

WKS
Classification of Chemical Reactions

NAME Answer Key
Period _____ Date _____

Identify the following chemical equations by type, then balance them. If a reaction belongs to more than one type, indicate all applicable types.

- | Reaction | Type(s) |
|---|-----------------------------------|
| 1. <u>2</u> C ₄ H ₈ + <u>6</u> O ₂ → <u>4</u> CO ₂ + <u>4</u> H ₂ O
Start Here | <u>combustion</u> |
| 2. _____ HCl + _____ NaOH → _____ H ₂ O + _____ NaCl | <u>double replacement</u> |
| 3. <u>2</u> KNO ₃ (s) → <u>2</u> KNO ₂ (s) + _____ O ₂ (g)
Start with lowest even # since have even # O in products | <u>decomposition</u> |
| 4. _____ AgNO ₃ + _____ NaCl → _____ NaNO ₃ + _____ AgCl | <u>double replacement</u> |
| 5. <u>2</u> Mg + _____ O ₂ → <u>2</u> MgO | <u>synthesis & combustion</u> |
| 6. Solid silver reacts with octasulfur (an allotrope of sulfur) to form solid silver sulfide.

$16 \text{ Ag (s)} + \text{S}_8 \text{ (s)} \rightarrow 8 \text{ Ag}_2\text{S (s)}$ | <u>synthesis</u> |
| 7. Solid magnesium carbonate is heated and forms solid magnesium oxide and carbon dioxide gas.

$\text{MgCO}_3 \text{ (s)} \xrightarrow{\Delta} \text{MgO (s)} + \text{CO}_2 \text{ (g)}$ | <u>decomposition</u> |
| 8. Fluorine gas reacts with a solution of iron(III) chloride to form chlorine gas and iron(III) fluoride solution.

$3 \text{ F}_2 \text{ (g)} + 2 \text{ FeCl}_3 \text{ (aq)} \rightarrow 2 \text{ FeF}_3 \text{ (aq)} + 3 \text{ Cl}_2 \text{ (g)}$ | <u>single replacement</u> |
| 9. Solid zinc reacts with a solution of gold(III) nitrate to form solid gold and zinc nitrate.

$3 \text{ Zn (s)} + 2 \text{ Au(NO}_3)_3 \text{ (aq)} \rightarrow 2 \text{ Au (s)} + 3 \text{ Zn(NO}_3)_2 \text{ (aq)}$ | <u>single replacement</u> |
| 10. Propanol (C ₃ H ₇ OH) liquid reacts with oxygen gas to form carbon dioxide gas and water vapor.
Start Here <u>C₃H₇OH (l)</u> + 9/2 O ₂ (g) → 3 CO ₂ (g) + 4 H ₂ O (g)
or
$2 \text{ C}_3\text{H}_7\text{OH (l)} + 9 \text{ O}_2 \text{ (g)} \rightarrow 6 \text{ CO}_2 \text{ (g)} + 8 \text{ H}_2\text{O (g)}$ | <u>combustion</u> |