(C) use length x width x height to calculate the area of an object
(D) describe numerical relationships between units of measurement system such as an inch equals 1/12 of a foot
(4.12) Measurement. The student applies measurement concepts. The student is expected to
(A) measure to solve problems involving length, including perimeter, time, temperature, and area.
(4.13) Probability and statistics. The student solves problems by collecting, organizing, displaying, and interpreting sets of data. The student is expected to
(A) list all possible outcomes of a probability experiment such as tossing a coin;
(B) use a pair of numbers to compare favorable outcomes to all possible outcomes such as four heads out of six tosses of a coin; and
(C) interpret bar, line, and pictographs
(D) use fractions to describe the results of an experiment
(E) use tables of related number pairs to make line graphs;
(F) describe characteristics of data presented in tables and graphs including the shape and spread of the data and the middle number; and
(4.14) Underlying processes and mathematical tools. The student applies Grade 4 mathematics to solve problems connected to everyday experiences and activities in and outside of school. The student is expected to:
(A) identify the mathematics in everyday situations;
(B) use a problem-solving model that incorporates understanding the problem, making a plan, carrying out the plan, and evaluating the solution for reasonableness;
(C) select or develop an appropriate problem-solving strategy, including drawing a picture, looking for a pattern, systematic guessing and checking, acting it out, making a table, working a simpler problem, or working backwards to solve a problem; and
(D) use tools such as real objects, manipulatives, and technology to solve problems.
(4.15) Underlying processes and mathematical tools. The student communicates about Grade 4 mathematics using informal language. The student is expected to:
(A) explain and record observations using objects, words, pictures, numbers, and technology; and
(B) relate informal language to mathematical language and symbols.
(4.16) Underlying processes and mathematical tools. The student uses logical reasoning to make sense of his or her world. The student is expected to:
(A) make generalizations from patterns or sets of examples and nonexamples; and
(B) justify why an answer is reasonable and explain the solution process.