



Topic D

Measuring and Estimating Length Using Customary and Metric Units

2.MD.1, 2.MD.2, 2.MD.3, 2.MD.4

Focus Standards:	2.MD.1	Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes.
	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.
	2.MD.3	Estimate lengths using units of inches, feet, centimeters, and meters.
	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.
Instructional Days:	4	
Coherence -Links from:	G1–M3	Ordering and Comparing Length Measurements as Numbers
	G2–M2	Addition and Subtraction of Length Units
	-Links to: G3–M2	Place Value and Problem Solving with Units of Measure

Topic D builds upon the work students completed in Module 2 with centimeter units, as students now explore measurement using both customary and metric units. In Lesson 16, students rotate through various centers and measure a variety of objects with inch rulers and yardsticks, strategically choosing the appropriate measurement tool and units for measuring a given object (**2.MD.1**). By doing so, they develop mental images of customary benchmark lengths.

Next, in Lesson 17, students deepen their measurement sense by applying their experiences in Lesson 16 to estimating the lengths of different objects and then checking their estimates by measuring (**2.MD.3**). For example, a student might estimate that a desk is three feet tall and then measure to discover that it is actually three feet six inches tall.

Then, in Lesson 18, students measure the same objects twice, using both metric and customary units. In this way, they learn that centimeters are smaller than inches. This reinforces the understanding that, when measuring with a smaller unit, more iterations of that unit are needed to measure the same object than when measuring with a larger unit (**2.MD.2**).

Finally, students compare different lengths using addition and subtraction in Lesson 19. They determine how much longer one object is than another, subtracting the smaller length from the larger one. Problems are solved in a variety of ways using the relationship between addition and subtraction (e.g., $25 \text{ in} - 18 \text{ in} = \underline{\hspace{1cm}}$ in, or $18 \text{ in} + \underline{\hspace{1cm}} = 25 \text{ in}$), and the differences are expressed using standard length units (e.g., 7 in) (**2.MD.4**).

The work with measurement tools and various length units in Topic D lays the groundwork for problem solving in Topic E, as students use the more abstract tape diagram to relate addition and subtraction to length.

A Teaching Sequence Toward Mastery of Measuring and Estimating Length Using Customary and Metric Units

- Objective 1: Measure various objects using inch rulers and yardsticks.**
(Lesson 16)
- Objective 2: Develop estimation strategies by applying prior knowledge of length and using mental benchmarks.**
(Lesson 17)
- Objective 3: Measure an object twice using different length units and compare; relate measurement to unit size.**
(Lesson 18)
- Objective 4: Measure to compare the differences in lengths using inches, feet, and yards.**
(Lesson 19)