

# Causation vs Correlation (advanced)

Name:

Date:



## Causation vs. Correlation: What's the Difference?

Read the definitions and examples carefully to understand the difference between causation and correlation.

Definitions:

**Causation:** When one event causes another event to happen. There is a cause-and-effect relationship.

Example: Eating lots of sugary snacks causes cavities.

**Correlation:** When two events happen at the same time or in a similar pattern but one does not necessarily cause the other.

Example: Ice cream sales and drowning incidents both increase in the summer, but eating ice cream does not cause drowning.

## Decide if the sentence is an example of causation or correlation

**During hot weather, the sale of ice cream increases.**

☒ correlation ☐ causation

**Hot weather leads to increased cases of heat exhaustion.**

☒ causation ☐ correlation

**On hot days, the number of people visiting the beach rises.**

☒ correlation ☐ causation

**Hot weather causes asphalt on roads to expand and crack.**

☒ causation ☐ correlation

**Sales of bottled water often go up during hot weather.**

☐ causation ☒ correlation

**Hot weather results in higher rates of dehydration among outdoor workers.**

☐ correlation ☒ causation

**The number of sunburn cases increases as the weather gets hotter.**

☐ correlation ☒ causation

**During hot weather, more people choose to swim in pools.**

☒ correlation   ☐ causation

**Describe why the increase in ice cream sales during hot weather is an example of correlation rather than causation.**

The increase in ice cream sales during hot weather is an example of correlation because both events happen at the same time, but one does not directly cause the other. Hot weather does not cause people to buy ice cream; rather, it creates a situation where people are more likely to buy ice cream to cool down.

**Explain why hot weather causes asphalt on roads to expand and crack.**

Hot weather causes asphalt on roads to expand and crack due to the physical properties of asphalt. When temperatures increase, the materials in the asphalt expand, and if the expansion is significant enough, it can cause the surface to crack. This is a direct cause-and-effect relationship, illustrating causation.

**Name one sentence from the exercise that represents causation and justify your choice with scientific reasoning.**

The sentence 'Hot weather leads to increased cases of heat exhaustion' represents causation. This is because high temperatures can impact the human body's ability to regulate its internal temperature, leading to heat exhaustion. This illustrates a direct cause-and-effect relationship.

## **Your turn to use causation and correlation**

**Write a short story that includes both a causal relationship and a correlation.**

Sally was always a good student, but she noticed that her grades started to slip when she began to spend more time on her phone. She realized that there was a correlation between the amount of time she spent on her phone and her declining grades. Sally decided to conduct an experiment to see if there was a causal relationship between the two. She limited her phone usage to only 30 minutes a day and focused more on her studies. After a few weeks, she noticed that her grades had improved significantly. Sally concluded that the excessive time spent on her phone was the cause of her poor academic performance, and by reducing her screen time, she was able to improve her grades.

**Create a comic strip for your short story**

Panel 1...

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