

- 2 (a) Define displacement from a point.

..... [1]

- (b) An object is projected horizontally at a speed of 6.0 m s^{-1} from a slope, as shown in Fig. 2.1.

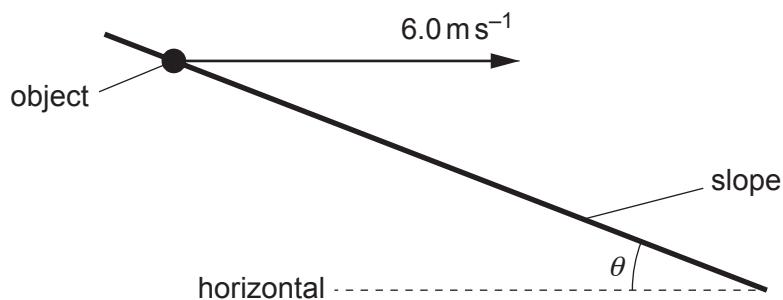


Fig. 2.1 (not to scale)

The slope is at an angle θ to the horizontal. Air resistance is negligible.

The object lands on the slope a time of 0.71 s later and stops without rolling or bouncing.

- (i) Determine the horizontal distance travelled by the object.

distance = m [1]

- (ii) Determine the vertical distance travelled by the object.

distance = m [2]

- (iii) Use your answers in (b)(i) and (b)(ii) to calculate θ .

$$\theta = \dots \text{ } ^\circ [2]$$

- (iv) Determine the magnitude of the displacement of the object from its original position.

$$\text{displacement} = \dots \text{ } \text{m} [2]$$

- (v) By considering energy, calculate the speed of the object just before it lands.

$$\text{speed} = \dots \text{ } \text{ms}^{-1} [3]$$