

Practice Test 1**Multiple Choice**

Identify the letter of the choice that best completes the statement or answers the question.

- _____ 1. A population has a mean of 75 and a standard deviation of 8. A random sample of 800 is selected. The expected value of \bar{x} is
- 8
 - 75
 - 800
 - None of these alternatives is correct.
- _____ 2. In computing the standard error of the mean, the finite population correction factor is used when
- $N/n > 0.05$
 - $N/n \leq 0.05$
 - $n/N > 0.05$
 - $n/N \leq 30$
- _____ 3. The point estimator with the smaller variance is said to have
- smaller relative efficiency
 - greater relative efficiency
 - smaller relative consistency
 - greater relative consistency
- _____ 4. Convenience sampling is an example of
- probabilistic sampling
 - stratified sampling
 - nonprobabilistic sampling
 - cluster sampling
- _____ 5. The closer the sample mean is to the population mean,
- the larger the sampling error
 - the smaller the sampling error
 - the sampling error equals 1
 - None of these alternatives is correct.
- _____ 6. As the sample size increases, the
- standard deviation of the population decreases
 - population mean increases
 - standard error of the mean decreases
 - standard error of the mean increases
- _____ 7. A population consists of 8 items. The number of different simple random samples of size 3 that can be selected from this population is
- 24
 - 56
 - 512
 - 128
- _____ 8. If we consider the simple random sampling process as an experiment, the sample mean is
- always zero
 - always smaller than the population mean
 - a random variable
 - exactly equal to the population mean
- _____ 9. Which of the following is(are) point estimator(s)?
- σ
 - μ
 - s
 - α

- _____ 10. A property of a point estimator that occurs whenever the expected value of the point estimator is equal to the population parameter it estimates is known as
- consistency
 - the expected value
 - the estimator
 - unbiasedness
- _____ 11. As the number of degrees of freedom for a t distribution increases, the difference between the t distribution and the standard normal distribution
- becomes larger
 - becomes smaller
 - stays the same
 - None of these alternatives is correct.

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 1.2 hours.

- _____ 12. Refer to Exhibit 8-1. The standard error of the mean is
- 7.5
 - 0.014
 - 0.160
 - 0.133
- _____ 13. Refer to Exhibit 8-1. With a 0.95 probability, the margin of error is approximately
- 0.26
 - 1.96
 - 0.21
 - 1.64
- _____ 14. Refer to Exhibit 8-1. If the sample mean is 9 hours, then the 95% confidence interval is
- 7.04 to 110.96 hours
 - 7.36 to 10.64 hours
 - 7.80 to 10.20 hours
 - 8.74 to 9.26 hours
- _____ 15. As the sample size increases, the sampling error
- increases
 - decreases
 - stays the same
 - increases or decreases depending on the size of the mean
- _____ 16. In determining the sample size necessary to estimate a population proportion, which of the following information is **not** needed?
- the maximum margin of error that can be tolerated
 - the confidence level required
 - a preliminary estimate of the true population proportion P
 - the mean of the population
- _____ 17. The sample size needed to provide a margin of error of 2 or less with a .95 probability when the population standard deviation equals 11 is
- 10
 - 11
 - 116
 - 117

- _____ 18. The following random sample was collected.
- 10 12 18 16
- The 80% confidence interval for μ is
- a. 12.054 to 15.946
 - b. 10.108 to 17.892
 - c. 10.321 to 17.679
 - d. 11.009 to 16.991
- _____ 19. In a random sample of 100 observations, $\bar{p} = 0.2$. The 95.44% confidence interval for P is
- a. 0.122 to 0.278
 - b. 0.164 to 0.236
 - c. 0.134 to 0.266
 - d. 0.120 to 0.280
- _____ 20. In a sample of 500 voters, 400 indicated they favor the incumbent governor. The 95% confidence interval of voters **not** favoring the incumbent is
- a. 0.782 to 0.818
 - b. 0.120 to 0.280
 - c. 0.765 to 0.835
 - d. 0.165 to 0.235
- _____ 21. The level of significance is the
- a. maximum allowable probability of Type II error
 - b. maximum allowable probability of Type I error
 - c. same as the confidence coefficient
 - d. same as the p-value
- _____ 22. A Type II error is committed when
- a. a true alternative hypothesis is mistakenly rejected
 - b. a true null hypothesis is mistakenly rejected
 - c. the sample size has been too small
 - d. not enough information has been available
- _____ 23. When the p-value is used for hypothesis testing, the null hypothesis is rejected if
- a. $p\text{-value} < \alpha$
 - b. $\alpha < p\text{-value}$
 - c. $p\text{-value} > \alpha$
 - d. $p\text{-value} = \alpha$
- _____ 24. If a hypothesis test leads to the rejection of the null hypothesis
- a. a Type II error must have been committed
 - b. a Type II error may have been committed
 - c. a Type I error must have been committed
 - d. a Type I error may have been committed
- _____ 25. A soft drink filling machine, when in perfect adjustment, fills the bottles with 12 ounces of soft drink. Any overfilling or under filling results in the shutdown and readjustment of the machine. To determine whether or not the machine is properly adjusted, the correct set of hypotheses is
- a. $H_0: \mu < 12$ $H_a: \mu \leq 12$
 - b. $H_0: \mu \leq 12$ $H_a: \mu > 12$
 - c. $H_0: \mu \neq 12$ $H_a: \mu = 12$
 - d. $H_0: \mu = 12$ $H_a: \mu \neq 12$

- _____ 26. The academic planner of a university thinks that at least 35% of the entire student body attends summer school. The correct set of hypotheses to test his belief is
- a. $H_0: P > 0.35$ $H_a: P \geq 0.35$
 - b. $H_0: P \leq 0.35$ $H_a: P > 0.35$
 - c. $H_0: P \geq 0.35$ $H_a: P < 0.35$
 - d. $H_0: P > 0.35$ $H_a: P \leq 0.35$

Exhibit 9-1

$n = 36$ $\bar{x} = 24.6$ $S = 12$ $H_0: \mu \leq 20$
 $H_a: \mu > 20$

- _____ 27. Refer to Exhibit 9-1. The standardized test statistic equals
- a. 2.3
 - b. 0.38
 - c. -2.3
 - d. -0.38
- _____ 28. Refer to Exhibit 9-1. The p-value is
- a. 0.5107
 - b. 0.0214
 - c. 0.0107
 - d. 2.1
- _____ 29. Refer to Exhibit 9-1. If the test is done at 95% confidence, the null hypothesis should
- a. not be rejected
 - b. be rejected
 - c. Not enough information is given to answer this question.
 - d. None of these alternatives is correct.
- _____ 30. In a one-tailed hypothesis test (lower tail) the test statistic is determined to be -2. The p-value for this test is
- a. 0.4772
 - b. 0.0228
 - c. 0.0056
 - d. 0.0228

**Practice Test 1
Answer Section**

MULTIPLE CHOICE

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