IGCSE Physics (9-1) Specification 5(d)

(d) Ideal gas molecules

Students should:

5.15 explain how molecules in a gas have random motion and that they exert a force and hence a pressure on the walls of a container

5.16 understand why there is an absolute zero of temperature which is –273 °C

5.17 describe the Kelvin scale of temperature and be able to convert between the Kelvin and Celsius scales

5.18 understand why an increase in temperature results in an increase in the average speed of gas molecules

5.19 know that the Kelvin temperature of a gas is proportional to the average kinetic energy of its molecules

5.20 explain, for a fixed amount of gas, the qualitative relationship between:

- pressure and volume at constant temperature
- pressure and Kelvin temperature at constant volume.

5.21 use the relationship between the pressure and Kelvin temperature of a fixed mass of gas at constant volume:

$$\frac{p_1}{T_1} = \frac{p_2}{T_2}$$

5.22 use the relationship between the pressure and volume of a fixed mass of gas at constant temperature:

$$p_1V_1 = p_2V_2$$

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