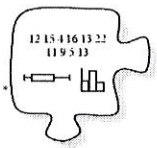


# 8.1.1 How can I describe the data?

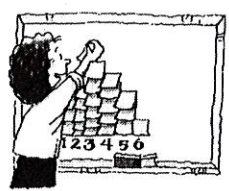


## Measures of Central Tendency

Data can be described and displayed in a variety of ways. You have already worked with many displays of data, such as tables and graphs. Today, you will focus on how to analyze and describe data numerically.

8-1

**8-1. TAKING A CENSUS:** Have you ever heard of a census? A census is a collection of data that describes the people living in a country. The United States government performs a census every ten years. The government uses the data to learn such things as how the population is changing, where people live, what types of families exist, and what languages are spoken. Today you will take a census of your class to answer the question, "What is the size of a typical family for the students in your math class?"



**Your Task:** Place your dot above the appropriate number on the class dot plot. Copy the dot plot into your notebook and then answer the following:

- a) What is the difference between the largest piece and the smallest piece of data in your class? This difference is called the **range**. It is one way to measure the "spread" or variability of the data.
- b) What number falls right in the middle of all the class data when the data is sorted in order? This number is called the **median**.

is \_\_\_\_\_.

at least

the median.

**8-2.** Once each day, Erika tracks the depth of the water in her local creek. Her first nine measurements, in inches, are below.

16 15 13 12 17 14 11 9 11

- a) What is the **median** of her data? What is the **range** of her data?
- b) Erika's next three measurements, in inches, are 9, 10, and 9. What is the **new median and new range**?

**8-3. WHAT IS AVERAGE?** Use the dot plot from question 8-1. If the number of people in each home were evenly distributed, how many people would be in each home? This calculation is called the **mean (or average)**. To find the mean, add all values, then divide by how many values there are.

**8-4.** An **outlier** is a piece of data that is much larger or much smaller than the rest of the data. Imagine that a student with a family of 20 people joined your class. How do you think the range and the measures of central tendency (mean and median) of your class's data would change with this additional piece of data? Which measure would change the most?

the

**8-5.** Complete the vocabulary on page 52. How do you find the **range**? How do you find the **median**? What is the **mean**? What is an **outlier**?

★ Just complete the four! ★

middle  
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values

a) 7

b) To  
to  
the

8-2

a) The  
The  
ran

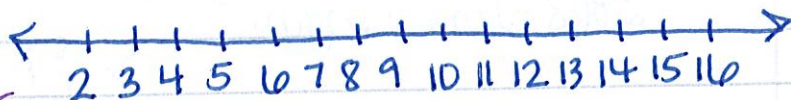
b) With  
so  
still  
didn't  
change.

8-3

Add all values then divide by how many there are.  
The mean (average) is \_\_\_\_\_.

### 8-1 Class dot plot :

Dot plots start with a number line!



a) The highest \_\_\_\_\_ minus the lowest \_\_\_\_\_ is \_\_\_\_\_.  
So, the range is \_\_\_\_\_.

b) To find the median, list the values from least to greatest (or use your dot plot).  
The value in the middle is \_\_\_\_\_ so it's the median.

### 8-2

When studying data, it's helpful to start by putting the values in order.

9, 9, 9, 10, 11, 11, 12, 13, 14, 15, 16, 17

a) The middle is 13, so the median is 13.  
The highest 17 minus the lowest 9 is 8 so the range is 8.

b) With the new values, 11 & 12 are in the middle so  $11\frac{1}{2}$  is the median (or 11.5). The range is still 8 because the highest and lowest values didn't change.

### 8-3

Add all values then divide by how many there are.  
The mean (average) is \_\_\_\_\_.

8-4

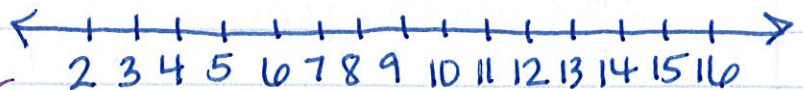
The range, mean and median would probably all increase (although the median might not).

The mean and range would change the most.

51

8-1 Class dot plot:

Dot plots start with a number line!



a) The highest \_\_\_\_\_ minus the lowest \_\_\_\_\_ is \_\_\_\_\_.  
So, the range is \_\_\_\_\_.

b) To find the median, list the values from least to greatest (or use your dot plot).