Chemical Reaction: Such a process in which breaking and making of bonds between different atoms to produces substances of new property is known as chemical reaction.
Ex. $2H_2 + O_2 \rightarrow 2H_2O$
(Here H_2 and O_2 take part in chemical reaction and produce a product of new property i.e. H_2O.)

Determination of Chemical Reaction:
We should have to determine the chemical reaction has taken place.
- Change in state
- Change in colour
- Evolution of a gas
- Change in temperature.

Above four points are identifications of chemical reaction which indicate that the reaction has taken place.

Chemical Equation
The representation of chemical reaction in the form of formulae of reactants and products separated by an arrow marks.

$$\textbf{Magnesium + Oxygen} \rightarrow \textbf{magnesium oxide}$$
$$\textbf{(Reactants)} \qquad \textbf{(product)}$$

To write the equation in such manner is called as word equation.
Another method to write chemical reaction;
$Mg + O_2 \rightarrow MgO$
This is symbolic form to write chemical equations.

There are two part of a chemical reaction
➢ **Reactants:** The substances that take place in chemical change are the reactants. Example from above equation. Mg and O are reactants.
➢ **Products:** The new substance, formed during the reaction, is the product. Ex. MgO is product, which newer substance produced in reaction.

The types of reaction are as follow;
(1) Combination reaction
(2) Decomposition reaction
(3) Displacement reaction
(4) Double displacement reaction
(5) Oxidation and reduction reaction

1. Combination Reaction
A reaction in which a single product is formed from two or more reactants is known as a combination reaction.

General form : $A + B \rightarrow AB$
$CaO(s) + H_2O(l) \rightarrow Ca(OH)_2 (aq)$
(Quick lime)   (Slaked lime)

According to definition to comparison with reaction equation we see calcium oxide and water are two reactants which form a single product calcium hydroxide.