

Cluster 8: Using Tools to Measure Length, Weight, and Capacity

Duration: 2-3 weeks

Content Standards:

This list includes standards that will be addressed in this cluster, but not necessarily mastered, since all standards are benchmarks for the end of the year. Please note the recommendations in the Important Considerations section of this cluster for more information.

NC.3.MD.2

Solve problems involving customary measurement.

- Estimate and measure lengths in customary units to the quarter-inch and half-inch, and feet and yards to the whole unit.
- Estimate and measure capacity and weight in customary units to a whole number: cups, pints, quarts, gallons, ounces, and pounds.
- Add, subtract, multiply, or divide to solve one-step word problems involving whole number measurements of length, weight, and capacity in the same customary units.

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?

This cluster is about measurement using customary measurements. Customary measurement is positioned at this point in the curriculum sequence because students can leverage their knowledge of linear models with fractions, part of the previous cluster, to measure length to the nearest $\frac{1}{4}$ and $\frac{1}{2}$ inch. This cluster is not about measuring using non-standard units that students experienced in grades K and 1. However, it is worthwhile to begin the unit with reminding students of the rationale and need for standard units.

Students will:

- Estimate using customary units for: length (inches, feet, yards); weight (ounces and pounds); and capacity (cups, pints, quarts, and gallons).
- Measure length to the nearest $\frac{1}{4}$ and $\frac{1}{2}$ inch.
- Measure weight and capacity to the nearest whole unit.
- Solve one-step story problems that involve whole-number measurements in the same customary units.

Important Considerations:

- Measurement is positioned at this point because it will be later in the school year, after most of the major work (multiplication, division, and fractions) has already been addressed.
- This cluster should start with attention to length because it directly builds on the previous cluster focused on fractions. Students learned about linear models for fractions so they can apply that knowledge in the context of measuring to the nearest $\frac{1}{4}$ and $\frac{1}{2}$ inch.
- Since the third bullet in this standard focuses on one-step story problems involving all four operations, this allows students to further practice with different story problem types (e.g., add

to, take from, equal groups). Therefore, 3.OA.3 can be addressed at this point in the school year, too.

- In second grade, students explored the relationship between two different measurements of the same object using two different units (e.g., when measuring a table, use inches and feet and explore how it takes more inches than feet to measure the table). This idea can be explored in the context of measuring capacity or weight in third grade. For example, how many cups versus pints does a given bucket hold?
- To give a sense of the “size” of the units of measurement, use everyday objects that students know. For example, to give them a sense of a gallon, use an empty gallon milk jug.