Study Guide and Intervention

7SDAP1.3

Measures of Central Tendency and Range

The most common measures of central tendency are mean, median, and mode. The range is also used to describe a set of data. To find the **mean** of a data set, find the sum of the data values then divide by the number of items in the set. To find the **median** of a data set, put the values in order from least to greatest, then find the middle number. If there are two middle numbers, add them together and divide by 2. The **mode** of a data set is the number or numbers that occur most often. If no number occurs more than once, the data set has no mode. The **range** of a data set is the difference between the greatest number and the least number in a set of data.

Example Find the mean, median, mode, and range of the set of data. Round to the nearest tenth if necessary. The ages, in years, of relatives staying at your home are listed below.
5, 14, 8, 2, 89, 14, 10, 2

Mean $\dfrac{5 + 14 + 8 + 2 + 89 + 14 + 10 + 2}{8} = 18$

The mean age is 18.

Median Arrange the numbers in order from least to greatest.
2 2 5 8 10 14 14 89

The middle numbers are 8 and 10. Since $\dfrac{8 + 10}{2} = 9$, the median age is 9.

Mode The numbers 2 and 14 each occur twice. The data set has two modes, 2 and 14.

Range 89–2 or 87

Different circumstances determine which measure of central tendency or range is most appropriate to describe a set of data. The mean is most useful when the data has no extreme values. The median is most useful when the data has a few extreme values with no big gaps in the middle of the data. The mode is most useful when the data has many identical numbers.

Exercises

Find the mean, median, mode, and range of each set of data. Round to the nearest tenth if necessary.

1. 2, 4, 5, 1, 3

2. 7, 5, 7, 7, 6, 4

3. 18, 14, 15, 11, 14, 12, 17

4. 19, 24, 22, 16, 15, 27, 22, 27

5. 2.3, 1.1, 1.5, 3.2, 1.7, 2.0, 2.4, 1.8

6. 36, 32, 34, 34, 35, 38, 36, 34

7. 30, 29, 30, 31, 30

8. 4.2, 5.2, 2.3, 4.0, 4.6, 6.0, 2.3, 5.3