

## **First Grade Standards: MATHEMATICS**

\*Note: This information has been adapted from the 2020 Colorado State Standards as presented on the Colorado Department of Education (CDE) website. It is *not* an exhaustive or detailed list. All standards mentioned represent skills grade-level students should have mastered by the end of the grade-level year. If you desire further information, please visit the Standards page on the CDE website: <https://www.cde.state.co.us/standardsandinstruction/standards>

This document provides tiered support in addressing the academic standards. Families can choose to approach their curriculum selection and content-area instruction in one or all of three categories: a general **Overview** of expectations and “mathematic” behaviors, **Learning Objectives** (a “fly by” glance of concepts a student masters throughout the school year) and **Specific Skills** (expanded ideas to explain the learning objectives). As you consider lesson planning for each grade level, use the “Overview” and “Learning Objectives” checklists to help you plan out your year. Start with the end in mind: If my child needs to know how to \_\_\_\_\_ by the end of the school year, what learning activities can be implemented to introduce and then reinforce the concepts? Think next about smaller steps in learning that your child needs to master in order to reach that end goal (he/she can’t count to 100 if he/she can’t first count to ten). Also keep in mind that most objectives are not learned in isolation, meaning learning objectives are often combined. You don’t need to ensure your child has mastered learning objective #1 before moving on to the next. Combining two or more objectives in a week’s lesson plan can make for more creative and integrated learning. If you are using a reputable and research-based curriculum, then your child will most likely be working his/her way through these learning objectives in a well-paced and consistent manner. (A brief sampling of solid curriculum options can be found on the CSP website under “Homeschool Resources.”)

### **Overview**

#### **Expectations for 1st Grade Students:**

- **Number and Quantity:** Fluently (consistently) add and subtract within 10; mentally add or subtract 10 to any number; break apart numbers into groups of tens and ones.
- **Algebra and Functions:** Solve a variety of addition and subtraction word problems; use equations to show the relationship of numbers in a word problem ( $9 = ? + 4$ ).
- **Data, Statistics, and Probability:** Measure and compare the length of objects; tell time to the nearest hour and half-hour.
- **Geometry:** Join and break apart shapes to create new shapes; find halves and fourths of shapes.

#### **Throughout 1st Grade You May Find Students:**

- Exploring the meaning of the equal sign (Does  $9 + 7 = 9 + 1 + 6$ ?).
- Using connections between addition and subtraction to solve problems (if  $5 + 7 = 12$  then what is  $12 - ? = 5$ ).
- Mentally solving problems like  $43 + 10$  and  $56 - 10$ .
- Describing a number like 37 as three tens and seven ones.
- Explaining the difference between seven, seventeen, and seventy.
- Solving addition and subtraction involving lengths.

### Learning Objectives

1. Extend the counting sequence up to 120.
2. Understand place value.
3. Use place value understanding and properties of operations to add and subtract.
4. Solve problems using addition and subtraction.
5. Understand the relationship between addition and subtraction and apply the properties of operations to solve equations.
6. Tell and write time in hours and half-hours using analog and digital clocks.
7. Represent and interpret data.
8. Analyze shapes and their attributes.

### Specific Skills

- 1. Extend the counting sequence up to 120.**
  - Count to 120, starting at any number less than 120. In this range, read and write numerals and represent a number of objects with a written numeral.
  - When might someone want to count by tens instead of ones?
  - Which numbers can be written with two numerals and which numbers are written with three?
- 2. Understand place value.**
  - Understand that two digits of a two-digit number represent amounts of tens and ones.
  - Understand the following as special cases:
    - 10 can be thought of as a bundle of ten ones — called a “ten.”
    - The numbers from 11 to 19 are composed of a ten and one, two, three, four, five, six, seven, eight, or nine ones.
    - The numbers 10, 20, 30, 40, 50, 60, 70, 80, 90 refer to one, two, three, four, five, six, seven, eight, or nine tens (and 0 ones).
  - Compare two two-digit numbers based on meanings of the tens and ones digits, recording the results of comparisons with the symbols  $>$ ,  $=$ , and  $<$ .
  - How can you use cubes to help you compare two numbers?
- 3. Use place value understanding and properties of operations to add and subtract.**
  - Add within 100, including adding a two-digit number and a one-digit number, and adding a two-digit number and a multiple of 10, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used. Understand that in

adding two-digit numbers, one adds tens and tens, ones and ones; and sometimes it is necessary to compose a ten.

- Given a two-digit number, mentally find 10 more or 10 less than the number, without having to count; explain the reasoning used.
- Subtract multiples of 10 in the range 10–90 from multiples of 10 in the range 10–90 (positive or zero differences), using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used.

#### **4. Solve problems using addition and subtraction.**

- Use addition and subtraction within 20 to solve word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem.
- Solve word problems that call for addition of three whole numbers whose sum is less than or equal to 20, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem.

#### **5. Understand the relationship between addition and subtraction and apply the properties of operations to solve equations.**

- Apply properties of operations as strategies to add and subtract. (Students need not use formal terms for these properties.) *Examples: If  $8 + 3 = 11$  is known, then  $3 + 8 = 11$  is also known. (Commutative property of addition.) To add  $2 + 6 + 4$ , the second two numbers can be added to make a ten, so  $2 + 6 + 4 = 2 + 10 = 12$ . (Associative property of addition.)*
- How could you explain why  $3 + 8$  and  $8 + 3$  both equal 11?
- Understand subtraction as an unknown-addend problem. *For example, subtract  $10 - 8$  by finding the number that makes 10 when added to 8.*
- Add and subtract within 20, demonstrating fluency for addition and subtraction within 10.
- With a representation of a value less than ten: How many more do you need to make ten?
- Understand the meaning of the equal sign and determine if equations involving addition and subtraction are true or false. *For example, which of the following equations are true and which are false?  $6 = 6$ ,  $7 = 8 - 1$ ,  $5 + 2 = 2 + 5$ ,  $4 + 1 = 5 + 2$ .*
  - What does it mean for two sides of an equation to be “equal”? How can  $2 + 3 = 5$ ?
  - (Given  $4 = 4$ ) If you add 2 more to the 4 on the right, how many do you need to add on the left to make a true statement? How would you write that as an equation?
  - Determine the unknown whole number in an addition or subtraction equation relating three whole numbers. *For example, determine the unknown number that makes the equation true in each of the equations  $8 + ? = 11$ ,  $5 = \_ - 3$ ,  $6 + 6 = \_$ .*

#### **6. Tell and write time in hours and half-hours using analog and digital clocks.**

- Recognize that time is a quantity that can be measured with different degrees of precision.
- How long is two half-hours?
- If the time is 2:30, where would the minute hand be pointing on an analog clock?

**7. Represent and interpret data.**

- Organize, represent, and interpret data with up to three categories; ask and answer questions about the total number of data points, how many in each category, and how many more or less are in one category than in another.
- Ask and answer questions about categorical data based on representations of the data.
- Group similar individual objects together and abstract those objects into a new group.
- Devise different ways to display the same data set then discuss relative strengths and weaknesses of each scheme.

**8. Analyze shapes and their attributes.**

- Distinguish between defining attributes (e.g., triangles are closed and three-sided) versus non-defining attributes (e.g., color, orientation, overall size); build and draw shapes to possess defining attributes.
- Partition circles and rectangles into two and four equal shares, describe the shares using the words *halves*, *fourths*, and *quarters*, and use the phrases *half of*, *fourth of*, and *quarter of*. Describe the whole as two of, or four of the shares. Understand for these examples that decomposing into more equal shares creates smaller shares.
  - In how many different ways can you create two or four equal shares in a rectangle?