

Practice Assignment

1. Decide whether each scenario has a positive, negative, or no correlation. Remember to think **generally!**

- a. Education vs. Income positive
- b. Number of pets a person has vs. Number of books a person has read none
- c. Number of days absent from school vs. Math grade negative
- d. Test scores vs. Shoe size none
- e. Distance traveled vs. Amount of gas in the car negative
- f. Hours studying vs. Grades positive
- g. Hours in the mall vs. Amount of money spent positive
- h. Person's height vs. Person's age positive
- i. Person's height vs. How fast they drive none
- j. Temperature vs. Number of people wearing jackets negative

2. Determine if the following statements are correlation or causation.

- a. The number of cold, snowy days and the amount of hot chocolate sold at a ski resort.  
correlation
- b. The number of miles driven and the amount of gas used.  
causation
- c. The number of additional calories consumed and the amount of weight gained.  
causation
- d. The age of a child and his/her shoe size.  
correlation
- e. The amount of cars a sales person sells and how much commission he makes.  
causation
- f. The number of cars traveling over a busy holiday weekend and the number of accidents reported.  
correlation
- g. The number of homework assignments turned in and how well an individual does in class.  
causation
- h. The annual salary and blood pressure for men ages 20 – 60.  
correlation

3. Which of the following statements shows a relationship that is correlated but not causal?
- A. The amount of rainfall received and level of water in the lake.
  - B. The number of lights left on each day and the amount of the electric bill.
  - C. The increase of warm sunny days and the number of ice cream vendors visible.
  - D. The number of hours worked and how much money is made.
4. Which of the following statements shows a relationship that is correlated but not causal?
- A. The number of tardies to class and the number of detentions received.
  - B. The season of the year and the number of water related injuries/deaths.
  - C. As the temperature rises, more mercury in the thermometer will expand and rise.
  - D. The larger the dimensions of a rectangular patio, the more square footage there will be.
5. Which of the following shows a causal relationship?
- A. An individual who works in construction and their diagnosis of skin cancer.
  - B. A decrease in temperature and increase in attendance at an ice skating rink.
  - C. As a child's weight increases, so does their vocabulary.
  - D. The number of minutes spent exercising and the amount of calories burned.
6. Students conducted research for their statistics projects to model the set of data that compares the number of TVs per person in a given country and the average life expectancy in the same country. They calculated that  $r = 0.87$ .

a. Discuss the type of correlation.

strong positive correlation

b. The students concluded that the more televisions you have, the longer you will live. Is this a correct conclusion? Why or why not?

The positive correlation suggests only that a relationship exists between owning a TV and lifespan. Having more TVs does NOT cause you to live longer.

c. What might explain the high correlation between the number of TVs and longer life expectancy?

People who have more money or live in an established area have more access to healthcare and typically enjoy a better quality of life.