

Boyle's law

The pressure of a gas increases when you squeeze it into a smaller volume. Using the apparatus shown, you can investigate exactly how the pressure relates to the volume.

Careful experiments show that, for most gases, the pressure of a fixed mass of gas at a constant temperature multiplied by its volume is always constant.

$$PV = \text{constant}$$

This is known as Boyle's law. It can be written as:

$$P = \frac{\text{constant}}{V}$$

or

$$P_1V_1 = P_2V_2$$

For a gas that obeys Boyle's law, a graph of P against $1/V$ is a straight line.