

1. Key Words		
1	Element	a substance made up of only one type of atom.
2	Atom	the smallest part of an element that can still be recognised as that element
3	Periodic table	an arrangement of elements in the order of their atomic numbers, forming groups and periods
4	Metal	A material which is typically hard, shiny, malleable, fusible, and ductile, with good electrical and thermal conductivity
5	Non-metal	an element that is not a metal.
6	Compound	a substance made when two or more elements are chemically bonded together
7	Particle	minute portion of matter
8	Molecule	Group of two or more atoms bonded together. Can be an element or a compound.
9	Formula	a set of chemical symbols showing the elements present in a compound and their relative proportions
10	Formulae	Plural of formula
11	Valency	of an element is a measure of its combining power with other atoms when it forms chemical compounds or molecules.
12	Word equation	a way of describing what happens in a chemical reaction by showing the names of all reactants and the products they form
13	Symbol equation	an equation that helps you see how much of each substance is involved in a chemical reaction by showing the chemical symbols and formulae of all the reactants and products involved
14	Reactant	a substance we start with before a chemical reaction takes place
15	Product	a substance made as a result of a chemical reaction
16	Balancing equations	a symbol equation in which there are equal numbers of each type of atom on either side of the equation

2. Symbols			
All elements are given a symbol			
These must be written with a capital letter first and a lower case letter second			
C - carbon		Ca - calcium	
<b>More Symbols to learn</b>			
H	hydrogen	F	fluorine
O	oxygen	Na	sodium
N	nitrogen	S	sulphur
Mg	magnesium	Cu	copper
Cl	chlorine	He	helium
Fe	iron	K	potassium
Li	lithium	P	phosphorous

1. The Periodic Table																																																																																																													
1	All elements are arranged on the periodic table																																																																																																												
2	<table border="1" style="width: 100%; text-align: center;"> <thead> <tr> <th>1</th> <th>2</th> <th></th> <th>3</th> <th>4</th> <th>5</th> <th>6</th> <th>7</th> <th>0</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>He</td> </tr> <tr> <td>Li</td> <td>Be</td> <td></td> <td>B</td> <td>C</td> <td>N</td> <td>O</td> <td>F</td> <td>Ne</td> </tr> <tr> <td>Na</td> <td>Mg</td> <td></td> <td>Al</td> <td>Si</td> <td>P</td> <td>S</td> <td>Cl</td> <td>Ar</td> </tr> <tr> <td>K</td> <td>Ca</td> <td>Sc</td> <td>Ti</td> <td>V</td> <td>Cr</td> <td>Mn</td> <td>Fe</td> <td>Co</td> <td>Ni</td> <td>Cu</td> <td>Zn</td> <td>Ga</td> <td>Ge</td> <td>As</td> <td>Se</td> <td>Br</td> <td>Kr</td> </tr> <tr> <td>Rb</td> <td>Sr</td> <td>Y</td> <td>Zr</td> <td>Nb</td> <td>Mo</td> <td>Tc</td> <td>Ru</td> <td>Rh</td> <td>Pd</td> <td>Ag</td> <td>Cd</td> <td>In</td> <td>Sn</td> <td>Sb</td> <td>Te</td> <td>I</td> <td>Xe</td> </tr> <tr> <td>Cs</td> <td>Ba</td> <td>La</td> <td>Hf</td> <td>Ta</td> <td>W</td> <td>Re</td> <td>Os</td> <td>Ir</td> <td>Pt</td> <td>Au</td> <td>Hg</td> <td>Tl</td> <td>Pb</td> <td>Bi</td> <td>Po</td> <td>At</td> <td>Rn</td> </tr> <tr> <td>Fr</td> <td>Ra</td> <td>Ac</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table> <p> <span style="display: inline-block; width: 15px; height: 15px; background-color: red; border: 1px solid black; margin-right: 5px;"></span> Metals             <span style="display: inline-block; width: 15px; height: 15px; background-color: yellow; border: 1px solid black; margin-left: 20px; margin-right: 5px;"></span> Non-metals         </p>	1	2		3	4	5	6	7	0									He	Li	Be		B	C	N	O	F	Ne	Na	Mg		Al	Si	P	S	Cl	Ar	K	Ca	Sc	Ti	V	Cr	Mn	Fe	Co	Ni	Cu	Zn	Ga	Ge	As	Se	Br	Kr	Rb	Sr	Y	Zr	Nb	Mo	Tc	Ru	Rh	Pd	Ag	Cd	In	Sn	Sb	Te	I	Xe	Cs	Ba	La	Hf	Ta	W	Re	Os	Ir	Pt	Au	Hg	Tl	Pb	Bi	Po	At	Rn	Fr	Ra	Ac															
1	2		3	4	5	6	7	0																																																																																																					
								He																																																																																																					
Li	Be		B	C	N	O	F	Ne																																																																																																					
Na	Mg		Al	Si	P	S	Cl	Ar																																																																																																					
K	Ca	Sc	Ti	V	Cr	Mn	Fe	Co	Ni	Cu	Zn	Ga	Ge	As	Se	Br	Kr																																																																																												
Rb	Sr	Y	Zr	Nb	Mo	Tc	Ru	Rh	Pd	Ag	Cd	In	Sn	Sb	Te	I	Xe																																																																																												
Cs	Ba	La	Hf	Ta	W	Re	Os	Ir	Pt	Au	Hg	Tl	Pb	Bi	Po	At	Rn																																																																																												
Fr	Ra	Ac																																																																																																											

**1. Periodic Table**  
 The elements are arranged in order of increasing atomic number  
 Elements are either **metals** or **non metals**  
**metals** are on the left  
**non metals** are on the right



3. Elements and Compounds	
We use diagrams to show whether a substance is an element or compound	
Elements are made of one type of atom	
Compounds are made of two or more types of atom bonded together	
Touching atoms represent a chemical bond	


#### 4. Formulae of Compounds

A compound has at least two elements in it.

They are formed in chemical reactions.

Compounds have different properties to the elements that make them

 Sodium, very reactive metal; shiny, conducts	Chlorine a very toxic green gas; Does not conduct 
--	---

Sodium chloride; White crystals, essential to life. Conducts only when molten or dissolved. 

Compounds have a formula – this tells us exactly what a compound is made of. A small number **after** a symbol tells you how many of that type of atom.

H <sub>2</sub> O	2 hydrogens 1 oxygen	CO <sub>2</sub>	1 carbon 2 oxygens
MgCl <sub>2</sub>	1 magnesium 2 fluorine	K <sub>2</sub> O	2 potassiums 1 oxygen
NH <sub>3</sub>	1 nitrogen 3 hydrogens	H <sub>2</sub> SO <sub>4</sub>	2 hydrogen 1 sulphur 4 oxygens

#### 5. Naming Compounds

When we combine elements to make something new, the names of each of the elements is used to name the compound

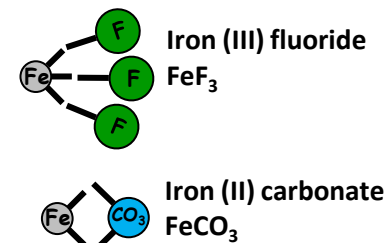
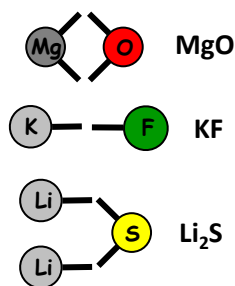
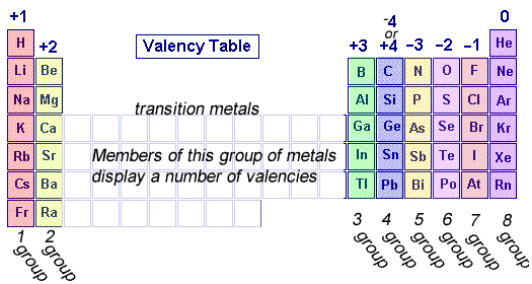
##### Rules

- Put the metal element first
- Then the non metal element
- Changing its ending to **-ide**

Calcium and fluorine make Calcium fluoride  
Magnesium and oxygen make Magnesium oxide  
Copper and chlorine make Copper chloride  
Carbon and oxygen make Carbon dioxide

#### 6. Valency

The valency of an element is a measure of its combining power with other atoms when it forms chemical compounds. Can be thought of as the number of bonds (arms) each substance has.



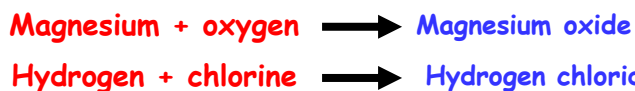
#### 7. Equations

A chemical equation shows what happens during a chemical reaction.

They are written in the format

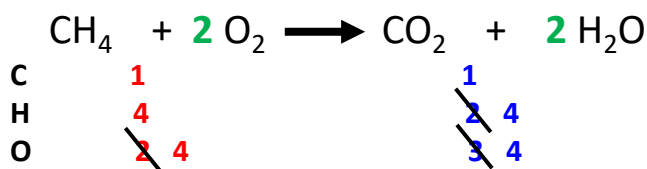
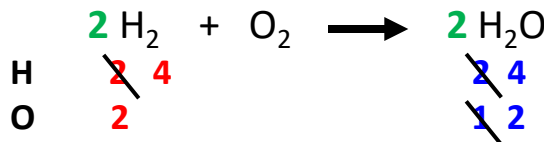
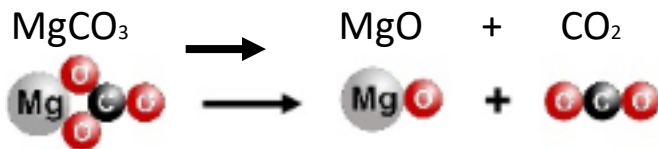


Word equations use full names of the elements and compounds involved



Symbol equations use the formulae of the reactants and products.

The total number of each element must be the same on each side of the arrow. This is called **balancing** the equation.



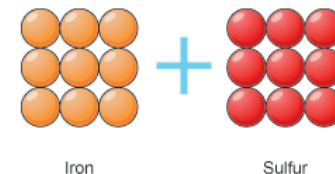
You can NEVER change a chemical formula (little numbers) only add big numbers at the front of formula

#### 8. Chemical reactions

During any chemical reaction:

- Existing bonds are broken
- Atoms are rearranged
- New bonds formed

The **reactant** bonds are broken



The **product** bonds are made

