

B.P. Chemical Egn
Word Egn
Skeleton Egn
Balanced Egn

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Notes: Chemical Equations & Reactions

Chemical reaction - process by which one or more substances are changed into one or more different substances

reactants \rightarrow products

Indications of a Chemical Reaction

- Evolution of heat & light
- Production of a gas
- Formation of a precipitate
- Color change

Steps for Writing Chemical Equations

- (1) Write word equation (names of reactants & products)
- (2) Write skeleton equation (write formulas for reactants & products)
 - Write symbols
 - Post Charges
 - Cross & drop & simplify
 - Check for diatomics (Br H O N C I F)
- (3) Balance equation by using coefficients
- (4) Count atoms to make sure atoms are balanced

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Examples

1. Solid magnesium and aqueous hydrochloric acid react to produce solid magnesium chloride and hydrogen gas.

Word equation: Solid magnesium + aqueous hydrochloric acid \rightarrow Solid magnesium chloride + hydrogen gas

Skeleton equation:
 $\text{Mg(s)} + \text{HCl(aq)} \rightarrow \text{MgCl(s)} + \text{H(g)}$
 $\text{Mg(s)} + \text{HCl(aq)} \rightarrow \text{MgCl}_2\text{(s)} + \text{H}_2\text{(g)}$

Balanced equation:
 $\text{Mg(s)} + 2\text{HCl(aq)} \rightarrow \text{MgCl}_2\text{(s)} + \text{H}_2\text{(g)}$

2. Solid calcium phosphate and aqueous sulfuric acid react to form aqueous phosphoric acid and solid calcium sulfate.

Word equation: Solid calcium phosphate + aqueous sulfuric acid \rightarrow aqueous phosphoric acid + solid calcium sulfate

Skeleton equation:
 $\text{Ca(PO}_4\text{)(s)} + \text{H}_2\text{(SO}_4\text{)(aq)} \rightarrow \text{H}_2\text{(PO}_4\text{)(aq)} + \text{Ca(SO}_4\text{)(s)}$
 $\text{Ca}_3\text{(PO}_4\text{)}_2\text{(s)} + \text{H}_2\text{SO}_4\text{(aq)} \rightarrow \text{H}_3\text{PO}_4\text{(aq)} + \text{CaSO}_4\text{(s)}$

Balanced equation:
 $\text{Ca}_3\text{(PO}_4\text{)}_2\text{(s)} + 3\text{H}_2\text{SO}_4\text{(aq)} \rightarrow 2\text{H}_3\text{PO}_4\text{(aq)} + 3\text{CaSO}_4\text{(s)}$

3. Write a word equation & sentence.



Word eqn: Solid potassium chlorate \rightarrow solid potassium chloride + oxygen gas

Sentence: Solid potassium chlorate forms solid potassium chloride and oxygen gas.