Link or Cause?

Sort what the evidence supports

MT.CORE.DATA.LIT.3 "Distinguish between association and causation."

NAME _____ DATE _____

ASSOCIATION

A LINK shows that two things occur together. Without a test that changes one thing, the report does not show that either one caused the other.

In a survey, people with more houseplants report sleeping longer.

CAUSATION

A CAUSE is supported when a test randomly assigns one change, keeps other conditions alike, and finds a difference in outcomes.

Identical batteries are randomly assigned to cool or warm storage for the same length of time. The cool batteries hold more charge afterward.

1 SORT

8 items

Read each report and circle LINK or CAUSE based on what its evidence supports.

1.	A survey finds that students who bike to school have higher attendance.	LINK CAUSE
2.	Identical seedlings are randomly assigned fertilizer or no fertilizer. They get equal water and light; the fertilized group grows taller.	LINK CAUSE
3.	People who read more novels report less screen time.	LINK CAUSE
4.	Stores with more checkout lanes sell more items per day.	LINK CAUSE
5.	Volunteers are randomly assigned to stretch or rest for 10 minutes before the same flexibility test. The stretch group scores higher.	LINK CAUSE
6.	People who listen to more podcasts report longer commutes.	LINK CAUSE
7.	Neighborhoods with more streetlights report fewer nighttime falls.	LINK CAUSE
8.	Identical metal rods are randomly assigned to saltwater or fresh water for the same time at the same temperature. The saltwater rods rust more.	LINK CAUSE

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

PROVE IT: Choose two numbered reports and explain how you knew where each belongs. MAKE YOUR OWN: Write one new LINK report and one new CAUSE report.

LINK _____

CAUSE _____

CHALLENGE

Write two sentences: describe a link someone might mistake for a cause, then name a third factor that could explain both things.

Link or Cause?

PART 1 · SORT

#	ITEM	CATEGORY	WHY
1	A survey finds that students who bike to school have higher attendance.	**LINK**	The survey shows an association but does not test whether biking changes attendance.
2	Identical seedlings are randomly assigned fertilizer or no fertilizer. They get equal water and light; the fertilized group grows taller.	**CAUSE**	Random assignment and alike growing conditions support fertilizer as the cause of the difference.
3	People who read more novels report less screen time.	**LINK**	The report describes two related measures without testing a change.
4	Stores with more checkout lanes sell more items per day.	**LINK**	Store size or customer traffic could affect both measures.
5	Volunteers are randomly assigned to stretch or rest for 10 minutes before the same flexibility test. The stretch group scores higher.	**CAUSE**	Random assignment and the shared test support stretching as the cause of the score difference.
6	People who listen to more podcasts report longer commutes.	**LINK**	The report does not test whether listening changes commute length.
7	Neighborhoods with more streetlights report fewer nighttime falls.	**LINK**	Other neighborhood differences could explain the association.
8	Identical metal rods are randomly assigned to saltwater or fresh water for the same time at the same temperature. The saltwater rods rust more.	**CAUSE**	Random assignment and alike conditions support saltwater as the cause of the difference.

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)

- **LINK**: In a survey, students who play chess more often report higher math grades.
- **CAUSE**: Identical damp towels are randomly assigned to dry with a fan or without one for 30 minutes under otherwise alike conditions. The towels dried with a fan retain less water.

Challenge: In a survey, people who buy more umbrellas also report more wet shoes. Rainy weather could increase both umbrella purchases and wet shoes.

Items 1, 3, 4, 6, and 7 are LINK; items 2, 5, and 8 are CAUSE. For PROVE IT, look for an explanation based on observation versus a randomly assigned change under alike conditions.