

Name _____ Course Number: _____ Section Number: _____

Directions: Answer Question #20 in the space provided. Circle the correct choice for each response set. If required, show calculations in the blank spaces near the problems, or attach paper.

Express the confidence interval using the indicated format.

1) Express the confidence interval (0.415, 0.523) in the form of $\hat{p} \pm E$.

- A) 0.469 ± 0.108 B) 0.469 ± 0.054 C) 0.415 ± 0.054 D) 0.415 ± 0.108

Solve the problem.

2) The following confidence interval is obtained for a population proportion, p : (0.639, 0.663). Use these confidence interval limits to find the point estimate, \hat{p} .

- A) 0.639 B) 0.651 C) 0.654 D) 0.663

Assume that a sample is used to estimate a population proportion p . Find the margin of error E that corresponds to the given statistics and confidence level. Round the margin of error to four decimal places.

3) 95% confidence; $n = 2448$, $x = 1763$

- A) 0.0151 B) 0.0199 C) 0.0240 D) 0.0178

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

4) $n = 172$, $x = 102$; 95% confidence

- A) $0.534 < p < 0.652$ B) $0.535 < p < 0.651$
C) $0.520 < p < 0.666$ D) $0.519 < p < 0.668$

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

5) Margin of error: 0.027; confidence level: 98%; \hat{p} and \hat{q} unknown

- A) 863 B) 1970 C) 1862 D) 1686

6) Margin of error: 0.01; confidence level: 95%; from a prior study, \hat{p} is estimated by the decimal equivalent of 67%.

- A) 25,739 B) 14,661 C) 7645 D) 8494

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

7) Of 84 adults selected randomly from one town, 62 have health insurance. Find a 90% confidence interval for the true proportion of all adults in the town who have health insurance.

- A) $0.659 < p < 0.817$ B) $0.626 < p < 0.850$
C) $0.615 < p < 0.862$ D) $0.644 < p < 0.832$

Find the indicated critical z value.

8) Find the critical value $z_{\alpha/2}$ that corresponds to a 99% confidence level.

- A) 2.575 B) 1.96 C) 2.33 D) 1.645

Determine whether the given conditions justify using the margin of error $E = z_{\alpha/2} \sigma / \sqrt{n}$ when finding a confidence interval estimate of the population mean μ .

9) The sample size is $n = 249$ and $\sigma = 17$.

- A) Yes B) No

Use the confidence level and sample data to find the margin of error E. Round your answer to the same number of decimal places as the sample mean unless otherwise noted.

10) The duration of telephone calls directed by a local telephone company: $\sigma = 4.2$ minutes, $n = 500$, 97% confidence. Round your answer to the nearest thousandth.

- A) 0.009 min B) 0.018 min C) 0.408 min D) 0.087 min

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.

11) A group of 68 randomly selected students have a mean score of 27.3 with a standard deviation of 2.1 on a placement test. What is the 90% confidence interval for the mean score, μ , of all students taking the test?

- A) $26.9 < \mu < 27.7$ B) $26.6 < \mu < 28.0$
C) $26.7 < \mu < 27.9$ D) $26.8 < \mu < 27.8$

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

12) How many commuters must be randomly selected to estimate the mean driving time of Chicago commuters? We want 98% confidence that the sample mean is within 2 minutes of the population mean, and the population standard deviation is known to be 10 minutes.

- A) 68 B) 136 C) 166 D) 97

Do one of the following, as appropriate: (a) Find the critical value $z_{\alpha/2}$, (b) find the critical value $t_{\alpha/2}$, (c) state that neither the normal nor the t distribution applies.

13) 91%; $n = 45$; σ is known; population appears to be very skewed.

- A) $z_{\alpha/2} = 1.75$ B) $t_{\alpha/2} = 1.645$ C) $z_{\alpha/2} = 1.70$ D) $t_{\alpha/2} = 1.34$

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.

14) 95% confidence; $n = 91$; $\bar{x} = 67$, $s = 14.5$

- A) 5.22 B) 2.72 C) 2.59 D) 3.02

Answer Key

Testname: CHAPTER 7 FORM C

- 1) B
- 2) B
- 3) D
- 4) C
- 5) C
- 6) D
- 7) A
- 8) A
- 9) A
- 10) C
- 11) A
- 12) B
- 13) C
- 14) D
- 15) C
- 16) D
- 17) C
- 18) B
- 19) C
- 20) No. The sample is a voluntary response sample, not a simple random sample. It is likely that the sample is not representative of all listeners.