Exam 1
Sample Multiple Choice Questions

1. If ten points are added to each observation in a distribution, what effect would this have on the standard deviation?

Answer:

2. If $P(A) = 5/16$, $P(B) = 4/16$, and $P(A$ and $B) = 2/16$, then what does $P(A$ or $B$) equal?

Explanation:

3. What are the necessary assumptions to test the equality of the variance from two independent groups?

Answer:

4. A test of anxiety has scores $Y$ that follow a $N(100, 16)$ distribution in the population of individuals suffering from a personality disorder. For samples of size $n = 64$ from this population, what is the 95th percentile of $\bar{X}$?

Answer:
5. If two events $A$ and $B$ are independent, indicate whether each of these is true to false.

A _____ $P(A \text{ given } B) = P(A)$
B _____ $P(B \text{ given } A) = P(B)$
C _____ $P(A \text{ and } B) = P(A)P(B)$
D _____ $P(A \text{ or } B) = P(A) + P(B) - P(A \text{ and } B)$
E _____ Events $A$ and $B$ are mutually exclusive.

6. In a study of group versus individual therapy, 10 people were randomly assigned to the individual counselling condition and 25 people to the group therapy condition. A two sample independent $t$-test was conducted to ascertain whether the two treatments are equally effective. If the population variance for the group treatment is smaller than the variance for the individual therapy treatment (i.e., $\sigma_{\text{GROUP}}^2 < \sigma_{\text{INDIVIDUAL}}^2$), what effect might this have on your type I error rate?

Answer:

7. The sample mean and variance of a random sample of $n_1 = 26$ from one population equal $\bar{Y}_1 = 45$ and $s_1^2 = 64$, and the sample mean and variance of a random sample of $n_2 = 17$ from a different (independent) population equal $\bar{Y}_2 = 42$ and $s_2^2 = 39$. If the variances in the two populations differ (i.e., $\sigma_1^2 \neq \sigma_2^2$), what is the best estimate of the standard error of the $\sigma_{\bar{Y}_1-\bar{Y}_2}$?

Answer:

8. What does the term “statistically significant” pertain directly to? (i.e., what does “statistically significant” mean?)

Answer:
9. In hypothesis testing, what is $\beta$?
   Answer:

10. Consider the test of $H_0: \mu = 50$. Give two common ways to justify the assumption that the sampling distribution of the mean is normal.
   Answer:

11. What is the purpose of assumptions in hypothesis testing?
   Answer: