

Name _____

SHORT ANSWER. Write the word or phrase or number that best completes each statement or answers the question.
Show all work to get any credit for your answers.

Use the given degree of confidence and sample data to construct a confidence interval for the population proportion p .

1) $n = 51$, $x = 27$; 95% confidence

Solve the problem.

- 2) A newspaper article about the results of a poll states: "In theory, the results of such a poll, in 99 cases out of 100 should differ by no more than 5 percentage points in either direction from what would have been obtained by interviewing all voters in the United States." Find the sample size suggested by this statement.

Use the confidence level and sample data to find a confidence interval for estimating the population μ . Round your answer to the same number of decimal places as the sample mean.

- 3) A random sample of 105 light bulbs had a mean life of $\bar{x} = 441$ hours with a standard deviation of $\sigma = 40$ hours. Construct a 90% confidence interval for the mean life, μ , of all light bulbs of this type.

Use the given degree of confidence and sample data to construct a confidence interval for the population mean μ . Assume that the population has a normal distribution.

- 4) A sociologist develops a test to measure attitudes towards public transportation, and 27 randomly selected subjects are given the test. Their mean score is 76.2 and their standard deviation is 21.4. Construct the 95% confidence interval for the mean score of all such subjects.

Use the given information to find the minimum sample size required to estimate an unknown population mean μ .

- 5) How many students must be randomly selected to estimate the mean weekly earnings of students at one college? We want 95% confidence that the sample mean is within \$5 of the population mean, and the population standard deviation is known to be \$63.

Assume that a sample is used to estimate a population mean μ . Use the given confidence level and sample data to find the margin of error. Assume that the sample is a simple random sample and the population has a normal distribution. Round your answer to one more decimal place than the sample standard deviation.

- 6) 95% confidence; $n = 91$; $\bar{x} = 16$, $s = 9.1$

Use the given data to find the minimum sample size required to estimate the population proportion.

- 7) Margin of error: 0.004; confidence level: 95%; $\hat{p}$ and $\hat{q}$ unknown

Identify the null hypothesis, alternative hypothesis, test statistic, P-value, conclusion about the null hypothesis, and final conclusion that addresses the original claim.

- 8) A supplier of digital memory cards claims that no more than 1% of the cards are defective. In a random sample of 600 memory cards, it is found that 3% are defective, but the supplier claims that this is only a sample fluctuation. At the 0.01 level of significance, test the supplier's claim that no more than 1% are defective.

- 9) The health of employees is monitored by periodically weighing them in. A sample of 54 employees has a mean weight of 183.9 lb. Assuming that σ is known to be 121.2 lb, use a 0.10 significance level to test the claim that the population mean of all such employees weights is less than 200 lb.

Assume that a simple random sample has been selected from a normally distributed population and test the given claim. Use either the traditional method or P-value method as indicated. Identify the null and alternative hypotheses, test statistic, critical value(s) or P-value (or range of P-values) as appropriate, and state the final conclusion that addresses the original claim.

- 10) A researcher wants to test the claim that convicted burglars spend an average of 18.7 months in jail. She takes a random sample of 11 such cases from court files and finds that $\bar{x} = 21.5$ months and $s = 7.4$ months. Test the claim that $\mu = 18.7$ months at the 0.05 significance level. Use the traditional method of testing hypotheses.