**Chapter 6: Hypothesis Testing With *z* Scores**

1. A middle school art teacher knows that the average on a creativity test is µ = 200 with a standard deviation of  = 50. She wants to know if the average of *M* = 215 for a sample of 49 students from her classes is higher than 200. What is the null hypothesis for this study?

A. µcreativity = 225

\*B. µcreativity = 200

C. µcreativity > 200

D. µcreativity > 225

Learning Objective: 6-1: Write null and research hypotheses using population parameters and words.

Cognitive Domain: Application

Answer Location: Step 2: State the Null Hypothesis and Research Hypothesis Symbolically and Verbally

2. A middle school art teacher knows that the average on a creativity test is µ = 200 with a standard deviation of σ = 50. She wants to know if the average of *M* = 215 for a sample of 49 students from her classes is higher than 200. What is the research hypothesis for this study?

A. µcreativity = 225

B. µcreativity = 200

\*C. µcreativity > 200

D. µcreativity > 225

Learning Objective: 6-1: Write null and research hypotheses using population parameters and words.

Cognitive Domain: Write null and research hypotheses using population parameters and words

Answer Location: Step 2: State the Null Hypothesis and Research Hypothesis Symbolically and Verbally

3. A middle school art teacher knows that the average on a creativity test is µ = 200 with a standard deviation of σ= 50. She wants to know if the average of *M* = 215 for a sample of 49 students from her classes is higher than 200. Compute the *z* score (the test statistic) for the sample mean.

A. +0.30

B. +0.31

\*C. +2.10

D. +14.70

Learning Objective: 6-2: Compute a *z* for a sample mean.

Cognitive Domain: Application

Answer Location: Compute the Test Statistic (*z* for a Sample Mean)

4. A middle school art teacher knows that the average on a creativity test is µ = 200 with a standard deviation of σ = 50. She wants to know if the average of *M* = 215 for a sample of 49 students from her classes is higher than 200. Can she reject her null hypothesis using an alpha level, α = .05 in one tail?

\*A. Yes, because the probability of obtaining a mean of 215 or higher if the null is true is about 0.0179.

B. Yes, because the probability of obtaining a mean more extreme than 215 if the null is true is about 0.0358

C. No, because the probability of obtaining a mean of 215 or higher if the null is true is about 0.3821

D. No, because the probability of obtaining a mean more extreme than 215 if the null is true is about 0.7566

Learning Objective: 6-3: Determine whether or not you should reject the null hypothesis.

Cognitive Domain: Application

Answer Location: Hypothesis Testing with *z* for a Sample Mean Example (One-Tailed)

5. A middle school art teacher knows that the average on a creativity test is µ = 200 with a standard deviation of σ = 50. She wants to know if the average of *M* = 215 for a sample of 49 students from her classes is higher than 200. Another way to decide whether or not to reject the null hypothesis is to compare the test statistic to a critical value. What is the critical *z* score for this hypothesis test, with alpha set as α = .05 (one-tailed)?

\*A. 1.65

B. −1.65

C. 1.96

D. −1.96

Learning Objective: 6-7: Provide a detailed description of a *p* value, critical value, and obtained value.

Cognitive Domain: Application

Answer Location: Step 3: Define the Critical Region

6. The results of this study suggest that the mean for her students was higher than the population mean.

\*True

False

Learning Objective: 6-3: Determine whether or not you should reject the null hypothesis.

Cognitive Domain: Application

Answer Location: Step 6: Interpreting the Results of the Hypothesis Test Using a *z* for a Sample Mean

7. A middle school art teacher knows that the average on a creativity test is µ = 200 with a standard deviation of σ = 50. She wants to know if the average of *M* = 215 for a sample of 49 students from her classes is higher than 200. Compute the effect size (*d*).

A. 0.04

B. 0.08

C. 0.31

\*D. 0.30

Learning Objective: 6-4: Compute and interpret the effect size (d) of a study.

Cognitive Domain: Application

Answer Location: Step 5: Compute an Effect Size, and Describe it as Small, Medium, or Large

8. Identify the best description of the effect size for this study?

A. small

\*B. small to medium

C. medium

D. medium to large

E. large

Learning Objective: 6-4: Compute and interpret the effect size (d) of a study.

Cognitive Domain: Application

Answer Location: 5: Compute an Effect Size, and Describe it as Small, Medium, or Large

9. Type I error occurs when \_\_\_\_\_\_\_\_\_\_\_\_.

A. you reject a false null hypothesis

\*B. you reject a true null hypothesis

C. you fail to reject a false null hypothesis

D. you fail to reject a true null hypothesis

Learning Objective: 6-6: Identify examples of Type I error, Type II error, and statistical power.

Cognitive Domain: Knowledge

Answer Location: Errors in Hypothesis Testing

10. Type II error occurs when \_\_\_\_\_\_\_\_\_\_\_.

A. you reject a false null hypothesis

B. you reject a true null hypothesis

\*C. you fail to reject a false null hypothesis.

D. you fail to reject a true null hypothesis

Learning Objective: 6-6: Identify examples of Type I error, Type II error, and statistical power.

Cognitive Domain: Knowledge

Answer Location: Errors in Hypothesis Testing

11. Power refers to the probability that \_\_\_\_\_\_\_\_\_\_\_.

\*A. you reject a false null hypothesis

B. you reject a true null hypothesis

C. you fail to reject a false null hypothesis

D. you fail to reject a true null hypothesis

Learning Objective: 6-6: Identify examples of Type I error, Type II error, and statistical power.

Cognitive Domain: Knowledge

Answer Location: Errors in Hypothesis Testing

12. A *p* value is the probability of obtaining the value of the test statistic or more extreme, if the null hypothesis is true.

\*True

False

Learning Objective: 6-7: Provide a detailed description of a *p* value, critical value, and obtained value.

Cognitive Domain: Knowledge

Answer Location: What Is a *p* Value