6.3 review

Name_____

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

Consider random samples of size 253 drawn from population A with proportion 0.10 and random samples of size 265 drawn from population B with proportion 0.22.

1) Find the standard error of the distribution of differences in sample proportions, $\hat{p}_A - \hat{p}_B$ 1) _____

A) 0.25 B) 0.42 C) 0.12 D) 0.032

2) Are the sample sizes large enough for the Central Limit Theorem to apply? 2) _____

A) No B) Yes

Situations comparing two proportions are described. In each case, determine whether the situation involves comparing proportions for two groups or comparing two proportions from the same group. State whether the methods of this section apply to the difference in proportions.

3) Compare the proportion of students who use a Windows-based PC to the proportion who use a Mac. This situation involves comparing 3) _____

A) two groups B) one group

4) Compare the proportion of students who use a Windows-based PC to the proportion who use a Mac. Do the methods of this section apply to the difference in proportions? 4) _____

A) Yes B) No

5) Compare the proportion of students who study abroad between those attending public universities and those at private universities. This situation involves comparing 5) _____

A) Two groups B) One group

6) Compare the proportion of students who study abroad between those attending public universities and those at private universities. Do the methods of this section apply to the difference in proportions? 6) _____

A) yes B) No

Situations comparing two proportions are described. In each case, determine whether the situation involves comparing proportions for two groups or comparing two proportions from the same group.

7) If we are comparing p1= the proportion of women who are math majors to p2= the proportion of men who are math majors, then we are comparing proportions for two different groups. 7) _____

A) True B) False

8) If we are comparing p1= the proportion of math majors who are women to p2= the proportion of math majors who are men, then we are comparing proportions for two different groups. 8) _____

A) True B) False

Find the mean/standard error of the sampling distribution of differences in sample proportions, $\hat{p}_1 - \hat{p}_2$.

9) n1=50 from p1=0.6 and n2=80 from p2=0.2 9) _____
Round your answers to three decimal places, if necessary.
A) There is not enough information to describe the distribution.
B) approximately normal with mean = -0.4; standard error = 0.0068
C) shape unknown with mean = -0.4; standard error = 0.0068
D) approximately normal with mean = 0.4; standard error = 0.082
E) shape unknown with mean = 0.4; standard error = 0.0068

Provide an appropriate response.

10) To construct a confidence interval for the difference of two population proportions the samples must be independently obtained random samples, and 10) _____
A) only one of $n_1\hat{p}_1 \geq 10$, $n_1(1 - \hat{p}_1) \geq 10$ or $n_2\hat{p}_2 \geq 10$, $n_2(1 - \hat{p}_2) \geq 10$ must be true.
B) $n_1\hat{p}_1(1 - \hat{p}_1) + n_2\hat{p}_2(1 - \hat{p}_2) \geq 20$.
C) both $n_1\hat{p}_1 \geq 10$, $n_1(1 - \hat{p}_1) \geq 10$ and $n_2\hat{p}_2 \geq 10$, $n_2(1 - \hat{p}_2) \geq 10$ must be true.
D) $n_1\hat{p}_1(1 - \hat{p}_1)\ n_2\hat{p}_2(1 - \hat{p}_2) \geq 100$.

Use the given degree of confidence and sample data to construct a confidence interval for the differences in population proportion.
A survey asked a random sample of n=2752 US adults whether they had visited a public library in the last 12 months. The results for males and females are shown in the table below.

	Yes	No	Total
Females	726	697	1423
Males	505	824	1329
Total	1231	1521	2752

11) Find $\hat{p}_f$ and $\hat{p}_m$, the sample proportions who have visited a public library in the last 12 months, for females and males respectively. What is the difference in sample proportions $\hat{p}_f - \hat{p}_m$? 11) _____
A) -0.1780 B) 0.1780 C) 0.080 D) 0.130

12) Will the distribution of $\hat{p}_f - \hat{p}_m$ be approximately normal? 12) _____
A) No B) Yes

13) What is the standard error of the sampling distribution of $\hat{p}_f - \hat{p}_m$? 13) _____
A) 0.0457 B) 0.3897 C) 0.0188 D) 0.2571

14) For a 95% confidence level, the margin of error is 14) _____
A) 0.0664 B) 0.0309 C) 0.0368 D) 0.0469

15) Find a 95% confidence interval for the difference in population proportions . 15) _____
Round your answers to two decimal places..
A) (0.06, 0.20) B) (0.10, 0.16) C) (0.08, 0.18) D) (0.09, 0.17)

16) Can we conclude from the confidence interval that there is a difference in proportions? 16) _____
A) No B) Yes

17) Are males or females more likely to visit the public library? 17) _____

A) Male B) Female

In a 2012 survey, Gallup asked a random sample of U.S. adults if they would prefer to have a job outside the home, or if they would prefer to stay home to care for the family and home. Of the 504 males they surveyed, 391 said that they would prefer to have a job outside of the home. Of the 473 females they surveyed, 254 said that they would prefer a job outside of the home. $\hat{p}_m$= sample proportion of males who would prefer to have a job outside of the home

$\hat{p}_f$ = sample proportion of females who would prefer to have a job outside of the home

18) Will the distribution of $\hat{p}_m - \hat{p}_f$ be approximately normal? 18) _____

A) Yes B) No

19) Construct a 99% confidence interval for the difference between the proportion of men and women who would prefer to have a job outside the home. Use three decimal places when computing the sample proportions and margin of error. 19) _____

A) (0.163, 0.315) B) (0.170, 0.308)

C) (0.181, 0.297) D) (-0.308, -0.170)

20) Test, at the 1% level, if there is evidence that the proportion of men who would prefer a job outside of the home is significantly higher than the proportion of women who would prefer a job outside of the home. 20) _____

State the null and alternative hypotheses.

A) $H_0: Pm \neq Pf$ $H_a: Pm < Pf$

B) $H_0: Pm = Pf$ $H_a: Pm \neq Pf$

C) $H_0: Pm = Pf$ $H_a: Pm < Pf$

D) $H_0: Pm = Pf$ $H_a: Pm > Pf$

21) What is the pooled proportion? 21) _____

A) $\hat{p} = 0.776$ B) $\hat{p} = 0.537$ C) $\hat{p} = 0.660$ D) $\hat{p} = 0.239$

22) What is the test statistic? 22) _____

A) 8.955 B) 2.62 C) 7.881 D) -2.62

23) Find the P-Value for testing the school's claim. 23) _____

A) 0.0044 B) 0.0000 C) 0.0280 D) 0.0056

24) Test at a 1% significance level, the proportion of men who would prefer a job outside of the home is significantly larger than the proportion of women who would prefer a job outside of the home. 24) _____

A) Do not reject H0 and insufficient evidence to supporte the claim that the proportion of men who would prefer a job outside of the home is significantly larger than the proportion of women who would prefer a job outside of the home.

B) Reject H0 and insufficient evidence to supporte the claim that the proportion of men who would prefer a job outside of the home is significantly larger than the proportion of women who would prefer a job outside of the home.

C) Reject H0 and we have very strong evidence to supporte the claim that the proportion of men who would prefer a job outside of the home is significantly larger than the proportion of women who would prefer a job outside of the home.

D) Do not reject H0 and we have very strong evidence to supporte the claime that the proportion of men who would prefer a job outside of the home is significantly larger than the proportion of women who would prefer a job outside of the home.