

(P17) (10) $V_1 = ?$ $T = 0^\circ\text{C} = 273\text{ K}$
 $V_2 = 482\text{ L}$ $T = 27^\circ\text{C} = 300\text{ K}$
 $+273$

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

$$\frac{273}{1} * \frac{V_1}{273} = \frac{482}{300} * \frac{273}{1}$$

438.62 L

Feb 26-9:40 AM

(8)

65 L, 52°C
72 L, Temp

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

$$\frac{65}{325} = \frac{72}{T}$$

$$T = \frac{(72)(325)}{65}$$

87°C $\rightarrow T = 360\text{ K}$

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Ideal Gas (comparative) only

Low P
High T = Avg KE
Large V
No mass

Does NOT EXIST

Move freely

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STP → Standard Temperature and Pressure.

TABLE (A) AT STP 1 mole GAS = 22.4 l

$T = 0^{\circ}\text{C}$ or 273 K

$P = 1 \text{ atm}, 760 \text{ mmHg}, 101.3 \text{ kPa}$
 760 torr

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Ideal Gas eqn

$$PV = nRT$$

← Temp in KELVIN !
 ↑ Pressure
 ↑ Volume
 ↑ # Moles

UNIVERSAL Gas Constant

0.08206 $\frac{\text{L} \cdot \text{atm}}{\text{mole} \cdot \text{K}}$

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$$\frac{PV}{nT} = \frac{nRT}{nT}$$

$$R = \frac{PV}{nT} = \frac{\text{atm} \cdot \text{L}}{\text{mole} \cdot \text{K}}$$

0.08206

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$4\text{Fe} + 3\text{O}_2 \rightarrow 2\text{Fe}_2\text{O}_3$
 $\text{298K} = 25^\circ\text{C}$
 200 kPa
 25L
 214 g

$\frac{200\text{ kPa}}{1\text{ atm}} \cdot \frac{1\text{ atm}}{101.3} = 1.97\text{ atm}$

$\frac{2.014\text{ mol O}_2}{3\text{ mol O}_2} \cdot \frac{2\text{ mol Fe}_2\text{O}_3}{1\text{ mol Fe}_2\text{O}_3} = 140\text{ g Fe}_2\text{O}_3$

$PV = nRT$

$n = \frac{PV}{RT} = \frac{(1.97)(25)}{(0.08206)(298)} = 2.014\text{ mol O}_2$

Feb 26-9:57 AM

P21 / 1.3.5

Feb 26-10:03 AM