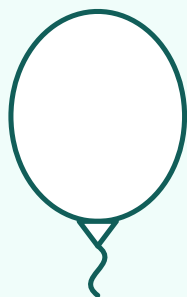


The Gas Laws

10th Grade

Three relationships between pressure, volume and temperature.



The behaviour of a gas is described by how pressure, volume and temperature trade against each other.

COMBINED LAW

$$P_1V_1/T_1 = P_2V_2/T_2$$

- Boyle's law: pressure and volume are inversely proportional at fixed temperature.
- Charles's law: volume and temperature are directly proportional at fixed pressure.
- Gay-Lussac's law: pressure and temperature are directly proportional at fixed volume.
- Temperature must always be in kelvin: $K = ^\circ C + 273$.
- The combined gas law contains all three.

LOOK FOR IT

Squeeze a sealed syringe and the pressure rises as the volume falls — Boyle's law.

Using celsius makes ratios meaningless, because $0^\circ C$ is not zero heat. Kelvin starts at absolute zero.