

CHAPTER

9

VOCABULARY & NOTES WORKSHEET

The History of Life on Earth

By studying the Vocabulary and Notes listed for each section below, you can gain a better understanding of this chapter.

SECTION 1

Vocabulary

In your own words, write a definition for each of the following terms in the space provided.

1. paleontologist _____

2. fossil _____

3. rock cycle _____

4. relative dating _____

5. absolute dating _____

6. half-life _____

7. geologic time scale _____

8. extinct _____

9. mass extinction _____



The History of Life on Earth, continued

10. Pangaea _____

11. plate tectonics _____

Notes

Read the following section highlights. Then, in your own words, write the highlights in your ScienceLog.

- Paleontologists are scientists who study fossils.
- The age of a fossil can be determined using relative dating and absolute dating. Relative dating is an estimate based on the known age of the sediment layer in which the fossil is found. Absolute dating measures the rate of decay of the unstable elements found in the rock surrounding the fossil.
- The geologic time scale is a calendar scientists use to outline the history of Earth and life on Earth.
- Many species existed for a few million years and then became extinct. Mass extinctions have occurred several times in Earth's history.

SECTION 2

Vocabulary

In your own words, write a definition for each of the following terms in the space provided.

1. Precambrian time _____

2. prokaryote _____

3. anaerobic _____

4. ozone _____

5. eukaryote _____

The History of Life on Earth, continued

6. Paleozoic era _____

7. Mesozoic era _____

8. Cenozoic era _____

Notes

Read the following section highlights. Then, in your own words, write the highlights in your ScienceLog.

- Precambrian time includes the formation of the Earth, the beginning of life, and the evolution of simple multicellular organisms.
- The Earth is about 4.6 billion years old. Life formed from nonliving matter on the turbulent early Earth.
- The first cells, prokaryotes, were anaerobic. Later, photosynthetic cyanobacteria evolved and caused oxygen to enter the atmosphere.
- During the Paleozoic era, animals appeared in the oceans, and plants and animals colonized the land.
- Dinosaurs and other reptiles roamed the Earth during the Mesozoic era. Flowering plants, birds, and primitive mammals also appeared.
- Primates evolved during the Cenozoic era, which extends to the present day.

SECTION 3

Vocabulary

In your own words, write a definition for each of the following terms in the space provided.

1. primate _____

2. hominid _____



The History of Life on Earth, continued

3. prosimian _____

4. australopithecine _____

5. Neanderthal _____

6. Cro-Magnon _____

Notes

Read the following section highlights. Then, in your own words, write the highlights in your ScienceLog.

- Humans, apes, and monkeys are primates. Primates are distinguished from other mammals by their opposable thumbs and binocular vision.
- Hominids, a subgroup of primates, include humans and their humanlike ancestors. The oldest known hominids are australopithecines.
- Hominids that had more human features include *Homo habilis*, *Homo erectus*, and *Homo sapiens*.
- Neanderthals were a species of humans that disappeared about 30,000 years ago.
- Cro-Magnon culture was very sophisticated. Cro-Magnons did not differ very much from present-day humans.

CHAPTER

9

CHAPTER REVIEW WORKSHEET

*The History of Life on Earth***USING VOCABULARY**

To complete the following sentences, choose the correct term from each pair of terms listed below, and write the term in the space provided.

1. During the _____ of the Earth's history, life is thought to have originated from nonliving matter. (Precambrian time period or Paleozoic era)
2. The Age of Mammals refers to the _____. (Mesozoic era or Cenozoic era)
3. The Age of Reptiles refers to the _____. (Paleozoic era or Mesozoic era)
4. Plants colonized dry land during the _____. (Precambrian time or Paleozoic era)
5. The most ancient hominids are called _____. (Neanderthals or australopithecines)

UNDERSTANDING CONCEPTS**Multiple Choice**

6. Scientists estimate the age of the Earth to be about
 - a. 10 billion years.
 - b. 4.6 billion years.
 - c. 3.8 billion years.
 - d. 4.4 million years.
7. The first cells appeared about
 - a. 10 billion years ago.
 - b. 4.6 billion years ago.
 - c. 3.5 billion years ago.
 - d. 4.4 million years ago.
8. How is the age of a fossil estimated?
 - a. by using the geologic time scale
 - b. by measuring unstable elements in the rock that holds the fossil
 - c. by studying the relative position of continents
 - d. by measuring the amount of oxygen in the fossil rock
9. Plants and air-breathing animals appeared during this time period.
 - a. Precambrian time
 - b. Paleozoic era
 - c. Mesozoic era
 - d. Cenozoic era



The History of Life on Earth, continued

- 10.** These hominids made sophisticated tools, hunted large animals, wore clothing, and cared for the sick and elderly. Their extinction is a mystery.
- a.** australopithecines
 - b.** hominids in the genus *Homo*
 - c.** Neanderthals
 - d.** Cro-Magnons

Short Answer

- 11.** What kinds of information do fossils provide about the evolutionary history of life?

- 12.** Name at least one important biological event that occurred during each of the following geologic eras:

Precambrian time _____

Paleozoic era _____

Mesozoic era _____

Cenozoic era _____

- 13.** Why are there usually more fossils from the Cenozoic era than from other geologic eras?

The History of Life on Earth, continued

CONCEPT MAPPING

14. Use the following terms to create a concept map: *Earth's history, humans, Paleozoic era, dinosaurs, Precambrian time, cyanobacteria, Mesozoic era, land plants, Cenozoic era.*

The History of Life on Earth, continued

CRITICAL THINKING AND PROBLEM SOLVING

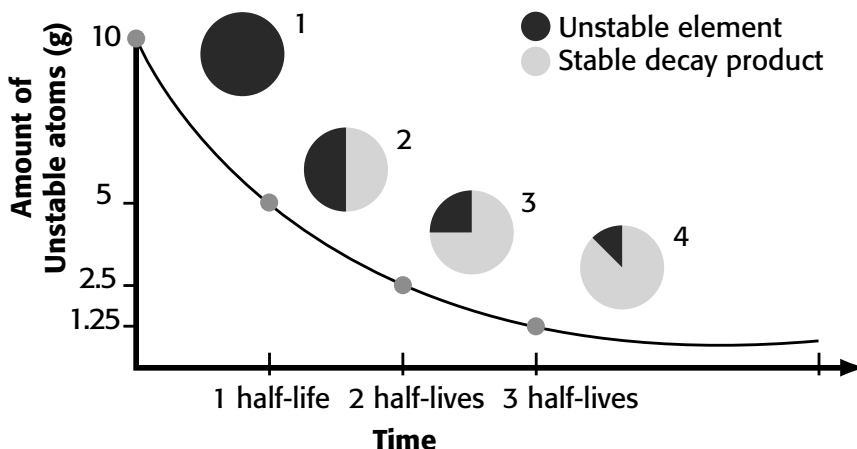
Write one or two sentences to answer each of the following questions:

15. Why do scientists think the first cells were anaerobic?

16. List three evolutionary changes in early hominids that led to the rise of modern humans.

MATH IN SCIENCE

17. A rock containing a newly discovered fossil is found to contain 5 g of an unstable form of potassium and 5 g of the stable element formed from its decay.



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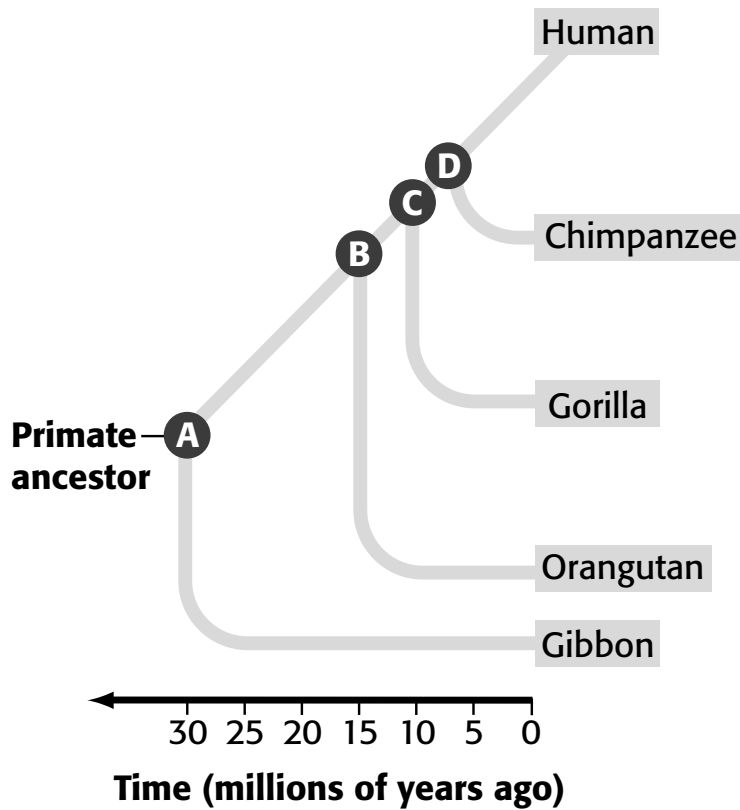
The History of Life on Earth, continued

If the half-life of the unstable form of potassium is 1.3 billion years, how old is the rock?

What can you infer about the age of the fossil?

INTERPRETING GRAPHICS

The figure below illustrates the evolutionary relationships between different primate groups. The lower a line branches off, the earlier the event occurred. Examine the figure, and answer the questions that follow.



The History of Life on Earth, continued

18. Which letter represents the time when humans and gorillas took different evolutionary paths?

19. About how many millions of years ago did orangutans diverge from the human evolutionary line?

20. Which group of apes has been separated from the human line of evolution for the longest period of time?

NOW WHAT DO YOU THINK?

Take a minute to review your answers to the ScienceLog questions at the beginning of the chapter. Have your answers changed? If necessary, revise your answers based on what you have learned since you began this chapter. Record your revisions in your ScienceLog.