Disclaimer

Chapter 7 Homework

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1. True or False. Point estimates are derived from sample data.
2. Fill in the blank. Error, also known as margin of error, is the distance between the point _____ and the population _____.
3. True or False. The sample mean is used to estimate the population mean (μ), the sample standard deviation is used to estimate the population standard deviation (σ) and the sample proportion is used to estimate the population proportion (p).
4. True or False. The width of a confidence interval increases as the confidence level decreases.
5. True or False. Margin of error will decrease as n, the sample size, decreases.
6. True or False. To be highly confident and have a narrower (tighter) confidence interval, increase n.
7. Construct a 95% confidence interval for the population mean given the following: sample mean = 5500, population standard deviation = 100 and sample size = 1000.
8. Construct a 90% confidence interval for the population mean given the following: sample mean = 33, population standard deviation = 5 and sample size = 36.
9. A confidence interval resulted in the following: 22 ± 0.7. What is the point estimate?
10. A confidence interval resulted in the following: 121 ± 16.4. What is the margin of error?
11. A confidence interval resulted in the following: 99 ± 25. What is the margin of error?
12. What common confidence level was most likely used to create the confidence interval (26, 34) given n = 36 and σ = 12?

13. What common confidence level was most likely used to create the confidence interval (41, 49) given n = 49 and σ = 14?
14. For a situation that follows a t-distribution, what would be the degrees of freedom for the following sample sizes?
    a) n = 20
    b) n = 12
    c) n = 6
15. What would be the t critical value used to construct
    a) a 99% confidence interval given n = 15?
    b) a 95% confidence interval given n = 3?
    c) a 90% confidence interval given n = 17?
16. Construct a 90% confidence interval for the population mean given the following: sample mean = 27, sample standard deviation = 0.4 and sample size = 25. Assume the sample was taken from a normal population.
17. Construct a 99% confidence interval for the population mean given the following: sample mean = 175, sample standard deviation = 11 and sample size = 9. Assume the sample was taken from a normal population.
18. What is the standard error of the proportion given p = 0.44 and n = 64?
19. What is the standard error of the proportion given p = 0.61 and n = 100?
20. Construct a 99% confidence interval for the population proportion given the following: x = 23 and sample size = 59.
21. Construct a 90% confidence interval for the population proportion given the following: x = 181 and sample size = 335.
22. What minimum sample size is needed to estimate the population mean to within 7 units with 99% confidence given the population standard deviation = 44?
23. What minimum sample size is needed to estimate the population mean to within 19 units with 90%

confidence given the population standard deviation = 50?

24. What minimum sample size is needed to estimate the population proportion to within 2.2% with 99%?
25. True or False. To determine the minimum sample size needed to estimate a population proportion, use 0.50 as a conservative estimate for the sample proportion if a sample estimate from a previous study is unknown.

Answers

1. True
2. Estimate, parameter
3. True
4. False
5. False
6. True
7. (5493.8, 5506.2)
8. (31.6, 34.4)
9. 22
10. 16.4
11. 25
12. 95%
13. 95%
14. a) 19, b) 11, c) 5
15. a) 2.97684, b) 4.30265, c) 1.745884
16. (26.9, 27.1)
17. (162.7, 187.3)
18. 0.062
19. 0.049
20. (0.226, 0.553)
21. (0.496, 0.585)
22. 262
23. 19
24. 3425
25. True