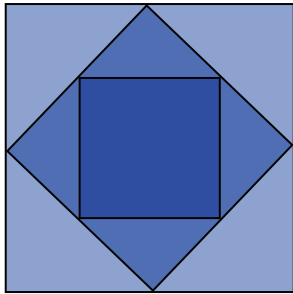




Second Grade Mathematics

Harford County Public Schools

Meeting the Maryland State Department Voluntary State Curriculum Standards for Mathematics



Second Grade

Welcome to second grade! In addition to extending their knowledge about the many ways that numbers can be represented, second grade students learn about time, money, the attributes of geometric figures, measurement, and how to interpret data displays. In second grade, students continue to make connections between the mathematics they learn in class and mathematics in their world.

**Jacqueline C. Haas, Ed.D.,
Superintendent**

Algebra, Patterns and Functions

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

Second grade learning outcomes include:

- Identify, describe, extend, and create numeric patterns by representing and analyzing numeric patterns in a variety of ways, including: skip counting by multiples of two, five, and ten beginning with any whole number, skip counting backwards by tens starting with any two-digit whole number, and complete a function table given an addition or subtraction rule using whole numbers.
- Identify, copy, describe, create, and extend non-numeric patterns such as growing patterns and repeating patterns using symbols, shapes, designs, and pictures using 3 different objects in the core of the pattern. (a,b,c,a,b...)
- Identify, write, and solve equations and inequalities by representing relationships using greater than, less than, and equal to relational symbols ($<$, $>$, $=$) 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 50.



Geometry

Second 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.

Second grade learning outcomes include:

- Recognize and apply the attributes of plane geometric figures by identifying and describing quadrilaterals (squares, rectangles, rhombi), identify and describe polygons by the number of sides (triangle, squares, rectangles, hexagons, octagons), and compare two- and three-dimensional shapes (square to a cube, rectangle to a rectangular prism.)
- Compare and describe congruent (similar) figures and recognize that basic shapes have several lines of symmetry.
- Recognize a transformation by applying spatial reasoning skills and identify and demonstrate slides and flips using manipulatives.

Number

Second grade students will continue to build a strong foundation of number sense. Students will describe, represent, or apply numbers or their relationships and will estimate or compute using mental strategies, paper/pencil, or technology.

Second grade learning outcomes include:

- Demonstrate proficiency with addition and subtraction basic facts using a variety of strategies. Students will also build equal groups to model multiplication as well as build groups that share for division.
- Read, write, and represent whole numbers up to 1,000 using models, symbols, and words. Students will also be able to count forward and backward by twos, fives, and tens starting with a number other than one.
- Express whole numbers up to 999 using expanded form (ex. $241 = 200 + 40 + 1$) as well as compare and order whole numbers to 999 using words and relational symbols ($<$, $>$, $=$).
- 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 and representing the value of a set of mixed currency up to \$10 and compare the value of two sets of the same currency up to \$10.

Measurement

Second grade students will continue to shape their understanding of the attributes, units, processes, and systems of measurement through real-world contexts by applying a variety of techniques, formulas, tools, or technology for determining measurement.

Second grade learning outcomes include:

- Read customary and metric measurement units by reading the scale on a ruler to identify length in inches, tell time in intervals of five minutes using an analog clock, compare the same time on analog and digital clocks, read a thermometer with a scale of 10° intervals and identify and compare the weight of objects to the nearest pound.
- Measure length of objects and pictures of objects to the nearest inch, centimeter, and foot; measure capacity using cups, pints, quarts, liters and gallons; measure to the nearest pound and kilogram; select and use appropriate units of measure for length/height, weight, and capacity; and recognize equivalent units of 12 inches = 1 foot.
- Apply concepts of measurement by counting units around a picture or geometric shape to determine perimeter, and counting square units within a picture or geometric shape to determine area.



Statistics and Probability

Second 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.

Second grade learning outcomes include:



- Collect and analyze data in tables by conducting surveys, and organize and display data to make pictographs (using scales of 1:1 and 2:1) and single bar graphs.
- Identify some possible outcomes that make up the sample space such as on a number cube rolling a two.

Processes of Mathematics

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

Second grade learning outcomes include:

- Identify the question in a problem and make a plan to solve a problem by applying strategies, show that a problem might have multiple solutions or no solution, extend it to a new problem or situation, and use methods of proof.
- 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.

