

Review and Assessment

Checking Concepts

- How does a petrified fossil form?
- Which organism has a better chance of leaving a fossil: a jellyfish or a bony fish? Explain.
- Describe a process that could cause an unconformity.
- What evidence would a scientist use to determine the absolute age of a fossil found in a sedimentary rock?
- When and how do scientists think that Earth's oceans formed?
- How did Earth's environments change from the Tertiary Period to the Quarternary Period? Explain.

Thinking Critically

- Applying Concepts** Paleontologists find a trilobite fossil in a rock layer at the top of a hill in South America. Then they find the same kind of fossil in a rock layer at the bottom of a cliff in Africa. What could the paleontologists conclude about the two rock layers?
- Problem Solving** Which of the elements in the table below would be better to use in dating a fossil from Precambrian time? Explain.

Radioactive Elements	
Element	Half-life (years)
Carbon-14	5,730
Uranium-235	713 million

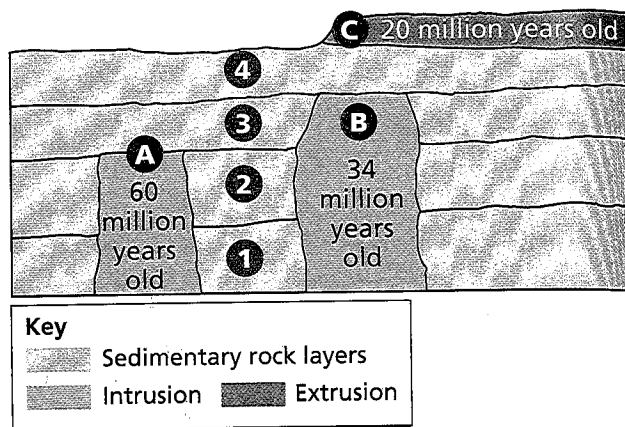
- Relating Cause and Effect** When Pangaea formed, the climate changed and the land on Earth became drier. How was this climate change more favorable to reptiles than amphibians?
- Making Judgments** If you see a movie in which early humans fight giant dinosaurs, how would you judge the scientific accuracy of that movie? Give reasons for your judgment.

Math Practice

- Percentage** What percentage of a radioactive element will remain after 9 half-lives?

Applying Skills

Use the diagram of rock layers below to answer Questions 22–25.



- Inferring** According to the Law of Superposition, which is the oldest layer of sedimentary rock? Which is the youngest? How do you know?
- Measuring** What method did a scientist use to determine the age of the intrusion and extrusion?
- Interpreting Data** What is the relative age of layer 3? (*Hint:* With what absolute ages can you compare it?)
- Interpreting Data** What is the relative age of layer 4?

Lab zone Chapter Project

Performance Assessment You have completed your illustrations for the timeline and travel brochure. Now you are ready to present the story of the geologic time period you researched. Be sure to include the awesome sights people will see when they travel to this time period. Don't forget to warn them of any dangers that await them. In your journal, reflect on what you have learned about Earth's history.

Standardized Test Prep

Test-Taking Tip

Answering a Constructed-Response Question

A constructed-response question asks you to compose an answer in your own words. Read the question carefully and note the type of information your response should contain. Your answer should address all the specific points asked for in the question. Before you begin writing, organize the information for your response.

Sample Question

Compare preserved remains and trace fossils. Give an example of each type of fossil.

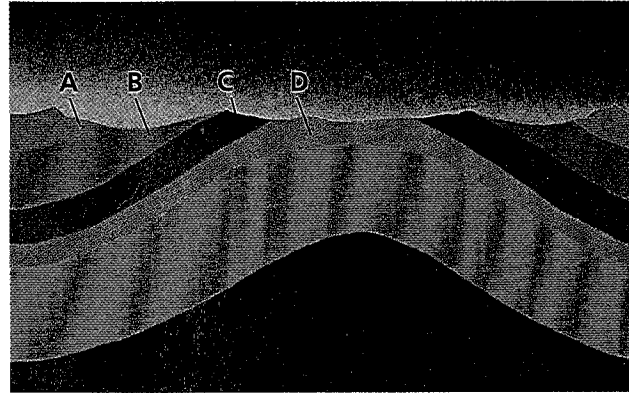
Answer

Both preserved remains and trace fossils provide evidence of ancient life forms. However, with preserved remains, an organism has been fossilized with little or no change. An example of preserved remains would be an insect in amber. A trace fossil preserves evidence of an organism, not the organism itself. The footprint of a dinosaur would be an example of a trace fossil.

Choose the letter of the best answer.

1. A geologist finds identical index fossils in a rock layer in the Grand Canyon in Arizona and in a rock layer in northern Utah, more than 675 kilometers away. What inference can she make about the ages of the two rock layers?
A the rock layer in the Grand Canyon is older
B the rock layer in Utah is older
C the two rock layers are about the same age
D no inferences
2. What should you use so that the geologic time scale covering Earth's 4.6 billion year history can be drawn as a straight line on a poster board one meter high?
F 1 cm = 1 million years
G 1 cm = 10,000 years
H 1 cm = 100,000 years
J 1 cm = 50,000,000 years

Use the diagram below and your knowledge of science to answer Question 3.



3. According to the law of superposition, the youngest layer of rock in this diagram is
A Layer A
B Layer B
C Layer C
D Layer D
 4. What was used by geologists to define the beginnings and ends of the divisions of the geologic time scale?
F radioactive dating
G major changes in life forms
H types of rocks present
J volcanic events
 5. A leaf falls into a shallow lake and is rapidly buried in the sediment that changes to rock over millions of years. Which type of fossil would be formed?
A mold and cast
B carbon film
C trace fossil
D amber
- ### Constructed Response
6. Describe two methods geologists use to determine the age of a rock. In your answer, be sure to mention igneous rock, sedimentary rock, the law of superposition, index fossils, radioactive decay, and half-life.