HW7 – Chapter 22   *Name* _____

France is famous, among other things, for the beauty of its language and its great literary tradition. French pride themselves with being strong readers. Some Canadians, however, think that a higher percentage of Canadians than French read. A recent Austin University Poll reported that 81% of 1009 randomly sampled French read at least one book in the past year, compared to 86% of 1004 randomly sampled Canadians. Do these results are a confirmation that a higher percentage of Canadians read?

1. Random sampling condition. Were the participants sampled randomly?
A. Yes B No. C. Most of the times D. Almost never

2. Is the 10% condition satisfied?
A. Yes, because the samples are less than 10% of the total number of French and Canadians respectively.
B. Yes because there are more than 20,013 potential participants
C. Yes because the two samples are less than 10% away from each other
D. Cannot be determined, because we don't know how many people read at least one book per year with absolute precision

3. What's the number of "successes" $n\hat{p}$ and failures $n\hat{q}$ for the French readers?
A. 192/817 B. 81/19 C. 799/210 D. 817/192

4. What's the number of "successes" $n\hat{p}$ and failures $n\hat{q}$ for the Canadian readers?
A. 863/141 B. 652/352 C. 86/14 D. 352/652

5. Does the success/failure condition apply?
A. Yes, because there are more failures than successes
B. Yes, because there are more successes than failures
C. Yes, because both successes and both failures are greater than 10
D. Yes, because the sum of all successes and all failures is greater than 10

6. What are $\hat{p}_F$ and $\hat{p}_C$?
A. 0.81/0.86 B. 0.86/0.81 C. 81.7%/86.3% D. 19.2%/14.1%

7. What's the value of p_{pooled}?
A. 0.817 B. 0.863 C. 0.848 D. 0.835

8. What's the value of SE_{pooled}?
A. 0.0165 B. 0.0785 C. 0.265 D. 0.0365

9. What's the value of z? (use "$(\hat{p}_F - \hat{p}_C) - 0$" at the numerator)
A. −1.03 B. 2.56 C. −3.03 D. 4.03

10. What's the value of the p-value?
 A. 0.014 B. 0.18 C. 0.05 D. 0.0012

11. I now want to find a 99% confidence interval for the difference between these two proportions. I need to find a….
A. two-proportion z-interval
B. one-proportion z-interval
C. two-proportion z-test
D. two-sample t-test

12. What's the value of $SE(\hat{p}_F - \hat{p}_C)$?
    A. 0.0183 B. 0.0165 C. 0.0275 D. 0.0987

13. Which z* I need for a 99% CI?
A. 1.96 B. 1.68 C. 0.05 D. 2.576

14. What's the value of ME?
A. 1.96 B. 0.0425 C. 0.0347 0.725

15. What's the 99% CI?
A. -0.0425 ± 0.05
B. -0.01 ± 0.0425
C. -0.05 ± 2.576
D. -0.05 ± 0.0425

16. How do you interpret the CI?
A. We are 99% confident that the proportion of French who read at least one book in the past year is between 0.8 percentage points and 9.3 percentage points lower than the proportion of Canadians who read at least one book in the past year.
B. We are 95% confident that the proportion of French who read at least one book in the past year is between 0.8 percentage points and 9.3 percentage points lower than the proportion of Canadians who read at least one book in the past year.
C. We are 99% confident that the proportion of Canadians who read at least one book in the past year is between 0.8 percentage points and 9.3 percentage points lower than the proportion of French who read at least one book in the past year.
D. We are 99% confident that the proportion of French who read at least one book in the past year is not between 0.8 percentage points and 9.3 percentage points lower than the proportion of Canadians who read at least one book in the past year.

Union High School had 23 of its students admitted to Acadia University. Seven of them were offered athletic scholarships. The school's principal checked their composite ACT scores (see the table), wondering if Acadia University might admit students with lower scores if they are also very good at sports. Assuming that this group of students is representative of students throughout the state, how can you find out is this is the case about the admission policy?

Composite ACT Score		
Non-athletes		Athletes
25	21	22
22	27	21
19	29	24
25	26	27
24	30	19
25	27	23
24	26	17
23	23	

17. What's the hypothesis?
A. The mean for athletes is higher.
B. The mean for non-athletes is higher.
C. There is no difference between the means.
D. We don't have enough data to make this decision.

18. What's the hypothesis in mathematical terms?

    A. $H_0 : \mu_1 - \mu_2 < 0$ $H_A : \mu_1 - \mu_2 > 0$

    B. $H_0 : \mu_1 - \mu_2 = 0$ $H_A : \mu_1 - \mu_2 < 0$

    C. $H_0 : \mu_1 - \mu_2 > 0$ $H_A : \mu_1 - \mu_2 = 0$

    D. $H_0 : \mu_1 - \mu_2 = 0$ $H_A : \mu_1 - \mu_2 > 0$

19. Assuming that the conditions (independence, randomization, 10% condition, nearly normal condition) are satisfied, which test we should use?
A. two-sample t-test
B. one proportions z-test
C. two proportions z-test
D. t-test

20. What's the mean ACT for athletes?
A. 12.46 B. 21.86 C. 23.45 D. 26.90

21. What's the mean ACT for non-athletes?
A. 21.35 B. 18.54 C. 22.75 D. 24.75

22. What's the standard error?
A. 1.432 B. 1.345 C. 2.786 D. 1.732

23. What the value of the t statistics?
A. 1.96 B. 3.42 C. 2.02 D. 1.89

24. The p-value (calculated by a computer) is 0.0352. Do we fail to reject or do we reject the null?
A. we reject the null B. we fail to reject the null C. impossible to determine D. we accept the null

25. What's the meaning of this?
A. There is no evidence of a difference between the mean ACT scores for non-athletes and athletes.
B. There is evidence of a difference between the mean ACT scores for non- athletes and athletes.
C. It's impossible to determine whether there is a difference
D. The fact that there is no difference between the mean ACT scores has been proved.

26. Create a 90% confidence interval that is likely to contain the true difference between the ACT scores. We can use a Student's t-model with 10 degrees of freedom. Which value of t you should use for the 90% CI?
A. 1.372 B. 1.753 C. 1.812 D. 2.228

27. What's the ME?
A. 1.96 B. 1.68 C. 4.35 D. 2.59

28. What's the confidence interval?
A. (0.29, 5.48) B. (0.35, 2.89) C. (0.35, 6.34) D. (2.89, 5.48)

29. What's the meaning of the CI?
A. We are 95% confident non-athletes average between 0.30 points and 5.48 points higher than athletes on the ACT.
B. We are 95% confident athletes average between 0.30 points and 5.48 points higher than athletes on the ACT.
C. We are 90% confident athletes average between 0.30 points and 5.48 points higher than athletes on the ACT.
D. We are 90% confident non-athletes average between 0.30 points and 5.48 points higher than athletes on the ACT.