

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

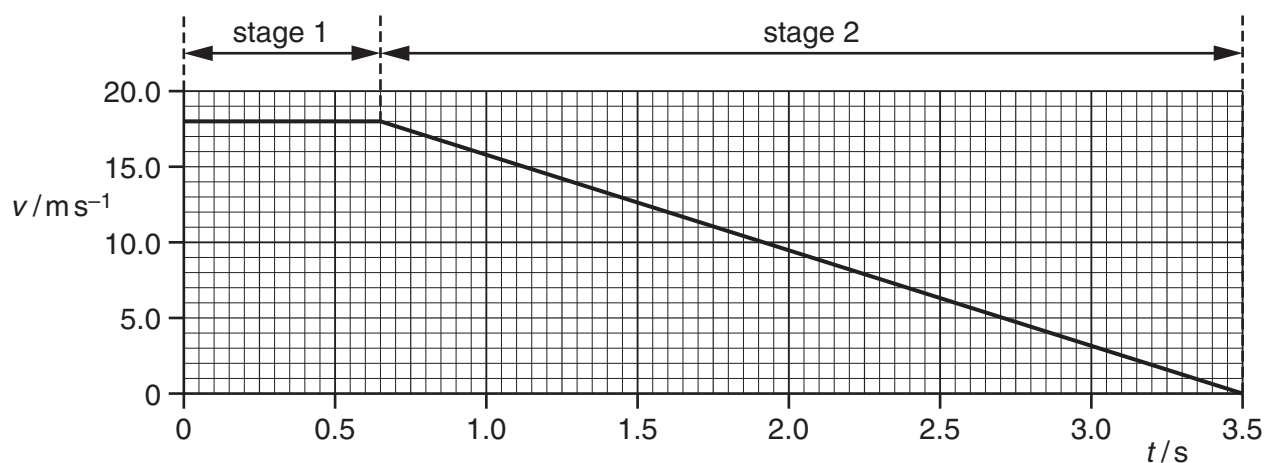


Fig. 2.1

At time $t = 0$, the driver sees an obstacle in the road. A short time later, the driver applies the brakes. The car travels in two stages, as shown in Fig. 2.1.

(a) Fig. 2.1 to describe the velocity of the car in

1. stage 1,

.....
.....[1]

2. stage 2.

.....
.....[1]

(b) (i) Calculate the distance travelled by the car from $t = 0$ to $t = 3.5$ s.

total distance = m [2]

- (ii) The car has a total mass of 1250 kg. Determine the total resistive force acting on the car in stage 2.

force = N [3]

- (c) safety reasons drivers are asked to travel at lower speeds. each stage, describe and explain the effect on the distance travelled for the same car and driver travelling at half the initial speed shown in Fig. 2.1.

- (i) stage 1:

.....
.....
.....[1]

- (ii) stage 2:

.....
.....
.....
.....[2]