Riverbank Clues

Use storm data to explain and predict changes to a riverbank.

E.4.9C.1 "Analyze and interpret data to describe (i.e., NASA, NOAA, USGS) and predict how natural processes (e.g., weathering, erosion, deposition, earthquakes, tsunamis, hurricanes, or storms) affect Earth's surface."

NAME _____ DATE _____

1 READ AND MARK

Read it twice

YOUR JOB In the table, number the spots 1 to 3 from greatest to least change in bank distance. Underline the sentence in the passage that tells you what a shorter distance means.

What Changed After the Storm?

1. After a hard rain, a river can change shape. Fast water may carry soil away from a bank. Slower water may drop sand and mud. Scientists at the USGS study how rivers change. Imagine a class measuring a river before and after one storm to find out where its banks moved.

2. The class puts a stake on land at each of three spots. Each stake stays in place. Students measure from each stake to the riverbank before the storm. After the water returns to its usual level, they measure again. The table shows these made-up measurements in centimeters. A shorter distance means the bank moved toward the stake.

DISTANCE FROM STAKE TO RIVERBANK

Spot	Before storm (cm)	After storm (cm)
Inner bend	80	95
Straight stretch	75	73
Outer bend	90	65

3. When moving water removes soil, the bank can shift toward a stake on land. When water drops sediment, the bank can grow toward the river. One storm cannot prove exactly what will happen next. Still, comparing measurements at different spots helps scientists make a careful prediction about another storm.

2 ANSWER WITH EVIDENCE

Use the passage

1. Compare the distances at the outer bend. What happened to the bank there, and what process likely caused it?

2. At which spot did the bank move farther from its stake? Use both numbers to explain what likely happened there.

3. Which spot changed the least? Give the change in centimeters and tell how its bank moved.

4. If another similar storm comes, where do you predict the most bank loss? Give a number from the table as evidence.

3 YOUR TURN

Your own words

A fourth spot measured 60 cm before the storm and 60 cm after it. Write three sentences: compare its change with one spot in the table, describe what its measurements show, and predict what might happen there in another similar storm.

ANSWER KEY

Riverbank Clues

GRADE 4 · E.4.9C.1

PART 1 · READ AND MARK

In the table, number the spots 1 to 3 from greatest to least change in bank distance. Underline the sentence in the passage that tells you what a shorter distance means. Accept any marking that follows this job and points at the right text.

PART 2 · ANSWERS

#	QUESTION	ANSWER
1	Compare the distances at the outer bend. What happened to the bank there, and what process likely caused it?	**The distance shrank from 90 cm to 65 cm. The bank moved toward the stake, likely because of erosion.**
2	At which spot did the bank move farther from its stake? Use both numbers to explain what likely happened there.	**At the inner bend, the distance grew from 80 cm to 95 cm. Sediment was likely deposited there.**
3	Which spot changed the least? Give the change in centimeters and tell how its bank moved.	**The straight stretch changed by 2 cm, from 75 cm to 73 cm. Its bank moved toward the stake.**
4	If another similar storm comes, where do you predict the most bank loss? Give a number from the table as evidence.	**The outer bend is the best prediction because its bank moved 25 cm toward the stake after this storm.**

PART 3 · YOUR TURN (SAMPLE ANSWER)

The fourth spot did not change, while the straight stretch moved 2 cm toward its stake. Its measurements show that the riverbank stayed in the same place during this storm. If another similar storm comes, the bank might stay in place again, but that is not certain.

For the marking job, accept outer bend as 1, inner bend as 2, and straight stretch as 3. Accept predictions supported by the data and stated as possibilities, not certainties.