Molar Volume
Sample Problem

① Determine the volume, in liters, of 0.60 mol SO_2 gas at STP.

$$0.60 \text{ mol } SO_2 \times \frac{22.4 \text{ L}}{1 \text{ mol}} = 13 \text{ L } SO_2$$

② How many moles are in 2.75 L of CO_2 gas at STP?

$$2.75 \text{ L } CO_2 \times \frac{1 \text{ mol}}{22.4 \text{ L}} = 0.12 \text{ mol } CO_2$$

③ An unknown gas has a density of 1.964 g/L at STP. What is its molar mass?

$$\frac{1.964 \text{ g}}{\text{L}} \times \frac{22.4 \text{ L}}{1 \text{ mol}} = 44.0 \text{ g/mol}$$