Interval estimation

MULTIPLE CHOICE

1. The absolute value of the difference between the point estimate and the population parameter it estimates is
   a. the standard error
   b. the sampling error
   c. precision
   d. the error of confidence

   ANS: B   PTS: 1   TOP: Interval Estimation

2. A population has a standard deviation of 50. A random sample of 100 items from this population is selected. The sample mean is determined to be 600. At 95% confidence, the margin of error is
   a. 5
   b. 9.8
   c. 650
   d. 609.8

   ANS: B   PTS: 1   TOP: Interval Estimation

3. For the interval estimation of μ when σ is known and the sample is large, the proper distribution to use is
   a. the normal distribution
   b. the t distribution with n degrees of freedom
   c. the t distribution with n + 1 degrees of freedom
   d. the t distribution with n + 2 degrees of freedom

   ANS: A   PTS: 1   TOP: Interval Estimation

4. The value added and subtracted from a point estimate in order to develop an interval estimate of the population parameter is known as the
   a. confidence level
   b. margin of error
   c. parameter estimate
   d. interval estimate

   ANS: B   PTS: 1   TOP: Interval Estimation

5. In order to use the normal distribution for interval estimation of μ when σ is known and the sample is very small, the population
   a. must be very large
   b. must have a normal distribution
   c. can have any distribution
   d. must have a mean of at least 1

   ANS: B   PTS: 1   TOP: Interval Estimation

6. The z value for a 97.8% confidence interval estimation is
   a. 2.02
   b. 1.96
   c. 2.00
   d. 2.29

   ANS: D   PTS: 1   TOP: Interval Estimation

7. After computing a confidence interval, the user believes the results are meaningless because the width of the interval is too large. Which one of the following is the best recommendation?
   a. Increase the level of confidence for the interval.
   b. Decrease the sample size.
   c. Increase the sample size.
   d. Reduce the population variance.

   ANS: C   PTS: 1   TOP: Interval Estimation

8. In general, higher confidence levels provide
   a. wider confidence intervals
   b. narrower confidence intervals
   c. a smaller standard error
   d. unbiased estimates

   ANS: A   PTS: 1   TOP: Interval Estimation

9. A sample of 225 elements from a population with a standard deviation of 75 is selected. The sample mean is 180. The 95% confidence interval for μ is
   a. 105.0 to 225.0
   b. 175.0 to 185.0
   c. 100.0 to 200.0
   d. 170.2 to 189.8

   ANS: D   PTS: 1   TOP: Interval Estimation

10. A random sample of 144 observations has a mean of 20, a median of 21, and a mode of 22. The population standard deviation is known to equal 4.8. The 95.44% confidence interval for the population mean is
    a. 15.2 to 24.8
    b. 19.200 to 20.800
    c. 19.216 to 20.784
    d. 21.2 to 22.8

    ANS: B   PTS: 1   TOP: Interval Estimation

Exhibit 8-1
In order to estimate the average time spent on the computer terminals per student at a local university, data were collected for a sample of 81 business students over a one-week period. Assume the population standard deviation is 1.8 hours.

11. Refer to Exhibit 8-1. The standard error of the mean is
    a. 7.50
    b. 0.39
    c. 2.00
    d. 0.20

    ANS: D   PTS: 1   TOP: Interval Estimation

12. Refer to Exhibit 8-1. If the sample mean is 9 hours, then the 95% confidence interval is
    a. 7.04 to 110.96 hours
    b. 7.36 to 10.64 hours
    c. 7.80 to 10.20 hours
    d. 8.61 to 9.39 hours

    ANS: D   PTS: 1   TOP: Interval Estimation

Exhibit 8-2
A random sample of 121 automobiles traveling on an interstate showed an average speed of 65 mph. From past information, it is known that the standard deviation of the population is 22 mph.

13. Refer to Exhibit 8-2. The standard error of the mean is
    a. 22.00
    b. 96.60
    c. 4.24
    d. 2.00

    ANS: D   PTS: 1   TOP: Interval Estimation

14. Refer to Exhibit 8-2. The 96.6% confidence interval for μ is
    a. 63.00 to 67.00
    b. 60.76 to 69.24
    c. 61.08 to 68.92
    d. 60.00 to 80.00

    ANS: B   PTS: 1   TOP: Interval Estimation

Exhibit 8-3
The manager of a grocery store has taken a random sample of 100 customers. The average length of time it took these 100 customers to check out was 3.0 minutes. It is known that the standard deviation of the population of checkout times is one minute.

15. Refer to Exhibit 8-3. The standard error of the mean equals
    a. 0.001
    b. 0.010
    c. 0.100
    d. 1.000

    ANS: C   PTS: 1   TOP: Interval Estimation