

## Grade 2 Mathematics Knowledge and Skills.

**(2.1) Number, operation, and quantitative reasoning.** The student understands how place value is used to represent whole numbers.

The student is expected to:

- (A) use concrete models of hundreds, tens, and ones to represent a given whole number (up to 999) in various ways;
- (B) use place value to read, write, and describe the value of whole numbers to 999; and
- (C) use place value to compare and order whole numbers to 999 and record the comparisons using numbers and symbols ( $<$ ,  $=$ ,  $>$ ).

**(2.2) Number, operation, and quantitative reasoning.** The student describes how fractions are used to name parts of whole objects or sets of objects.

The student is expected to:

- (A) use concrete models to represent and name fractional parts of a whole object (with denominators of 12 or less);
- (B) use concrete models to represent and name fractional parts of a set of objects (with denominators of 12 or less); and
- (C) use concrete models to determine if a fractional part of a whole is closer to 0,  $\frac{1}{2}$ , or 1.

**(2.3) Number, operation, and quantitative reasoning.** The student adds and subtracts whole numbers to solve problems.

The student is expected to:

- (A) recall and apply basic addition and subtraction facts (to 18);
- (B) model addition and subtraction of two-digit numbers with objects, pictures, words, and numbers;
- (C) select addition or subtraction to solve problems using two-digit numbers, whether or not regrouping is necessary;
- (D) determine the value of a collection of coins up to one dollar; and
- (E) describe how the cent symbol, dollar symbol, and the decimal point are used to name the value of a collection of coins.

**(2.4) Number, operation, and quantitative reasoning.** The student models multiplication and division.

The student is expected to:

- (A) model, create, and describe multiplication situations in which equivalent sets of concrete objects are joined; and
- (B) model, create, and describe division situations in which a set of concrete objects is separated into equivalent sets.

**(2.5) Patterns, relationships, and algebraic thinking.** The student uses patterns in numbers and operations.

The student is expected to:

- (A) find patterns in numbers such as in a 100s chart;
- (B) use patterns in place value to compare and order whole numbers through 999; and
- (C) use patterns and relationships to develop strategies to remember basic addition and subtraction facts. Determine patterns in related addition and subtraction number sentences (including fact families) such as  $8 + 9 = 17$ ,  $9 + 8 = 17$ ,  $17 - 8 = 9$ , and  $17 - 9 = 8$ .

**(2.6) Patterns, relationships, and algebraic thinking.** The student uses patterns to describe relationships and make predictions.

The student is expected to:

- (A) generate a list of paired numbers based on a real-life situation such as number of tricycles related to number of wheels;
- (B) identify patterns in a list of related number pairs based on a real-life situation and extend the list; and
- (C) identify, describe, and extend repeating and additive patterns to make predictions and solve problems.

**(2.7) Geometry and spatial reasoning.**

The student uses attributes to identify two- and three-dimensional geometric figures. The student compares and

contrasts two- and three-dimensional geometric figures or both.

The student is expected to:

- (A) describe attributes (the number of vertices, faces, edges, sides) of two- and three dimensional geometric figures such as circles, polygons, spheres, cones, cylinders, prisms, and pyramids, etc.;
- (B) use attributes to describe how 2 two dimensional figures or 2 three-dimensional geometric figures are alike or different; and
- (C) cut two-dimensional geometric figures apart and identify the new geometric figures formed.

**(2.8) Geometry and spatial reasoning.** The student recognizes that a line can be used to represent a set of numbers and its properties.

The student is expected to:

- (A) use whole numbers to locate and name points on a number line.

**(2.9) Measurement.** The student directly compares the attributes of length, area, weight/mass, and capacity, and uses comparative language to solve problems and answer questions. The student selects and uses nonstandard units to describe length, area, capacity, and weight/mass. The student recognizes and uses models that approximate standard units ( from both SI, also known as metric, and customary systems) of length, weight/mass, capacity, and time.

The student is expected to:

- (A) identify concrete models that approximate standard units of length and use them to measure length;
- (B) select a non-standard unit of measure such as square tiles to determine the area of a two-dimensional surface;
- (C) select a non-standard unit of measure such as a bathroom cup or a jar to determine the capacity of a given container; and
- (D) select a non-standard unit of measure such as beans or marbles to determine the weight/mass of a given object.

**(2.10) Measurement.** The student uses standard tools to estimate and measure time and temperature (in degrees Fahrenheit).

The student is expected to:

- (A) read a thermometer to gather data;
- (B) read and write times shown on analog and digital clocks using five-minute increments; and
- (C) describe activities that take approximately one second, one minute, and one hour.

**(2.11) Probability and statistics.** The student organizes data to make it useful for interpreting information.

The student is expected to:

- (A) construct picture graphs and bar-type graphs;
- (B) draw conclusions and answer questions based on picture graphs and bar-type graphs; and
- (C) use data to describe events as more likely or less likely such as drawing a certain color crayon from a bag of seven red crayons and three green crayons.

**(2.12) Underlying processes and mathematical tools.** The student applies Grade 2 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) solve problems with guidance that incorporates the processes of understanding the problem, making a plan, carrying out the plan, and evaluating the solution for reasonableness;
- (C) select or develop an appropriate problem solving plan or strategy including drawing a picture, looking for a pattern, systematic guessing and checking, or acting it out in order to solve a problem; and (D) use tools such as real objects, manipulatives, and technology to solve problems.

(2.13) **Underlying processes and mathematical tools.** The student communicates about Grade 2 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.

(2.14) **Underlying processes and mathematical tools.** The student uses logical reasoning.

- (A) The student is expected to justify his or her thinking using objects, words, pictures, numbers, and technology.