Percentage of: To find a *percentage of* an amount, drop the % symbol and divide the percentage value by 100, then multiply. This example shows that 6% of 1200 is 72:

$$6\% \text{ of } 1200 \text{ responses} = \frac{6}{100} \times 1200 = 72$$

Fraction→Percentage: To *convert from a fraction to a percentage,* divide the denominator into the numerator to get an equivalent decimal number; then multiply by 100 and affix the % symbol. This example shows that the fraction 3/4 is equivalent to 75%:

$$\frac{3}{4} = 0.75 \rightarrow 0.75 \times 100\% = 75\%$$

Decimal→Percentage: To *convert from a decimal to a percentage,* multiply by 100%. This example shows that 0.25 is equivalent to 25%:

$$0.25 \rightarrow 0.25 \times 100\% = 25\%$$

Percentage→Decimal: To *convert from a percentage to a decimal number,* delete the % symbol and divide by 100. This example shows that 85% is equivalent to 0.85:

$$85\% = \frac{85}{100} = 0.85$$

There are many examples of the misuse of statistics. Books such as Darrell Huff's classic *How to Lie with Statistics,* Robert Reichard's *The Figure Finaglers,* and Cynthia Crossen's *Tainted Truth* describe some of those other cases. Understanding these practices will be extremely helpful in evaluating the statistical data encountered in everyday situations.

What Is Statistical Thinking? Statisticians universally agree that statistical thinking is good, but there are different views of what actually constitutes statistical thinking. If you ask the 18,000 members of the American Statistical Association to define statistical thinking, you will probably get 18,001 different definitions. In this section we have described statistical thinking in terms of the ability to see the big picture; to consider such relevant factors as context, source of data, and sampling method; and to form conclusions and identify practical implications. Statistical thinking involves critical thinking and the ability to make sense of results. Statistical thinking might involve determining whether results are statistically significant and practically significant. Statistical thinking demands so much more than the ability to execute complicated calculations. Through numerous examples, exercises, and discussions, this text will help you develop the statistical thinking skills that are so important in today's world.

1-2 Basic Skills and Concepts

Statistical Literacy and Critical Thinking

1. Statistical Significance versus Practical Significance What is the difference between statistical significance and practical significance? Can a statistical study have statistical significance, but not practical significance?

2. Source of Data In conducting a statistical study, why is it important to consider the source of the data?

3. Voluntary Response Sample What is a voluntary response sample, and why is such a sample generally not suitable for a statistical study?