Solution

First sort the data values by arranging them in order, as shown below:

22 22 **23** 24 26

Because the number of data values is an odd number (5), the median is the number located in the exact middle of the sorted list, which is 23. The median is therefore 23 chips. Note that the median of 23 chips is different from the mean of 23.4 chips found in Example 1.

Example 3 Median

Repeat Example 2 after including the sixth count of 27 chips. That is, find the median of these counts: 22 chips, 22 chips, 26 chips, 24 chips, 23 chips, and 27 chips.

Solution

First arrange the values in order:

22 22 **23** **24** 26 27

Because the number of data values is an even number (6), the median is found by computing the mean of the two middle numbers, which are 23 and 24.

$$\text{Median} = \frac{23 + 24}{2} = \frac{47}{2} = 23.5$$

The median is 23.5 chips.

CAUTION Never use the term *average* when referring to a measure of center. The word *average* is often used for the mean, but it is sometimes used for other measures of center. To avoid any confusion, we use the correct and specific term, such as *mean* or *median*; *average* is not used by statisticians and it will not be used throughout the remainder of this book when referring to a specific measure of center.

Mode

The mode is another measure of center.

DEFINITION The **mode** of a data set is the value that occurs with the greatest frequency.

Finding the Mode: A data set can have one mode, more than one mode, or no mode.

- When two data values occur with the same greatest frequency, each one is a mode and the data set is **bimodal.**
- When more than two data values occur with the same greatest frequency, each is a mode and the data set is said to be **multimodal.**
- When no data value is repeated, we say that there is **no mode.**