Creek Litter Check

Design a way to track and reduce plastic runoff

MS-ESS3-3 "Apply scientific principles to design a method for monitoring, evaluating, and managing a human impact on the environment."

NAME _____ DATE _____

1 READ AND MARK

Read it twice

YOUR JOB Underline how the team monitors plastic, circle its two actions to reduce litter, and box the evidence that would show whether those actions worked.

What Reaches the Creek?

1. On rainy days, wrappers and bottle caps from the school parking lot wash toward a storm drain. The drain empties into a nearby creek, not a water treatment plant. In the creek, plastic can trap small animals or break into tiny pieces that are hard to remove. A student team wants to reduce this litter, but a cleaner-looking parking lot would not prove that less plastic reaches the creek. They need evidence from the water as well as a way to stop litter before it enters the drain.

2. From a safe path, the team counts visible plastic in two equal-length creek sections, one above the drain and one below it. They count the day after each rain, using the same sections and the same counting rules. They also record rainfall, since a larger storm may carry more litter. Counts above the drain help reveal plastic arriving from other places. If downstream counts are higher than upstream counts after several similar storms, runoff from near the drain may be adding plastic.

3. To manage the litter, the school puts covered trash bins near the parking lot and organizes a litter pickup before forecast rain. The team keeps counting after storms with similar rainfall and compares the difference between downstream and upstream counts before and after the changes. A smaller difference suggests less plastic is entering near the drain. If counts do not drop, the team can check whether bins overflow or whether litter collects in a different part of the lot. They can then adjust their plan using the new evidence.

2 ANSWER WITH EVIDENCE

Use the passage

1. Why does the team count plastic above and below the drain instead of only below it?

2. A storm after the new bins are added brings much more rain than earlier storms. How should the team use that storm's count when judging whether the bins helped?

3. The team finds that litter gathers far from the new bins. How could it adjust its plan, and how would it test the change?

4. After the bins and pickups begin, upstream counts stay about the same, but downstream counts fall after similar storms. What does this suggest?

3 YOUR TURN

Your own words

A school garden uses a hose every day, even when the soil is damp. In 4 to 5 sentences, design a way to monitor water use, reduce waste without harming plants, and decide whether your change works. Name one factor you would keep the same when comparing results.

ANSWER KEY

Creek Litter Check

GRADES 6-8 · MS-ESS3-3

PART 1 · READ AND MARK

Underline how the team monitors plastic, circle its two actions to reduce litter, and box the evidence that would show whether those actions worked. Accept any marking that follows this job and points at the right text.

PART 2 · ANSWERS

#	QUESTION	ANSWER
1	Why does the team count plastic above and below the drain instead of only below it?	**The upstream count helps show how much plastic arrived from other places. Comparing it with the downstream count helps the team judge whether plastic may be entering near the drain.**
2	A storm after the new bins are added brings much more rain than earlier storms. How should the team use that storm's count when judging whether the bins helped?	**The team should record the count and rainfall but avoid using that storm alone to judge the bins. It should compare counts from storms with similar rainfall.**
3	The team finds that litter gathers far from the new bins. How could it adjust its plan, and how would it test the change?	**The team could focus a litter pickup on that part of the lot before rain. It could then compare upstream and downstream counts after storms with similar rainfall.**
4	After the bins and pickups begin, upstream counts stay about the same, but downstream counts fall after similar storms. What does this suggest?	**The plan may be reducing plastic entering near the drain because the difference between downstream and upstream counts has become smaller.**

PART 3 · YOUR TURN (SAMPLE ANSWER)

I would record daily water use with a hose meter and check soil moisture at the same depth each morning. I would water only when the soil is dry at that depth, using a drip hose near plant roots. I would compare water use over two weeks with similar rainfall, before and after the change. I would also check that the same plants stay healthy, so using less water does not simply mean they lack water.

Accept other safe, measurable ways to track plastic and water use. For the garden task, look for a management change, a fair before-and-after comparison, and a check on plant health.