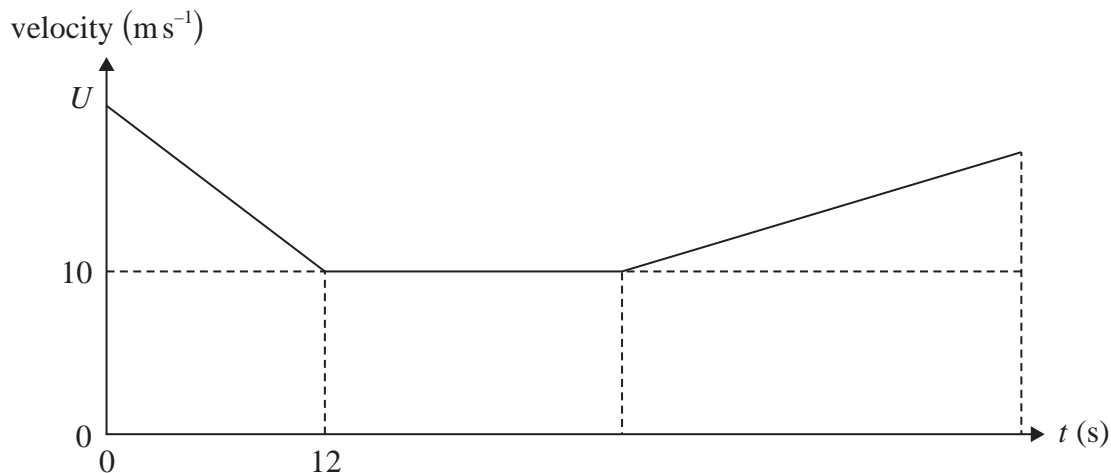**2.**

Figure 1

A car moves along a straight horizontal road.
The points *A* and *B* are on the road.
Figure 1 shows a velocity-time graph for the motion of the car between *A* and *B*,

- at time $t = 0$, the car passes through *A* with a speed of $U\,\text{m s}^{-1}$

- the car then decelerates at $0.5\,\text{m s}^{-2}$ for 12 s down to a speed of $10\,\text{m s}^{-1}$

- the car then moves at a constant speed of $10\,\text{m s}^{-1}$ for 18 s

- the car then accelerates at $0.25\,\text{m s}^{-2}$ for 20 s, arriving at *B*

(a) Find the value of *U*.

(3)

(b) Find the distance *AB*.

(4)