5.1 review

Name_____

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

Use a table of areas to find the specified area under the standard normal curve.

1) The area that lies to the left of 1.13 1) _____
A) 0.8907 B) 0.8485 C) 0.4354 D) 0.8708 E) 0.1292

2) The area that lies between -1.10 and -0.36 2) _____
A) 0.2239 B) -0.2237 C) 0.2237 D) 0.7763 E) 0.4951

3) The area that lies to the right of -1.82 3) _____
A) 0.4828 B) -0.0344 C) 0.4656 D) 0.0344 E) 0.9656

4) The following is a set of hypotheses, some information from one or more samples, and a standard error from a randomization distribution. 4) _____
Test H0 : μ=9 vs Ha : μ≠9 when the sample has n=72, $\bar{x}$=9.07 and s=0.84 with SE=0.10.
Find the value of the standardized z-test statistic and P-value
Round your answer to three decimal places.
A) z= 0.700, P-value=0.758 B) z= 0.700, P-value=0.484
C) z= -0.700, P-value=0.242 D) z= -0.700, P-value=0.758

5) The following is a set of hypotheses, some information from one or more samples, and a standard error from a randomization distribution. 5) _____
Test H0 : p1=p2 vs Ha : p1<p2 when the samples have n1=150 with $\hat{p}_1$=0.19, and n2=90 with $\hat{p}_2$=0.23. The standard error of $\hat{p}_1$-$\hat{p}_2$ from the randomization distribution is 0.05.
Find the value of the standardized z-test statistic and p-value
Round your answer to three decimal places.
A) z= 0.8, p-value=0.788 B) z= -0.8, p-value=0.788
C) z= 0.8, p-value=0.212 D) z= -0.8, p-value=0.212

6) Find the value of the standardized z-test statistic and the area above 140 for a N(160,25) distribution. 6) _____
Round your answer to three decimal places.
A) z= -0.8, area = 0.212 B) z= -0.8, area = 0.788
C) z= 0.8, area = 0.212 D) z= 0.8, area = 0.788

7) Find the value of the standardized z-test statistic and the area below 202 for a N(160,25) distribution. 7) _____
Round your answer to three decimal places.
A) z= 1.68, area = 0.954 B) z= -1.68, area = 0.046
C) z= -1.68, area = 0.954 D) z= 1.68, area = 0.046

The dataset ExerciseHours contains information on the amount of exercise (hours per week) for a sample of statistics students. The mean amount of exercise was 9.4 hours for the 30 female students in the sample and 12.4 hours for the 20 male students. A randomization distribution of differences in means based on these data, under a null hypothesis of no difference in mean exercise time between females and males, is centered near zero and reasonably normally distributed. The standard error for the difference in means, as estimated from the standard deviation of the randomization differences, is SE=2.38. Use this information to test, at a 5% level, whether the data show that the mean exercise time for female statistics students is less than the mean exercise time of male statistics students.

8) State the null and alternative hypotheses. 8) _____
Let group 1 be the female participants and group 2 be the male participants.

A) H_0: $\mu 1 = \mu 2$ H_a: $\mu 1 > \mu 2$
B) H_0: $\mu 1 < \mu 2$ H_a: $\mu 1 = \mu 2$
C) H_0: $\mu 1 = \mu 2$ H_a: $\mu 1 < \mu 2$
D) H_0: $\mu 1 = \mu 2$ H_a: $\mu 1 \neq \mu 2$

9) What is the test statistic? 9) _____
A) z = -1.26 B) z = 1.26 C) z = 0.79 D) z = -0.79

10) What is the p-value? 10) _____
Round your answer to three decimal places.
A) p-value=0.785 B) p-value=0.215 C) p-value=0.104 D) p-value=0.896

11) What is the conclusion? 11) _____
A) Do not reject H0 and do not find evidence that females exercise less.
B) Do not reject H0 and find evidence that females exercise less.
C) Reject H0 and find evidence that females do not exercise less.
D) Reject H0 and find evidence that females exercise less.

In a survey of 1000 American adults conducted in April 2012, 43% reported having gone through an entire week without paying for anything in cash. Test to see if this sample provides evidence that the proportion of all American adults going a week without paying cash is greater than 40%. Use the fact that a randomization distribution is approximately normally distributed with a standard error of SE=0.016. Show all details of the test and use a 5% significance level.

12) State the null and alternative hypotheses. 12) _____
A) H_0: p = 0.4 H_a: p > 0.4
B) H_0: p = 0.4 H_a: p ≠ 0.4
C) H_0: p = 0.4 H_a: p < 0.4
D) H_0: p > 0.4 H_a: p = 0.4

13) What is the test statistic? Round your answer to two decimal places. 13) _____
A) z = -0.53 B) z = 0.53 C) z = -1.88 D) z = 1.88

14) What is the p-value? Round your answer to three decimal places. 14) _____
A) p-value = 0.298 B) p-value = 0.030 C) p-value = 0.970 D) p-value = 0.702

15) What is the conclusion? 15) _____
A) Do not reject H0 and do not find evidence that the proportion is greater than 40%.
B) Reject H0 and find evidence that the proportion is not greater than 40%.
C) Reject H0 and find evidence that the proportion is greater than 40%.
D) Do not reject H0 and find evidence that the proportion is greater than 40%.

A study investigated whether dogs change their behavior depending on whether a person displays reliable or unreliable behavior. Dogs were shown two containers, one empty and one containing a dog biscuit. An experimenter pointed to one of the two containers. If the experimenter pointed to the container with the treat on the first trial, 16 of 26 dogs followed the experimenter's cue on the second trial. However, if the experimenter misled the dog on the first trial, only 7 of 26 dogs followed the cue on the second trial. Test to see if the proportion following the cue is different depending on whether the person exhibited reliable or unreliable behavior. The standard error for the difference in proportions is 0.138. Use a 5% significance level.

Let group 1 be the dogs to follow a cue from a person who is reliable and let group 2 be the dogs to follow a cue from a person who is unreliable.

16) State the null and alternative hypotheses. 16) _____

A) H_0: p1 = p2
H_a: p1 > p2

B) H_0: p1 = p2
H_a: p1 ≠ p2

C) H_0: p1 = p2
H_a: p1 < p2

D) H_0: p1 < p2
H_a: p1 = p2

17) What is the test statistic? Round your answer to two decimal places. 17) _____

A) z = -0.40 B) z = 0.40 C) z = -2.51 D) z = 2.51

18) What is the p-value? Round your answer to three decimal places. 18) _____

A) 0.994 B) 0.006 C) 0.012 D) 0.345

19) What is the conclusion?. 19) _____

A) Do not reject H0.
B) Reject H0.
C) Do not reject Ha.
D) Reject Ha.

20) Do we find evidence that the proportion of dogs following a cue is different depending on whether the person exhibited reliable or unreliable behavior? 20) _____

A) Yes B) No