



Topic B

Standard Length Units

1.MD.1, 1.MD.2

Focus Standards:	1.MD.1	Order three objects by length; compare the lengths of two objects indirectly by using a third object.
	1.MD.2	Express the length of an object as a whole number of length units, by laying multiple copies of a shorter object (the length unit) end to end; understand that the length measurement of an object is the number of same-size length units that span it with no gaps or overlaps. <i>Limit to contexts where the object being measured is spanned by a whole number of length units with no gaps or overlaps.</i>
Instructional Days:	3	
Coherence	-Links from:	GK–M3 Comparison of Length, Weight, Capacity, and Numbers to 10
	-Links to:	G2–M2 Addition and Subtraction of Length Units
		G2–M7 Problem Solving with Length, Money, and Data

Topic B adds a new level of precision to measurement by introducing the idea of a length unit. In Lesson 4, centimeter cubes are laid alongside the length of objects as students learn that the total number of cubes laid end to end with no gaps or overlaps is the length measure of that object. The objects being measured by students include many of the same objects measured in Topic A so that students can add greater precision to their measurements as they specify the number of units equal to the length of the objects being compared. For example, the length of the crayon can now be described not only as shorter than the paper strip, but more precisely as 9 centimeter cubes (**1.MD.2**).

In Lesson 5, students lay those same centimeter cubes alongside a ruler, recognizing the meaning of the numbers on the ruler as describing the number of centimeter length units up to that number. The centimeter then connects students to their world as they come to realize that the centimeter unit is used by first-grade students in Brazil, by the restaurant owner across the street, and even by their families. Students explore the question, “Why would we use a standard unit to measure?” As the use of rulers to measure is a Grade 2 standard, students in Grade 1 simply *rename* their centimeter cube as a centimeter as they continue to use the cubes to measure objects. The Geometric Measurement Progressions Document suggests that students engage in standard unit measurement in order to develop a solid understanding of why and how to measure, rather than measuring using a plethora of nonstandard measurement units.¹

¹See the K–5 Geometric Measurement progression.

The topic closes with Lesson 6 where students measure and compare sets of three items using centimeter cubes, returning to the transitive statements of Topic A, but with more sophisticated insights (**1.MD.1**): “The pencil measures 10 centimeters. The crayon measures 6 centimeters. The book measures 20 centimeters. The order from shortest to longest is the crayon, the pencil, and the book. The book is longer than the pencil, and the pencil is longer than the crayon, so the book is longer than the crayon.” Students finally solve *compare with difference unknown* word problems, determining how much longer a given object is than another.

A Teaching Sequence Toward Mastery of Standard Length Units

Objective 1: Express the length of an object using centimeter cubes as length units to measure with no gaps or overlaps.
(Lesson 4)

Objective 2: Rename and measure with centimeter cubes, using their standard unit name of centimeters.
(Lesson 5)

Objective 3: Order, measure, and compare the length of objects before and after measuring with centimeter cubes, solving *compare with difference unknown* word problems.
(Lesson 6)