Chemistry 12 – Types of Reactions Notes

Type of reaction	Definition	General Formula	Examples	What to look for!
Synthesis	Combination of two or more substances to form a compound	**A + B → AB**	$C + O_2 \rightarrow CO_2$ $H_2 + Cl_2 \rightarrow 2HCl$	Two elements react
Decomposition	Breaking down a molecule into simpler substances	**AB → A + B**	$2NO \rightarrow N_2 + O_2$ $2Ag_2O \rightarrow 4Ag + O_2$	Single compound on the reactant side
Single Replacement	Replacing one atom in a compound by another atom	**A + BX → B + AX**	$Fe + CuCl_2 \rightarrow Cu + FeCl_2$ $Cl_2 + 2KI \rightarrow I_2 + 2KCl$	Element reacts with a compound
Double Replacement	Exchange of atoms or groups between two different compounds	**AB + XY → AY + XB**	$AgNO_3 + NaCl \rightarrow AgCl + NaNO_3$	Two compounds react
Neutralization	Special type of double replacement. Reaction of an acid with a base	**Acid + Base → Salt + water**	$HCl + NaOH \rightarrow NaCl + H_2O$ $HNO_3 + KOH \rightarrow KNO_3 + H_2O$	Acids (chemicals starting with "H") and Bases (chemicals ending with "OH")
Combustion	Reaction of hydrocarbon with oxygen to produce carbon dioxide and water	**Hydrocarbon + O_2 → CO_2 + H_2O**	$C_5H_{12} + 8O_2 \rightarrow 5CO_2 + 6H_2O$	Hydrocarbon reactant and O_2