

1 Physical quantities and units – Part 1

—Answers

Answers

Work through these after you have tried the questions yourself.

2.1 A **unit** (it has a number but no unit).

2.2 (a) kilogram, kg \ (b) metre, m \ (c) second, s.

2.3 $\frac{\text{distance}}{\text{time}} = \frac{\text{m}}{\text{s}} = \text{m s}^{-1}$.

2.4 (a) $3 \times 10^3 \text{ m}$ \ (b) $25 \times 10^{-3} = 2.5 \times 10^{-2} \text{ m}$ \ (c) $7 \times 10^{-6} \text{ m}$.

2.5 m has unit kg; v^2 has unit $(\text{m s}^{-1})^2 = \text{m}^2 \text{s}^{-2}$. Together mv^2 is $\text{kg m}^2 \text{s}^{-2} = \text{J}$. The $\frac{1}{2}$ has no unit, so both sides are joules —homogeneous.

2.6 (a) scalar \ (b) vector \ (c) scalar \ (d) vector.

2.7 $R = \sqrt{1.2^2 + 0.5^2} = \sqrt{1.44 + 0.25} = \sqrt{1.69} = 1.3 \text{ m s}^{-1}$.