

Second 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 2nd Grade Students:

- **Number and Quantity:** Use an understanding of place value to add and subtract within 100.
- **Algebra and Functions:** Fluently (consistently) add and subtract within 20 using mental strategies.
- **Data, Statistics, and Probability:** Read and create pictographs and bar graphs; relate addition and subtraction to length, time and money.
- **Geometry:** Build, draw, and analyze 2-dimensional shapes (squares and triangles) and 3-dimensional shapes (cubes and pyramids).

Throughout 2nd Grade You May Find Students:

- Mentally adding and subtracting problems like $17 - 5$, $13 + 6$, and $15 - 12$.
- Skip counting by 5s (5, 10, 15), 10s (10, 20, 30), and 100s (100, 200, 300) starting at different numbers.
- Solving two-digit addition and subtraction problems using a variety of strategies.
- Using number lines to solve addition and subtraction word problems.
- Exploring the features of shapes and ways to break shapes into halves, thirds, and fourths.

Learning Objectives

1. Understand place value in three-digit numbers using base ten.
2. Use place value understanding and properties of operations to add and subtract.
3. Solve problems using addition and subtraction within 100; fluently add and subtract within 20.
4. Work with equal groups of objects to gain foundations for multiplication.
5. Measure and estimate lengths in standard units.
6. Relate addition and subtraction to length.
7. Work with time and money.
8. Represent and interpret data.
9. Analyze shapes and their attributes.

Specific Skills

1. Understand place value in three-digit numbers using base ten.

- Understand that the three digits of a three-digit number represent amounts of hundreds, tens, and ones; e.g., 706 equals 7 hundreds, 0 tens, and 6 ones. Understand the following:
 - 100 can be thought of as a bundle of ten tens — called a “hundred.”
 - The numbers 100, 200, 300, 400, 500, 600, 700, 800, 900 refer to one, two, three, four, five, six, seven, eight, or nine hundreds (and 0 tens and 0 ones).
 - How many hundreds are in the number “four hundred five”? How do you know? How many tens are in the number “four hundred five”? How do you know?
- Count within 1000; skip-count by 5s, 10s, and 100s.
- Read/write numbers to 1000 using base-ten numerals, number names, and expanded form.
- Compare two three-digit numbers based on meanings of the hundreds, tens, and ones digits, using $>$, $=$, and $<$ symbols to record the results of comparisons.

2. Use place value understanding and properties of operations to add and subtract.

- Fluently add and subtract within 100 using strategies based on place value, properties/orders of operations, and/or the relationship between addition and subtraction.
- Add up to four two-digit numbers using strategies based on place value.
 - How might you rewrite $38 + 47 + 93 + 62$ to make it easier to solve?
- Add and subtract within 1000, 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. Understand that in adding or subtracting three-digit numbers, one adds or subtracts hundreds and hundreds, tens and tens, ones and ones. (Why might it be helpful to view subtraction as an unknown addend problem? (e.g., $278 + ? = 425$))

- Mentally add 10 or 100 to a given number 100–900, and mentally subtract 10 or 100 from a given number 100–900.

3. Solve problems using addition and subtraction within 100; fluently add and subtract within 20.

- Use addition and subtraction within 100 to solve one- and two-step word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.
- Fluently add and subtract within 20 using mental strategies. Recognize those problems that can be solved mentally versus those that require the use of objects, diagrams, or equations.
- By end of Grade 2, know from memory all sums of two one-digit numbers (aka basic addition math facts for all numbers 0-9).

4. Work with equal groups of objects to gain foundations for multiplication.

- Reason about what it means for numbers to be even and odd.
- Determine whether a group of objects (up to 20) has an odd or even number of members, e.g., by pairing objects or counting them by 2s; write an equation to express an even number as a sum of two equal addends.
- Use addition to find the total number of objects arranged in rectangular arrays with up to 5 rows and up to 5 columns; write an equation to express the total as a sum.

5. Measure and estimate lengths in standard units.

- Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes.
- Measure the length of an object twice, using length units of different lengths for the two measurements; describe how the two measurements relate to the size of the unit chosen.
- Estimate lengths using units of inches, feet, centimeters, and meters.
- Measure to determine how much longer one object is than another, expressing the length difference in terms of a standard-length unit.
- Determine when it is appropriate to estimate an object's length or when a more precise measurement is needed.

6. Relate addition and subtraction to length.

- Use addition and subtraction within 100 to solve word problems involving lengths that are given in the same units, e.g., by using drawings (such as drawings of rulers) and equations with a symbol for the unknown number to represent the problem.
- Represent whole numbers as lengths from 0 on a number line diagram with equally spaced points corresponding to the numbers 0,1,2, ..., and represent whole-number sums and differences within 100 on a number line diagram.

7. Work with time and money.

- Tell/write time from analog and digital clocks, using a.m. and p.m.
- Solve word problems involving dollar bills, quarters, dimes, nickels, and pennies, using \$ and ¢ symbols. (*If you have two dimes and three pennies, how many cents do you have?*)

8. Represent and interpret data.

- Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories. Solve simple put-together, take-apart, and compare problems using information presented in a bar graph.
 - (Given a bar graph representation of up to four categories of animals) How many more birds are there than hippos? How many more giraffes would there need to be in order for the number of giraffes to equal the number of elephants?

9. Analyze shapes and their attributes.

- Recognize and draw shapes having specified attributes, such as a given number of angles or a given number of equal faces. (Sizes are compared directly or visually, not compared by measuring.) Identify triangles, quadrilaterals, pentagons, hexagons, and cubes.
- Partition a rectangle into rows and columns of same-size squares and count to find the total number of them.
- Partition circles and rectangles into two, three, or four equal shares, describe the shares using the words halves, thirds, half of, a third of, etc., and describe the whole as two halves, three thirds, four fourths. Recognize that equal shares of identical wholes need not have the same shape.