

Pre-AP Chemistry – Unit 6, Chemical Reactions

Objective 1: Students will recognize indicators of chemical change write balanced chemical equations to describe them based on common reactivity patterns. [S.12.C.1, S.14.C.1, S.15.C.6]

Objective 1

- List the common indicators of chemical change and provide an example from lab where you have observed this.
- Balance** and give the **reaction type** for each of the reactions below.
 - $_ \text{K (s)} + _ \text{H}_2\text{O (l)} \rightarrow _ \text{KOH (aq)} + _ \text{H}_2 \text{(g)}$
 - $_ \text{AlCl}_3 \text{(s)} \rightarrow _ \text{Al (s)} + _ \text{Cl}_2 \text{(g)}$
 - $_ \text{C}_5\text{H}_{12} \text{(g)} + _ \text{O}_2 \text{(g)} \rightarrow _ \text{CO}_2 \text{(g)} + _ \text{H}_2\text{O (g)}$
 - $_ \text{CsOH (aq)} + _ \text{H}_2\text{SO}_4 \text{(aq)} \rightarrow _ \text{H}_2\text{O (l)} + _ \text{Cs}_2\text{SO}_4 \text{(aq)}$
 - $_ \text{Cl}_2 \text{(g)} + _ \text{Br}_2 \text{(g)} \rightarrow _ \text{BrCl}_5 \text{(g)}$
- Write and balance the following equations.
 - solid calcium carbonate reacts with hydrochloric acid [HCl(aq)] to yield aqueous calcium chloride, carbon dioxide gas, and liquid water
 - solid zinc metal reacts with sulfuric acid to yield aqueous zinc sulfate and hydrogen gas
 - aqueous zinc chloride reacts with dihydrogen monosulfide gas to yield a zinc sulfide precipitate and hydrochloric acid
- Complete and balance the following reactions.
 - Sodium carbonate is heated and decomposes.
 - Hexane (C₆H₁₄) is burned in excess oxygen.
 - Iron(III) chloride solution is poured over a piece of silver.
 - Lead(II) nitrate and sodium iodide solutions are mixed.
 - Nitrogen gas is passed over a hot piece of lithium metal.

Write the word equations below as **chemical equations and balance**:

1) Zinc and lead (II) nitrate react to form zinc nitrate and lead.

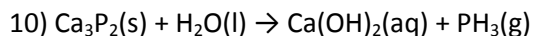
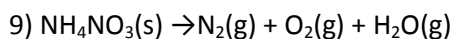
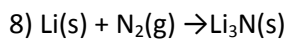
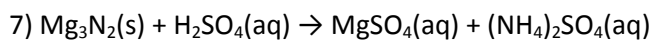
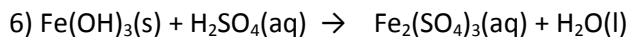
2) Aluminum bromide and chlorine gas react to form aluminum chloride and bromine gas.

3) Sodium phosphate and calcium chloride react to form calcium phosphate and sodium chloride.

4) Aluminum and hydrochloric acid react to form aluminum chloride and hydrogen gas.

5) Magnesium nitrate reacts in solution with potassium hydroxide to yield a magnesium hydroxide precipitate and soluble potassium nitrate

Write the following chemical equations in words.



Classify each of the reactions above:

1)

2)

3)

4)

5)

6)

7)

8)

9)

10)

Complete, balance, and give types for the reactions below.

1) Ethene (C₂H₄) is totally burned.

2) Al(NO₃)₃ (aq) + Ca (s) →

3) CsClO₃ (s) $\xrightarrow{\Delta}$

4) Magnesium bromide + chlorine →

5) Silver nitrate + zinc chloride →

6) CH₄ + O₂ →

7) Silver nitrate reacts with copper

8) Sodium phosphate reacts with potassium hydroxide

9) Al + HCl

10) RbNO₃ + BeF₂