What Can Studies Show?

Choose research methods and judge claims about cause.

P.1.2 "Differentiate between research methods including descriptive, correlational, and experimental methods, decide when to use each, and differentiate between correlation and causation."

NAME _____ DATE _____

1 READ AND MARK

Read it twice

YOUR JOB Underline the sentence that begins "The team" in each paragraph to mark what the researchers do. Circle the possible third factor in paragraph 2 that could explain the quiz results.

A Museum Asks Questions

1. An old train station has become a town history museum. Its director wants to know whether a new exhibit about railroad workers reaches teenagers. A descriptive study records what is happening without testing a cause. The team counts teen visitors each afternoon for a month and asks them which exhibit they visited. These records show how many teens came and what they saw, but not why they came or what they learned. This plan is useful when the director first needs a clear picture of attendance before deciding what else to investigate.

2. Next, the director wonders whether visits go with greater knowledge of the town's railroad past. A correlational study looks for a relationship between measured variables, without assigning people to different experiences. The team asks students at several schools whether they visited the exhibit, then compares their answers with scores on the same railroad-history quiz. If visitors score higher, that is a correlation, not proof that the exhibit caused the difference. Students with more interest in local history before the exhibit opened might both visit and know more already. This approach fits questions about links when assigning visits is impractical.

3. Finally, the director wants to test whether a guided exhibit tour improves short-term quiz scores compared with reading about the same history. An experiment changes one condition and randomly assigns participants to groups so that other differences are less likely to explain the result. The team randomly assigns willing students to either a guided tour or a reading session, then gives both groups the same quiz. If tour students score higher, the tour may have caused the difference in this study, assuming the groups were treated alike apart from the activity. This plan tests a cause rather than just describing or linking observations.

2 ANSWER WITH EVIDENCE

Use the passage

1. Which research method does the first plan use? Explain how the team's actions fit that method.

2. Suppose exhibit visitors score higher on the quiz in the second plan. Why would that not prove the exhibit caused their higher scores?

3. Which research method does the third plan use? What makes its evidence about cause stronger than the second plan's evidence?

4. The director cannot assign students to visit the museum but wants to check whether visits and quiz scores are linked. Which method should the director use, and why?

3 YOUR TURN

Your own words

A town installs plaques about the history of a former factory. In three or four sentences, plan a study to find out whether reading a plaque increases students' knowledge of that history. Name your method, describe what you would do and measure, and explain whether your results could support a causal claim.

What Can Studies Show?

PART 1 · READ AND MARK

Underline the sentence that begins "The team" in each paragraph to mark what the researchers do. Circle the possible third factor in paragraph 2 that could explain the quiz results. Accept any marking that follows this job and points at the right text.

PART 2 · ANSWERS

#	QUESTION	ANSWER
1	Which research method does the first plan use? Explain how the team's actions fit that method.	**Descriptive. The team records teen attendance and exhibit visits without changing anyone's experience or testing a cause.**
2	Suppose exhibit visitors score higher on the quiz in the second plan. Why would that not prove the exhibit caused their higher scores?	**The study shows a relationship, but students already interested in local history might be more likely both to visit and to know the answers.**
3	Which research method does the third plan use? What makes its evidence about cause stronger than the second plan's evidence?	**Experimental. Random assignment to a tour or reading session makes preexisting differences between the groups less likely to explain a score difference.**
4	The director cannot assign students to visit the museum but wants to check whether visits and quiz scores are linked. Which method should the director use, and why?	**Correlational, because the director can measure students' visits and scores to look for a relationship without assigning visits.**

PART 3 · YOUR TURN (SAMPLE ANSWER)

I would use an experiment with students who agree to participate. I would randomly assign half to read a factory-history plaque and half to read an unrelated text for the same amount of time. Then I would give both groups the same factory-history quiz and compare their scores. If the plaque group scores higher, the controlled comparison could support a claim that reading the plaque caused the difference in this study.

For Part 1, accept "more interest in local history before the exhibit opened" as the circled factor. For Part 3, accept a causal claim only when the plan changes plaque exposure, uses comparable groups, and measures knowledge in both groups.