

Example:

Q2. A gas occupies 10 liters at a pressure of 1 atm. If the pressure is increased to 2 atm at constant temperature, what is the new volume?

- a) 5 liters
- b) 10 liters
- c) 20 liters
- d) 4 liters

Solution: Using $PV = \text{constant}$,

Initial: $P_1 = 1 \text{ atm}$, $V_1 = 10 \text{ L}$

Final: $P_2 = 2 \text{ atm}$, $V_2 = ?$

$$P_1 V_1 = P_2 V_2 \rightarrow 1 \times 10 = 2 \times V_2 \rightarrow V_2 = \frac{10}{2} = 5 \text{ L}$$

Correct Answer: a) 5 liters

- Application and Scenario-Based Questions

These involve real-world contexts or experimental setups.

Example:

Q3. In an experiment, a sealed syringe contains 50 mL of air at 1 atm pressure. When the piston is pushed in, the pressure increases to 3 atm. What is the new volume of air?

- a) 150 mL
- b) 50 mL
- c) 16.7 mL
- d) 100 mL

