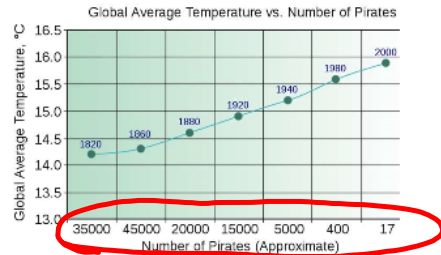


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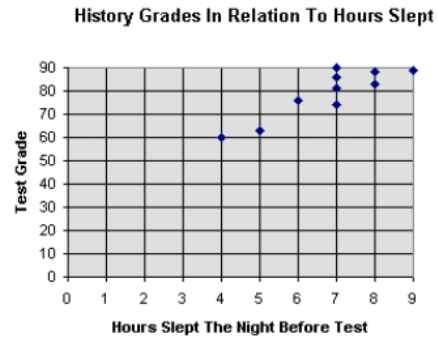
Correlation and Causation Homework

1. From the information given,
 - a. Determine if the correlation is positive, negative or none.
 - b. Estimate the correlation coefficient.
 - c. Is there causation? Why or why not?



neg.
 $r = -.8$ or $-.9$
no causation

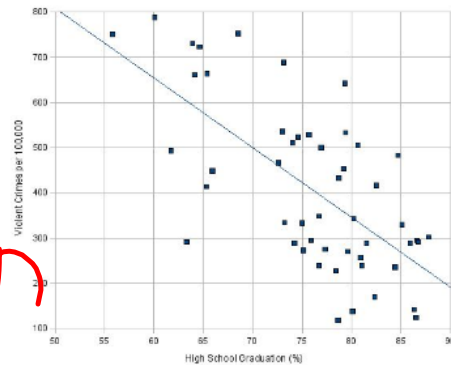
2. A history teacher asked her students how many hours of sleep they had the night before a test. The data above shows the number of hours the student slept and their score on the exam. The graph is a scatter plot from the given data.



- a. Determine if the correlation is positive, negative, or none.
- b. Estimate the correlation coefficient.
- c. Is there causation? Would this information affect your behavior the night before a test?

positive
 $r = .8$
no causation

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



- a. Determine if the correlation is positive, negative, or none.
- b. Estimate the correlation coefficient.
- c. Is this an illustration of cause and effect, or are these two variables simply correlated?

negative
 $r = -.5$
no causation

For the given situations below,

- a. Is the association positive, negative or none?
- b. 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.*

neg. causation

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.*

positive no causation

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.*

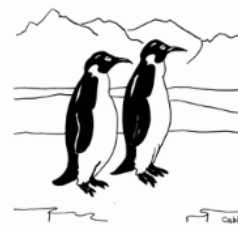
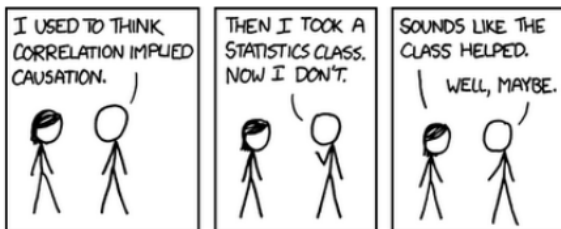
positive no causation

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

↕ ↕
negative causation

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.*

positive no causation



"Do you think all these film crews brought on global warming or did global warming bring on all these film crews?"