Layers Tell Stories

Use fossil patterns to trace change through rock layers.

MS-LS4-1 "Analyze and interpret data for patterns in the fossil record that document the existence, diversity, extinction, and change of life forms throughout the history of life on Earth under the assumption that natural laws operate today as in..."

NAME _____ DATE _____

1 READ AND MARK

Read it twice

YOUR JOB Underline each phrase that tells which rock layers are older or younger. Circle each observation that shows a change in fossil diversity, disappearance, or body structures.

A Rock Column at One Site

1. Rock layers can act like pages in a history book. At one field site, scientists examined five undisturbed sedimentary layers. Layer 1 is deepest, and Layer 5 is nearest the surface. In most undisturbed rock stacks, lower layers formed before layers above them. Scientists also assume that processes such as sediment settling, burial, and fossilization followed the same natural laws in the past that they follow today. This lets them use layer position to place fossil evidence in chronological order.

2. Layer 1 contains many fossils of soft-bodied organisms with simple body shapes and no hard internal supports. Layer 2 contains those fossils plus a few organisms with hard outer coverings. In Layer 3, the soft-bodied forms are absent, while fossils with hard coverings are common. Layer 4 has several kinds of fossils with hard coverings and some with internal support structures. Layer 5 contains fewer kinds than Layer 4, but it includes fossils with internal supports and jointed limbs.

3. These data show several patterns, not a single straight path of progress. The disappearance of soft-bodied forms after Layer 2 is evidence that this group no longer appears in younger layers at this site. The number of fossil kinds rises from Layer 1 through Layer 4, then drops in Layer 5. Structures also change over time: later layers include hard coverings, internal supports, and jointed limbs. Fossil records are incomplete, so scientists compare many sites before making broad conclusions.

2 ANSWER WITH EVIDENCE

Use the passage

1. Which layer formed first? Give two fossil features that distinguish it from Layer 5.

2. Describe the pattern in the number of fossil kinds from Layer 1 through Layer 5.

3. What layer pattern is evidence that the soft-bodied group may have disappeared from this site?

4. How does the assumption about natural laws help scientists interpret the order of fossils in these layers?

3 YOUR TURN

Your own words

A second site has four undisturbed layers, A deepest to D nearest the surface. A has one kind of simple soft-bodied fossil. B has simple soft-bodied fossils and two kinds with hard outer coverings. C has four kinds with hard coverings and one kind with an internal support. D has one kind with an internal support and jointed limbs. Write exactly three sentences: state the chronological order, describe the diversity pattern, and identify one change in structures or one possible disappearance. Support each sentence with data.

ANSWER KEY

Layers Tell Stories

GRADES 6-8 · MS-LS4-1

PART 1 · READ AND MARK

Underline each phrase that tells which rock layers are older or younger. Circle each observation that shows a change in fossil diversity, disappearance, or body structures. Accept any marking that follows this job and points at the right text.

PART 2 · ANSWERS

#	QUESTION	ANSWER
1	Which layer formed first? Give two fossil features that distinguish it from Layer 5.	**Layer 1 formed first because it is deepest. Its fossils have simple body shapes and no hard internal supports, unlike the internal supports and jointed limbs in Layer 5.**
2	Describe the pattern in the number of fossil kinds from Layer 1 through Layer 5.	**The number of fossil kinds increases from Layer 1 through Layer 4, then decreases in Layer 5.**
3	What layer pattern is evidence that the soft-bodied group may have disappeared from this site?	**Soft-bodied forms occur in Layers 1 and 2 but are absent from Layer 3 and the younger layers above it.**
4	How does the assumption about natural laws help scientists interpret the order of fossils in these layers?	**It allows scientists to use the same processes of settling, burial, and fossilization observed today to infer that lower undisturbed layers formed before higher layers.**

PART 3 · YOUR TURN (SAMPLE ANSWER)

The order from oldest to youngest is A, B, C, and D because A is deepest and D is closest to the surface. Diversity increases from one kind in A to five kinds in C, then decreases to one kind in D. Internal supports first appear in C, and simple soft-bodied fossils no longer appear above B.

Accept equivalent evidence-based descriptions of layer order, diversity, structural change, and possible disappearance. For the open task, students should use the given layer data and avoid claiming a worldwide extinction from one site.