The Odd Result

Weigh evidence from fair and unfair tests

FSL.3D.2 "Determine whether given information supports or contradicts a hypothesis or conclusion and provide support for the reasoning."

NAME _____ DATE _____

1 READ AND MARK

Read it twice

YOUR JOB Underline Maya's hypothesis, write S beside each controlled result that supports it and C beside each controlled result that contradicts it, and circle the detail that makes the visitor's test unfair.

Sugar in Two Cups

1. At the school café, Maya notices that sugar seems to vanish faster in hot tea than in iced tea. She proposes a testable hypothesis: with equal amounts of sugar and water and the same stirring, sugar dissolves faster in warm water than in cool water. Her lab partners use identical clear cups, add one teaspoon of sugar to each cup, and pour in 200 milliliters of water. One cup holds water at 50°C; the other holds water at 20°C. They stir each cup at the same steady rate and stop the timer when no grains are visible.

2. In the first paired test, the sugar disappears after 24 seconds in warm water and 57 seconds in cool water. They clean the cups and run another paired test with fresh water at the same temperatures. This time, warm water takes 27 seconds and cool water takes 54 seconds. In a third paired test, warm water takes 61 seconds and cool water takes 56 seconds. The partners match the sugar, water, cups, and stirring again. They note that the first two trials ended the same way, while the third did not. They keep every result in their record.

3. A visitor then tries a quick test with a warm cup and a cool cup. The warm cup takes longer, but the visitor stirs only the cool cup. That difference matters because stirring can change how quickly sugar dissolves. The visitor argues that this result settles the question. Maya writes a conclusion: "Warm water always dissolves sugar faster than cool water." Her partners wonder whether either claim fits every test. They also wonder whether an unusual result should be checked in another controlled trial before deciding how dependable the pattern is.

2 ANSWER WITH EVIDENCE

Use the passage

1. Do the first two paired tests support or contradict Maya's hypothesis? Use times from one test to explain.

2. Does the third paired test support or contradict the hypothesis? Explain using its times.

3. The visitor says the quick test settles the question. Does that test provide reliable evidence against Maya's hypothesis? Explain.

4. Is Maya's conclusion that warm water always dissolves sugar faster supported by all the controlled tests? Cite evidence.

3 YOUR TURN

Your own words

Invent a different testable hypothesis about a household material. Describe two fair trials with plausible results, one that supports your hypothesis and one that contradicts it, then explain whether the results justify a claim that it is always true.

ANSWER KEY

The Odd Result

PART 1 · READ AND MARK

Underline Maya's hypothesis, write S beside each controlled result that supports it and C beside each controlled result that contradicts it, and circle the detail that makes the visitor's test unfair. Accept any marking that follows this job and points at the right text.

PART 2 · ANSWERS

#	QUESTION	ANSWER
1	Do the first two paired tests support or contradict Maya's hypothesis? Use times from one test to explain.	**They support it. For example, in the first paired test, sugar dissolved in 24 seconds in warm water and 57 seconds in cool water.**
2	Does the third paired test support or contradict the hypothesis? Explain using its times.	**It contradicts the hypothesis: warm water took 61 seconds, longer than the cool water's 56 seconds, under matched conditions.**
3	The visitor says the quick test settles the question. Does that test provide reliable evidence against Maya's hypothesis? Explain.	**No. The visitor stirred only the cool cup, so stirring could explain why the warm cup took longer.**
4	Is Maya's conclusion that warm water always dissolves sugar faster supported by all the controlled tests? Cite evidence.	**No. The third controlled test contradicts "always": the warm cup took 61 seconds and the cool cup took 56 seconds.**

PART 3 · YOUR TURN (SAMPLE ANSWER)

My hypothesis is that identical ice cubes melt faster on a metal tray than on a wooden tray in the same room. In one trial, the cube on metal melted in 12 minutes, while the cube on wood took 19 minutes; this supports my hypothesis. In a second trial, metal took 21 minutes and wood took 18 minutes; this contradicts it. Both trials used equal-sized cubes in the same room, so these results do not justify saying the hypothesis is always true.

Accept accurate reasoning that distinguishes a controlled comparison from the visitor's test. For Part 3, accept plausible invented results if the student holds relevant conditions constant and correctly identifies which result supports and which contradicts the hypothesis.