Clues Across Oceans

Use fossils and rocks to reconstruct moving continents.

E.8.9A.3 "Map land and water patterns from various time periods and use rocks and fossils to report evidence of how Earth's plates have moved great distances, collided, and spread apart."

NAME _____ DATE _____

1 READ AND MARK

Read it twice

YOUR JOB Underline descriptions of where land or water lay, and circle fossil or rock clues that support those positions.

When the Atlantic Was Not There

1. Imagine walking from eastern South America to western Africa without crossing the Atlantic Ocean. About 280 million years ago, these lands were joined within the supercontinent Pangaea. Rocks of that age on both continents hold fossils of Mesosaurus, a small freshwater reptile. It could not have swum across today's salty Atlantic. Its fossils help scientists place the two lands next to each other on a map of the past.

2. Today, the Atlantic lies between South America and Africa. Their opposing coastlines roughly fit together, but coastlines can change as sea level rises or falls. Matching fossils and rock layers offer stronger clues to the continents' earlier positions. Around 180 million years ago, Pangaea began to break apart. As plates moved away from each other, new seafloor formed between the separating lands, and the Atlantic widened.

3. Evidence also records plates coming together. In eastern North America, parts of the Appalachian Mountains contain rocks that match rocks in mountain belts in Scotland by age and type. These rocks help link North America and Europe before the Atlantic formed. Earlier plate collisions built mountain ranges across the joined lands. By comparing old rock and fossil locations with today's oceans, scientists reconstruct both collision and separation.

2 ANSWER WITH EVIDENCE

Use the passage

1. Where would you place South America and Africa on a map from 280 million years ago? Use fossil evidence to explain.

2. How did the land and water pattern between South America and Africa change after Pangaea began to break apart?

3. What rock evidence suggests that some plates collided instead of only spreading apart?

4. A map shows North America and Scotland far apart before the Atlantic formed. How would you revise it using evidence from the passage?

3 YOUR TURN

Your own words

Two continents have matching 260-million-year-old rock layers with fossils of the same land animal, but an ocean separates them today. In two panels, sketch and label their likely land and water pattern 260 million years ago and today, then write one sentence explaining the change using both clues.

ANSWER KEY

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GRADE 8 · E.8.9A.3

PART 1 · READ AND MARK

Underline descriptions of where land or water lay, and circle fossil or rock clues that support those positions. Accept any marking that follows this job and points at the right text.

PART 2 · ANSWERS

#	QUESTION	ANSWER
1	Where would you place South America and Africa on a map from 280 million years ago? Use fossil evidence to explain.	**Place them next to each other. Rocks of that age on both continents contain Mesosaurus fossils, and this freshwater reptile could not cross today's Atlantic.**
2	How did the land and water pattern between South America and Africa change after Pangaea began to break apart?	**The lands moved apart, new seafloor formed between them, and the Atlantic widened.**
3	What rock evidence suggests that some plates collided instead of only spreading apart?	**Appalachian rocks match rocks in Scottish mountain belts by age and type. The passage links mountain building across joined lands to earlier plate collisions.**
4	A map shows North America and Scotland far apart before the Atlantic formed. How would you revise it using evidence from the passage?	**Place North America and Scotland near each other because their matching mountain rocks help link them before the Atlantic formed.**

PART 3 · YOUR TURN (SAMPLE ANSWER)

Panel 1, 260 million years ago: the two continents joined, with matching rock layers and land-animal fossils along their shared area. Panel 2, today: the continents separated by a labeled ocean, with the matching layers and fossils on opposite shores. The matching rocks and land-animal fossils suggest the continents were once joined before their plates moved apart and an ocean formed.

Accept sketches with the continents joined in the older panel and separated by an ocean today. The explanation must use both the matching rocks and land-animal fossils as evidence.