

Balancing Chemical Equations – Worksheet #2

Classifying Chemical Reactions

Most chemical reactions can be classified as one of these six basic reaction types:

- Synthesis (combination)
- Decomposition
- Single Replacement (oxidation-reduction)
- Double Replacement (precipitation)
- Acid-Base (neutralization)
- Combustion

Write balanced equations for each of the following examples:

1. Synthesis Reaction: $A + B \rightarrow AB$

Sodium (s) + chlorine (g) \rightarrow sodium chloride (s)

2. Decomposition Reaction: $AB \rightarrow A + B$

sodium bicarbonate (s) \rightarrow carbon dioxide (g) + sodium carbonate (s) + water (l)

3. Single Replacement Reactions: $AB + C \rightarrow A + CB$

hydrochloric acid, HCl (aq) + magnesium (s) \rightarrow magnesium chloride (aq) + hydrogen (g)

4. Double Replacement Reactions: $AB + CD \rightarrow AD + CB$

calcium chloride (aq) + ammonium hydroxide (aq) \rightarrow calcium hydroxide (s) + ammonium chloride (aq)

5. Acid-Base Reactions: $HA + BOH \rightarrow BA + H_2O$

Sulfuric Acid, H_2SO_4 (aq) + potassium hydroxide (aq) \rightarrow potassium sulfate (aq) + water (l)

6. Combustion Reactions: $Fuel + O_2(g) \rightarrow CO_2(g) + H_2O(g)$

Hexane, C_6H_{14} (l) + oxygen (g) \rightarrow carbon dioxide (g) + water (g)