

## Mean, Median, and Mode

**Measures of central tendency** are numbers used to represent a set of data. Three types of measures of central tendency are mean, median, and mode.

The **mean** is the sum of the numbers in a set of data divided by the number of items.

### EXAMPLE

- 1** Katherine is running a lemonade stand. She made \$3.50 on Tuesday, \$4.00 on Wednesday, \$5.00 on Thursday, and \$4.50 on Friday. What was her mean daily profit?

$$\begin{aligned}\text{mean} &= \frac{\text{sum of daily profits}}{\text{number of days}} \\ &= \frac{\$3.50 + \$4.00 + \$5.00 + \$4.50}{4} \\ &= \frac{\$17.00}{4} \text{ or } \$4.25\end{aligned}$$

Katherine's mean daily profit was \$4.25.

The **median** is the middle number in a set of data when the data are arranged in numerical order. If there are an even number of data, the median is the mean of the two middle numbers.

### EXAMPLE

- 2** The table shows the number of hits Marcus made for his team. Find the median of the data.

To find the median, order the numbers from least to greatest. The median is in the middle.

$$2, 3, 3, 5, 6, 7$$

$$\frac{3 + 5}{2} = 4$$

There is an even number of items. Find the mean of the middle two.

The median number of hits is 4.

Team Played	Number of Hits by Marcus
Badgers	3
Hornets	6
Bulldogs	5
Vikings	2
Rangers	3
Panthers	7

The **mode** is the number or numbers that appear most often in a set of data. If no item appears most often, the set has no mode.

### EXAMPLE

- 3** The table shows the heights in inches of the members of the 2005–2006 University of Dayton Men's Basketball team. What is the mode of the heights?

2005–2006 Dayton Flyers Men's Basketball Team				
74	78	79	80	78
72	81	83	76	78
76	75	77	79	72

Source: ESPN

The mode is the number that occurs most frequently. 78 occurs three times, 72, 76, and 79 each occur twice, and all the other heights occur once. The mode height is 78.

You can use measures of central tendency to solve problems.

### EXAMPLE

- 4 On her first five history tests, Yoko received the following scores: 82, 96, 92, 83, and 91. What test score must Yoko earn on the sixth test so that her average (mean) for all six tests will be 90%?

$$\text{mean} = \frac{\text{sum of the first five scores} + \text{sixth score}}{6}$$

Write an equation.

$$90 = \frac{82 + 96 + 92 + 83 + 91 + x}{6}$$

Use  $x$  to represent the sixth score.

$$90 = \frac{444 + x}{6}$$

Simplify.

$$540 = \frac{444 + x}{6}$$

Multiply each side by 6.

$$96 = x$$

Subtract 444 from each side.

To have an average score of 90, Yoko must earn a 96 on the sixth test.