

- 1 Decimal sub-multiples and multiples of units are indicated using a prefix to the unit. For example, the prefix milli (m) represents  $10^{-3}$ .

Which of the following gives the sub-multiples or multiples represented by pico (p) and giga (G)?

	pico (p)	giga (G)
<b>A</b>	$10^{-9}$	$10^9$
<b>B</b>	$10^{-9}$	$10^{12}$
<b>C</b>	$10^{-12}$	$10^9$
<b>D</b>	$10^{-12}$	$10^{12}$

- 2 A metal sphere of radius  $r$  is dropped into a tank of water. As it sinks at speed  $v$ , it experiences a drag force  $F$  given by  $F = kr v$ , where  $k$  is a constant.

What are the SI base units of  $k$ ?

- A**  $\text{kg m}^2 \text{s}^{-1}$       **B**  $\text{kg m}^{-2} \text{s}^{-2}$       **C**  $\text{kg m}^{-1} \text{s}^{-1}$       **D**  $\text{kg m s}^{-2}$

- 3 An Olympic athlete of mass 80 kg competes in a 100 m race.

What is the best estimate of his mean kinetic energy during the race?

- A**  $4 \times 10^2 \text{ J}$       **B**  $4 \times 10^3 \text{ J}$       **C**  $4 \times 10^4 \text{ J}$       **D**  $4 \times 10^5 \text{ J}$

- 4 In an experiment, a radio-controlled car takes  $2.50 \pm 0.05 \text{ s}$  to travel  $40.0 \pm 0.1 \text{ m}$ .

What is the car's average speed and the uncertainty in this value?

- A**  $16 \pm 1 \text{ m s}^{-1}$   
**B**  $16.0 \pm 0.2 \text{ m s}^{-1}$   
**C**  $16.0 \pm 0.4 \text{ m s}^{-1}$   
**D**  $16.00 \pm 0.36 \text{ m s}^{-1}$