

Evidence at the Parking Lot

Use evidence, explanations, and respectful responses to evaluate a local solution.

8.3.C “engage respectfully in scientific argumentation using applied scientific explanations and empirical evidence.”

NAME _____

DATE _____

1 READ AND MARK _____ Read it twice

YOUR JOB Underline each claim, circle each piece of empirical evidence, and write 1 beside each respectful response to another person's idea. These marks will help you see how scientific arguments use evidence and respond to questions.

Can Native Flowers Reduce Runoff?

- ① At a town meeting, students discussed whether the school should plant native flowers beside its parking lot. Maya claimed that the garden would reduce muddy runoff after rain. She explained that plant roots create spaces in soil, so more water can soak in rather than flow across pavement. Her claim was based on a class investigation: after pouring equal amounts of water onto trays, the tray with rooted native plants released less runoff than the tray with bare soil.
- ② Jon agreed that the investigation supported Maya's explanation, but he questioned how well trays represented the parking lot. “The result is useful,” he said, “yet real storms last longer and pavement changes where water goes.” He suggested measuring runoff from two similar outdoor plots during several storms. Maya responded, “That would test the claim under more realistic conditions.” She did not treat Jon's question as an attack. Both students focused on the method and evidence, not on each other.
- ③ Later, the class collected outdoor data. During four rainstorms, the planted plot had lower runoff in three storms, but the difference was small during a very heavy storm. Maya revised her claim: native flowers can reduce runoff in many storms, although they may not prevent runoff during the heaviest storms. Jon accepted this narrower claim because it matched the new evidence. The group recommended the garden as one part of a runoff plan, along with drains that carry extra water safely away.

2 ANSWER WITH EVIDENCE _____ Use the passage

1 What is Maya's original claim, and what scientific explanation does she use to support it?

2 Which result from the class investigation is empirical evidence for Maya's claim? Explain why this result is evidence.

3 How does Jon challenge Maya's idea respectfully? What additional investigation does he suggest?

4 How did the outdoor rainstorm data lead Maya to revise her claim?

3 YOUR TURN _____ Your own words

A student says that adding shade trees near the playground will make summer blacktop cooler. A class measured average afternoon blacktop temperatures on five similar days: 46°C in shade and 61°C in sun. Write four sentences: a claim, the evidence, a scientific explanation, and a respectful question or suggestion for improving the investigation.

PART 1 • READ AND MARK

Underline each claim, circle each piece of empirical evidence, and write 1 beside each respectful response to another person's idea. These marks will help you see how scientific arguments use evidence and respond to questions. Accept any marking that follows this job and points at the right text.

PART 2 • ANSWERS

#	QUESTION	ANSWER
1	What is Maya's original claim, and what scientific explanation does she use to support it?	Maya claims that native flowers will reduce muddy runoff. She explains that roots create spaces in soil, allowing more water to soak in instead of flowing across pavement.
2	Which result from the class investigation is empirical evidence for Maya's claim? Explain why this result is evidence.	The tray with rooted native plants released less runoff than the tray with bare soil after equal amounts of water were poured on them. This measured comparison supports the idea that rooted plants can reduce runoff.
3	How does Jon challenge Maya's idea respectfully? What additional investigation does he suggest?	Jon says the tray result is useful, then questions whether trays represent the parking lot because real storms last longer and pavement affects water flow. He suggests measuring runoff from two similar outdoor plots during several storms.
4	How did the outdoor rainstorm data lead Maya to revise her claim?	The planted plot had lower runoff in three of four storms, but the difference was small in a very heavy storm. Maya changed her claim to say that native flowers can reduce runoff in many storms but may not prevent it in the heaviest storms.

PART 3 • YOUR TURN (SAMPLE ANSWER)

Shade trees near the playground can lower summer blacktop temperatures. On five similar days, blacktop in shade averaged 46°C, while blacktop in sun averaged 61°C. Shade blocks some solar radiation, so the surface absorbs less energy and warms less. I agree that the data support planting trees, but we should also measure temperatures at more times of day.

Accept accurate paraphrases that distinguish a claim, empirical evidence, and a scientific explanation. For Part 3, accept any four-sentence argument that uses both temperatures correctly, explains how shade affects heating, and includes a respectful question or method suggestion.