

Exam Review Post 3:

1.) Use: $\frac{V_1}{T_1} = \frac{V_2}{T_2}$

$$\frac{30.0\text{L}}{358\text{K}} = \frac{45.0\text{L}}{X}$$

$$X = 537\text{K}$$

$$\text{in } ^\circ\text{C} = \boxed{264^\circ\text{C}}$$

2.) $\frac{8.5\text{L}}{455.0\text{K}} = \frac{X}{153.0\text{K}}$

$$X = 2.86\text{L}$$

3.) $(10.50\text{L})(203\text{kPa}) = X(101.3\text{kPa})$

$$X = 21\text{L}$$

4.) Convert grams to moles:

$$\frac{32 \text{ g } N_2}{28 \text{ g}} \times 1 \text{ mole} = 1.14 \text{ moles}$$

Now use $PV = nRT$

$$(5.12) X = (1.14)(0.0821)(291)$$

$$X = 5.3 \text{ L}$$

5.) First convert one of the pressures so both are the same unit.

$$\frac{1000 \text{ kPa}}{101.3 \text{ kPa}} \times 760 \text{ mmHg} = 7502 \text{ mmHg}$$

Now use $P_1 V_1 = P_2 V_2$

$$(7502)(1.5) = (1650)(X)$$

$$6.82 \text{ L} = X$$

6.) Helium is faster.

$$\frac{X}{1} = \frac{\sqrt{38}}{\sqrt{4}}$$

$$X = 3.08$$

13.) Sorry, out of order.

$$\frac{20}{1} = \frac{\sqrt{X}}{\sqrt{2}}$$

$$X = 800 \text{ g/mol}$$

$$7.) \quad \frac{X}{1} = \frac{\sqrt{44}}{\sqrt{2}}$$

$$X = 4.7$$

$$8.) \quad \text{Use } PV = nRT$$

$$(2.50)(0.100) = n(0.0821)(298)$$

$$n = 0.0102 \text{ moles}$$

$$9.) \quad \text{Use: } \frac{P_1 V_1}{T_1} = \frac{P_2 V_2}{T_2}$$

$$\frac{(760)(250)}{273} = \frac{(1020)X}{573}$$

$$391 \text{ mL} = X$$

$$10.) \quad \frac{(8.30)(920.0)}{(233)} = \frac{(760)X}{273}$$

$$X = 11.8 \text{ L}$$

11) use $P_1 V_1 = P_2 V_2$

$$(420)(90) = (8) X$$

$$4725 \text{ mL} = X$$

12) $\frac{(2500)(X)}{303} = \frac{283}{283}$

$$X = 2335 \text{ mL}$$

14) $\frac{(7.5)(1.7)}{(353)} = \frac{X(4)}{(363)}$

$$X = 3.28 \text{ L}$$

15 or 17) use $PV = nRT$

$$(250)(0.890) = n(62.4)(294)$$

$$n = 0.0121 \text{ moles}$$