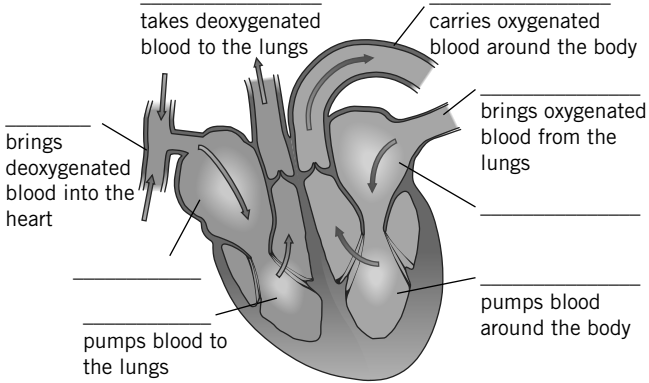


Chapter 4: Organising animals and plants 1

Knowledge organiser

The heart

The heart is the organ that pumps _____ around your body. It is made from _____ muscle tissue, which is supplied with oxygen by the _____ **artery**. Complete the labels on the diagram.



Heart rate is controlled by a group of cells in the _____ that generate _____, acting as a pacemaker. Artificial pacemakers can be used to control _____.

blood is a tissue made up of _____ main components

- _____ – bind to oxygen and transport it around the body
- _____ – transports substances and blood cells around the body
- _____ – form blood clots to create barriers to infections
- _____ – part of the immune system to defend the body against pathogens

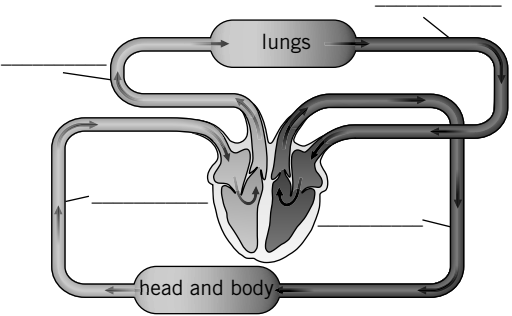
Blood vessels

Vessel	Function	Structure	Diagram
artery		•	
		•	
		•	
vein		•	
		•	
		•	
capillary		•	
		•	
		•	

Double circulatory system

The human circulatory system is described as a _____ because blood passes through the heart _____ for every circuit around the body:

- the right ventricle pumps blood to the _____ where gas exchange takes place
- the _____ pumps blood around the rest of the body.

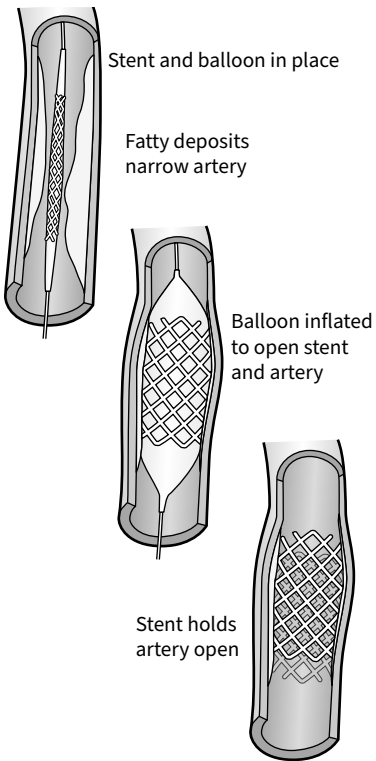


Heart issues

Coronary heart disease is caused by a build up of fatty material in the _____ arteries, making them _____, and reducing _____. _____ can be used to help keep the coronary arteries open.

Patients with heart failure often have to use _____ before a donor heart becomes available for a heart transplant.

People with faulty heart **valves** may feel symptoms of breathlessness as valves do not fully _____, making the heart less efficient. These can be replaced with _____ (from animals), or _____ (made from titanium and polymers).

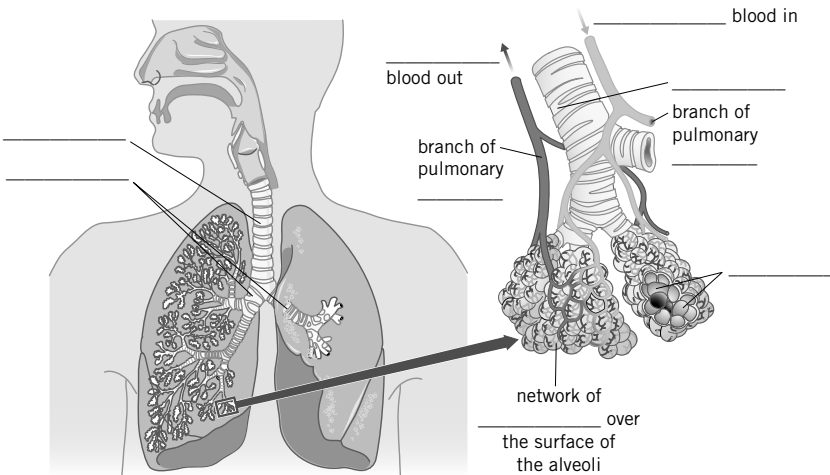


Lungs

- When breathing in, air moves
- 1 into the body through the mouth and nose
 - 2 down the _____
 - 3 into the _____
 - 4 through the _____
 - 5 into the _____ (air sacs).

Oxygen then diffuses into the blood in the network of _____ over the surface of the alveoli.

Label the diagram.



Key terms

Make sure you can write a definition for these key terms.

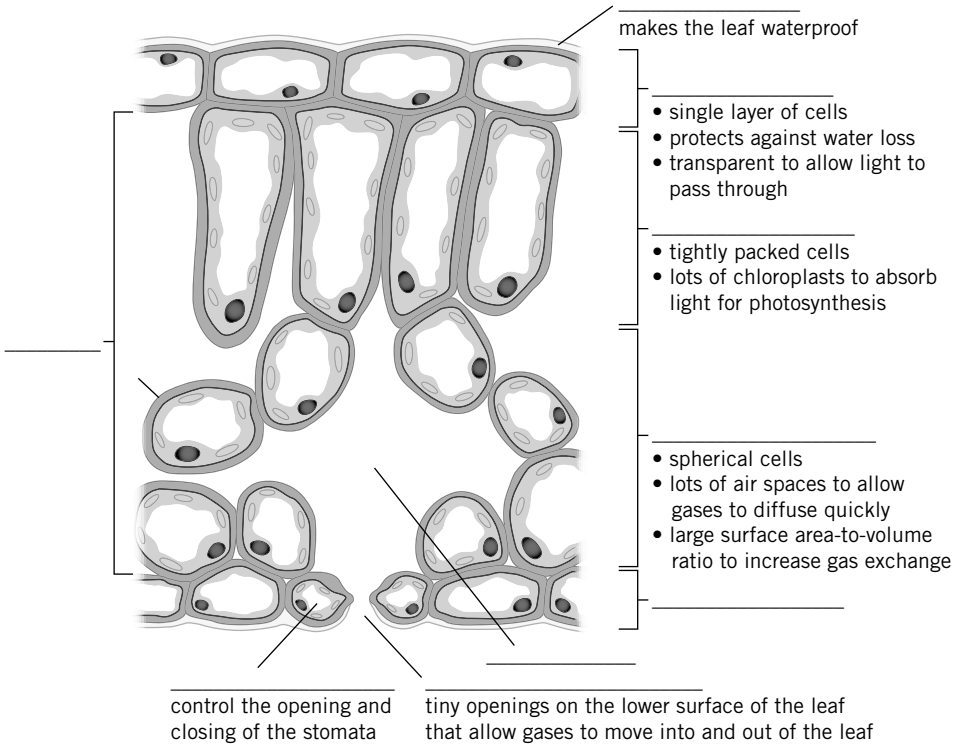
alveoli aorta artery atrium bronchi bronchiole capillary cardiac
coronary double circulatory system plasma platelet pulmonary valve
vein vena cava ventricle

Chapter 4: Organising animals and plants 2

Knowledge organiser

Tissues in leaves

Leaves are _____ because they contain many tissues that work together to perform _____.



Stomata

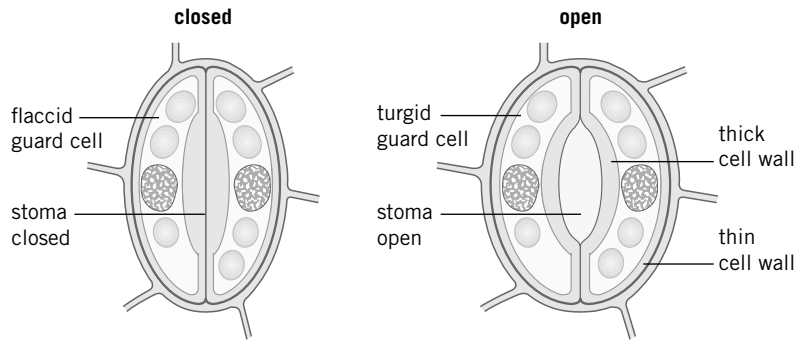
_____ are tiny openings in the undersides of leaves – this placement reduces water loss through _____.

They control gas exchange and water loss from leaves by:

- allowing _____ of _____ into the plant for photosynthesis
- allowing diffusion of _____ out of the plant.

_____ are used to open and close the stomata.

When a plant has plenty of water, the guard cells become _____. The cell wall on the inner surface is very _____, so it cannot stretch as much as the outer surface. So as the guard cells _____ up, they curve away from each other, opening the _____.



Transpiration

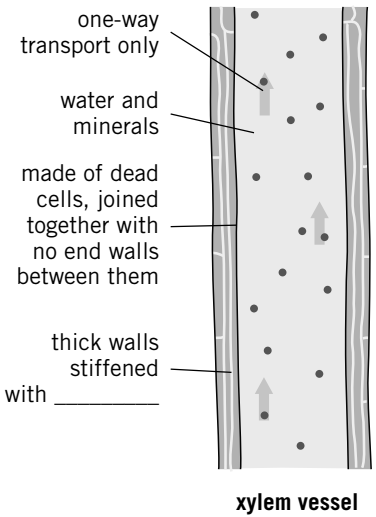
Description

Water is lost through the stomata by evaporation. This pulls water up from the roots through the _____ and is called _____. The constant _____ of water up the plant is called the _____.

Importance

- provides water to cells to keep them _____
- provides _____ to cells for photosynthesis
- transports _____ to leaves

Specialised tissues



Factors affecting the rate of transpiration

Factor	Effect on transpiration	Because...
temperature		
humidity		
wind speed		
light intensity		



Key terms

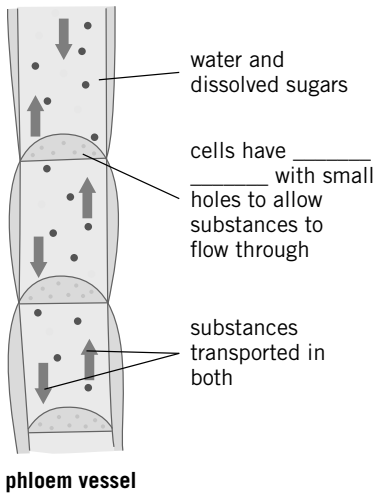
Make sure you can write a definition for these key terms.

photosynthesis stomata guard cells transpiration translocation
light intensity temperature humidity wind speed phloem xylem

Translocation

The movement of dissolved sugars from the leaves to the rest of the plant through the _____.

- moves dissolved sugars made in the leaves during _____ to other parts of the plant
- this allows for _____, growth, and _____ storage



Chapter 4: Organising animals and plants

Retrieval questions

Answer the following questions using the information from the knowledge organiser.

B4 questions		Answers
1	Name the four main components of blood.	
2	What is the function of platelets?	
3	Why is the human circulatory system a double circulatory system?	
4	How does the structure of an artery relate to its function?	
5	How does the structure of a vein relate to its function?	
6	How does the structure of a capillary relate to its function?	
7	List the structures air passes through when breathing in.	
8	What is the function of the red blood cells?	
9	What is the function of the white blood cells?	
10	What is the function of the plasma?	
11	Why is a leaf an organ?	
12	How is the upper epidermis adapted for its function?	<ul style="list-style-type: none">
13	How is the palisade mesophyll adapted for its function?	
14	How is the spongy mesophyll adapted for its function?	
15	What is the function of the guard cells?	
16	What is the function of the xylem?	
17	Give three adaptations of the xylem.	<ul style="list-style-type: none">

18	What is the function of the phloem?	
19	What is the purpose of translocation?	
20	Define the term transpiration.	
21	What is the purpose of transpiration?	<ul style="list-style-type: none">
22	Name four factors that affect the rate of transpiration.	
23	What effect does temperature have on the rate of transpiration?	
24	What effect does humidity have on the rate of transpiration?	
25	Why does increased light intensity increase the rate of transpiration?	
26	What is the function of the stomata?	
27	Where are most stomata found?	
28	What is the advantage to the plant of having a high number of stomata at this location?	