

# Math

## SECOND GRADE

Students in second grade are able to solve increasingly challenging problems, explore mathematical ideas in a variety of ways, and consider multiple solutions to problems. They begin to evaluate their own thinking as well as that of others in classroom discourse about mathematical ideas.

The second-grade learning environment should reflect the developmental changes of students while focusing on the need for fundamental mathematics, interactive exploration, reflection, and justification of findings. The learning environment should allow students to investigate practical applications as they work to solve real-life problems. Students gain confidence and flexibility in problem solving as they demonstrate understanding of mathematical concepts using extended project investigations.

The content in second grade focuses on fluency with numbers, place value, reasoning, and problem solving. Algorithms for addition and subtraction may be formally introduced. Additionally, concepts such as using standard units of measure, creating and extending patterns, describing plane and solid figures through geometry, and collecting data are included. Learning with understanding is enhanced by students' use of concrete objects and a variety of mathematical tools.

### Number and Operations

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Students will:

1. Demonstrate concepts of number sense by using multiple representations of whole numbers up to 1000, counting forward and backward by threes from a given number, identifying a number that is 100 more or 100 less than a given number, and differentiating between odd and even numbers
  - Identify position using ordinal numbers to 100th
  - Determine the value of a digit in the ones, tens, hundreds, and thousands place
  - Determine the value of a number expressed in expanded notation
  - Compare numbers to 1000 using  $>$ ,  $<$  and  $=$
2. Apply the operations of addition and subtraction to solve problems involving two-digit numerals, using multiple strategies with and without regrouping
  - Demonstrate computational fluency for basic addition and subtraction facts with sums through 20 and differences with minuends through 20, using horizontal and vertical forms
  - Interpret multiplication as repeated addition and division as equal groupings
  - Solve multi-step addition and subtraction problems originating from real-life experiences
  - Justify the strategy used to solve addition and subtraction problems
  - Use an estimate to determine if an answer is reasonable
3. Label equal parts of a whole using  $\frac{1}{2}$ ,  $\frac{1}{3}$ ,  $\frac{1}{4}$  and  $\frac{1}{6}$
4. Determine the monetary value of sets of coins and bills up to \$2.00
  - Exchange coins of equivalent value
  - Apply monetary symbols, including dollar (\$), cent ( $\text{\textit{c}}$ ), and decimal point ( $\text{\textit{.}}$ )
  - Recognize the decimal numbers .10, .25, .50, and .75 as related to money
5. Vocabulary:
6. Complete 50 addition facts in 3 minutes and 50 subtraction facts in 5 minutes

## Algebra

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7. Sort and classify objects into groups, showing the relationship they have to each other
8. Create growing patterns.
9. Solve problems using the associative property of addition
10. Describe change over time in observable (qualitative) and measurable (quantitative) terms

## Geometry

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11. Describe attributes of two-dimensional (plane) and three-dimensional (solid) figures using the terms *side*, *surface*, *edge*, *vertex*, and *angle*
  - Identify quadrilaterals, pentagons, hexagons, or octagons
  - Identify line symmetry in plane geometric figures
  - Create designs that exhibit line symmetry
  - Recognize symmetry of real life objects as well as plane figures.
  - Recognize the results of changing the position (transformation) of objects or shapes by sliding (translation), turning (rotation), or flipping (reflection)
12. Describe the route from one location to another by applying concepts of direction and distance
  - Follow multi-step directions to locate objects
  - Read maps of the school environment
  - Using grids for movement between points

## Measurement

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13. Measure length in customary units, including inches, feet, and yards
  - Use metric units
  - Use appropriate tools, including rulers, yard sticks, meter sticks, or tape measures
14. Estimate weight and capacity by making comparisons with familiar objects
15. Tell time to the minute using analog and digital clocks

## Data Analysis and Probability

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16. Create displays, including appropriate labels, for a given set of data using pictographs, tally charts, bar graphs, or single- or double-loop Venn diagrams
  - Interpret graphic displays
17. Determine if one event related to everyday life is more likely or less likely to occur than another event