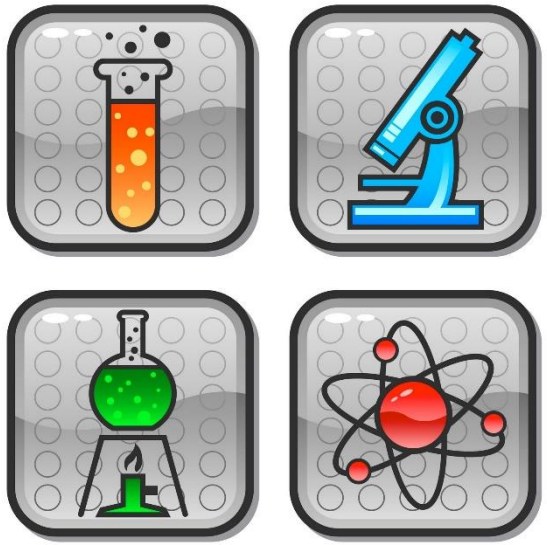
Year 8 Science Knowledge Organiser

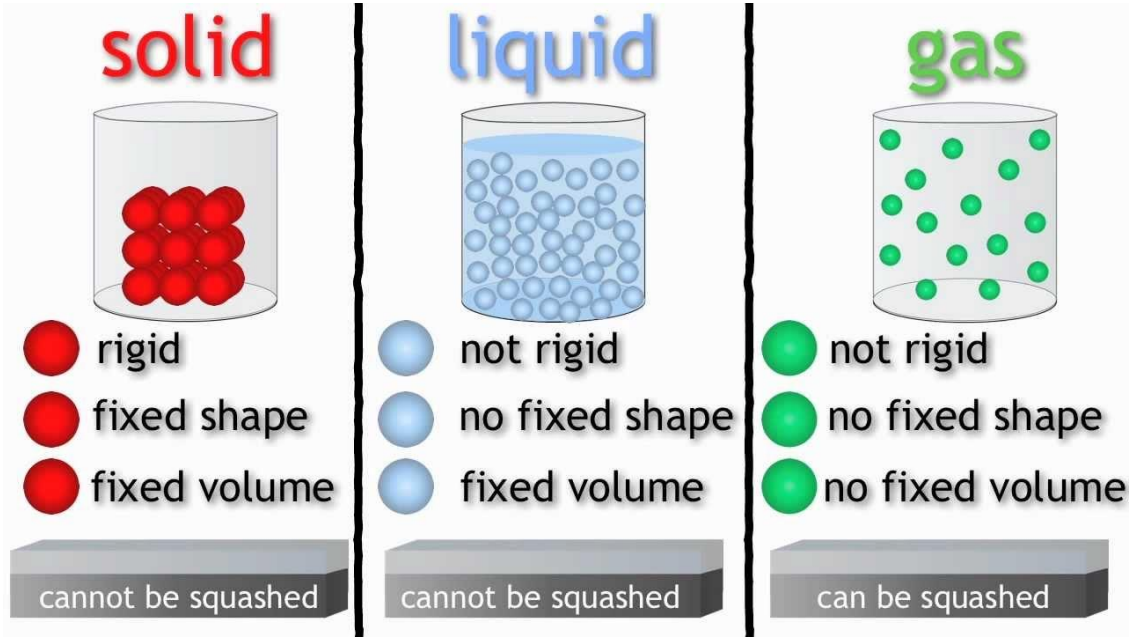


Science Knowledge Organiser Checklist

	Task	Complete
1.	States of matter- worksheet	
2.	States of matter- Learning map	
3.	Separating Techniques - worksheet	
4.	Separating Techniques – questions	
5.	Separating Techniques – Learning map	
6.	Mrs Nerg diagram	
7.	Organs worksheet	
8.	Cells worksheets	
9.	Cells learning map	

	Task	Complete
10.	Alien questions	
11.	Solar system worksheet	
12.	Solar system learning map	
13.	Friction questions	
14.	Danger! High Voltage questions	
15.	Electricity Learning map	
16.	Extinction worksheet	
17.	Plant reproduction worksheet	
18.	Plant reproduction learning map	

States of matter/state changes

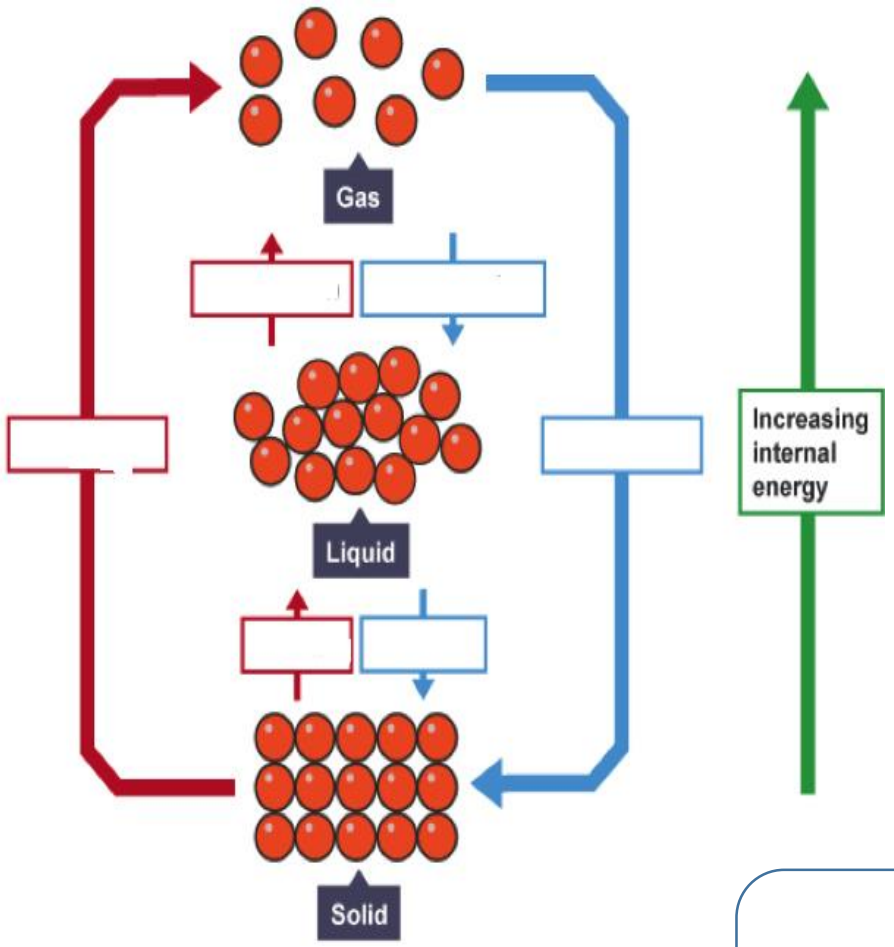


Exercise - Join up the words in the left-hand column with their meanings in the right-

DIFFUSION	A solid changing to a liquid.
ICE	The spreading out of particles.
MELTING	The solid state of water.
STATE OF MATTER	A solid, liquid or gas.
EVAPORATION	A gas changing to a liquid.
CONDENSING	A liquid changing to a gas.

Quick Test

1. Name the 3 states of matter
2. In which state are the particles closer together
3. Do solids have a definite volume?
4. In which state are solids held by forces of attraction but the particles may move a little?
5. Can liquids be squashed or compressed?
6. Can gases be compressed
7. In which process do solids turn into gases?
8. In which process do solids turn into liquids



States of matter

Show the particle arrangement below

Solid

Liquid

Gas

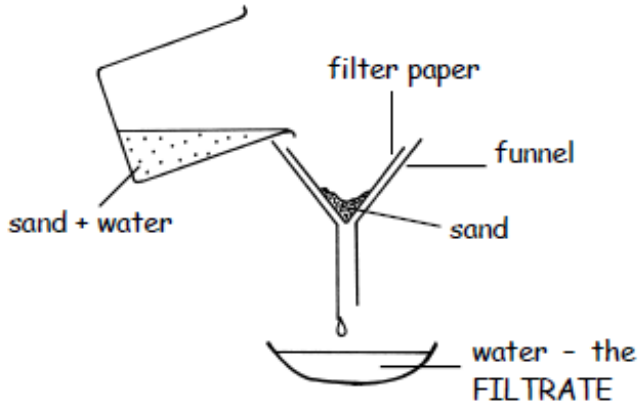
Solids:
Particles are close together
Strong forces of attraction
Particles vibrate
Can't be compressed

Liquids:
Particles are _____ together
Particles are held by _____ forces of attractions.
Particles can _____ a bit
Can't be _____

Gases

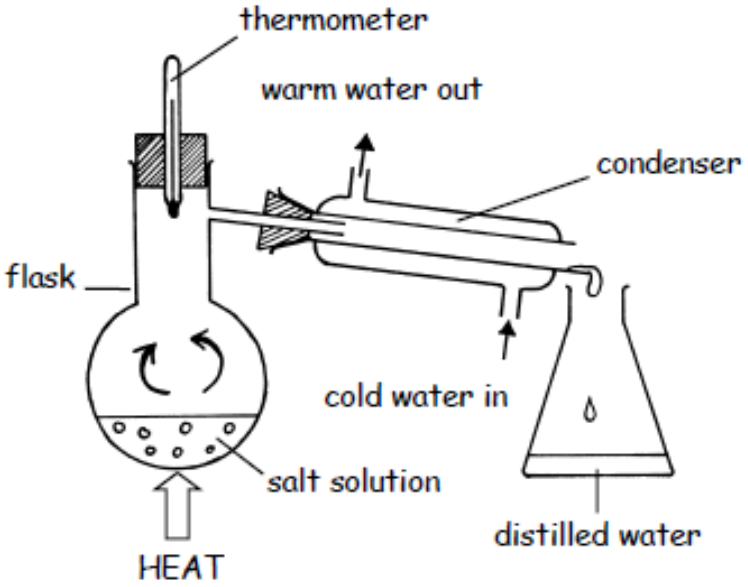
Separating Techniques

A mixture contains a number of substances that are not chemically joined. The diagrams below show different ways of separating mixtures. Fill in the missing words in the paragraphs beside each method.



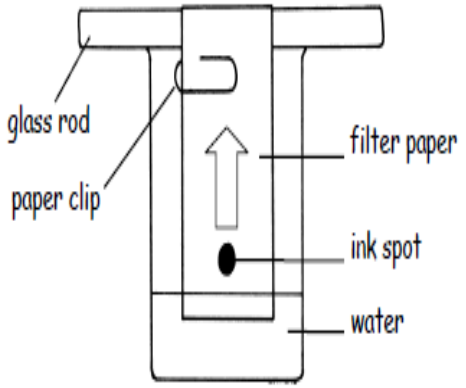
Filtration.

This method separates small, solid particles from liquids. In the diagram a mixture of sand and water is being filtered. The ..... passes through the filter paper and the ..... is held back. The sand particles are too big to pass through the pores in the .....



Distillation.

This method separates dissolved chemicals (SOLUTES) from the liquids that they are dissolved in (SOLVENTS). In the diagram salt solution is being separated into salt and ..... The water evaporates from the boiling solution and then condenses as it is ..... in the condenser. The salt is left behind in the .....



Chromatography.

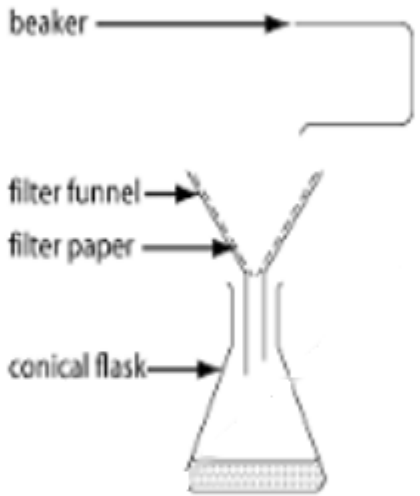
In the diagram the colours in pen ink are being separated. As water rises up the ..... it takes the colours with it. Different colours travel at different ..... If the ink contains more than one colour they will separate out along the paper.

Exercise 2 - Join up each mixture below with the correct method for separating it.

muddy water	distillation
copper sulphate solution	filtration
peas and sand	magnetic attraction
iron filings and sawdust	sieving

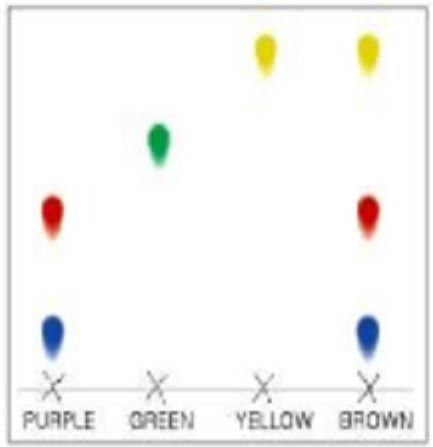
Key words: solution, filter, soluble, evaporation, chromatography, distillation, condense, solvent, saturated

Write a method for separating sand and water using the equipment in the diagram.



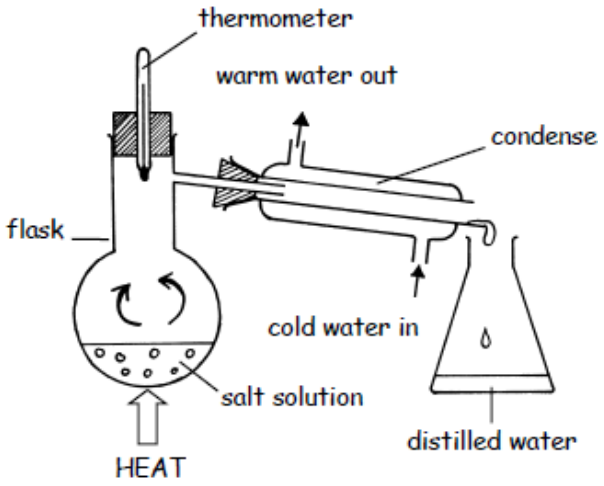
Add in the words which describe the change of state.

Explain in as much detail how this chromatogram has been made and what it shows.



Separating Techniques

Distillation



Explain distillation how it works

Filtering

Draw and label diagram

Evaporating

Draw and label diagram

Introducing Mrs Nerg

Fill in the diagram with the 7 processes all living things do – try to explain what each one means

Organs

Exercise 1 - Fill in the missing words in the passage below.

In the human body many cells of the same ..... join together form TISSUES. These tissues then join together to form ..... An organ is a part of the ..... that has one or more importa ..... to carry out. All of the organs work together to keep th body ..... The bodies of most animals and ..... are made of many organs. Several organs working together on one large task called a ..... For example, in the human body the mouth, gulle stomach and ..... make up the digestive system.

intestines type organs plants jobs body healthy system

Exercise 2 - Join up the organs below to their correct description.

Brain

Heart

Leaf

Stomach

Flower

Descriptions

This pumps blood around the body.

This organ makes food in a plant.

This controls the rest of the body.

This organ makes seeds in a plant.

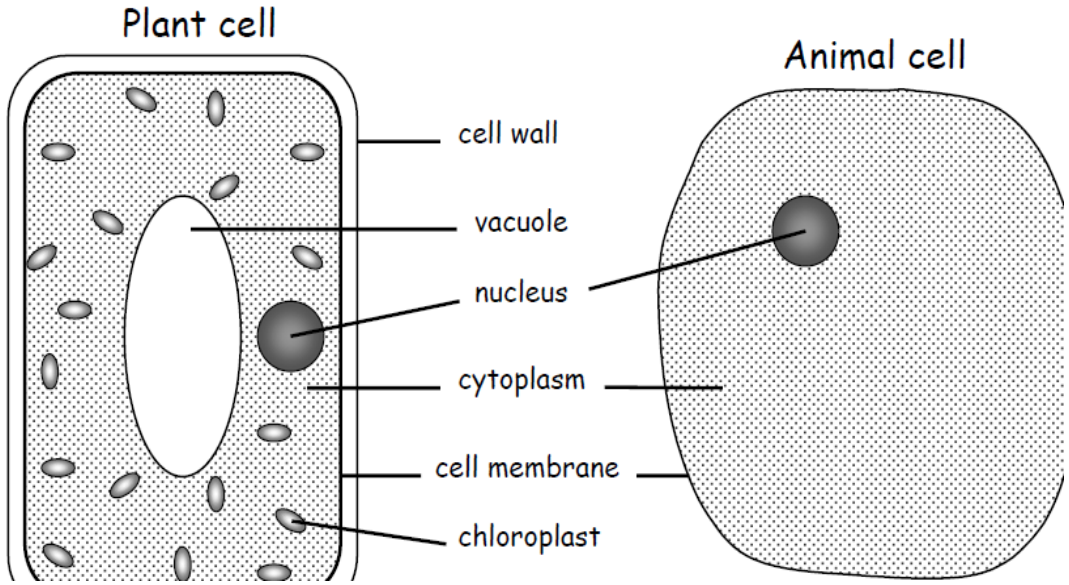
This helps to digest food.

Plant and Animal Cells

Exercise 1 - Fill in the missing words in the passage below.

The bodies of all plants and ..... are made up of tiny living units called ..... Some microscopic organisms consist of only a ..... cell but the bodies of most plants and animals are made up of ..... of cells. There are many different ..... of plant and animal cells. The diagrams below show the ..... that they usually contain.

parts **animals** **cells** **types** **millions** **single**



Exercise 2 - Join up the cell parts below to their correct jobs.

Cell part	Job
Nucleus	covers the membrane and gives strength to a plant cell.
Cytoplasm	controls what the cell does.
Cell wall	jelly that fills the cell, chemical reactions happen here.
Chloroplast	stores water in a plant cell.
Vacuole	absorbs light energy to make food for the plant.

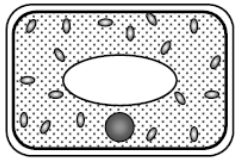
Specialised Cells

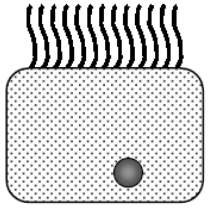
Exercise 1 – Fill in the missing words in the passage below.

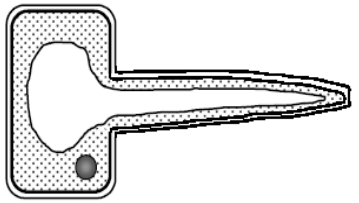
Nearly all cells contain a membrane, ... and cytoplasm. There are many ..... types of cells. They vary in their shape and ..... depending on their functions (jobs). Each type of cell is well ..... (suited) to its function. In the human ..... there are about twenty different types of cell, each has a certain ..... to do. This makes the body work much ..... than if each cell was trying to do everything.

better **different** **nucleus** **size** **body** **adapted** **job**

Exercise 2 – Join up the cells below to their correct descriptions.







Ciliated cell

This cell is found lining the windpipe. Its surface is covered with tiny hairs called cilia. These waft dirt and germs up to the throat.

Palisade cell

This cell is found on the top side of a leaf. It contains tiny green discs called chloroplasts. These absorb sunlight in order to make food.

Sperm cell

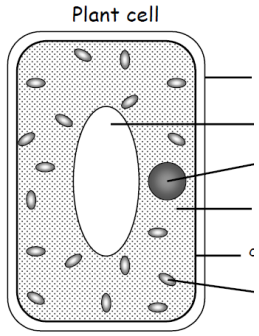
It uses its tail to swim to the ovum. The head contains the nucleus which enters the ovum during fertilisation.

Root Hair cell

This is found on the surface of a root. Its job is to absorb water from the soil. It is long and thin with a big surface area to absorb water.

Cells

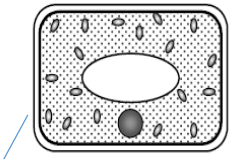
Label the plant cell

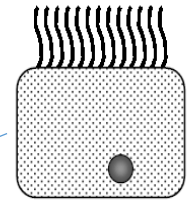


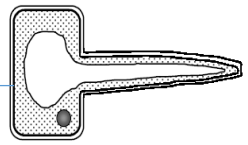
State what each part of the cell does

Nucleus:
Cytoplasm:
Cell Wall :
Cell membrane:
Chloroplast:
Vacuole :

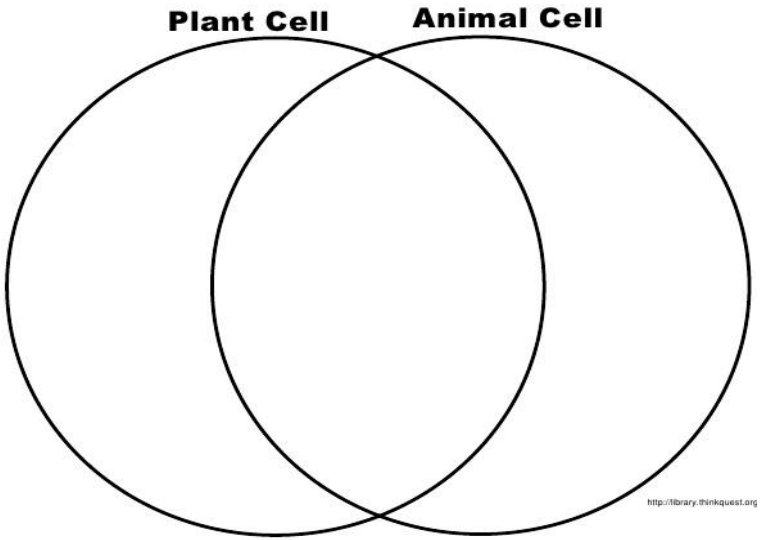
Name the following types of cells and list what they do and how they are adapted for that







Complete the Venn diagram to show the part of the cells for plant and animals. The middle section should show the parts they both have



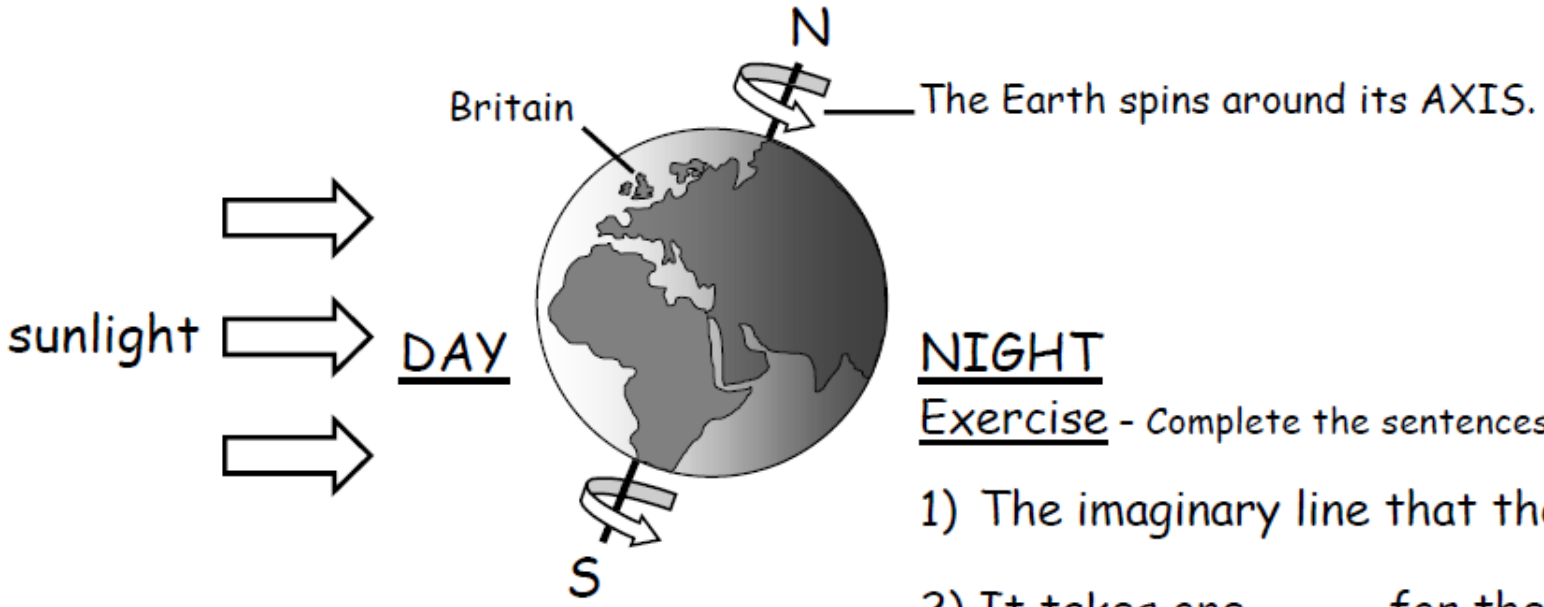
Draw and label a animal cell

Specialised Cells

What is specialised cell?

Alien

The Earth spins around an imaginary line called its AXIS. The axis runs from the North to the South pole. The Earth turns once every twenty four hours (one day). During the day we face towards the Sun and at night we face away from the Sun.



Exercise - Complete the sentences below.

1) The imaginary line that the Earth spins around is called its _ _ _ _

2) It takes one _ _ _ for the Earth to turn once.

3) During the day we face _ _ _ _ _ _ _ the Sun.

4) The Sun rises in the _ _ _ _ and sets in the _ _ _ _

5) Our shadows are longest in the _ _ _ _ _ _ _ and in the evening.

6) At _ _ _ _ _ _ the Sun is at its highest in the sky.

W.S.84. The solar system.

Name .....

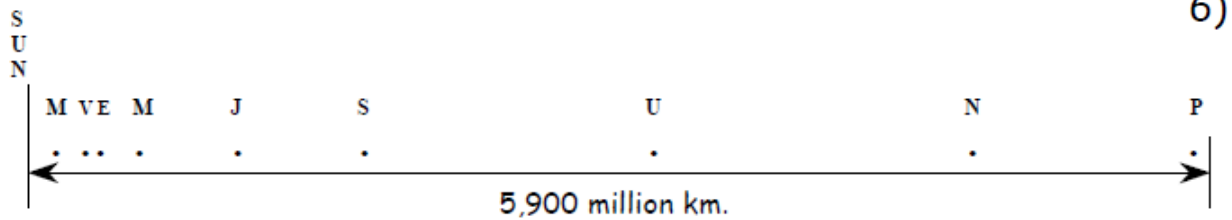
The Sun and other stars are sources of light. Planets orbit stars and do not mak their own light. We can sometimes see the moon and some of the planets at nigh because they REFLECT light from the Sun. The SOLAR SYSTEM is our Sun togethe with the nine planets that orbit it. The order of the nine planets starting with th one closest to the Sun is :

Mercury Venus Earth Mars Jupiter Saturn Uranus Neptune Pluto

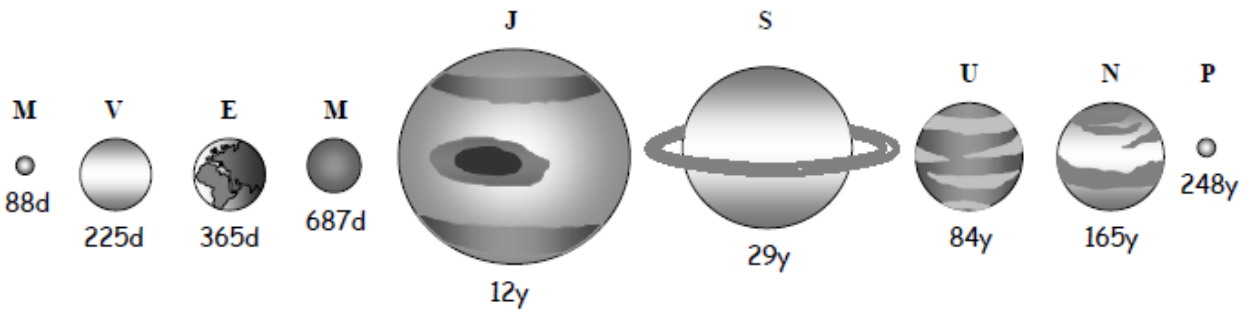
An easy way to remember the order of the planets is to remember this rhyme :

My Very Easy Method Just Speeds Up Naming Planets.

The diagram below gives an idea of how far the planets are from the Sun.



The diagram below shows how the planets compare in size. The length of each planet's year (orbit time) is also given underneath each one (d = days, y = years.)



THE FURTHER THE PLANET IS FROM THE SUN THE LONGER IT TAKES TO ORBIT.

Exercise - Complete the sentences below.

1) The planet that is closest to Earth is _ _ _ _ _

2) The largest planet is _ _ _ _ _ _ _

3) The further the planet is from the Sun the _ _ _ _ _ _ is its year.

4) The planet with a year about twice as long as Earth's is _ _ _ _

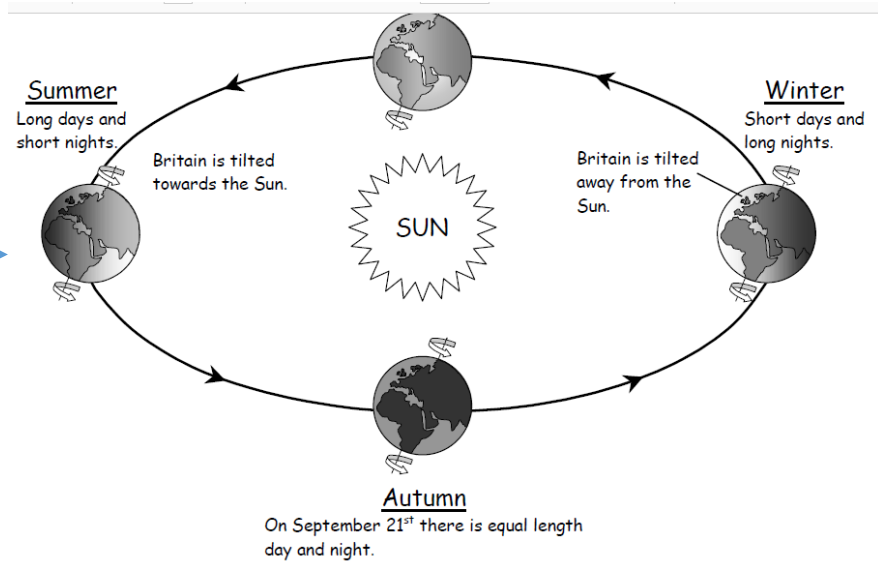
5) Planets that are close to the Sun have very _ _ _ _ temperatures.

6) The rings around _ _ _ _ _ _ are easily seen.

List the planets in order from the sun

Explain why we have night and day?

Explain why we have the seasons?



Explain which planet will have the longest year.

What is a satellite? List 3 uses of satellites

Friction

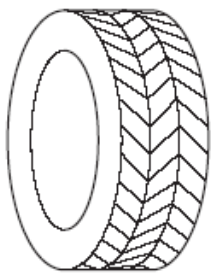
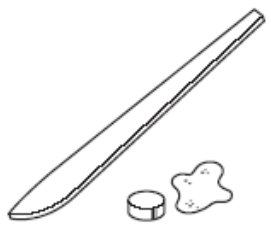
Name _____ **Class** _____ **Date** _____

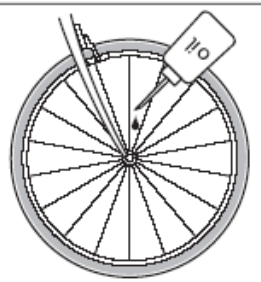
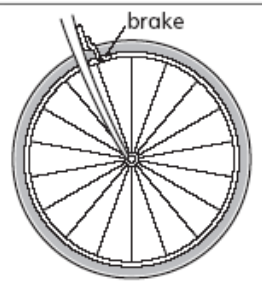
1 Complete the sentences by using the words in the box.

Friction is the __ __ __ __ __ between two __ __ __ __ __ __ __ __ objects. It can __ __ __ __ things down or make things stand __ __ __ __ __ .

force	**slow**	**still**	**touching**

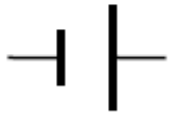
2 Look at the pictures. Decide whether each shows more friction or less friction.

		
using a bathmat	using rubber tyres	waxing skis

		
sliding on a *polished* slide	oiling	pulling on bicycle brakes

Danger! High Voltage

Symbols


A cell (battery).

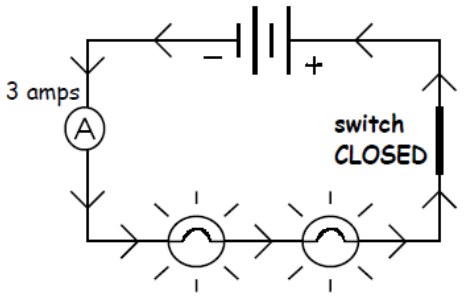

A switch. This connects two leads.


A voltmeter. This measures the voltage across the battery terminals.


An ammeter. This measures the size of the electric current in AMPS (A).


A bulb. The brightness gives some idea of how much electricity is flowing.

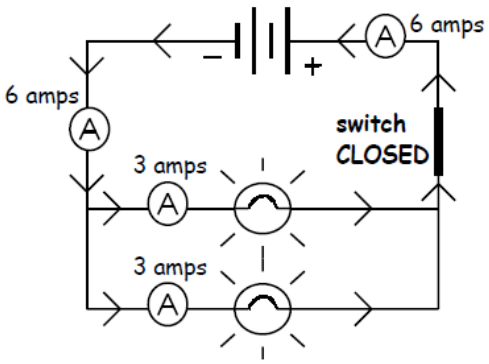
Bulbs in series



The bulbs are dim.

The current is ..... because it is harder for it to travel through both bulbs. We say that there is a high ..... The current does not get used up as it travels around the circuit. The ..... gives the same reading anywhere in the circuit.

Bulbs in parallel



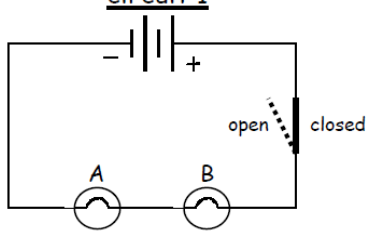
The bulbs are much brighter.

Both bulbs are connected directly across the two batteries therefore they are given the full .....
The current is ..... because it is easier for it to flow around the circuit. If another bulb was connected in parallel they would still be as .....

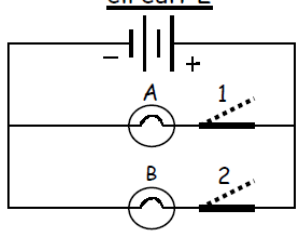
voltage **small** **bright** **resistance** **larger** **ammeter**

Exercise 2 - Study the two circuit diagrams below and then try to complete the sentences.

circuit 1



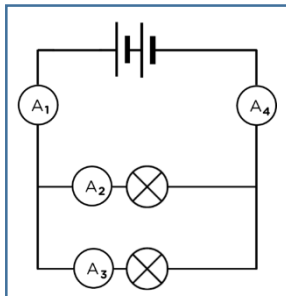
circuit 2

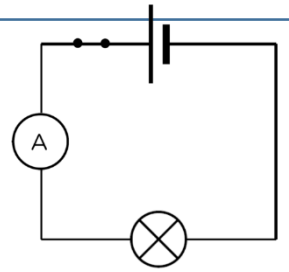


1) If the switch is opened in circuit 1 both bulbs would _____

2) If bulb A is removed from circuit 1 bulb B would get _____

3) If switch 1 is opened in circuit 2 only bulb ____ would light up.





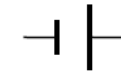
Explain what you know about the current in series and parallel circuits .

Electricity is the flow of

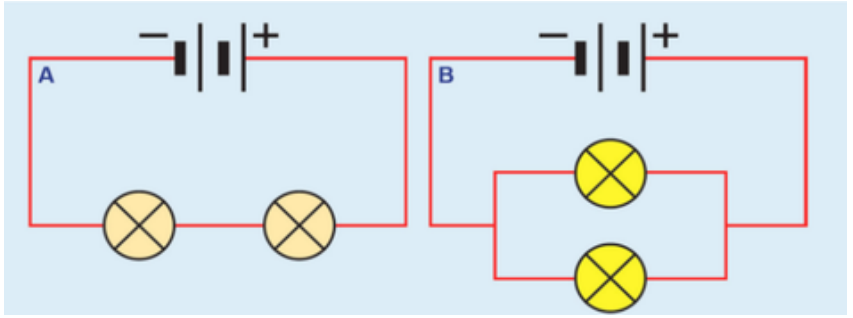
_____

Draw a series circuit with a battery, 2 bulbs and an ammeter

Label the following symbols



Draw a parallel circuit with 2 bulbs, a battery and 2 voltmeters



Which circuit will have the brightest bulbs?

Why does it have the brightest bulbs?

Extinction

Complete the table listing the changes that happen to males and females at puberty

Changes to males	Changes to females

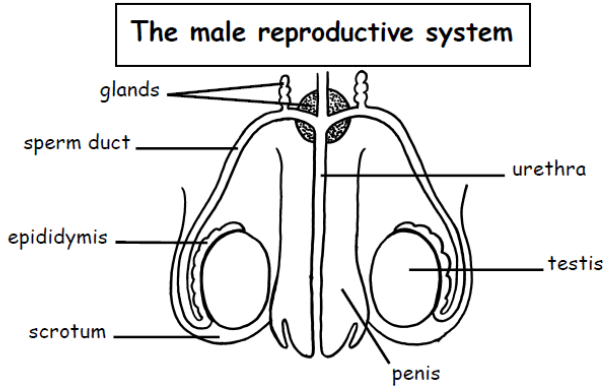
Exercise 1 - Fill in the missing words in the passage below.

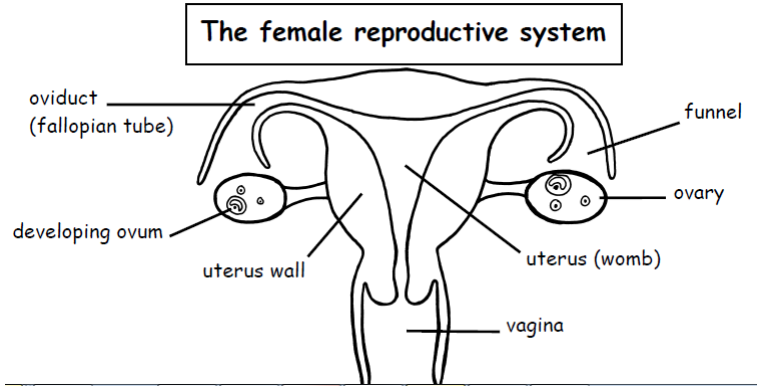
All ..... eventually grow up to be men and women. The time when the body is changing is called ..... Changes happen all over the ..... Emotional changes also happen at puberty and we feel ..... to the opposite sex. A ..... called testosterone is made by the testes in a boy and this causes some of the ..... in his body. In a girl the ovaries make a hormone called ..... which causes many of the changes in her body.

body changes oestrogen hormone puberty children attracted

W.S.12. **The human reproductive system.** Name .....

The diagrams below show the male and female reproductive systems.





Exercise - fill in the missing words in the passage below.

In the man the testes make the ..... cells. The sperms are stored in a coiled ..... called the epididymis. The ..... becomes erect during sexual intercourse. The sperms are carried through a long tube called the sperm ..... to the top of the penis. Here glands make fluids that help the sperms to ..... The urethra is a tube that carries sperms and ..... out of the body.

In the woman the ovaries make the ..... (egg cells). One ovum is produced every ..... The ovum is carried along the ..... (fallopian tubes) down to the uterus (womb). The placenta grows in the uterus wall during pregnancy. This gives the developing baby ..... and oxygen.

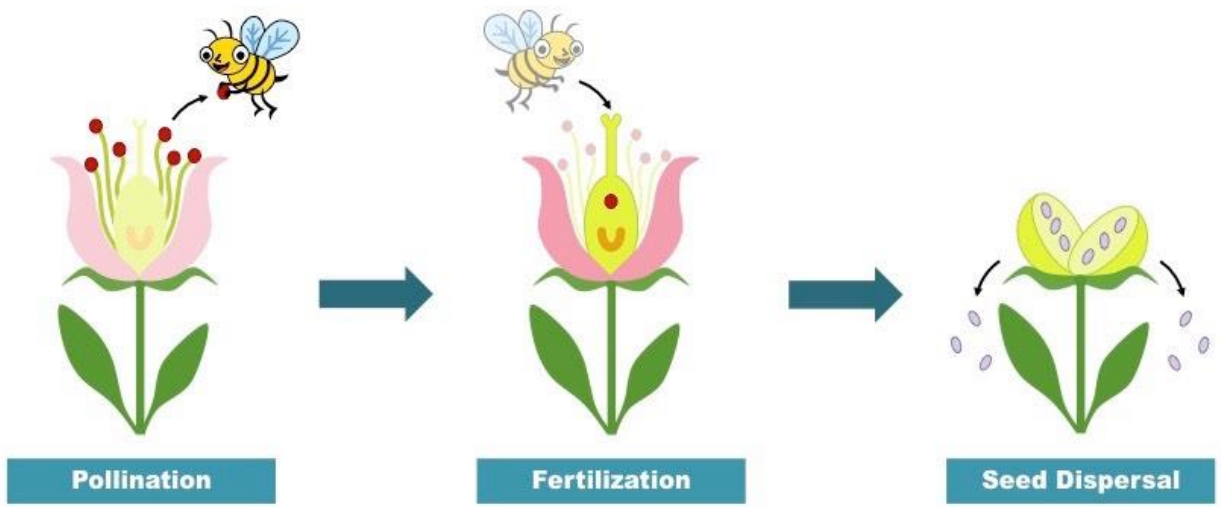
duct urine ova food sperm tube month swim oviducts penis

Plant reproduction

Exercise - Fill in the missing words in the passage below.

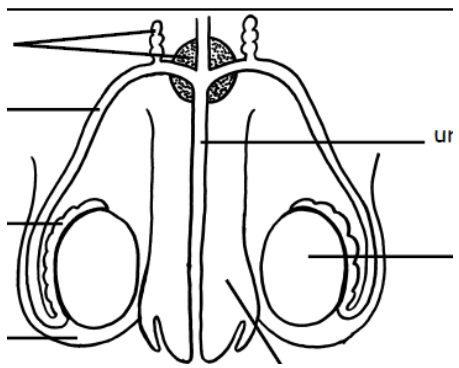
Flowers make ..... so that plants can reproduce. Pollination is when ..... is carried from one flower to another. Pollen can be carried by wind or ..... The insects visit the flower to drink the ..... Flowers are colourful and ..... to attract insects. Plants that use wind to pollinate their flowers are not brightly ..... They are light and feathery to catch the breeze.

Fertilisation is when the male and female sex cells ..... The fertilised ..... then develop into seeds. When the flower dies a ..... is left behind. Fruits help to ..... the seeds.

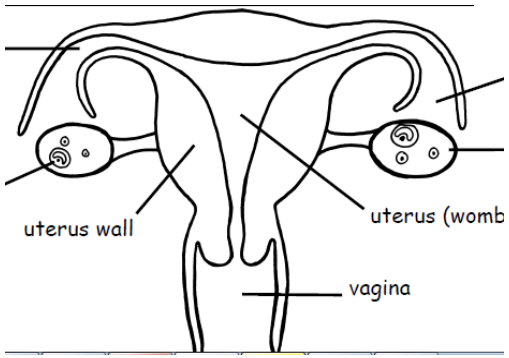


Flower Part	Function
Petals	
Anther	
Filament	
Stigma	
Style	
Ovary	
Ovules	
Nectary	
Sepals	
Stamen	
Carpel	

Label the diagrams below

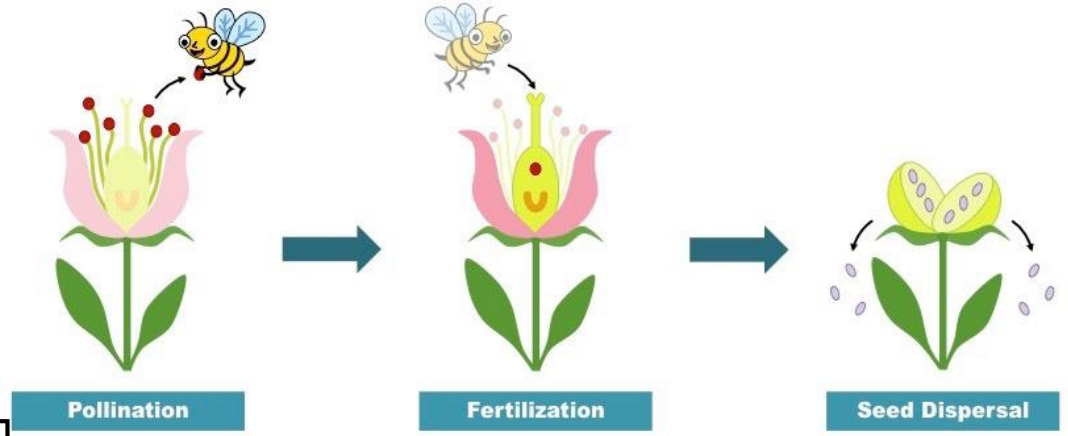


Testes, penis, urethra
scrotum, gland sperm duct



Oviduct , uterus, ovary, cervix

Explain what happens during pollination. (use words pollen, pollen tube, style, stigma and ovary)



Reproduction revision

Explain what happens during plant fertilisation.

List types of seed dispersal

Use these words to label the parts of the flower
Stigma, style, stamen, ovary petals filament ovules