Kindergarten 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 <u>end</u> 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 Kindergarten Students:
- **Number and Quantity**: Fluently (consistently) write numerals and count items up to 20.
- **Algebra and Functions**: Understand addition as putting together and subtraction as taking apart for numbers up to 10.
- **Data, Statistics, and Probability**: Sort objects into groups by comparing attributes such as color, size, and shape.
- **Geometry**: Name shapes regardless of size or position (a triangle is still a triangle even when pointing down).

Throughout Kindergarten You May Find Students:
- Playing counting games to help focus on one-to-one counting (touching one object and saying one number name).
- Quickly seeing groups of two or three objects without counting.
- Recognizing multiple finger patterns for the numbers 1 to 10.
- Writing numerals.
- Acting out addition and subtraction word problems.
- Creating pictures to show how numbers were joined or broken apart.
- Making comparisons ("I have more crayons" "His pencil is shorter than mine").
- Describing the basic location of objects (next to, under, over, inside).
- Naming and drawing shapes.
- Creating pictures by combining shapes (a house drawing created with a square and triangle).

Learning Objectives

1. Use number names and count sequence up to 100.

2. Compare numbers (i.e. more/less, greater than/less than).

3. Develop basic understanding of place value.

4. Model and describe addition as putting together and adding to, and subtraction as taking apart and taking from, using objects or drawings.

5. Describe and compare measurable attributes (i.e. length, weight, height).

6. Classify (name) objects (especially shapes) and count the number of objects in each category.

Specific Skills

1. Use number names and count sequence up to 100.
- Count to 100 by ones and by tens.
- Count forward beginning from a given number within the known sequence (instead of having to begin at 1).
- Write numbers from 0 to 20. Represent a number of objects with a written numeral 0–20 (with 0 representing a count of no objects).
- Recognize that the number sequence from 1 to 9 repeats between the "decade" numbers, except in the spoken numbers between 10 and 20.
- Reason that counting to 100 by tens reaches the same number as can be counted repeatedly by ones. Make use of the base-ten counting structure when using special words at the "decades," like "sixty" and "seventy."
- Count to answer "How many?" questions about as many as 20 things arranged in a line, a rectangular array, or a circle, or as many as 10 things in a scattered configuration; given a number from 1–20, count out that many objects.
- Make counting efficient by following rows, columns, or other patterns in a group of objects.
- Explain how the number reached when counting is a relationship between the quantity started from and the quantity added.
- Answer: What number is one larger than four? What number is one larger than seven?

2. Compare numbers.
- Identify whether the number of objects in one group is greater than, less than, or equal to the number of objects in another group, e.g., by using matching and counting strategies. (Include groups with up to 10 objects.)

3. Develop basic understanding of place value.
- Work with numbers 11–19 to gain foundations for place value.
- Construct and deconstruct numbers from 11 to 19 into ten ones and some further ones, e.g., by using objects or drawings, and record each by a drawing or equation (such as $18 = 10 + 8$); understand that these numbers are composed of ten ones and one, two, three, four, five, six, seven, eight, or nine ones. Be precise in drawings, diagrams, and numerical recordings about objects or symbols that represent ones and objects or symbols that represent tens.

- Can you show the number 13 as ten ones and some more ones? How many more ones than tens are there?
- In the number 11, what makes the "1" on the left different from the "1" on the right? Could you show this with objects or a diagram?

4. Model and describe addition as putting together and adding to, and subtraction as taking apart and taking from, using objects or drawings.
- Represent addition and subtraction with objects, fingers, mental images, drawings (drawings need not show details, but should show the mathematics in the problem), sounds (e.g., claps), acting out situations, verbal explanations, expressions, or equations.
- Solve addition and subtraction word problems, and add and subtract within 10, e.g., by using objects or drawings to represent the problem.
- Deconstruct numbers less than or equal to 10 into pairs in more than one way, e.g., by using objects or drawings, and record each by a drawing or equation (e.g., $5 = 2 + 3$ and $5 = 4 + 1$).
- For any number from 1 to 9, find the number that makes 10 when added to the given number, e.g., by using objects or drawings, and record the answer with a drawing or equation.
- Fluently add and subtract within 5.
- How could you show me adding 3 and 2? How could you show me 3 take away 2?

5. Describe and compare measurable attributes.
- Describe measurable attributes of objects, such as length or weight. Describe several measurable attributes of a single object.
- Directly compare two objects with a measurable attribute in common, to see which object has "more of"/"less of" the attribute, and describe the difference. *For example, directly compare the heights of two children and describe one child as taller/shorter.*

6. Classify (name) objects (especially shapes) and count the number of objects in each category.
- Classify objects into given categories; count the numbers of objects in each category and sort the categories by count. (Limit category counts to be less than or equal to 10.)
- Group objects into categories to help make sense of problems.
- Abstract individual objects into new conceptual groups.
- Choose appropriate representations of objects and categories.
- Identify and describe shapes (squares, circles, triangles, rectangles, hexagons, cubes, cones, cylinders, and spheres).
- Describe objects in the environment using names of shapes and describe the relative positions of these objects using terms such as *above*, *below*, *beside*, *in front of*, *behind*, and *next to*.
- Correctly name shapes regardless of their orientations or overall size.
- Analyze and compare two- and three-dimensional shapes (aka "flat" vs. solid), in different sizes and orientations, using informal language to describe their similarities, differences, parts (e.g., number of sides and vertices/"corners") and other attributes (e.g., having sides of equal length).
- Model shapes in the world by building shapes from components (e.g., sticks and clay balls) and drawing shapes.
- Compose simple shapes to form larger shapes. *For example, "Can you join these two triangles with full sides touching to make a rectangle?"*