

Chapter 8 Review Problems

1. Write the formula equation for the reaction in which aqueous solutions of sulfuric acid and sodium hydroxide react to form aqueous sodium sulfate and water.

2. Write the chemical equation for each of the following reactions

- ammonium chloride + calcium hydroxide \rightarrow calcium chloride + ammonia + water
- hexane, C_6H_{14} , + oxygen \rightarrow carbon dioxide + water

3. List five types of chemical reactions

4. Complete and balance each of the following reactions identified by type:

- synthesis: $\text{---} \rightarrow Li_2O$
- Single-replacement: $Na + H_2O \rightarrow \text{---}$
- Double-replacement: $HNO_3 + Ca(OH)_2 \rightarrow \text{---}$

5. Classify each of the following reactions as synthesis, decomposition, single-replacement, double-replacement, or combustion:

- $N_{2(g)} + 3 H_{2(g)} \rightarrow 2 NH_{3(g)}$
- $2 NaNO_{3(s)} \rightarrow 2 NaNO_{2(s)} + O_{2(g)}$
- $2 C_6H_{14(l)} + 19 O_{2(g)} \rightarrow 12 CO_{2(g)} + 14 H_2O_{(l)}$
- $NH_4Cl_{(s)} \rightarrow NH_{3(g)} + HCl_{(g)}$
- $BaO_{(s)} + H_2O_{(l)} \rightarrow Ba(OH)_{2(aq)}$
- $AgNO_{3(aq)} + NaCl_{(aq)} \rightarrow AgCl_{(s)} + NaNO_{3(aq)}$

6. Based on the activity series, predict whether each of the following possible reactions listed will occur:

- $Ni_{(s)} + H_2O_{(l)}$
- $Au_{(s)} + HCl_{(aq)}$
- $Cd_{(s)} + HCl_{(aq)}$