Hold Back the Flood

Trace how a model test led to a safer design.

4.15 "Design, test, and evaluate a solution that will protect humans from the effects of natural Earth processes."

NAME _____ DATE _____

1 READ AND MARK

Read it twice

YOUR JOB Underline the danger to people, circle each barrier design, and number the two test results in the order they happened.

A Wall for the Creek

1. After heavy rain, a creek can rise and spill over its banks. Floodwater can enter homes and trap people. A fourth-grade class wanted to protect homes near the creek. They built a model on a sloped tray, with a clay creek bed down the middle and small paper houses beside it. A cup of water poured into the top of the creek bed stood for floodwater.

2. First, the class stacked small cloth bags of sand between the creek bed and the houses. They poured one full cup of water into the top of the bed. Water slipped through gaps between the bags, and three paper houses got wet. The bags slowed the water, but the class needed a way to block the gaps. They let the tray dry and replaced the wet houses.

3. Next, they placed a piece of plastic behind the sandbags to cover the gaps. They kept the same tray, houses, and amount of water. This time, one paper house got wet when water went around the end of the wall. The change helped, but it did not stop all flooding. The class decided to make the wall longer and test it again.

2 ANSWER WITH EVIDENCE

Use the passage

1. What danger was the class trying to protect people from?

2. What did the first test show about the sandbag wall, and why did it happen?

3. What evidence suggests that adding plastic helped?

4. What change did the class decide to test next? Which result led to that choice?

3 YOUR TURN

Your own words

Imagine rocks falling from a hillside toward a walking path. Describe a barrier you would build, how you would test it twice with a model, what evidence you would record, and how that evidence would help you improve the barrier.

ANSWER KEY

Hold Back the Flood

GRADE 4 · 4.15

PART 1 · READ AND MARK

Underline the danger to people, circle each barrier design, and number the two test results in the order they happened. Accept any marking that follows this job and points at the right text.

PART 2 · ANSWERS

#	QUESTION	ANSWER
1	What danger was the class trying to protect people from?	**Floodwater could enter homes and trap people.**
2	What did the first test show about the sandbag wall, and why did it happen?	**Three paper houses got wet because water slipped through gaps between the sandbags.**
3	What evidence suggests that adding plastic helped?	**Three houses got wet in the first test, but only one got wet after the class added plastic.**
4	What change did the class decide to test next? Which result led to that choice?	**They decided to make the wall longer because water went around its end and wet one house.**

PART 3 · YOUR TURN (SAMPLE ANSWER)

I would build a short fence between a hill and a walking path. In a tray model, I would roll five pebbles down a clay slope from marked spots and count how many reach a paper path. Next, I would make the fence taller and roll the same pebbles from the same spots. If fewer pebbles reach the path, the taller fence works better. If any reach it, I would add a second fence and test again.

Accept other barriers that could block falling rocks. The response should describe two model tests, identify evidence to compare, and explain how the evidence would guide a change.