



## Topic B

# Generate and Analyze Measurement Data

## 3.MD.4

<b>Focus Standard:</b>	3.MD.4	Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Show the data by making a line plot, where the horizontal scale is marked off in appropriate units—whole numbers, halves, or quarters.
<b>Instructional Days:</b>	5	
<b>Coherence -Links from:</b>	G2–M7	Problem Solving with Length, Money, and Data
	G3–M5	Fractions as Numbers on the Number Line
<b>-Links to:</b>	G4–M2	Unit Conversions and Problem Solving with Metric Measurement

In Lesson 5, students use the method of partitioning a whole into equally spaced increments using the number line as a measurement tool (G3–M5–Lesson 30) to partition a six-inch strip into 6 equal increments. They repeat the process by partitioning the same strip into 12 equal increments and determine that it shows half-inch intervals. Finally, students partition the strip into 24 equal increments to determine that they have created quarter-inch intervals. The three measurements on the paper strip respectively measure in whole-inch, half-inch, and quarter-inch measurements.

Students use their paper strip as a ruler to measure pre-cut straws that are less than six inches long. As they measure, they make predictions about which of their measurements gives the most accurate data, eventually concluding that it is typically the quarter-inch measurement.

Lesson 6 reintroduces the line plot as a tool for displaying measurement data. While students are familiar with line plots from Grade 2, using fractional values on the line plot is a new concept in this lesson. To prepare students for creating their own line plots in Lessons 7 and 8, Lesson 6 builds foundational experience with representations given in fractional intervals. Students understand the conventions of line plots with fractions and learn to interpret data from them.

In Lessons 7 and 8, students apply the conventions of constructing line plots with fractions to display measurement data. They learn how to represent data when the data set has values of mixed units (i.e., double-digit whole numbers and a fraction). The process of representing their data on line plots naturally evokes student observations about the distribution of the data and leads to solving comparative problems.

In Lesson 9, students analyze both categorical and measurement data to solve problems. Students also explore the functions of different representations— graphs, charts, and line plots—and discuss the appropriateness of each type of representation for different types of data.

This is a perfect opportunity to take advantage of measuring for science-related purposes. For example, if you are germinating and growing bean plants, students may start by measuring the bean seed and then take regular measurements of the plant as it grows. Students might also collect objects from the playground, such as leaves from the same tree or blades of grass. They could talk about why someone might want to measure these objects (e.g., to analyze the health of the tree).

#### A Teaching Sequence Toward Mastery to Generate and Analyze Measurement Data

**Objective 1:** Create ruler with 1-inch,  $\frac{1}{2}$  inch, and  $\frac{1}{4}$  inch intervals, and generate measurement data.  
(Lesson 5)

**Objective 2:** Interpret measurement data from various line plots.  
(Lesson 6)

**Objective 3:** Represent measurement data with line plots.  
(Lessons 7–8)

**Objective 4:** Analyze data to problem solve.  
(Lesson 9)