

$$63) 2.00 \text{ L O}_2 \frac{1 \text{ mole O}_2}{22.4 \text{ L O}_2} \left| \frac{4 \text{ mol Al}}{3 \text{ mol O}_2} \right| \frac{26.98 \text{ g Al}}{1 \text{ mol Al}} = 3.21 \text{ g Al}$$



$$pV = nRT$$

$$(1.00 \text{ atm})(70.0 \text{ L}) = x \left( 0.0821 \frac{\text{atm}\cdot\text{L}}{\text{mol}\cdot\text{K}} \right) (273 \text{ K})$$

$$x = 3.12 \text{ mol N}_2$$

$$3.12 \text{ mol N}_2 \frac{2 \text{ mol Na}_2\text{N}_3}{3 \text{ mol N}_2} \left| \frac{65.02 \text{ g Na}_2\text{N}_3}{1 \text{ mol Na}_2\text{N}_3} \right| =$$

$$13 \text{ g Na}_2\text{N}_3$$

$$67) \quad PV = nRT$$

$$4800 \text{ m}^3 \left( \frac{100 \text{ cm}}{1 \text{ m}} \right)^3 \frac{1 \text{ L}}{1000 \text{ cm}^3} = 4.8 \times 10^6 \text{ L}$$

$$(1.00 \text{ atm})(4.8 \times 10^6 \text{ L}) = x \left( 0.0821 \frac{\text{atm} \cdot \text{L}}{\text{mol} \cdot \text{K}} \right) (273 \text{ K})$$

$$x = 2.1 \times 10^5 \text{ mol H}_2 \text{ in balloon}$$

$$2.1 \times 10^5 \text{ mole H}_2 \quad \frac{1.00 \text{ mol H}_2}{.80 \text{ mol H}_2} = 2.6 \times 10^5 \text{ mol H}_2$$

$$2.6 \times 10^5 \text{ mol H}_2 \quad \frac{1 \text{ mol Fe} \mid 55.85 \text{ g Fe}}{1 \text{ mol H}_2 \mid 1 \text{ mol Fe}} = 1.5 \times 10^7 \text{ g Fe}$$

$$2.6 \times 10^5 \text{ mol H}_2 \quad \frac{1 \text{ mole H}_2\text{SO}_4 \mid 98.09 \text{ g H}_2\text{SO}_4 \mid 100 \text{ g reas.}}{1 \text{ mole H}_2 \mid 1 \text{ mole H}_2\text{SO}_4 \mid 98 \text{ g H}_2\text{SO}_4} =$$

$$2.6 \times 10^7 \text{ g of } 98\% \text{ H}_2\text{SO}_4$$



$$PV = nRT$$

$$(0.500 \text{ atm})(20.0 \text{ L}) = x \left( 0.0821 \frac{\text{atm} \cdot \text{L}}{\text{mol} \cdot \text{K}} \right) (673 \text{ K})$$

$$x = 0.181 \text{ mol Xe} \quad \text{Xe} \neq 11 \text{ mol}$$

$$\text{mole F}_2 = \frac{3(0.181)}{2} = 0.543 \text{ mol F}_2$$

$$0.181 \text{ mol Xe} \quad \frac{1 \text{ mol XeF}_4 \mid 207.3 \text{ g XeF}_4}{1 \text{ mol Xe} \mid 1 \text{ mol Xe}} = 37.5 \text{ g XeF}_4$$