

1 Which is an SI base unit?

- A current
- B gram
- C kelvin
- D volt

2 Which pair contains one vector and one scalar quantity?

- A displacement      acceleration
- B force              kinetic energy
- C momentum      velocity
- D power             speed

3 When a constant braking force is applied to a vehicle moving at speed  $v$ , the distance  $d$  moved by the vehicle in coming to rest is given by the expression

$$d = kv^2$$

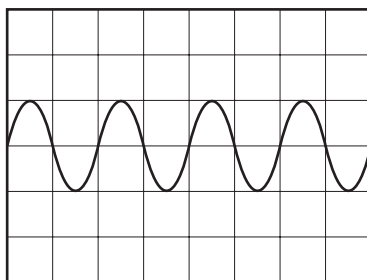
where  $k$  is a constant.

When  $d$  is measured in metres and  $v$  is measured in metres per second, the constant has a value of  $k_1$ .

What is the value of the constant when the distance is measured in metres, and the speed is measured in kilometres per hour?

- A  $0.0772 k_1$       B  $0.278 k_1$       C  $3.60 k_1$       D  $13.0 k_1$

4 A whale produces sound waves of frequency 5 Hz. The waves are detected by a microphone and displayed on an oscilloscope.



What is the time-base setting on the oscilloscope?

- A  $0.1 \text{ ms div}^{-1}$       B  $1 \text{ ms div}^{-1}$       C  $10 \text{ ms div}^{-1}$       D  $100 \text{ ms div}^{-1}$