Clues Across Oceans

Use fossils, rocks, and seafloor ages to trace past plate movement.

6.6.c "Provide evidence of past plate movements, using data regarding the distribution of fossils, rocks, continental shapes, and seafloor structures."

NAME _____ DATE _____

1 READ AND MARK

Read it twice

YOUR JOB Underline a fossil clue and a rock clue, circle the seafloor age pattern, and number those three clues in the order you find them.

The Ocean Between Them

1. Imagine finding the same ancient animal on opposite sides of the Atlantic Ocean. Fossils of Mesosaurus, a small freshwater reptile, occur in eastern South America and southwestern Africa. It lived about 280 million years ago, long before the Atlantic Ocean opened. A freshwater animal could not have crossed a wide saltwater ocean. Scientists infer that the two land areas were once connected. Fossils of Glossopteris, an ancient seed plant, also occur on continents now far apart. Fossils are clues to where living things could travel when Earth's land had a different arrangement.

2. The edges of South America and Africa offer another clue: their continental shelves, the shallow underwater borders of the continents, fit together better than their present-day shorelines do. But a close fit alone might be a coincidence. Scientists also compare rocks. In places where the continents would meet, rock layers of similar ages and types line up across the ocean. This match is like finding two torn pages with the same colored stripes. Together, the shapes and rocks support the idea that the continents were once joined and later moved apart.

3. The Atlantic seafloor records how that separation happened. Along the Mid-Atlantic Ridge, hot material rises and cools into new ocean rock. As more rock forms, older seafloor moves away from the ridge on both sides. Rocks near the ridge are youngest; rocks farther toward the continents are generally older. This age pattern shows that the ocean floor has spread outward over millions of years. It explains how South America and Africa could move apart after being connected. No single clue tells the whole story, but fossils, rocks, shapes, and seafloor ages agree.

2 ANSWER WITH EVIDENCE

Use the passage

1. How does the location of Mesosaurus fossils support the idea that South America and Africa were once connected?

2. Why do scientists compare continental shelves, rather than only shorelines, when testing whether the continents once fit together?

3. How do the rock layers add evidence beyond the fit of the continental shelves?

4. What seafloor age pattern supports the idea that South America and Africa moved apart? Explain how.

3 YOUR TURN

Your own words

Two continents now separated by a wide ocean have fossils of the same ancient land animal and matching rock layers of the same age. A classmate says the animal swam across, so the continents never moved. Write four sentences that give a different explanation, use both kinds of evidence, and explain why swimming cannot explain all the clues.

ANSWER KEY

Clues Across Oceans

GRADE 6 · 6.6.c

PART 1 · READ AND MARK

Underline a fossil clue and a rock clue, circle the seafloor age pattern, and number those three clues in the order you find them. Accept any marking that follows this job and points at the right text.

PART 2 · ANSWERS

#	QUESTION	ANSWER
1	How does the location of Mesosaurus fossils support the idea that South America and Africa were once connected?	**Mesosaurus fossils occur on both continents. Because it was a freshwater reptile that could not cross a wide saltwater ocean, the continents were likely once connected.**
2	Why do scientists compare continental shelves, rather than only shorelines, when testing whether the continents once fit together?	**The continental shelves fit together better than the present-day shorelines do.**
3	How do the rock layers add evidence beyond the fit of the continental shelves?	**Rock layers of similar ages and types line up where the continents would meet, adding a second clue that they were once joined.**
4	What seafloor age pattern supports the idea that South America and Africa moved apart? Explain how.	**Atlantic seafloor rock is youngest near the Mid-Atlantic Ridge and generally older toward the continents. New rock forms at the ridge and moves outward, showing how the continents separated.**

PART 3 · YOUR TURN (SAMPLE ANSWER)

The two continents may once have been connected and later moved apart. The matching land-animal fossils suggest the animals lived on joined land before the ocean formed. Rock layers of the same age also match across the ocean, supporting that former connection. Swimming cannot explain why the rock layers match, so the two clues together make past movement a stronger explanation.

Accept answers that connect each clue to past plate movement, even if students use different wording. For Your Turn, look for an explanation that uses both fossils and rocks and addresses the limit of the swimming claim.