

Name: \_\_\_\_\_ Date: \_\_\_\_\_

**Correlation and Causation Homework**

1. From the information given,  
a. Determine if the correlation is positive, negative or none.

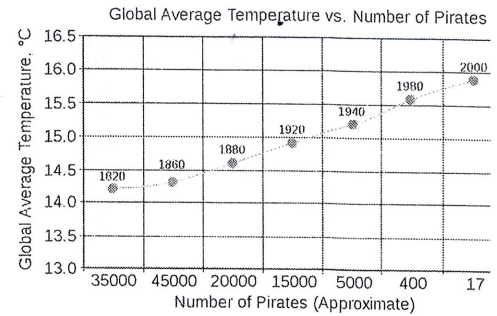
*Positive*

- b. Estimate the correlation coefficient.

*1*

- c. Is there causation? Why or why not?

*Unlikely. I'm not aware of any pirate ability to affect the weather. (except the Flying Spaghetti Monster)*



2. A history teacher asked her students how many hours of sleep they had the night before a test. The data above shows the number of hours the student slept and their score on the exam. The graph is a scatter plot from the given data.

- a. Determine if the correlation is positive, negative, or none.

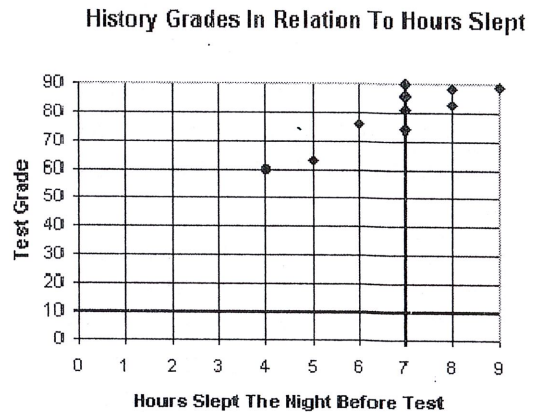
*Positive*

- b. Estimate the correlation coefficient.

*0.5*

- c. Is there causation? Would this information affect your behavior the night before a test?

*Probably some. In many cases, yes.*



3. The following chart shows violent crime rates compared to high school graduation for all fifty states.

- a. Determine if the correlation is positive, negative, or none.

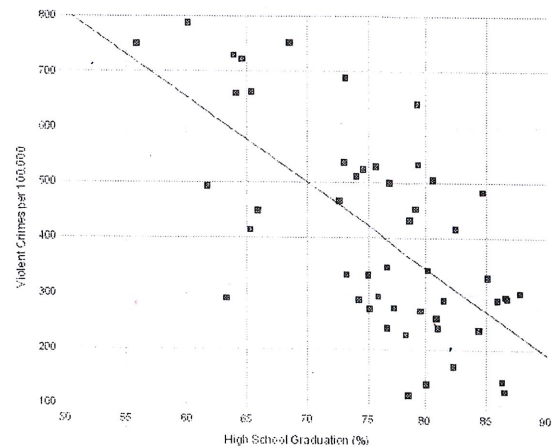
*Negative*

- b. Estimate the correlation coefficient.

*-0.5*

- c. Is this an illustration of cause and effect, or are these two variables simply correlated?

*I would say correlated. While they both have many of the same root causes, one graduation probably doesn't directly affect crime rates.*



For the given situations below,

- Is the association positive, negative or none?
- Is the causation statement true or false?

4. When you are on a diet, the less calories you eat daily vs. the more weight you lose.  
Causation statement: *Therefore, eating less calories makes you lose weight.*

a) Negative 

b) Mostly true

5. The more ice cream consumed on a beach vs. the increased number of people who go in the water. Causation statement: *Therefore, eating more ice cream on the beach makes people go in the water.*

a) Positive

b) False. Both are caused by heat.

6. The more people in a family vs. the increased number of cars the family owns.  
Causation Statement: *Therefore, the more people there are in a family determines how many cars a family owns.*

a) Positive

b) Mostly true, there are other factors.

7. The average speed cars travel from Philadelphia to New York on the turnpike vs. the average amount of times it takes. Causation Statement: *Therefore, the speed cars travel from Philadelphia to New York determines the time it takes to go between them.*

a) Negative 

b) True

8. How much you pay for a house vs. how much you pay for a car. Causation statement: *Therefore the more you pay for a house makes you spend more for a car.*

a) None

b) False