Hold Back the Water

Read how a team tests and improves a flood plan.

E.5.10.2 "Design a process for better preparing communities to withstand human-caused or natural disasters (e.g., removing oil from water or soil, systems that reduce the impact of floods, structures that resist hurricane forces)..."

NAME _____ DATE _____

1 READ AND MARK

Read it twice

YOUR JOB Underline the flood problem and two limits the solution must meet. Circle the first test result, then number the first design and its improvement 1 and 2.

A Barrier for the Library

1. Maya's town library sits beside a stream. After a heavy rain, water can flow across the sidewalk and under the library door. Wet books and damaged computers could keep the building closed. The town needs a plan that keeps water out without blocking the sidewalk on dry days or pushing floodwater toward nearby homes. Maya's team decides to test a removable door barrier.

2. First, the team builds a cardboard model of the library entrance on a tray with model homes nearby. They tape a low strip of plastic across the model doorway and pour one cup of water at the same spot each time. They collect and measure the water that gets inside. The first test lets four spoonfuls through because water slips under the strip. The team checks where the water goes outside the doorway.

3. The team adds a soft foam seal under the plastic strip and repeats the test with one cup of water. This time, only one spoonful gets inside, and the water stays on the tray instead of flowing toward the model homes. The team recommends a removable barrier with a seal, plus a rule to check its fit before storm season. Workers would test the full-size barrier before using it.

2 ANSWER WITH EVIDENCE

Use the passage

1. What problem must Maya's team solve? Name one limit their design must meet.

2. How does the team make its two model tests a fair comparison? What do they measure?

3. What did the first test show was wrong with the design? How did the team change it?

4. What evidence shows the changed design worked better? What must still be tested before the town uses it?

3 YOUR TURN

Your own words

A small cooking-oil spill reaches a park pond, and the town wants to keep the oil from spreading. Write a plan that states the problem, describes a model you would build and test, tells what you would measure, and explains how you would improve your design if its first test fails.

ANSWER KEY

Hold Back the Water

GRADE 5 · E.5.10.2

PART 1 · READ AND MARK

Underline the flood problem and two limits the solution must meet. Circle the first test result, then number the first design and its improvement 1 and 2. Accept any marking that follows this job and points at the right text.

PART 2 · ANSWERS

#	QUESTION	ANSWER
1	What problem must Maya's team solve? Name one limit their design must meet.	**The team must keep floodwater out of the library. The barrier must not block the sidewalk on dry days or push water toward nearby homes.**
2	How does the team make its two model tests a fair comparison? What do they measure?	**They pour one cup of water at the same spot each time and measure how many spoonfuls enter the model library.**
3	What did the first test show was wrong with the design? How did the team change it?	**Four spoonfuls slipped under the plastic strip. The team added a soft foam seal underneath it.**
4	What evidence shows the changed design worked better? What must still be tested before the town uses it?	**Only one spoonful entered the model library, and water did not flow toward the model homes. Workers must test the full-size barrier.**

PART 3 · YOUR TURN (SAMPLE ANSWER)

The problem is that oil could spread across the pond and harm living things. I would float a ring of absorbent cotton around a drop of cooking oil in a shallow pan of water. I would measure how far the oil spreads after one minute and compare it with a pan without the ring. If oil escapes the ring, I would make the ring thicker and test again using the same amount of oil.

Accept other workable model materials and measurements. The plan should connect a possible test failure to a specific change that can be tested again.