

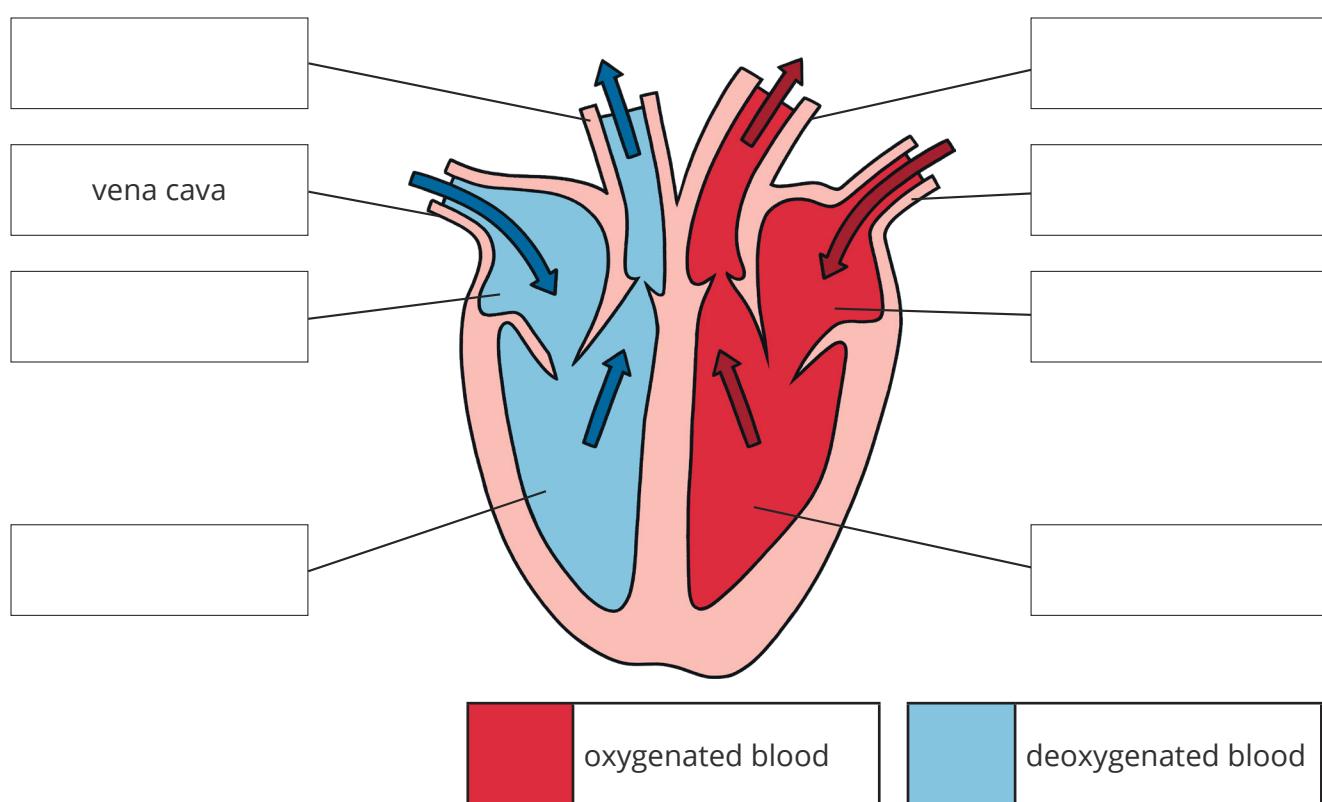


The Heart

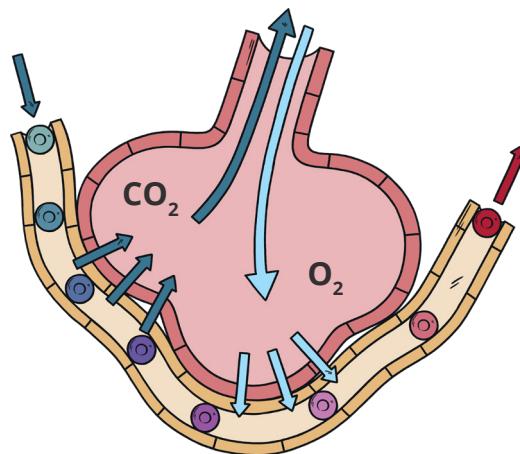
The heart is part of the circulatory system. Humans have a double circulatory system; the heart pumps the blood through two circuits. The right side of the heart pumps blood to the lungs and the left side of the heart pumps blood to the rest of the body.

Blood enters the heart through the **vena cava** and passes into the **right atrium**, then into the **right ventricle**. The muscles in the right ventricle wall push the blood through the **pulmonary artery**, which carries the blood to the lungs. At the same time, blood from the lungs enters the heart through the **pulmonary vein**, passes through the **left atrium** and into the **left ventricle**. Muscles in the left ventricle wall push the blood through the **aorta**, which takes the blood to the rest of the body.

1. Label the parts of the heart in the diagram below.



Blood arriving at the right side of the heart is **deoxygenated**. The right side of the heart pumps blood to the lungs. Blood returning to the left side of the heart is **oxygenated**. The diagram below shows blood passing through a capillary close to an alveolus in the lungs.



4. Use the diagram to describe the process of gas exchange in the lungs. Try to include all the key words in the box.

alveoli

carbon dioxide

diffuses

exhaled

inhaled

oxygen

red blood cells

The left side of the heart pumps oxygenated blood to the rest of the body.

5. Describe what happens to the substances in the blood as it passes close to the body tissues. Try to include all the key words in the box.

carbon dioxide

diffuses

glucose

energy

muscle

oxygen

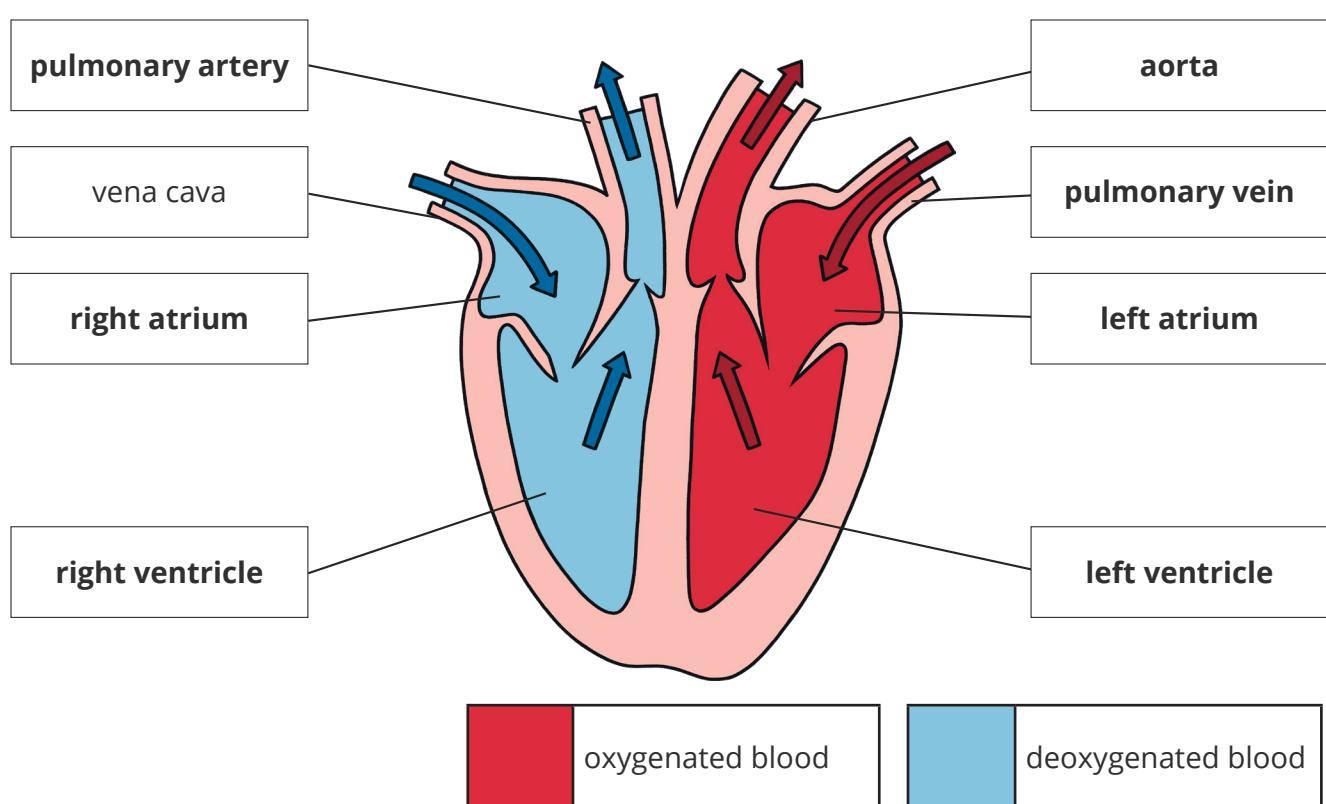
respiration

The Heart Answers

The heart is part of the circulatory system. Humans have a double circulatory system; the heart pumps the blood through two circuits. The right side of the heart pumps blood to the lungs and the left side of the heart pumps blood to the rest of the body.

Blood enters the heart through the **vena cava** and passes into the **right atrium**, then into the **right ventricle**. The muscles in the right ventricle wall push the blood through the **pulmonary artery**, which carries the blood to the lungs. At the same time, blood from the lungs enters the heart through the **pulmonary vein**, passes through the **left atrium** and into the **left ventricle**. Muscles in the left ventricle wall push the blood through the **aorta**, which takes the blood to the rest of the body.

1. Label the parts of the heart in the diagram below.



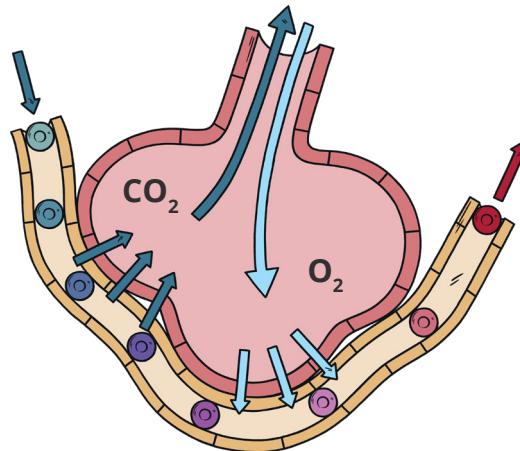
2. Explain why the muscle wall on the left side of the heart is thicker than the wall on the right side of the heart.

The left side of the heart needs to put the blood under higher pressure than the right side in order to pump it a greater distance around the body.

3. Explain why the heart has valves between the chambers.

The valves prevent blood flowing backwards, to keep blood flowing in one direction around the circulatory system.

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4. Use the diagram to describe the process of gas exchange in the lungs. Try to include all the key words in the box.

alveoli	carbon dioxide	diffuses	exhaled
inhaled	oxygen	red blood cells	

The air that is inhaled into the lungs contains a high concentration of oxygen. Oxygen diffuses from the air in the alveoli into the red blood cells in the blood. Carbon dioxide diffuses from the blood into the air in the alveoli to be exhaled.

The left side of the heart pumps oxygenated blood to the rest of the body.

5. Describe what happens to the substances in the blood as it passes close to the body tissues. Try to include all the key words in the box.

carbon dioxide	diffuses	glucose	energy
muscle	oxygen	respiration	

Glucose and oxygen diffuse from the blood into the muscle cells, where they are used for respiration to release energy. Carbon dioxide and other waste products diffuse from the muscle cells into the blood to be returned to the heart.