

Directed Reading B *continued*

- d.** 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?

Fossils usually form when a dead organism is covered by a layer of sediment. Over time, more sediment settles on top of the organism. Minerals in the sediment may seep into the organism and gradually replace the organism with stone. If the organism rots away completely after being covered, 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, or tree of life, or phylogenic tree or cladogram

15. How are fossils organized in the fossil record?

The fossil record is expressed as a branching diagram with older fossils on the left, and newer fossils on the right.

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?

less likely

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

evolution - how organisms have changed over time.

EVIDENCE OF ANCESTRY

- b.** 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.

Directed Reading B *continued*

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 **hypothesis** about how species are related.

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

a cladogram, or branching diagram

23. What does each branch in this model represent?

a speciation event or transition where a new species emerged from a pre-existing species.

24. List two groups of animals that may share a common ancestor with whales.

- 1. animals with a pelvic bone like the hippopotamus
- 2. mammals *with hair* like the camel

25. Scientists use information about organisms to sketch out

a(n) **"tree of life"** that includes all known living things.

EXAMINING ORGANISMS

26. In addition to studying fossils, how can scientists learn about an organism's ancestors?

By examining similarities and differences between animals that are alive today. This is called phylogeny or comparative anatomy.

27. List three things about whales that tell scientists that whales are not fish.

- 1. Whales have a pelvic bone, and fish do not.
- 2. Whales breathe air into lungs, fish use gills.
- 3. Whales give live birth, fish lay eggs.

28. What do these traits show about whales?

Whales are mammals and are more closely related to land based mammals like the hippo.

29. What does a whale body contain that hints it had an ancestor that lived on land?

A pelvis bone that is vestigial. Vestigial means a body part that is inherited from your ancestors, but you could live just fine without it. For example the humans appendix is vestigial.