from data TO DECISION

Flight Planning

The *From Data to Decision* project at the end of Chapter 2 involved data from American Airline flights from New York (JFK airport) to Los Angeles (LAX airport), and the data are listed in Data Set 15 in Appendix B.

Critical Thinking

Use the methods from this chapter to explore the arrival delay times at LAX. Those times are important because they can affect passenger plans. Are there any outliers? Based on the results, should you somehow modify the scheduled arrival times? If so, how? Write a brief report of your conclusions, and provide supporting statistical evidence.

Cooperative Group Activities

1. Out-of-class activity The Chapter Problem involves counts of chocolate chips in five different brands of cookies. Obtain your own sample of chocolate chip cookies and proceed to count the number of chocolate chips in each cookie. Use the data to generate a histogram and any other suitable graphs. Find the descriptive statistics. Compare your chocolate chip counts to those given in Table 3-1. Are there any differences? Explain.

2. In-class activity In class, each student should record two pulse rates by counting the number of heartbeats in one minute. The first pulse rate should be measured while seated, and the second pulse rate should be measured while standing. Use the methods of this chapter to compare results. Do males and females appear to have different pulse rates? Do pulse rates measured while seated appear to be different from pulse rates measured while standing?

3. Out-of-class activity In the article "Weighing Anchors" in *Omni* magazine, author John Rubin observed that when people estimate a value, their estimate is often "anchored" to (or influenced by) a preceding number, even if that preceding number is totally unrelated to the quantity being estimated. To demonstrate this, he asked people to give a quick estimate of the value of $8 \times 7 \times 6 \times 5 \times 4 \times 3 \times 2 \times 1$. The mean of the answers given was 2250, but when the order of the numbers was reversed, the mean became 512. Rubin explained that when we begin calculations with larger numbers (as in $8 \times 7 \times 6$), our estimates tend to be larger. He noted that both 2250 and 512 are far below the correct product, 40,320. The article suggests that irrelevant numbers can play a role in influencing real estate appraisals, estimates of car values, and estimates of the likelihood of nuclear war.

Conduct an experiment to test this theory. Select some subjects and ask them to quickly estimate the value of

$$8 \times 7 \times 6 \times 5 \times 4 \times 3 \times 2 \times 1$$

Then select other subjects and ask them to quickly estimate the value of

$$1 \times 2 \times 3 \times 4 \times 5 \times 6 \times 7 \times 8$$

Record the estimates along with the particular order used. Carefully design the experiment so that conditions are uniform and the two sample groups are selected in a way that minimizes any bias. Don't describe the theory to subjects until after they have provided their estimates. Compare the two sets of sample results by using the methods of this chapter. Provide a printed report that includes the data collected, the detailed methods used, the method of analysis, any relevant graphs and/or statistics, and a statement of conclusions. Include a critique of the experiment, with reasons why the results might not be correct, and describe ways in which the experiment could be improved.