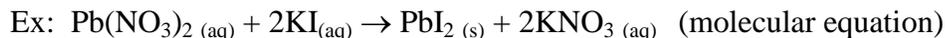


WRITING AND BALANCING CHEMICAL EQUATIONS

All chemical equations must obey the Law of Conservation of Matter ie: they must be balanced using coefficients.

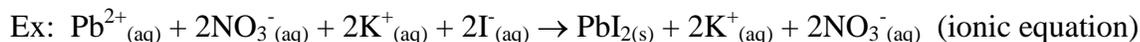
Molecular Equations:

- Show the complete formulas of each element and compound in the reaction.



Ionic Equations:

- Instead of writing formulas for the substances as molecular formulas, they are written as the ions that would be present in an aqueous solution.



- Substances written as ions are: **Soluble salts, strong acids, strong bases (see below)**

Net Ionic Equations:

- Show only the ions actually involved with the reaction.
- Once the ionic equation is written, any spectator ions (ions that appear in the same form on both sides of the equation) are deleted..



Major Reaction Types:

- Combination (synthesis) reaction:** $\text{A} + \text{B} \rightarrow \text{AB}$
- Decomposition (analysis) reaction:** $\text{AB} \rightarrow \text{A} + \text{B}$
- Combustion reaction:** $\text{C}_x\text{H}_y + \text{O}_2 \rightarrow \text{CO}_2 + \text{H}_2\text{O}$
- Single replacement (displacement) reactions:** $\text{A} + \text{BC} \rightarrow \text{AC} + \text{B}$
- Double replacement (metathesis) reactions:** $\text{AB} + \text{CD} \rightarrow \text{AD} + \text{CB}$

SOLUBILITY RULES: (MEMORIZE)

For the purposes of the AP Exam, all sodium, potassium, ammonium, and nitrate salts are considered soluble in water. Additional solubility information will be provided to you if it is needed.

STRONG ACIDS AND BASES: (MEMORIZE)

Strong Acids		
Group 7A Hydrides	HCl	Hydrochloric acid
	HBr	Hydrobromic acid
	HI	Hydroiodic acid
Oxyacids	HNO ₃	Nitric acid
	H ₂ SO ₄	Sulfuric acid
	HClO ₄	Perchloric acid
Strong Bases		
Group 1A Hydroxides	LiOH	Lithium hydroxide
	NaOH	Sodium hydroxide
	KOH	Potassium hydroxide
	RbOH	Rubidium hydroxide
	CsOH	Cesium hydroxide
Group 2A Hydroxides	Mg(OH) ₂	Magnesium hydroxide
	Ca(OH) ₂	Calcium hydroxide
	Sr(OH) ₂	Strontium hydroxide
	Ba(OH) ₂	Barium hydroxide