Worksheet #4: Single-Replacement Reactions

Step 1 - Write the formulas of the reactants on the left of the yield sign
Step 2 - Look at the Activity Series on page 266 to determine if the replacement can happen
Step 3 - If the replacement can occur, complete the reaction and balance it. If the reaction cannot happen, write N.R. (no rxn) on the product side.

1. lead + zinc acetate →

   $Pb + Zn(C_2H_3O_2)_2 \rightarrow$ N.R.

2. iron + aluminum oxide →

   $Fe + Al_2O_3 \rightarrow$ N.R.

3. silver nitrate + nickel → nickel(II) nitrate + silver

   $2AgNO_3 + Ni \rightarrow Ni(NO_3)_2 + 2Ag$

4. sodium bromide + iodine →

   $NaBr + I_2 \rightarrow$ N.R.

5. aluminum bromide + chlorine → aluminum chloride + bromine

   $2AlBr_3 + 3Cl_2 \rightarrow 2AlCl_3 + 3Br_2$

6. sodium iodide + bromine → sodium bromide + iodine

   $2NaI + Br_2 \rightarrow 2NaBr + I_2$

7. calcium + hydrochloric acid → calcium chloride + hydrogen

   $Ca + 2HCl \rightarrow CaCl_2 + H_2$

8. magnesium + nitric acid → magnesium nitrate + hydrogen

   $Mg + 2HNO_3 \rightarrow Mg(NO_3)_2 + H_2$

9. silver + sulfuric acid →

   $Ag + H_2SO_4 \rightarrow$ N.R.

10. potassium + water → potassium hydroxide + hydrogen

    $2K + 2H_2O \rightarrow 2KOH + H_2$

    HOH

11. sodium + water → sodium hydroxide + hydrogen

    $2Na + 2H_2O \rightarrow 2NaOH + H_2$

    HOH

Worksheet #6: Combustion Reactions

We will focus on the combustion of hydrocarbons. Hydrocarbons react with oxygen to form carbon dioxide and water.

1. methane (CH_4) + oxygen → carbon dioxide + water

   $CH_4 + 2O_2 \rightarrow CO_2 + 2H_2O$

2. ethane (C_2H_6) + oxygen → carbon dioxide + water

   $2C_2H_6 + 7O_2 \rightarrow 4CO_2 + 6H_2O$

3. propane (C_3H_8) + oxygen → carbon dioxide + water

   $C_3H_8 + 5O_2 \rightarrow 3CO_2 + 4H_2O$

4. butane (C_4H_{10}) + oxygen → carbon dioxide + water

   $2C_4H_{10} + 13O_2 \rightarrow 8CO_2 + 10H_2O$

5. pentane (C_5H_{12}) + oxygen → carbon dioxide + water

   $C_5H_{12} + 8O_2 \rightarrow 5CO_2 + 6H_2O$

6. hexane (C_6H_{14}) + oxygen → carbon dioxide + water

   $2C_6H_{14} + 19O_2 \rightarrow 12CO_2 + 14H_2O$

7. ethene (C_2H_4) + oxygen → carbon dioxide + water

   $C_2H_4 + 3O_2 \rightarrow 2CO_2 + 2H_2O$

8. ethyne (C_2H_2) + oxygen → carbon dioxide + water

   $2C_2H_2 + 5O_2 \rightarrow 4CO_2 + 2H_2O$

9. benzene (C_6H_6) + oxygen → carbon dioxide + water

   $2C_6H_6 + 15O_2 \rightarrow 12CO_2 + 6H_2O$