Analyzing the Human Heart

Your heart is only slightly larger than your fist, yet it is more powerful, durable, and hard-working. Its job is to pump blood to the lungs and to all of the body tissues. In this activity you will use a diagram of the heart to analyze the way in which the heart works.

I. Using the following word list, label the various parts of the heart on the diagram.

- Right ventricle
- Left ventricle
- Upper vena cava
- Lower vena cava
- Aorta
- Right atrium
- Left atrium
- Tricuspid valve
- Bicuspid valve
- Septum
- Right pulmonary arteries
- Left pulmonary arteries
- Right pulmonary veins
- Left pulmonary veins

Diagram labels:
- Upper vena cava
- Right pulmonary artery
- Right pulmonary vein
- Right atrium
- Bicuspid valve
- Right ventricle
- Lower vena cava
- Left atrium
- Left pulmonary artery
- Left pulmonary veins
- Tricuspid valve
- Left ventricle
- Septum
- Aorta

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2. Color red the structures in the diagram that carry only oxygen-rich blood. Color blue the structures that carry only oxygen-poor blood.

3. Use arrows to show the direction of blood flow.

Answer the following questions.

4. Through which parts of the heart does oxygen-rich blood flow?
   \[
   \text{left + right pulmonary veins} \rightarrow \text{left atrium} \rightarrow \text{left ventricle} \rightarrow \text{aorta}
   \]

5. Through which parts of the heart does oxygen-poor blood flow?
   \[
   \text{anterior + posterior vena cava} \rightarrow \text{right atrium} \rightarrow \text{right ventricle} \rightarrow \text{pulmonary trunk} \rightarrow \text{left + right pulmonary artery} \rightarrow \text{lungs}
   \]

6. What is the difference between veins and arteries?
   - Arteries away from heart. Thick walls, Valves.
   - Veins to the heart. Thin walls.

Rheumatic fever is a serious disease in which the joints of the body, the pericardium, and the valves of the heart become inflamed. It can do damage to all parts of the body, especially the heart valves. The valve between the left atrium and left ventricle usually receives the most damage in the form of scar tissue. Masses of scar tissue prevent the valve from closing properly. This also causes the heart to make a gurgling sound that is called a heart murmer.

7. Describe the damage that would occur from rheumatic fever.
   - \text{Scarring of tricuspid valve, so it doesn't close properly.}
   - May lead to backwards flow of the blood. Usually not to another.

8. What long-term effects on the heart would result from a damaged valve?
   - \text{Heart has to work harder to pump enough oxygenated blood to the body. This can wear out your heart and might lead to heart failure.}