

## Worksheet SNC 2D1 - Types of Chemical Reactions

**Part A:** Write a balanced equation for each of the following:

1. Synthesis Reactions ( $A + B \rightarrow AB$ )

- 1) Calcium metal reacts with chlorine gas to yield calcium chloride.
- 2) Nitrogen gas reacts with hydrogen gas to produce ammonia ( $\text{NH}_3$ ) gas.
- 3) Iron reacts with oxygen gas at high temperatures to produce iron (III) oxide.

2. Decomposition Reactions ( $AB \rightarrow A + B$ )

- 1) Calcium carbonate decomposes into calcium oxide and carbon dioxide.
- 2) TNT ( $\text{C}_7\text{H}_5(\text{NO}_2)_3$ ) explodes to produce carbon monoxide gas, carbon soot, hydrogen gas, and nitrogen gas.

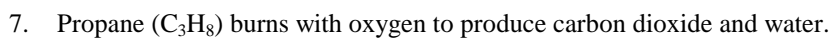
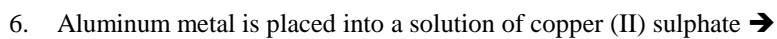
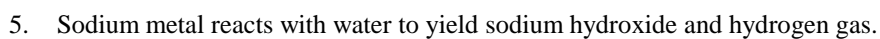
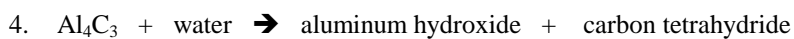
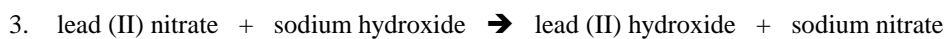
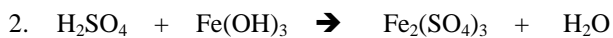
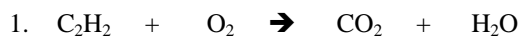
3. Displacement Reactions ( $A + BC \rightarrow AC + B$ )

- 1) Copper in copper (II) sulfate is replaced by aluminum.
- 2) Gold is deposited from a solution of gold (II) nitrate in the presence magnesium.
- 3) Aluminum reacts with  $\text{H}_2\text{SO}_4$  to produce hydrogen gas and one other compound.

4. Double Displacement Reactions ( $AB + CD \rightarrow AD + CB$ )

- 1) Insoluble silver chloride is produced when a solution of silver nitrate is added to a solution of ferric chloride (iron (III) chloride).
- 2) Ammonium hydroxide reacts with chromium (III) sulfate.
- 3) Sodium hydroxide neutralizes  $\text{H}_2\text{CO}_3$  acid.

**Part B:** Write a balanced equation and indicate the type of chemical reaction for each of the following:



8. barium acetate + sulphuric acid → barium sulphate + acetic acid

9. Zinc sulfide burns in air (What gas in the air is needed for combustion?)

10. Calcium chlorate is reacted with sodium carbonate.

11. Zirconium (IV) sulfate is reacted with sodium phosphate.

12. Hydrogen sulfide is added to arsenic pentachloride.