

MEASURES OF CENTRAL TENDENCY

A measure of central tendency for a set of numerical data is a single number that represents a "typical" value for the set. Three important measures of central tendency are the *mean*, the *median*, and the *mode*.

- The **mean**, or average, of a data set is the sum of the values in the set divided by the number of values in the set.
- The **median** of a data set with an odd number of values is the middle value when the values are written in numerical order. The median of a data set with an even number of values is the mean of the two middle values when the values are written in numerical order.
- The **mode** of a data set is the value or values in the set that occur most often. If no value occurs more often than any of the others, there is no mode.

EXAMPLE Find the mean, median, and mode of the following data set.

10, 12, 7, 11, 20, 7, 8, 19, 9, 5

SOLUTION

To find the mean, divide the sum of the data values by the number of data values.

$$\text{Mean} = \frac{10 + 12 + 7 + 11 + 20 + 7 + 8 + 19 + 9 + 5}{10} = \frac{108}{10} = 10.8$$

Since there are an even number of values, find the median by writing the data values in numerical order and finding the mean of the two middle values.

$$5, 7, 7, 8, 9, 10, 11, 12, 19, 20 \quad \text{Median} = \frac{9 + 10}{2} = \frac{19}{2} = 9.5$$

The mode is the number that occurs most often in the data set.

$$\text{Mode} = 7$$

Practice

Find the mean, median, and mode(s) of the data set.

- 0, 0, 0, 0, 0, 1, 2, 2, 4, 4
- 3, 1, 1, 8, 2, 1, 3, 5, 3
- 10, 15, 20, 25, 30, 35, 40, 45, 50
- 14, 10, 45, 38, 60, 14, 23, 35, 68, 50
- 376, 376, 386, 393, 487, 598, 737, 745, 853
- 101, 76, 52, 50, 26, 7, 13, 1000