Rock Story Detectives

Use evidence to ask how Earth materials change and move.

S6E5.d "Ask questions to identify types of weathering, agents of erosion and transportation, and environments of deposition."

NAME _____ DATE _____

1 READ AND MARK

Read it twice

YOUR JOB Underline clues about weathering, circle agents that move sediment, and number each place where sediment is deposited so you can use evidence to ask identification questions.

Following Sediment from Ridge to Coast

1. At Pine Ridge, a student team examined a granite outcrop beside a trail. Cracks held water that froze overnight and widened as the ice expanded. Tree roots also pushed into cracks. These are physical weathering, which breaks rock into smaller pieces without changing its minerals. Nearby, rainwater carrying dissolved carbon dioxide slowly reacted with calcite in limestone. This chemical weathering changed and dissolved part of the rock. The team noted that both processes made loose material available for movement.

2. Farther downslope, the team found a muddy stream carrying sand, silt, and small pebbles. Flowing water had eroded soil from the bank and transported the particles downstream. The water lost speed where the channel spread across a flat floodplain. First, heavier pebbles settled. Then sand and silt settled from slower water. This deposition built a layer of sediment on the floodplain. The different particle sizes showed that moving water sorts material as its energy changes.

3. At the coast, a river entered a quiet bay. Its current slowed, so fine silt and clay settled near the river mouth, forming a delta. Along a nearby beach, waves moved sand back and forth and left much of it on shore. Wind lifted dry sand from the upper beach and transported it inland. Where plants blocked the wind, the sand was deposited in dunes. Depositional environments, such as deltas, beaches, and dunes, are places where sediments collect.

2 ANSWER WITH EVIDENCE

Use the passage

1. Write a question that would help you identify the type of weathering caused by freezing water at Pine Ridge. Then answer your question from the passage.

2. Write a question that identifies the agent that eroded the stream bank and transported sediment. Then answer it.

3. Write a question that identifies the depositional environment formed where the river entered the quiet bay. Then answer it.

4. Write a question that identifies the agent that transported sand inland and the place where it was deposited. Then answer it.

3 YOUR TURN

Your own words

Invent a two-sentence land-change scene that includes weathering, sediment movement, and deposition. Then write three questions a scientist could ask, one about the weathering type, one about the transportation agent, and one about the depositional environment.

ANSWER KEY

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GRADE 6 · S6E5.d

PART 1 · READ AND MARK

Underline clues about weathering, circle agents that move sediment, and number each place where sediment is deposited so you can use evidence to ask identification questions. Accept any marking that follows this job and points at the right text.

PART 2 · ANSWERS

#	QUESTION	ANSWER
1	Write a question that would help you identify the type of weathering caused by freezing water at Pine Ridge. Then answer your question from the passage.	**Sample: Did freezing water break the granite without changing its minerals? Yes. It caused physical weathering.**
2	Write a question that identifies the agent that eroded the stream bank and transported sediment. Then answer it.	**Sample: What agent eroded the bank and carried the particles downstream? Flowing water.**
3	Write a question that identifies the depositional environment formed where the river entered the quiet bay. Then answer it.	**Sample: What depositional environment formed near the river mouth in the quiet bay? A delta.**
4	Write a question that identifies the agent that transported sand inland and the place where it was deposited. Then answer it.	**Sample: What moved sand inland from the beach, and where did it collect? Wind moved it, and it collected in dunes where plants blocked the wind.**

PART 3 · YOUR TURN (SAMPLE ANSWER)

Rainwater seeped into a sandstone cliff and froze at night, widening cracks. Later, a creek eroded loose grains from the slope and carried them to a still lake, where they settled in a delta. Did freezing water cause physical weathering of the sandstone? Did creek water erode and transport the loose grains? Is the delta a depositional environment?

Accept differently worded questions when the answers correctly identify physical or chemical weathering, a transportation agent such as water or wind, and a depositional environment stated in the passage. For Your Turn, accept any accurate two-sentence scene and three matching identification questions.