Link or Cause?

Sort patterns from proven effects.

MA.912.DP.1.3 "Explain the difference between correlation and causation in the contexts of both numerical and categorical data."

NAME _____ DATE _____

ASSOCIATION ONLY	CAUSE SHOWN
Two variables are linked, but the information does not prove that one causes the other. A third factor may explain the pattern.	Evidence shows that changing one variable changes another. A controlled experiment with random assignment can support this claim.
Cities with more bookstores also report more coffee shops.	In a randomized trial, plants given fertilizer grew taller than plants not given fertilizer.

1 SORT

6 items

Part 1: Circle the category for each statement, then for Part 2, choose two items and explain what evidence supports your choices.

1.	Students who sleep longer tend to have higher test scores.	ASSOCIATED	CAUSATION
2.	Students randomly assigned to tutoring score higher than students not assigned to tutoring.	ASSOCIATED	CAUSATION
3.	Counties with higher vaccination rates have lower hospitalization rates.	ASSOCIATED	CAUSATION
4.	People carrying umbrellas are more often seen on wet sidewalks.	ASSOCIATED	CAUSATION
5.	Households randomly assigned LED bulbs use less electricity than households assigned incandescent bulbs.	ASSOCIATED	CAUSATION
6.	Schools with more art courses have higher attendance rates.	ASSOCIATED	CAUSATION

2 PROVE IT

Explain your thinking

Pick two items from Part 1. For each one, tell how you knew where it belonged.

ITEM # _____ **HOW I KNEW** _____

ITEM # _____ **HOW I KNEW** _____

3 MAKE YOUR OWN

One of each

Part 3: Write one new ASSOCIATED example and one new CAUSATION example.

ASSOCIATED _____

CAUSATION _____

CHALLENGE

Write a headline that wrongly claims cause from an association, then revise it to state only the association.

ANSWER KEY

Link or Cause?

HIGH SCHOOL · MA.912.DP.1.3

PART 1 · SORT

#	ITEM	CATEGORY	WHY
1	Students who sleep longer tend to have higher test scores.	**ASSOCIATED**	This is an observed pattern, so other factors could explain it.
2	Students randomly assigned to tutoring score higher than students not assigned to tutoring.	**CAUSATION**	Random assignment supports the conclusion that tutoring caused the score difference.
3	Counties with higher vaccination rates have lower hospitalization rates.	**ASSOCIATED**	The statement reports a relationship but does not describe evidence proving cause.
4	People carrying umbrellas are more often seen on wet sidewalks.	**ASSOCIATED**	Rain can explain both umbrella use and wet sidewalks.
5	Households randomly assigned LED bulbs use less electricity than households assigned incandescent bulbs.	**CAUSATION**	Random assignment supports the conclusion that bulb type caused the difference in electricity use.
6	Schools with more art courses have higher attendance rates.	**ASSOCIATED**	The relationship does not prove that art courses caused attendance to rise.

PART 2 · PROVE IT

Accept any explanation that names the deciding feature from the rule box for the chosen item.

PART 3 · MAKE YOUR OWN (SAMPLE ANSWERS)

- **ASSOCIATED**: People who own bicycles are more likely to buy helmets.
- **CAUSATION**: In a randomized study, participants assigned noise-canceling headphones made fewer listening errors.

Challenge: Wrong: More parks cause lower crime. Revised: Neighborhoods with more parks are associated with lower crime.

Accept causation only when the statement gives evidence that supports a causal claim, such as random assignment. Observed relationships, even plausible ones, belong in ASSOCIATED.