Section: Change over Time

1. One way to tell kinds of animals apart is by their **differences**.

DIFFERENCES BETWEEN ORGANISMS

2. How does adaptation help an organism?
   a. It helps the organism change colors.
   b. It improves its ability to survive and reproduce.
   c. It improves its ability to change species.
   d. It helps the organism become a fossil.

3. If living things have the same characteristics, they may be members of the same
   a. evolution.
   b. planet.
   c. species.
   d. fossil record.

4. Two organisms that can mate to produce offspring that can reproduce belong to the same **species**.

5. When members of the same species live in the same place, they form a(n) **population**.

6. Since life began on Earth, many **species** have vanished and many new ones have appeared.

7. Scientists have observed that species have **changed** over time.

8. The inherited **characteristics** in populations also change over time.

9. What can result as populations of organisms change?
   **new species may form**

10. The process in which populations change over time is called **evolution**.

EVIDENCE OF CHANGES OVER TIME

11. Where is evidence that organisms have changed over time buried?
   a. within Earth’s crust
   b. on the Internet
   c. in water
   d. in old books
12. What is a fossil?
   a. a layer of sediment
   b. a living organism
   c. a very old organism
   d. the trace or remains of an organism that lived long ago

13. How is a fossil usually formed?

   A fossil can form when a dead organism is covered by a layer of sediment, becoming totally covered over time. Minerals in the sediment may gradually replace the organism with stone. If the organism rots away completely, it may leave an imprint of itself in the rock.

14. What is the timeline of life that scientists have made by studying fossils called?

   the fossil record

15. How are fossils organized in the fossil record?

   In the fossil record, the fossils are organized by their estimated ages and their physical similarities

16. Fossils in newer layers of Earth tend to resemble current ____________ organisms

17. In older layers of Earth, are fossils more likely or less likely to resemble today’s animals or plants?

   Fossils in older layers of Earth are less likely to look like animals or plants from today.

18. What does comparing organisms in the fossil record provide evidence for?

   Comparing organisms in the fossil record provides evidence that organisms have changed over time

EVIDENCE OF ANCESTRY

19. The fossil record provides evidence about
   a. the age of rocks.
   b. the order in which species have existed.
   c. the number of layers Earth has.
   d. the composition of minerals.
A 20. In fossils and in living things, scientists find evidence of
   a. common ancestors.
   b. rock layers of Earth.
   c. the age of rocks.
   d. the composition of minerals.

21. As scientists study fossils and living organisms, they may draw models to illustrate their _______ about how species are related.

22. What is the model that shows the relationship between species called?
   a branching diagram

23. What does each branch in this model represent?
   A branch represents a group of organisms that descended from the first species on the diagram

24. List two groups of animals that may share a common ancestor with whales.
   Camels, llamas, pigs, peccaries, hoofed grazing animals and hippopotamuses

25. Scientists use information about organisms to sketch out a(n) _______ that includes all known living things.

EXAMINING ORGANISMS

26. In addition to studying fossils, how can scientists learn about an organism’s ancestors?
   Scientists can learn about an organism's ancestors by carefully examining the current, living organism.

27. List three things about whales that tell scientists that whales are not fish.
   Whales are not fish because they breathe air, give birth to live young and produce milk.

28. What do these traits show about whales?
   whales are mammals not fish

29. What does a whale body contain that hints it had an ancestor that lived on land?
   Since modern whales have tiny hip bones, it shows they had ancient ancestors that lived on land.
COMPARING ORGANISMS

30. Which of the following scientific fields provide evidence that organisms share common ancestors?  
   a. physical education and comparative molecules  
   b. geology and geography  
   c. comparative anatomy and molecular biology  
   d. physics and chemistry

31. When scientists study the anatomy of organisms, they find that related organisms  
   a. share all their traits.  
   b. share many traits.  
   c. share no traits.  
   d. have no traits.

32. Which of the following makes the human arm similar to a dolphin’s flipper or a bat’s wing?  
   a. the ability to fly  
   b. the structure of the skin  
   c. the order of their evolution  
   d. the structure and order of bones

33. What does the similarity between humans, dolphins, cats, and bats indicate?  
   a. that they all evolved recently  
   b. that their ancestors lived in the same place  
   c. that they share a common ancestor  
   d. that they are becoming more alike over time

34. Which of the following determines an organism’s traits?  
   a. its descendants  
   b. genetic information stored in its DNA  
   c. where it was born  
   d. what it looks like

35. What does comparing DNA from two species tell scientists?  
   By comparing the DNA from two species scientists can tell that the more similarities there are in the DNA of any two species the more recently they shared a common ancestor.