Name:_____
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Chemistry 11
TYPES OF CHEMICAL REACTIONS

THERE ARE SIX MAJOR TYPES OF CHEMICAL REACTIONS OF IMPORTANCE TO CHEMISTRY 11:

Type 1. SYNTHESIS when two (or more) reactants combine to form a single product.

GENERIC EQUATION: A + B → AB

Examples: $2Na + Cl_2 \longrightarrow 2NaCl$

$2H_2 + O_2 \longrightarrow 2H_2O$

Type 2. DECOMPOSTION when a reactant compound breaks into it's component elements

GENERIC EQUATION: AB → A + B

Examples: $2Ag_2O \longrightarrow 4Ag + O_2$

$2H_2O \longrightarrow 2H_2 + O_2$

Type 3. SINGLE REPLACEMENT when a lone element "replaces" it's counterpart in a reactant compound.

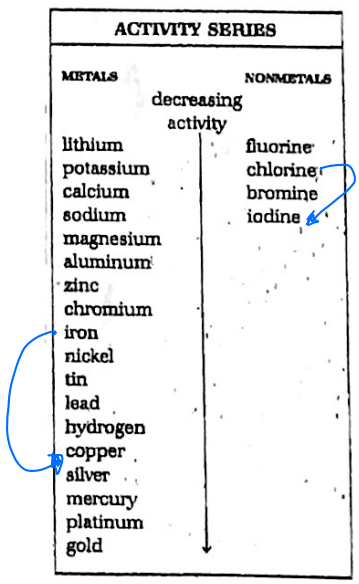
GENERIC EQUATIONS: **M + AB → MB + A**
N + AB → AN + B

NOT ALL ELEMENTS CAN "BUMP" THE OTHER OUT OF A CHEMICAL COMPOUND. TO DETERMINE WHETHER OR NOT A BUMPING WILL OCCUR YOU MUST REFERR TO THE FOLLOWING ACTIVITY SERIES:

Examples:

$Fe + CuCl_2 \longrightarrow FeCl_2 + Cu$

$Cl_2 + 2KI \longrightarrow 2KCl + I_2$



Type 4. DOUBLE REPLACEMENT when two reacting compounds switch partners.

GENERIC EQUATION: AB + XY → AY + XB

Examples: $AgNO_3 + NaCl \longrightarrow AgCl + NaNO_3$

$Ba(NO_3)_2 + K_2SO_4 \longrightarrow BaSO_4 + 2KNO_3$

TYPE 5. NEUTRALIZATION (Specialized DOUBLE REPLACEMENT) when an ACID and Base form Salt and water.

GENERIC EQUATION: HB + AOH → AB + H_2O (ℓ)

Examples:

$HCl + NaOH \rightarrow NaCl + H_2O(\ell)$

$H_2SO_4 + Ba(OH)_2 \rightarrow BaSO_4 + 2H_2O(\ell)$

TYPE 5. COMBUSTION when a hydrocarbon "burns" in the presence of oxygen.

HYDROCARBON: a compound containing H's and C's

GENERIC EQUATION: $C_xH_y + O_2 \rightarrow CO_2 + H_2O(g)$ (← hot ∴ gaseous water)

Examples:

$CH_4 + 2O_2 \longrightarrow CO_2 + 2H_2O(g)$

$C_5H_{12} + 8O_2 \longrightarrow 5CO_2 + 6H_2O(g)$

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