

Write and balance the skeleton equations described below, then identify the each type.

- | <u>Reaction</u> | <u>Type(s)</u> |
|---|-----------------------------------|
| 1. Butene gas (C ₄ H ₈) reacts with oxygen gas to form carbon dioxide gas and water vapor.
$\text{C}_4\text{H}_8 (\text{g}) + 6 \text{O}_2 (\text{g}) \rightarrow 4 \text{CO}_2 (\text{g}) + 4 \text{H}_2\text{O} (\text{g})$ | <u>Combustion</u> |
| 2. Hydrobromic acid solution reacts with barium hydroxide solution to form barium bromide solution and liquid water.
$2 \text{HBr} (\text{aq}) + \text{Ba}(\text{OH})_2 (\text{aq}) \rightarrow \text{BaBr}_2 (\text{aq}) + 2 \text{H}_2\text{O} (\text{l})$ | <u>Double Replacement</u> |
| 3. Solid potassium nitrate is heated and forms solid potassium nitrite and oxygen gas.
$2 \text{KNO}_3 (\text{s}) \xrightarrow{\Delta} 2 \text{KNO}_2 (\text{s}) + \text{O}_2 (\text{g})$ | <u>Decomposition</u> |
| 4. A solution of silver nitrate is mixed with a solution of aluminum chloride and forms solid silver chloride and aluminum nitrate solution.
$3 \text{AgNO}_3 (\text{aq}) + \text{AlCl}_3 (\text{aq}) \rightarrow 3 \text{AgCl} (\text{s}) + \text{Al}(\text{NO}_3)_3 (\text{aq})$ | <u>Double Replacement</u> |
| 5. Solid iron powder reacts with gaseous oxygen to form solid iron(III) oxide (and lots of energy).
$4 \text{Fe} (\text{s}) + 3 \text{O}_2 (\text{g}) \rightarrow 2 \text{Fe}_2\text{O}_3 (\text{s})$ | <u>Combustion & Synthesis</u> |
| 6. Solid silver reacts with octasulfur (an allotrope of sulfur) to form solid silver sulfide.
$16 \text{Ag} (\text{s}) + \text{S}_8 (\text{s}) \rightarrow 8 \text{Ag}_2\text{S} (\text{s})$ | <u>Synthesis</u> |
| 7. Solid magnesium carbonate is heated and forms solid magnesium oxide and carbon dioxide gas.
$\text{MgCO}_3 (\text{s}) \xrightarrow{\Delta} \text{MgO} (\text{s}) + \text{CO}_2 (\text{g})$ | <u>Decomposition</u> |
| 8. Fluorine gas reacts with a solution of iron(III) chloride to form chlorine gas and iron(III) fluoride solution.
$3 \text{F}_2 (\text{g}) + 2 \text{FeCl}_3 (\text{aq}) \rightarrow 3 \text{Cl}_2 (\text{g}) + 2 \text{FeF}_3 (\text{aq})$ | <u>Single Replacement</u> |
| 9. Solid zinc reacts with a solution of gold(III) nitrate to form solid gold and zinc nitrate.
$3 \text{Zn} (\text{s}) + 2 \text{Au}(\text{NO}_3)_3 (\text{aq}) \rightarrow 2 \text{Au} + 3 \text{Zn}(\text{NO}_3)_2 (\text{aq})$ | <u>Single Replacement</u> |
| 10. Propanol (C ₃ H ₇ OH) liquid reacts with oxygen gas to form carbon dioxide gas and water vapor.
$2 \text{C}_3\text{H}_7\text{OH} (\text{l}) + 9 \text{O}_2 (\text{g}) \rightarrow 6 \text{CO}_2 (\text{g}) + 8 \text{H}_2\text{O} (\text{g})$ | <u>Combustion</u> |