

**12** The density of an ideal gas is  $1.2 \text{ kg m}^{-3}$  at a pressure of  $1.0 \times 10^5 \text{ Pa}$ .

What is the root-mean-square (r.m.s.) speed of the molecules of the gas?

**A**  $350 \text{ m s}^{-1}$

**B**  $500 \text{ m s}^{-1}$

**C**  $3700 \text{ m s}^{-1}$

**D**  $2.50 \times 10^5 \text{ m s}^{-1}$

**13** A fixed mass of an ideal gas undergoes a cycle PQRQ of changes, as shown below.