

# Math

## FIRST GRADE

The focus in first grade is to provide foundational experiences and opportunities in mathematics that stimulate students to become independent thinkers and life-long problem solvers. First-grade students need a rich mathematical environment that encourages communication, introduces the use of multiple representations, and integrates mathematical concepts into everyday life. Students also need instructional time that provides reflection and justification of diverse approaches for solving mathematical problems.

Students enter first grade with a wide range of mathematical abilities and experiences. They need time to develop conceptual knowledge, to connect mathematical concepts with their own experiences, and to transfer their understanding into written expression. An effective instructional environment allows for the use of hands-on materials, in-depth reasoning, verbal communication, and visual representations. Additionally, the integration of literature, incorporation of cooperative learning strategies, and inclusion of active participation in classroom activities help students make strong connections.

By the end of first grade, students have established a foundation for future mathematical success. This foundation supports a conceptual understanding of the base ten system of numeration. It helps students to develop the ability to use the basic operations of addition and subtraction and to apply knowledge of simple data displays to organize objects and information. The establishment of a link between measurement and geometry also enables students to develop skills for describing and explaining their world mathematically.

## Number and Operations

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Students will:

1. Count forward and backward by ones, twos, fives, tens up to 100
2. Count forward and backward from any number
3. Identify multiple representations for a given number 0 – 20 (e.g., 5, five,  $\| \| \|$ )
4. Identify ordinal numbers 1<sup>st</sup> through 20<sup>th</sup>
5. Compare numbers to 100 using greater than, less than
  - Introduction of  $<$  and  $>$
6. Determine the value of a digit in the ones, tens, and hundreds position
7. Determine the value of a number with the number of tens and ones
8. Identify similar amounts such as one ten and eight ones = 18
9. Determine the value of a number that is 10 more or 10 less
10. Identify monetary value up to \$1.00
  - Recognition of 1¢, 5¢, 10¢, 25¢
  - Recognize front and back of coins
  - Exchange of coins of equivalent value
11. Use concrete materials to model addition story problems
12. Compare sets of objects and apply signs to the actions of joining and separating sets

13. Solve problems requiring the addition and subtraction of one and two digit numerals without regrouping
14. Use three or more addends
15. Identify sums to 18 and differences with minuends of 18 or less with fluency
16. Solve problems in the horizontal and vertical positions
17. Identify parts of a whole with two, three, or four equal parts
18. Vocabulary: sum, difference minus, plus, join
19. Complete 25 addition facts in 3 minutes and 25 subtraction facts in 5 minutes

## **Algebra**

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20. Use patterns
  - Name characteristics of patterns
  - Extend number patterns
  - Recognize patterns in the environment
21. Solve problems using the identity and communicative properties of addition
22. Name fact families and relationship between operations
  - $5 + 2 = 7$                        $7 - 2 = 5$
  - $2 + 5 = 7$                        $7 - 5 = 2$
23. Sort and classify groups of objects

## **Geometry**

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24. Differentiate plane shapes, circles, squares, rectangles and triangles
25. Transfer shapes from one representation to another
26. Identify sphere, cone, cube, cylinder, pyramid, rectangular prism
27. Recognize real-life examples of line symmetry
28. Change position of objects or shapes by sliding (translation) and turning (rotation)
29. Combine shapes to fill in area of a given shape

## **Measurement**

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30. Compare objects by length, weight, and capacity
31. Measure by standard units: inch and centimeter
32. Identify time on the hour and half-hour on digital and analog clocks
33. Locate days, dates, and months on a calendar
34. Vocabulary: yesterday, today, tomorrow, day before, day after

## **Data**

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35. Organize objects or information into predetermined data displays – pictographs, tally charts, bar graphs, Venn diagrams
36. Collect data
37. Create appropriate displays with data