

Rock to River

Track how Earth materials change, move, and collect.

SC.6.E.6.1 "Describe and give examples of ways in which Earth's surface is built up and torn down by physical and chemical weathering, erosion, and deposition."

NAME _____

DATE _____

1 READ AND MARK _____ Read it twice

YOUR JOB Underline words that describe physical or chemical weathering, circle words that describe erosion, and draw a box around words that describe deposition. Your marks should show how rock is torn down, moved, and built up.

A Changing Stream Valley

- ① On a steep granite slope, daytime heat warms the rock and cool nights make it contract. Water seeps into cracks. When the water freezes, it expands and pushes the cracks wider. Plant roots can also press into cracks as they grow. These forces break one large rock into smaller, sharp pieces without changing what the rock is made of. This physical weathering tears down the slope. Loose pieces collect at the cliff base, ready to be moved by gravity, rain, or a stream.
- ② Rainwater absorbs carbon dioxide from air and soil, forming a weak acid. As it flows over limestone, the acid reacts with minerals and carries dissolved material away in the water. The limestone slowly develops holes and wider cracks. This is chemical weathering because the rock's minerals change into substances that can dissolve or wash away. Rust is another example. Oxygen and water react with iron in some rocks, making rusty minerals that are weaker and easier to break apart.
- ③ After a hard rain, runoff and a nearby stream pick up rock fragments, sand, and dissolved material. This erosion moves weathered sediment from one place to another. Fast water can carry larger pieces, but water slows where the stream enters a quiet pond. There, some sediment settles to the bottom. This deposition builds up a layer of sand and mud. Over many storms, weathering supplies material, erosion transports it, and deposition creates new surface features such as bars, floodplain layers, or a small delta.

2 ANSWER WITH EVIDENCE _____ Use the passage

1 How does freezing water cause physical weathering on the granite slope? Why is this change physical weathering?

2 Describe one way rainwater chemically weathers limestone.

3 What is the difference between erosion and deposition in the stream valley?

4 Why does sediment settle where the stream enters the quiet pond, and what does this build?

3 YOUR TURN _____ Your own words

Create a three-panel sketch of a different outdoor setting, such as a beach, hillside, or roadside. In Panel 1, show and label both physical and chemical weathering. In Panel 2, show and label erosion. In Panel 3, show and label deposition. Then write two sentences explaining how material is torn down, moved, and built up.

		
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PART 1 • READ AND MARK

Underline words that describe physical or chemical weathering, circle words that describe erosion, and draw a box around words that describe deposition. Your marks should show how rock is torn down, moved, and built up. Accept any marking that follows this job and points at the right text.

PART 2 • ANSWERS

#	QUESTION	ANSWER
1	How does freezing water cause physical weathering on the granite slope? Why is this change physical weathering?	Water freezes in cracks, expands, and pushes the cracks wider until rock breaks into smaller pieces. It is physical weathering because the rock breaks without changing what it is made of.
2	Describe one way rainwater chemically weathers limestone.	Rainwater forms a weak acid that reacts with limestone minerals. The minerals change into material that can dissolve or wash away, leaving holes and wider cracks.
3	What is the difference between erosion and deposition in the stream valley?	Erosion moves weathered sediment from one place to another. Deposition happens when sediment settles and builds up, such as sand and mud at the bottom of the pond.
4	Why does sediment settle where the stream enters the quiet pond, and what does this build?	The water slows as it enters the quiet pond, so it cannot carry as much sediment. The sediment settles and builds a layer of sand and mud.

PART 3 • YOUR TURN (SAMPLE ANSWER)

Panel 1: Frost-widened crack in granite, acid-rain pit in limestone. Labels: physical weathering, chemical weathering. Panel 2: Rain runoff carries broken rock and sand down a hillside. Label: erosion. Panel 3: Water slows at the base of the hill, and sand settles in a fan-shaped pile. Label: deposition. Freezing water and acidic rain tear down the rocks by breaking them or changing their minerals. Runoff moves the weathered pieces downhill, where slower water deposits them in a new pile.

Accept equivalent descriptions that correctly distinguish physical weathering as breaking without a composition change and chemical weathering as a mineral change. For the sketch, accept any realistic setting that includes both types of weathering, movement by erosion, and settling or buildup by deposition.