

## Gas Stoichiometry – Practice Problems

- Carbon Monoxide reacts with Oxygen to produce Carbon Dioxide. If 1.0 L of carbon monoxide reacts with oxygen at STP,
  - How many liters of oxygen are required to react?
  - How many liters of carbon dioxide are produced?
- Acetylene gas (C<sub>2</sub>H<sub>2</sub>) undergoes combustion to produce Carbon Dioxide and Water vapor.
  - How many liters of C<sub>2</sub>H<sub>2</sub> are required to produce 75.0 L of CO<sub>2</sub>?
  - What volume of Water is produced?
  - What volume of O<sub>2</sub> is required?
- If liquid Carbon Disulfide (CS<sub>2</sub>) reacts with 450 mL of Oxygen to produce the gases Carbon Dioxide and Sulfur Dioxide, what volume of each product is produced?
- Assume that 5.60 L of Hydrogen Gas, at STP, reacts with Copper (II) Oxide according to the equation:
$$\text{CuO} + \text{H}_2 \rightarrow \text{Cu} + \text{H}_2\text{O}$$
  - How many moles of H<sub>2</sub> react?
  - How many moles of copper are produced?
  - How many grams of copper are produced?
- Assume that 8.5 L of Iodine gas (I<sub>2</sub>) are produced at STP according to the equation:
$$\text{KI} + \text{Cl}_2 \rightarrow \text{KCl} + \text{I}_2$$
  - How many moles of I<sub>2</sub> are produced?
  - How many moles of KI were used?
  - How many grams of KI were used?
- Solid Iron (III) Hydroxide decomposes to produce Iron (III) Oxide and water vapor. If 0.75 L of water are produced at STP,
  - How many grams of Iron (III) Hydroxide were used?
  - How many grams of Iron (III) Oxide were produced?
- Solid Iron reacts with Sulfuric Acid to produce Iron (II) Sulfate and Hydrogen Gas. If 650 mL of Hydrogen gas are collected at STP, how many grams of Iron (II) Sulfate are also produced?
- Assume that 13.5 g of solid Aluminum react with HCl according to the equation at STP:
$$\text{Al} + \text{HCl} \rightarrow \text{AlCl}_3 + \text{H}_2$$
  - How many moles of Al react?
  - How many moles of H<sub>2</sub> are produced?
  - How many liters of H<sub>2</sub> are produced?

