INTRODUCTION TO BEHAVIOR GENETICS

PSYCH 3102

Instructor: Dr Christina Hewitt

HOMEWORK # 1

QUESTION SHEET

All answers should be entered on the attached separate answer sheet. Show all working.

1. Which statistics classes have you taken in the past (give dates)?

2. What is the range of possible values for a Pearson correlation coefficient?

3. If outcome 'A' occurs with a probability of 0.02

   a) how many times in a 1000 observations would you expect to observe 'A'

   b) if you make just two observations, what is the probability that they are both outcome 'A'?

4. If two variables correlate 0.80, are they closely related, hardly related, or not at all related?

5. Roughly what proportion of scores for a normally distributed (Gaussian) variable falls within 1 standard deviation from the mean?

6. Roughly what proportion of scores for a normally distributed (Gaussian) variable is further from the mean than 1.96 standard deviations?

7. If the variance of variable X is 4, the variance of variable Y is 9, and the covariance of X and Y is 3, what is the correlation between X and Y? (Show working and formulae used)

8. For the data described in Question 7, what is the regression of Y on X? (Show work and formulae)

The data that follow give simulated measurements on pairs of twins. Use the data to answer Questions 9 – 14

Measurements

Twin pair number	First twin(X)	Second twin (Y)
1	3	2
2	3	3
3	2	1
4	1	2
5	0	0
6	2	2
7	2	2
8	3	2
9	3	3
10	2	3
11	1	1
12	1	1
13	4	4
14	2	3
15	2	1
16	1	2

9. What is the mean score for the First twins?

10. What is the mean score for the Second twins?

11. Roughly plot out the measurements as a **scatter plot of First twin against Second twin.** What is the value of making this plot?

12. Compute the variance separately for First twins and Second twins.

13. Compute the covariance of First twin with Second twin.

14. What is the correlation of First with Second twins?

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ANSWER SHEET

NAME: _____

DATE: _____

MAJOR: _____ **(eg. Psychology)**

Write all answers on this answer sheet and hand in as soon as you have completed the homework.

1. _____

2. _____

3. a)_____

    b)_____

4. _____

5. _____

6. _____

7. _____

8. _____

9. _____

10. _____

11.

12. First twins _____

_____

Second twins _____

_____

13. _____

_____

_____

14. _____

_____

_____