

Clues in the Cliffs

Use rock-layer patterns to explain landscape change.

4-ESS1-1 "Identify evidence from patterns in rock formations and fossils in rock layers to support an explanation for changes in a landscape over time..."

NAME _____

DATE _____

1 READ AND MARK _____ Read it twice

YOUR JOB Underline each clue that describes a rock layer, fossil, or river. Number the underlined clues in the order they tell the landscape story, beginning with 1.

Bluebay Cliffs

- ① At Bluebay Cliffs, a class studied a tall wall of rock beside the ocean. Near the bottom, students found dark layers with fern leaf fossils and fossilized wood. Higher up, they found pale layers with clam and snail shell fossils. The patterns were not mixed together. Plant fossils appeared in lower layers, while shell fossils appeared in higher layers.
- ② These fossils are evidence of a landscape change over relative time. The lower plant layers came earlier than the higher shell layers. The area was likely land when plants were buried in the lower layers. Later, water covered the area. Animals with shells lived there, and their fossils are in the higher layers of rock.
- ③ Not far away, a river flows through a deep canyon. The canyon walls show many flat rock layers, one above another. The river runs at the bottom of the canyon. This pattern is evidence that the layers were already there before the river made the canyon deeper. Over time, moving water carried away rock and cut downward, leaving the different layers visible in the canyon walls.

2 ANSWER WITH EVIDENCE Use the passage

1 What fossil pattern did the students find at Bluebay Cliffs?

2 What landscape change do the fossil layers support?

3 Which layers came earlier, the plant-fossil layers or the shell-fossil layers? What is the evidence?

4 What evidence supports the idea that the river cut the canyon after the rock layers were already there?

3 YOUR TURN Your own words

Imagine a road cut shows shell fossils in lower layers and leaf fossils in higher layers. Write two sentences that use this pattern as evidence to explain how the landscape changed. Include which environment came first.

PART 1 • READ AND MARK

Underline each clue that describes a rock layer, fossil, or river. Number the underlined clues in the order they tell the landscape story, beginning with 1. Accept any marking that follows this job and points at the right text.

PART 2 • ANSWERS

#	QUESTION	ANSWER
1	What fossil pattern did the students find at Bluebay Cliffs?	Lower layers had plant fossils and fossilized wood, while higher layers had clam and snail shell fossils.
2	What landscape change do the fossil layers support?	The area changed from land to water over time.
3	Which layers came earlier, the plant-fossil layers or the shell-fossil layers? What is the evidence?	The plant-fossil layers came earlier because they are lower than the shell-fossil layers.
4	What evidence supports the idea that the river cut the canyon after the rock layers were already there?	The canyon walls show rock layers, and the river runs at the bottom of the canyon.

PART 3 • YOUR TURN (SAMPLE ANSWER)

The lower shell fossils show that water covered the area earlier. The higher leaf fossils show that later the area was land where plants grew.

Accept explanations that use the positions of layers and the kinds of fossils as evidence for relative change over time. For the open task, students should explain that water came first and land came later.