2 The variation with time t of the velocity v of a ball is shown in Fig. 2.1.

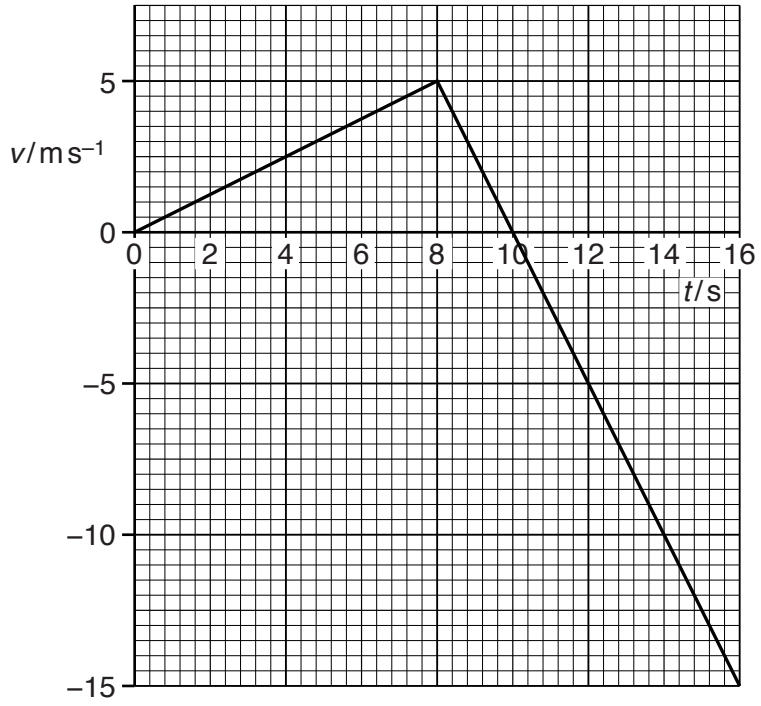

Fig. 2.1

The ball moves in a straight line from a point P at $t = 0$. The mass of the ball is 400 g.

(a) Use Fig. 2.1 to describe, without calculation, the velocity of the ball from $t = 0$ to $t = 16$ s.

.....

.....

.....

.....

.....[2]

(b) Use Fig. 2.1 to calculate, for the ball,

(i) the displacement from P at $t = 10\,s$,

displacement = ... m [2]

(ii) the acceleration at $t = 10\,s$,

acceleration = ... $m\,s^{-2}$ [2]

(iii) the maximum kinetic energy.

kinetic energy = ... J [2]

(c) Use your answers in **(b)(i)** and **(b)(ii)** to determine the time from $t = 0$ for the ball to return to P.

time = ... s [2]