ACTON PUBLIC SCHOOLS

Grade Two

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)

- Identify the value of all common U. S. coins and $1, $5, $10, and $20 bills. Find the value of a collection of coins and dollar bills and different ways to represent an amount of money up to $1. Use appropriate notation; e.g., 47¢, $1.35**.** (2.N.6) W/M
- Identify and distinguish uses of numbers, including cardinal and ordinal numbers, and numbers as labels and measurements**.** (2.N.2)
- Identify odd and even numbers and determine whether a set of objects has an odd or even number of elements. (2.N.5)
- Identify the concept of and use the commutative property of addition.
- Know addition facts (addends to 20) and related subtraction facts and use them to solve problems. (2.N.9)
- Compare whole numbers up to 1,000 using terms and symbols (less than, equal to, greater than). (2.N.4)
- Estimate, calculate, and solve problems involving addition and subtraction of 2-digit numbers. (2.N.12)

"Working On" Skills/Concepts (W)

- Concept of Fractions: 1/2 , 1/3, 1/4 , as part of wholes, parts of groups, and numbers on a number line. Investigate non-unit fractions; e.g., 2/3, 3/4. (2.N.3)
- Concept of quantity to 1000: Identify the place value of the digits and understand the meaning of place value**.** Read, write, enumerate, and compare numbers. (2.N.1)
- Concepts underlying + & - using multi-digit numbers. Use addition and subtraction concepts in problem solving, with and without regrouping. (2.N.8)
- Demonstrate the ability to add and subtract three-digit numbers accurately and efficiently. (2.N.11) **(pilot this objective for 2001-02)**
- Understand and use the inverse relationship between addition and subtraction to solve problems and check solutions. (2.N.8) W/I

- Demonstrate an understanding of the concepts underlying multiplication and division using concrete materials and pictures. W/I
- Demonstrate an understanding of and the ability to use the conventional algorithm for addition (two 3-digit numbers and three 2-digit numbers) and subtraction (two 3-digit numbers). (2.N.11) W/I

Introductory/Exploratory Concepts and Skills:

- Compare whole numbers up to 10,000 using terms and symbols (less than, equal to, greater than). (2.N.4)
- Make change using coins.

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)

- 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)
- Skip count by 5s and 10s, 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)
- Construct and solve open sentences that have variables; e.g., 10= n+ 7, n+a=10.
- Demonstrate and use the symbols for inequalities; e.g., greater than and less than.

"Working On" Skills/Concepts (W)

- Describe functions related to trading, including coin trades and measurement trades; e.g., nickels for quarters, minutes for hours. (2.P.7)
- Investigate situations with variables as unknowns and as quantities that vary.

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)

- Relate geometric ideas to numbers; e.g., seeing rows in an array as a model of repeated addition or multiplication. (2.G7)
- Identify symmetry in two-dimensional shapes. (2.G.5)

"Working On" Skills/Concepts (W)

- Identify, describe and organize by attributes and draw and compare 2-dimensional shapes, including both and curved figures, e.g. circle, triangle, rectangle, pentagon, hexagon, octagon, rhombus, trapezoid, and parallelogram. (2.G.1)
- Predict the results of putting shapes together and taking them apart. (2.G.6)
- Describe attributes and parts of two- and three-dimensional shapes; e.g., number and length of sides, numbers of corners, edges, and faces. W/I

Introductory/Exploratory Concepts and Skills (I)

- Explore intersecting, parallel, and perpendicular lines.
- Identify, describe the attributes, and compare 3-dimensional shapes, including cone, cube, sphere, cylinder, prism, 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)

- Compare the length or weight of two or more objects by using direct comparison or nonstandard units. (2.M.3)
- Identify and use the calendar, including the days of the week, months, seasons, and the year. (2.M.1)

"Working On" Skills/Concepts (W)

- Select and correctly use the appropriate measurement tools; e.g., ruler, balance scale, and thermometer. (2.M.5)
- Measure and compare objects using 1/4" and 1/2" units of length.
- Tell time in any position on analog and digital clocks using a. m. and p. m. (2.M.2) W/I

Introductory/Exploratory Concepts and Skills (I):

- Make and use estimates of measurement, including time, weight**,** and area. (2.M.6)
- Estimate and calculate perimeter of simple polygons.
- Measure and compare objects using metric and customary units of length measurement; e.g., centimeter, meter, half inch, inch, foot, and yard. (2.M.4)

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)

- Use observations and surveys to gather data about themselves and their surroundings. (2.D.1)
- Formulate inferences (draw conclusions) about a situation based on information gained from data. (2.D.3)

"Working On" Skills/Concepts (W)

- Organize, classify, represent, and interpret data using tallies, charts, tables, bar graphs, line graphs, and Venn diagrams. Interpret the representations. (2.D.2)
- Make educated guesses.
- Predict outcomes based on information gained from data. (2.D.4)

Introductory/Exploratory Concepts and Skills (I):

- Investigate more likely, likely, and impossible outcomes by conducting experiments using spinners, counting, and other concrete objects.
- 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?
- Formulate conjectures about a situation based on information gained from data. (2.D.3)