

Name: _____

YOU MUST SHOW ALL OF YOUR WORK TO GET FULL CREDIT!

1. According to a study of 90 truckers, a trucker drives, on average, 540 miles per day. If the standard deviation of the miles driven per day for the population of truckers is 40, find the 99% confidence interval of the mean number of miles driven per day by all truckers. (4 points)

2. A quality control expert wants to estimate the proportion of defective components that are being manufactured by his company. A sample of 300 components showed that 20 were defective. How large a sample is needed to estimate the true proportion of defective components to within 2.5 percentage points with 99% confidence? (4 points)

3. A random sample of 12 school districts showed that the mean number of students per teacher was 19.2 with a sample variance of 4.41. Estimate the true mean number of students per teacher with 95% confidence. (4 points)

4. In a sample of 200 people, 154 said they watch educational TV programs. Find the 90% confidence interval of the true proportion of people who watch educational TV. (4 points)

5. A researcher wishes to find the confidence interval of the population standard deviation for the number of homeless people in a large city. A sample of 25 months had a standard deviation of 462. Find the 95% confidence interval for the standard deviation. (4 points)
6. A study of 35 apple trees showed that the average number of apples per tree was 625. The standard deviation of the population is 100. What is the 80% confidence interval for the mean number of apples per tree for all trees? (4 points)
7. In a study using 14 samples, and in which the population variance is unknown, the distribution that should be used to calculate confidence intervals is _____. (1 point)
- A) a standard normal distribution.
 - B) a t distribution with 13 degrees of freedom.
 - C) a t distribution with 14 degrees of freedom.
 - D) a t distribution with 15 degrees of freedom.
8. Find the 95% confidence interval for the variance of the heights of maple trees if a sample of 16 trees has a standard deviation of 12.2 feet. (4 points)
9. Find the χ^2_{left} and χ^2_{right} values for the 90% confidence interval with a sample size of 20. (1 point)