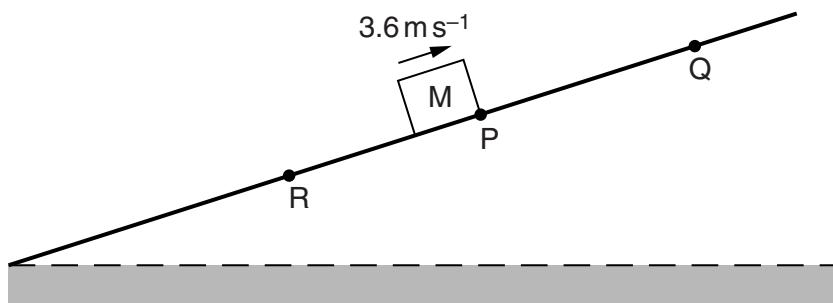


- 2 Fig. 2.1 shows an object M on a slope.



**Fig. 2.1**

M moves up the slope, comes to rest at point Q and then moves back down the slope to point R.  
M has a constant acceleration of  $3.0 \text{ m s}^{-2}$  down the slope at all times.

At time  $t = 0$ , M is at point P and has a velocity of  $3.6 \text{ m s}^{-1}$  up the slope.  
The total distance from P to Q and then to R is 6.0 m.

- (a)** Calculate, for the motion of M from P to Q,

- (i) the time taken,

$$\text{time} = \dots \text{ s} \quad [2]$$

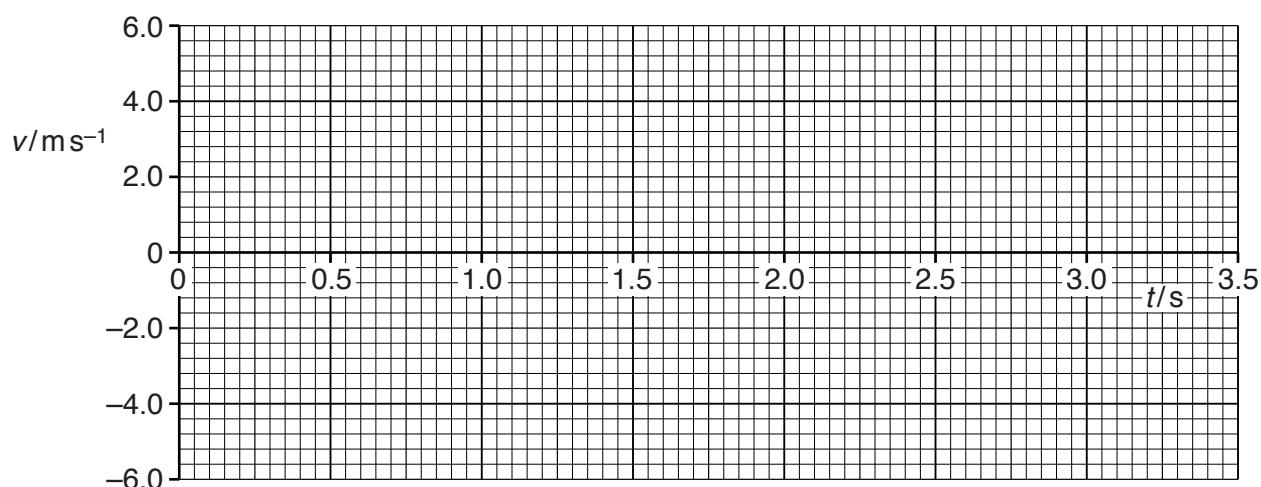
- (ii) the distance travelled.

$$\text{distance} = \dots \text{ m} \quad [1]$$

- (b)** Show that the speed of M at R is  $4.8 \text{ m s}^{-1}$ .

[2]

- (c) On Fig. 2.2, draw the variation with time  $t$  of the velocity  $v$  of M for the motion P to Q to R.



**Fig. 2.2**

[3]

- (d) The mass of M is 450 g.

Calculate the difference in the kinetic energy of M at P and at R.

difference in kinetic energy = ..... J [2]