12.2 Measures of Central Tendency

**Measures of central tendency** are used to describe the average or typical data within a distribution. Mean, median, and mode are three measures that differ in their calculation methods and in their appropriateness for specific real-world situations.

# OBJECTIVE 1: Determine the mean for a data set

The **mean** is the sum of the data items divided by the number of items.

**CALCULATING THE MEAN**

The Greek letter sigma, , is used for summation. The expression  means the sum of all values of *x*. In this case each *x* is a data item and *n* is the number of data items in the set. The mean of the data set is represented by 



If the data has been arranged into a frequency distribution or histogram, the process of calculating the mean can be simplified by multiplying each data value by its frequency, *f*.



# OBJECTIVE 2: Determine the median for a data set

The **median** is the middle item in a data set.

**DETERMINING THE MEDIAN**

1. Arrange the data items in ascending order.
2. If the number of data items is odd, the median is the data item in the middle of the list. If *n* items are arranged in order, the position of the median in the list is 
3. If the number of data items is even, the median is the mean of the two middle data items. In this case, the median is not a data item. However, if the two middle items are equal, they will also be equal to the median.

# OBJECTIVE 3: Determine the mode for a data set

The **mode** is the data value that occurs most often in a data set. If more than one data value has the highest frequency, then each of these data values is a mode. If there is no data value that occurs most often, then the data set has no mode.

# OBJECTIVE 4: Determine the midrange for a data set

The **midrange** of a data set is the mean of the highest and lowest data values within the set.