Clues Beneath Alabama

Read rock evidence to trace changes in Alabama over geologic time.

ESS.5.d "Obtain, evaluate, and communicate information about important tectonic and geologic events that have occurred in Alabama over geologic time."

NAME _____ DATE _____

1 READ AND MARK

Read it twice

YOUR JOB Underline clues found in rocks, circle the events or environments those clues support, and number the events from oldest to youngest. Use your marks to connect evidence with changes in Alabama.

Seas, Mountains, and Seas Again

1. At a quarry in northern Alabama, layers of limestone contain fossils of animals that lived in ancient seas. Much of this limestone formed during the early Paleozoic Era, when shallow seawater covered parts of what is now Alabama. Shells and other remains collected on the seafloor and became rock as more sediment buried them. The fossils support the claim that this place was once underwater, but they do not reveal every change in the coastline. A layer records conditions when it formed, not the entire history of the land above it.

2. Later, near the end of the Paleozoic Era, the land changed dramatically. As ancestral Africa collided with North America, rock layers in eastern Alabama were compressed, folded, and pushed upward during Appalachian mountain building. In the northeast, the Valley and Ridge region still holds long belts of folded rock. Erosion later wore down the mountains and carried sand and mud into nearby basins. In northwestern Alabama, buried remains of plants from late Paleozoic coastal swamps formed coal. Folded layers indicate powerful compression, while coal points to swamp conditions. Neither clue, by itself, identifies the colliding continents.

3. Long after those mountains formed, seas again spread across southern and central Alabama during the Late Cretaceous Period. Tiny marine organisms left shells that accumulated with other sediment, forming chalk in parts of central Alabama. Fossils of sea animals in these deposits provide another clue to marine conditions, millions of years after the older northern limestone formed. Today, chalk and related deposits help shape the Black Belt, a band of dark soils across central Alabama. These layers show that a marine setting returned, not that Alabama stayed underwater the whole time. Together, rocks from different ages reveal repeated changes, not one unbroken event.

2 ANSWER WITH EVIDENCE

Use the passage

1. How did the northern limestone form, and what evidence supports the claim that seawater once covered that area?

2. What do the folded rocks in eastern Alabama support about mountain building? What can the folds alone not tell us?

3. What past environment does coal in northwestern Alabama point to, and how did that environment lead to coal?

4. Why do fossils in both the older northern limestone and the Late Cretaceous chalk not prove that Alabama stayed underwater between those times? Use an intervening clue from the passage.

3 YOUR TURN

Your own words

Write a five-sentence museum label responding to this claim: “Alabama’s marine rocks show one sea covered the state without interruption.” Use clues from the passage to explain an earlier sea, an intervening land event, and a later sea, then state one limit of what the clues prove.

ANSWER KEY

Clues Beneath Alabama

PART 1 · READ AND MARK

Underline clues found in rocks, circle the events or environments those clues support, and number the events from oldest to youngest. Use your marks to connect evidence with changes in Alabama. Accept any marking that follows this job and points at the right text.

PART 2 · ANSWERS

#	QUESTION	ANSWER
1	How did the northern limestone form, and what evidence supports the claim that seawater once covered that area?	**Remains collected on a seafloor and became limestone as sediment buried them. Fossils of sea animals support the claim that the area was underwater.**
2	What do the folded rocks in eastern Alabama support about mountain building? What can the folds alone not tell us?	**The folds support that powerful compression occurred during mountain building. By themselves, they cannot identify the continents that collided.**
3	What past environment does coal in northwestern Alabama point to, and how did that environment lead to coal?	**The coal points to coastal swamps. Buried remains of swamp plants formed coal.**
4	Why do fossils in both the older northern limestone and the Late Cretaceous chalk not prove that Alabama stayed underwater between those times? Use an intervening clue from the passage.	**The fossils record marine conditions at two different times, not every time between them. Folded rocks show that mountain building occurred between those marine episodes.**

PART 3 · YOUR TURN (SAMPLE ANSWER)

Alabama's marine rocks do not prove that one sea covered the state without interruption. Fossils in northern limestone show that shallow seawater covered parts of Alabama early in the Paleozoic Era. Later, a continental collision compressed eastern rocks into folds, and coastal swamps in the northwest left plants that became coal. Much later, shells accumulated in southern and central seas and helped form Late Cretaceous chalk. These clues show changing environments, but no single layer records every coastline change.

Accept equivalent descriptions of the evidence and its limits. Museum labels should distinguish the older marine setting from the later one and place mountain building between them.