**Multiple choice questions. Select the best answer.**

1. What would the scatterplot show for data that produce a correlation of *r* = +.88?

a. Points clustered close to a line that slopes up to the right

b. Points clustered close to a line that slopes down to the right

c. Points widely scattered around a line that slopes up to the right

d. Points widely scattered around a line that slopes down to the right

2. Which of the following correlations shows the greatest strength or consistency of relationship?

a. –.90 c. +.85

b. +.74 d. –.33

3. A researcher measures IQ and weight for a group of college students. What kind of correlation is likely to be obtained for these two variables?

a. A positive correlation c. A correlation near zero

b. A negative correlation d. A correlation near one

4. Suppose the correlation between height and weight for adults is +0.40. What proportion (or percent) of the variability in weight can be explained by the relationship with height?

a. 40% c. 16%

b. 20% d. 80%

5. For a hypothesis test evaluating a correlation, what is stated by the null hypothesis?

a. There is a non-zero correlation for the general population.

b. The population correlation is zero.

c. There is a non-zero correlation for the sample.

d. The sample correlation is zero.

6. Correlational analyses provide researchers with the nature and degree of the association between pairs of scores. By “nature,” we mean:

a. how small versus large the relationship is

b. the size of the relationship

c. whether the relationship is positive or negative

d. whether the relationship is causal

7. Which of these is a proper statement of the (non-directional) alternative hypothesis for correlational hypothesis tests?

a. H1: *R*2 = 0

b. H1: *R*2 ≠ 0

c. H1: ρ = 0

d. H1: ρ ≠ 0

8. Which of these research questions would allow for a correlational analysis to be performed on the data?

a. Are cat owners or dog owners more extraverted, when extraversion is measured on a scale from  
1-not at all extraverted to 5-extremely extraverted?

b. Is gender related to whether a student majors in business versus education?

c. Are tortoises slower walkers than hares?

d. Is age related to severity of flu symptoms, when severity is measured on a scale from 1-not at all  
severe *to* 5-extremely severe?

9. A researcher is interested in whether the question – How high is your self-esteem? 1-*very low* to 10-*very high* – could be used as a quick reliable self-report measure of self-esteem. She gave this question to the same 75 participants twice, separated by 10 weeks, and ran a correlational analysis between the time 1 and time 2 self-esteem scores. If she found that the correlation was ***r* = -.10**, she should conclude:

a. that the measure does not reliably measure self-esteem, because the correlation between the  
measures when given at two time points was close to zero (no relationship between people’s scores at time 1 and time 2)

b. that the measure reliably measures self-esteem.

c. that the measure reliably measures self-esteem, but that self-esteem was very low in her  
sample.

d. The researcher cannot draw any conclusions from these data.

10. Which of the following issues might cause you to draw the wrong conclusions from your correlational analyses?

a. having data with a restricted range

b. using correlation matrices

c. having outliers in your dataset

d. neglecting the possibility of third variables

11. Fathers’ heights account for 50% of the variation in sons’ heights. What percentage of the variance in sons’ heights are *unexplained?*

a. 50%

b. 25%

c. 2.5%

d. 5%

12. Suppose that level of extroversion and number of cats owned is negative correlated, with an *r* = -.20 – what percentage of the variance in # of cats owned is shared by level of extroversion?

a. 0.20%

b. 20%

c. 0.40%

d. 4%

**TRUE OR FALSE? If the statement is *false*, how could you correct it to make it true?**

1. If the value of the correlation efficient is *r* = +1.00 or –1.00, then all data points in a scatterplot fit perfectly on a straight line.
2. A correlation of *r* = –.90 indicates that the data points are clustered close to a line that slopes down to the right.
3. Suppose that there is a correlation of *r* = .41 between the amount of time that each student reports studying for an exam and the student’s grade on the exam. This correlation would mean that there is a tendency for people who study more to get better grades.
4. A set of X and Y scores has a correlation of *r* = –.60. For these data, 60% of the variability in the Y scores can be predicted from the relationship with X.
5. A researcher finds a significant correlation between the amount of time spent watching television and blood pressure for a sample of 50-year-old men. This means that watching more television causes high blood pressure.
6. For a hypothesis test evaluating the significance of a correlation, the null hypothesis states that the sample correlation is zero.
7. It’s unclear whether higher aggression levels cause people to watch more football, or whether watching football causes people to display more aggression, an issue known as the third variable problem.
8. A researcher is interested in whether age is related to political ideology (1-extremely liberal to 7-extremely conservative), and also whether age is associated with daily happiness level. This researcher should run two correlational analyses to examine these questions.
9. A correlation could be run between scores in Professor Smith’s fall 2017 PY 101 course and scores in Professor Smith’s fall 2017 PY 204 course, to see if these scores are positively or negatively related.
10. For a hypothesis test for a correlational analysis, the alternative hypothesis will state that there *is* a relationship between the two variables, in the population.
11. A correlation coefficient from a study is equal to -.30. According to the guidelines followed by many researchers, this would be considered a “small” effect.
12. The p-value associated with the test statistic for a correlational study is less than .05. This suggests that there is not likely to be a relationship between the two variables.

**KEY for MC Questions**

1. A
2. A
3. C
4. C
5. B
6. C
7. D
8. D
9. A
10. B
11. A
12. D

**KEY for True/False Questions**

1. True
2. True
3. True
4. False. 36% of the variability in Y can be predicted from the relationship with X. You must multiply *r* by itself to achieve R2.
5. False. You cannot conclude anything about causation from a correlational study.
6. False. Null and alternative hypotheses are always about the *population*, not the sample.
7. False. This example is an example of the *directionality* problem. The directionality problem refers to the notion that if there IS a causal relationship, correlational research cannot tell us which variable is the cause and which the effect.
8. True. Both research questions involve two quantitative/continuous variables. The researcher would examine the correlation between age and political ideology, and then also the correlation between age and daily happiness.
9. False, most likely, since the students in the two courses are different. For correlational analyses, you need pairs of scores for each participant, rather than two variables that come from different samples of people.
10. True
11. False. An *r* of -.30 is considered a medium-sized effect.
12. False. If the p-value is less than .05, then the *null* hypothesis (which states that there is not likely to be a relationship) is *NOT credible*, that is, the null hypothesis is unlikely to be true. (If *p* < .05, we should therefore conclude there is a good chance that there *is* a real relationship between the two variables, i.e., the data are more consistent with the alternative hypothesis.)