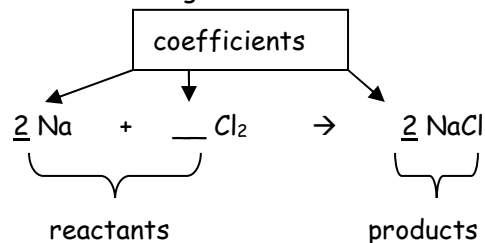


Chemical Reactions

Review from science 10

- When sodium and chlorine are brought together a reaction occurs. A set amount of sodium is needed to react **EVENLY** with the chlorine. Writing chemical reactions and chemical equations allows us to figure this amount out.

Ex. -



- Some atoms are never found alone. They always pair up with themselves. These elements are called the diatomic seven and there are 7 of them. H, O, F, Br, I, N, Cl
- Some indicators of chemical change are;
 - colour change
 - temperature change
 - new phase
 - gas given off
 - difficult to reverse
- A system is the part of the universe being studied.
- An open system allows things (matter and/or energy) to enter and leave, while a closed system does not allow things (matter and/or energy) to enter and/or leave.

Ex. - If an experiment examines how a beaker of hot liquid cools down with time, the "system" is the beaker and its contents.

A beaker full of boiling water is an example of an open system if the beaker and the water are considered to be the "system" and the beaker is on a hot plate. Heat is able to enter the beaker and water (the system) and water vapour is able to escape. This system is open to both heat energy and atoms (matter).

A sealed glass tube containing hot water is an example of a system that is only closed in respect to mass (not energy). No material can get in or out of the sealed tube.

- Law of Conservation of Mass - the total mass of a closed system does not change during a chemical reaction.
- Law of Conservation of Atoms - the total number and type of atom in a closed system does not change during a chemical reaction.
- Law of Conservation of Energy - total energy in a closed system does not change in a chemical reaction.