

MULTIPLE CHOICE

1. Which of the following would *not* be an advantage of the endoskeleton found in all vertebrates?
 - a) It protects internal body structures.
 - b) It aids in movement.
 - c) It helps prevent desiccation in terrestrial vertebrates.
 - d) It provides structural support in terrestrial vertebrates.

2. Which of the following is *not* found in all vertebrates?
 - a) jaws
 - b) cranium
 - c) endoskeleton
 - d) vertebral column

3. The concentration of the urine an animal produces depends primarily on
 - a) the time of the year.
 - b) the size of the organism.
 - c) the animal's environment.
 - d) the diet of the organism.

4. The structure of a fish that filters dissolved chemical wastes from the blood is a(n)
 - a) lung.
 - b) heart.
 - c) amnion
 - d) kidney.

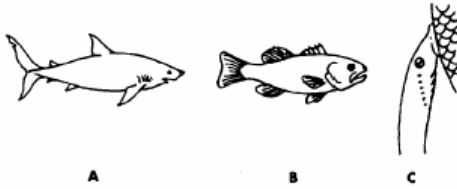
5. The urinary bladder and kidneys make up the _____ of a fish.
 - a) respiratory system.
 - b) digestive system.
 - c) excretory system.
 - d) circulatory system.

6. Substances that are useful to the body, but filtered out of the blood by kidneys,
 - a) are lost and must be constantly replaced through the animal's diet.
 - b) would prove poisonous if allowed to remain in the blood.
 - c) are converted to feces to be disposed of.
 - d) are selectively reabsorbed back into the blood.

7. Lampreys and hagfishes have
 - a) jaws.
 - b) paired fins.
 - c) a rigid skeleton.
 - d) a notochord through all stages of their life cycle.

8. . The word *agnatha* means
 - a) "bony fishes."
 - b) "without jaws."
 - c) "without vertebral column."
 - d) "early fish."

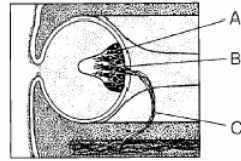
Three Types of Fish



9. Refer to the illustration above. Fish "C" in the diagram
- has skin covered by overlapping structures called scales.
 - has many small scales embedded in the skin.
 - feeds parasitically on other fish.
 - does not have a lateral line system.
10. Refer to the illustration above. Fish "A" in the diagram
- has skin covered by overlapping structures called scales.
 - has many small scales embedded in the skin.
 - feeds parasitically on other fish.
 - does not have a lateral line system.
11. Refer to the illustration above. Fish "B" in the diagram
- has skin covered by overlapping structures called scales.
 - has many small scales embedded in the skin.
 - feeds parasitically on other fish.
 - does not have a lateral line system.
12. The living agnathans are the
- lampreys and sharks..
 - sharks and rays.
 - hagfishes and coelacanth
 - lampreys and hagfishes.
13. Lampreys are
- autotrophs..
 - mutualistic organisms.
 - Parasites
 - amphibians.
14. The ion concentration in the body of a shark
- changes constantly as the shark swims at different depths.
 - is higher than that in the surrounding sea water.
 - is lower than that in the surrounding sea water.
 - is the same as that in the surrounding sea water.
15. The word *chondrichthyes* means
- bony fish.
 - gilled fish.
 - big fish.
 - cartilage fish.
16. Cartilaginous fishes have all of the following except
- spiracles..
 - internal fertilization.
 - a swim bladder
 - gill slits.

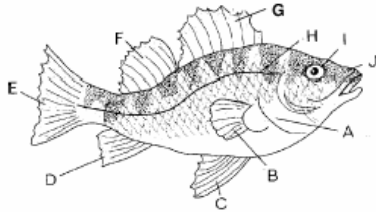
Structures of the Lateral Line of a Fish

17. In the illustration. The structure labeled "C" is a
- cilium.
 - scale.
 - supporting cell.
 - nerve.



18. Which of the following senses is *not* used by sharks to detect prey?
- olfaction
 - vision
 - lateral-line system
 - touch
19. The eggs of many species of sharks
- are released from the mother's body before fertilization.
 - are released from the mother's body after fertilization.
 - are released from the mother's body after developing into young embryos.
 - hatch inside the mother's body, where the young sharks continue to grow.
20. Members of the class Osteichthyes
- have skeletons made of bone.
 - do not have jaws.
 - include the rays and skates.
 - All of the above

External Structure of a Bony Fish



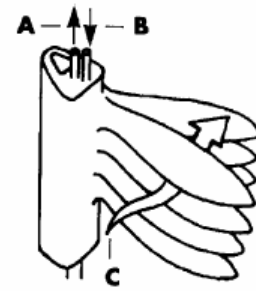
21. Refer to the illustration above. In order to move forward, the fish uses the fin(s) labeled
- "B."
 - "C."
 - "E."
 - "F."
22. In the illustration above, the structure labeled "A," which draws water into the mouth of the fish, is
- pharynx.
 - esophagus.
 - gills.
 - operculum.
23. The two major groups of bony fishes are the lobe-finned fishes and the
- lungfishes.
 - ray-finned fishes.
 - coelacanth.
 - placoderms.
24. A collection chamber that reduces the resistance of blood flow into the heart of a fish is
- sinus venosus.
 - ventricle.
 - conus arteriosus.
 - atrium.
 -

25. In the illustration. The structure shown in the diagram is a

- a) lung.
- b) lateral line.
- c) gill.
- d) trachea.

26. In the illustration, which arrow indicates the direction of water flow?

- a) Arrow "A"
- b) Arrow "B"
- c) Arrow "C"
- d) None of the above



27. In the illustration above, which organism might you expect to find the structure illustrated in the diagram?

- a) frog
- b) spider
- c) bird
- d) goldfish

28. In the illustration above, which arrow(s) in the diagram indicate(s) the direction of oxygen-poor blood flow?

- a) Arrow "A"
- b) Arrow "B"
- c) Arrow "C"
- d) Arrows "A" and "B"

29. The countercurrent flow of water and blood found in the gills of fishes

- a) allows blood and water to flow in the same direction.
- b) ensures that oxygen diffuses into the blood over the whole length of the blood vessels in the gills.
- c) results in an uneven supply of oxygen reaching the blood vessels in the gills.
- d) hampers the diffusion of oxygen and carbon dioxide between the blood and the water.

30. The operculum

- a) is part of the skeletal system..
- b) is an adaptation for rapid swimming.
- c) covers the gill chamber
- d) None of the above

31. The gills of bony fishes

- a) give them buoyancy.
- b) are found in a single chamber behind the operculum.
- c) are composed of scales.
- d) are housed in chambers on each side of the head.

32. The swim bladder

- a) stores air for breathing.
- b) contains antibodies.
- c) is found in all amphibians.
- d) allows fishes to become more buoyant.

33. A critical difference between bony fishes and sharks is

- a) the presence of a swim bladder in most bony fishes.
- b) the presence of a lateral line system in sharks.
- c) that most sharks have color vision.
- d) All of the above