

SANGAM SKM COLLEGE – NADI

YEAR 13

CHEMISTRY

2021

WORKSHEET 5

Questions: Ideal Gas

1. If I have 72 liters of gas held at a pressure of 3.4 atm and a temperature of 225 K, how many moles of gas do I have?

$$PV = nRT$$

$$n = \frac{RT}{PV} = \frac{.0821 \frac{\text{atm} \cdot \text{L}}{\text{mol} \cdot \text{K}} \cdot 225 \text{ K}}{72 \text{ L} \cdot 3.4 \text{ atm}}$$

$$n = 0.07546 \text{ mol}$$

2. If I have 0.275 moles of gas at a temperature of 75 K and a pressure of 1.75 atmospheres, what is the volume of the gas?

$$PV = nRT$$
$$V = \frac{nRT}{P} = \frac{.275 \text{ mol} \cdot .0821 \frac{\text{atm} \cdot \text{L}}{\text{mol} \cdot \text{K}} \cdot 75 \text{ K}}{1.75 \text{ atm}}$$

$$V = 0.9676 \text{ L}$$

3. If I have 4 moles of a gas at a pressure of 5.6 atm and a volume of 12 liters, what is the temperature?

$$PV = nRT$$
$$T = \frac{PV}{nR} = \frac{(5.6 \text{ atm})(12 \text{ L})}{4 \text{ mol} \cdot 0.0821 \frac{\text{atm} \cdot \text{L}}{\text{mol} \cdot \text{K}}}$$

$$T = 204.63 \text{ K}$$