Where Rain Goes

Use evidence to judge a plan for protecting a stream.

5.14 "Obtain and evaluate information to communicate how science-based solutions are being used to protect Earth's natural resources and its environment."

NAME _____ DATE _____

1 READ AND MARK

Read it twice

YOUR JOB Underline the science-based solution, circle both runoff measurements, and mark the test's limit with a 1 and the proposed next step with a 2 so you can judge the evidence.

A Garden Beside the Parking Lot

1. After a hard rain, water races across a school parking lot. It can carry bits of soil and oil into a storm drain. Many storm drains lead to streams without cleaning the water first. To help, the school plants a rain garden beside the lot. This shallow, planted area catches runoff. Its soil absorbs water, and plant roots help hold the soil in place.

2. The science club tests a small model before recommending a garden. They pour one liter of water onto each of two equal-size surfaces: a patch of pavement and a patch of planted soil. They catch the water that runs off each surface. The pavement sends 900 milliliters into a cup. The planted soil sends 400 milliliters. The difference suggests that planted soil can reduce runoff.

3. The club shares its findings with the principal but also names a limit. A small test does not show how a full-size garden will work during every storm. Rainfall, soil, and plant growth can change the results. The club suggests measuring water near the storm drain before and after the garden is built. Clear evidence would help the school decide whether the garden protects the stream.

2 ANSWER WITH EVIDENCE

Use the passage

1. What natural resource is the rain garden meant to protect? Explain how the garden might help.

2. Which results support the idea that planted soil reduces runoff? Use both measurements in your answer.

3. Does the club's test show that the garden removes oil from runoff? Explain your answer.

4. What should the club measure after the garden is built to find out whether it reduces runoff? Why is the small test not enough?

3 YOUR TURN

Your own words

Choose a different place at school where rain could carry soil toward a drain. In three or four sentences, propose a solution, explain how it would work, name one measurement that could test it, and state one limit of that test.

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PART 1 · READ AND MARK

Underline the science-based solution, circle both runoff measurements, and mark the test's limit with a 1 and the proposed next step with a 2 so you can judge the evidence. Accept any marking that follows this job and points at the right text.

PART 2 · ANSWERS

#	QUESTION	ANSWER
1	What natural resource is the rain garden meant to protect? Explain how the garden might help.	**It is meant to protect the stream. The garden's soil can absorb some runoff before it reaches the storm drain.**
2	Which results support the idea that planted soil reduces runoff? Use both measurements in your answer.	**After each surface received one liter of water, 900 milliliters ran off the pavement, but only 400 milliliters ran off the planted soil.**
3	Does the club's test show that the garden removes oil from runoff? Explain your answer.	**No. The club measured the amount of runoff, not the amount of oil in the water.**
4	What should the club measure after the garden is built to find out whether it reduces runoff? Why is the small test not enough?	**The club should compare water reaching the storm drain before and after the garden is built during similar storms. A small test cannot show how a full-size garden will work in every storm.**

PART 3 · YOUR TURN (SAMPLE ANSWER)

Rain washes loose soil from the playground hill toward a drain. Planting native grasses there could hold the soil with their roots. I would measure how much soil settles from equal-size runoff samples collected before and after planting during similar storms. Heavier rain could still affect the results.

Accept other solutions supported by a plausible explanation, a relevant measurement, and a test limit. For Question 3, students must distinguish measuring runoff volume from testing water for oil.