

# ACTON PUBLIC SCHOOLS

## Grade One

### Math Benchmarks

#### Strand 1: Number Sense and Operations

##### **Broad Concepts**

- Understand numbers, ways of representing numbers, relationships among numbers, and number systems.
- Understand meanings of operations and how they relate to one another.
- Compute fluently and make reasonable estimates.

*Students engage in problem solving, communicating, reasoning, connecting, and representing:*

##### Mastery Skills/Concepts (M)

- Concepts underlying + & -: Use concrete materials to model addition and subtraction. (1.5)
- Know addition facts (sums to 10) and related subtraction facts and use them to solve problems. (1.7)

##### “Working On” Skills/Concepts (W)

- Compare whole numbers using terms and symbols (less than, equal to, greater than). (2.N.4)
- Identify and distinguish among multiple uses of numbers, including cardinal numbers (to tell how many) and ordinal numbers (to tell which one) and numbers as labels and measurements. (2. N.2)
- Identify and represent common fractions ( $\frac{1}{2}$ ,  $\frac{1}{3}$ ,  $\frac{1}{4}$ ) as part of wholes and parts of groups and numbers on the number line. (2.N.3)
- Understand the concept of quantity to 100, identify the place value of the digits, and order the numbers; read, write, enumerate, and compare numbers (1.4)
- Learn the concepts underlying + & -: describe the meanings of addition and subtraction; e.g., plus, combined with, how many more, how much less, how many remaining. (1.6)
- Understand and use the inverse relationship between addition and subtraction. (1.10)
- Identify the value of all U.S. coins and \$1, \$2, \$5, and \$10 bills. Find the value of a collection of coins and different ways to represent an amount of money less than one dollar. (1.12)
- Identify odd and even numbers and determine whether a set of objects has an odd or even number of elements. (1.13)
- Use concrete materials to investigate situations that lead to multiplication and division.
- Know addition facts (sums to 10) M and related subtraction facts and use them to solve problems. (1.7)

Introductory/Exploratory Concepts and Skills (I):

- Use concrete materials to investigate the addition of common fractions; e.g.,  $1/2+1/2= 1$ ,  $1/4+1/4 = 1/2$ .
- Identify the value of \$1, \$2, \$5, and \$10 bills.

**Strand 2: Patterns, Relations, and Algebra**

**Broad Concepts**

- Understand patterns, relations, and functions.
- Represent and analyze mathematical situations and structures using algebraic symbols.
- Use mathematical models to represent and understand quantitative relationships.
- Analyze change in various concepts.

*Students engage in problem solving, communicating, reasoning, connecting, and representing:*

Mastery Skills/Concepts (M)

- none identified

“Working On” Skills/Concepts (W)

- Identify, reproduce, describe, extend, and create simple rhythmic, shape, size, number, and color-repeating patterns. (2.P.1)
- Describe and create repeating, addition, and subtraction number patterns; e.g., 1, 3, 5, 7, 9, 11...., or 27, 25, 23, 21.... (2.P.3)
- Count by ones forward or backward, starting at any given number up to 100.
- Skip count by 2s, 5s, and 10s up to 100, starting at any number. (2.P.4)
- Identify different patterns on the hundreds chart. (2.P.2 )
- Write number sentences to represent mathematical relationships in real-world situations. (2.P.6 )
- Describe functions related to trading, including coin trades; e.g., Dean’s blocks, chip trading. (2.P.7)
- Identify the concept of the commutative property for addition.

Introductory/Exploratory Concepts and Skills (I):

- none identified

### **Strand 3: Geometry**

#### **Broad Concepts**

- Analyze characteristics and properties of two- and three-dimensional geometric shapes and develop mathematical understanding of geometric relationships.
- Specify locations and describe spatial relationships using coordinate geometry and other representational systems.
- Apply transformations and use symmetry to analyze mathematical situations.
- Use visualization, spatial reasoning, and geometric modeling to solve problems.

*Students engage in problem solving, communicating, reasoning, connecting, and representing:*

#### Mastery Skills/Concepts (M)

- none identified

#### “Working On” Skills/Concepts (W)

- Identify, describe the attributes, draw, and compare 2-dimensional shapes (curved figures, polygons, and quadrilaterals); e.g., circles, diamonds, square, triangles, and rectangles. (2.G.1)  
e.g. number and length of sides, numbers of corners, and edges.
- Predict the results of putting shapes together and taking them apart. (2.G.6)
- Identify symmetry in two-dimensional shapes. (2.G.5)
- Relate geometric ideas to numbers; e.g., seeing rows in an array as a model of repeated addition. (2.G.7)

#### Introductory/Exploratory Concepts and Skills (I):

- Identify, describe the attributes, and compare 3-dimensional shapes, including cone, cube, sphere, cylinder, and pyramid. (2.G.2)
- Recognize congruent shapes. (2.G.3)

### **Strand 4: Measurement**

#### **Broad Concepts**

- Understand measurable attributes of objects and the units, systems, and processes of measurement.
- Apply appropriate techniques, tools, and formulas to determine measurements.

*Students engage in problem solving, communicating, reasoning, connecting, and representing:*

#### Mastery Skills/Concepts (M)

- none identified

#### “Working On” Skills/Concepts (W)

- Identify parts of the day; e.g., morning, afternoon, evening,.... day, week, month, year, and calendar. (2.M.1)
- Tell time at hour and half-hour intervals on analog and digital clocks using a. m. and p. m. (2.M.2)

- Measure and compare objects using metric and non-standard and customary units of length measurement; e.g., centimeter, inch, foot, meter. (2.M.4)
- Select and correctly use the appropriate measurement tools; e.g., ruler, balance scale, and thermometer. (2.M.5)
- Compare the length or weight of two or more objects by using direct comparison or non-standard units. (2.M.3)

Introductory/Exploratory Concepts and Skills (I):

- Tell time at quarter-hour intervals on analog and digital clocks using a. m. and p. m.
- Measure and compare objects using whole and half-inch units of length.
- Estimate and calculate perimeters.
- Make estimates of measurement, including time, volume, weight, and area, using standard and/or non-standard units. (2.M.6 )

**Strand 5: Data Analysis, Statistics and Probability**

**Broad Concepts**

- Formulate questions that can be addressed with data and collect, organize, and display relevant data to answer them.
- Select and use appropriate statistical methods to analyze data.
- Develop and evaluate inferences and predictions that are based on data.

*Students engage in problem solving, communicating, reasoning, connecting, and representing:*

Mastery Skills/Concepts (M)

- none identified

“Working On” Skills/Concepts (W)

- Use observations and surveys to gather data about themselves and their surroundings. (2.D.1 )
- Organize, classify, represent, and interpret data using tallies, charts, tables, bar graphs, pictographs, and Venn diagrams. Interpret the representations. (2.D.2)
- Formulate inferences (draw conclusions) and make educated guesses (conjectures) about a situation based on information gained from data. (2.D.3)
- Predict outcomes based on information gained from data. (2.D.4)
- List and count the number of possible pairings of objects from two sets (ordered pairs); e.g., how many different outfits can one make from a set of three shirts and a set of two skirts?

Introductory/Exploratory Concepts and Skills (I):

- Investigate whether or not an outcome is likely or unlikely. Conduct experiments using spinners, counting, and other concrete objects.