THE IDEAL GAS LAW and DENSITY

\[ PV = nRT \]
where

- \( P \) = pressure in atmosphere
- \( V \) = volume in liters
- \( n \) = number of moles of gas
- \( R \) = Universal Gas Constant = 0.0821 L·atm/mol·K
- \( T \) = Kelvin temperature

1. How many moles of oxygen will occupy a volume of 2.50 liters at 1.20 atm and 25 °C?

2. What volume will 2.00 moles of nitrogen occupy at 720. torr and 20.°C?

3. What pressure will be exerted by 25.0 g of CO\(_2\) at temperature of 25 °C and a volume of 500. mL?

4. At what temperature will 5.00 g of Cl\(_2\) exert a pressure of 900. torr at a volume of 750. mL?

5. What is the density of NH\(_3\) at 800. torr and 25 °C?

6. If the density of a gas is 1.2 g/L at 745 torr and 20.°C, what is its molar mass?

7. How many moles of nitrogen gas will occupy a volume of 347 mL at 6680 torr and 27 °C?

8. What volume will 454 grams (1 lb) of hydrogen occupy at 1.05 atm and 25 °C?

9. Find the number of grams of CO\(_2\) that exert a pressure of 785 torr at a volume of 32.5 L and a temperature of 32 °C.

10. An elemental gas has a mass of 10.3 g. If the volume is 58.4 L and the pressure is 758 torr at a temperature of 2.5 °C, what is the gas?