Animals including humans





How do an animal's living systems work together to maintain a healthy body?

Lesson 1: What is the circulatory system?

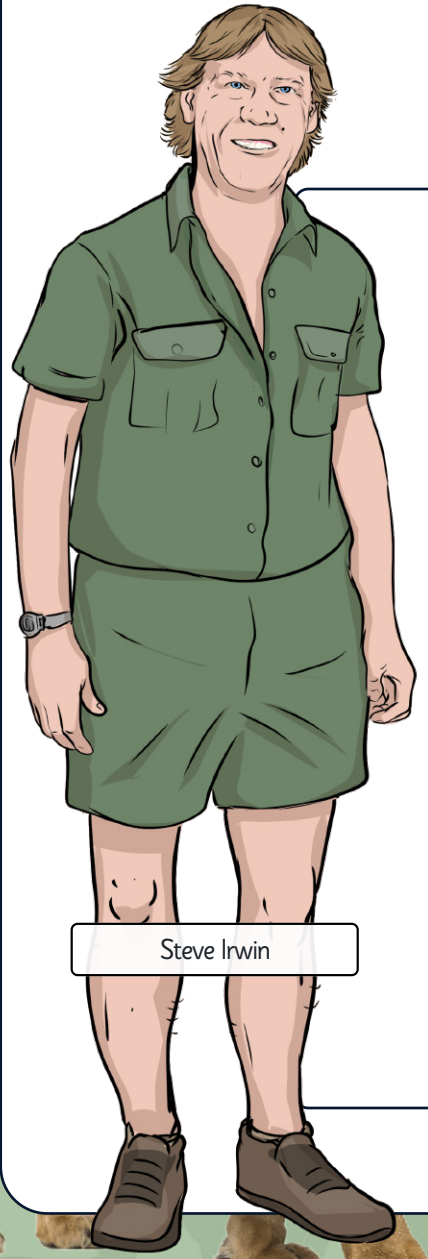








Scientific enquiry types and skills



Scientific enquiry types

- Testing
- Researching
- Observing
- Pattern seeking
- **Identifying & classifying** ✓
- Problem solving

Working scientifically skills

- **Asking questions** ✓
- Making predictions
- Setting up tests
- Observing & measuring
- **Recording data** ✓
- Interpreting & communicating results
- Evaluating

How do an animal's living systems work together to maintain a healthy body?


Marie Curie

Lesson 1: What is the circulatory system?

Lesson 2: How does the heart work?

Lesson 3: How does exercise affect my heart rate?

Lesson 4: What does blood transport around my body?

Lesson 5: How can I live a healthy lifestyle?

Lesson 6: What can damage our health?


William Harvey

Key vocabulary for this lesson



blood – a red liquid that flows around your body carrying oxygen, nutrients and water to your organs and takes away waste products like carbon dioxide



function – another word for what something does or its purpose



heart – a strong, muscular organ that works like a pump



system – groups of parts that work together to do a job

Identifying and classifying

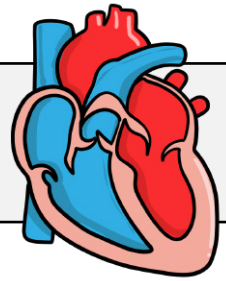


Hello Year 6. I'm Dr Anna, and I'm a cardiovascular specialist. I study how the **heart** , **blood** and blood vessels work together to keep the body alive.

We will look closely at the different parts of the **circulatory system** and learn how blood travels around our bodies, delivering oxygen, **nutrients** and water.

When we look at a heart diagram, like the one below, it is like we are looking at a person standing in front of us. So their left and right are opposite to ours.

right side of the heart



left side of the heart

What is a body system?

Identifying & classifying



Body systems are groups of internal organs that work to do an important job. Each body system has a different function .

In year **3** , you learnt about the **skeletal** system.

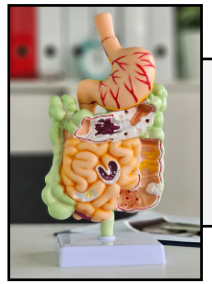
In year **4** , you learnt about the **digestive** system.

Use precise scientific vocabulary to explain to your learning partner the main functions of each system below. Be ready to share your feedback with the class.





the skeletal system and the muscular system



the digestive system



New word alert!
internal organ – a body part inside a living thing that has a specific job to do

Use the following sentence starters to help you.
"The main function of the…system is…"
"Organs in this system include…"

What is a body system?

answers

Identifying & classifying



The **skeletal system** and the **muscular system are** the body's framework of **bones** and **muscles** that provide structure, protection and support. The skeletal system holds the body's shape. The muscular system is responsible for all movement.



the skeletal system



the muscular system

The digestive system

Identifying & classifying



New word alert!
nutrient – the good things in food that help our bodies grow and stay strong

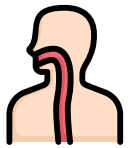
The **digestive system** is a group of organs that work together to break down food into **nutrients** the body can absorb and use for energy, repair, and growth. It also helps remove waste from the body.



Organs include:



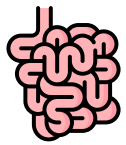
mouth



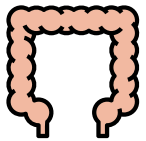
oesophagus



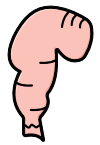
stomach



small intestine



large intestine



rectum

Word detective

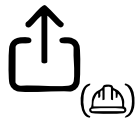


nutrient – the good things in food that help our bodies grow and stay strong

The word '**nutrient**' comes from three Latin word parts. More than just eating, base 'nutr' is about **nourishing**, which means giving what something needs to **grow and be healthy**.







nutr ⊕ **i** ⊕ **ent** = **nutrient**

"feel" *CVL "something that"

Together, these word parts make a word that means "**something that feeds or gives something what it needs to be healthy**".

Asking questions

Scientists ask questions to find things out and learn new things.
Questions help them solve problems and make discoveries.

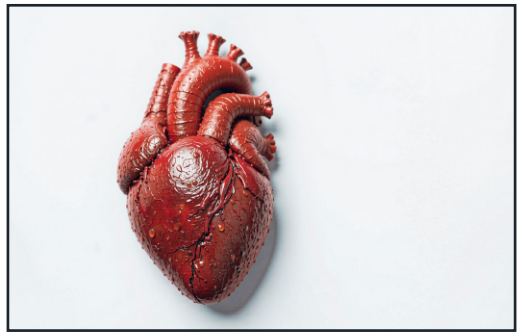
What is the function of the heart?

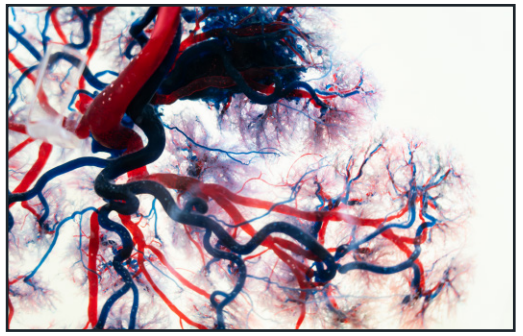
How much blood does a person have?

Today, we will be learning about another of the body's systems called the '**circulatory system**'.

Discuss what you think the circulatory system does with your learning partner and then record some questions you would like to find the answer to on Post-it notes. Be ready to **share** your ***feedback*** with the class.

How does oxygen get to my muscles?





Asking questions



What questions did you have?

Stick your questions on the Post-it notes to your class science board so we can revisit them as we build our understanding. As we learn about the **circulatory system**, we can see if any of our questions are answered.

How does the oxygen get into our blood?

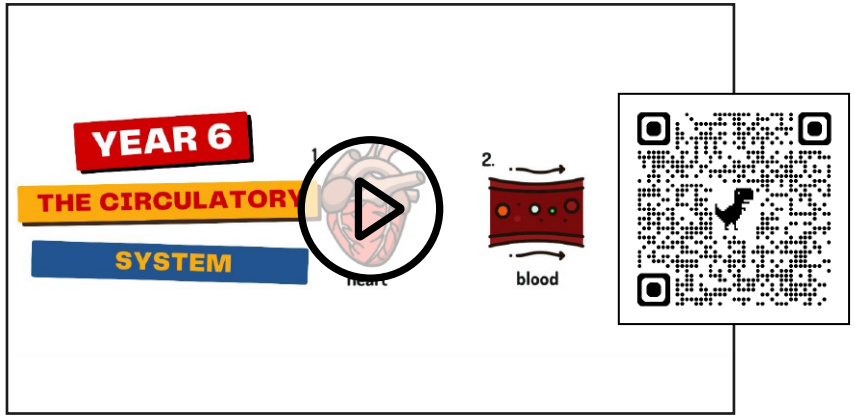
Why does a heart beat faster?



Let's watch

The **heart** is part of the **circulatory system** in our bodies.
There are three main parts: the heart, the blood vessels, and the **blood** .

Watch the video below to find out more.

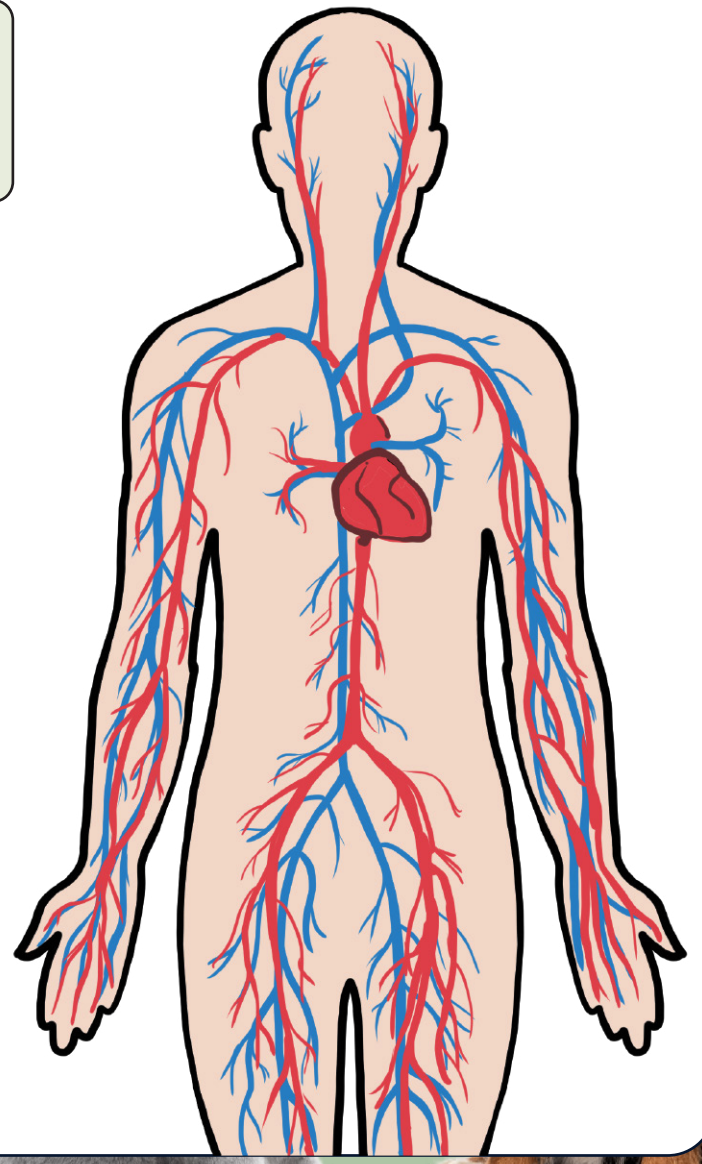


https://www.youtube.com/watch?v=alP6dnqjNZw&list=PL1V_0pmo4_u9HDinbg-k_yqwa2eifWOe5&index=1

New word alert!

circulatory – describes the process of circulation where something moves around

blood vessels – tubes that carry blood around the body



Word detective

circulatory – describes the process of circulation where something moves around

The word '**circulatory**' comes from Latin word parts that refer to a system in which things travel around a loop.

circ + **ule** + **ate** + **or** + **y** = **circulatory**

- **circ** – "round or ring"
- **ule** – "something that or a smaller version"
- **ate** – "cause, make or describing"
- **or** – "one who or something that"
- **y** – "state, condition or quality"

Together, these word parts form a word meaning "**move in a circle**".
We use it to refer to the system of blood moving through our body.

Recap quiz

Answer the questions below with your **learning partner**.

Be ready to **share** your ***feedback*** with the class before the answers are revealed.

1. What are the three main parts of the circulatory system?

a) small intestine b) mouth c) heart d) lungs e) blood f) skin e) blood vessels

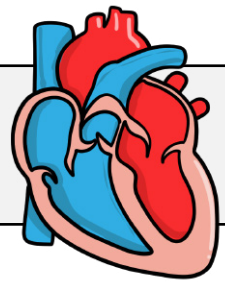
2. What is the function of the heart?

a) to digest food b) to pump blood throughout the body c) to support our skeleton

3. The left side of the heart carries oxygen loaded blood.

True or false?

right side of the heart



left side of the heart

Recap quiz

answers

1. What are the three main parts of the circulatory system?

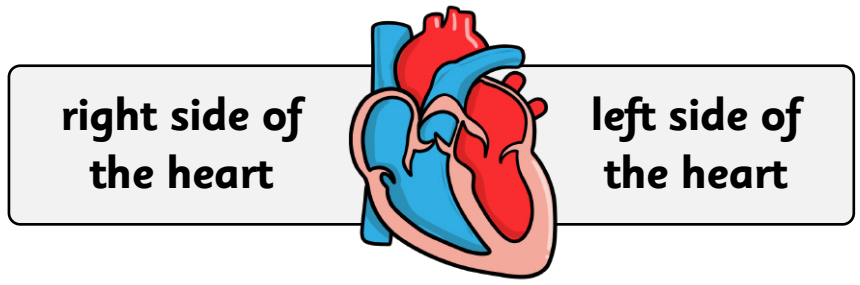
a) small intestine **b) mouth** **c) heart** **d) lungs** **e) blood** **f) skin** **e) blood vessels**

2. What is the function of the heart?

a) to digest food **b) to pump blood throughout the body** **c) to support our skeleton**

3. The left side of the heart carries oxygen loaded blood.

True or false?



The circulatory system

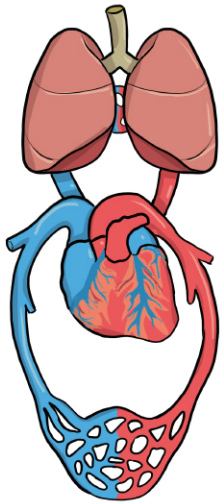


Why is this system called the **circulatory system?**

It's called the **circulatory** **system** because the **blood** circulates, or travels in a loop, around the body, carrying oxygen and **nutrients** to every part.

The three main parts are the **heart** , **blood vessels** and **blood**.

Did you know?
The **lungs** are **NOT** part of the circulatory system (they are part of the respiratory system), although they work very closely with it.

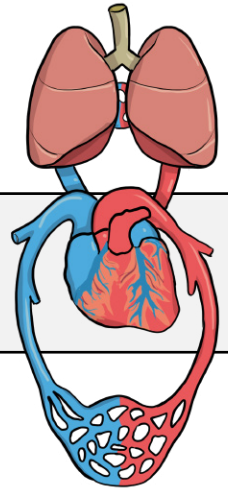


Circulatory system diagram



Today, we are going to be learning about the flow of **blood** in the **circulatory system** .

We can use a diagram to help us see how the **circulatory system** works. Using a diagram makes it easier to understand something that we can't see inside our bodies.



right side of the heart

left side of the heart

Circulatory system activity

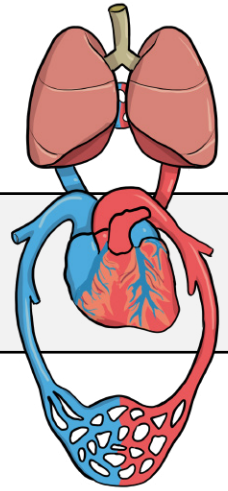


We need to label this diagram.

heart **lungs** **blood vessels in the body**

Where would these labels go? Discuss this with your learning partner.

Be ready to share your feedback with the class.



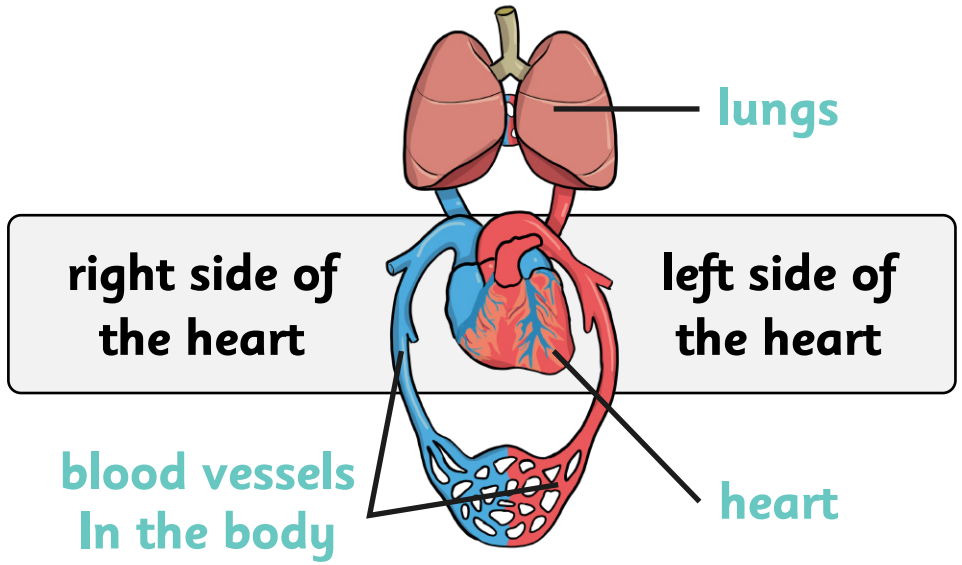
right side of the heart

left side of the heart

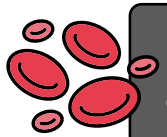
Circulatory system activity

answers

Oxygen-loaded blood is coloured **red** on the diagram.
The blood with **reduced oxygen** is coloured **blue** on the diagram.



Remember!
The lungs are **NOT** part of the circulatory system, but work closely with it!



New word alert!
oxgenated blood – blood that is loaded with oxygen



New word alert!
deoxgenated blood – blood that has reduced or less oxygen

Word detective

oxygenated blood – blood that is loaded with oxygen

The word '**oxygenated**' comes from Greek and French word parts. The word part 'oxy' means '**sharp**'. This might seem strange, because **oxygen** is not sharp at all! A long time ago, scientists did not fully understand oxygen, and they believed it was linked to sharp-tasting substances. Later, scientists learned more and realised this idea was wrong, but the name stayed the same.

oxy + **gen** + **ate** + **ed** = **oxygenated**

oxy	gen	ate	ed
"sharp"	"thing that produces or causes"	"cause, make or describing"	"past simple tense verbs or past participles"

Together, these word parts form a word meaning "**having oxygen added**".
We use it to refer to blood that carries oxygen throughout the body.

Word detective

deoxygenated blood – blood that has reduced or less oxygen

The word '**deoxygenated**' comes from Greek and French word parts. We have already learnt that if something is **oxygenated**, it has oxygen added to it. So, if something is **deoxygenated**, we know that it has oxygen removed.

de + **oxy** + **gen** + **ate** + **ed** = **oxygenated**

de	oxy	gen	ate	ed
"remove, reverse or reduce"	"sharp"	"thing that produces or causes"	"cause, make or describing"	"past simple tense verbs or past participles"

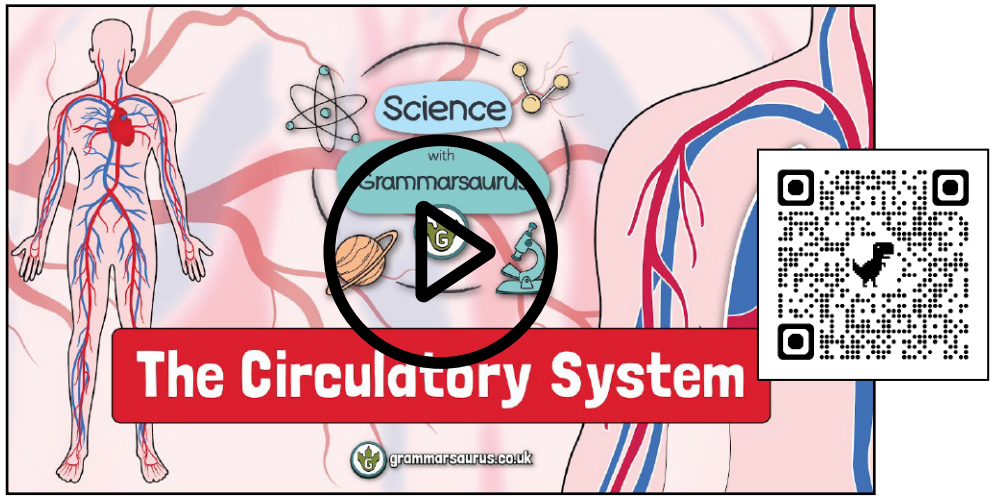
Together, these word parts form a word meaning "**having oxygen removed**".
We use it to refer to blood returning to the lungs that has less oxygen.

Let's watch



The **circulatory system** consists of three main parts: **blood**, **blood vessels**, and the **heart**. Let's look again in a bit more detail at how blood moves around the system.

Watch the video below to find out more.



[Science with Grammarsaurus - The Circulatory System - Grammarsaurus]

How does blood move around our bodies?

A flow diagram uses boxes, lines, and arrows to show the steps in a process in the correct order. This type of flow diagram shows the continuous loop of the **circulatory system** .

A diagram to show the movement of blood through the **circulatory system**.

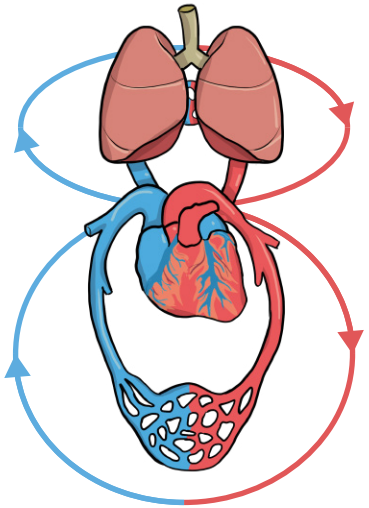
The lungs provide the blood with **oxygen**. The blood returns to the heart.

The heart pumps **oxygenated** blood through blood vessels called '**arteries**'.

The blood travels to all other body parts, delivering **oxygen**, **water** and **nutrients**.

Deoxygenated blood carrying waste products travels back to the heart through blood vessels called '**veins**'.

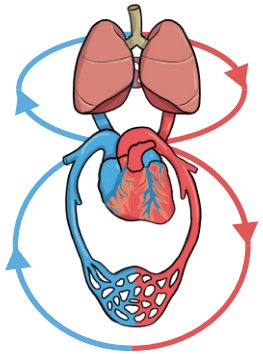
The heart pumps **deoxygenated blood** to the lungs.



Let's investigate



We need to understand the path our blood takes as it moves around the body. A scientist might create a functioning model to demonstrate this, but we can use role-play to show how blood moves through our **circulatory system**. You will follow the instructions on your '**Let's investigate**' worksheet to take the role of a blood cell as it moves around our circulatory system.



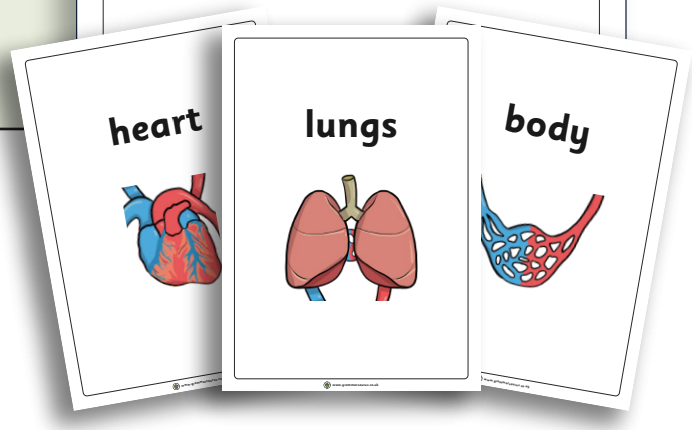
Paper signs (heart, lungs, body), red and blue cards or stickers.

How it works:

- Place signs around the room: heart, lungs, body.
- Some children have red cards (oxygenated blood) and some blue cards (deoxygenated blood).
- Children "travel" like blood:

1. blue blood → heart → lungs
2. lungs (turn blue cards to red) → heart → body
3. body (swap red cards for blue) → heart → lungs

- Explain each stage as you move.



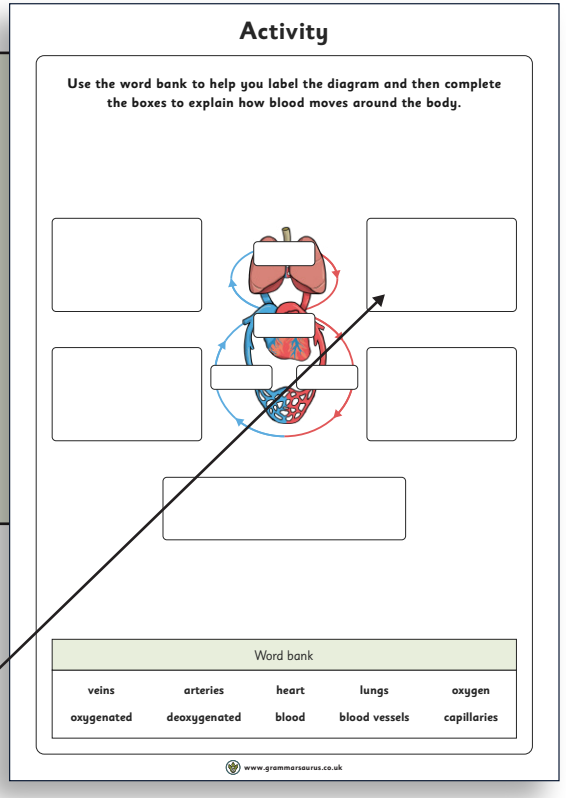
Activity

Identifying & classifying

Recording data



Look at the flow diagram on your **activity sheet**. The flow diagram shows how blood moves around the body. Label the **heart**, **lungs**, and **blood vessels** (arteries and veins) on the worksheet, and explain the processes that occur at each stage.



Write what happens here.

The lungs provide the blood with oxygen.

The oxygenated blood then returns to the heart.

Where does the blood go next?

Recap activity

Match the different parts of the **circulatory system** to the correct definition with your **learning partner**. Be ready to **share** your ***feedback*** with the class before the answers are revealed.

blood	a muscle that pumps blood around the body
veins	a liquid that carries oxygen, water and nutrients around the body
arteries	carry oxygenated blood away from the heart
lungs	carry deoxygenated blood back to the heart
heart	provide the blood with oxygen

Recap activity

answers

blood	a muscle that pumps blood around the body
veins	a liquid that carries oxygen, water and nutrients around the body
arteries	carry oxygenated blood away from the heart
lungs	carry deoxygenated blood back to the heart
heart	provide the blood with oxygen

Asking questions



Think about what you've discovered about the **circulatory system** today. Use your scientific thinking to reflect on what you have learnt and which of the questions on your science board you have managed to answer.

Do you have any new questions now?
If you do, add them to the board.

How has your understanding of body systems changed?

Discuss this with your **learning partner**.
Be ready to **share** your ***feedback*** with the class.

How does the oxygen get into our blood?

Why does a heart beat faster?

Challenge



Discuss the following question with your learning partner.

The world's tallest man, Robert Wadlow, was 2.72 metres tall. His blood had to travel a much greater distance than in an average-sized person.

How might his height have affected the amount of work his circulatory system had to do to move blood around his body?

Be ready to **share your feedback** with the class.

Use the following sentence starters to help you.

"Because Robert Wadlow was so tall, his circulatory system would have had to…"

"His height meant the blood had a longer journey, so…"



Challenge

answers



Marie Curie

Because Robert Wadlow was so tall, his circulatory system would have had to work harder to move blood around his whole body. The blood had further to travel, so it needed more force to reach everywhere.

His height meant the blood had a longer journey, so his heart needed to pump strongly to keep the blood moving to all his organs.



William Harvey