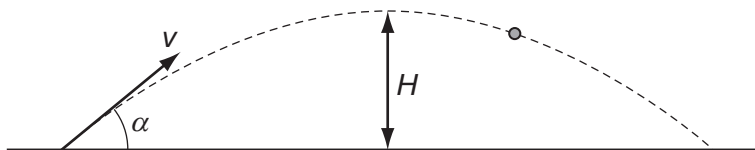


- 1 Which pair of quantities contains one vector and one scalar quantity?
- A** displacement; force
B kinetic energy; power
C acceleration; momentum
D velocity; distance
- 2 One property Q of a material is used to describe the behaviour of sound waves in the material. Q is defined as the pressure P of the sound wave divided by the speed v of the wave and the surface area A of the material through which the wave travels:

$$Q = \frac{P}{vA}.$$

What are the SI base units of Q ?

- A** $\text{kg m}^2 \text{s}^{-3}$ **B** $\text{kg m}^{-3} \text{s}^{-1}$ **C** $\text{kg m}^{-4} \text{s}^{-1}$ **D** $\text{kg m}^{-2} \text{s}^{-2}$
- 3 A cannon fires a cannonball with an initial speed v at an angle α to the horizontal.



Which equation is correct for the maximum height H reached?

- A** $H = \frac{v \sin \alpha}{2g}$ **B** $H = \frac{g \sin \alpha}{2v}$ **C** $H = \frac{(v \sin \alpha)^2}{2g}$ **D** $H = \frac{g^2 \sin \alpha}{2v}$

Space for working