

A Healthy Heart



Intermediate 1 Biology
Health & Technology

What do you know already?

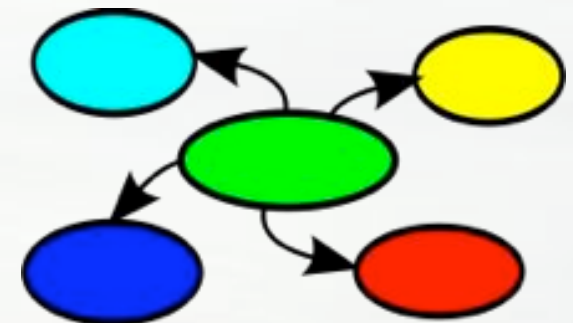
- In groups: Produce a mind map to show everything you already know about the heart.

Where is it?

What does it do?

How can we keep it healthy?

How do we know if it's healthy?



Learning Outcomes

- For the topic...
 - o What does the heart do?
 - o Pulse rate.
 - o Blood pressure.
 - o Blood tests.
- For today... **What does the heart do?**
 - o How does the heart pump blood around the body?
 - o What are the three main blood vessels?



Your Challenge...

- In Pairs: By the end of the lesson you must produce an annotated diagram which shows how the heart pumps blood around the body through the three main blood vessels.
- You will be given two opportunities to gather information to help you with this challenge:
 1. *Observing a heart dissection.*
 2. *Reading a piece of text.*



How does the heart pump blood around the body?

- Observe the heart dissection carried out by your teacher.
- Make sure you...
 - o **learn safely.**
 - Only touch the heart when permitted.
 - Make sure you wear gloves when touching the heart and wash your hands afterwards.
 - o **ask questions.**
 - o **make notes which you think will help you with the challenge.**

How does the heart pump blood around the body?

- Read the piece of text about the heart individually.
- Re-read the text with your partner underlining the pieces of information which you think are useful for drawing your annotated diagram.

Finished?

- Work together to draw a **draft** of your annotated diagram to show how the heart pumps blood around the body through the three main blood vessels **onto a whiteboard**.
- Check your draft with a textbook or your teacher.
- Once you're happy with your diagram, copy it into your jotters.

What have we learnt?

1. How does the heart pump blood around the body?
2. What are the three main blood vessels?

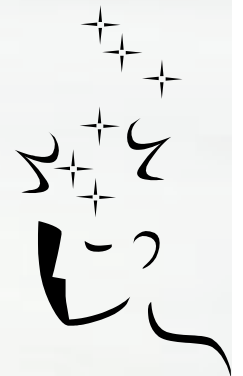


What is it?

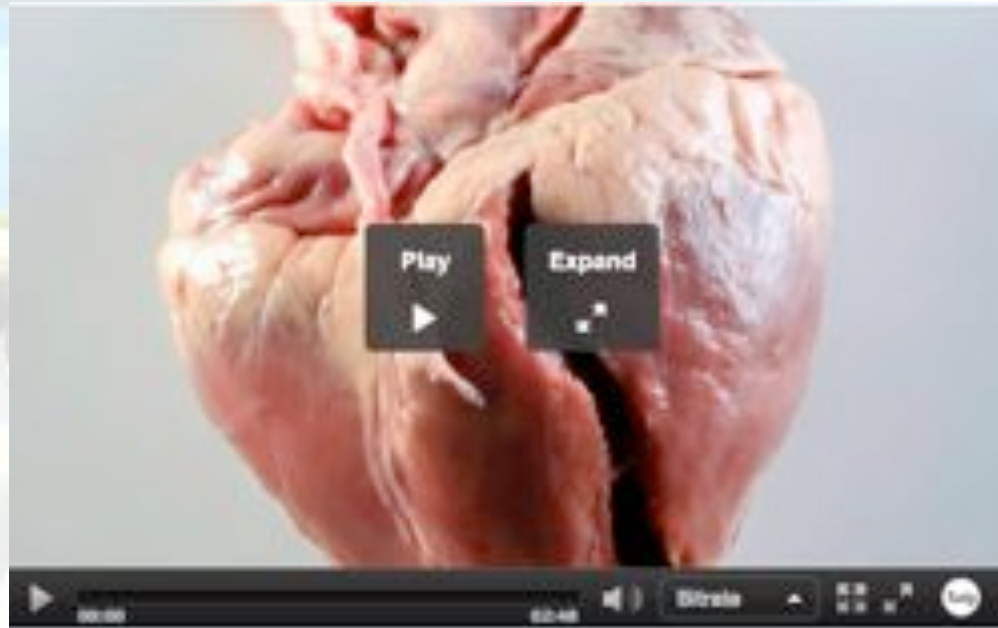
- It's the size of a grapefruit.
- It NEVER gets tired!
- In an hour it creates enough power to raise a baby elephant off the ground.
- The biggest one in the world belongs to a whale and is as BIG as a car!!!
- The humming bird's is the size of a grain of rice.
- Humans get along with just 1
- The octopus has 3
- The earthworm has 5!!!

Learning Outcomes

- Why does blood need to be transported around the body?




Heart



[Heart on Glow Science](#)

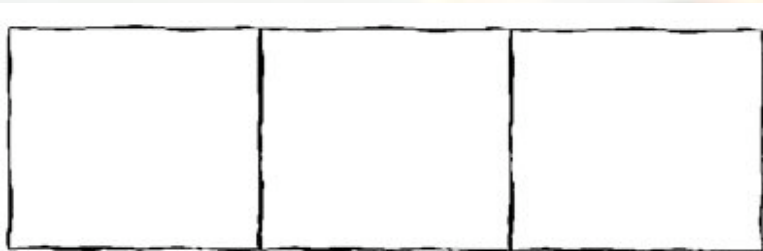
Let's discuss...



Why does blood
need to be
transported around
the body?

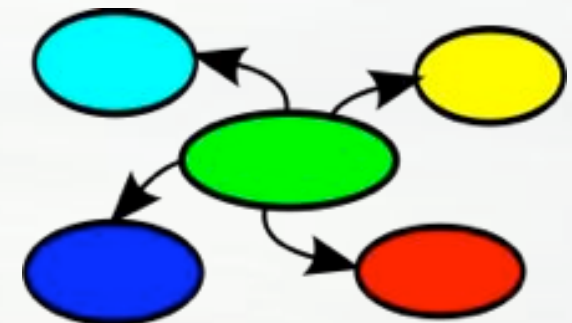
Tell the story...

- Individually: Write a story or produce a comic strip which shows what the blood transports around the body.
- For example...
 - Ollie Oxygen's Great Adventure, or
 - Martin Muscle: How I Contracted, or
 -your own idea...!



What have we learnt?

- In Groups: Return to your mind map from last lesson...what can you now add?
- How have you learnt all this?



What's your resting pulse rate?

The radial pulse is felt on the wrist, just below the thumb

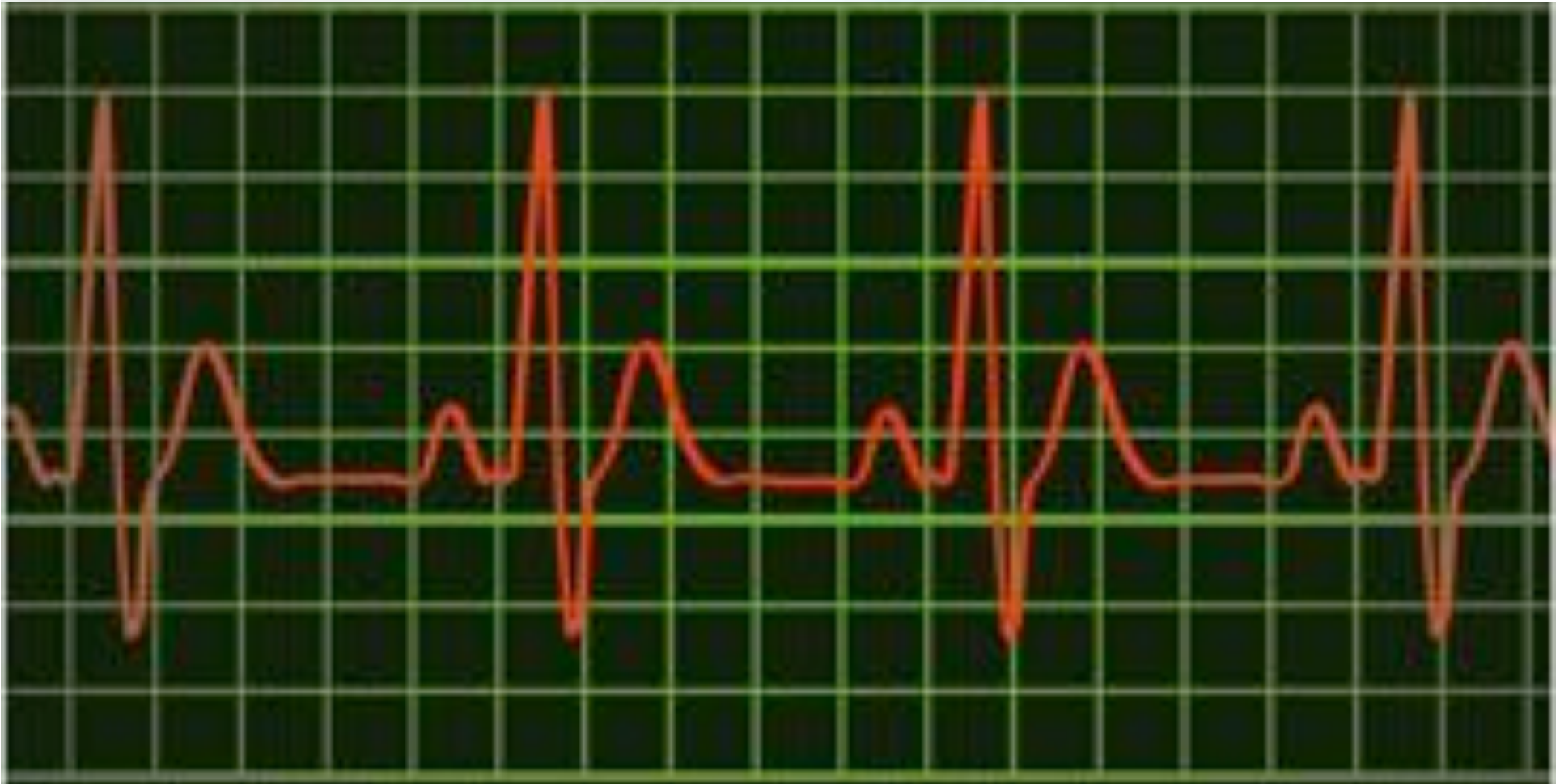


Learning Outcomes

- What does pulse rate tell us?
- What is recovery time?
- What effect does exercise have on pulse rate and recovery time?



What does pulse rate tell us?



What does pulse rate tell us?

Your pulse is caused by your heart beating

You're feeling the blood being squeezed through your arteries

Your pulse rate is the number of times your heart beats in a minute

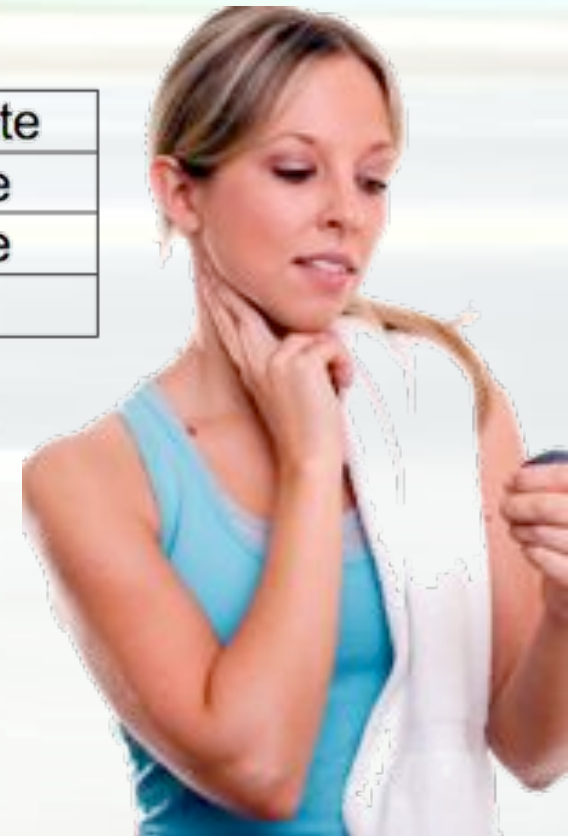
What does pulse rate tell us?

Your resting pulse rate is your pulse rate when you're resting!

Normal Values for resting heart rate

Newborn infants	100 - 160 beats per minute
Children 1 to 10 years	70 - 120 beats per minute
Children over 10 and adults	60 - 100 beats per minute
Well-trained athletes	40 - 60 beats per minute

What factors would affect pulse rate?



What does pulse rate tell us?

Body Size

Increases if heavier



What factors would affect pulse rate?

What does pulse rate tell us?

Age

Lower in adults

What factors would affect pulse rate?



What does pulse rate tell us?

Sex

Higher in women

Women average = 84 bpm

Men average = 78 bpm

What factors would affect pulse rate?



What does pulse rate tell us?

Fitness

Lower when fitter



What factors would affect pulse rate?

What is recovery time?

Recovery time is the time it takes for your pulse to return to your normal resting value after exercise



Would this be short or long for someone who is fit?

What is your recovery time?

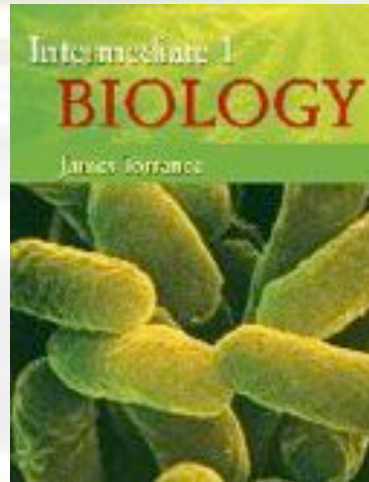
How could you find your recovery time?

Plan and carry out your investigation

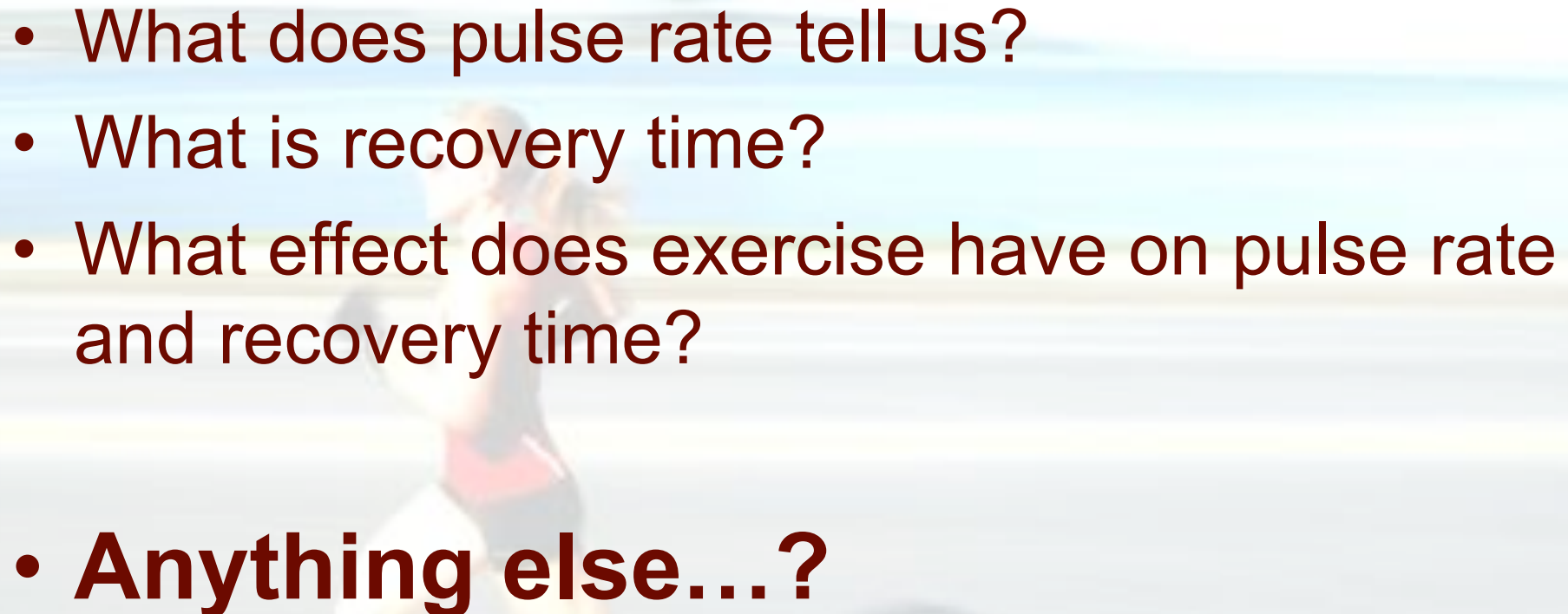
How do you think you could lower your recovery time?

Do you know it?

- Testing your knowledge:
 - Answer questions 1 to 5 on page 22.



What have you learnt?

- What does pulse rate tell us?
 - What is recovery time?
 - What effect does exercise have on pulse rate and recovery time?
 - **Anything else...?**
- 

How can we measure blood pressure?



**Stethoscope &
Mercury
Manometer**

**Digital
Sphygmomanometer**



Learning Outcomes

- What is Blood Pressure?
- Why does Blood Pressure change?
- What is the significance of Blood Pressure for health?



Blood Pressure



[The Effects of Alcohol on Blood Vessels](#)

Blood Pressure

- Your task is to produce a leaflet for your doctor's surgery which provides for people worried about their blood pressure.
- **What do you think you would need to include?**



Blood Pressure

- Your leaflet must include...
 - **What blood pressure is.**
 - **How blood pressure can be measured.**
 - **What 'normal' blood pressure is.**
 - **The causes of high blood pressure.**
 - **The possible effects of high blood pressure.**
 - **The possible effects of low blood pressure.**
 - **How moderate quantities of alcohol can help reduce blood pressure.**

**Why did we
learn that?**



What's in your blood?



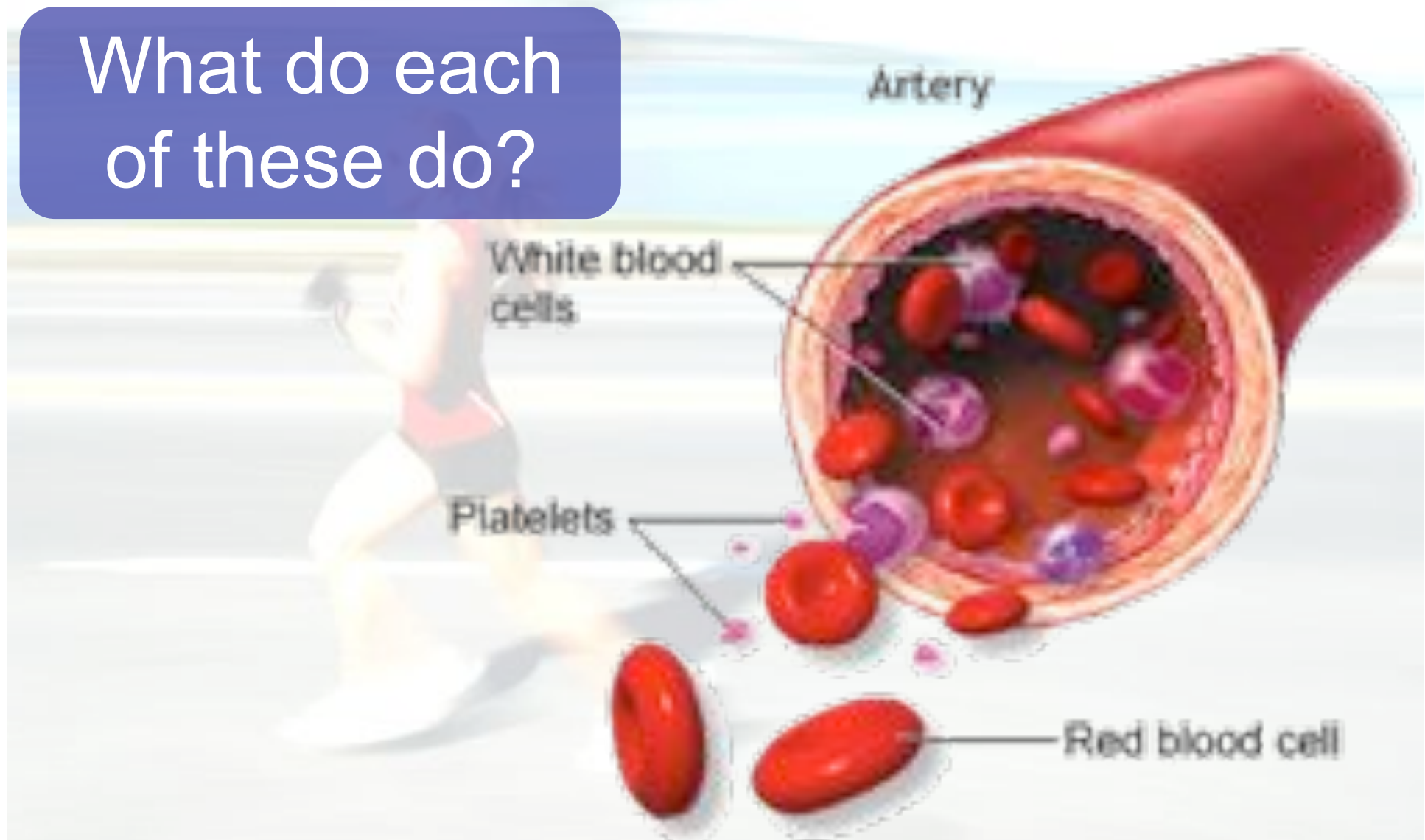
Learning Outcomes

- What's in your blood?
- What are blood groups?



What's in your blood?

What do each of these do?



What are blood groups?



[Give Blood Adverts](#)

[England & Wales](#)

What are blood groups?

Stock Level on 08 Aug 2011



Current Blood Stocks

Why are there eight groups?

Why do they matter?

Which groups are at risk?

What are blood groups?

- Copy & Complete the following tables:

		group donating blood			
		A	B	AB	O
group receiving blood	A				
	B				
	AB				
	O				

✓ = successful transfusion
 X = unsuccessful transfusion

		group donating blood	
		Rh+	Rh-
group receiving blood	Rh+		
	Rh-		

✓ = successful transfusion
 X = unsuccessful transfusion

What are blood groups?

		group donating blood			
		A	B	AB	O
group receiving blood	A	✓	X	X	✓
	B	X	✓	X	✓
	AB	✓	✓	✓	✓
	O	X	X	X	✓

✓ = successful transfusion

X = unsuccessful transfusion

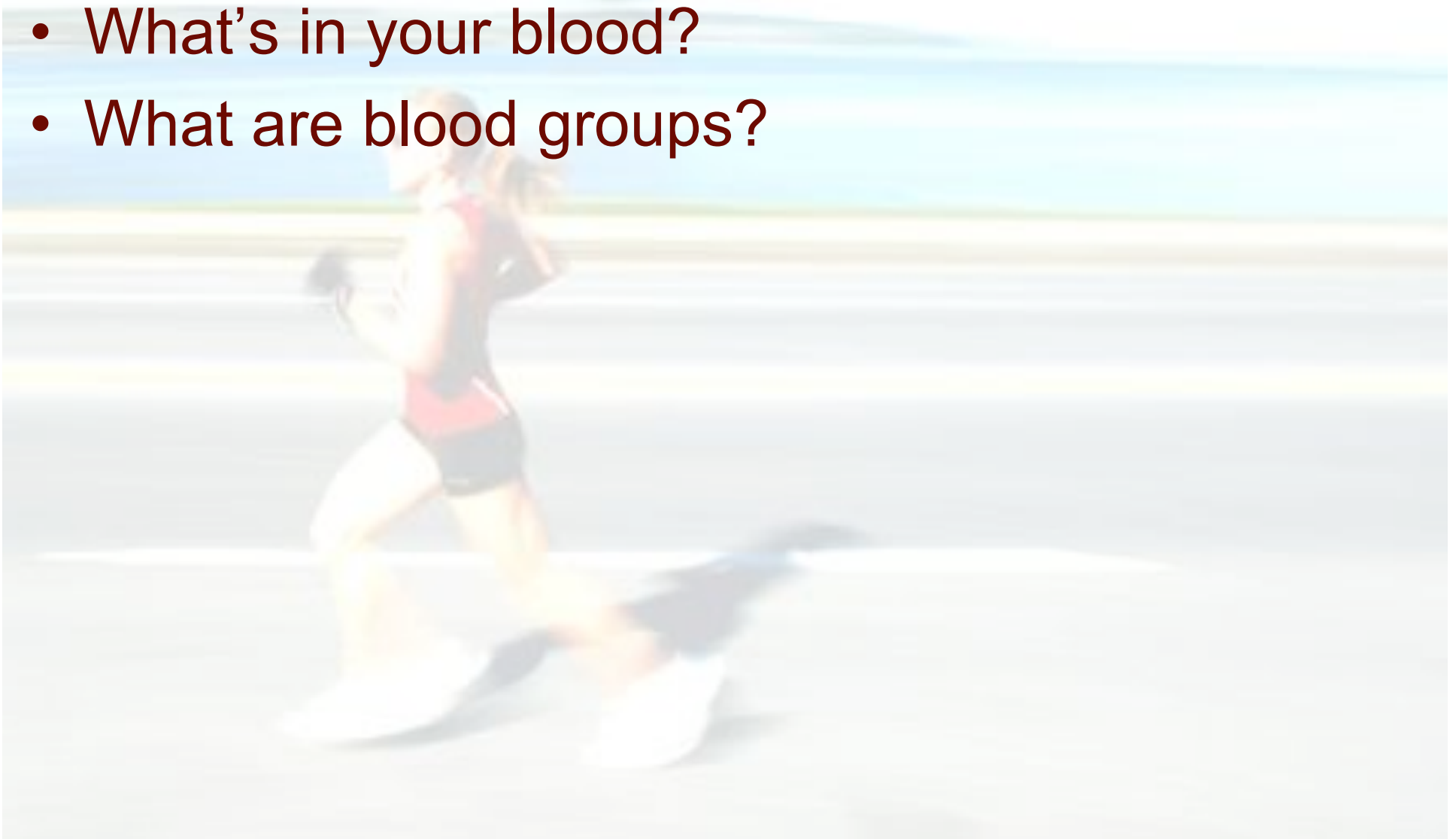
		group donating blood	
		Rh+	Rh-
group receiving blood	Rh+	✓	✓
	Rh-	X	✓

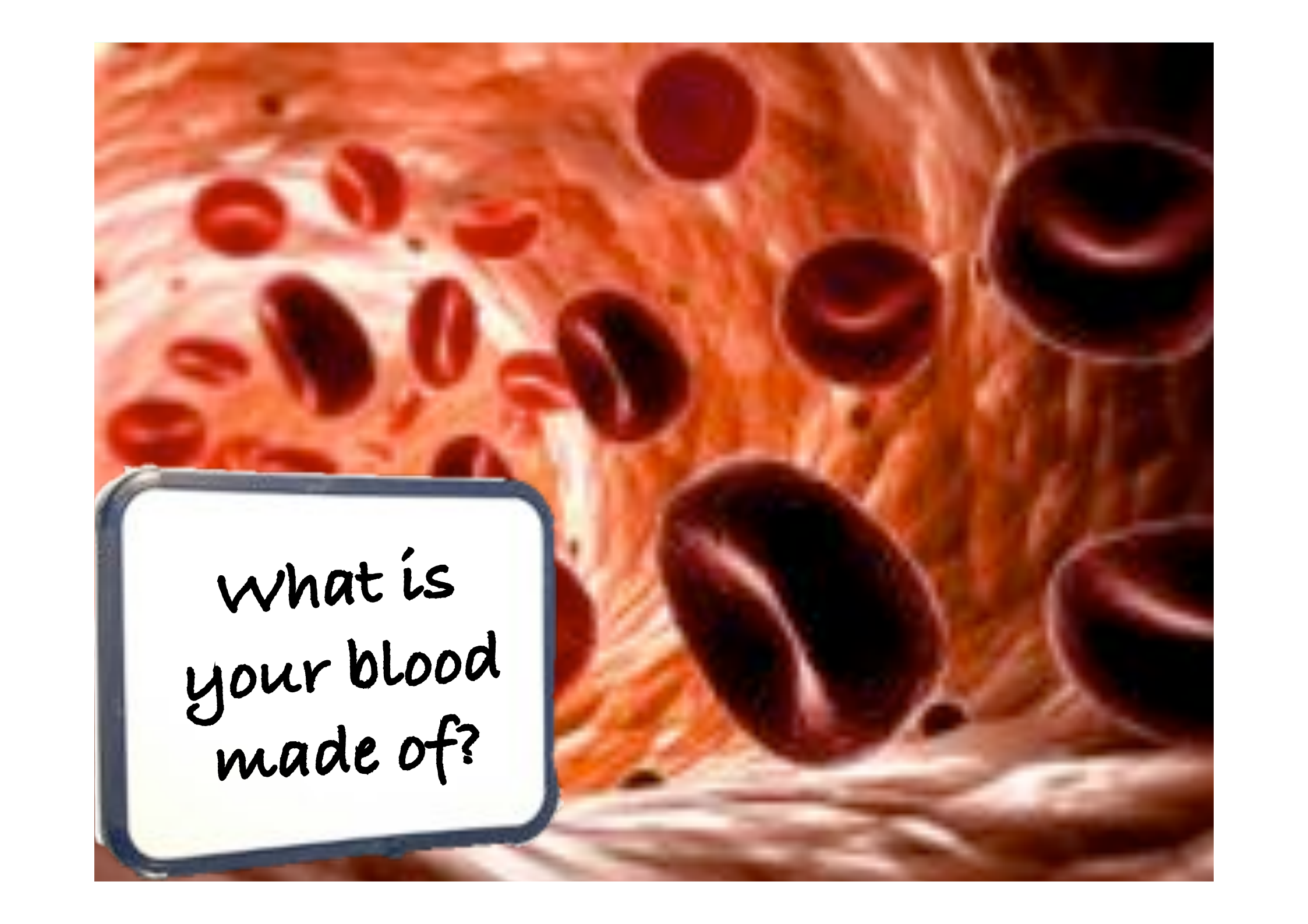
✓ = successful transfusion

X = unsuccessful transfusion

What have we learnt?

- What's in your blood?
- What are blood groups?



A detailed illustration of a blood vessel containing numerous red blood cells. The cells are shown in various orientations, some appearing as biconcave discs. The background is a textured, reddish-orange color representing the vessel wall and surrounding tissue.

What is
your blood
made of?

Learning Outcomes

- How can we detect blood diseases?
- How can we measure drugs in blood?



Blood Diseases

- Blood can be affected by a number of different diseases...how can we detect these?
- Produce a mindmap to show what each of the following diseases are and how they can be detected:
 - o Infection
 - o Anaemia
 - o Diabetes
 - o Leukaemia

Drugs in the Blood

- Drugs, such as alcohol, can also be detected in the blood...**find out how and why.**

Group Task

Work as a group to produce a poster, leaflet or video for a drink driving campaign.

You must include information on the legal limit for alcohol in the blood when driving and how this will be measured.

Do you know it?

- Testing your knowledge:
 - Answer questions 1 to 4 on page 32.

