Chapter Exercises

Exercise 9.1

Check your answers against those in the ANSWER section.

The Internal Revenue Service is studying contributions to charity. A random sample of 36 returns is selected. The mean contribution is $150 and the standard deviation of the sample is $20. Construct a 98 percent confidence interval for the population mean.

Exercise 9.2

Check your answers against those in the ANSWER section.

A manufacturer of batteries for "kids' toys" wishes to investigate the length of time a battery will last. Tests results on a sample of 10 batteries indicated a sample mean of 5.67 and a sample standard deviation of 0.57.
a.   Determine the mean and the standard deviation
b.   What is the population mean? What is the best estimate of that value?
c.   Construct a 95 percent confidence interval for the population mean.
d.   Explain why the t distribution is used as a part of the confidence interval.
e.   Is it reasonable for the manufacturer to claim that the batteries will last 6.0 hours?

Exercise 9.3

Check your answers against those in the ANSWER section.

Refer to Exercise 9.1. Compute the 98 percent confidence interval if the population consists of 200 tax returns.

Exercise 9.4

Check your answers against those in the ANSWER section.

A random sample of 100 light bulbs is selected. Sixty were found to burn for more than 1,000 hours. Develop a 90 percent confidence interval for the proportion of bulbs that will burn more than 1,000 hours.

Exercise 9.5

Check your answers against those in the ANSWER section.

A health maintenance organization (HMO) wants to estimate the mean length of a hospital stay. How large a sample of patient records is necessary if the HMO wants to be 99 percent confident of the estimate and wants the estimate to be within plus or minus 0.2 days? An earlier study showed the standard deviation of the length of stay to be 0.25 days.

Exercise 9.6

Check your answers against those in the ANSWER section.

A large bank believes that one-third of its checking customers have used at least one of the bank's other services during the past year. How large a sample is required to estimate the actual proportion within a range of plus and minus 0.04? Use the 98 percent level of confidence.