

Name: _____

Date: _____

Quiz 8 – B

1. You're interested in studying the relationships between religion and attitudes about sexuality.

A. Describe an observational study you might do. (Be careful not to do a survey!) Explain why it's an observational study, not a survey.

B. Describe what it would take to turn this observational study into an experiment. (Your answer can be kind of fanciful.)

2. Which of the following is the best description of the statement, "Milk consumed and height are correlated"? Pick one.

A. Drinking milk causes someone to grow taller.

B. Being big causes someone to consume more of everything, including milk.

C. Knowing someone drinks milk enables you to predict their height very well.

D. Knowing someone drinks milk enables you to predict their height at least a little better than if you don't know.

Explain your choice.

3. Explain what it means to say two variables are independent.

4. When I'm watching T.V., I never read at the same time. When I'm reading, I never watch T.V. at the same time. Are the variables Hours of T.V. Watched and Hours of Reading are dependent or independent? Justify your choice.

5. Pet ownership (variable A) is correlated with a pet owning person's longevity (variable B). Come up with an explanation for each of the following ways to interpret this data:

A. $A \rightarrow B$ (that is, *A causes B*)

B. $B \rightarrow A$ (that is, *B causes A*)

C. A and B are both caused by a common factor

6. Why did the two water supply companies in London provide a natural experiment proving that cholera is waterborne?

Quiz 8 – B – answer key

1.
 - A. Answers will vary.
 - B. Answers will vary.
2. (D) is correct. Correlation means that knowing the information about one variable allows you to make at least a slightly better prediction about the other variable than a baseline guess.
3. Independence means that there is zero correlation; variable A is equally frequent/likely to happen if variable B happens or doesn't happen.
4. The variables of Hours of T.V. Watched and Hours of Reading are dependent. Knowing whether I'm watching T.V. (say, yes) allows you to perfectly predict whether I'm reading (no).
5.
 - A. Owning a pet reduces stress and loneliness, letting people live longer lives.
 - B. People who live longer lives have more time to own a pet. Especially once people retire (if they live that long), they're likely to get a pet.
 - C. Wealthy people live longer. They are also more able to afford a pet.
6. Two households that were next to each other might be supplied by different water companies. The households were in most ways exactly the same, so if they had different rates of cholera, the best explanation is the water source.