

GRADE 3 • MODULE 6

Collecting and Displaying Data

New or Recently Introduced Terms

- Axis (vertical or horizontal scale in a graph)
- Frequent (most common measurement on a line plot)
- Measurement data (e.g., length measurements of a collection of pencils)
- Scaled graphs (bar or picture graph in which the scale uses units with a value greater than 1)
- Survey (collecting data by asking a question and recording responses)

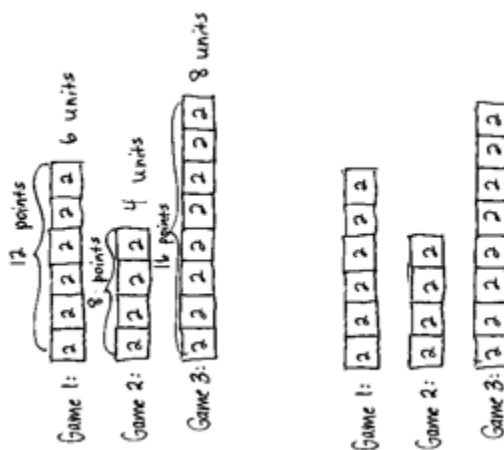
Familiar Terms and Symbols¹

- Bar graph (graph generated from categorical data with bars to represent a quantity)
- Data (information)
- Fraction (numerical quantity that is not a whole number, e.g., $\frac{1}{2}$)
- Line plot (display of measurement data on a horizontal line)
- Picture graph (graph generated from categorical data with graphics to represent a quantity)

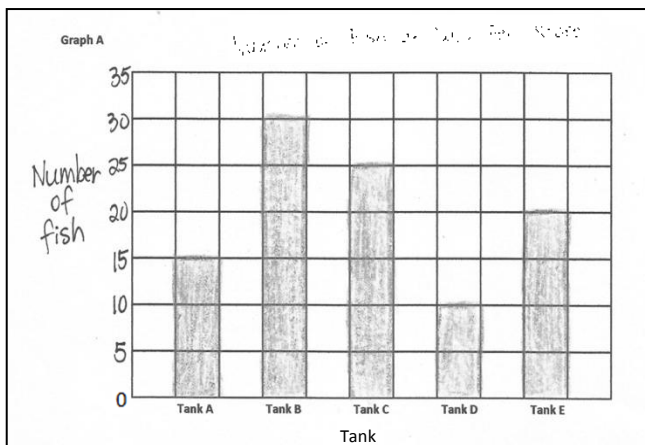
Topic A: Generate and Analyze Categorical Data

Drawing on prior knowledge from Grade 2, students in Lesson 1 generate categorical data from getting-to-know-you activities. They organize the data, and then represent it in a variety of ways, e.g., tally marks, graphs with one-to-one correspondence, or tables. By the end of the lesson, students show data as picture graphs where each picture has a value greater than 1.

Students rotate tape diagrams vertically in Lesson 2. These rotated tape diagrams have units other than 1 and help students create scaled bar graphs. Bar and picture graphs are introduced in Grade 2, however Grade 3 adds the complexity that one unit—one picture—can have a whole number value greater than 1. Students see that the same skip-counting and multiplication strategies that they use to problem solve with tape diagrams can be applied to problem solving with bar graphs.



In Lesson 3, students use the rotated tape diagram to construct the scale on the vertical axis of a bar graph. One tape becomes a bar on the bar graph. As with the unit of a tape diagram, one unit of a bar graph can have a value greater than 1. Students create number lines with intervals appropriate to the data.



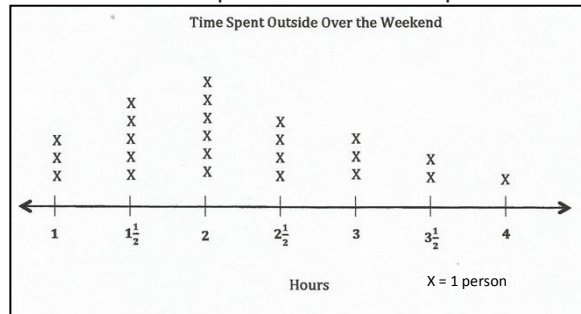
Lesson 4 provides an opportunity for students to analyze graphs to solve one- and two-step problems, including comparison problems. This work highlights Mathematical Practice 2 as students re-contextualize their numerical work to interpret its meaning as data.

Topic B: Generate and Analyze Measurement Data

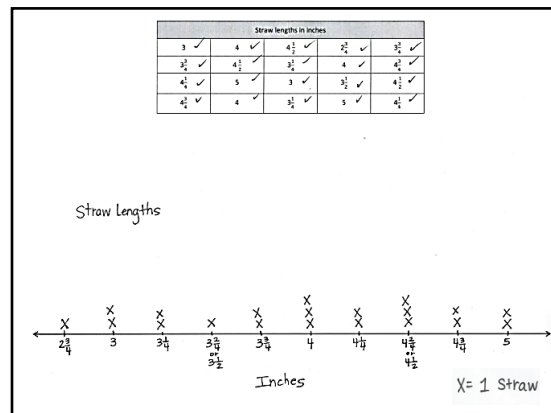
In Lesson 5, students use the method of partitioning a whole into equally spaced increments using the number line as a measurement tool (G3–M5–Lesson 30) to partition a six-inch strip into 6 equal increments. They repeat the process by partitioning the same strip into 12 equal increments and determine 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 give 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 building their own line plots in Lessons 7 and 8, this lesson builds foundational experience with representations given in fractional intervals. Students understand the conventions of line plots with fractions, learn to interpret data from them, and make conjectures about the meaning of the distributions.



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 with mixed units: double-digit whole numbers and a fraction, e.g., 14 1/2 inches. The process of representing their data on line plots naturally surfaces 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 may also be presented with a table of data in order to determine whether it is best represented as a bar graph or as a line plot.

