What is the Circulatory System?

Worksheet

The circulatory system is a closed transport network: the heart pumps blood through arteries to tissues, capillaries exchange gases and nutrients, and veins return blood to the heart, cycling continuously between the lungs and the body.

Questions

1. Which chamber of the heart pumps oxygenated blood to the body?

A) Right atrium
B) Right ventricle
C) Left atrium
D) Left ventricle

2. Where does gas exchange between blood and body cells occur?

A) Arteries
B) Veins
C) Capillaries
D) Heart valves

3. Which vessel carries deoxygenated blood away from the heart?

A) Aorta
B) Pulmonary artery
C) Pulmonary vein
D) Vena cava

4. What is the correct order of double circulation?

A) Heart body lungs heart
B) Heart lungs heart body heart
C) Lungs body heart
D) Body lungs body

5. Trace the path of a single red blood cell starting in the right atrium until it returns oxygenated blood to a muscle cell in the leg.

6. During intense exercise, why does heart rate and breathing rate both increase?

7. A patient has a blockage in a coronary artery. Why is this dangerous even though the heart itself is full of blood?

8. Define: What are the two loops of the circulatory system?

9. Define: Which heart chamber pumps blood to the lungs?

10. Define: Where does gas exchange with body tissues happen?

Answer Key

1. D) Left ventricle - The left ventricle pumps oxygen-rich blood out through the aorta to the whole body.

2. C) Capillaries - Capillaries have thin walls that allow oxygen, carbon dioxide and nutrients to diffuse in and out.

3. B) Pulmonary artery - The pulmonary artery is the exception - it carries deoxygenated blood from the right ventricle to the lungs.

4. B) Heart lungs heart body heart - Blood cycles from the heart to the lungs, back to the heart, then out to the body, and back again.

5. Step 1: Blood leaves the right atrium, passes through the right ventricle, and is pumped to the lungs via the pulmonary artery. Step 2: In the lung capillaries, the blood picks up oxygen and releases carbon dioxide. Step 3: Oxygen-rich blood returns to the left atrium, then the left ventricle, which pumps it out through the aorta. Step 4: The blood travels through arteries, arterioles, and finally leg capillaries, delivering oxygen to the muscle cell.

6. Step 1: Muscle cells consume oxygen faster and produce more carbon dioxide during exercise. Step 2: The heart increases its rate (heart rate) to circulate blood faster and deliver more oxygen. Step 3: Faster circulation alone isn't enough - the lungs must also load more oxygen, so breathing rate rises. Step 4: Together, the circulatory and respiratory systems keep up with the muscles' increased demand.

7. Step 1: The blood inside the heart's chambers is meant for the rest of the body, not the heart muscle itself. Step 2: The heart muscle gets its own oxygen supply from coronary arteries that branch off the aorta. Step 3: A blockage in a coronary artery starves part of the heart muscle of oxygen. Step 4: This can cause tissue death (myocardial infarction, or heart attack) despite blood still being inside the chambers.

8. Pulmonary circulation (heart-lungs-heart) and systemic circulation (heart-body-heart).

9. The right ventricle, via the pulmonary artery.

10. In the capillaries, the smallest blood vessels with walls thin enough for diffusion.