Exercise 1. An irate patient complained that the cost of a doctor’s visit was too high. She randomly surveyed 20 other patients and found that the mean amount of money they spent on each doctor’s visit was $44.80. The standard deviation of the sample was $3.53. Find a point estimate of the population mean. Find the 95% confidence interval of the population mean. Assume the variable is normally distributed.

Exercise 2. A political analyst found that 43% of 300 randomly selected Republican voters feel that the federal government has too much power. Find the 95% confidence interval of the population proportion of Republican voters who feel this way.

Exercise 3. A nutritionist wishes to determine, within 3%, the true proportion of adults who do not eat any lunch. If he wishes to be 95% confident that his estimate contains the population proportion, how large a sample will be necessary? A previous study found that 15% of the 125 people surveyed said they did not eat lunch.

Exercise 4. The average weight of 40 randomly selected minivans was 4150 pounds. The population standard deviation was 480 pounds. Find a point estimate of the population mean. Find the 99% confidence interval of the true mean weight of the minivans.

Exercise 5. A random sample of 20 automobiles has a pollution by-product release standard deviation of 2.3 ounces when 1 gallon of gasoline is used. Find the 90% confidence interval of the population standard deviation. Assume the variable is normally distributed.
Exercise 6. A taxi company claims that its drivers have an average of at least 12.4 years’ experience. In a study of 15 randomly selected taxi drivers, the average experience was 11.2 years. The standard deviation was 2. At $\alpha = 0.10$, is the number of years’ experience of the taxi drivers really less than the taxi company claimed?

Exercise 7. It has been hypothesized that the standard deviation of the germination time of radish seeds is 8 days. The standard deviation of a random sample of 60 radish plants’ germination times was 6 days. At $\alpha = 0.01$, test the claim.

Exercise 8. A Harris Poll found that 35% of people said that they drink a caffeinated beverage to combat midday drowsiness. A recent survey found that 19 out of 48 randomly selected people stated that they drank a caffeinated beverage to combat midday drowsiness. At $\alpha = 0.02$, is the claim of the percentage found in the Harris Poll believable?

Exercise 9. Is lighter better? A random sample of men’s soccer shoes from an international catalog had the following weights (in ounces).

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\begin{array}{cccc}
10.8 & 9.8 & 8.8 & 9.6 \\ 10 & 8.4 & 9.6 & 10 \\ 9.8 & 9.4 & 9.8
\end{array}
\]

At $\alpha = 0.05$, can it be concluded that the average weight is less than 10 ounces? Assume the variable is normally distributed.