Year 6

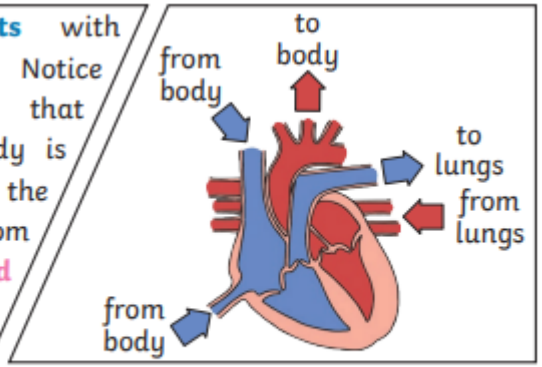
Unit: Animals including humans

Intent:
To identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood.
To recognise the impact of diet, exercise, drugs, and lifestyle on the way their body functions.
To describe the ways in which nutrients and water are transported within animals, including humans.

Prior learning
Year 2 – Describe the importance for humans of exercise, eating the right amounts of different foods, and hygiene.
Year 3 – Identify that animals (including humans) need the right type and amount of nutrition, and that they cannot make their own food.
Year 4 – Describe the simple functions and workings of the digestive system.
Later learning (not in Year 6)
KS3 – The consequences of imbalances in the diet, including obesity, starvation, and deficiency diseases.
KS23 – The effects of recreational drugs on behaviour, health, and life processes.
KS3 – The impact of exercise, asthma, and smoking on the human gas exchange system.
KS3 – The mechanism of breathing to move air in and out of the lungs.

Key Questions:
What is the name of the system in your body which includes the heart, veins, capillaries, and arteries?
What is deoxygenated blood?
How many chambers does a mammal's heart have?
Where does blood collect oxygen from?
Which type of blood vessels are the smallest?
What job do the veins do?
Which part of the blood is a liquid?
What do platelets do?
What does a healthy diet involve?
What is the job of the red blood cells?
What is plasma made up of?
What happens in your brain when you exercise?

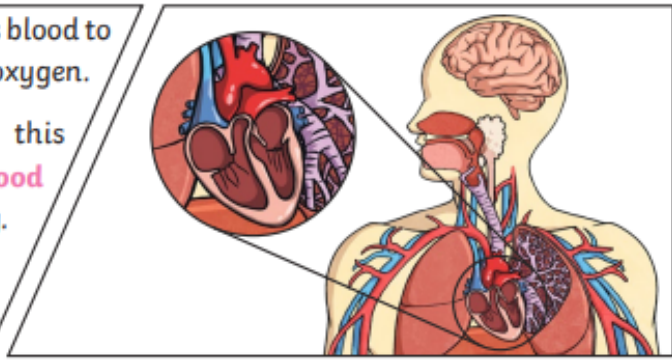
Mammals have **hearts** with four chambers. Notice how the blood that has come from the body is **deoxygenated**, and the blood that has come from the lungs is **oxygenated** again. The blood isn't actually red and blue: we just show it like that on a diagram.

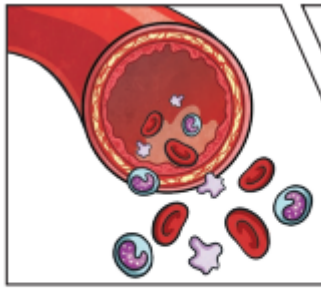


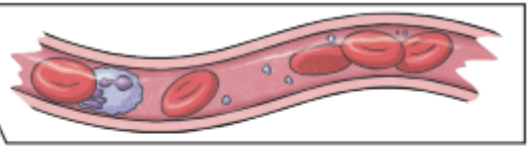
deoxygenated blood ➡ ⬅ **oxygenated blood**

The **heart** pumps blood to the lungs to get oxygen.

It then pumps this **oxygenated blood** around the body.

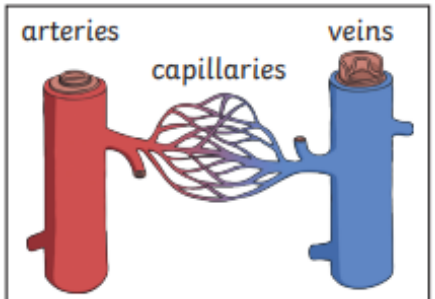






Capillaries are the smallest **blood vessels** in the body and it is here that the exchange of water, nutrients, oxygen and carbon dioxide takes place.

Arteries carry **oxygenated blood** away from the **heart**.



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

Blood transports:

- gases (mostly oxygen and carbon dioxide);
- **nutrients** (including water);
- waste products.

The liquid part of blood contains water and protein. This is called plasma.

Regular exercise:

- strengthens muscles including the heart muscle;
- improves circulation;
- increases the amount of oxygen around the body;
- releases brain chemicals which help you feel calm and relaxed;
- helps you sleep more easily;
- strengthens bones.

It can even help to stop us from getting ill.

Drugs, **alcohol** and smoking have negative effects on the body.

A healthy diet involves eating the right types of **nutrients** in the right amounts.

If you linked up all of the body's blood vessels, including arteries, capillaries, and veins, they would measure over 60,000 miles.

Plasma is liquid. The other parts of your blood are solid.

Platelets help you stop bleeding when you get hurt.

Red blood cells carry oxygen through your body.

White blood cells fight infection when you're sick.

Vocabulary	
Alcohol	A drug produced from grains, fruits, or vegetables when they are put through a process called fermentation.
Blood vessels	The tube-like structures that carry blood through the tissues and organs. Veins, arteries, and capillaries are the three types of blood vessels.
Circulatory system	A system which includes the heart, veins, arteries, and blood transporting substances around the body.
Deoxygenated blood	Deoxygenated blood is blood where most of the oxygen has already been transferred to the rest of the body. This blood is returning to the heart to be reoxygenated.
Drug	A substance containing natural or man-made chemicals that influences your body when it enters your system.
Heart	An organ which constantly pumps blood around the circulatory system.
Oxygenated blood	Oxygenated blood has more oxygen. It is pumped from the heart to the rest of the body.
Nutrient	Substances that all living things need to stay alive and healthy.