

Types of Chemical Reactions

Learning Goals: I will be able to ...

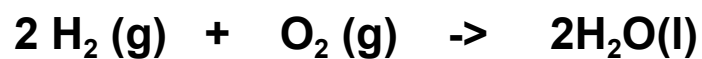
- identify and define the main types of chemical reactions
- predict the products of *synthesis* and *decomposition* reactions
- predict the products of *single displacement* and *double displacement* reactions
- predict the products of *neutralization* reactions
- write balanced chemical equations for these reactions

Synthesis Reactions

→ Two or more reactants combine to form one new product.

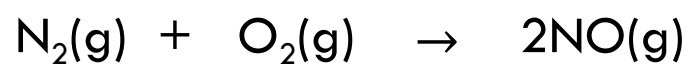
→ Represented by:

→ Example:



Many greenhouse gases are formed through a synthesis reaction.

For example;



So what do all these (g), (l), (aq), and (s)'s mean????

□ Abbreviations for the States of Reactants and Products

State	Abbreviation	Examples(at room temp)
Solid	(s)	Most metals, ionic compounds such as NaCl
Liquid	(l)	H ₂ O, H ₂ O ₂ , Hg
Gas	(g)	H ₂ , O ₂ , F ₂ , N ₂ , Cl ₂ , SO ₂
Aqueous Solution	(aq)	Any soluble solid such as NaCl

Decomposition Reactions

→A compound is broken down into two or more smaller products.

→Many of these reactions require heat (Δ) to occur. Some require an electric current to occur.

→Represented by:



→Example:



Single Displacement Reactions

→ One element replaces another element in a compound (usually an ionic compound).

→ Represented by:



OR



For example:

Lithium + Barium Nitride



Barium + Lithium Nitride



Double Displacement Reactions

→The cation of one compound exchanges place with the cation of another compound (usually ionic compounds).

→Represented by:



→A true double displacement reaction occurs when one of the products is:

1. a precipitate (s)
2. a gas (g)
3. water (l)

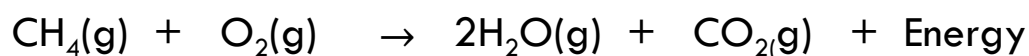
5. Combustions Reactions

A combustion reaction occurs when a hydrocarbon (organic molecule) reacts with oxygen to produce energy.

□ Combustion reactions are usually in the form:



□ For Example:



This is the Complete Combustion of Methane gas

Fuel + Oxygen -> Water and Carbon Dioxide
(hydro carbon)

Try These:

Identify the following reactions as one of the given types:

