

Ch 17. The History of Life. Biology. Landis

Your name, please _____

Section 17–1 The Fossil Record (pages 417–422)

This section explains how fossils form and how they can be interpreted. It also describes the geologic time scale that is used to represent evolutionary time.

Fossils and Ancient Life (page 417)

1. What is the fossil record?
2. What evidence does the fossil record provide?
3. Species that died out are said to be
4. About what percent of all species that have ever lived on Earth have become extinct?

How Fossils Form (page 418)

5. Circle the letter of each sentence that is true about fossils.
 - a. Most organisms that die are preserved as fossils.
 - b. Fossils can include footprints, eggs, or other traces of organisms.
 - c. Most fossils form in metamorphic rock.
 - d. The quality of fossil preservation varies.
6. How do fossils form in sedimentary rock?

Interpreting Fossil Evidence (pages 418–420)

7. List the two techniques paleontologists use to determine the age of fossils.
8. Circle the letter of each sentence that is true about relative dating.
 - a. It determines the age of a fossil by comparing its placement with that of fossils in other layers of rock.
 - b. It uses index fossils.
 - c. It allows paleontologists to estimate a fossil's age in years.
 - d. It provides no information about absolute age.
9. Are older rock layers usually closer to Earth's surface than more recent rock layers?
10. What do scientists use to assign absolute ages to rocks?
11. The length of time required for half of the radioactive atoms in a

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sample to decay is called a(an)

12. The use of the concept named in question #11 above to determine the age of a sample is called .
13. How do scientists calculate the age of a sample using the technique named in question #12 above?
14. Do all radioactive elements have the same half-life?

Geologic Time Scale (pages 421-422)

15. Fill in the missing eras and periods in the geologic time scale below.

GEOLOGIC TIME SCALE

| Era | Period | Time (millions of years ago) |
|-----------|------------|------------------------------|
| | Quaternary | 1.8 – present |
| | | 65 – 1.8 |
| | Cretaceous | 145 – 65 |
| | | 208 – 145 |
| | Triassic | 245 – 208 |
| Paleozoic | Permian | 290 – 245 |
| | | 363 – 290 |
| | Devonian | 410 – 363 |
| | | 440 – 410 |
| | Ordovician | 505 – 440 |
| | | 544 – 505 |
| | Vendian | 650 – 544 |

16. Circle the letter of the choice that lists the eras of the geologic time scale in order from most recent to oldest.
 - a. Mesozoic, Paleozoic, Cenozoic
 - b. Cenozoic, Paleozoic, Mesozoic
 - c. Cenozoic, Mesozoic, Paleozoic
 - d. Paleozoic, Mesozoic, Cenozoic
17. Circle the letter of each sentence that is true about the geologic time scale.
 - a. The scale is used to represent evolutionary time.
 - b. Major changes in fossil organisms separate segments of geologic time.
 - c. Divisions of the scale cover standard lengths of 100 million years.
 - d. Geologic time begins with the Cambrian Period.

Section 17-2 Earth's Early History (pages 423 428)

This section explains how Earth formed. It also outlines hypotheses that have been proposed for how life first arose on Earth and describes some of the main

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evolutionary steps in the early evolution of life.

Sexual Reproduction and Multicellularity (page 428)

18. How did sexual reproduction speed up the evolutionary process?

19. When did sexual reproduction first evolve?

Section 17–3 Evolution of Multicellular Life (pages 429–434)

This section describes how multicellular life evolved from its earliest forms to its present-day diversity.

Precambrian Time (page 429)

20. About what percent of Earth's history occurred during the Precambrian?

21. Why do few fossils exist from the Precambrian?

Paleozoic Era (pages 429–431)

22. What happened during the Cambrian period?

23. What happened during the Devonian period?

24. Where does the Carboniferous Period get its name?

25. When many types of living things become extinct at the same time, it is called a(an)

Mesozoic Era (pages 431–432)

26. The Mesozoic Era is called the Age of

27. Describe the mass extinction that occurred at the end of the Cretaceous Period.

Cenozoic Era (pages 433–434)

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28. The Cenozoic Era is called the Age of

Section 17–4 Patterns of Evolution (pages 435–440)

This section describes six important patterns of large-scale, long-term evolutionary change.

Mass Extinctions (page 435)

29. What are possible causes of mass extinctions?

30. What effects have mass extinctions had on the history of life?

Adaptive Radiation (page 436)

31. What is adaptive radiation?

32. What led to the adaptive radiation of mammals?

Convergent Evolution (pages 436–437)

33. What is convergent evolution?

34. Circle the letter of each choice that is an example of convergent evolution.

- a. Bird's wing and fish's fin
- b. Shark's fin and dolphin's limb
- c. Human's arm and bird's wing
- d. Human's leg and dolphin's limb

Coevolution (pages 437–438)

35. What is coevolution?

36. How have plants and plant-eating insects coevolved?

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Punctuated Equilibrium (page 439)

37. Describe punctuated equilibrium.

38. The idea that evolution occurs at a slow, steady rate is called

39. What are some reasons rapid evolution may occur after long periods of equilibrium?