Exam 4 Practice Test - PART I

SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

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

1) Of 118 randomly selected adults, 34 were found to have high blood pressure. Construct a 95% confidence interval for the true percentage of all adults that have high blood pressure. 1) _____

2) Of 150 adults selected randomly from one town, 30 of them smoke. Construct a 99% confidence interval for the true percentage of all adults in the town that smoke. 2) _____

3) Of 260 employees selected randomly from one company, 18.46% of them commute by carpooling. Construct a 90% confidence interval for the true percentage of all employees of the company who carpool. 3) _____

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

4) Margin of error: 0.005; confidence level: 95%; $\hat{p}$ and $\hat{q}$ unknown 4) _____

Assume that you wish to estimate a population proportion, p. For the given margin of error and confidence level, determine the sample size required.

5) A political action committee is interested in finding out what proportion of voters will support an environmental initiative. Obtain a sample size that will ensure a margin of error of at most 0.09 for a 95% confidence interval. Similar initiatives in the past have gotten 93% support. 5) _____

6) A researcher wants to determine what proportion of adults in one town regularly buy organic food. Obtain a sample size that will ensure a margin of error of at most 0.07 for a 90% confidence interval. In previous years, the proportion has been 0.24. 6) _____

Find the required sample size without making a guess for the observed value of $\hat{p}$.

7) A manufacturer wishes to estimate the proportion of washing machines leaving the factory that are defective. Obtain a sample size that will ensure a margin of error of at most 0.012 for a 95% confidence interval. 7) _____

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.

8) A laboratory tested 82 chicken eggs and found that the mean amount of cholesterol was 228 milligrams with $\sigma = 19.0$ milligrams. Construct a 95% confidence interval for the true mean cholesterol content, μ, of all such eggs. 8) _____

9) 37 packages are randomly selected from packages received by a parcel service. The sample has a mean weight of 10.3 pounds and a standard deviation of 2.4 pounds. What is the 95% confidence interval for the true mean weight, μ, of all packages received by the parcel service? 9) _____

10) A group of 59 randomly selected students have a mean score of 29.5 with a standard deviation of 5.2 on a placement test. What is the 90% confidence interval for the mean score, μ, of all students taking the test? 10) _____

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.

11) A laboratory tested twelve chicken eggs and found that the mean amount of cholesterol was 185 milligrams with $s = 17.6$ milligrams. Construct a 95% confidence interval for the true mean cholesterol content of all such eggs. 11) _____

12) The football coach randomly selected ten players and timed how long each player took to perform a certain drill. The times (in minutes) were: 12) _____

7.0 10.8 9.5 8.0 11.5
7.5 6.4 11.3 10.2 12.6

Determine a 95% confidence interval for the mean time for all players.

13) Thirty randomly selected students took the calculus final. If the sample mean was 95 and the standard deviation was 6.6, construct a 99% confidence interval for the mean score of all students. 13) _____

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

14) Margin of error: $126, confidence level: 99%, $\sigma = \$512$ 14) _____

15) How many business students must be randomly selected to estimate the mean monthly earnings of business students at one college? We want 95% confidence that the sample mean is within $135 of the population mean, and the population standard deviation is known to be $538. 15) _____

16) How many commuters must be randomly selected to estimate the mean driving time of Chicago commuters? We want 90% confidence that the sample mean is within 4 minutes of the population mean, and the population standard deviation is known to be 12 minutes. 16) _____

Answer Key
Testname: EXAM 4 PRACTICE TEST PART I

1) $20.6\% < p < 37.0\%$
2) $11.6\% < p < 28.4\%$
3) $14.5\% < p < 22.4\%$
4) 42,025
5) 31
6) 101
7) 6670
8) $224 \text{ mg} < \mu < 232 \text{ mg}$
9) $9.5 \text{ lb} < \mu < 11.1 \text{ lb}$
10) $28.4 < \mu < 30.6$
11) $173.8 \text{ mg} < \mu < 196.2 \text{ mg}$
12) $8.03 \text{ min} < \mu < 10.93 \text{ min}$
13) $91.68 < \mu < 98.32$
14) 110
15) 62
16) 25