

- 2 The variation with time t of the velocity v of two cars P and Q is shown in Fig. 2.1.

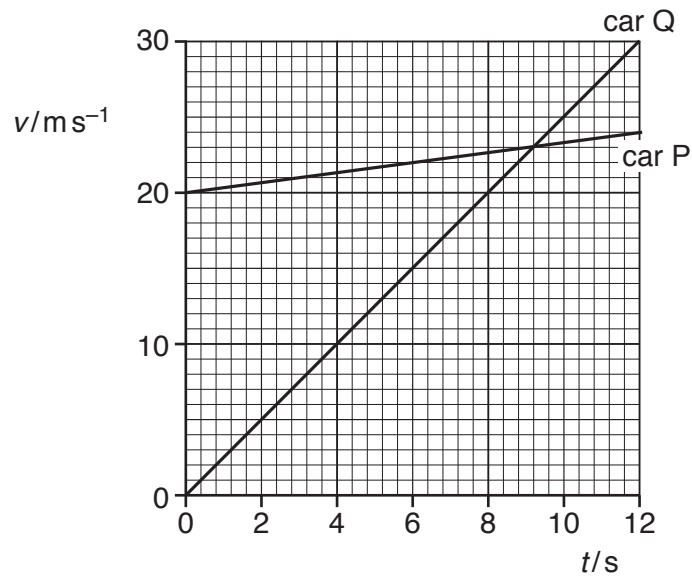


Fig. 2.1

The cars travel in the same direction along a straight road.
Car P passes car Q at time $t = 0$.

- (a) The speed limit for cars on the road is 100 km h^{-1} . State and explain whether car Q exceeds the speed limit.

.....[1]

- (b) Calculate the acceleration of car P.

acceleration = ms^{-2} [2]

- (c) Determine the distance between the two cars at time $t = 12\text{ s}$.

distance = m [3]

- (d) From time $t = 12\text{ s}$, the velocity of each car remains constant at its value at $t = 12\text{ s}$.

Determine the time t at which car Q passes car P.

$t =$ s [2]

[Total: 8]