

Wind and Water Erosion

Grade 4 • SCIENCE • Explaining how wind and moving water weather, erode, transport, and reshape Earth's surface. • Standards: 4-ESS2-1

Read each scenario carefully. Then write your answer to explain what happens to Earth's surface in each situation.

1. A strong wind blows across a sandy beach. What happens to the sand?
2. Rain falls on a dirt hill and water flows down the side. What happens to some of the dirt?
3. A river flows over rocks for many years. The rocks that were once sharp and jagged are now smooth and round. What caused this change?
4. After a rainstorm, a stream carries mud and small pebbles downstream. When the stream slows down in a flat area, what happens to the mud and pebbles?
5. Strong winds blow across a dry farm field every day for a month. The farmer notices that soil from one end of the field is now piled up near the fence at the other end. Explain what process moved the soil.
6. A waterfall crashes onto rocks at the bottom every day for hundreds of years. What will happen to the rocks at the bottom and why?
7. A canyon has a river running through it. Scientists notice that the canyon is slightly wider and deeper than it was 100 years ago. What caused the canyon to change?
8. Desert winds blow sand against a tall rock formation every day. After many years, the bottom of the rock has worn away more than the top, making it look like a mushroom. Explain how this shape formed.
9. A river flows quickly through mountains, carrying sand, pebbles, and small rocks. When the river reaches flat land and slows down, it drops the pebbles and rocks first, then the sand further downstream. Why does the river drop different materials in different places?

10. A coastal cliff is made of soft rock. Ocean waves crash against the bottom of the cliff every day. Over 50 years, the cliff has moved backward and large chunks have fallen into the ocean. Describe the complete process that caused the cliff to move backward.

Answer Key — Wind and Water Erosion

For the teacher / parent. Do not distribute with the worksheet.

1. The wind picks up and carries the sand to a new location. *(Wind erosion moves loose sand particles from one place to another.)*
2. The moving water carries some of the dirt down the hill. *(Moving water erodes and transports soil downhill.)*
3. The moving water wore down the rocks over time. *(Water erosion gradually weathers and smooths rock surfaces.)*
4. The mud and pebbles settle and are deposited in the flat area. *(When moving water slows down, it deposits the sediment it was carrying.)*
5. Wind erosion picked up the soil and transported it across the field where it was deposited at the fence. *(Wind erodes, transports, and deposits soil in new locations.)*
6. The rocks will break apart and wear away because the force of the falling water weathers them over time. *(Moving water continuously hitting rocks causes weathering and erosion.)*
7. The moving river water eroded the sides and bottom of the canyon, carrying away rock and soil. *(Rivers continuously erode their channels, making them wider and deeper over time.)*
8. Wind-blown sand eroded the bottom of the rock more than the top because the sand travels close to the ground, weathering the lower part faster. *(Wind erosion with sand particles acts like sandpaper, wearing away rock surfaces, especially near ground level where sand concentration is highest.)*
9. Heavier materials like pebbles and rocks settle first when the water slows down, while lighter sand stays in the water longer and is deposited further downstream. *(Moving water deposits sediment based on size and weight; heavier particles settle first as water velocity decreases.)*
10. The waves weathered and eroded the soft rock at the bottom of the cliff, making it unstable. This caused the upper part to collapse and fall. The waves then transported the broken rock pieces away, and the process repeated, moving the cliff backward. *(Wave erosion undercuts the cliff base through weathering and erosion, causing collapse, then transports debris away, allowing the cycle to continue and the cliff to retreat.)*