PSYC 60 – Statistics
Spring 2012
Quiz 4 – A

Name: _____

Signature: _____

Student #: A_____

Instructions

Calculators (simple & graphing) will be allowed along with one page with a single side of handwritten notes. You will receive a copy of the chi-square table with this quiz. You will have the full class period (50 minutes minus setup time).

Test Selection

1. A college admission rep asks the following questions on a survey:
   What kind of learner are you: Book Worm / Interactive / Lucky Guesser
   Are you going to graduate high school: Yes / No

The admission rep wants to determine if learner influences graduate rate. What kind of test should she perform?

A. t test, 2-sample independent
B. t test, 2-sample dependent
C. correlation
D. regression
E. chi-squared

Correlation

2. An advertising researcher finds that the louder the volume of an advertisement, the fewer the number of calls to the business while the ad is run. This explains about 10% of the variance in the number of calls received by that business. For the relationship between ad volume and # of calls, what is the most likely r value?

A. -0.8
B. -0.3
C. 0
D. 0.1
E. 0.5

3. There is a strong, positive relationship between the frequency that a student eats at the Price Center and the number of student organizations that he/she participates in. For a student that is below the mean for number of student organizations they are involved with, she/he most likely:

A. eats at the price center more than the typical student
B. eats at the price center less than the typical student
C. cannot be answered without knowing slope
D. cannot be answered without knowing with means

4. Given the following z scores, calculate the r value:

Z of X	Z of Y
0.82	1.0
0.3	0.0
-1.12	-1.0

A. -0.12
B. 0.00
C. 0.65
D. 0.97
E. 1.94

5. For an r value of 0.5 and n=7, which statement best describes standard error (SE) of r?

A. sample r values will typically vary by about 0.07 from the population value
B. sample r values will typically vary by about 0.32 from the population value
C. sample r values will typically vary by about 0.39 from the population value
D. Standard error cannot be calculated without knowing a population value
E. Standard error is not applicable to r values

6. What is the critical value for the following test? 20 subjects, r = 0.8, alpha = 0.05, mean of X = 18.0, mean of Y = 0.23, testing the null hypothesis that r equals 0.

A. 1.734
B. 2.086
C. 2.093
D. 2.101
E. 12.706

7. You find an r value of 0.35 with 62 subjects. What is the best conclusion?

A. The correlation is not significant; the r value is probably miscalculated
B. The correlation is not significant; the r value is due to sampling error
C. The correlation is significant for alpha = 0.01 (and therefore also alpha = 0.05)
D. The correlation is only significant for alpha = 0.05

8. If you have the correlation coefficient between variable A and variable B, what extra information do you need in order to calculate the proportion of variance in B that variable A can explain?

A. The variance of scores in A
B. The variance of scores in B
C. The sample sizes of A and B
D. 2 points on the line
E. None of the above

9. Which of the following do NOT affect correlation values?

A. outliers
B. curvilinear relationships
C. measurement units
D. more than one of these

10. At the end of this PSYC 60 class, Professor Claffey looks at the relationship between class attendance (days of clicker use) and course grade and finds an r value of 0.95. He is convinced that clickers are the way to go from now on, but his TAs give him a wise warning. Which of the following was it?

A. "This could be a Type II error"
B. "This is unlikely to be statistically significant"
C. "You performed the wrong statistical test"
D. "You can't claim that class attendance caused higher grades"
E. "You need to find the regression line to assert a positive relationship"

Regression

11. What can we do with a regression line that we cannot do with a correlation r value?
A. predict values
B. determine the direction of a relationship
C. determine the strength of a relationship
D. calculate a standard error

12. Given the following information, what is the formula for the least squares regression line?

	X	Y	r = 0.6
Mean	34	0.2	
SS	110	4	

A. y = 170 x + 1.04
B. y = 0.04 x - 1.04
C. y = 0.04 x - 3.54
D. y = 0.11 x - 3.54
E. y = 0.006 + 0

13. A regression line is found to predict course grade based on # of homework problems solved. The line has a slope of 4.1 points/problem with an intercept of -40 points. Ellie does 30 problems and receives 96 points in the course. What is the error for Ellie's predicted grade?

A. 4
B. 13
C. 27
D. 56
E. 136

14. Compared to other regression lines, what is the advantage of selecting the "least squares" regression line?

A. it is mathematically more accurate
B. it allows the prediction of one variable from the other
C. it minimizes large errors
D. it minimizes the sum of (y - predicted y)
E. it goes through the most number of points

Chi Squared

15. At a blood bank, donations are distributed among blood types with the following rates: A = 20%, B = 25%, AB = 30%, O = 15%. In a test to determine if the blood bank is maintaining an equal proportion of all blood types, which is part of the null hypothesis?

A. Proportion of type A = 20%
B. Proportion of type A = 25%
C. Proportion of type A = 25% - 20%
D. Proportion of type A > 20%

16. A gambler flipping a coin 100 times gets 62 heads and 38 tails. Perform a one-variable chi-square test with that null hypothesis that the proportion of heads equals the proportion of tails. Is the result significant for alpha = 0.05?

A. Yes, significant because critical X2 is 7.81 and X2 is > X2*
B. Yes, significant because critical X2 is 5.99 and X2 is > X2*
C. Yes, significant because critical X2 is 3.84 and X2 is > X2*
D. No, not significant

17. What are the most common chi-square values by chance (when the null hypothesis is true)? Choose the best answer.

A. zero is the most common
B. positive values that are close to zero
C. positive values much greater than zero
D. negative values
E. positive and negative values that are close to zero

18. A car dealership has 1100 cars on his lot. 9% of them are red and 15% of them are SUVs. What is the expected frequency of red SUV's if color and model are independent?

A. 24%
B. 14.9
C. 99
D. 165
E. 264

19. You are trying to determine if the proportion of Democrats and Republicans on city council depends on city. Perform a chi-square test for independence using the following data on number of city council members:

	Chicago	Houston
Democrat	10	9
Republican	5	4

A. Significant because critical X2 is 41.34 and X2 is > X2*
B. Significant because critical X2 is 5.49 and X2 is > X2*
C. Significant because critical X2 is 3.84 and X2 is > X2*
D. Not significant

20. Which is NOT true about the chi-square distribution?

A. it is symmetrical
B. there are only positive values
C. values that are very large or very close to zero are uncommon
D. the shape/values change based on degrees of freedom