

Gas Laws

Chapter 7: Gas Laws · Topic 1

Key Concept

Boyle's Law states that at constant temperature, pressure and volume of a gas are inversely proportional ($P_1V_1 = P_2V_2$).

Charles's Law states that at constant pressure, volume and temperature of a gas are directly proportional ($V_1/T_1 = V_2/T_2$).

The combined gas law merges these relationships, showing how pressure, volume, and temperature relate together for a fixed amount of gas.

Understanding gas laws helps explain everyday phenomena, like why a balloon expands when heated, or why tyres need adjusted pressure in different weather.

Quick Revision Notes

- Boyle's Law: $P_1V_1 = P_2V_2$ (constant temperature).
- Pressure and volume are inversely proportional.
- Charles's Law: $V_1/T_1 = V_2/T_2$ (constant pressure).
- Volume and temperature are directly proportional.
- Combined gas law merges these relationships.
- It applies to a fixed amount of gas.
- This explains balloon expansion when heated.
- It also explains tyre pressure changes with weather.

Practice Questions

- 1 Apply Boyle's Law to calculate a new pressure given volume changes.
- 2 Apply Charles's Law to calculate a new volume given temperature changes.
- 3 Discuss why a balloon expands when heated.
- 4 Research why tyre pressure changes in different weather.
- 5 Solve a gas law problem.
- 6 Explain the combined gas law in your own words.