6.1 review

Name_____

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

Solve the problem.

1) A national caterer determined that 37% of the people who sampled their food said that it was delicious. If the 144 people at the Valley Ridge Nursing Home are given the same food, will the distribution of $\hat{p}$ be approximately normal? Answer Yes or No. 1) _____

A) Yes B) No

2) A national caterer determined that 37% of the people who sampled their food said that it was delicious. If the 144 people at the Valley Ridge Nursing Home are given the same food, and asked by tables what the deliciousness of the food, what is the mean of the sampling distribution of $\hat{p}$? 2) _____

A) 0.25 B) 0.42 C) 0.53 D) 0.37

3) A national caterer determined that 37% of the people who sampled their food said that it was delicious. If the 144 people at the Valley Ridge Nursing Home are given the same food, and asked by tables what the deliciousness of the food, what is the standard error of the sampling distribution of $\hat{p}$? 3) _____

A) 0.48 B) 0.002 C) 0.04 D) .23

4) A national caterer determined that 37% of the people who sampled their food said that it was delicious. If the 244 people at the Valley Ridge Nursing Home are given the same food, and asked by tables what the deliciousness of the food, what is the standard error of the sampling distribution of $\hat{p}$? 4) _____

A) 0.03 B) 0.04 C) .23 D) 0.002

5) for the sampling distribution of $\hat{p}$, What is the effect of the larger sample size(increase sample size) on the mean and standard error? 5) _____

A) the larger sample size does not affect the center, but it increases the standard error.
B) the larger sample size does affect the center, it also reduces the standard error.
C) the larger sample size does not affect the center, but it reduces the standard error.
D) the larger sample size does affect the center, it also increases the standard error.

Find the mean/standard error of the sampling distribution of the proportion.

6) Assume that 26% of students at a university wear contact lenses. We randomly pick 300 students. Describe the sampling distribution model of the proportion of students in this group who wear contact lenses. 6) _____

A) There is not enough information to describe the distribution.
B) approximately normal with mean = 74%; standard error = 1.1%
C) shape unknown with mean = 74%; standard error = 2.5%
D) approximately normal with mean = 26%; standard error = 2.5%
E) shape unknown with mean = 26%; standard error = 1.1%

Select the most appropriate answer.

7) When a higher confidence level is used to estimate a proportion and all other factors involved are held constant 7) _____
A) the confidence interval will be wider.
B) the confidence interval will be narrower.
C) there is not enough information to determine the effect on the confidence interval.
D) the confidence interval will be less likely to contain the parameter being estimated.
E) the confidence interval will not be affected.

Use the given degree of confidence and sample data to construct a confidence interval for the population proportion.

8) When 293 college students are randomly selected and surveyed, it is found that 114 own a car. The point estimate for the percentage of all college students who own a car is 8) _____
A) 2.5701 B) 0.5000 C) 0.2571 D) 0.3891

9) When 293 college students are randomly selected and surveyed, it is found that 114 own a car.will the distribution of $\hat{p}$ be approximately normal? 9) _____
A) No B) Yes

10) When 293 college students are randomly selected and surveyed, it is found that 114 own a car. what is the standard error of the sampling distribution of $\hat{p}$? 10) _____
A) 0.0457 B) 0.3897 C) 0.0285 D) 0.2571

11) When 293 college students are randomly selected and surveyed, it is found that 114 own a car. For 99% confidence level, the margin of error for the percentage of all college students who own a car is 11) _____
A) 0.0664 B) 0.0559 C) 0.0734 D) 0.0469

12) When 293 college students are randomly selected and surveyed, it is found that 114 own a car. Construct a 99% confidence interval for the percentage of all college students who own a car. 12) _____
A) (34.2%, 43.6%)
B) (32.3%, 45.5%)
C) (31.6%, 44.5%)
D) (31.6%, 46.3%)
E) (33.3%, 44.5%)

Solve the problem.

13) A local men's clothing store is being sold. The buyers are trying to estimate the percentage of items that are outdated. They will randomly sample among its 100,000 items in order to determine the proportion of merchandise that is outdated. The current owners have never determined their outdated percentage and can not help the buyers. Approximately how large a sample do the buyers need in order to insure that they are 90% confident that the margin of error is within 3%? 13) _____
A) 3007 B) 457 C) 752 D) 1504

14) A state highway patrol official wishes to estimate the number of drivers that exceed the speed limit traveling a certain road, How large a sample is needed in order to be 98% confident that the sample proportion will not differ from the true proportion by more than 2%? 14) _____
A) 3371 B) 3383 C) 3394 D) 6766

15) A state highway patrol official wishes to estimate the number of drivers that exceed the speed limit traveling a certain road, How large a sample is needed in order to be 98% confident that the sample proportion will not differ from the true proportion by more than 2%? assuming previous studies found that 65% of drivers on this road exceeded the speed limit. 15) _____

A) 3371 B) 1327 C) 3088 D) 3393

Select the most appropriate answer.

16) When determining the sample size for estimating a population proportion for a given level of confidence and a desired margin of error, the closer to 0.50 that p is estimated to be 16) _____

A) the smaller the sample size required.
B) the larger the sample size required.
C) has no effect on the sample size required.
D) has an undeterminable effect on the sample size required.
E) the farther from 0.50 that 1 - p is estimated to be.

Solve the problem.

17) A university dean is interested in determining the proportion of students who receive some sort of financial aid. Rather than examine the records for all students, the dean randomly selects 200 students and finds that 118 of them are receiving financial aid. If the dean wanted to estimate the proportion of all students receiving financial aid to within 5% with 99% confidence level, how many students would need to be sampled? 17) _____

A) 642 B) 33 C) 156 D) 250

A medical school claims that more than 28% of its students plan to go into general practice. It is found that among a random sample of 130 of the school's students, 51 of them plan to go into general practice.

18) State the null and alternative hypotheses. 18) _____

A) H_0: p = 0.39
H_a: p > 0.39

B) H_0: p = 0.28
H_a: p ≠ 0.28

C) H_0: p = 0.39
H_a: p < 0.39

D) H_0: p = 0.28
H_a: p > 0.28

19) What is the sample statistic? 19) _____

A) $\hat{p} = 0.2800$ B) $\hat{p} = 0.5000$ C) $\hat{p} = 0.3923$ D) $\hat{p} = 51$

20) What is the test statistic? 20) _____

A) -2.85 B) 2.62 C) 2.85 D) -2.62

21) Find the P-Value for testing the school's claim. 21) _____

A) 0.0044 B) 0.0022 C) 0.0280 D) 0.0778

22) What is the conclusion(at a 5% significance level)? 22) _____

A) Do not reject H0 and insufficient evidence to support the claim that more than 28% of its students plan to go into general practice
B) Reject H0 and insufficient evidence to support the claim that more than 28% of its students plan to go into general practice
C) Reject H0 and sufficient evidence to support the claim that more than 28% of its students plan to go into general practice
D) Do not reject H0 and sufficient evidence to support the claime that more than 28% of its students plan to go into general practice

A researcher is wondering whether the smoking habits of young adults (18-25 years of age) in a certain city in the U.S. are the same as the proportion of the general population of young adults in the U.S. A recent study stated that the proportion of young adults who reported smoking at least twice a week or more in the last month was 0.16. The researcher collected data from a random sample of 75 adults in the city of interest, report 6 of them smoke at least twice a week or more in the last month

23) Check that the conditions hold so that the sampling distribution will approximately follow the normal distribution. Are the conditions satisfied? If not, choose the condition that is not satisfied. 23) _____

A) No, the researcher did not collect a large enough sample.
B) No, the population of interest is not large enough to assume independence.
C) No, the researcher did not collect a random sample.
D) Yes, all the conditions are satisfied.

24) State the hypotheses to be tested for this study. 24) _____

A) H_0: $p = 0.16$; H_a: $p < 0.16$
B) H_0: $p = 0.16$; H_a: $p > 0.16$
C) H_0: $p = 0.16$; H_a: $p \neq 0.16$
D) H_0: $p \neq 0.16$; H_a: $p < 0.16$

25) What is the sample statistic? 25) _____

A) $\hat{p} = 0.080$
B) $\hat{p} = 0.050$
C) $\hat{p} = 0.16$
D) $\hat{p} = 12.5$

26) What is the test statistic? 26) _____

A) *-2.55*
B) *2.55*
C) *-1.89*
D) *1.89*

27) What is p-value for the claim? 27) _____

A) *0.0588*
B) *0.0294*
C) *0.0054*
D) *0.0108*

28) Choose the best statement to interpret the results. 28) _____

A) The p-value is above a standard cutoff value of $\alpha = 0.05$ and therefore there is sufficient evidence to support that the city of interest has a different proportion of smokers than the general public.
B) The p-value for a two-sided test is divided by 2 resulting in a value less than a standard cutoff value of $\alpha = 0.02$ supporting the hypothesis that the city of interest has a different proportion of smokers than the general public.
C) The standard cutoff value of $\alpha = 0.05$ is multiplied by two for a two-sided test and the resulting value of 0.10 is greater than the p-value. Therefore there is no evidence to support that the city of interest has a different proportion of smokers than the general public.
D) The p-value is above a standard cutoff value of $\alpha = 0.05$ and therefore there is insufficient evidence to support that the city of interest has a different proportion of smokers than the general public.