









The diagram shows a velocity-time graph which models the motion of a car. The graph consists of six straight line segments. The car accelerates from rest to a speed of  $20 \text{ m s}^{-1}$  over a period of 5 s, and then travels at this speed for a further 20 s. The car then decelerates to a speed of  $6 \text{ m s}^{-1}$  over a period of 5 s. This speed is maintained for a further  $(T - 30)$  s. The car then accelerates again to a speed of  $20 \text{ m s}^{-1}$  over a period of  $(50 - T)$  s, before decelerating to rest over a period of 10 s.

- (a) Given that during the two stages of the motion when the car is accelerating, the accelerations are equal, find the value of  $T$ . [2]

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- (b) Find the total distance travelled by the car during the motion. [2]

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