

Disclaimer/s

We hope you find the information on our website and resources useful.

Animations

This resource has been designed with animations to make it as fun and engaging as possible. To view the content in the correct formatting, please view the PowerPoint in 'slide show mode'. This takes you from desktop to presentation mode. If you view the slides out of 'slide show mode', you may find that some of the text and images overlap each other and/or are difficult to read.

To enter slide show mode, go to the **slide show menu tab** and select either **from beginning** or **from current slide**.



Science

Animals Including Humans

Animals Including Humans

Blood

Aim

- To describe the important jobs of the blood vessels and blood.

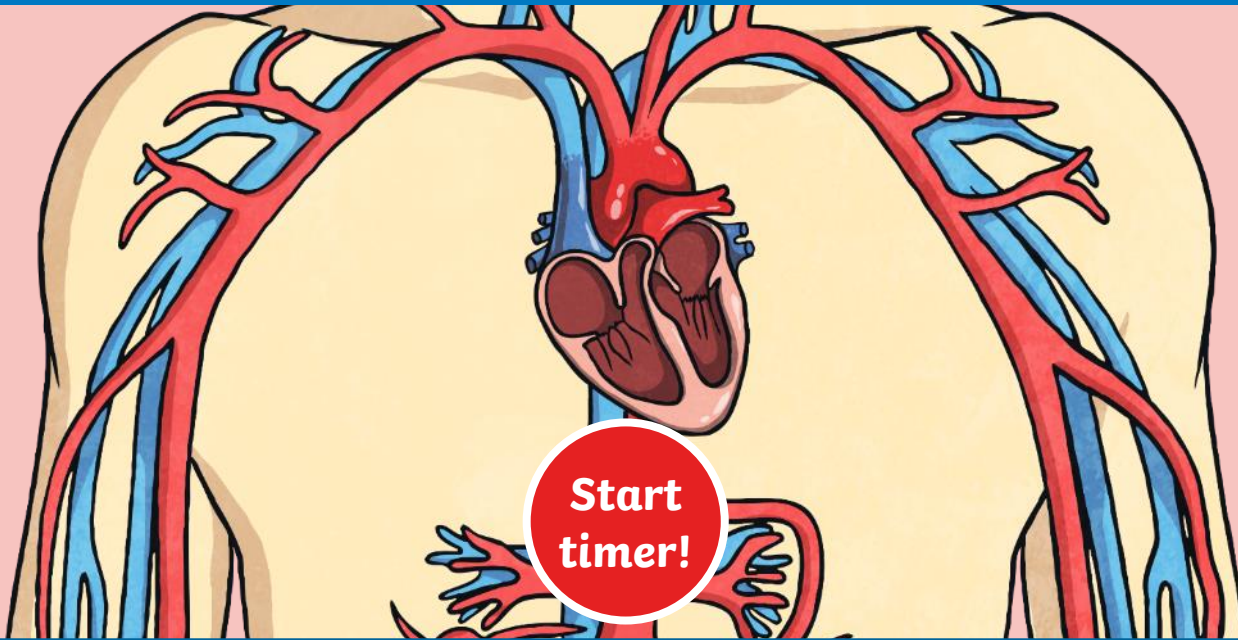
Success Criteria

- I can describe the differences between arteries, capillaries and veins.
- I can discuss the four parts that blood is made up from.
- I can explain why blood is oxygenated and deoxygenated.

Remember It

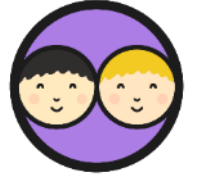


What is the circulatory system made up of?
You have one minute to write down everything that you can remember.



**Start
timer!**

The Heart



Roses are red, violets
are blue, the heart is
amazing, but what
does it do?

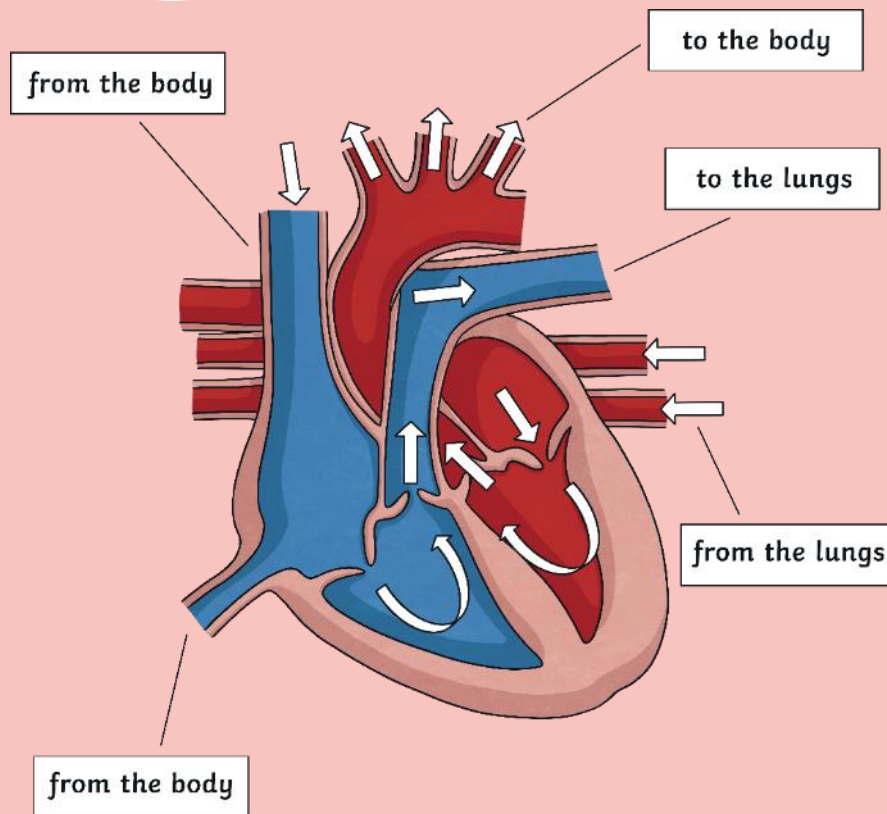




The Heart



Let's take another look at the heart.

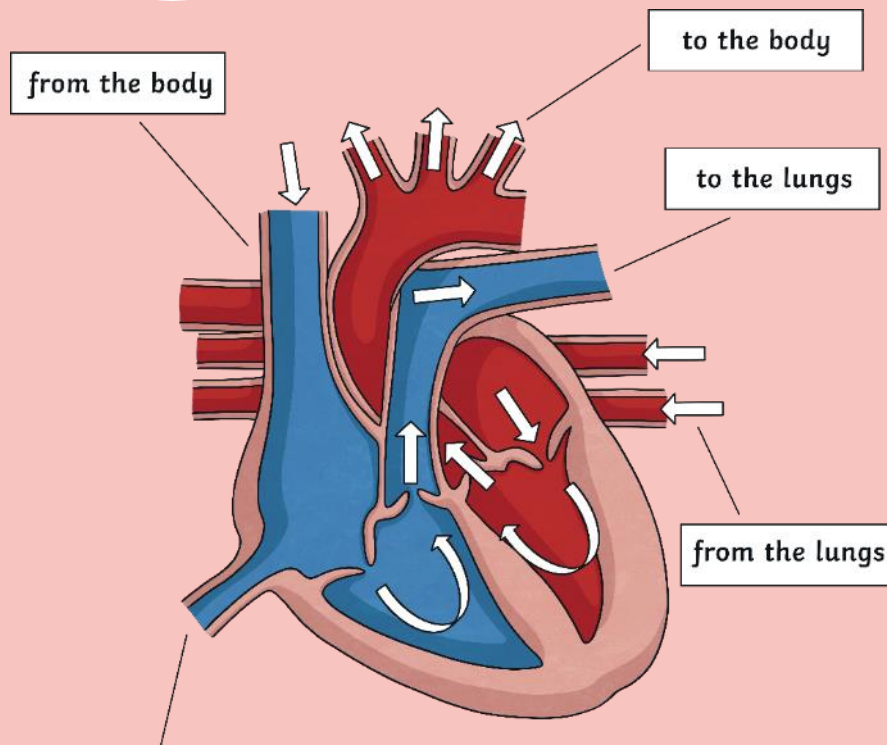


With your talk partner, discuss the different areas of the heart and think about these questions:

- 1 How many chambers (enclosed spaces) can you count?
- 2 Why does the diagram have red and blue parts?
- 3 What do the arrows show?
- 4 What job does the heart do?



The Heart



- The heart pumps blood to the lungs to get oxygen (blue on the diagram to show that it is deoxygenated).
- The heart then pumps this oxygenated blood around the body (red on the diagram to show that it is oxygenated).
- The heart is split into the left and right side and consists of four chambers.

X

Can you explain why blood is oxygenated and deoxygenated?



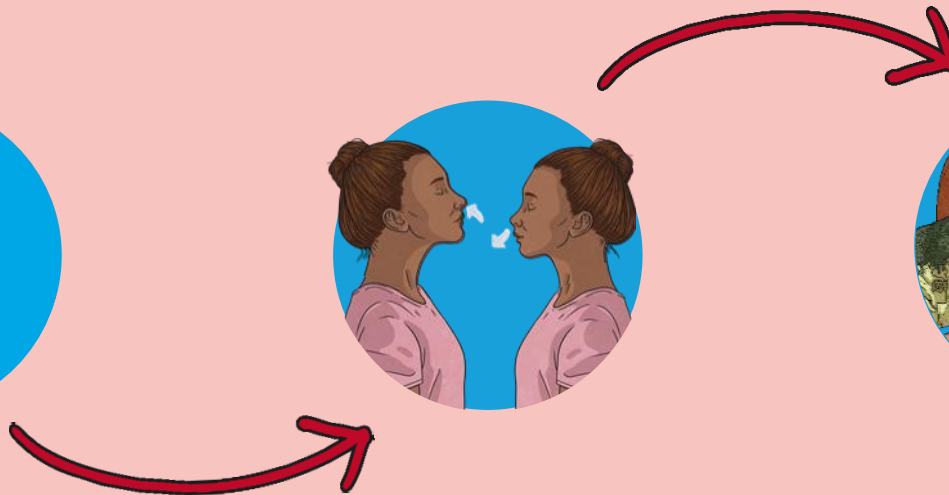
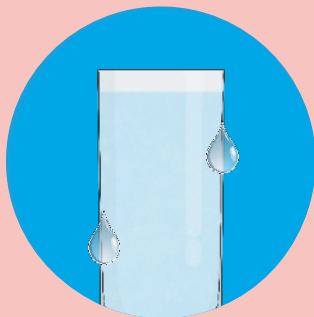
What Do Animals Need to Survive?



The air we breathe contains a very important gas, **oxygen**, that all of the cells in our body need for us to stay alive.

Animals need lots of things to survive. Oxygen, water and food are very important.

But how are these things moved around our body?



Blood Vessels



Blood is very important. It moves oxygen and the nutrients from food and water to where they are needed in the body. Blood also transports the waste products to the lungs and kidneys to be removed from the body.

Fill in the missing words on the **Blood Vessels Activity Sheet** to show what you have learnt.

5 min timer!

You can use your **Knowledge Organiser** for support if you need to.

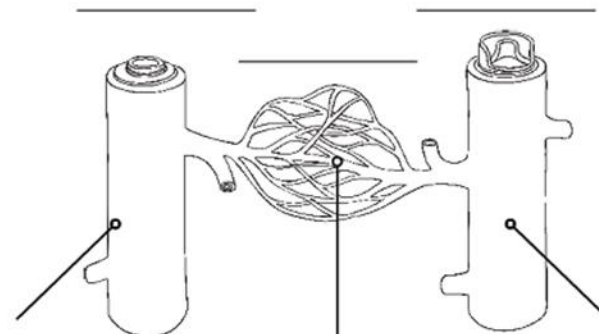
Blood Vessels

To be able to describe the important jobs of the blood vessels and blood.

1 Use the words in the word bank below to fill in the gaps in the blood vessels diagram.

oxygen	deoxygenated	capillaries	capillaries
arteries	smallest	artery	vein

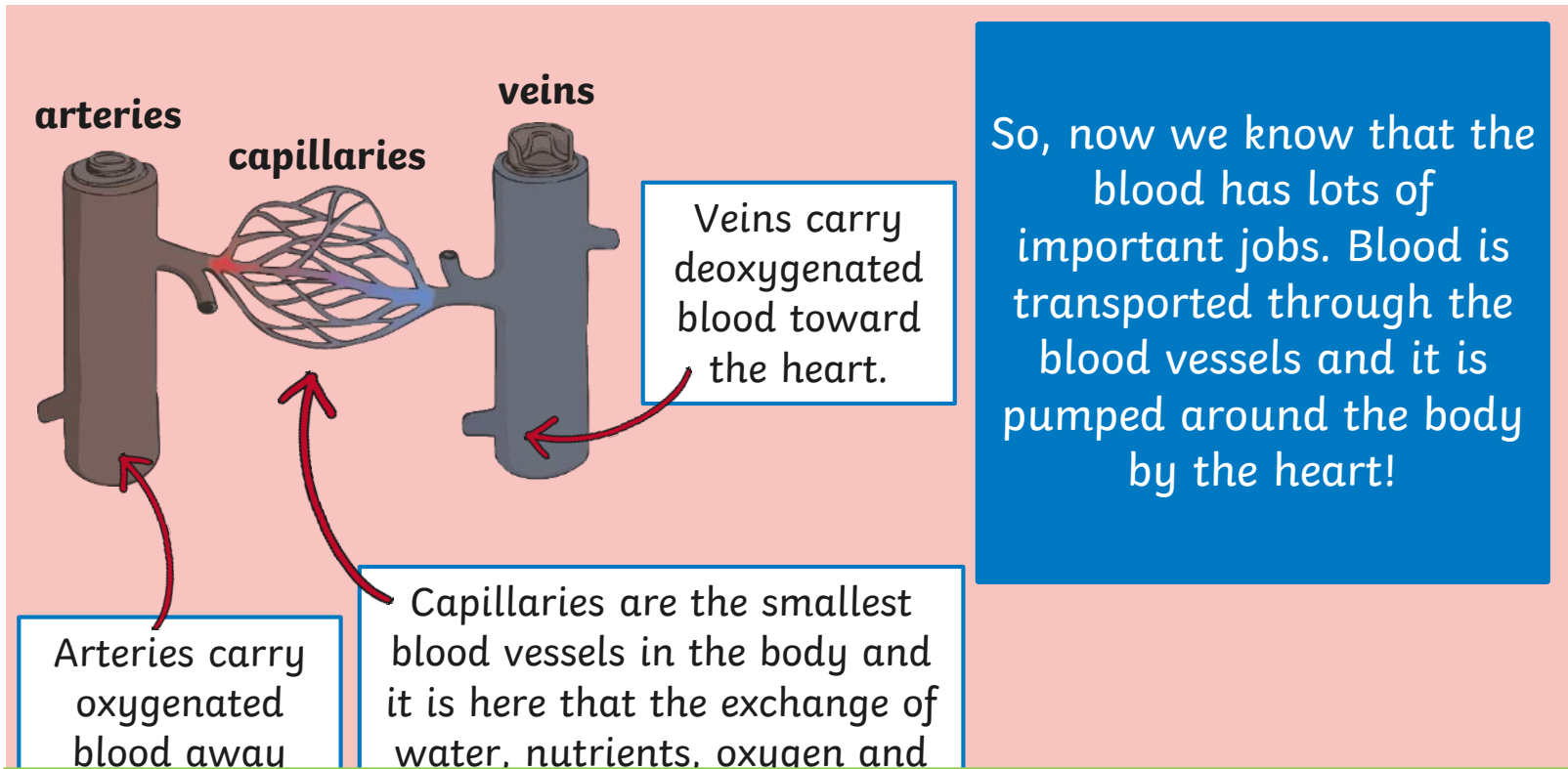
Blood Vessels



_____ carry
oxygenated blood away

Veins carry _____
blood toward the heart

Blood Vessels



X Can you describe the differences between arteries, capillaries and veins?



Blood Isn't Just a Red Liquid



Blood is made up of four parts.

Use your **Knowledge Organiser** to find out what job each component does. Click on each image below to check if you were correct.



Red blood cells carry oxygen through your body.



White blood cells fight infections when you're sick.



Platelets help you stop bleeding when you get a cut.

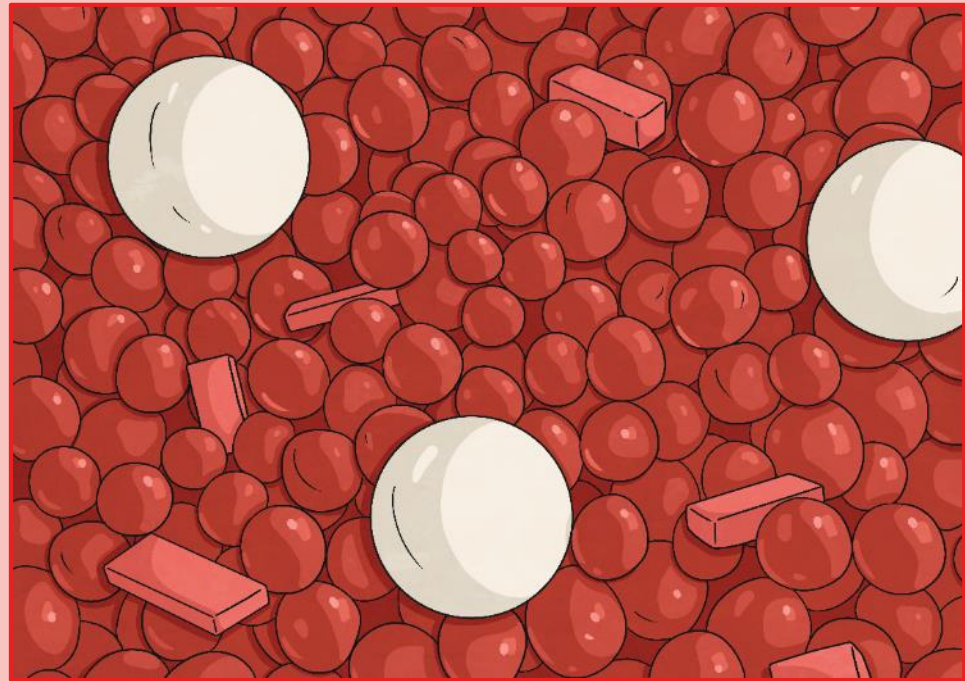
Build Your Own Blood



In this activity you will need to follow the instructions and build your own blood! Then, complete the **Build Your Own Blood Activity Sheet**.

You will need:

- a plastic container
- table tennis balls
- red water beads
- water
- red craft foam



Build Your Own Blood



Method

- Decide as a group which of the items are going to represent the:
 - **red blood cells;**
 - **white blood cells;**
 - **plasma;**
 - **platelets.**
- Add the different parts together in the container to create the blood.
- Either draw it on your worksheet or take a photo and get your teacher to print it out.
- You must label your picture with the correct scientific terms.



What Did You Learn?



Can you show what you have learnt by answering the following multiple-choice questions about blood?

What are the four main components of blood that blood is made up from?

Correct! Move on to the next question.

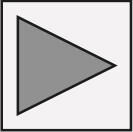
plastic, doughnuts, red blood cells, white blood cells

plasma, platelets, red blood cells, white blood cells

plasma, doughnuts, red blood cells, white blood cells

plasma, platelets, red blood cells, green blood cells

What Did You Learn?



What is the name of the
blood that carries oxy

Correct! Move on to
the next question.

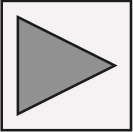
red blood cells

white blood cells

plasma

platelets

What Did You Learn?



Which part of the blood is

Correct! Move on to the next question.

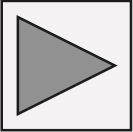
white blood cells

red blood cells

platelets

plasma

What Did You Learn?



What state of matter are
parts of the blood?

Correct! Move on to
the next question.

solid

liquid

gas

matter

What Did You Learn?



Other than oxygen, what
the blood transport a
the body?

Correct! End of
questions.

blood and air

food and water

waste products
and nutrients

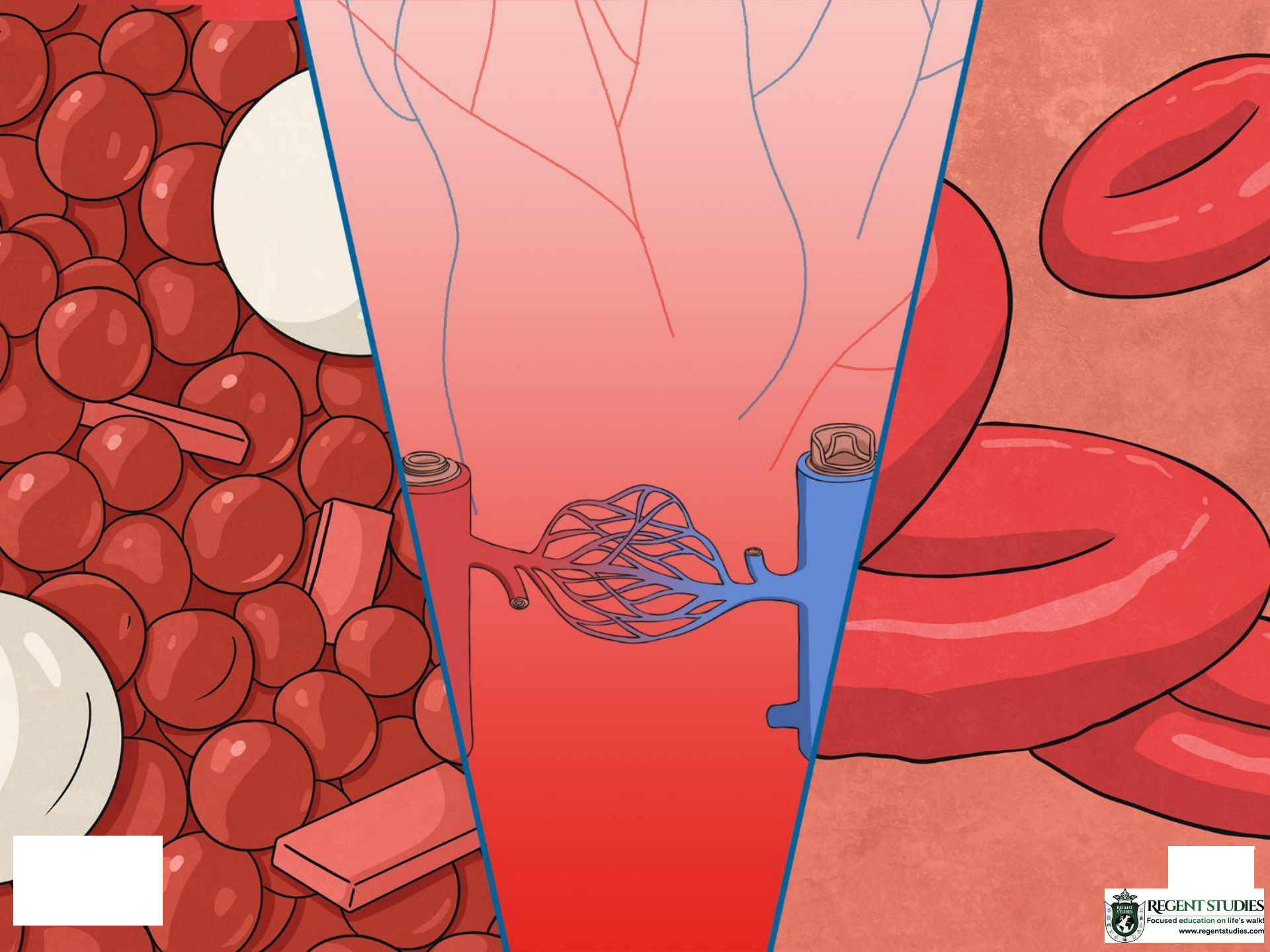
light and sound

Aim


- To describe the important jobs of the blood vessels and blood.

Success Criteria

- I can describe the differences between arteries, capillaries and veins.
- I can discuss the four parts that blood is made up from.
- I can explain why blood is oxygenated and deoxygenated.




















Animals Including Humans: Blood

Aim Identify and name the main parts of the human circulatory system and describe the functions of the heart, blood vessels and blood. Describe the ways in which nutrients and water are transported within animals, including humans. To describe the important jobs of the blood vessels and blood.		Lesson Duration All timings are approximate.	
Success Criteria I can describe the differences between arteries, capillaries and veins. I can discuss the four parts that blood is made up from. I can explain why blood is oxygenated and deoxygenated.			
Standard School Equipment Whiteboards and pens, red and blue pencil crayons Resources That May Need Purchasing Plastic container, table tennis balls, red aqua beads, red craft foam, beaker, straws		Preparation Blood Vessels Activity Sheet – per child Knowledge Organiser – per child Differentiated Build Your Own Blood Activity Sheet – per child Reasoning Cards: Blood – as required	
Key Vocabulary Heart, blood vessels, blood, pump, nutrients, waste products, veins, arteries, capillaries, plasma, platelets, red blood cells, white blood cells, circulatory system.			

Prior Learning: In lesson 1, the children have learnt about the function of the heart and have been introduced to the idea of blood vessels. From year 4 they have learnt about and will be familiar with the states of matter terms.

Learning Sequence

	Remember It: On their whiteboards, ask children to answer the question 'What is the circulatory system made up of?' and follow the prompts on the Lesson Presentation . Children can use the Knowledge Organiser to help them and to mark their own work afterwards.	
	The Heart: Ask pairs to discuss the twist on the Valentine's poem on the Lesson Presentation . 'Roses are red, violets are blue, the heart is amazing, but what does it do?' The key idea here is to get them talking about blood being pumped around the body. Look at the diagram of the heart and ask children to discuss what they can see using the prompts on the Lesson Presentation . (If possible, look at the augmented reality heart so that children can see what an actual heart would look like.) Use the Lesson Presentation to recap about how the heart works. Can children explain why blood is oxygenated and deoxygenated?	
	What Do Animals Need To Survive? Children can discuss this question and share ideas before showing the prompt pictures on the Lesson Presentation . Children discuss the images while the teacher circulates to help children determine that the pictures represent water, breathing in oxygen and food. Discuss that air is used, but reinforce the term 'oxygen' and how we need it to survive. See if this prompts any recall from Y4 'states of matter' and the term 'gas'.	
	Blood Vessels: Share the information on the Lesson Presentation about how blood transports all of the things that animals need to survive around the body. Children talk with a partner about what they remember about the different blood vessels and then fill in the missing parts on the Blood Vessels Activity Sheet . The Knowledge Organiser will aid this activity. Can children describe the differences between arteries, capillaries and veins?	
	Blood Isn't Just a Red Liquid: The information on the Lesson Presentation introduces the idea that blood isn't just a red liquid, that it is composed of four main parts: red blood cells, white blood cells, plasma and platelets. Children use their Knowledge Organiser to find out what job each component does. Click on the images to reveal the answers and discuss. Can children discuss the four parts that blood is made up from?	

	<p>Build Your Own Blood: In this activity, children will follow the instructions on the Lesson Presentation and build their own blood models. (This could potentially be done with edible jelly and other edible items such as cereal hoops, but this way is more cost-effective.)</p> <div style="display: flex; justify-content: space-between;"> <div data-bbox="245 219 584 577"> <p> Children complete the Build Your Own Blood Activity Sheet. Use a printed-out photo of their model to stick onto the worksheet (or they could draw it) and annotate using the word bank. Then, complete the cloze activity with initial letters, using the word bank for support.</p> </div> <div data-bbox="628 219 967 546"> <p> Children complete the Build Your Own Blood Activity Sheet. Use a printed-out photo or ask children to draw their model, then annotate using their Knowledge Organiser to help them. Then, complete the cloze activity using the word bank for support.</p> </div> <div data-bbox="1008 219 1347 604"> <p> Children complete the Build Your Own Blood Activity Sheet. They draw their model of blood and annotate their diagram. Then, complete the cloze activity using the word bank and adding in whether each component is a solid or a liquid. Use the Knowledge Organiser for support if needed.</p> </div> </div>	
	<p>What Did You Learn? Ask children to show their knowledge from the lesson today by taking part in the multiple-choice quiz on the Lesson Presentation. (Children can discuss the answers or write the answers down in their workbooks or on whiteboards.)</p>	

Explore it

Play it: Play the [Blood Cell Types Game](#) to become more familiar with using the scientific vocabulary and knowing the jobs of each of the blood cells.

Research it: Research different conditions that affect the blood cells, e.g. sickle cell anaemia affects the shape of the red blood cells and hinders their ability to carry oxygen.

Reason it

Children discuss [Reasoning Card 2: Blood](#). Children apply their knowledge of blood to help them reason about how changes in blood cells can affect people, e.g. sickle cell anaemia.

Assessment

Scientific Knowledge	
Working Towards the Expected Level With scaffolding and/ or support, children can describe the important jobs of the blood vessels and blood.	Children:
Working At the Expected Level Children can describe the important jobs of the blood vessels and blood.	Children:
Working At Greater Depth Children can confidently describe the important jobs of the blood vessels and blood and explain the different aspects of their blood model.	Children:
Working Scientifically	
Working Towards the Expected Level With scaffolding, children can identify scientific evidence that has been used to support or refute ideas or arguments.	Children:
Working At the Expected Level Children can identify scientific evidence that has been used to support or refute ideas or arguments.	Children:
Working At Greater Depth Children can confidently identify scientific evidence that has been used to support or refute ideas or arguments.	Children:

Aim: To describe the important jobs of the blood vessels and blood.				Date:					
				Delivered By:			Support:		
Success Criteria	Me	Friend	Teacher	T	PPA	S	I	AL	GP
I can describe the differences between arteries, capillaries and veins.				Notes/Evidence					
I can discuss the four parts that blood is made up from.									
I can explain why blood is oxygenated and deoxygenated.									
Next Steps									
<ul style="list-style-type: none"> _____ _____ 									

T	Teacher	I	Independent
PPA	Planning, Preparation and Assessment	AL	Adult Led
S	Supply	GP	Guided Practice

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Blood Vessels

To be able to describe the important jobs of the blood vessels and blood.



1 Use the words in the word bank below to fill in the gaps in the blood vessels diagram.

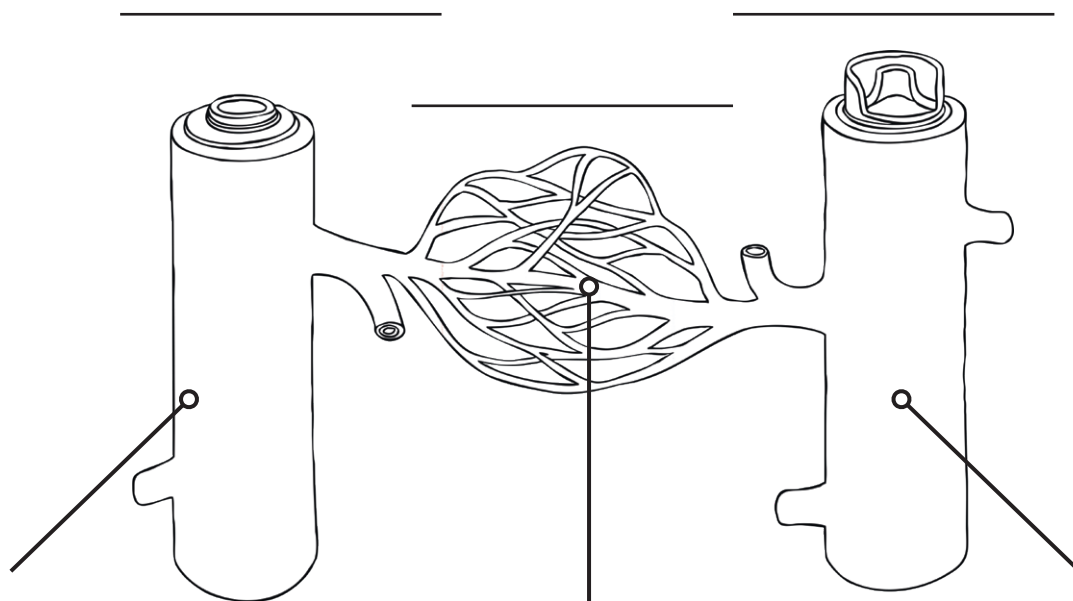
oxygen
arteries

deoxygenated
smallest

capillaries
artery

capillaries
vein

Blood Vessels



_____ carry
oxygenated blood away
from the heart.

Veins carry _____
blood toward the heart.

_____ are the _____ blood
vessels in the body and it is here that the
exchange of water, nutrients, _____ and
carbon dioxide takes place.

2 Colour the blood vessels the correct colour to show the oxygenated and deoxygenated blood.

Blood Vessels Answers

1 Use the words in the word bank below to fill in the gaps in the blood vessels diagram.

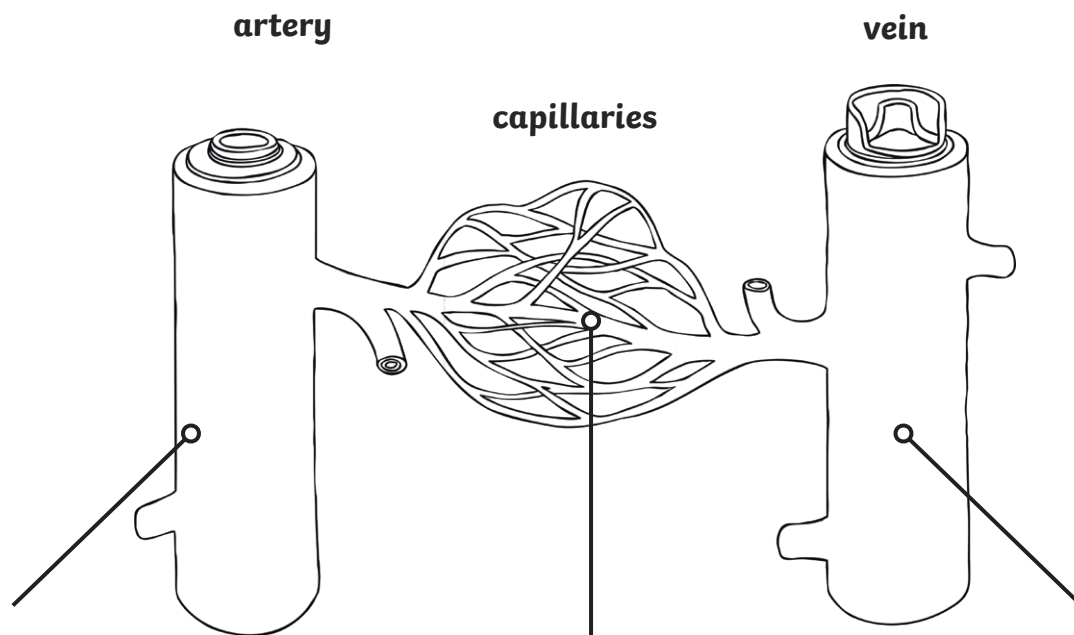
oxygen
arteries

deoxygenated
smallest

capillaries
artery

capillaries
vein

Blood Vessels



Arteries carry oxygenated blood away from the heart.

Veins carry **deoxygenated** blood toward the heart.

Capillaries are the **smallest** blood vessels in the body and it is here that the exchange of water, nutrients, **oxygen** and carbon dioxide takes place.

2 Colour the blood vessels the correct colour to show the oxygenated and deoxygenated blood.

You should have coloured the artery red and the vein blue. This is because the artery is carrying oxygenated blood away from the heart, and the vein is returning the deoxygenated blood to the heart.

Build Your Own Blood

To be able to describe the important jobs of the blood vessels and blood.



1

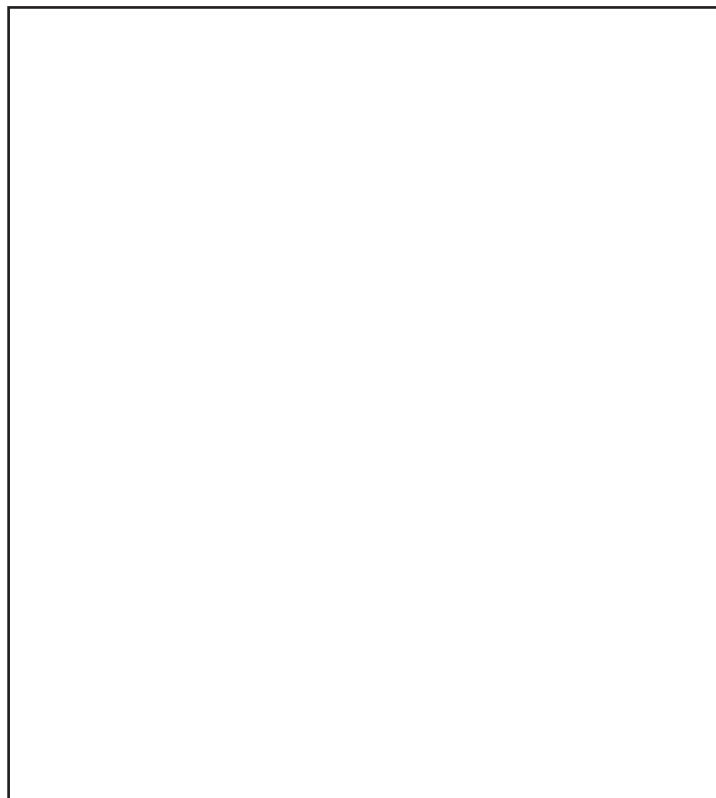
Draw a picture or use a photo of the model of blood that you have just made. Make sure you include all four components and label what each part represents in our blood.

plasma

red blood cell

white blood cell


platelets

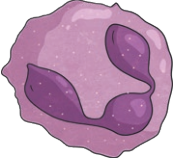
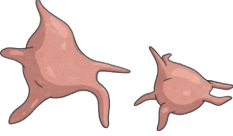



2

Use the word bank below to fill in the gaps to reveal what each component in our blood does.

water attack oxygen red infections scab liquid bleeding

Component	Job that it does
<p>red blood cell</p> 	<p>Red blood cells transport o_____ and carbon dioxide around the body.</p> <p>They contain a special pigment that gives blood its r_____ colour.</p>

<p>white blood cell</p> 	<p>White blood cells a_____ any harmful microorganisms that enter the body, like viruses or bacteria.</p> <p>Their job is to help fight i_____.</p>
<p>platelet</p> 	<p>The platelets all join up together (clot) to stop b_____.</p> <p>When the platelets have all stuck together, the clot dries out and a s_____ is formed!</p>
<p>plasma</p> 	<p>Plasma is a straw-coloured l_____. It transports w_____, protein and nutrients all around the body.</p>

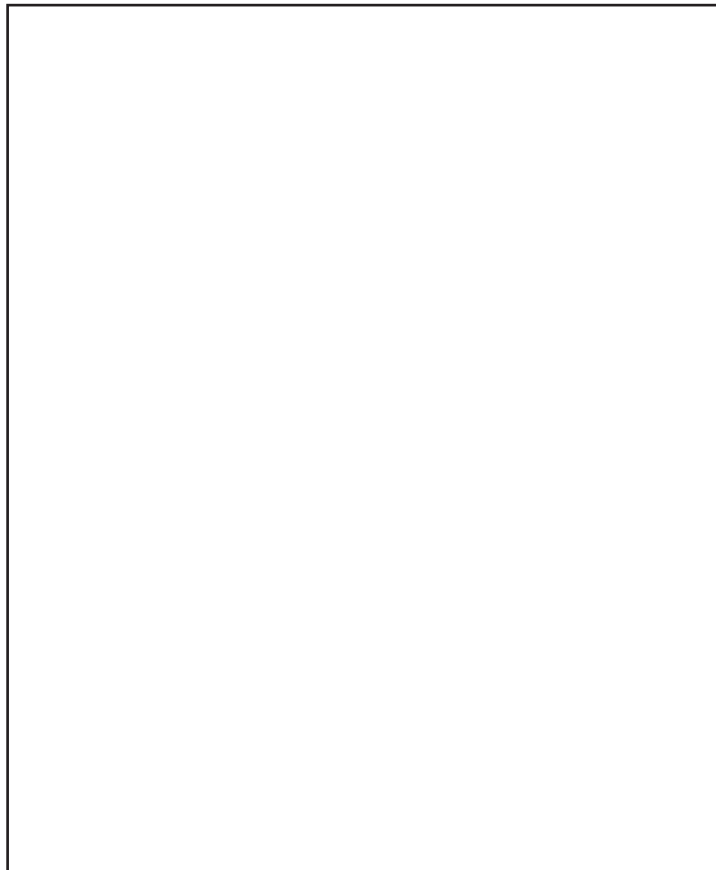
Build Your Own Blood

To be able to describe the important jobs of the blood vessels and blood.



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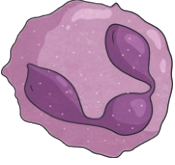
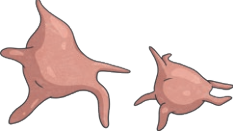



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Use the word bank below to fill in the gaps to reveal what each component in our blood does.

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Component	Job that it does
red blood cell 	Red blood cells transport _____ and carbon dioxide around the body. They contain a special pigment that gives blood its _____ colour.

<p>white blood cell</p> 	<p>White blood cells _____ any harmful microorganisms that enter the body, like viruses or bacteria.</p> <p>Their job is to help fight _____.</p>
<p>platelet</p> 	<p>The platelets all join up together (clot) to stop _____.</p> <p>When the platelets have all stuck together, the clot dries out and a _____ is formed!</p>
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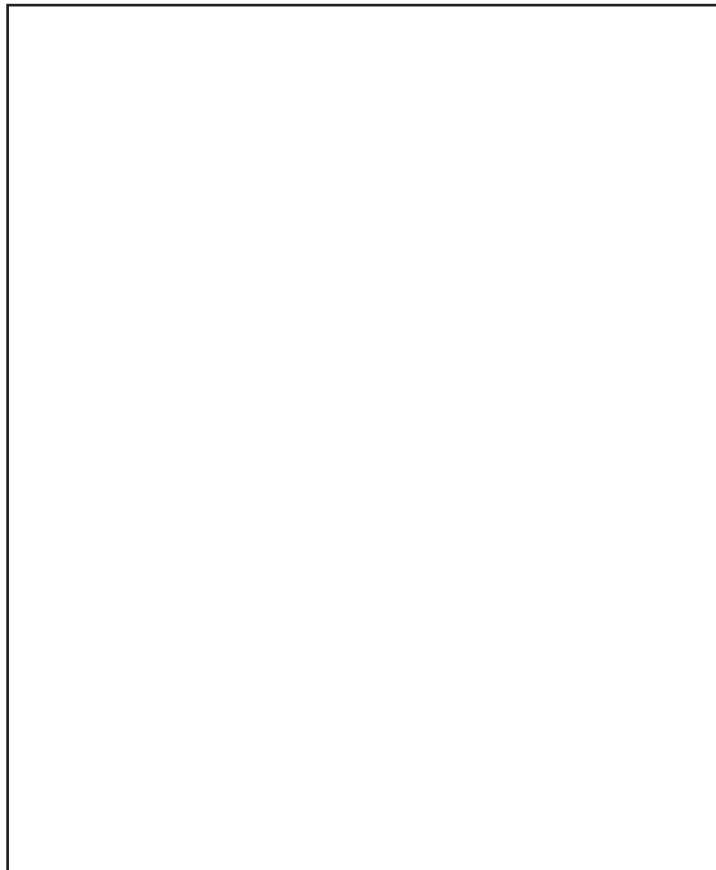
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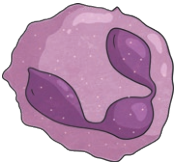
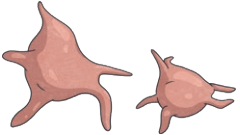



2

Use the word bank below to fill in the gaps to reveal what each component in our blood does. Then decide if each component is a solid or a liquid.

water attack oxygen red infections scab liquid bleeding

Component	Job that it does	Solid or liquid?
red blood cell 	Red blood cells transport _____ and carbon dioxide around the body. They contain a special pigment that gives blood its _____ colour.	

<p>white blood cell</p> 	<p>White blood cells _____ any harmful microorganisms that enter the body, like viruses or bacteria.</p> <p>Their job is to help fight _____.</p>	
<p>platelet</p> 	<p>The platelets all join up together (clot) to stop _____.</p> <p>When the platelets have all stuck together, the clot dries out and a _____ is formed!</p>	
<p>plasma</p> 	<p>Plasma is a straw-coloured _____.</p> <p>It transports _____, protein and nutrients all around the body.</p>	

Build Your Own Blood Answers

To be able to describe the important jobs of the blood vessels and blood.

1

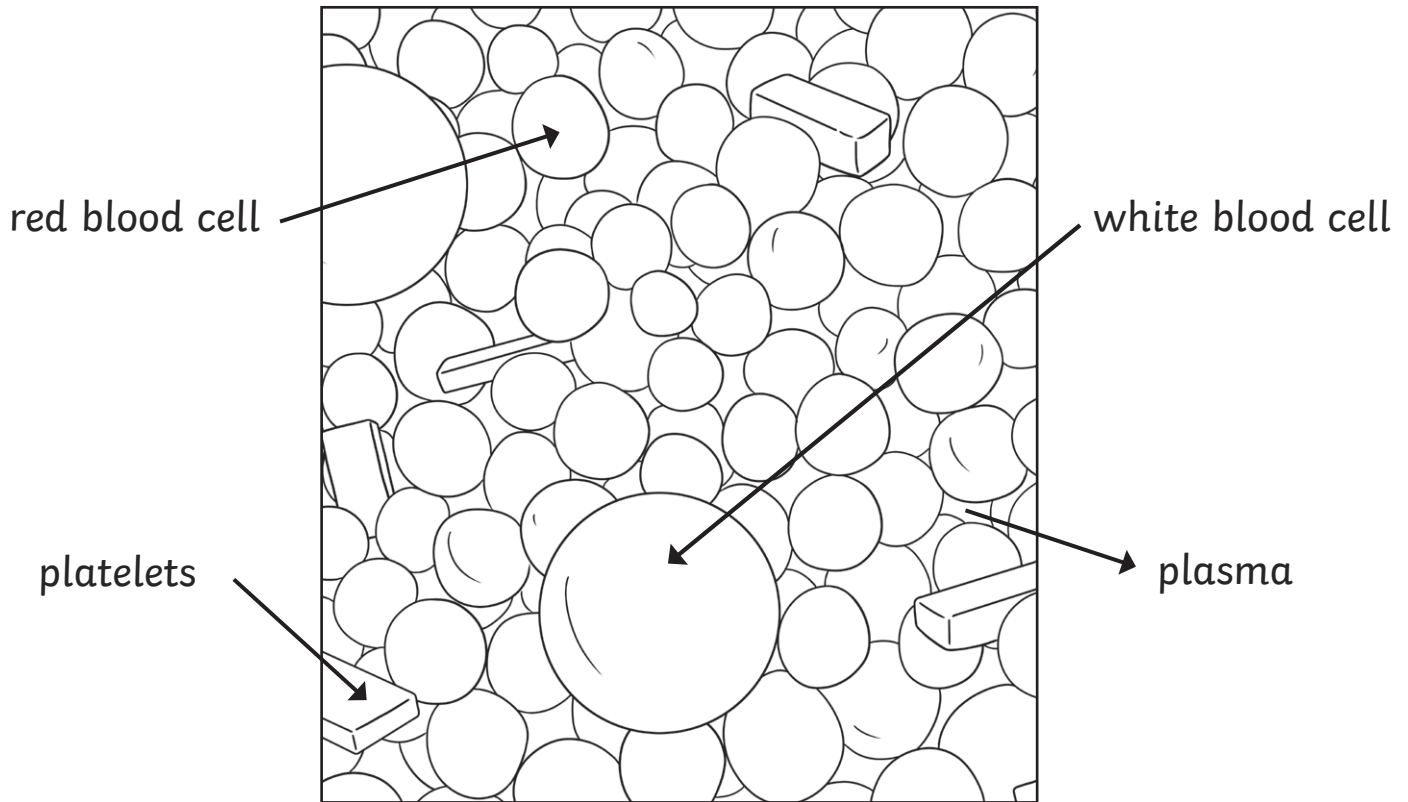
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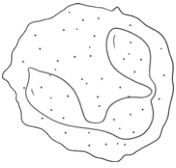
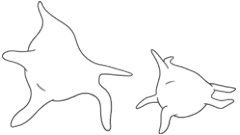



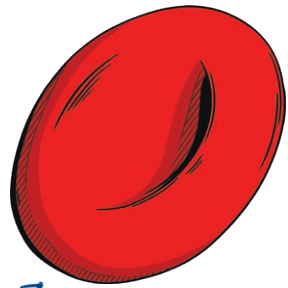
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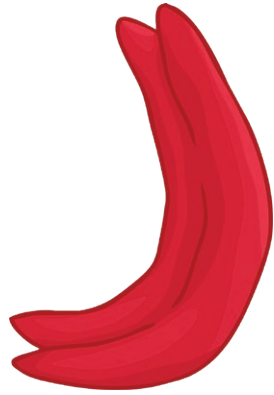
water attack oxygen red infections scab liquid bleeding

Component	Job that it does	Solid or liquid?
red blood cell 	Red blood cells transport oxygen and carbon dioxide around the body. They contain a special pigment that gives blood its red colour.	solid

<p>white blood cell</p> 	<p>White blood cells attack any harmful microorganisms that enter the body, like viruses or bacteria.</p> <p>Their job is to help fight infections.</p>	<p>solid</p>
<p>platelet</p> 	<p>The platelets all join up together (clot) to stop bleeding. When the platelets have all stuck together, the clot dries out and a scab is formed!</p>	<p>solid</p>
<p>plasma</p> 	<p>Plasma is a straw-coloured liquid. It transports water, protein and nutrients all around the body.</p>	<p>liquid</p>



A healthy red blood cell

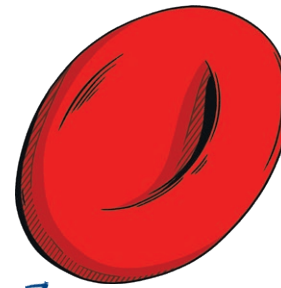


A red blood cell affected by sickle cell disease

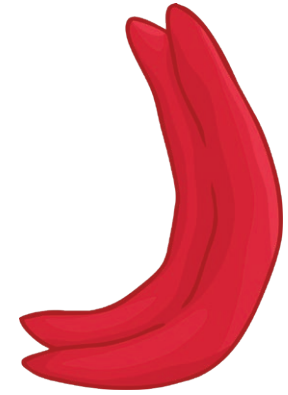
Use what you know about red blood cells to discuss how the unusual shape might affect a person who has sickle cell disease.

Useful information:

- Red blood cells usually look like round discs.
- People affected with sickle cell disease produce 'crescent moon' or 'sickle' shaped red blood cells. A sickle is an old farm tool.
- A round disc is a good shape for red blood cells because they can move easily through the blood vessels.



A healthy red blood cell



A red blood cell affected by sickle cell disease

Use what you know about red blood cells to discuss how the unusual shape might affect a person who has sickle cell disease.

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Reasoning Card ②

Use what you know about red blood cells to discuss how the unusual shape might affect a person who has sickle cell disease.

Useful information:

Red blood cells usually look like round discs.

People affected with sickle cell disease produce 'crescent moon' or 'sickle' shaped red blood cells. A sickle is an old farm tool.

A round disc is a good shape for red blood cells because they can move easily through the blood vessels.

Example answer:

Answers should refer to the round disc being the best shape and the sickle cell being an inferior shape. Children should be able to recall that red blood cells carry oxygen around the body.

A sickle cell shape means it cannot carry as much oxygen. Reference to sufferers of sickle cell being short of breath.

Sickle cells are not a good shape to fit through capillaries because they get stuck and this affects how the red blood cells can flow and transport oxygen around the body.

People with sickle cell disease don't have enough round red blood cells and so their daily activities can be affected, they may get tired a lot, they might not grow as quickly, etc.

Animals Including Humans | Blood

To describe the important jobs of the blood vessels and blood.		
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