

Cluster 6: Working with Linear Measurement

Duration: 2-3 weeks

Content Standards:

This list includes standards addressed in this cluster, but not necessarily mastered, since all standards are benchmarks for the end of the year. Note strikethroughs and recommendations in the Important Considerations section for more information.

NC.2.MD.1

Measure the length of an object in standard units by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes.

NC.2.MD.2

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.

NC.2.MD.3

Estimate lengths in using standard units of inches, feet, yards, centimeters, and meters.

NC.2.MD.4

Measure to determine how much longer one object is than another, expressing the length difference in terms of a standard length unit.

NC.2.MD.5

Use addition and subtraction, within 100, to solve word problems involving lengths that are given in the same units, using equations with a symbol for the unknown number to represent the problem.

NC.2.OA.1

Represent and solve addition and subtraction word problems, within 100, with unknowns in all positions, by using representations and equations with a symbol for the unknown number to represent the problem, when solving:

- One-Step problems:
 - Add to/Take from - Start Unknown
 - Compare - Bigger Unknown
 - Compare - Smaller Unknown
- Two-Step problems involving single digits:
 - Add to/Take from - Change Unknown
 - Add to/Take From - Result Unknown

Mathematical Practices:

- 1. Make Sense of Problems and Persevere in Solving Them**
- 2. Reason Abstractly and Quantitatively**
- 3. Construct Viable Arguments and Critique the Reasoning of Others**
- 4. Model with Mathematics**
- 5. Use Appropriate Tools Strategically**
- 6. Attend to Precision**
- 7. Look for and make use of structure**
- 8. Look for and express regularity in repeated reasoning**

What is the Mathematics?

In this cluster, students will recognize the need for standard units of measure. They will estimate and then precisely measure objects using self-selected tools, while developing the understanding that linear measurement involves the iteration of units (i.e., inches, feet, yards, centimeters, and meters). Students will acquire specific skills such as how to align objects to the zero point on the ruler, interpret the meaning of numbers on measurement tools, and draw a connection between the use of physical objects as measurement tools (e.g., paper clips and cubes) and standard measurement tools (e.g., rulers).

Through hands-on experiences, students will also learn the inverse relationship between the size of a unit and number of units needed to measure a length. (e.g., It take fewer feet than inches to measure the length of a desk). After having many opportunities to work with measurement tools, students will solve real-world problems involving measurements.

Important Considerations

In first grade, students worked with non-standard units of linear measure, such as paper clips and cubes. It may be helpful to begin this cluster by drawing from students' prior experiences with non-standard measurement. It is important to establish a purpose for standard units of measure and develop crucial measurement skills prior to focusing on problem solving. When problem solving, pose a variety of problem types with unknowns in all positions.

- ***Engaged in authentic measurement tasks throughout this cluster.***
- ***For length comparison, use language such as “longer than” and “shorter than”.***
- ***As students learn to measure using different units, they should also be encouraged to discover personal benchmarks for each unit (e.g., one foot is the length from a student’s elbow to pinky).***
- ***Discuss reasonableness of measurement units (e.g., which is the most appropriate unit for measuring the length of the classroom).***
- ***Linear measurement tools may also be considered number lines. While working with linear measurement, connections should be made to skills acquired while working with the number line.***
- ***In this cluster, measurement is the context for word problems. Note that two-step word problems are introduced in this cluster, though students may have some experiences with them before this point when engaged in rich tasks.***