Chapter 7 Exercises

- 1. A soft-drink machine is regulated so that the amount of drink dispensed is approximately normally distributed with a standard deviation equal to 1.5 deciliters. A random sample of 36 drinks had an average content of 22.5 deciliters.
 - a. Construct a 95% confidence interval estimate for the mean of all drinks dispensed by this machine.

- **b.** Give a practical interpretation for the interval estimate you obtained in part (**a**).
- c. Determine how large a sample is needed if we wish to be 95% confident that our estimate will be within 0.1 deciliters of the true mean?
- d. Construct a 99% confidence interval estimate for the mean of all drinks dispensed by this machine. Interpret your answer.

- 2. The contents of 10 similar containers of a commercial soap are 10.2, 9.7, 10.1, 10.3, 10.1, 9.8, 9.9, 10.4, 10.3, and 9.8 liters. Assume that these values come from a normal population.
 - ${\bf a.}$ Find a 95% confidence interval for the mean soap content of all such containers. Interpret your answer.

b. Find a 99% confidence interval for the mean soap content of all such containers. Interpret your answer.

- **3.** In the Federal Trade Commission (FTC) "Price Check" study of electronic checkout scanners, the FTC inspected 1,669 scanners at retail stores and supermarkets by scanning a sample of items at each store and determining if the scanned price was accurate. The FTC gives a store a "passing grade" if 98% or more of the items are priced accurately. Of the 1,669 stores in the study, 1,185 passed inspection.
 - **a.** Find a 90% confidence interval for the true proportion of retail stores and supermarkets with electronic scanners that pass the FTC price-check test. Interpret your result.

- **b.** Two years prior to the study, the FTC found that 45% of the stores passed inspection. Use the interval you obtained in part (**a**) to determine whether the proportion of stores that now pass inspection exceeds 45%.
- c. Determine the sample size need to have a margin of error of at most 0.01.

Homework problems: Section 7.2: (pp. 283-285) # 13, 15, 17, 19, 21, 23, 25. Section 7.3: (pp. 292-294) # 29, 33, 35, 37. Section 7.4: (pp. 296-297) # 43, 45. Supplementary: (pp. 297-299) # 47, 49, 51, 53, 55.