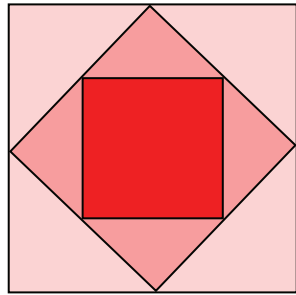


Harford County Public Schools

Meeting the
Maryland State Department
Voluntary State Curriculum
Standards for Mathematics



First Grade

Welcome to first grade! In addition to learning about the many ways that numbers can be represented, first grade students learn about patterns, geometric figures, spatial relationships, measurement, and how to gather and display data. First grade students also learn to communicate mathematical ideas and make sense of the world through reasoning and problem solving.

Jacqueline C. Haas, Ed.D.,
Superintendent

First Grade Mathematics

Algebra, Patterns, and Functions

First grade students will demonstrate an understanding of how patterns, relationships, and functions are connected to the real world. First graders will investigate and model relationships among quantities and apply this knowledge in real world situations.

First grade learning outcomes include:

- Identify, describe, extend, and create patterns by representing and analyzing numeric patterns in a variety of ways, including: skip counting by multiples of two and ten beginning with any whole number, skip counting backwards by tens starting with a multiple of ten, and using manipulatives, as well as the number grid.
- Identify, copy, describe, create, and extend non-numeric patterns such as growing patterns and repeating patterns in a variety of ways.
- Identify, write, and solve equations and inequalities by representing relationships using greater than, less than, and equal to for quantities up to 100. Students will also find the missing number (unknown) in a number sentence using the + and - symbols with whole numbers to 20 using pictures and manipulatives.



Geometry

First grade students will analyze and compare the characteristics and properties of two- and three-dimensional geometric shapes. They will explore ways to describe, reason, and solve problems about shape, size, position, or the motion of objects in relationship to their world.

First grade learning outcomes include:

- Create models of triangles, circles, squares, rectangles, and rhombi. Combine and subdivide squares and rectangles.
- Recognize and use the attributes to compare solid geometric figures such as cubes, spheres, cylinders, pyramids, cones, and rectangular prisms.
- Identify and match congruent (similar) figures.
- Demonstrate symmetry by using basic shapes and pictures, folding paper, and drawing a line of symmetry.
- Recognize a transformation by using direction, location, and position words (right/left), apply spatial reasoning using manipulatives, and identify and demonstrate slides and flips using manipulatives.

Number

First grade students build a strong foundation in number sense as other areas of mathematics will build on this foundation. First grade students will describe, represent, or apply numbers or their relationships and will estimate or compute using mental strategies, paper/pencil, or technology.

First grade learning outcomes include:

- Apply knowledge of whole numbers and place value by using a variety of materials to compose and decompose quantities to 20.
- Use the numbers five and ten as anchors in relationship to other numbers.
- Read, write and represent whole numbers up to 100 and beyond using models, symbols, and words, including oral counting. Students will also be able to count forward and backward starting with numbers other than one.
- Compare and order whole numbers to 99 using terms like greater than, less than, and equal to.
- Develop strategies for addition and subtraction basic facts such as counting on, counting back, making ten, doubles, and doubles plus one.
- Apply knowledge of fractions of a single region with denominators of two and four as well as use pictures and models to represent halves as part of a set.
- Apply knowledge of money by identifying the value of a set of mixed currency up to \$1.00 using manipulatives and compare the value of two sets of the same currency up to \$1.00.

Measurement

First grade students will begin to shape their understanding of the attributes, units, processes, and systems of measurement through real-world contexts.

First grade learning outcomes include:

- Read a calendar to identify days of the week and months of the year, tell time in intervals of hours and half-hours using an analog clock, compare the same time using analog clocks and digital clocks, read a thermometer to tell temperature to the nearest 10° F, and compare and order objects by weight in pounds using both spring and bathroom scales.
- Measure length of objects and pictures of objects to the nearest inch using a ruler, identify and compare units of capacity using cups and gallons, and compare and order objects by weight in pounds using both spring and bathroom scales.

Statistics and Probability

First grade students will discover the world of data and how it helps them be informed citizens, employees, and consumers by collecting, organizing, displaying, analyzing, and interpreting data to make decisions and predictions that are relevant to their world. They will experiment with different methods of reasoning to determine probabilities to make predictions or solve problems about events whose outcomes involve random variation.

First grade learning outcomes include:

- Use tally charts, make picture graphs, and make single bar graphs in order to analyze and interpret the data using a variety of categories.
- Identify possible outcomes by recognizing that a real life situation may have more than one outcome. (a coin having heads or tails)

Processes of Mathematics

Students demonstrate the processes of mathematics by making connections and applying reasoning to solve problems and communicate their findings. First grade students will continually weave the interconnectedness of the different areas of mathematics and its relationship to the world.

First grade learning outcomes include:

- Identify the question in a problem, make a plan to solve a problem by applying strategies, show that a problem might have multiple solutions or no solution, and extend the solution to a new problem situation.
- Express mathematical ideas orally and in various written and model forms. (pictures, symbols, manipulatives)
- Ask questions about mathematical ideas or problems and give feedback to revise mathematical thinking.

