

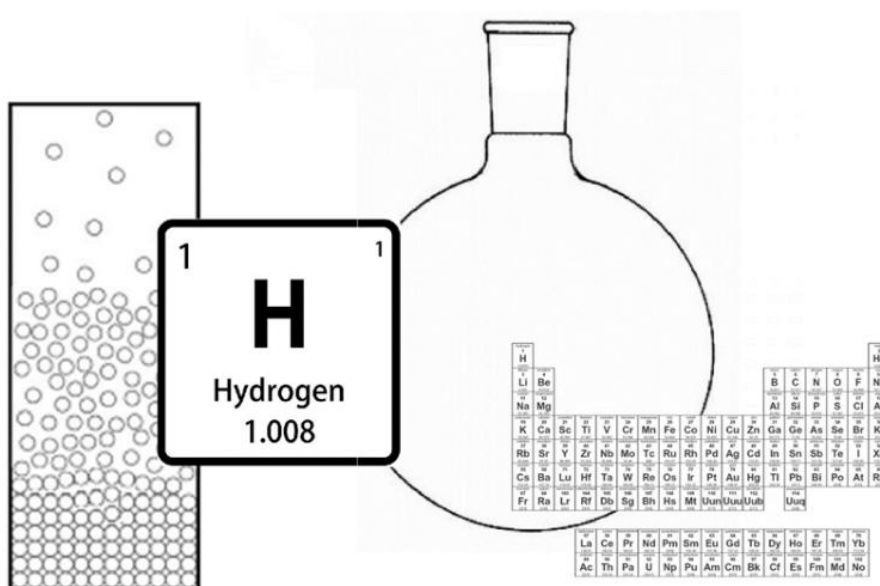
Name \_\_\_\_\_

Class \_\_\_\_\_

Aylsham High School Science

# Year 7

## C1: Atoms and the periodic table



### Contents:

Core Knowledge

Concept 1: Models of Atoms

Concept 2: Atoms, elements, compounds and mixtures



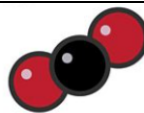
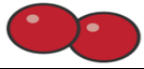

Concept 3: Chemical symbols

Concept 4: Chemical and physical change

Concept 5: Physical and chemical properties of elements

Concept 6 :The periodic table

5 quick questions templates

What is an atom?	The smallest part of an element that can exist
Describe Dalton's model of the atom.	Atoms as solid spheres that cannot be divided into smaller parts 
What is an element?	A substance made of one type of atom e.g oxygen= $O_2$ , Iron= Fe 
What is a molecule?	A particle made of two or more atoms joined together e.g. Oxygen = $O_2$ , Water = $H_2O$ 
What is a diatomic molecule?	A molecule that consists of two atoms, often the same. E.g. $O_2$ , $Cl_2$ 
What is a chemical symbol?	A one or two universal letter code of each element
Where are chemical symbols of elements found?	In the periodic table
What is a compound?	A substance made of more than one type of atom chemically joined together. E.g. Water = $H_2O$ , Carbon dioxide = $CO_2$ 
What is a chemical formula?	A formula that shows the number and type of atoms present in a molecule.
What do the compound endings: 1) ide 2) ate mean?	1) ide – a compound of only the named substances 2) ate – a compound of the named substances and oxygen
What is a physical change?	Changes of state as no new substances are made.
What is a chemical change (Chemical reaction)?	When atoms rearrange to make new substances
Where do we find metals in the period table?	On the left
Where do we find non-metals on the periodic table?	On the right
Who designed the modern periodic table?	Mendeleev
What are the groups in the periodic table?	Columns
What are the rows called in the periodic table?	Periods
What are the physical properties of most metals?	Good conductors of electricity, good conductors of heat, shiny, high density (heavy for its size), malleable (can be hammered), sonorous (makes a ringing sound when hit), ductile (can be pulled into wires), high melting points (except mercury), hard
What are the physical properties of non-metals?	Poor conductors of electricity, poor conductors of heat, dull, low density (light for its size), brittle (breaks easily), non-sonorous (no ringing sound when hit), low melting points

## Concept 1: Models of Atoms

We are going to look at what atoms are and how we use a simple model to describe them



John Dalton published his ideas about atoms in 1803. He thought that all matter was made of tiny particles called atoms, which he imagined as tiny solid balls.

Atom – The smallest part of an element that can exist on its own.



In 1803, an English scientist, , carried out experiments

with different elements. From his experiments he **found that**:

- different  seemed to consist of particles . He described  as tiny, hard balls.
- He thought that each chemical  had its own kind of .
- Although he did not know what their structure was, he knew he had found out something important.

**Element, atom, John Dalton, elements, atoms**

What is an atom?

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Draw a picture of Dalton's model of the atom.

Can we see atoms?

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Where do we find atoms?

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## Concept 2: Atoms, elements, compounds and mixtures


We are going to explore the differences between elements, compounds and mixtures and use our model of an atom to help us explain these



Key Idea

A substance made from only one type of atom is called an element.

Elements are listed on the periodic table.

Atoms can be drawn as circles. But all the atoms of an element need to look exactly the same e.g. 

Atoms can form strong bonds with each other, making molecules.

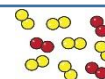
A molecule is a particle made of two or more atoms joined together

More than one type of element joined together makes a compound.

When drawing a diagram of molecules made from the atoms of more than one element, different sizes and colours can show the different elements. E.g.



A mixture consists of two or more different substances, not chemically joined together e.g Air



What is an element? Definition and particle diagram.

How many different types of element are there?

---

Give some examples of elements?

---

What do scientists make if different elements are joined together?

---

Draw a particle diagram to represent two different elements joined together? E.g. Salt NaCl

What do scientists make if different elements are not joined together?

---

Investigating compounds and mixtures:

1. Would you describe iron as an element, mixture or compound?

\_\_\_\_\_

2. Draw a diagram showing what the particles might look like in pure iron. Explain your diagram.

\_\_\_\_\_  
\_\_\_\_\_



3. Would you describe sulfur as an element, mixture or compound?

\_\_\_\_\_

4. Draw a diagram showing what the particles might look like in pure sulfur. Explain your diagram

\_\_\_\_\_  
\_\_\_\_\_

**Now watch the teacher:**

5. When the teacher mixed the 2 together how would you describe them?

\_\_\_\_\_

6. Draw a diagram showing what the particles might look like when iron and sulfur are mixed. Explain your diagram

\_\_\_\_\_  
\_\_\_\_\_

**Watch what happens when you bring a magnet near:**

7. How and why could you separate the mixture of iron and sulfur?

\_\_\_\_\_

**Watch what happens when you heat the substances:**

8. What did you observe when the mixture of iron and sulfur was heated.

\_\_\_\_\_

9. What has been made? How could you describe it?

\_\_\_\_\_

10. Draw a diagram showing what the particles might look like when iron and sulfur have reacted with one another. Explain your diagram

\_\_\_\_\_  
\_\_\_\_\_

Let's compare and contrast elements, compounds and mixtures:

	Compound	Mixture
Does the substance have a fixed composition?		
Give some examples		
Joined together?		
Draw a diagram to show how the particles could be arranged		
Properties compared to the particles it made from		
Can it be separate?		

### Elements, Compounds, and Mixtures

Classify each of the pictures below by placing the correct label in the blanks below:  
 A= Element  
 B= Compound  
 C= Mixture of elements  
 D= Mixture of compounds  
 E= Mixture of elements and compound

Each circle represents an atom and each different color represents a different kind of atom. If two atoms are touching then they are bonded together.

1) \_\_\_\_\_

2) \_\_\_\_\_

3) \_\_\_\_\_

4) \_\_\_\_\_

5) \_\_\_\_\_

6) \_\_\_\_\_

7) \_\_\_\_\_

8) \_\_\_\_\_

9) \_\_\_\_\_

10) \_\_\_\_\_

11) \_\_\_\_\_

12) \_\_\_\_\_

13) \_\_\_\_\_

14) \_\_\_\_\_

15) \_\_\_\_\_

### Concept 3: Chemical symbols



Key Idea

Each element is represented by its own chemical symbol. A chemical symbol:

- consists of one or two letters
- always starts with a capital letter, with any other letter in lower case

For example, the element mercury is shown as Hg. Do not show it as HG, hg or hG.



#### Symbols and formulae

1. Which is the correct symbol for Hydrogen?

H	h	Hy	hy

2. Which is the correct symbol for Potassium?

P	Po	K	k

3. What is the correct symbol for Magnesium?

mg	M	mG	Mg

4. What is the correct symbol for Chlorine?

C	cl	CL	Cl

5. Which is the correct symbol for Carbon?

C	Ca	c	CA

6. Which is the correct symbol for Iron?

I	Ir	Fe	FE

7. What is the correct symbol for Copper?

CU	Cu	cU	cu

8. What is the correct symbol for Oxygen?

O	OX	ox	Ox



The chemical formula of a compound shows how many of each type of atom join together to make the units which make up the compound.

### The first Three rules for working out formula

1. Every time there is a new capital letter there is a new element to count. For example:
  - $\text{CO} = 1 \times \text{Carbon and } 1 \times \text{Oxygen.}$
  - Whereas,  $\text{Co} = 1 \times \text{Cobalt}$
2. If there is no number present (big or small) there is actually an invisible number 1. For example:
  - $\text{CuSO}_4$  would probably be more clear if it were written like this  $1\text{Cu}_1\text{S}_1\text{O}_4$  and contains 1 x Copper, 1 x Sulphur and 4 x Oxygen
3. If a big number is before a substance everything needs to be multiplied by that number. For example:
  - $4\text{H}_2\text{O} = 4 \times 2 = 8 \text{ Hydrogen and } 4 \times 1 = 4 \text{ Oxygen}$

Look carefully at the list of chemicals below,

$\text{Br}_2, \text{He}, \text{H}_2, \text{H}_2\text{O}, \text{O}_2, \text{Cl}_2, \text{I}_2, \text{NH}_3, \text{N}_2, \text{CO}_2, \text{HF}, \text{F}_2, \text{CH}_4, \text{HBr}, \text{C}_2\text{H}_4, \text{Ne},$

From the list write down the formula of any **elements**

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From the list write down the formula of any substances that contain **2 atoms**

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From the list write down the formula of any compounds that contain **3 atoms**

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From the list write down the formula of any compounds that contain **4 atoms**

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From the list write down the formula of any compounds that contain **5 atoms**

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From the list write down the formula of any compounds that contain **6 atoms**

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**Are all the substances with 2 atoms compounds?**

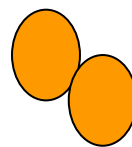
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Key Idea

Some non-metal elements exist as simple molecules with two atoms joined together. We say that these elements are diatomic. To show this, their formulae contain a subscript number 2. For example:



hydrogen,  $H_2$ , nitrogen,  $N_2$ , oxygen,  $O_2$ , fluorine,  $F_2$ , bromine,  $Br_2$ , chlorine,  $Cl_2$ , iodine, I



What is a diatomic molecule?

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Why are He, Ne, Xe called **monoatomic** substances?

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What do  $Br_2$ ,  $H_2$ ,  $O_2$ , HF,  $F_2$ , HBr all have in common?

---

Which ones are elements?

---

Which ones are compounds?

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Why are  $Br_2$ ,  $H_2$ ,  $O_2$ , HF,  $F_2$ , HBr called diatomic molecules?

---

Draw a diagram of each of the chemicals:

$Br_2$	$H_2$	$O_2$	HF	$F_2$	HBR



Let's practice the rules:

1. What elements have we got?
2. What little numbers do they have?
3. Are there any big numbers?

CO	
Element	Number of atoms
Total	

H <sub>2</sub> O	
Element	Number of atoms
Total	

CO <sub>2</sub>	
Element	Number of atoms
Total	

2MgO	
Element	Number of atoms
Total	

CuSO <sub>4</sub>	
Element	Number of atoms
Total	

N <sub>2</sub>	
Element	Number of atoms
Total	

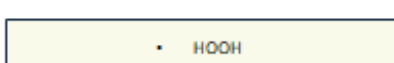
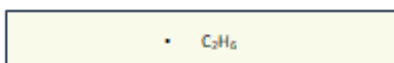
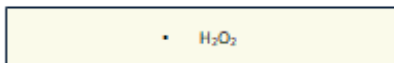
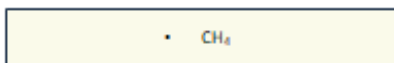
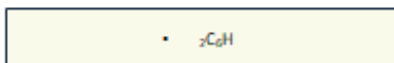
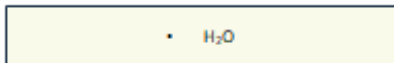
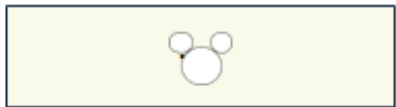
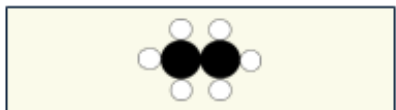
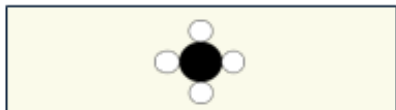
C <sub>6</sub> H <sub>12</sub> O <sub>6</sub>	
Element	Number of atoms
Total	

4Li <sub>2</sub> OH	
Element	Number of atoms
Total	

# Assessment task: Formula practice

- Match each molecule to the correct formula.

Key:




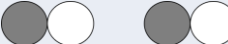



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- Write an expression that represents each molecule diagram.



## Settling task

Molecule diagram	Expression
	
	
	
	
	

Ones to learn! This year you will be tested on the elements in year 8 and 9 elements and compounds.

It is vital as a chemistry student that you know the formulas of common substances. Here is a list of substances whose formulas you should know at all times.

Elements				Compounds	
Al	aluminium	Mg	magnesium	NH <sub>3</sub>	ammonia
Ar	argon	Hg	mercury	CaCO <sub>3</sub>	calcium carbonate
Br <sub>2</sub>	bromine	Mg	magnesium	CO	carbon monoxide
Ca	calcium	Ne	neon	CO <sub>2</sub>	carbon dioxide
C	carbon	Ni	nickel	CuSO <sub>4</sub>	copper sulfate
Cl <sub>2</sub>	chlorine	N <sub>2</sub>	nitrogen	HCl	hydrochloric acid
Cr	chromium	O <sub>2</sub>	oxygen	CH <sub>4</sub>	methane
Co	cobalt	P <sub>4</sub>	phosphorus	HNO <sub>3</sub>	nitric acid
Cu	copper	Pt	platinum	NO	nitrogen monoxide
F <sub>2</sub>	fluorine	K	potassium	NO <sub>2</sub>	nitrogen dioxide
Au	gold	Si	silicon	NaCl	sodium chloride
He	helium	Ag	silver	NaOH	sodium hydroxide
H <sub>2</sub>	hydrogen	Na	sodium	SO <sub>2</sub>	sulfur dioxide
I <sub>2</sub>	iodine	S <sub>8</sub>	sulfur	H <sub>2</sub> SO <sub>4</sub>	sulfuric acid
Fe	iron	Sn	tin	H <sub>2</sub> O	water
Pb	lead	Ti	titanium		
Li	lithium	Zn	zinc		



Complete the table:

Name	Picture	Atom, element or compound, Mono/diatomic?	Formula
Oxygen ( Two oxygen atoms joined together)			
Carbon ( A single carbon atom)			
Water ( 2 hydrogen atoms joined to oxygen)			
Carbon dioxide ( 2 oxygen atoms joined to 1 carbon atom)			
Bromine ( Two bromine atoms joined together )			
Hydrogen ( Two hydrogen atoms joined together)			
Sodium ( A single sodium atom)			
Sodium chloride ( A sodium atom joined to a chlorine atom)			
Sulfur ( A single sulfur atom)			
Carbon monoxide ( A carbon atom joined to a oxygen atom)			



## Naming compounds

Key Idea

Naming compounds is easy if you follow these 3 simple rules.

### Rule one

The element that is furthest left in the periodic table comes first, eg Sodium Chloride/Carbon dioxide

### Rule two

If there are only two elements in the compound then the compounds name ends in *-ide*, eg A compound of copper and sulfur is called copper sulfide.

### Rule three

If the compound contains three elements one of which is oxygen then the compound name will end in *-ate* or *-ite*, eg Calcium carbonate contains calcium, carbon and oxygen.

Additional point: Sometimes more than one compound is made from the same elements. For example, there are several different types of nitrogen oxide.

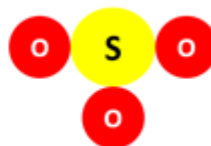
When this happens, the number of a particular type of atom is shown by using 'mono-' (one), 'di-' (two) or 'tri-' (three).



Carbon Monoxide



Nitrogen dioxide



Sulfur Trioxide



## Naming compounds

Use the naming rules you have learnt to answer the following questions.

1. Compounds that contain oxygen and one other element are called oxides.

Name these oxides: (3)

a. MgO \_\_\_\_\_

b. CaO \_\_\_\_\_

c. Na<sub>2</sub>O \_\_\_\_\_

2. Some oxides contain more than one oxygen atom. Name these oxides: (3)

a. CO<sub>2</sub> \_\_\_\_\_

b. SO<sub>2</sub> \_\_\_\_\_

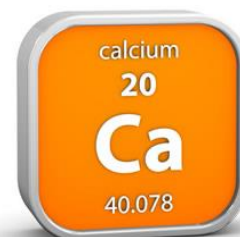
c. SO<sub>3</sub> \_\_\_\_\_

3. Compounds that contain sulfur and one other element are called sulfides.

Name these sulfides: (3)

a. FeS \_\_\_\_\_

b. ZnS \_\_\_\_\_



c.  $\text{H}_2\text{S}$  \_\_\_\_\_

4. Compounds that contain chlorine and one other element are called chlorides.

Name these chlorides: (3)

a.  $\text{KCl}$  \_\_\_\_\_

b.  $\text{NaCl}$  \_\_\_\_\_

c.  $\text{HCl}$  \_\_\_\_\_

5. Compounds that contain oxygen, sulfur and one other element are called sulfates.

Name these sulfates: (3)

a.  $\text{CuSO}_4$  \_\_\_\_\_

b.  $\text{ZnSO}_4$  \_\_\_\_\_

c.  $\text{Na}_2\text{SO}_4$  \_\_\_\_\_

6. Compounds that contain oxygen, carbon and one other element are called carbonates.

Name these carbonates: (3)

a.  $\text{CuCO}_3$  \_\_\_\_\_

b.  $\text{Na}_2\text{CO}_3$  \_\_\_\_\_

c.  $\text{MgCO}_3$  \_\_\_\_\_

7. Compounds that contain oxygen, nitrogen and one other element are called nitrates.

Name these nitrates: (3)

a.  $\text{NaNO}_3$  \_\_\_\_\_

b.  $\text{KNO}_3$  \_\_\_\_\_

c.  $\text{AgNO}_3$  \_\_\_\_\_

8. Now you've got the hang of it, try naming these compounds: (12)

a.  $\text{LiCl}$  \_\_\_\_\_

g.  $\text{CaCO}_3$  \_\_\_\_\_

b.  $\text{MgSO}_4$  \_\_\_\_\_

h.  $\text{K}_2\text{SO}_4$  \_\_\_\_\_

c.  $\text{Li}_2\text{O}$  \_\_\_\_\_

i.  $\text{RbNO}_3$  \_\_\_\_\_

d.  $\text{CaS}$  \_\_\_\_\_

j.  $\text{CaCl}_2$  \_\_\_\_\_

e.  $\text{ZnO}$  \_\_\_\_\_

k.  $\text{NiS}$  \_\_\_\_\_

f.  $\text{LiNO}_3$  \_\_\_\_\_

l.  $\text{K}_2\text{CO}_3$  \_\_\_\_\_

*Extension:*

9. These may look a bit different, but you can use the same rules. Try naming them: (4)

a.  $\text{Al}_2\text{O}_3$  \_\_\_\_\_

c.  $\text{Al}_2(\text{SO}_2)_3$  \_\_\_\_\_

b.  $\text{Zn}(\text{NO}_3)_2$  \_\_\_\_\_

d.  $\text{Al}_2(\text{CO}_3)_3$  \_\_\_\_\_

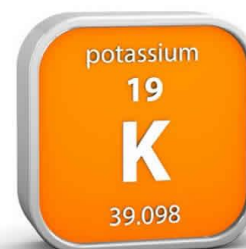
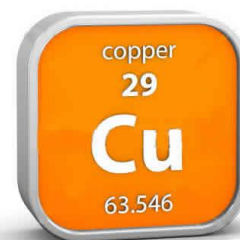
10. Suggest names for these compounds: (4)

a.  $\text{KBr}$  \_\_\_\_\_

c.  $\text{AlPO}_4$  \_\_\_\_\_

b.  $\text{BN}$  \_\_\_\_\_

d.  $\text{NaHCO}_3$  \_\_\_\_\_



All:

When does a compound end in -ide?

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When a compound end in does -ate?

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Now lets put it all together

	Elements found in the compound	Name of compound	Number of each element
MgO	Magnesium and Oxygen		1 Mg and 1 O
K <sub>2</sub> O			
CuBr <sub>2</sub>			
NaNO <sub>3</sub>			
FeS			
FeSO <sub>4</sub>			
CaCO <sub>3</sub>			

## Concept 4: Chemical and physical change

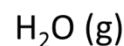
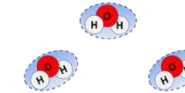
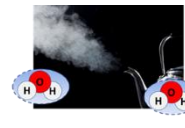
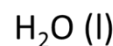
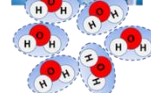
We are going to explore the differences between a chemical and physical change



Key Idea

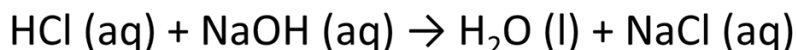
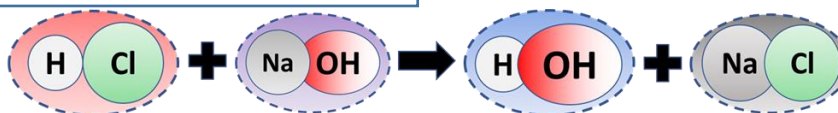
### A physical change: Changes of state as no new substances are made.

- “In a physical change the arrangement of the particles changes, but the composition of the particles (what is actually inside them) does not change.
- Another way of saying this is that the physical state of the substance changes, but the substance itself stays the same.
- The substance is the same at the beginning and at the end.  
No new substance has been formed.”



### A chemical change: When atoms rearrange to make new substance

- “A chemical reaction involves atoms rearranging to form a new substance that wasn’t there before. The composition of the particles always changes, the arrangement of particles may also change.



- You can think of atoms a bit like lego pieces. Imagine taking one or more objects made of lego, then rearranging the pieces to build something new. That’s basically what a chemical reaction is”
- “The process is often difficult to reverse: Once atoms have rearranged into a new substance, it can be difficult (but not impossible) for them to rearrange back to how they were at the start.

Substances mixed	I saw... (all your observations)	Was something new made?	Can it be reversed? If so, how?	Chemical or physical change?





## Task 1

Definition:

Characteristics:

**Chemical reaction**

Examples

Opposites and Non-examples

Definition:

Characteristics:


**Physical change**

Examples

Opposites and Non-examples

Task 2:	Chemical Change	Physical Change
1) A new substance is formed		
2) Boiling		
3) Baking a cake		
4) Rotting fruit		
5) Lighting a candle		
6) Melting candle wax		
7) Atoms rearrange and bond with different ones		
8) Particles rearrange into a regular order, all touching		
9) $\text{CO}_2 (\text{g}) \rightarrow \text{CO}_2 (\text{s})$		
10) $\text{C} (\text{s}) + \text{O}_2 (\text{g}) \rightarrow \text{CO}_2 (\text{g})$		


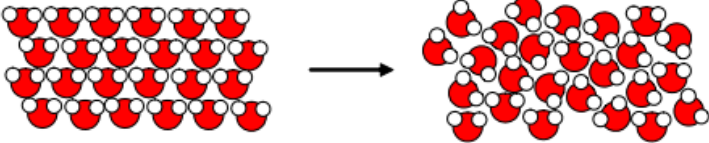
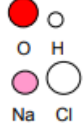
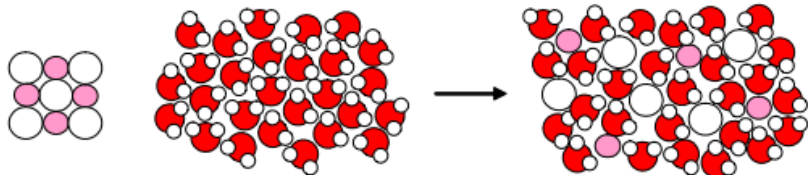

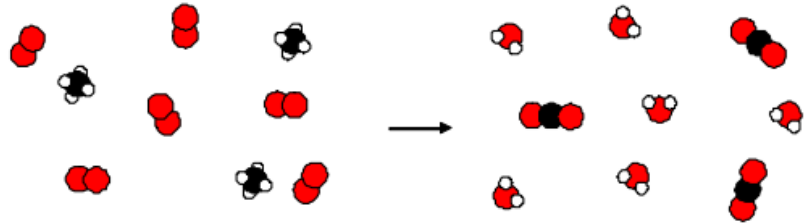
### Task 3


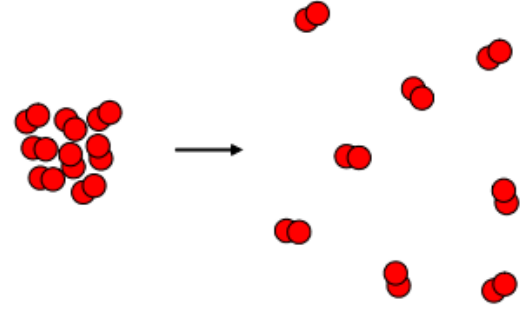

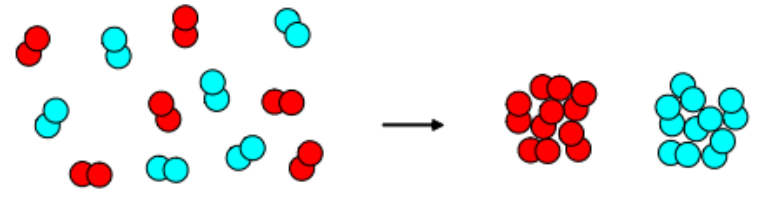

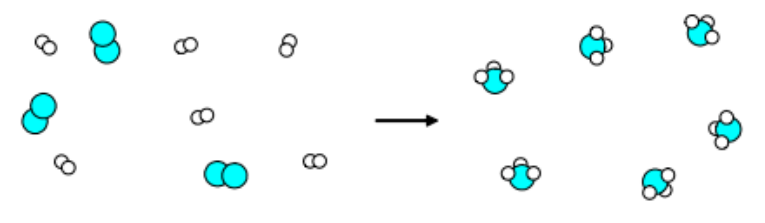
Adding acid to alkali 	Fireworks 	Driving a car 
Ice cream melting 	Boiling the kettle 	frying an egg 
Burning a candle 	Melting candle wax 	Dissolving sugar in tea 
Lighting a match 	Making ice cubes 	Ironing clothes 
Printing 	Baking a cake 	Launching a space rocket 

In each of the following, look carefully at the particles to see whether it is a chemical or a physical change. Also, if you can, try to describe what is actually happening in each case. Remember:

Chemical change = different particles are formed,

Physical change = keep the same particles

1)	<p>KEY</p> 	
Describe what may be happening.		
Chemical or physical change?		
2)	<p>KEY</p> 	
Describe what is happening.		
Chemical or physical change?		
3)	<p>KEY</p> 	
Describe what is happening.		
Chemical or physical change?		

4)	<p>KEY</p> 	
Describe what is happening.		
Chemical or physical change?		
5)	<p>KEY</p> 	
Describe what is happening.		
Chemical or physical change?		
6)	<p>KEY</p> 	
Describe what is happening.		
Chemical or physical change?		

## Concept 5: Physical and chemical properties of elements

We are going to look at the varying physical properties of different elements



Key Idea

The position of an element on the periodic table provides information about its properties.

The majority of elements are metals and they are found on the left and in the middle of the periodic table.

Metals and non-metals have different properties and different reactions.

Complete the table as you are shown different elements

Name	Metal/ non metal	Appearance	Melting point	Conducts electricity and heat?	Density	Malleable Ductile Brittle?
Oxygen						
Magnesium						
Copper						
Chlorine						
Carbon						
Sodium						



Key Idea

Most metals share a lot of properties, such as being good conductors of heat and electricity.

Non-metals often have the opposite properties. For example, they are usually poor conductors of heat and electricity.



Task:

Complete the table:

Property	METALS	NON-METALS
State at room temperature		
Melting points		
Electrical conductivity		
Thermal conductivity		
Appearance		
Density		
Strength		
Oxides		
Malleability & ductility		

Using the properties of metals and non-metals, decide whether each of the following elements is a metal or non-metal.

	Appearance	Electrical conductivity	Melting point (°C)	Strength	Density as solid (g/cm <sup>3</sup> )	Metal or non-metal
a	silvery	conductor	961	strong	10.5	
b	purple-black	insulator	114	weak	4.9	
c	shiny white	conductor	232	fairly strong	7.3	
d	dark grey	insulator	217	weak	4.8	
e	brown	insulator	- 7	-	3.1	
f	green	insulator	- 101	-	1.6	
g	yellow	conductor	1063	strong	19.3	
h	silvery	conductor	- 39	-	13.6	
i	black	conductor	3730	weak	2.2	
j	silvery white	conductor	98	strong	0.9	

How did you tell apart the metals from the non-metals?

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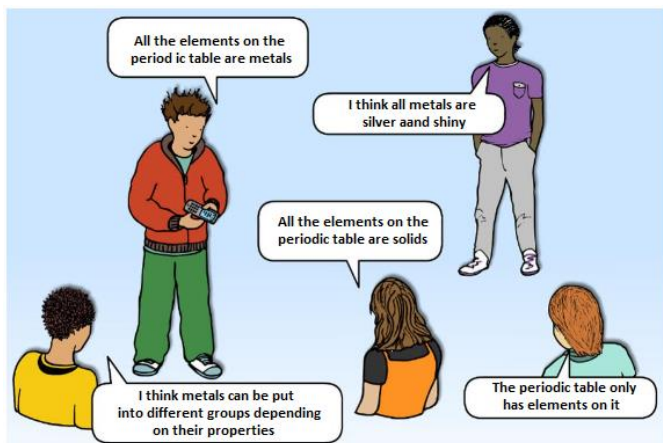


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## Concept 6 :The periodic table

We are going to look at how the periodic table is ordered to show a list of elements

What do you think?



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## How are the Elements Arranged?

The vertical columns are called **GROUPS**

The horizontal rows are called **PERIODS**

hydrogen 1 H 1.0079																	helium 2 He 4.0026		
lithium 3 Li 6.941	beryllium 4 Be 9.0122											boron 5 B 10.811	carbon 6 C 12.011	nitrogen 7 N 14.007	oxygen 8 O 15.999	fluorine 9 F 18.998	neon 10 Ne 20.180		
sodium 11 Na 22.990	magnesium 12 Mg 24.305											aluminum 13 Al 26.982	silicon 14 Si 28.086	phosphorus 15 P 30.974	sulfur 16 S 32.065	chlorine 17 Cl 35.453	argon 18 Ar 39.948		
		scandium 21 Sc 44.956	titanium 22 Ti 47.867	vanadium 23 V 50.942	chromium 24 Cr 51.996	manganese 25 Mn 54.938	iron 26 Fe 55.845	cobalt 27 Co 58.933	nickel 28 Ni 58.693	copper 29 Cu 63.546	zinc 30 Zn 65.39	gallium 31 Ga 69.723	germanium 32 Ge 72.61	arsenic 33 As 74.922	selenium 34 Se 78.96	bromine 35 Br 79.904	krypton 36 Kr 83.80		
potassium 19 K 39.098	calcium 20 Ca 40.078											zinc 30 Zn 65.39	gallium 31 Ga 69.723	germanium 32 Ge 72.61	arsenic 33 As 74.922	selenium 34 Se 78.96	bromine 35 Br 79.904	krypton 36 Kr 83.80	
rubidium 37 Rb 85.468	strontium 38 Sr 87.62											cadmium 48 Cd 112.41	indium 49 In 114.82	tin 50 Sn 118.71	antimony 51 Sb 121.76	tellurium 52 Te 127.60	iodine 53 I 126.90	xenon 54 Xe 131.29	
cesium 55 Cs 132.91	barium 56 Ba 137.33			lutetium 71 Lu 174.97	hafnium 72 Hf 178.49	tantalum 73 Ta 180.95	tungsten 74 W 183.84	rhodium 75 Rh 186.21	palladium 76 Pd 186.21	silver 77 Ag 196.97	cadmium 78 Cd 200.50	indium 79 In 204.38	tin 80 Sn 207.2	antimony 81 Sb 208.98	tellurium 82 Te 208.98	bismuth 83 Bi 208.98	polonium 84 Po [209]	astatine 85 At [210]	radon 86 Rn [222]
francium 87 Fr [223]	radium 88 Ra [226]			lawrencium 103 Lr [260]	rutherfordium 104 Rf [261]	dubnium 105 Db [262]	seaborgium 106 Sg [263]	bohrium 107 Bh [264]	hassium 108 Hs [265]	meitnerium 109 Mt [266]	darmstadtium 110 Uun [267]	roentgenium 111 Uuu [268]	copernicium 112 Uub [269]						



Key Idea

Like many scientists working at the end of the 19th-century the Russian chemist Dmitri Mendeleev (1834-1907) was looking for ways to organise the known elements. Mendeleev published his first periodic table of the elements in 1869. Mendeleev arranged the elements in order of increasing mass. When he did this he noted that the chemical properties of the elements and their compounds showed various trends. He then arranged the elements by putting those with similar properties below each other into groups. To make his classification work Mendeleev made a few changes to his order.



Task 1 : Highlighted the following on your periodic table –Metals, Non-metals, Group 1, Group 2, Transition Metals, Group 7 and Group 0/8.

Task 2: Complete the table

Symbol	Name	Period	Group
H	Hydrogen	Period 1	Not really in a group
		Period 2	Group 1
		Period 2	Group 3
C			
		Period 2	Group 5
	Oxygen		
	Fluorine		
Na	Sodium	Period 3	Group 1
Mg			
		Period 3	Group 3
Si	Silicon		
		Period 3	Group 5
		Period 3	Group 6
		Period 3	Group 7
Ar	Argon		
K	Potassium		
Ca			

5 quick questions templates

**Test 1:**

Question 1	
Question 2	
Question 3	
Question 4	
Questions 5	

**Test 2:**

Question 1	
Question 2	
Question 3	
Question 4	
Question 5	



**Test 3:**

Question 1	
Question 2	
Question 3	
Question 4	
Questions 5	

**Test 4:**

Question 1	
Question 2	
Question 3	
Question 4	
Question 5	

**Test 5:**

Question 1	
Question 2	
Question 3	
Question 4	
Questions 5	

**Test 6:**

Question 1	
Question 2	
Question 3	
Question 4	
Question 5	

## Formula Literacy check Elements:

	name	formula
1	oxygen	
2	sodium	
3	carbon	
4	nitrogen	
5	iron	
6	hydrogen	
7	potassium	
8	gold	
9	calcium	
10	argon	

	name	formula
1	hydrogen	
2	carbon	
3	magnesium	
4	sulfur	
5	chlorine	
6	helium	
7	gold	
8	aluminium	
9	sodium	
10	nickel	

	name	formula
1	nitrogen	
2	copper	
3	calcium	
4	silicon	
5	iodine	
6	phosphorus	
7	silver	
8	iron	
9	neon	
10	mercury	