

SCH 3U REVIEW

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GASES p. 813

$$1 \quad V_1 P_1 = V_2 P_2$$

$$V_2 = \frac{(2.00 \text{ L})(98.0 \text{ kPa})}{82.0 \text{ kPa}}$$

$$= 2.39 \text{ L}$$

$$2 \quad \frac{V_1}{T_1} = \frac{V_2}{T_2}$$

$$V_2 = \frac{1.50 \text{ L}}{305 \text{ K}} \times 361 \text{ K}$$

$$= 1.78 \text{ L}$$

$$3 \quad \frac{P_1}{T_1} = \frac{P_2}{T_2}$$

$$\frac{135.0 \text{ kPa}}{298 \text{ K}} = \frac{P_2}{398 \text{ K}}$$

$$P_2 = 180.3 \text{ kPa}$$

$$4. \quad V_2 = V_1 \times \frac{T_2}{T_1} \times \frac{P_1}{P_2}$$

$$= 2.75 \text{ L} \times \left(\frac{310 \text{ K}}{295 \text{ K}} \right) \times \left(\frac{101.0 \text{ kPa}}{90.0 \text{ kPa}} \right)$$

$$= 3.24 \text{ L}$$

$$5. \quad V_2 = 1.00 \text{ L} \times \frac{273 \text{ K}}{295 \text{ K}} \times \frac{700.0 \text{ kPa}}{101.3 \text{ kPa}}$$

$$= 6.39 \text{ L}$$

$$6 \quad V = \frac{nRT}{P} = \frac{(2.50 \text{ mol})(8.314 \frac{\text{L kPa}}{\text{mol K}})(233 \text{ K})}{58.6 \text{ kPa}}$$

$$= 82.6 \text{ L}$$

7. $n(\text{CO}_2) = \frac{6.60 \text{ g}}{44 \text{ g/mol}}$
 $= 0.15 \text{ mol}$

$P = \frac{(0.15 \text{ mol})(8.314 \frac{\text{L kPa}}{\text{K mol}})(298 \text{ K})}{2.00 \text{ L}}$
 $= 185.8 \text{ kPa}$

8. $n = \frac{(450.0 \text{ kPa})(0.500 \text{ L})}{(8.314 \frac{\text{L kPa}}{\text{K mol}})(293 \text{ K})}$
 $= 0.092 \text{ mol Cl}_2$

mass = $(0.092 \text{ mol})(70.90 \text{ g/mol})$
 $= 6.52 \text{ g Cl}_2$

9. $n = \frac{240.0 \text{ g}}{2.016 \text{ g/mol}}$
 $= 119.0 \text{ mol}$

$V = \frac{(119.0 \text{ mol})(8.314 \frac{\text{L kPa}}{\text{K mol}})(273 \text{ K})}{101.3 \text{ kPa}}$
 $= 2667 \text{ L}$

10. $n = \frac{(101.3 \text{ kPa})(1.00 \text{ L})}{(8.314 \frac{\text{L kPa}}{\text{K mol}})(273 \text{ K})}$
 $= 0.0446 \text{ mol}$

MM = $\frac{1.25 \text{ g}}{0.0446 \text{ mol}}$
 $= 28.0 \text{ g/mol}$