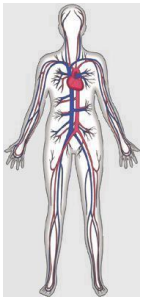
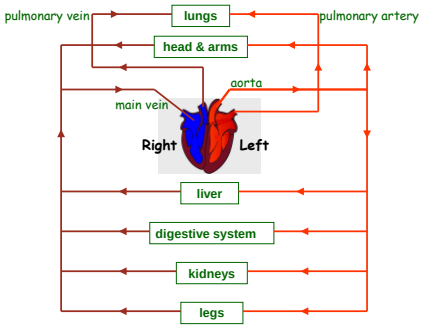
Circulatory System



What is the circulatory system?

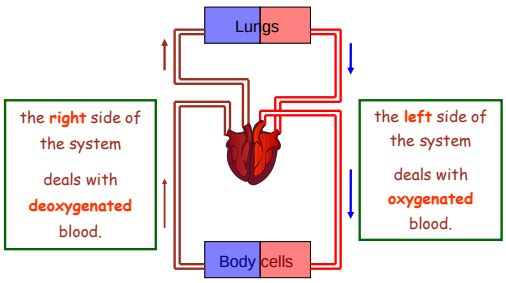
- The circulatory system carries blood and dissolved substances to and from different places in the body.
- The Heart has the job of pumping these things around the body.
- The Heart pumps blood and substances around the body in tubes called blood vessels.
- The Heart and blood vessels together make up the **Circulatory System**.

How does this system work?

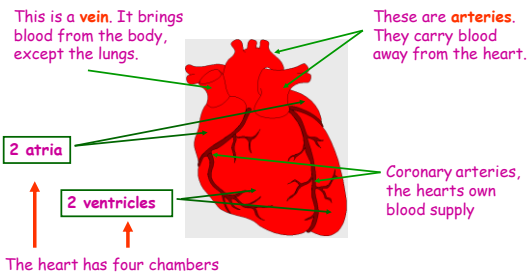


Circulatory System

Our circulatory system is a double circulatory system.
This means it has two parts parts.

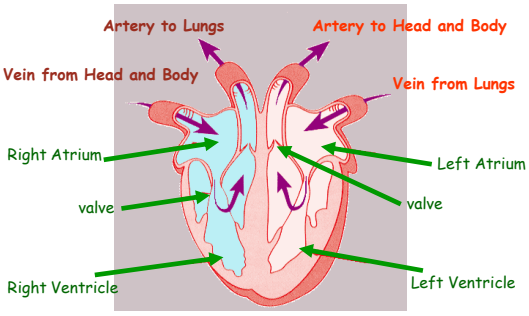


The Heart



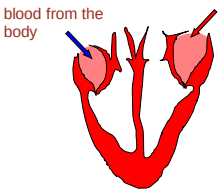
now lets look inside the heart

The Heart



How does the Heart work?

STEP ONE



The heart beat begins when the heart muscles **relax** and blood flows into the atria.

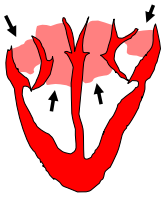
How does the Heart work?

STEP TWO

The atria then **contract** and the valves **open** to allow blood into the ventricles.

How does the Heart work?

STEP THREE



The valves **close** to stop blood flowing backwards.

The ventricles **contract** forcing the blood to leave the heart.

At the same time, the atria are **relaxing** and once again filling with blood.

The cycle then repeats itself.

blood from the heart gets around the body through blood vessels

There are 3 types of blood vessels

a. ARTERY

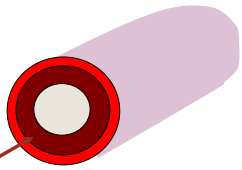
b. VEIN

c. CAPILLARY

The ARTERY

Arteries carry blood away from the heart.

the elastic fibres allow the artery to ***stretch*** under pressure



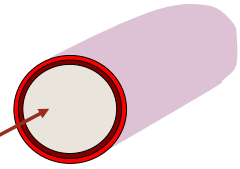
thick muscle and elastic fibres

the thick muscle can contract to ***push*** the blood along.

The VEIN

Veins carry blood towards from the heart.

veins have valves which act to stop the blood from going in the wrong direction.



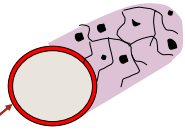
thin muscle and elastic fibres

body muscles surround the veins so that when they contract to move the body, they also squeeze the veins and push the blood along the vessel.

The CAPILLARY

Capillaries link Arteries with Veins

they exchange materials between the blood and other body cells.

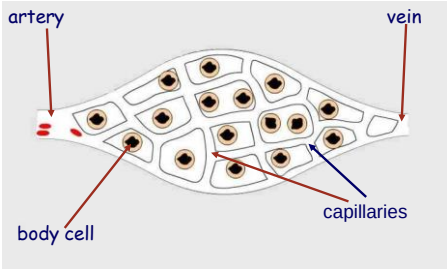


the wall of a capillary is only one cell thick

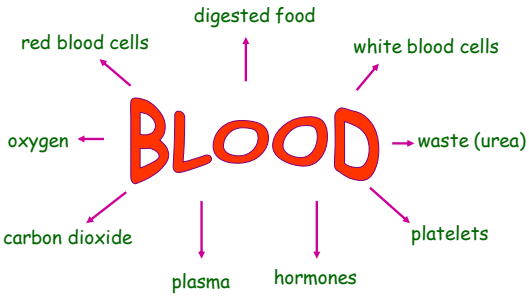
The exchange of materials between the blood and the body can only occur through capillaries.

The CAPILLARY

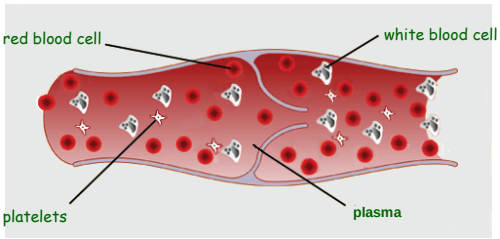
A collection of capillaries is known as a **capillary bed**.



what's in



The Blood



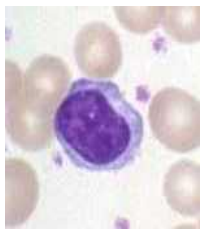
Red Blood Cells

a biconcave disc that is round and flat **without a nucleus**

contain **haemoglobin**, a molecule specially designed to hold oxygen and carry it to cells that need it.

can **change shape** to an amazing extent, without breaking, as it squeezes single file through the capillaries.

White Blood Cells



there are many different types and all contain a **big nucleus**.

the two main ones are the **lymphocytes** and the **macrophages**.

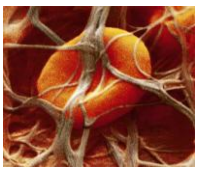
macrophages 'eat' and **digest** micro-organisms .

some lymphocytes fight disease by making **antibodies** to destroy invaders by dissolving them.

other lymphocytes make **antitoxins** to break down poisons.

Platelets

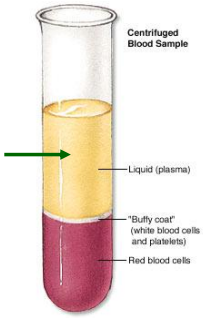
Platelets are bits of cell broken off larger cells.



Platelets produce tiny **fibrinogen fibres** to form a net. This net traps other blood cells to form a **blood** clot.

Plasma

A **straw-coloured** liquid that carries the cells and the platelets which help blood clot.



It also contains useful things like;

- carbon dioxide
- glucose
- amino acids
- proteins
- minerals
- vitamins
- hormones
- waste materials like **urea**.

SUMMARY

copy and complete the following;

Arteries take blood _away_ from the heart. The walls of an artery are made up of thick _muscular_ walls and elastic fibres. Veins carry blood _towards_ the heart and also have valves. The _capillaries_ link arteries and veins, and have a one cell thick wall. Blood is made up of four main things _plasma_, the liquid part of the blood; Red Blood Cells to carry _oxygen_; White Blood cells to protect the body from disease and _platelets_ to help blood clot.