

Chapter 21

Use with Section 1

ENRICHMENT

● Fish

Chordate Hearts

The hearts of fish, amphibians, and reptiles are all different. This is because each type of animal has different needs and different body functions.

Fish have hearts with only two chambers, an atrium and a ventricle. Their blood flows in a simple path from the heart to the gills, where it is oxygenated, to body tissues, and back to the heart. This two-chambered heart supports the life of the fish because fish don't need as high a level of energy for body functions as land vertebrates. Fish are supported and buoyed up by the water they live in.

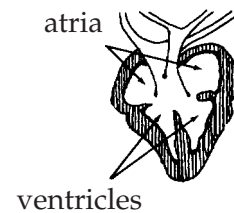
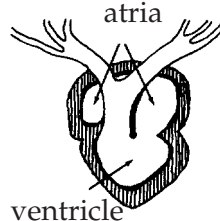
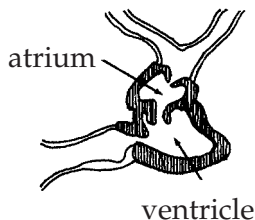
Amphibians and reptiles have a more complex circulatory system than fish. This better enables them to deal with the environmental problems of living on land. Amphibians and reptiles have a third heart chamber that helps

the heart to keep oxygenated and deoxygenated blood separate.

Amphibians carry on respiration through their skin as well as lungs. Unlike fish, they have two atria instead of one. One atrium receives oxygenated blood from the lungs, and the other receives deoxygenated blood from body tissues. Both atria empty into a single ventricle. The ventricle lets blood bypass the lungs when the animal is under water.

Reptiles don't have skin respiration. Reptile hearts have two atria and a ventricle. But unlike the amphibian's, the reptile heart has a partially divided ventricle. This wall further decreases the mixing of oxygenated and deoxygenated blood and allows oxygenated blood to be pumped continually to the body.

Decide if the following are hearts of fish, amphibians, or reptiles. Label the diagrams, then answer the questions that follow in complete sentences.



1. Summarize how the number of chambers in the hearts of fish, amphibians, and reptiles relates to their lifestyles. _____

2. Why do you think humans and birds have a more advanced type of heart than fish, amphibians, and reptiles? _____