Where Rain Goes

Use runoff data to test claims and weigh conclusions.

FSL.3D.3 "Analyze and interpret data from informational texts and data to (1) reveal patterns and construct meaning (2) support or refute hypotheses, explanations, claims, designs, or (3) evaluate the strength of conclusions."

NAME _____ DATE _____

1 READ AND MARK

Read it twice

YOUR JOB Underline the class's claim, circle a limit of its experiment, and number the three trials in the table. Use your marks to decide what the data do and do not support.

A Schoolyard Runoff Test

1 After a heavy rain, water running off a schoolyard can carry soil into a drain. A science class asked whether planted soil would reduce runoff compared with bare soil. They set identical trays at the same slope, filled them with the same type and depth of soil, and grew grass in half the trays.

2 For each trial, the class poured 500 milliliters of water onto each tray at the same rate and collected the water that flowed off. The table reports runoff, not water stored in soil or leaves. A smaller runoff volume means less water reached the collection cup during the test, but it does not show where the remaining water went.

WATER COLLECTED AFTER EACH TEST

Trial	Bare soil runoff (mL)	Grass-covered soil runoff (mL)
1	360	210
2	340	190
3	380	240

3 The class proposed that grass might help slow runoff by holding water near the soil surface. Their results can test whether runoff differed in these trays, not whether grass alone prevents flooding. All three trials used one tray size and one pouring rate. Runoff during a longer or more intense storm could follow a different pattern.

2 ANSWER WITH EVIDENCE

Use the passage

1. What pattern appears in all three trials? Use the runoff amounts to describe the size of the difference.

2. A student claims that grass cut runoff by at least half in every trial. Does the table support or refute that claim? Give one numerical example.

3. Do these results prove that grass roots absorbed the missing water? Explain using what the class measured.

4. How strong is the conclusion that planting grass would prevent flooding across a neighborhood? Use one detail about the experiment.

3 YOUR TURN

Your own words

Design a follow-up test that changes one condition, such as slope or pouring rate. In three or four sentences, state what you would keep the same, predict a pattern, and describe a result that would challenge your prediction.

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PART 1 · READ AND MARK

Underline the class's claim, circle a limit of its experiment, and number the three trials in the table. Use your marks to decide what the data do and do not support. Accept any marking that follows this job and points at the right text.

PART 2 · ANSWERS

#	QUESTION	ANSWER
1	What pattern appears in all three trials? Use the runoff amounts to describe the size of the difference.	**Grass-covered soil produced less runoff in every trial, by 150 mL, 150 mL, and 140 mL.**
2	A student claims that grass cut runoff by at least half in every trial. Does the table support or refute that claim? Give one numerical example.	**It refutes the claim. In trial 1, half of 360 mL is 180 mL, but the grass-covered tray produced 210 mL of runoff.**
3	Do these results prove that grass roots absorbed the missing water? Explain using what the class measured.	**No. The class measured only water that flowed off the trays, not water absorbed by roots or stored elsewhere.**
4	How strong is the conclusion that planting grass would prevent flooding across a neighborhood? Use one detail about the experiment.	**The conclusion is weak because the class tested small trays at only one pouring rate, not runoff across a neighborhood during varied storms.**

PART 3 · YOUR TURN (SAMPLE ANSWER)

I would make both types of tray steeper while keeping the soil depth, tray size, and amount and rate of water the same. I would test bare and grass-covered soil at the new slope. I predict the grass-covered trays would still produce less runoff. My prediction would be challenged if the grass-covered trays produced as much runoff as, or more runoff than, the bare trays.

Accept equivalent calculations or comparisons supported by the table. For the follow-up, look for one changed condition, controlled conditions, a testable prediction, and a result that could challenge it.