6.10 You want to rent an unfurnished one-bedroom apartment for next semester. The mean monthly rent for a random sample of 10 apartments advertised in the local newspaper is $580. Assume that the standard deviation is $90. Find a 95% confidence interval for the mean monthly rent for unfurnished one-bedroom apartments available for rent in this community.
Answer to 6.10 $580 \pm 55.78 = $524.22 to $635.78
6.16 Computers in some vehicles calculate various quantities, one of which is miles per gallon (MPG). Suppose a random sample of 20 of these records in a particular vehicle is given in the Excel data set.

(a) What is the standard deviation of $\bar{x}$?
(b) Give a 95% confidence interval for the mean MPG for this vehicle.
Answer to 6.16

(a) 0.6485 MPG

(b) margin of error: 1.27, so confidence interval is from 17.21 to 19.75 MPG.
6.13 A questionnaire about study habits was given to a random sample of students taking a large introductory statistics class. The sample of 25 students reported that they spent an average of 80 minutes per week studying statistics. Assume that the standard deviation is 35 minutes per week.

(a) Give a 95% confidence interval for the mean time spent studying statistics by students in this class.

(b) Is it true that 95% of the students in the class have weekly study times that lie in the interval you found in part (a)? Explain your answer.
Answer to 6.13

(a) $80 \pm 13.72 = 66.28$ to $93.72$ minutes per week.

(b) No, this is a range for means if we were to sample over and over.
6.22 You are planning a survey of starting salaries for recent liberal arts graduates from your college. From a pilot study you estimate that the standard deviation is about $9000. What sample size do you need to have a margin of error equal to $400 with 95% confidence?
Answer to 6.22 1945
6.28 To assess the accuracy of a laboratory scale, a standard weight known to weigh 10 grams is weighed repeatedly. The scale readings are normally distributed with unknown mean (this mean is 10 grams if the scale has no bias). The standard deviation of the scale readings is known to be .0002 grams.

(a) The weight is weighed five times. The mean result is 10.0023 grams. Give a 98% confidence interval for the mean of the repeated measurements of the weight.

(b) How many measurements must be averaged to get a margin of error of ±.0001 with 98% confidence?
Answer to 6.28

(a) $10.0023 \pm 0.0002 = 10.0021 \text{ to } 10.0025 \text{ grams.}$
(b) 22