

A Trip Through Geologic Time

Chapter Test A

Multiple Choice

Write the letter of the correct answer on the line at the left.

- _____ 1. Late in the Paleozoic Era, the supercontinent Pangaea formed. The climate in the center of Pangaea was probably a(n)
- a. extremely cold, polar climate.
 - b. hot, dry desert climate.
 - c. wet tropical climate.
 - d. warm, mild climate.
- _____ 2. During the Paleozoic, the first organisms to live **partly** on land were
- a. insects.
 - b. reptiles.
 - c. amphibians.
 - d. invertebrates.
- _____ 3. Which best describes the climates of Europe and North America during the 1.8 million years of the Quaternary Period?
- a. hot and dry climates
 - b. cool and rainy periods followed by droughts
 - c. warm and mild climates
 - d. a series of ice ages followed by periods when the glaciers melted
- _____ 4. What has the study of fossils allowed scientists to do?
- a. describe past environments and the history of life
 - b. study present ocean temperatures at different depths
 - c. analyze the chemical composition of sedimentary rocks and minerals
 - d. predict which organisms will become extinct in the future
- _____ 5. Earth's earliest atmosphere lacked which gas that is necessary for life as we know it to exist today?
- a. nitrogen
 - b. carbon dioxide
 - c. argon
 - d. oxygen

A Trip Through Geologic Time *(continued)*

- _____ 6. The relative age of a rock is
- its age compared with the ages of other rocks.
 - less than the age of the fossils the rock contains.
 - the number of years since the rock formed.
 - its age based on how much carbon-14 the rock contains.
- _____ 7. Geologists use radioactive dating to
- determine the relative ages of rock layers.
 - tell the difference between molds and casts.
 - tell where one soil horizon ends and the next one begins.
 - determine the absolute ages of rocks.
- _____ 8. What are fossils?
- molds and casts of organisms that live today
 - drawings of ancient animals and other organisms
 - footprints or burrows of small animals that live today
 - the preserved remains or traces of organisms that lived in the past
- _____ 9. The time it takes for half of the radioactive atoms in a sample of a radioactive element to decay is the element's
- relative age.
 - potassium-argon date.
 - absolute age.
 - half-life.
- _____ 10. A fossil formed when minerals replace all or part of an organism is called a
- mold.
 - petrified fossil.
 - cast.
 - trace fossil.
- _____ 11. Originally, the geologic time scale placed Earth's rocks in order by
- absolute dates.
 - relative age.
 - composition.
 - decades and centuries.

A Trip Through Geologic Time *(continued)*

- _____ 12. The order of rock layers can be altered by
- a. intrusions and carbon film.
 - b. faults and index fossils.
 - c. extrusions and trace fossils.
 - d. unconformities and folding.

Completion

Fill in the line to complete each statement.

13. The extinction of the dinosaurs gave warm-blooded vertebrates called _____ a chance to become abundant.
14. Potassium-40 is useful for dating very old rocks because it has a(n) _____ of 1.3 billion years.
15. A(n) _____ is a gap in the geologic record where some rock layers have been lost because of erosion.
16. A(n) _____ fossil forms when dissolved minerals replace the remains of an organism and then harden to form rock.
17. Jawless fish were Earth's first _____, or animals with backbones.

True or False

If the statement is true, write true. If it is false, change the underlined word or words to make the statement true.

- _____ 18. Fossils usually occur in metamorphic rock.
- _____ 19. The law of superposition helps geologists determine the absolute age of a rock layer.
- _____ 20. Geologists divide Earth's long history into smaller units that make up the geologic time scale.
- _____ 21. Footprints and trails are examples of trace fossils.
- _____ 22. Sometimes layers of rock are overturned so much that the youngest rock layer may appear on the bottom, which is the reverse of what is ordinarily expected.

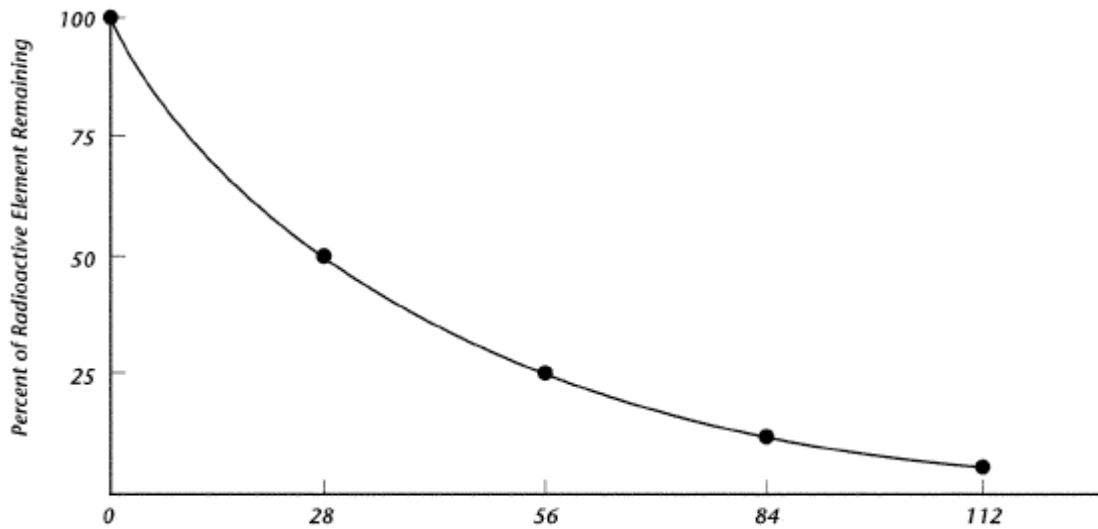
A Trip Through Geologic Time *(continued)*

Using Science Skills

Use the diagram to answer each question.

Strontium-90 is a radioactive form of the element strontium that undergoes radioactive decay. The graph shows the decay of strontium-90 over time.

Radioactive Decay of Strontium-90



23. If the graph represents the decay of strontium-90 in an igneous rock, what event occurred at 0 years on the horizontal axis?

24. Based on the graph, what can you say about the amount of time it will take for the strontium-90 to decay completely?

Essay

Write an answer for each of the following questions on a separate sheet of paper.

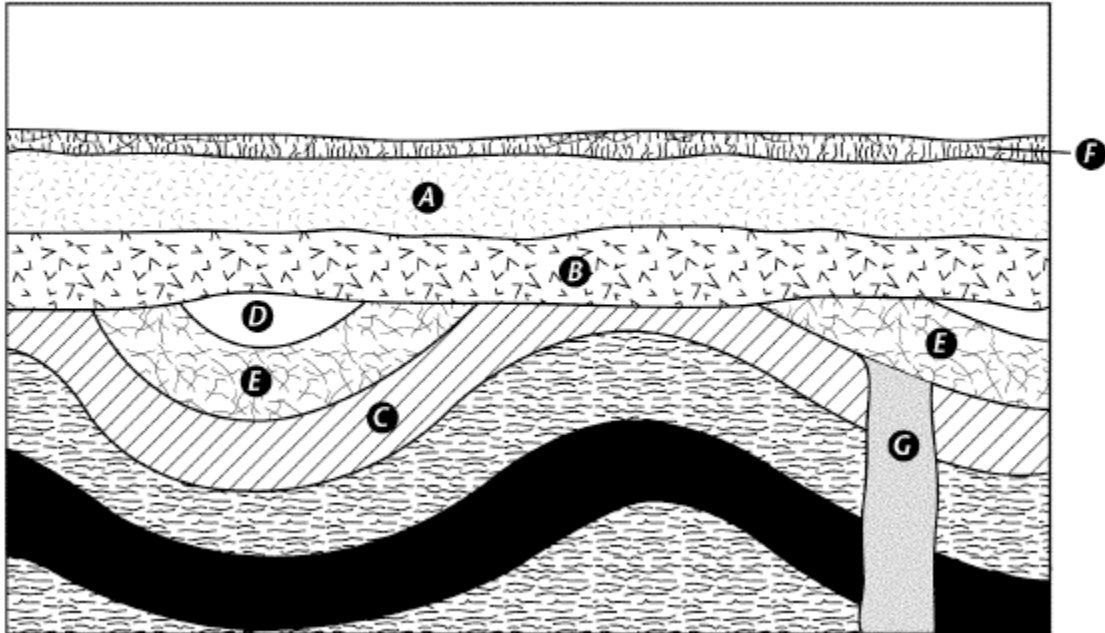
25. Describe what scientists can learn about the past by studying fossils.
26. Compare and contrast molds, casts, and trace fossils.

A Trip Through Geologic Time *(continued)*

Using Science Skills

Use the diagram to answer each question.

Rock Layers



27. Layer F is an igneous extrusion. How could a geologist use layer F to infer the age of layer A?

28. How do layers B and D compare in age? If rock layers between B and D have eroded away, what is the boundary between B and D called?

Essay

Write an answer for each of the following questions on a separate sheet of paper.

29. Summarize the main changes in Earth's environment and life forms that occurred during the Cenozoic Era.
30. Describe a scientific hypothesis to explain the mass extinction of dinosaurs and many other organisms at the end of the Cretaceous Period.
31. Name one or more common organisms that lived or lives during each of the three eras of geologic time.