Clues in Limestone

Use fossil evidence to test claims about ancient life.

E.8.7.3 "Construct and analyze scientific arguments to support claims that most fossil evidence is an indication of the diversity of life that was present on Earth and that relationships exist between past and current life forms."

NAME _____ DATE _____

1 READ AND MARK

Read it twice

YOUR JOB Underline three different fossils found in one layer, circle two structures shared by ancient and living animals, and put a star beside one limit of fossil evidence. Use your marks to build and test claims about life in the past.

An Ancient Sea in Ohio

1. A rocky hillside near Cincinnati, Ohio, was once part of a shallow sea. Its limestone layers formed about 450 million years ago. In one layer, a student might find a ribbed brachiopod shell, a round disk from a crinoid stem, and the hard shell of a trilobite. These fossils are remains of different kinds of animals that lived in that ancient sea. Finding several kinds in the same layer supports a claim that the sea held diverse life, not just one kind of organism.

2. Fossils can also reveal links between ancient and living animals. Some fossil crinoids preserve a cup-shaped body and branching arms. Living sea lilies are crinoids with cup-shaped bodies and branching arms too. Ancient brachiopod shells have two parts joined at a hinge, and living brachiopods have this feature too. Shared structures support the claim that past and present organisms are related. But a matching feature alone cannot show that a particular fossil was the direct ancestor of a living animal. Scientists compare several features before making a careful argument.

3. The trilobite tells a different part of the story. Trilobites no longer live in the seas, even though some other groups from that ancient sea still have living members. Also, a fossil collection is not a complete list of past life. Hard shells and skeletons are more likely to be preserved than soft bodies. A scientist could argue that the fossils show some ancient diversity while missing other kinds of organisms. To judge the argument, ask which fossils support its claims and what the rocks cannot tell us.

2 ANSWER WITH EVIDENCE

Use the passage

1. What evidence from one limestone layer supports the claim that several kinds of animals lived in the ancient sea?

2. How do fossil crinoids and living sea lilies support a claim about relationships between past and present life?

3. A student claims the fossils show every kind of animal that lived in the ancient sea. What evidence from the passage weakens that claim?

4. A student claims that one fossil brachiopod was the direct ancestor of a living brachiopod. What does the passage support, and what can it not prove?

3 YOUR TURN

Your own words

In a different ancient seafloor layer, researchers find coiled fossil snail shells, serrated fossil shark teeth, and branching coral fossils; living sea snails have coiled shells, and some living sharks have serrated teeth. Write a four- or five-sentence argument that uses this evidence to support claims about past diversity and a relationship to living animals, while explaining why a shared trait does not prove direct ancestry.

ANSWER KEY

Clues in Limestone

GRADE 8 · E.8.7.3

PART 1 · READ AND MARK

Underline three different fossils found in one layer, circle two structures shared by ancient and living animals, and put a star beside one limit of fossil evidence. Use your marks to build and test claims about life in the past. Accept any marking that follows this job and points at the right text.

PART 2 · ANSWERS

#	QUESTION	ANSWER
1	What evidence from one limestone layer supports the claim that several kinds of animals lived in the ancient sea?	**The layer contains a brachiopod shell, a crinoid stem disk, and a trilobite shell, evidence of three different kinds of animals.**
2	How do fossil crinoids and living sea lilies support a claim about relationships between past and present life?	**Both have cup-shaped bodies and branching arms. These shared structures support a relationship between fossil crinoids and living sea lilies.**
3	A student claims the fossils show every kind of animal that lived in the ancient sea. What evidence from the passage weakens that claim?	**Hard parts are more likely to be preserved than soft bodies, so some animals may not be represented by fossils.**
4	A student claims that one fossil brachiopod was the direct ancestor of a living brachiopod. What does the passage support, and what can it not prove?	**Their two-part shells and hinges support a relationship. That shared feature cannot prove the particular fossil was a direct ancestor.**

PART 3 · YOUR TURN (SAMPLE ANSWER)

The ancient seafloor supported diverse life because its layer contains snail shells, shark teeth, and coral fossils. The coiled fossil shells and the coiled shells of living sea snails support a relationship between ancient and living snails. The serrated fossil shark teeth and teeth of some living sharks provide another example of a shared trait. These traits do not prove that any particular fossil animal was a direct ancestor of a living animal.

Accept arguments that cite at least two distinct fossil types for diversity and compare one fossil trait with a living animal's trait. Students should distinguish evidence of a relationship from proof of direct ancestry.