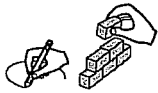


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Date _____

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Activity 42.1 How is mammalian heart structure related to function?

1. Diagram and describe the path a red blood cell takes from a capillary in your big toe to your heart and back to your big toe. At each point in the pathway, indicate whether the red blood cell is most likely picking up or losing oxygen. Indicate also the relative blood pressure that part of the path is likely to have. Include all of the following terms in your diagram.

aorta

venules

veins

arteries

arterioles

capillaries

right atrium

left atrium

right ventricle

left ventricle

coronary arteries

heart

internal organs (for example, lungs,
digestive tract)

skeletal muscle

2. The degree of musculature differs in these chambers of the heart: atria, right ventricle, left ventricle.

a. Draw the heart and its chambers, including differences in musculature.	b. Explain why the differences in musculature might exist by explaining the normal functions of each chamber.	c. Include in your description the functions of the SA node (pacemaker), the AV node, and the AV and semilunar valves.

3. While in utero, the wall between the two ventricles of the human fetal heart is not complete. An opening, the foramen ovale, allows blood from the two ventricles to mix. Normally, at birth, this hole seals over and the two ventricles are separated from each other. What would be the consequences to the infant if this hole did not seal over at birth?

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4. One of the most common congenital defects of the cardiovascular system is called "transposition of the great arteries." In infants who have this defect, the pulmonary artery exits from the heart where the aorta should and the aorta exits where the pulmonary artery should. All other circulatory connections are normal.

a. Diagram and describe the circulation of blood in an infant who has this genetic defect.

b. What type of treatment would such an infant need?