Elementary Statistics Chapter 6 Test - Form C

Name:_____ Course Number:_____ Section Number:_____

Provide an appropriate response.

1) Why would manufacturers and businesses be interested in constructing a confidence interval for the population variance? Would manufacturers and businesses want large or small variances?

Assume that a computer was used to generate the given confidence interval for the population mean, μ. Find the margin of error.

2) $3.19 < \mu < 3.57$

A) 0.130 B) 0.190 C) 0.240 D) 0.38

Solve the problem.

3) Find the value of $z_{\alpha/2}$ that corresponds to a level of confidence of 93.56 percent.

A) 1.52 B) 1.85 C) -1.85 D) 0.0322

Use the given degree of confidence and sample data to find the margin of error in estimating the population mean μ.

4) College students' annual earnings: 99% confidence; $n = 68, \bar{x} = \$3075, s = \$889$

A) \$251 B) \$8 C) \$278 D) \$960

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

5) A laboratory tested 78 chicken eggs and found that the mean amount of cholesterol was 214 milligrams with s = 18.5 milligrams. Construct a 95 percent confidence interval for the true mean cholesterol content, μ, of all such eggs.

A) (210, 218) B) (209, 217) C) (209, 218) D) (211, 219)

Solve the problem.

6) Find the critical value $t_{\alpha/2}$ that corresponds to a confidence level of 98% and a sample size of 8.

A) 2.306 B) 2.365 C) 2.896 D) 2.998

Given the sample statistics, determine if you should use the t distribution, normal distribution, or neither to construct a confidence interval for an estimate of μ.

7) From a sample of 109 observations, $\bar{x} = 14.50$, s = 2.62. The data do not have a bell-shaped distribution.

A) t distribution

B) Neither

C) Normal distribution

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.

8) The football coach randomly selected ten players and timed how long each player took to perform a certain drill. The times (in minutes) were:
13.1 6.6 8.5 13.5 9.5
8.4 10.2 6.5 10.3 10.3
Determine a 95 percent confidence interval for the mean time for all players.

A) (8.10, 11.30) B) (8.00, 11.40)
C) (11.40, 8.00) D) (11.30, 8.10)

Find the necessary sample size.

9) Weights of women in one age group are normally distributed with a standard deviation σ of 17 lb. A researcher wishes to estimate the mean weight of all women in this age group. Find how large a sample must be drawn in order to be 90 percent confident that the sample mean will not differ from the population mean by more than 3.5 lb.

A) 65 B) 91 C) 63 D) 76

Solve the problem.

10) The following confidence interval is obtained for a population proportion, p:
$0.408 < p < 0.432$
Use these confidence interval limits to find the margin of error, E.

A) 0.024 B) 0.420 C) 0.013 D) 0.012

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

11) Of 219 employees selected randomly from one company, 10.96% of them commute by carpooling. Construct a 90% confidence interval for the true percentage of all employees of the company who carpool.

A) $5.51\% < p < 16.4\%$ B) $6.04\% < p < 15.9\%$
C) $7.49\% < p < 14.4\%$ D) $6.82\% < p < 15.1\%$

Solve the problem.

12) 365 randomly selected light bulbs were tested in a laboratory, 229 lasted more than 500 hours. Find a point estimate of the true proportion of all light bulbs that last more than 500 hours.

A) 0.625 B) 0.373 C) 0.627 D) 0.386

13) A pollster wishes to estimate the true proportion of U.S. voters that oppose capital punishment. How many voters should be surveyed in order to be 98 percent confident that the true proportion is estimated to within 0.02?

A) 3394 B) 3393 C) 1 D) 68

14) Find the critical value χ^2_L corresponding to a sample size of 26 and a confidence level of 90 percent.

A) 11.524 B) 37.652 C) 14.611 D) 44.314

Use the given degree of confidence and sample data to find a confidence interval for the population standard deviation σ. Assume that the population has a normal distribution.

15) The daily intakes of milk (in ounces) for ten randomly selected people were:
23.0 30.6 20.3 10.1 11.5
21.8 22.2 26.9 21.0 30.1
Find a 99 percent confidence interval for the population standard deviation σ.

A) (0.93, 3.48)
B) (4.22, 13.97)
C) (4.22, 15.55)
D) (4.08, 13.97)