1. Eight chemical elements do not have isotopes (different forms of the same element having the same atomic number but different atomic weights). A random sample of 30 of the elements that do have isotopes showed a mean number of 19.63 isotopes per element and the population a standard deviation of 18.73.

Estimate the true mean number of isotopes for all elements with isotopes with 90% confidence.

1. A travel agency states that Americans stay an average of 7.5 nights when they go on vacation. The sample size was 1500. Find a point estimate of the population mean. Find the 95% confidence interval of the true mean. Assume the population standard was 0.8.
2. A random sample of 49 shoppers showed that they spend an average of $23.45 per visit at the Saturday Mornings Bookstore. The standard deviation of the population is $2.80. Find a point estimate of the population mean. Find the 90% confidence interval of the true mean.
3. A local county has a very active adult education venue. A random sample of the population showed that 189 out of 400 persons 16 years old or older participated in some type of formal adult education activities. Estimate the true proportion of adults participating in some kind of formal education program with 98% confidence.
4. A random sample of 22 lawn mowers was selected, and the motors were tested to see how many miles per gallon of gasoline each one obtained. The variance of the measurements was 2.6. Find the 95% confidence interval of the true variance.