

- 2 (a) Explain what is meant by a *scalar* quantity and by a *vector* quantity.

scalar:

.....

vector:

.....

[2]

- (b) A ball leaves point P at the top of a cliff with a horizontal velocity of 15 m s^{-1} , as shown in Fig. 2.1.

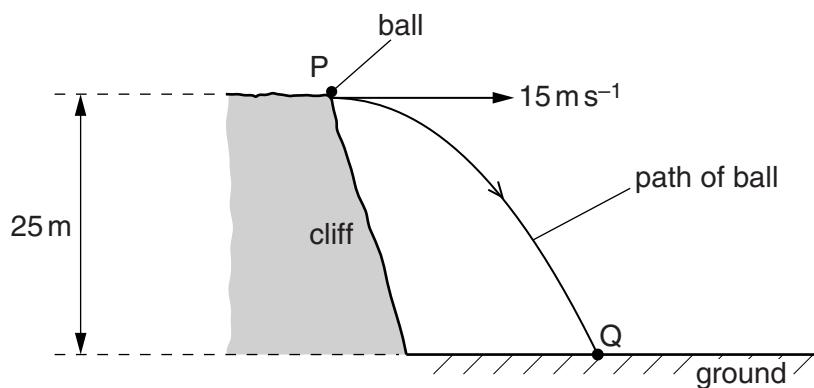


Fig. 2.1

The height of the cliff is 25 m. The ball hits the ground at point Q.
Air resistance is negligible.

- (i) Calculate the vertical velocity of the ball just before it makes impact with the ground at Q.

$$\text{vertical velocity} = \dots \text{ m s}^{-1} \quad [2]$$

- (ii) Show that the time taken for the ball to fall to the ground is 2.3 s.

[1]

- (iii) Calculate the magnitude of the displacement of the ball at point Q from point P.

displacement = m [4]

- (iv) Explain why the distance travelled by the ball is different from the magnitude of the displacement of the ball.

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.....
.....

[2]