Year 8 Science Summary Sheets For Summer Exams 2024

How to learn:

- Find a good table or desk to study where it is quiet
- Make notes from my science booklets
- Get someone else to test me on my notes
- Do the revision work in class and go over it again at home
- Use BBC Bitesize to revise by watching the videos, reading and making notes and doing the quizzes

Scan the QR code to take you to BBC Bitesize to revise your first topic

How not to learn:

- Just reading over notes the night before is not enough to learn and understand science well
- Revising with your phone close by is not helpful as it is too easy to be distracted
- Lying on your bed or sofa is not effective as your brain thinks you are resting not working

What to revise:

- Look at all the booklets you have from science this year.
- Find the list of Learning Objectives in each booklet. These are usually in the first couple of pages of the booklet.
- Use your booklet and these summary sheets to make sure you can answer all of these
- If you are having problems ask your teacher.

In class, your teacher will help you revise and be able to advise you.

Introduction to Science **Knowledge Organiser**

A science laboratory is used for carrying out practical investigations. This can involve using hazardous chemicals and equipment such as Bunsen burners.

Some practical equipment, such as test tubes, are easily breakable so care must be taken.

Thinking about the students' and teacher's health and safety is very important so that no one gets hurt.

Laboratory Safety Rules

Your teacher will have made the safety rules for the laboratory very clear. Below are some important safety rules, which should always be followed, but there may be others which you need to consider in addition to these.

- Always wear eye protection during a practical.
- Carry out a practical while standing up.
- Do not eat or drink in the laboratory.
- Tie long hair back and tuck loose clothing in during practicals.
- If something is spilled or broken, tell the teacher.
- Ensure that the floor and work space is clear of obstacles.

Hazard Symbols

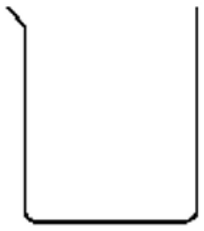
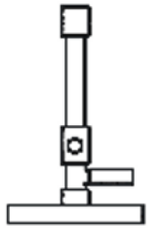
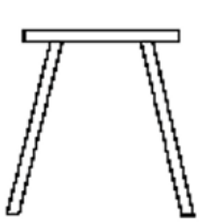
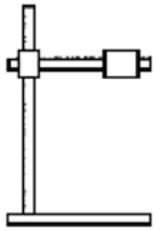
Hazard symbols show people how dangerous a chemical is, and what care should be taken when handling them.

Symbols can be used all over the world and are immediately recognisable, so it does not matter which language is used.

flammable	acute toxicity	corrosive	explosive
			
moderate health hazard	serious health hazard	harmful to the environment	
			

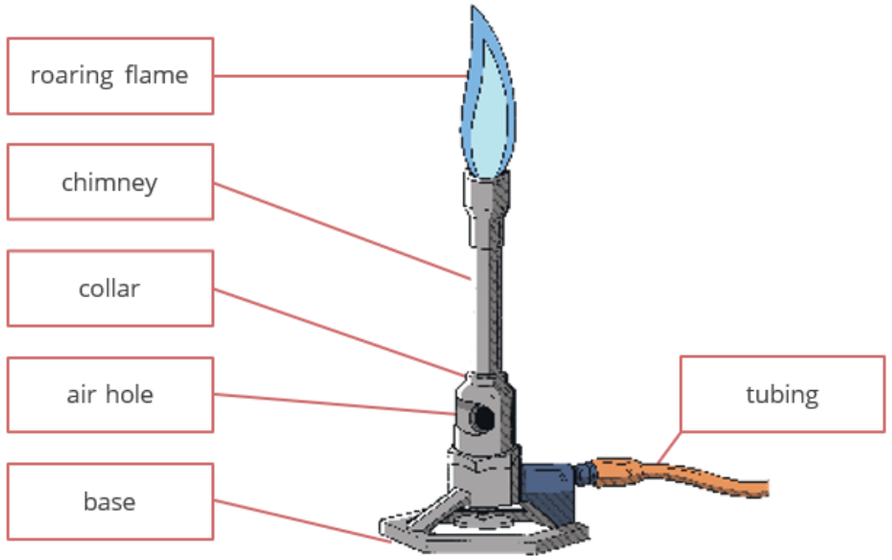
Scientific Equipment

Diagrams are used when drawing practical equipment to make it easier and quicker to draw.

beaker	Bunsen burner	tripod	evaporating basin	clamp stand, boss and clamp	conical flask
					
test tube	funnel	measuring cylinder	thermometer	heatproof mat	gauze
					

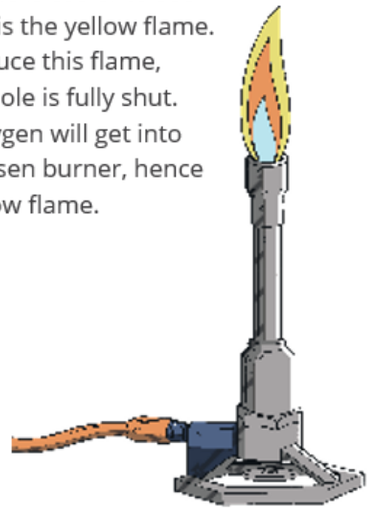
Bunsen Burner

The Bunsen burner is an important piece of scientific equipment. It is used in many science experiments and uses methane gas.



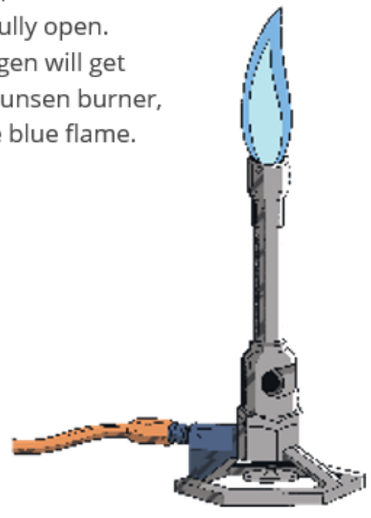
The Safety Flame

The safety flame is used when the Bunsen burner is not in use. The flame is easier to see when it is the yellow flame. To produce this flame, the air hole is fully shut. Less oxygen will get into the Bunsen burner, hence the yellow flame.



The Roaring Flame

The roaring flame is used to heat things quickly. To produce this flame, the air hole must be fully open. More oxygen will get into the Bunsen burner, hence the blue flame.



Measurements

Units of measurement

Units are important. It is no use telling someone that it took 20 to boil some water. Do you mean 20 seconds, 20 minutes or 20 hours?

We measure length in **metres (m), centimetres (cm) and millimetres (mm)**.
We measure these using a metre stick or ruler.

We measure mass in **kilograms (kg) and grams (g)**.
We measure this using a top pan balance.

We measure volume in **litres (L), millilitres (ml) or metres cubed (m^3) or centimentres cubed (cm^3)**.
We measure this using a measuring cylinder.

We measure temperature in **degrees Celsius (°C)**.
We measure this using a thermometer.

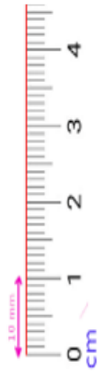
Label each piece of equipment and say what it is used for:

top pan balance
for weighing mass

thermometer
for temperature

measuring cylinder
for volume of liquid

ruler
for length



Activate 1

Revision Sheet – Cells

Biology B1
Chapter 1

Cells

Use the words in the box to complete the paragraph.

microscope	building	cells
observe	enlarges	

All living organisms are made up of cells, these are the building blocks of life. To observe cells in detail you need to use a microscope. This enlarges the object.

Specialised Cells

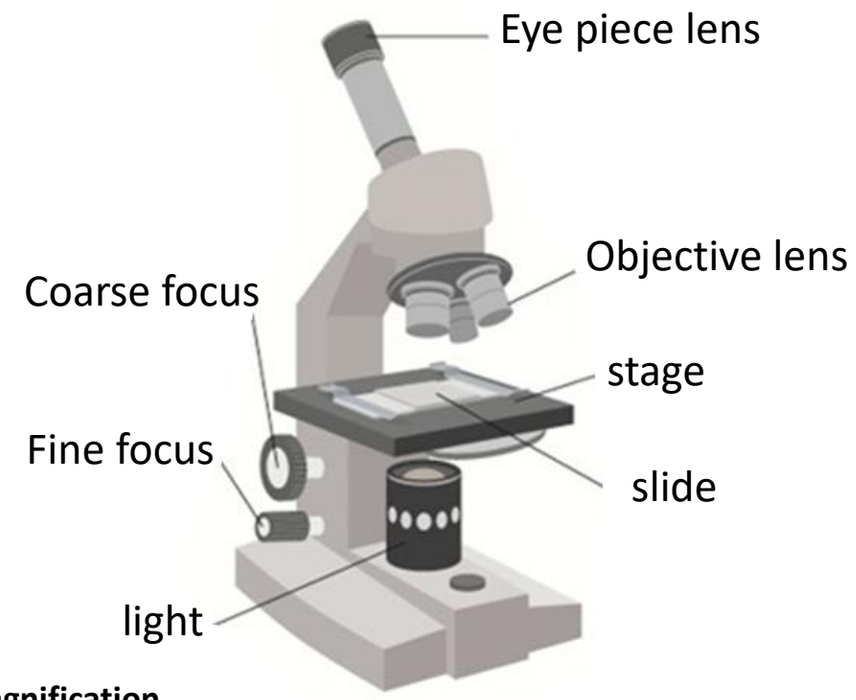
Match each cell with its specialised part and function

Root hair cell	Contains haemoglobin	To connect to other cells
Leaf Cell	Many chloroplasts	For swimming
Sperm cell	Increased surface area	To absorb water
Red blood cell	Long tail	To carry out photosynthesis
Nerve cell	Connections at both ends of the cell	To transport oxygen

Light microscopes

Label all the parts of the microscope. Using the words from the box below.

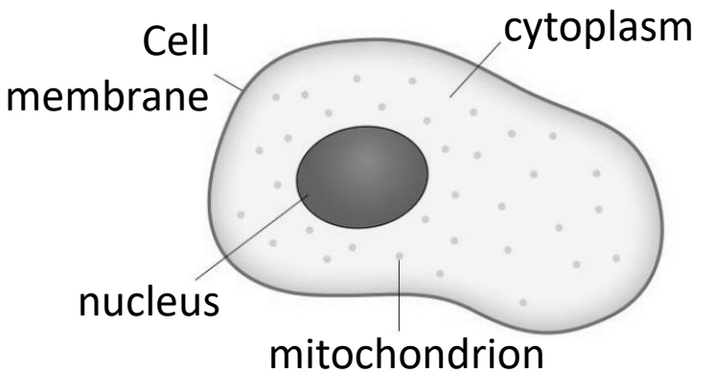
stage	coarse focus	eye piece lens	slide
light	fine focus	objective lens	



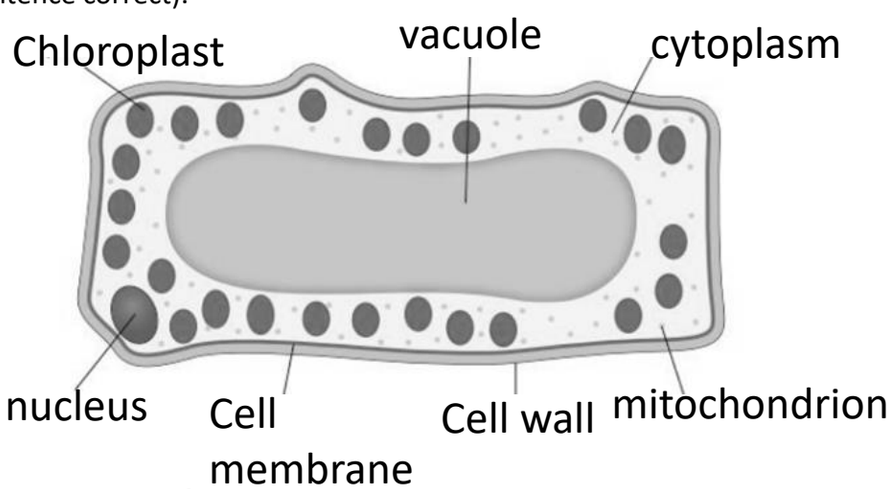
Plants and animal cells

Label the following diagrams with the words from the box.

nucleus	chloroplast	mitochondrion	vacuole
cell membrane	cytoplasm	cell wall	



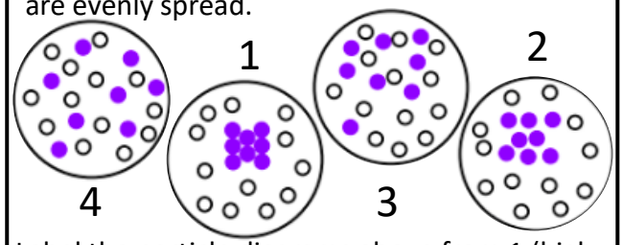
This is an **animal ~~/ plant~~** cell (cross out the wrong word to make the sentence correct).



This is an **~~animal~~ / plant** cell (cross out the wrong word to make the sentence correct).

Diffusion

Substances move from an area where they are in a high concentration to an area where they are in a low concentration, until they are evenly spread.



Label the particle diagrams above from 1 (high concentration) to 4 (evenly spread) to show the progress of particle diffusion.

Magnification

You are asked to observe an onion cell using a microscope. The eyepiece lens has a magnification of x10 and the objective lens has a magnification of x50. What is the total magnification? Show your working.

10 x 50 = 500

Cell function

Match each component of a cell to its function.

Vacuole	Controls the cell's activities
Nucleus	Controls what comes in and out of a cell
Cell wall	Where chemical reactions take place
Cytoplasm	Where respiration occurs
Chloroplasts	Where photosynthesis occurs
Cell membrane	Contains cell sap to keep the cell frim
mitochondria	Rigid structure that supports the cell

Unicellular organisms

Use the words in the box to complete the paragraph.

one	binary fission	unicellular
engulf	photosynthesis	

Amoebas and euglenas are examples of unicellular organisms. This means that they are only made up of one cell. Both organisms reproduce by Binary fission. Amoebas have to engulf food to survive, but euglenas can carry out Photosynthesis to produce their own food.

Activate 1

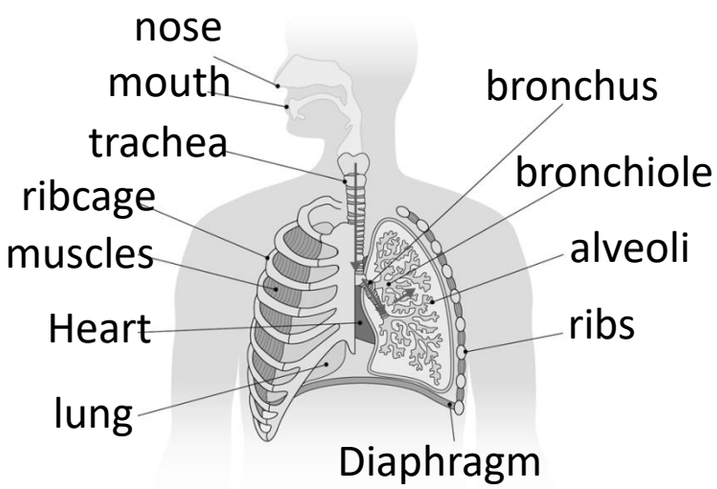
Revision Sheet – Body Systems

Biology B1
Chapter 2

Breathing

Use the words in the box to label the diagrams.

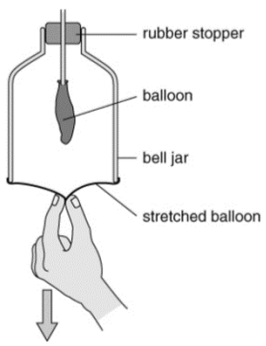
diaphragm	alveolus	trachea	nose
ribcage	muscle	lung	mouth
bronchus	heart	bronchiole	rib



Complete the table using the following words:

Up and out **down and in**
increases **decreases** **down** **up**

	Inhaling	Exhaling
Ribs move	Up & out	Down & in
Diaphragm moves	down	up
Chest volume	increases	decreases



The drawing shows a model used to explain how the lungs expand and fill with air. Number the sentences to put them in the correct order.

5 … air enters the balloon, and so …

3 … the pressure in the jar is …

4 … less than atmospheric pressure, and so ...

6 … the balloon inflates.

2 … the stretched balloon is pulled downwards, and so …

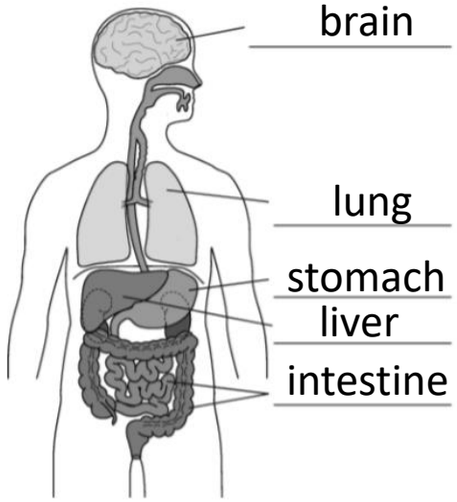
1 The air in the jar is at the same pressure as atmospheric pressure. Then …

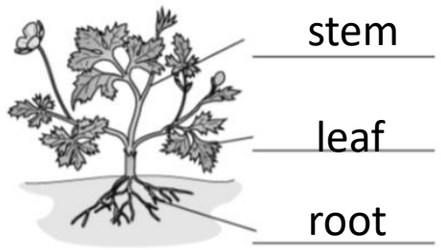
Multicellular organism - levels of organisation

Use the words in the box to label the diagrams.

brain	intestines	leaf	liver	lung
	root	stem	stomach	

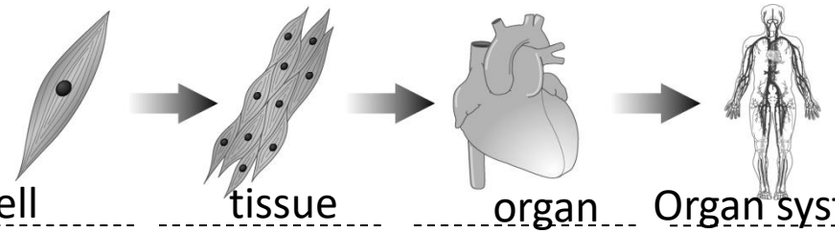
On the diagram of the human body, draw the position of the heart. Label it.





Write the correct name for the level of organisation in this examples. Choose from the words:

organ **organ system** **tissue** **cell**



cell — tissue — organ — Organ system

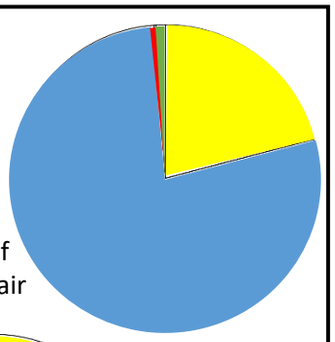
Gas exchange

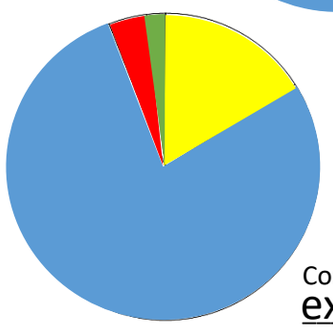
The following pie charts show the percentage of gases in inhaled and exhaled air. Colour and label the pie charts according to the following data.

Gas Name	Inhaled air	Exhaled air	Colour in
Nitrogen	78%	78%	Blue
Oxygen	20.96%	16%	Yellow
Carbon Dioxide	0.04%	4%	Red
Other gases	1%	2%	Green

What gas, present in air, is not used by the body? Nitrogen

Composition of inhaled air





Composition of exhaled air

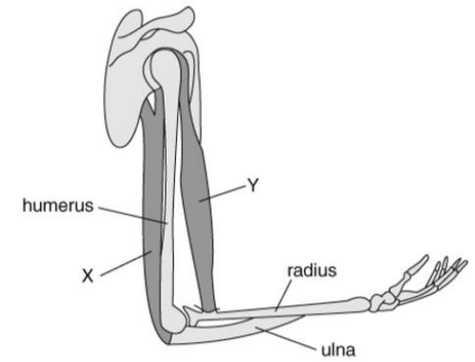
Skeleton

Use the words in the box to complete the paragraph.

support	move	bones
marrow	protect	blood

Your skeleton is made of bones. The skeleton has four important functions – to support the body, to protect the organs, to help the body move, and to make blood. Red and white blood cells are produced in bone marrow. Which is found in the centre of some large bones.

Movement – Joints and muscles



Look at the drawing of the inside of an arm.

a. What are parts X and Y both types of? muscles

b. What are the humerus, radius and ulna examples of? bones

c. Describe what happens to the shape of part X when it contracts. shortens

d. Which part, X or Y, has to contract to pull up the lower arm? Y

e. What are the names of parts X and Y?

X is triceps

Y is biceps

f. What type of joint is the elbow? hinge

g. Name a joint in the body which is a ball and socket type? Hip or shoulder

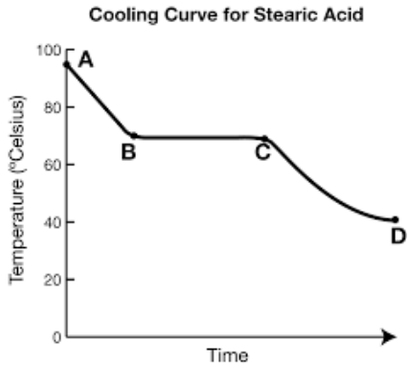
Activate 1

Revision Sheet – Particles and their behaviour

Chemistry C1
Chapter 1

Melting and freezing

Look at the graph and answer the following questions about cooling stearic acid.



Between which letters on the graph represents when stearic acid is a:

Solid C-D Liquid A-B

State the temperature that stearic acid melts?

70°C.

Boiling

Number the following sentences in the correct order to explain what happens when water boils.

4 After heating for some time, the temperature of the water reaches 100°C.

5 Some water particles will have enough energy to leave the rest of the particles.

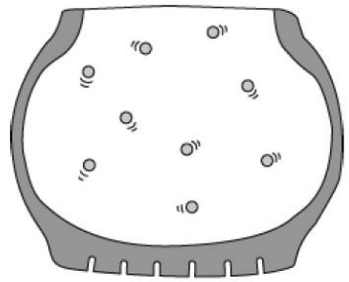
1 At room temperature, water particles can move past one another freely.

6 This means that the water turns into a gas, and is now called steam.

3 This causes the water particles to gain movement (kinetic) energy.

2 When water is heated, the water temperature begins to rise.

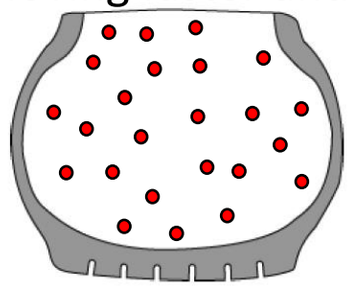
Gas pressure



The diagrams on the left show the particles inside a car tyre at low pressure.

Complete the second drawing to show the particles in a tyre that has been pumped up to a higher pressure.

Moving faster and colliding more often



Use the words in the box below to complete the sentences below about air pressure.

colliding	less	move
more	particles	

The particles of all gases move freely in all directions. Air pressure is caused by the moving gas particles colliding with surfaces. Inside the tyre there are less air particles, in the same volume, than outside the tyre. Air pressure inside a tyre increases if you put more gas particles into the tyre. The air pressure is higher because more gas particles are hitting the surface.

States of matter

Tick the correct boxes to summaries the properties of solids, liquids and gases.

Property	Solids	Liquids	Gases
Have a fixed shape	X		
Can change shape		X	X
Have a fixed volume	X	X	
Volume can change			X
Can easily be compressed			X
Cannot be easily compressed	X	X	
Can flow easily		X	X

Complete the following sentences about the states of matter.

a. Solids can be disposed of in a landfill site because they Will remain safely in the landfill

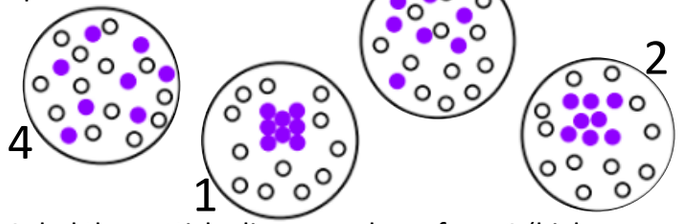
b. Liquids can disappear from landfill sites because they can Flow through the gaps and leak out

c. The states of matter that can be poured out of a container are Liquid and gas

d. The three states of matter are Solid, liquid and gas

Diffusion

Substances move from an area where they are in a high concentration to an area where they are in a low concentration, until they are evenly spread.



Label the particle diagrams above from 1 (high concentration) to 4 (evenly spread) to show the progress of particle diffusion.

The particle model

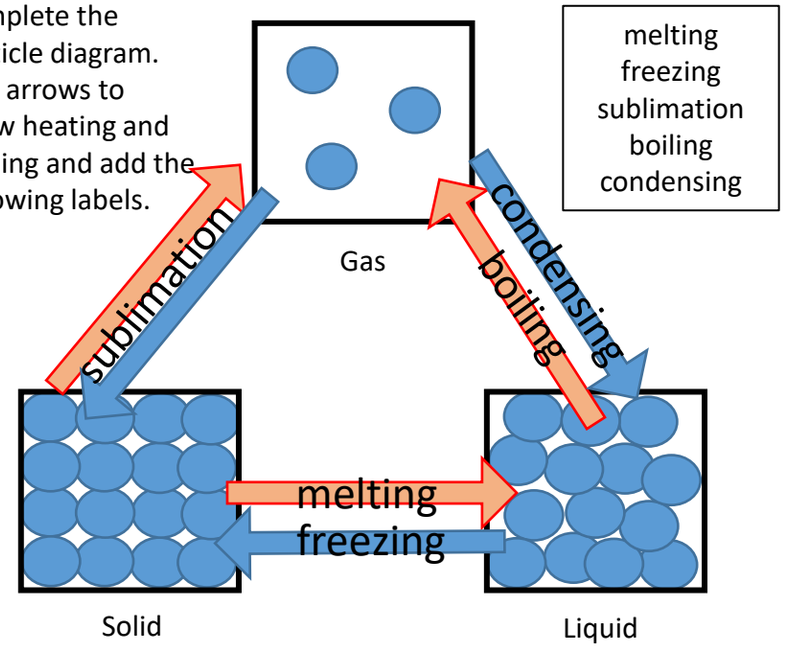
Choose the correct bold word to make the following sentences true.

All substances are made up of tiny parts called **particles~~/practical's~~**. Different substances contain different particles. For example, a piece of iron contains particles of **~~carbon/~~ iron** and a glass of **~~milk/~~water** contains thousands and thousands of water particles.

Particles can have certain **properties~~/behaviour~~** when they are all together in a substance but when they are on their own they don't have these properties. A gold ring has a yellow colour and is **solid~~/liquid~~** at room temperature but an individual particle of gold isn't yellow and isn't a solid. It can only have these properties when it is with other **~~iron/~~gold** particles.

Complete the particle diagram. Add arrows to show heating and cooling and add the following labels.

melting
freezing
sublimation
boiling
condensing



Activate 1

Revision Sheet – Elements, atoms and compounds

Chemistry C1
Chapter 2

Elements

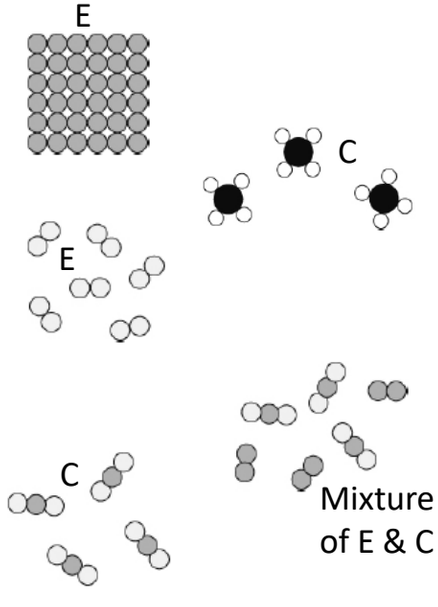
Write down the names of 10 elements and their chemical symbols:

1 Sodium Na
2 Chlorine Cl
3 Hydrogen H
4 Nitrogen N
5 Helium He
6 Calcium Ca
7 Magnesium Mg
8 Potassium K
9 Carbon C
10 Iron Fe

Find and colour in green on the Periodic table six elements whose name begins with the letter C.

Find and colour in blue on the Periodic table six elements whose name begins with the letter S.

Write next to the following particle diagrams if they show an element (Label E) or a compound (Label C)



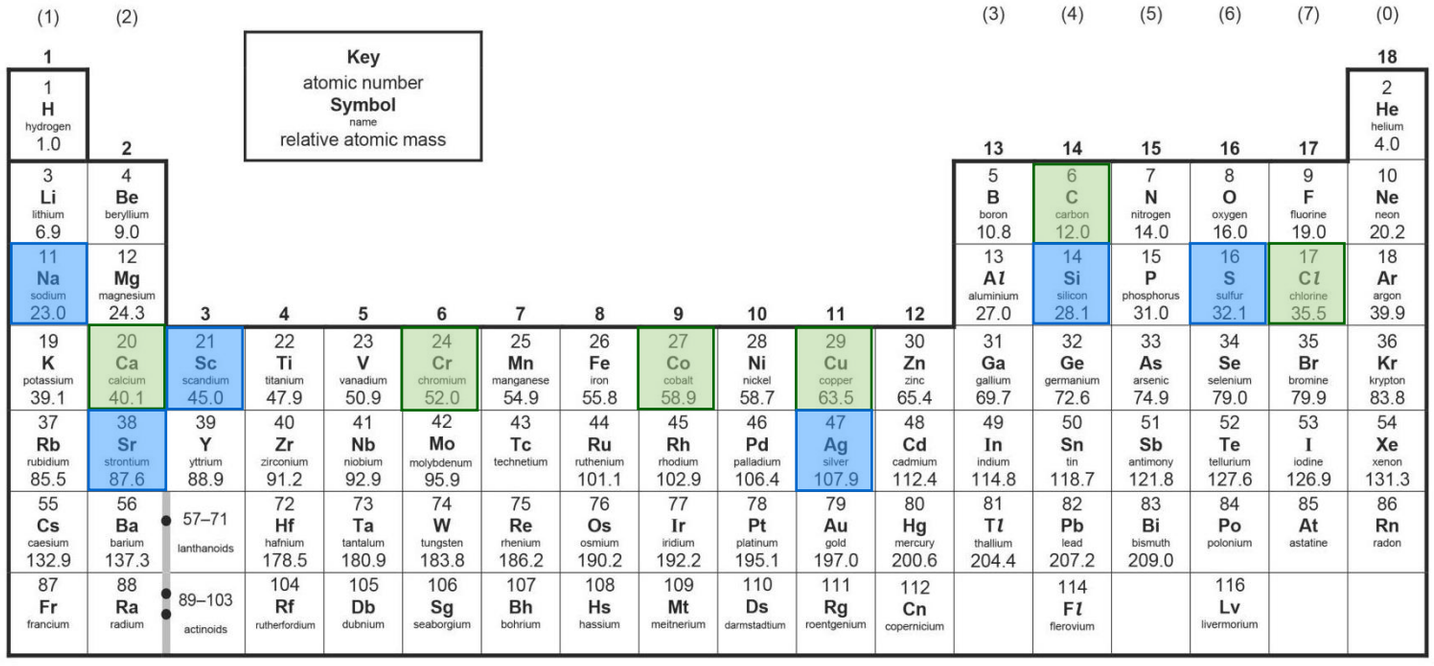
Atoms

Word Bank: Same, Different, atom

The smallest part of an element that can exist is called an ___atom___. All the atoms of an element are the ___same___. The atoms of one element are ___different___ to the atoms of all other elements.

Draw a line to match up the keyword with the correct description.

Element	Set group of two or more atoms joined together.
Compound	The simplest particles of matter, which we think of as being like a tiny ball.
Atom	Simplest type of substance. Contains only one kind of atom.
Molecule	Contains different kinds of atoms jumbled up but not joined together.
Mixture of elements	Contains two or more kinds of atoms (elements) joined together.



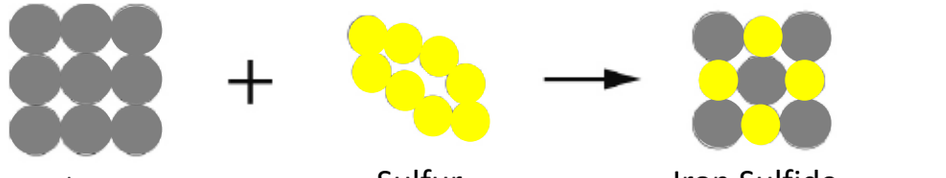
Compounds

When iron and sulphur are mixed and heated, as shown below, they form iron sulphide

Cross out the incorrect words to make the sentences correct.

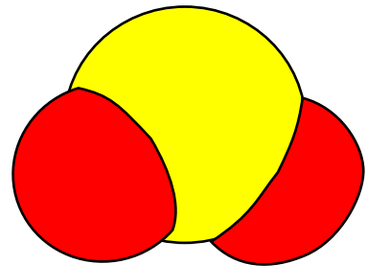
A compound is a substance made up of atoms of ~~one~~/**two** or more elements. The properties of a compound are ~~the same as/~~ **different to** the properties of its elements. A molecule is a group of **two**~~/three~~ or more atoms ~~weakly/~~**strongly** joined together.

The diagrams below represent the atoms in this reaction. Complete the labels on the diagrams and colour in the diagrams making sulphur atoms yellow and iron atoms grey.



Chemical Formulae

The diagram below shows a molecules of sulphur dioxide. Each sphere represents one atom. Different coloured spheres represent different elements.
Colour the large sphere yellow for Sulfur and the small sphere red for Oxygen.



State the total number of atoms in this molecule ___3___.

State the number of different types of atoms in the molecule ___2___.

State whether sulphur dioxide is an element or a compound ___Compound___.

Complete the table below:

Name of element	Number of atoms of this element in 1 sulfur dioxide molecule
Sulfur	1
Oxygen	2

Write the formula of sulfur dioxide.

SO_2

Compounds are represented by the symbols of the elements joined together. Name the compounds below. How many elements are present in the compounds?

NaCl ___Sodium Chloride___
Elements ___1 x Sodium, 1 x Chlorine___
MgO ___Magnesium Oxide___
Elements ___1 x Magnesium, 1 x Oxygen___
ZnS ___Zinc Sulfide___
Elements ___1 x Zinc, 1 x Sulfur___
AgBr ___Silver Bromide___
Elements ___1 x Silver, 1 x Bromine___

Activate 1

Revision Sheet – Forces

Physics P1
Chapter 1

Describing forces

Use the word bank to fill in the correct words in the sentence:

A force is a push or a pull.

We can show the forces acting on an object using force arrows. Forces come in pairs, called interaction pairs. To measure forces we use a newtonmeter. All forces are measured in Newtons (N).

WORD BANK
pull newtonmeter arrows
interaction push newtons

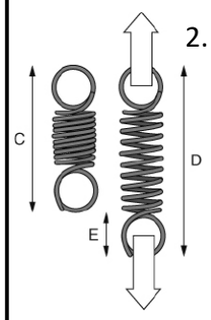
Forces can change three things about an object, list them:

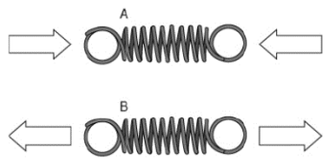
1. Its shape
2. Direction
3. Speed

Squashing and stretching

Use the word bank below to fill in the gaps. You may use each word once, more than once or not at all.

WORD BANK Compress elastic stretch elastic limit extension original length plastic proportional stretched length Hooke's

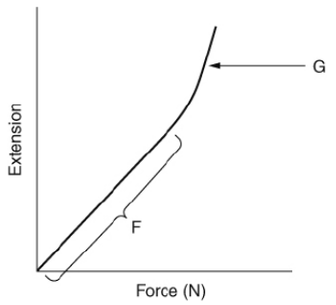




1. The forces on spring A will compress it.
2. The forces on spring B will stretch it.
3. Length C is the original length of the spring.
4. Length D is the stretched length of the spring.
5. Length E is the extension of the spring.
6. When the force is removed from a spring it returns to its original length. It is elastic.

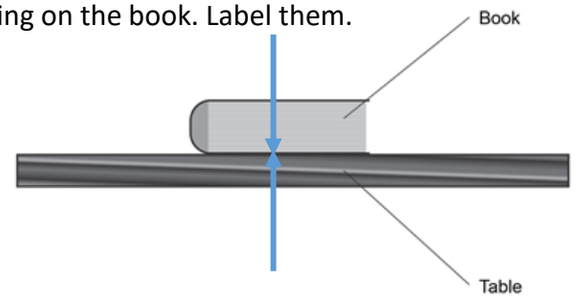
The graph above right, shows how extension of a spring changes when the force on it is changed.

7. In part F of the graph the extension is proportional to the force. If the extension doubles when you double the force the spring obeys Hooke's Law.
8. In part G, the spring has been pulled past its elastic limit. It will not return to its original shape.



Interaction pairs

Draw the force arrows to show the interaction pair acting on the book. Label them.



The book pushes on the table. This is the force of the book on the table. What is the opposite force in the interaction pair? The force of the table on the book.

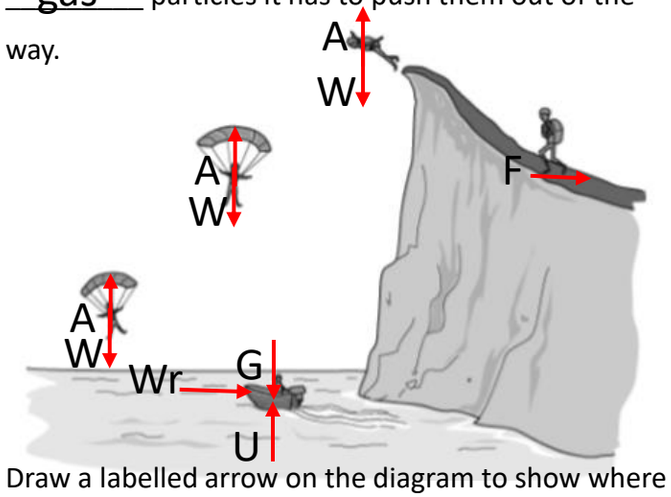
Drag forces and friction

Use the word bank to fill in the correct words in the sentence:

WORD BANK
gas air resistance rough friction
liquid water resistance force

The force of friction acts between two solid surfaces in contact with each other. The surfaces are rough and will grip each other. This is why you need to exert a force to make something move. There are two drag forces: air resistance and water resistance

When a moving object is in contact with liquid or gas particles it has to push them out of the way.



Draw a labelled arrow on the diagram to show where the following forces are in action:
Air Resistance (label A) Friction (label F)
Water Resistance (label Wr) Weight (label W)
Upthrust (U)

Forces at a distance

Write next the following forces a C for a contact force and an N for non-contact force:

Touching surfaces C Upthrust C Gravity N
Magnetic forces N Friction C Air resistance C

Some of the statements in the table describe mass, some describe weight, and some apply to both. Tick the correct boxes in the table.

	Mass	Weight	Both
The amount of matter in an object	X		
Measured in Newtons		X	
The size of the gravity force pulling down on something		X	
Measured in kilograms	X		
This would not change if an object was taken to the Moon	X		
This would get smaller if an object was taken to the Moon		X	
Gets less when you go to the toilet			X
Increases when you eat something			X

Balanced and unbalanced forces

An object has balanced forces on it ……	Can make it speed up
Unbalanced forces on an object……	Can change the direction it is moving
Balanced forces on a stationary object……	When there are two forces of the same size in opposite directions
Balanced forces on a moving object……	Will not change its speed or direction
	Will not make it move
	Can make it slow down.