Name:_____
Date:_____ Class Period:_____

Correlation and Causation Notes

A_____ is a relationship between _____ events, where a _____ in one event is relation to a _____ in another event.

Correlations can be described as a _____ correlation or a _____ correlation.

A _____ correlation is when one event _____, the other event _____.

So, as one _____ _____, the other _____ _____.

Also, as one _____ _____, the other _____ _____.

Examples:

A _____ correlation is when one event _____, the other event _____.

So, as one _____ _____, the other _____ _____.

Also, as one _____ _____, the other _____ _____.

Correlation Coefficient:

The _____ _____ measures the _____ of a correlation between two variables.

A correlation coefficient is a number between _____ and _____.

A correlation coefficient is denoted by _____.

How to determine the correlation coefficient:

1.

2.

3.

4.

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A correlation between two events does _____ imply that the _____ event is _____ for the change in the _____ event.

The correlation only shows how _____ it is that a change also took _____ in the second event.

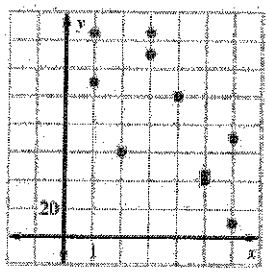
A _____ is a relationship between two events where a change in one event is _____ for a change in the second event.

Examples of a Causation:

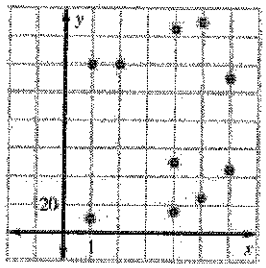
Practice Problems:

For each scatter plot, tell whether the data have a positive correlation, a negative correlation, or no correlation. Then, tell whether the correlation is closest to -1, -0.5, 0, 0.5, or 1.

1.



2.



3. Determine if the correlation is Positive, negative, or no correlation? Could it be a causation?

a. Amount of exercise and percent of body fat _____

b. A person's age and the number of medical conditions they have _____

c. Temperature and number of ice cream cones sold _____

d. The number of students at Harrison and the number of dogs in Atlanta _____

e. Age of a tadpole and the length of its tail _____

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Correlation and Causation Notes

A Correlation is a relationship between 2 events, where a change in one event is ~~relation~~ related to a change in another event.

Correlations can be described as a positive correlation or a negative correlation.

A positive correlation is when one event increases, the other event increases.

So, as one goes up, the other goes up.

Also, as one goes down, the other goes down.

Examples:

A negative correlation is when one event increases, the other event decreases.

So, as one goes up, the other goes down.

Also, as one goes down, the other goes up.

ex:

Correlation Coefficient:

The correlation coefficient measures the strength of a correlation between two variables.

A correlation coefficient is a number between −1 and +1.

A correlation coefficient is denoted by r.

perf neg ↓ −1 | med neg ↓ −0.5 | no corr ↑ 0 | medium pos ↓ 0.5 | perf pos ↓ +1

How to determine the correlation coefficient:

1. Quickly look at a scatter plot & look away
2. If you see a slope, then it is at least a −0.5 or 0.5
3. If it has a positive slope, it is a positive corr
4. If it has a negative slope, it is a neg corr

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A correlation between two events does NOT imply that the first event is responsible for the change in the second event.

The correlation only shows how likely it is that a change also took place in the second event.

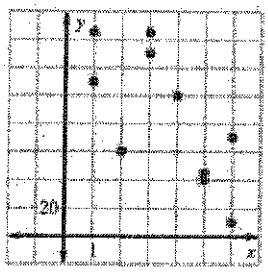
A Causation is a relationship between two events where a change in one event is responsible for a change in the second event.

Examples of a Causation:

Practice Problems:

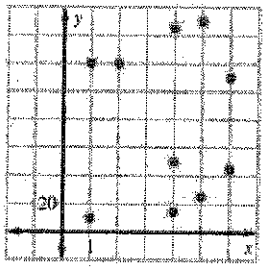
For each scatter plot, tell whether the data have a positive correlation, a negative correlation, or no correlation. Then, tell whether the correlation is closest to -1, -0.5, 0, 0.5, or 1.

1.



negative
medium
r = -0.7

2.



positive
weak
r = 0.3

3. Determine if the correlation is Positive, negative, or no correlation? Could it be a causation?

a. Amount of exercise and percent of body fat negative → causation

b. A person's age and the number of medical conditions they have positive →

c. Temperature and number of ice cream cones sold positive → corr

d. The number of students at Harrison and the number of dogs in Atlanta no corr

e. Age of a tadpole and the length of its tail negative →