Solution

The midrange is found as follows:

$$\text{Midrange} = \frac{\text{maximum data value} + \text{minimum data value}}{2}$$

$$= \frac{26 + 22}{2} = 24$$

The midrange is 24.0 chips.

When calculating measures of center, we often need to round the result. We use the following rule.

Round-Off Rules:

For the mean, median, and midrange, carry one more decimal place than is present in the original set of values.

For the mode, leave the value as is without rounding (because values of the mode are the same as some of the original data values).

When applying this rule, round only the final answer, *not intermediate values that occur during calculations.* For example, the mean of 2, 3, and 5 is 3.333333 . . . , which is rounded to 3.3, which has one more decimal place than the original values of 2, 3, and 5. As another example, the mean of 80.4 and 80.6 is 80.50 (one more decimal place than was used for the original values). Because the mode is one or more of the original data values, we do not round values of the mode; we simply use the same original values.

Critical Thinking

Although we can calculate measures of center for a set of sample data, we should always think about whether the results are reasonable. In Section 1-3 we noted that it does not make sense to do numerical calculations with data at the nominal level of measurement, because those data consist of names, labels, or categories only, so statistics such as the mean and median are meaningless. We should also think about the sampling method used to collect the data. If the sampling method is not sound, the statistics we obtain may be very misleading.

Example 6 Critical Thinking and Measures of Center

For each of the following, identify a major reason why the mean and median are *not* meaningful statistics.

a. Zip codes of the author, White House, Air Force division of the Pentagon, Empire State Building, and Statue of Liberty: 12590, 20500, 20330, 10118, 10004.

b. Rank (by sales) of selected statistics textbooks: 1, 4, 5, 3, 2, 15.

c. Numbers on the jerseys of the starting offense for the New Orleans Saints when they won the last Super Bowl (as of this writing): 12, 74, 77, 76, 73, 78, 88, 19, 9, 23, 25.