

## Respostas da lista de gases

2ª lista

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1º)

$$\frac{P_1 V_1}{T_1} = \frac{P_2 V_2}{T_2} \Rightarrow \frac{P_1}{T_1} = \frac{P_2}{T_2}$$

$$T_1 = 20^\circ + 273 = 293 \text{ K} \quad \left\{ \begin{array}{l} \frac{P_1}{T_1} = \frac{P_2}{T_2} \Rightarrow P_1 = \frac{1295,06}{338} \\ P_1 = ? \end{array} \right.$$

$$T_2 = 65^\circ + 273 = 338 \text{ K}$$

$$P_2 = 65 \text{ PSI} \cdot 0,068 = 4,42 \text{ atm} \quad (P_1 = 3,83 \text{ atm})$$

2º)

a)

$$V_1 = 2 \text{ L}$$

$$T_1 = 25^\circ + 273 = 298 \text{ K}$$

$$P_1 = 1 \text{ atm}$$

$$V_2 = ?$$

$$T_2 = 17,5 + 273 = 290,5 \text{ K}$$

$$P_2 = 0,36 \text{ atm}$$

$$\left\{ \begin{array}{l} \frac{P_1 V_1}{T_1} = \frac{P_2 V_2}{T_2} = \frac{1 \cdot 2}{298} = \frac{0,36 \cdot V_2}{290,5} \\ \frac{581}{107,28} = \frac{107,28 V_2}{107,28} \end{array} \right.$$

$$V_2 = 5,41 \text{ L}$$

b)

$$d = \frac{P M}{R T} \Rightarrow \frac{0,36 \cdot 32}{0,082 \cdot 290,5}$$

$$P = 0,36 \text{ atm}$$

$$R = 0,082$$

$$T = 290,5 \text{ K}$$

$$M = 2,16 = 32 \text{ g/mol}$$

$$d = 0,48 \text{ g/L}$$

3º)

$$Pv = nRT$$

$$P = 2490 \text{ Psi} \Rightarrow 169,43 \text{ atm}$$

$$V = 30 \text{ L}$$

$$N = ?$$

$$R = 0,082$$

$$T = 25^\circ\text{C} + 273 = 298 \text{ K}$$

$$169,43 \cdot 30 = N \cdot 0,082 \cdot 298$$

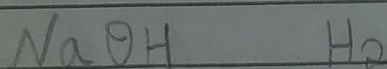
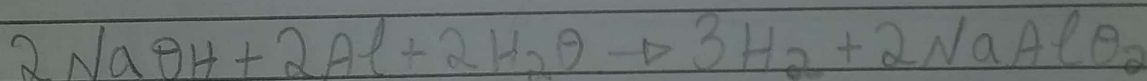
$$\frac{5082,9}{24,436} = \frac{N \cdot 24,436}{24,436}$$

$$N = 208 \text{ mols}$$

$$M = \frac{n}{V} \Rightarrow \frac{208}{30}$$

$$M = 6,93 \text{ g}$$

4º)



$$2 \quad - \quad 3$$

$$0,25 - x$$

$$x = \frac{0,25 \cdot 3}{2} \Rightarrow 0,375$$

$$Pv = nRT$$

$$P = 1 \text{ atm}$$

$$V = ?$$

$$1V = 0,375 \cdot 0,082 \cdot 298$$

$$n = 0,375$$

$$R = 0,082$$

$$T = 298$$

$$V = 9,16 \text{ L}$$



5.)

$$P_1 = 250 \text{ psi} = 17 \text{ atm}$$

$$V_1 = 1 \text{ L}$$

$$T_1 = 25^\circ\text{C} + 273 = 298 \text{ K}$$

$$P_2 = 2,5 \text{ atm}$$

$$V_2 = 2,5 \text{ L}$$

$$T_2 = ?$$

$$\frac{P_1 V_1}{T_1} = \frac{P_2 V_2}{T_2}$$

$$\frac{17 \cdot 1}{298} = \frac{2,5 \cdot 2,5}{T_2}$$

$$\frac{17 T_2}{17} = \frac{1862,5}{17}$$

$$T_2 = 109,55 \text{ K}$$