

Problem Solving with Money, Measurement and Data

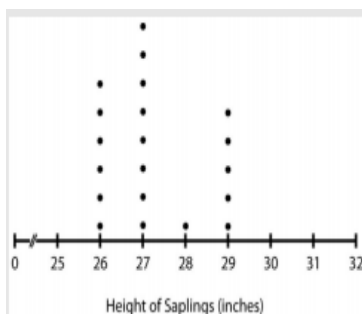
Key Content from This Unit:

In this unit, students find the total value of a group of coins or dollars in the context of simple addition and subtraction word problem types with the result unknown. Students solve simple put-together, take-apart, and compare problems using information presented in a picture or bar graph. Students also learn to draw picture and bar graphs to organize and represent the data in as many as four categories. They learn that this organizing of information makes it easier to compare data and can help them solve problems.

Vocabulary to Know:

Data: Facts assembled for analysis or information.
Category: A group of people or things sharing a common characteristic, e.g., bananas are in the fruit category.
Line plot: A graph representing data with an X above each instance of value on a number line.
Picture graph: A representation of data like a bar graph, using pictures instead of bars.
Bar graph: A diagram showing data using lines or rectangles of equal width.

Line Plot



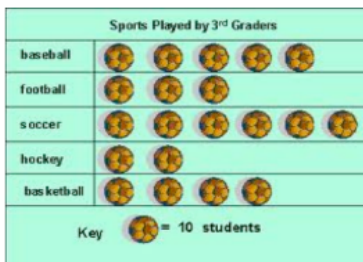
What came before this:

In Grade 1, students organized, represented, and interpreted data with up to three categories. Students asked and answered questions about the total number of data points, how many are in each category, and how many more or less are in one category than another. Earlier in Grade 2 students solved word problems involving like coins or dollars (all pennies, or nickels, or dimes, or quarters. etc.).

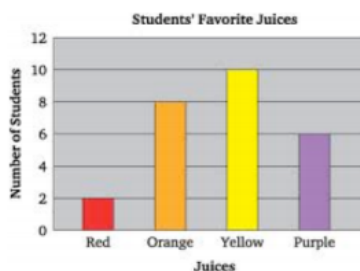
What comes after this:

In Grade 3, students draw a scaled picture graph and a scaled bar graph to represent a data set with several categories and solve one and two-step problems about information presented in scaled bar graphs. They will also generate measurement data by measuring lengths, using rulers marked with halves and fourths of an inch. They will show their data by making a line plot. Students will begin to measure and estimate liquid volumes and masses using standard units of grams.

Picture Graph



Bar Graph



Common Core Focus:

- Solve addition and subtraction word problems with money as a context.
- Use the \$ and ¢ symbols appropriately when working with money problems.
- Generate and display measurement data in a horizontal line plot (with whole numbers units).
- Draw picture and bar graphs to display data with up to four categories.
- Solve problems using information represented in a bar and picture graphs.
- Represent whole numbers as lengths from 0 on a number line diagram with equally spaced points corresponding to the numbers 0, 1, 2, ... to display data.

2.MD.6, 2.MD.8, 2.MD.9, 2.MD.10

Spotlight on the Math Practices

Model with Mathematics

Mathematically proficient students can apply the mathematics they know to solve problems arising in everyday life, society, and the workplace.

In this unit, students *model with mathematics* when they:

- Solve everyday problems involving money, measurement, and data displayed in graphs.
- Interpret real world data from line plots, bar graphs and picture graphs.

How Can You Help?

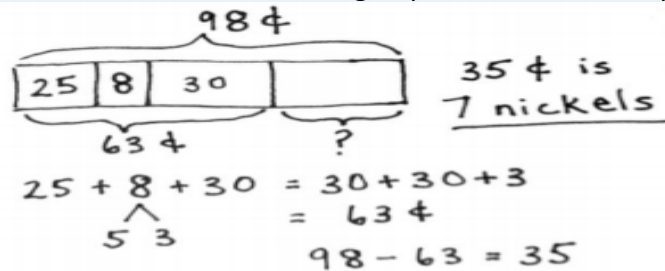
- Go on a measuring hunt around the house. For example, find a book that is 7 inches long. Find another item that is 2 inches long. Plot all of the measurements on a line plot as you go. Come up with statements to describe what the data shows you.
- Give your child various amounts of money (coins or dollars) to count. When using coins (quarters, dimes, nickels, pennies), the total should not exceed \$1.00.

KEY MATHEMATICAL MODELS of the COMMON CORE

The **TAPE DIAGRAM** is a powerful model that students can use to solve a variety of problems. Tape diagrams are also called "bar models" and consist of a simple bar drawing that students make to represent a word problem. They then use the drawing to discuss and solve the problem. As students move through the grades, tape diagrams provide an essential bridge to algebra.

The tape diagram below represents the word problem:

Devon found 98¢ in her piggy bank. She counted 1 quarter, 8 pennies, 3 dimes, and some nickels. How many nickels did she find? This diagram shows an understanding of place value, decomposing and making a ten.



Some Resources to Help at Home

- Let's graph: http://www.harcourtschool.com/activity/lets_graph/
- Learning Coins: http://www.abcya.com/counting_money.htm
- Bank It: <http://www.fuelthebrain.com/Interactives/app.php?ID=40>
- Line plot tutorial: <http://www.schooltube.com/video/27ad1fffb73701b8ead9/>
- Learn Zillion line plot: <https://learnzillion.com/lessons/3657-display-data-from-a-word-problem-on-a-line-plot>
- Learn Zillion picture graphs: <https://learnzillion.com/lessonsets/653-draw-picture-graphs-to-represent-data>
- Learn Zillion number lines: <https://learnzillion.com/lessonsets/563-represent-whole-numbers-and-their-sums-and-differences-on-a-number-line-diagram>
- Learn Zillion adding and subtracting money: <https://learnzillion.com/lessons/2905-add-and-subtract-money-using-mental-math>