



3055 BA SANGAM COLLEGE

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WORKSHEET 22

School: Ba Sangam College

Name: _____

Subject: Basic Science

Year/Level: 9

Strand 2	Matter
Sub Strand 2.3	Reactions
Content Learning Outcome	Differentiate and discuss elements, compounds and mixtures and determine their symbols when forming chemical equations.

Lesson Notes

REACTIONS

Elements - made up of the same kind of atoms

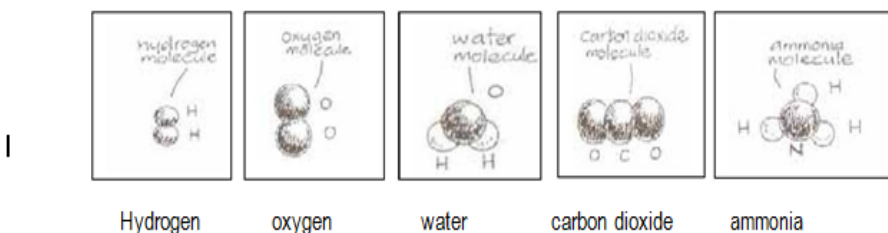
- example: elements carbon is made up of only carbon atoms

Compound - made up of two or more kinds of atoms joined together

- example: carbon dioxide is made up of carbon and oxygen atoms

Molecule - is made up of two or more atoms of the same kind or of different kinds chemically combined together.

Models of some molecules

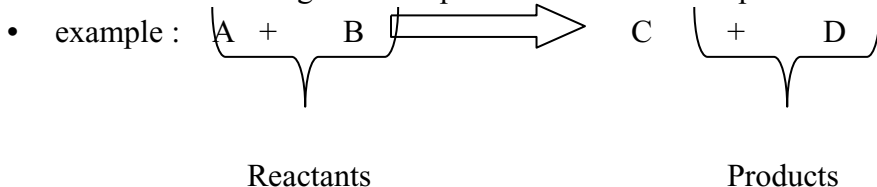


Interactions between elements

- results in chemical reaction between the elements
- new substances are formed
- involves heat-change, heat is either absorbed or lost

Chemical reactions

- can be written using a word equation or a chemical equation



Word equations

- Shows the names of the reactants and products that are part of the chemical reaction
- Example: glucose + oxygen \longrightarrow carbon dioxide + water

Chemical equation

- Shows the chemical formulas of the reactant and product taking part in the chemical reaction
- Example: $6\text{C}_6\text{H}_{12}\text{O}_6 + 6\text{O}_2 \longrightarrow 6\text{CO}_2 + 6\text{H}_2\text{O}$

Balanced equation

- Is where all the atoms of each kind are equal on both sides of the equation
- The physical states of the reactants and products are also stated
- Example: $6\text{C}_6\text{H}_{12}\text{O}_6(\text{s}) + 6\text{O}_2(\text{g}) \longrightarrow 6\text{CO}_2(\text{g}) + 6\text{H}_2\text{O}(\text{l})$

Physical states include:

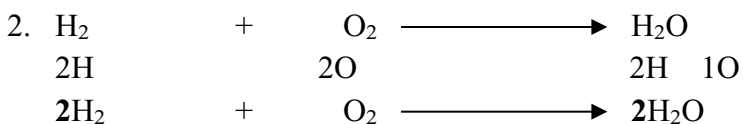
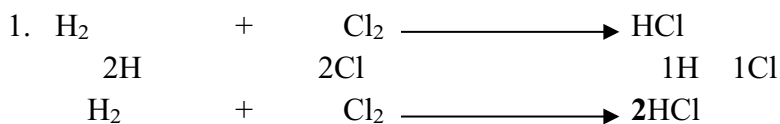
S-solid aq-aqueous

l- Liquid g-gas

Balancing chemical equation

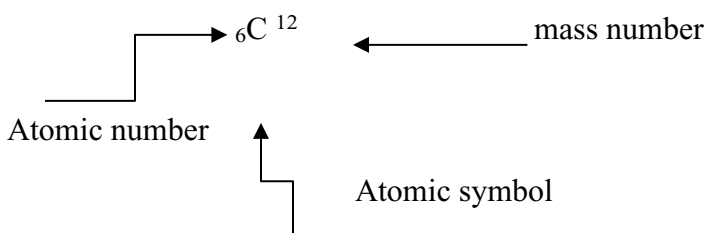
1. Count the number of each type of atoms on both sides of the equation
2. Use whole number as coefficients to balance the number of each type of atoms on both sides

Example:



The periodic table

- Shows the elements and their chemical symbols
- Example: elements carbon appear ${}_6\text{C}^{12}$



Elements	Symbols	Elements	Symbols
Hydrogen	H	Sodium	Na
Helium	He	Magnesium	Mg
Lithium	Li	Aluminium	Al
Beryllium	Be	Silicon	Si
Boron	B	Phosphorus	P
Carbon	C	Sulphur	S
Nitrogen	N	Chlorine	Cl
Oxygen	O	Argon	Ar
Fluorine	F	Potassium	K
Neon	Ne	Calcium	Ca

Ions

- ✓ Are charged particles
- ✓ Formed when an atom loses or gain an electron(s)

Example 1 : sodium

Na-(2, 8, 1)

After losing one electron, sodium gains a positive charge

Na^+ - (2, 8)

Example 2: chlorine

Cl-(2, 8, 1)

After gaining one electron, chlorine gains a negative charge

Cl^- - (2, 8, 8)

Note:

A positively charged ion is called a **cation**

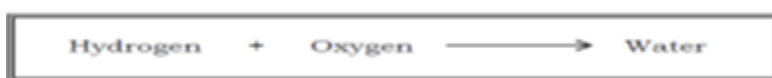
A negative charged ion is called **anion**

Exercise

1. Differentiate between elements and compounds.

(2 marks)

2. Use the word equation shown below to answer the questions that follow.



i. Name one

Product: _____ (1 mark)

Reactant: _____ (1 mark)

ii. Write the symbols for:

Oxygen : _____ (1 mark)

Hydrogen: _____ (1 mark)

2. Write the chemical formula for water.

Formula: _____ (1 mark)

3. State whether the following is formed from the gain or loss of electrons.

Anions: _____ (1 mark)

Cations: _____ (1 mark)

4. Define Molecules

(1 mark)

