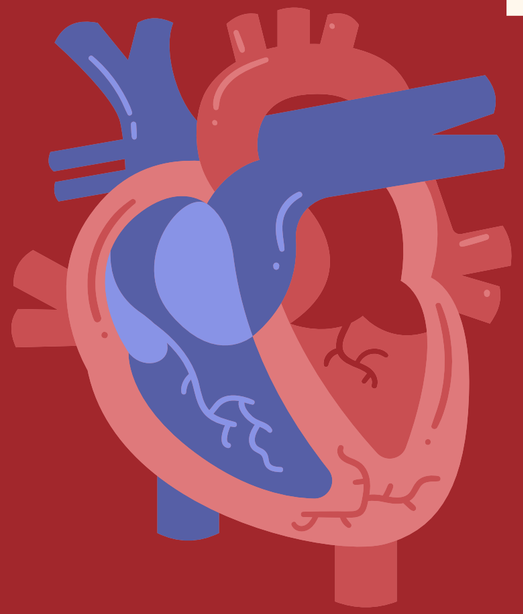
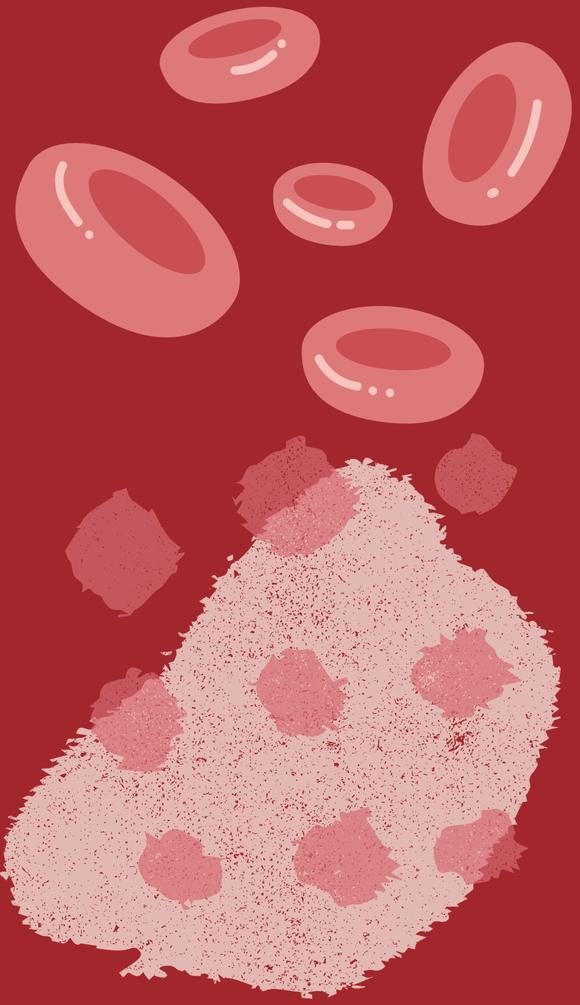
THE CIRCULATORY SYSTEM





The role of the heart, blood and blood vessels

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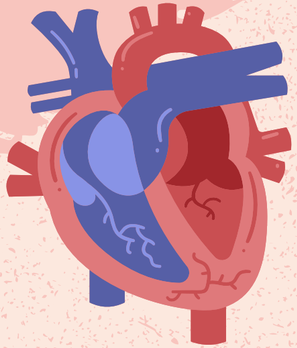
WHAT IS YOUR PULSE RATE?

To check your pulse, place the tips of your index and middle finger on your wrist.

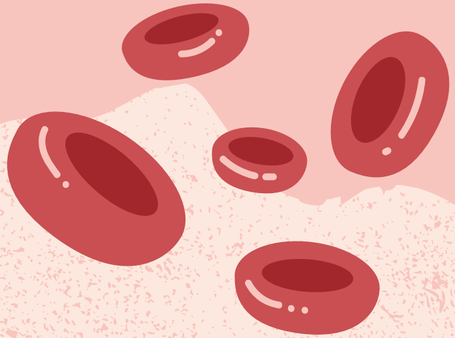
Feel your pulse and count the beats for 15 seconds. Then, multiply that number by four to find out how many times your heart beats in one minute.

Where does this pulse come from?

TODAY, YOU WILL...



Name and describe the main parts of the human circulatory system.



Describe the role of the heart, blood and blood vessels.

THE HUMAN CIRCULATORY SYSTEM

Function

To transport blood, oxygen and nutrients to the body

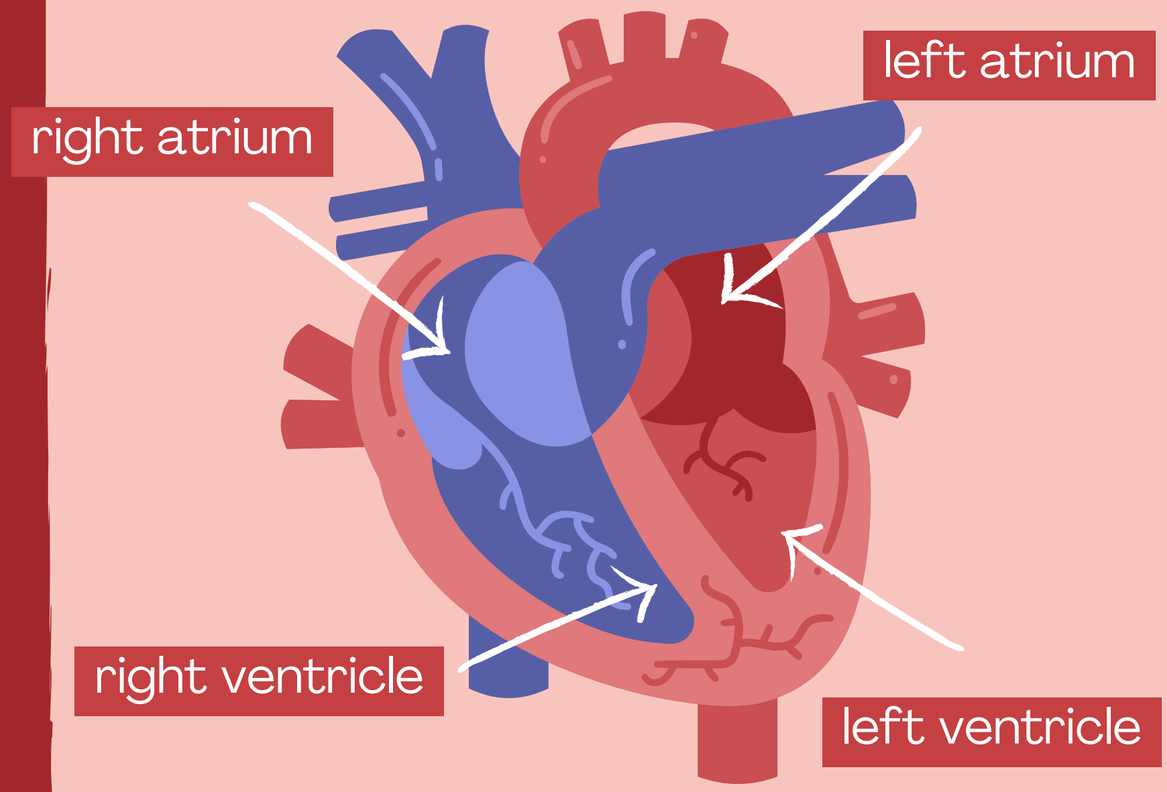
Main Parts

Has three main parts: the heart, blood vessels and blood

THE HEART

It works as a **pump to move the blood** around the body.

It has four chambers—two atria (upper chambers) and two ventricles (lower chambers).

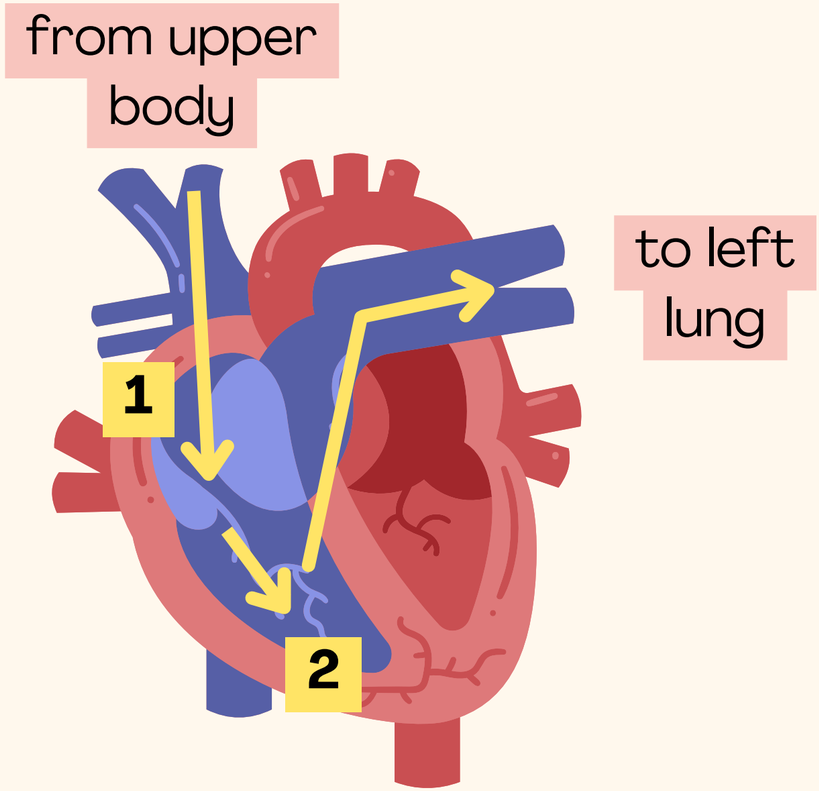


THE HEART

Let’s examine how blood flows through the heart.

1. The right atrium takes in blood carrying carbon dioxide.

2. Blood is squeezed down into the right ventricle and taken to the lungs, where oxygen replaces carbon dioxide.



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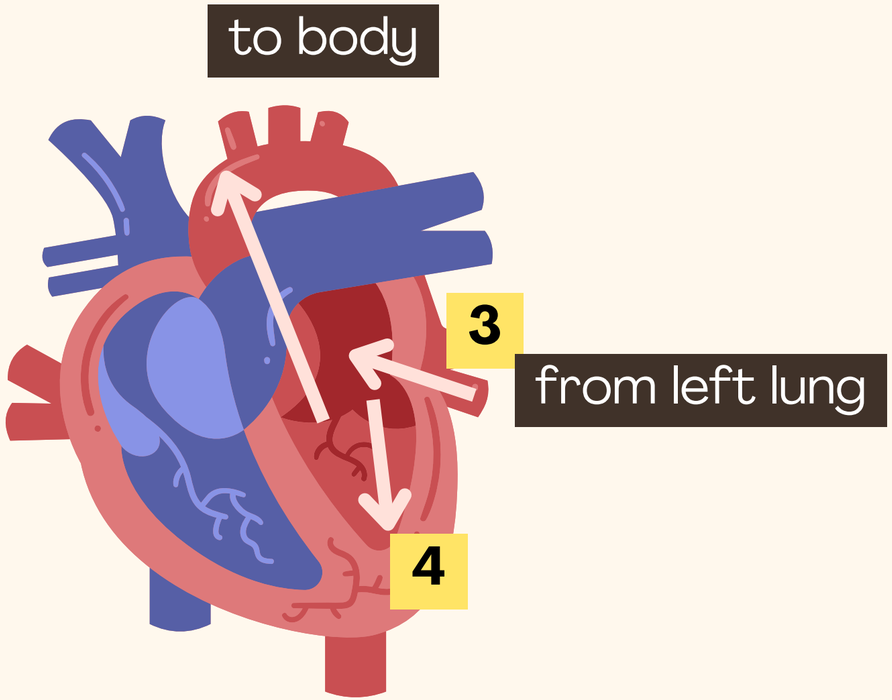
THE HEART

Let’s examine how blood flows through the heart.



3 Oxygen-carrying blood from the lungs enters the left atrium.

4 Blood is pumped into the left ventricle and starts its journey again throughout the body.

LESSON CHECK: THE HEART

Can you explain how blood flows through the heart with a partner, even without the diagram of the heart?

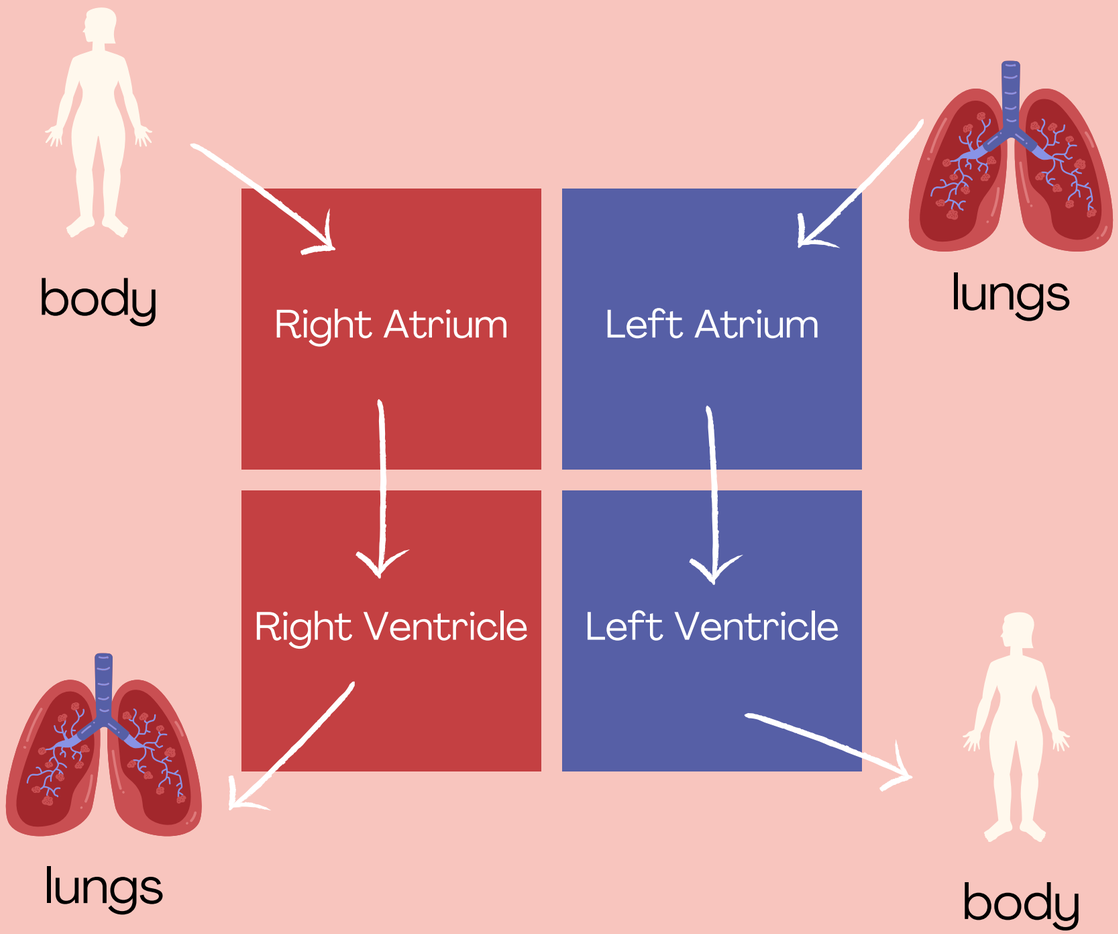
Try explaining the process to your peer without referring to your notes.

SAMPLE ANSWER

LESSON CHECK: THE HEART

Can you explain how blood flows through the heart with a partner, even without the diagram of the heart?

Shown is a sample diagram of how blood flows through the heart.



BLOOD

It is a special **fluid** primarily contained within the blood vessels.

It has **four main components**—red blood cells, white blood cells, platelets and plasma.

BLOOD

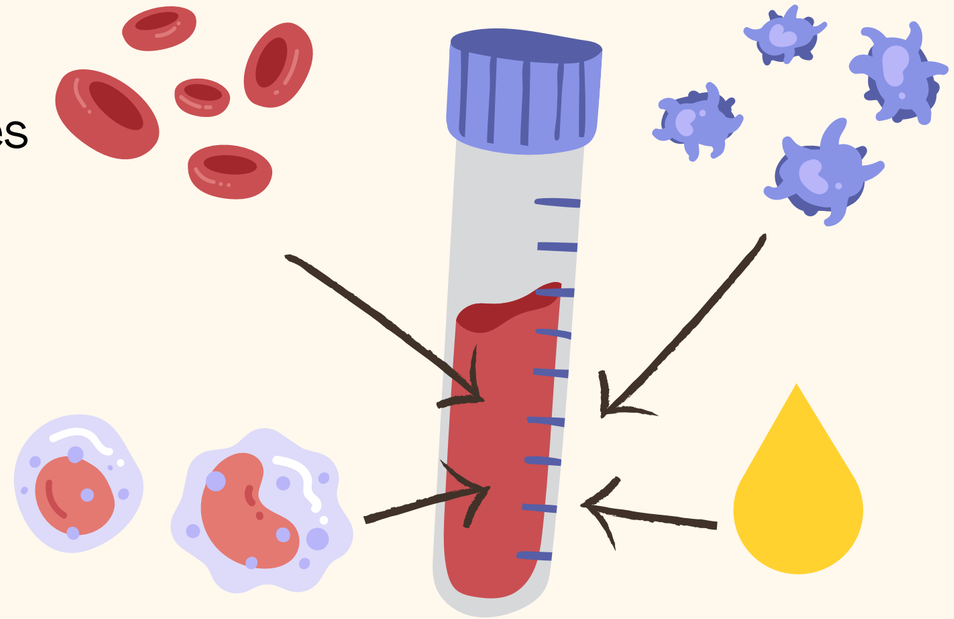
Our blood has four main components:

Red Blood Cells

carry oxygen, nutrients and wastes

White Blood Cells

fight diseases and protect the body from infection



Platelets

gather at the site of injury and help the clotting process

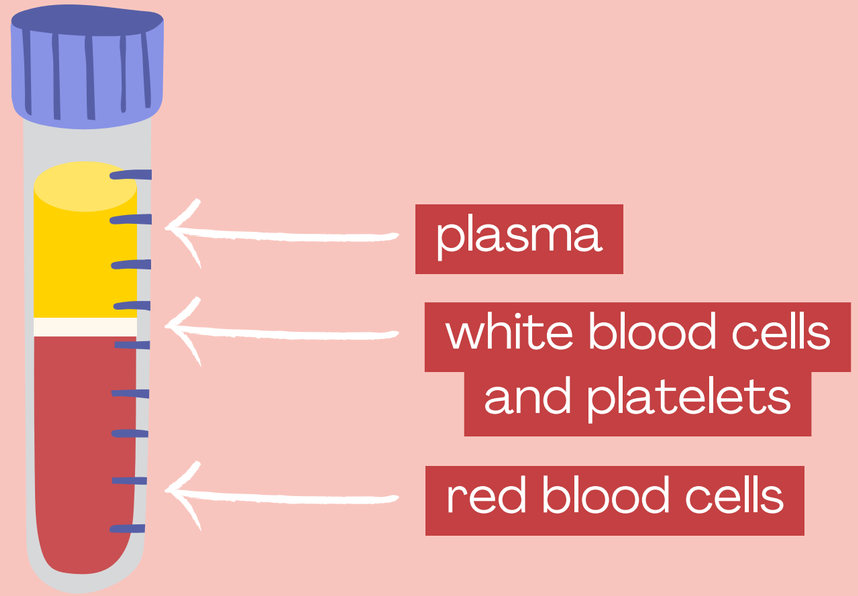
Plasma

straw-coloured liquid where the other components float in

BLOOD

When someone has a blood test, a small amount of blood is taken and kept in a tube for testing.

To closely examine it, blood undergoes component separation. One common method involves spinning it at very high speeds in a centrifuge.

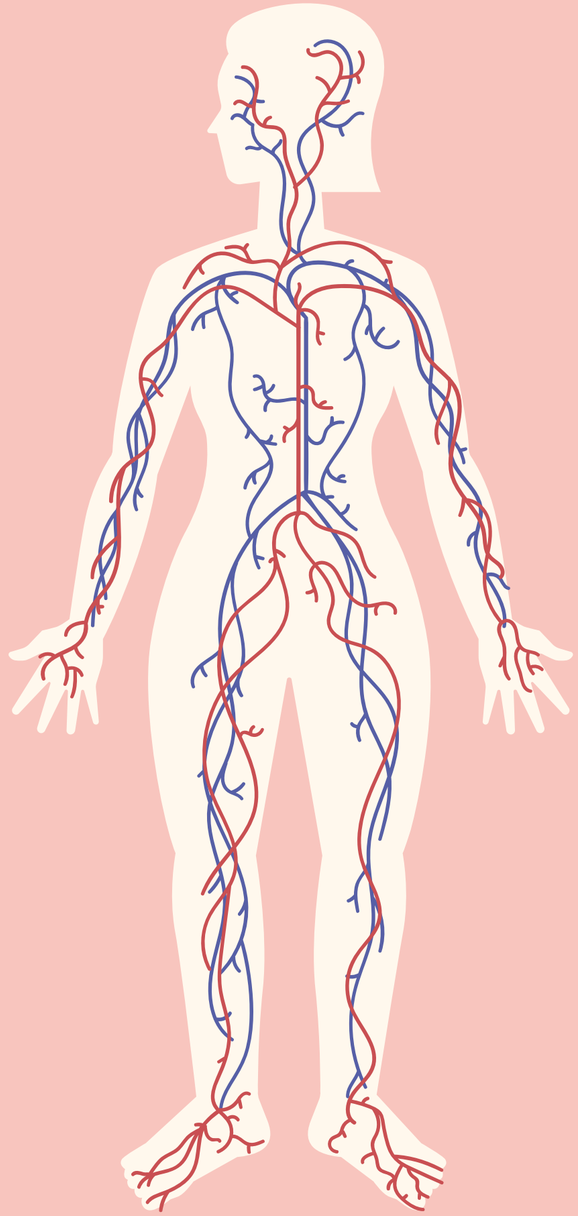


Blood is divided into its components, with the heaviest parts at the bottom.

BLOOD VESSELS

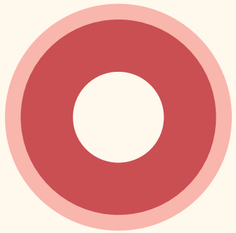
These are tubes or channels that carry blood throughout our body.

There are three types of blood vessels—veins, arteries and capillaries. Each one differs in size and structure.



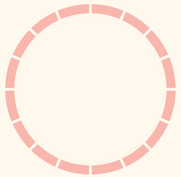
BLOOD VESSELS

Let’s take a closer look at the three types of blood vessels:



Artery

It has the **thickest wall** of all three, allowing it to withstand the high pressure created by the heart.



Capillary

It has the **thinnest wall** to allow substances such as oxygen and sugars to pass through its wall—into or out of the blood.

Vein

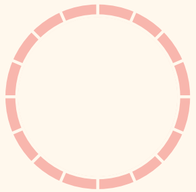
It is **less muscular and stretchy** than an artery, so blood moves through it with low pressure. It also has a special valve that helps blood go only one way.

BLOOD VESSELS

Each type of blood vessel has a unique role in the circulatory system.

Artery

Carries blood **away from the heart**



Capillary

Assists in the **exchange of substances** between the blood and tissues

Vein

Carries blood back **towards the heart**

TIP Remember ‘A’ for ‘artery’ and ‘away’ from the heart!

LESSON CHECK: SICKLE CELL DISEASE

Sickle cell disease (SCD) is an inherited blood disorder. People with SCD have red blood cells that become **hard and sticky**, forming a **C-shaped blood cell** instead of the healthy disc-shaped one.

Considering what you've learnt about blood and blood vessels, how does this shape affect blood flow in the circulatory system?

SAMPLE ANSWER

LESSON CHECK: SICKLE CELL DISEASE

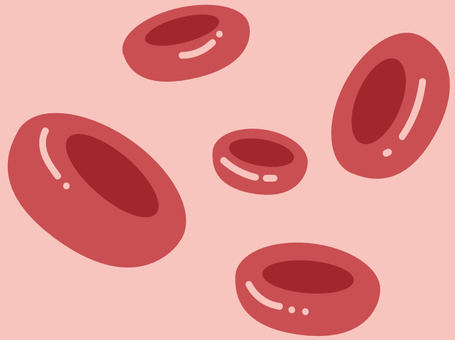
Considering what you've learnt about blood and blood vessels, how does this shape affect blood flow in the circulatory system?

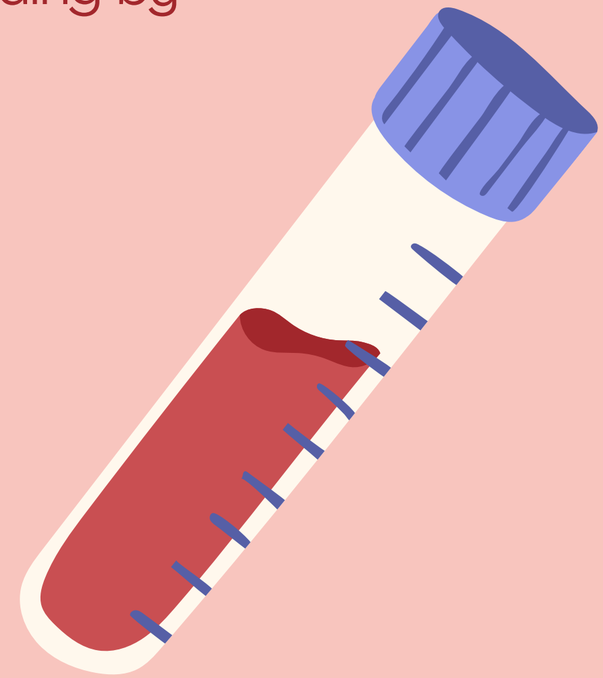
The irregular shape of the sickle-shaped blood cell makes it easy to clog and block the blood flow.

This can cause pain and other serious infections.

QUIZ TIME

Check your understanding by answering the quiz.





What is the primary function of red blood cells?

- Defend against bacterial infections.
- Clot blood to prevent bleeding.
- Transport oxygen throughout the body.

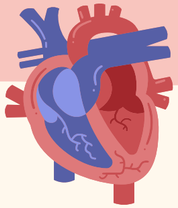
Submit

Your name will not be shared

Teacher Tip: Double-click to customize this poll or quiz, or go to **Elements** for more options!

A RECAP

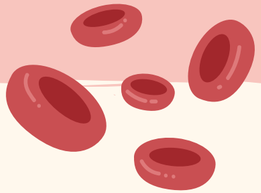
The circulatory system delivers oxygen and nutrients to the body, while also removing wastes.



Heart

Muscular organ that has four chambers

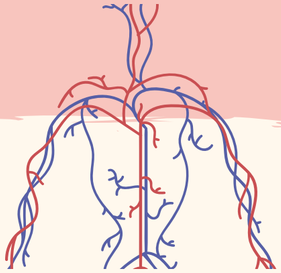
Pumps blood around the body



Blood

Has four components: plasma, red blood cell, white blood cell and platelets

Carries oxygen, nutrients and wastes



Blood Vessels

Has three types: arteries, veins and capillaries

Serve as channels for the blood

A DAY IN THE LIFE OF A RED BLOOD CELL

Write a story as though you are a red blood cell.

Some guide questions you can use are:

- What do you look like?
- What is your job?
- Where are you found?
- Where do you travel from and to?

Thank You

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