

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

- 1) An interval estimate may or may not contain the true value of the parameter being estimated. 1) _____
A) False B) True
- 2) When computing a confidence interval for a population mean using raw data, round off to two more decimal places than the number of decimal places in the original data. 2) _____
A) True B) False
- 3) The confidence level of an interval estimate of a parameter is the probability that the interval estimate will contain the parameter. 3) _____
A) True B) False
- 4) The term $z_{\alpha/2} \left(\frac{\sigma}{\sqrt{n}} \right)$ describes the _____. 4) _____
A) interval estimate B) unbiased estimator
C) maximum error of estimate D) confidence interval
- 5) Find the critical value $z_{\alpha/2}$ needed to construct a(n) 79% confidence interval. 5) _____
A) 0.97 B) 0.81 C) 1.98 D) 1.25
- 6) Find the level of the confidence interval that has the given critical value. 6) _____
2.16
A) 1.54% B) 3.08% C) 98.46% D) 96.92%
- 7) A sample of size $n = 56$ is drawn from a population whose standard deviation is $\sigma = 4.5$. Find the margin of error for a 95% confidence interval for μ . 7) _____
A) 3.26 B) 0.56 C) 0.60 D) 1.18
- 8) A sample of size $n = 20$ is drawn from an approximately normal population whose standard deviation is $\sigma = 5.5$. The sample mean is $\bar{x} = 52.4$. Construct a 95% confidence interval for μ . 8) _____
A) $35.69 < \mu < 69.11$ B) $49.99 < \mu < 54.81$
C) $52.40 < \mu < 54.81$ D) $51.37 < \mu < 53.43$

- 13) A sample of 41 light bulbs had a mean lifetime of 599 hours. A 95% confidence interval for the population mean was $593.8 < \mu < 604.2$. 13) _____

Which one of the following statements is the correct interpretation of the results?

- A) We are 95% confident that the mean lifetime of all the bulbs in the population is between 593.8 hours and 604.2 hours.
- B) 95% of the light bulbs in the sample had lifetimes between 593.8 hours and 604.2 hours
- C) None of these are true.
- D) The probability that the population mean is between 593.8 hours and 604.2 hours is 0.95.

- 14) The following display from a TI-84 Plus calculator presents a 95% confidence interval. 14) _____

ZInterval (29.856, 39.608) $\bar{x} = 34.732$ $n = 61$
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Fill in the blanks: We are _____ confident that the population mean is between _____ and _____.

- A) 95%, 29.856, 39.608
- B) 5%, 0, 34.732
- C) 95%, 0, 34.732
- D) 5%, 29.856, 39.608

- 15) The t -distribution has a variance that is greater than one. 15) _____
- A) True
 - B) False

- 16) In a study using 8 samples, and in which the population variance is unknown, the distribution that should be used to calculate confidence intervals is 16) _____
- A) a t distribution with 9 degrees of freedom.
 - B) a t distribution with 8 degrees of freedom.
 - C) a t distribution with 7 degrees of freedom.
 - D) a standard normal distribution.

- 17) Find $t_{\alpha/2}$ when $n = 12$ for the 95% confidence interval for the mean. 17) _____
- A) 1.52
 - B) 2.92
 - C) 2.20
 - D) 1.80

18) Find the critical value $t_{\alpha/2}$ needed to construct a confidence interval of the given level with the given sample size. 18) _____

Level 95%, sample size 11

- A) 2.228 B) 1.960 C) 2.201 D) 1.812

19) A sample of size $n = 11$ has a sample mean $\bar{x} = 15.6$ and sample standard deviation $s = 2.4$. Construct a 95% confidence interval for the population mean μ . 19) _____

- A) $14.0 < \mu < 17.2$ B) $15.1 < \mu < 16.1$
 C) $14.6 < \mu < 16.6$ D) $14.3 < \mu < 16.9$

20) A food snack manufacturer samples 11 bags of pretzels off the assembly line and weighs their contents. If the sample mean is 15.2 oz. and the sample standard deviation is 0.50 oz., find the 95% confidence interval of the true mean. 20) _____

- A) $12.9 < \mu < 17.5$ B) $14.9 < \mu < 15.5$
 C) $14.1 < \mu < 16.3$ D) $15.0 < \mu < 15.4$

21) Six measurements were made of the magnesium ion concentration (in parts per million, ppm) in a city's municipal water supply, with the following results. It is reasonable to assume that the population is approximately normal. 21) _____

189 175 140 188 179 211

Construct a 98% confidence interval for the mean magnesium ion concentration.

- A) $145.2 < \mu < 215.5$ B) $148.3 < \mu < 212.4$
 C) $176.7 < \mu < 184.0$ D) $176.4 < \mu < 184.3$

22) The following display from a TI-84 Plus calculator presents a 95% confidence interval. 22) _____

TInterval

(57.84, 60.48)

$\bar{x} = 59.158$

Sx = 4.33

n = 45

Fill in the blanks: We are _____ confident that the population mean is between _____ and _____.

- A) 95%, 0, 59.158 B) 5%, 0, 59.158
 C) 95%, 57.84, 60.48 D) 5%, 57.84, 60.48

29) The following display from a TI-84 Plus calculator presents a 99% confidence interval for a proportion. 29) _____

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1-PropZInt
(0.157092, 0.495330)
p̂ = 0.326211
n = 65
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Fill in the blanks: We are _____ confident that the population mean is between _____ and _____.

A) 99%, 0, 0.326211

B) 1%, 0, 0.326211

C) 1%, 0.157092, 0.495330

D) 99%, 0.157092, 0.495330

Answer Key

Testname: HW7

- 1) B
- 2) B
- 3) A
- 4) C
- 5) D
- 6) D
- 7) D
- 8) B
- 9) D
- 10) B
- 11) C
- 12) D
- 13) A
- 14) A
- 15) A
- 16) C
- 17) C
- 18) A
- 19) A
- 20) B
- 21) B
- 22) C
- 23) D
- 24) B
- 25) C
- 26) D
- 27) C
- 28) B
- 29) D