

## Questions

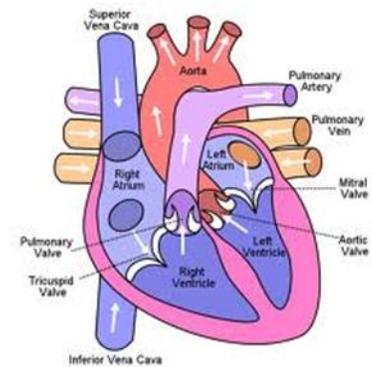
## The Circulatory System Notes

The circulatory system consists of the:

- Heart
- Blood
- Blood vessels
- Lymphatic system

The circulatory system:

- Carries water, oxygen and nutrients to the cells
- Carries waste products such as carbon dioxide away from the cells
- Transports hormones
- Is a closed system in humans, it forms a circuit where the blood moves through-out the body



## Heart

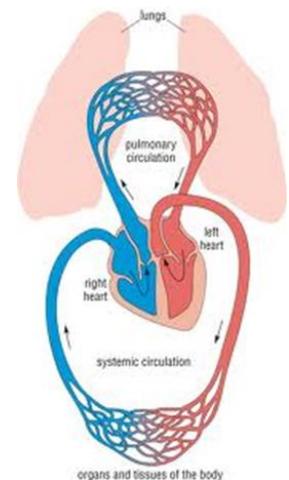
The human heart is the size of a clenched fist. It is located towards the middle of the chest, near the sternum. It is a hollow organ with 4 chambers which are separated by valves

- Right atrium-receives oxygen poor blood-deoxygenated
- Left atrium-receives oxygenated blood from pulmonary vein
- Right ventricle-discharges blood to pulmonary artery
- Left ventricle-discharges oxygenated blood to the aorta

The closing of the ventricles causes the sound lub-dub of the heartbeat. The average heart beats 70 times per minute. Nerve impulses are controlled by the pacemaker, which sends impulses to the heart to contract

## Flow of blood from body to the heart:

- **Right atrium** receives deoxygenated blood from the superior vena cava
- Blood flows through a valve into the **right ventricle** and out to the pulmonary artery and to the lungs. In the lungs, gas exchange takes place. Carbon dioxide diffuses out to the blood into the alveoli of the lungs and oxygen diffuses out of the alveoli and into the blood.
- Oxygenated blood travels through the pulmonary vein into the **left atrium**.
- The **left ventricle** receives the oxygenated blood and sends it out to the aorta and to the billions of cells in the body.

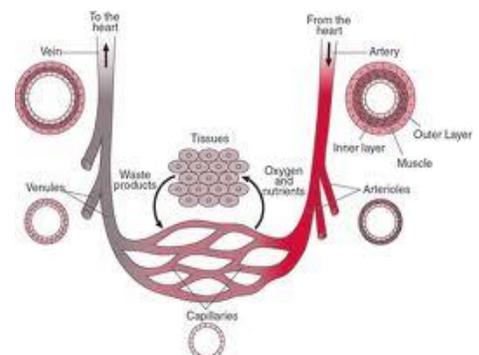


**Systemic circulation** is the blood flow between the heart and body.

**Pulmonary circulation** is the blood flow between the heart and lungs.

## Blood Vessels

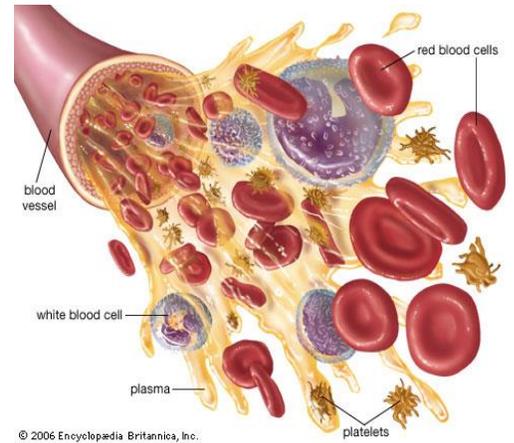
- **Arteries**-thick blood vessels that take oxygenated blood **away** from the heart
- **Veins**-thinner blood vessels that take deoxygenated blood **towards** the heart; veins have valves that prevent back flow
- **Capillaries**-small thin vessels where gas exchange takes place



## Blood

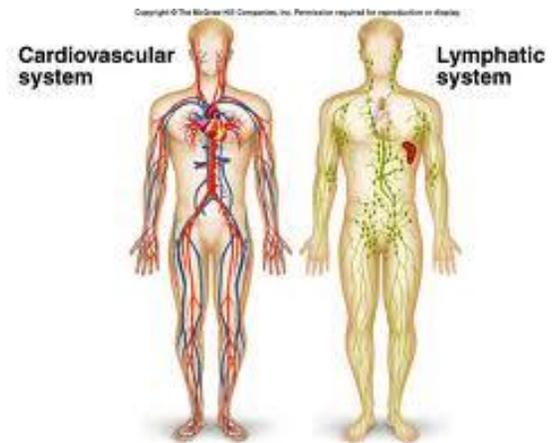
Blood consists of plasma, red blood cells, white blood cells and platelets. Red and white blood cells are produced in the bone marrow.

- Plasma is yellowish in color, mostly water and carries the nutrients and hormones.
- Red blood cells are called erythrocytes and contain the protein the hemoglobin which transports oxygen and carbon dioxide. They have no nuclei
- White blood cells known as leukocytes and help protect against disease and microorganisms. Lymphocytes are white blood cells that are part of the lymphatic system and help with the immune system
- Platelets are small; disk shaped and helps with clotting.



## Lymphatic System

The lymphatic system is part of the circulatory system. It consists of lymph vessels, lymph nodes and lymph which, contains plasma. The lymphatic system helps to return fluid to the circulatory system and helps with defense for the body and the immune system.



## How the circulatory system works with other body systems:

The circulatory system helps maintain homeostasis by transporting oxygen and nutrients needed for cell functions and removing waste, carbon dioxide and helping to transport it out of the body.

The circulatory system works with the

- nervous system -electrical signals help to contract the heart
- lymphatic system returns fluid/water back to circulatory system
- digestive system-carries absorbed nutrients & glucose to cells for function
- endocrine system-transportes hormones

## Summary: