

2 (a) Define linear momentum.

.....
 [1]

(b) A car of mass 1800 kg is moving in a straight line. Fig. 2.1 shows the variation with time t of the momentum p of the car.

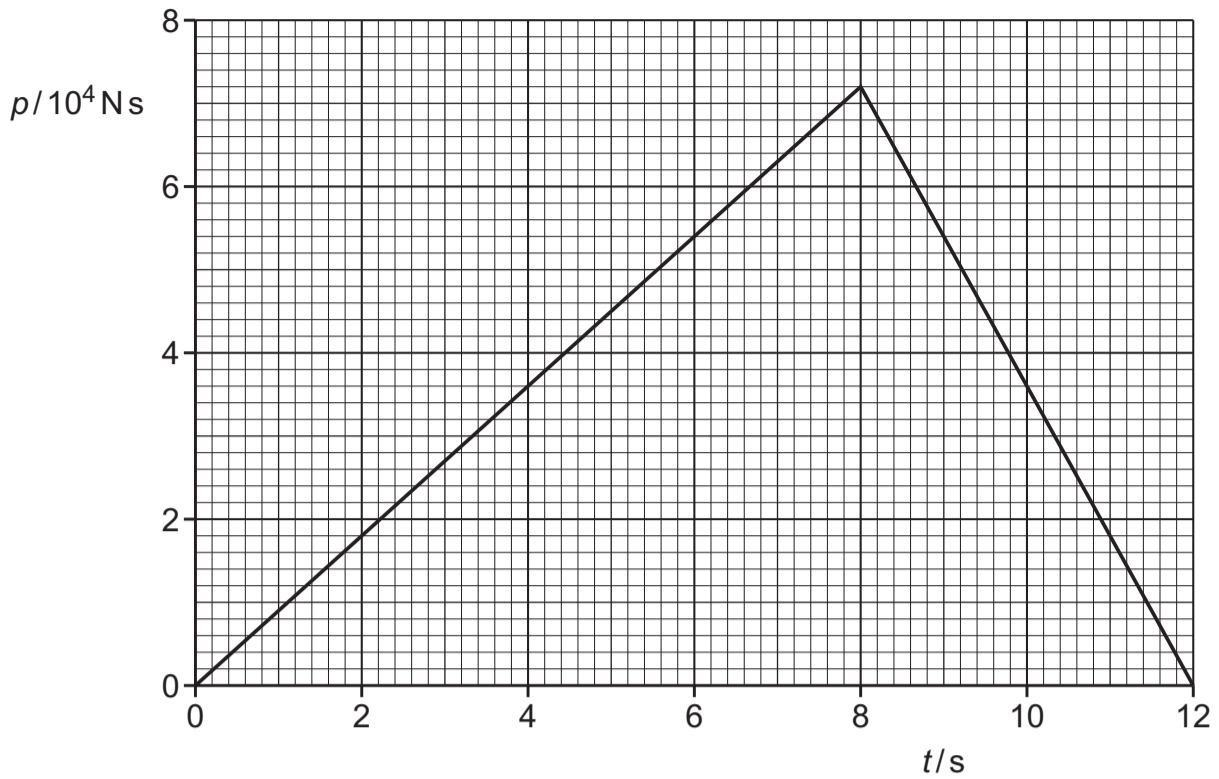


Fig. 2.1

(i) Calculate the maximum speed reached by the car.

maximum speed = ms^{-1} [1]

(ii) Calculate the maximum kinetic energy of the car.

maximum kinetic energy = J [2]

(iii) Show that the acceleration of the car at time $t = 4.0 \text{ s}$ is 5.0 ms^{-2} .

[2]

(iv) Determine the distance travelled by the car between times $t = 0$ and $t = 12.0 \text{ s}$.

distance = m [2]

(c) On Fig. 2.2, sketch the variation with time t of the acceleration a of the car in (b) from $t = 0$ to $t = 12.0 \text{ s}$.

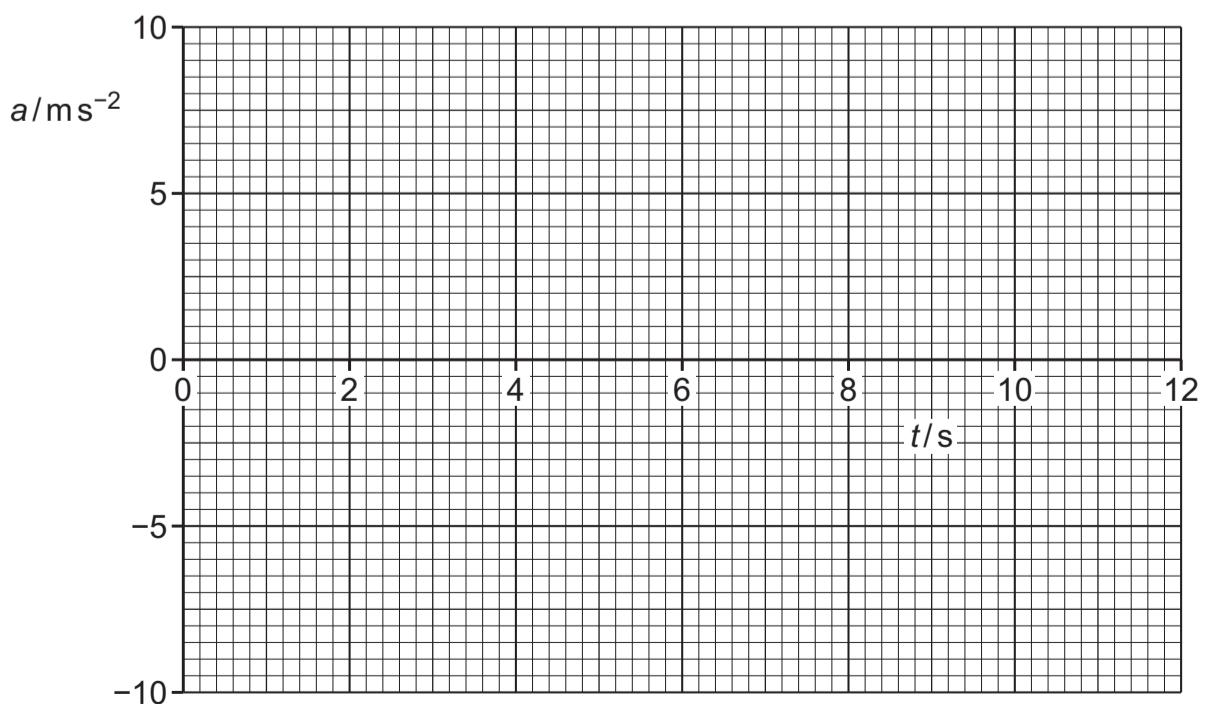


Fig. 2.2

[3]