4.5 review

Name_____

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

1) Confidence intervals are for estimating the value of a parameter, while hypothesis tests test whether the data provide evidence against a specific hypothesized value. 1) _____
A) False B) True

2) when we want to estimate a population parameter (use sample data). A confidence interval is most appropriate. 2) _____
A) False B) True

3) when we want to answer specific question about a populater parameter (use sample data). The hypothesis test is most appropriate 3) _____
A) True B) False

4) We are determining thevalue of a parameter when we know the entire population. Inference is not relevant in this situation 4) _____
A) False B) True

For each of the following questions, indicate whether it is best assessed by using a confidence interval or a hypothesis test or whether statistical inference is not relevant to answer it.

5) What proportion of people using a public restroom wash their hands after going to the bathroom? 5) _____
A) Inference not relevant B) Hypothesis test C) Confidence interval

6) In 2010, what percent of the US Senate voted to confirm Elena Kagan as a member of the Supreme Court? 6) _____
A) Hypothesis test B) Inference not relevant C) Confidence interval

7) Do basketball players hit a higher proportion of free throws when they are playing at home than when they are playing away 7) _____
A) Hypothesis test B) Inference not relevant C) Confidence interval

8) An article presented a method for estimating the body fat percentage of north American porcupines; the method was illustrated with a sample of n=25 porcupines. Based on this sample, a 95% bootstrap confidence interval for the average body fat percentage of porcupines is 17.4% to 25.8%. Which of the following null hypotheses would be rejected based on this confidence interval? 8) _____
A) H_0: p = 22.9% B) H_0: p = 26.6% C) H_0: p = 20.0% D) H_0: p = 18.6%

9) Suppose that a 95% confidence interval for μ is (54.8, 60.8). Which of the following is most likely the p-value for the test of H_0: $\mu = 56$ versus H_a: $\mu \neq 56$? 9) _____
A) 0..031 B) 0.001 C) 0.016 D) 0.231

In 2012 the Centers for Disease Control and Prevention reported that in a sample of 4,349 African Americans 31% were Vitamin D deficient. A 90% confidence interval based on this sample is (0.30, 0.32). It is believed that among the general population of Americans 8% suffer from Vitamin D deficiency.

10) Define the appropriate parameter and state the appropriate hypotheses for testing the claim that, among African Americans, Vitamin D deficiency occurs at a rate other than 8%. 10) _____

A) H_0: p > 0.08, H_a: p = 0.08
B) H_0: p ≠ 0.08, H_a: p = 0.08
C) H_0: p = 0.08, H_a: p ≠ 0.08
D) H_0: p = 0.08, H_a: p > 0.08

11) Does this confidence interval provide evidence that among African Americans Vitamin D deficiency occurs at a rate other than 8%? What significance level is being used to make this decision? 11) _____

A) Yes. at the 10% significance level
B) No. at the 10% significance level
C) Yes. at the 90% significance level
D) No. at the 90% significance level

A study suggests that exposure to UV rays through the car window may increase the risk of skin cancer.The study reviewed the records of all 1050 skin cancer patients referred to the St. Louis University Cancer Center in 2004. Of the 42 patients with melanoma, the cancer occurred on the left side of the body in 31 patients and on the right side in the other 11.

12) Is this an experiment or an observational study? 12) _____

A) Experiment
B) Observational study

13) Of the patients with melanoma, what proportion had the cancer on the left side? Round your answer to three decimal places. 13) _____

A) $\hat{p}$ =0.030
B) p =0.738
C) $\hat{p}$ =0.738
D) $\hat{p}$ =0.262

14) Suppose the question of interest is whether melanomas are more likely to occur on the left side than on the right. 14) _____
State the null and alternative hypotheses.

A) H_0: p = 0.5, H_a: p > 0.5
B) H_0: p = 0.5, H_a: p < 0.5
C) H_0: p = 0.5, H_a: p≥0.5
D) H_0: p = 0.5, H_a: p ≠ 0.5

15) Is this a left-tailed, right-tailed or two-tailed test? 15) _____

A) right-tailed
B) left-tailed
C) two-tailed

16) A bootstrap 95% confidence interval for the proportion of melanomas occurring on the left is 0.579 to 0.861. Use the confidence interval to predict the results of the hypothesis test . 16) _____

A) Reject H0.
B) Do not reject H0.

17) A randomization distribution gives the p-value as 0.003 for testing the hypotheses given . What is the conclusion of the test in the context of this study? 17) _____

A) Reject H0, there is evidence that melanomas are more likely on the left side.
B) Do not reject H0, there is no evidence that melanomas are more likely on the left side.
C) Reject H0, there is evidence that melanomas are not more likely on the left side.
D) Do not reject H0, there is evidence that melanomas are more likely on the left side.

18) The authors hypothesize that skin cancers are more prevalent on the left because of the sunlight coming in through car windows. (Windows protect against UVB rays but not UVA rays.) Do the data in this study support a conclusion that more melanomas occur on the left side because of increased exposure to sunlight on that side for drivers? 18) _____

A) Yes B) No