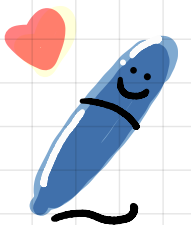


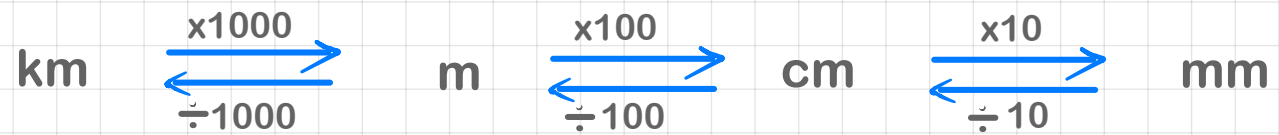
3.8) Motion Graphs



Motion Graphs

Review : Units

Distance



Time



Motion Graphs

Distance-Time Graphs

Distance \longrightarrow Graph

Speed at $t = \dots \longrightarrow$ Gradient of graph

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

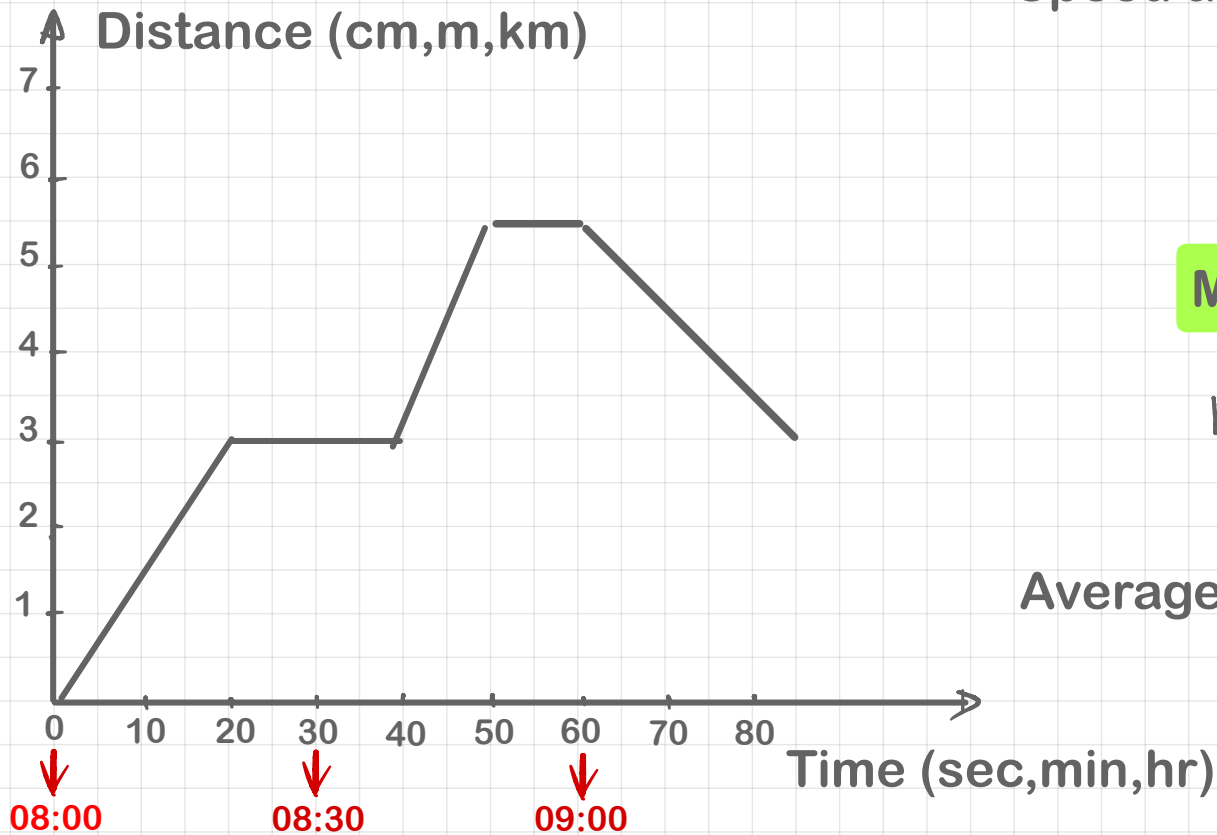
More gradient = More speed

$$m = 20$$

$$m = -20$$

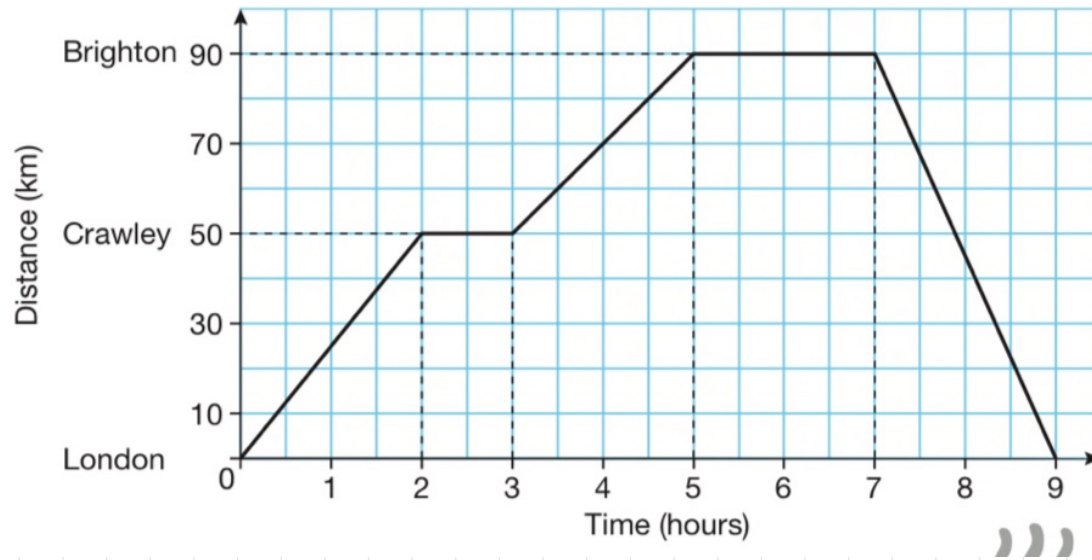
$$m = 50$$

Average speed \longrightarrow $\frac{\text{Total distance}}{\text{Total time}}$



Motion Graphs

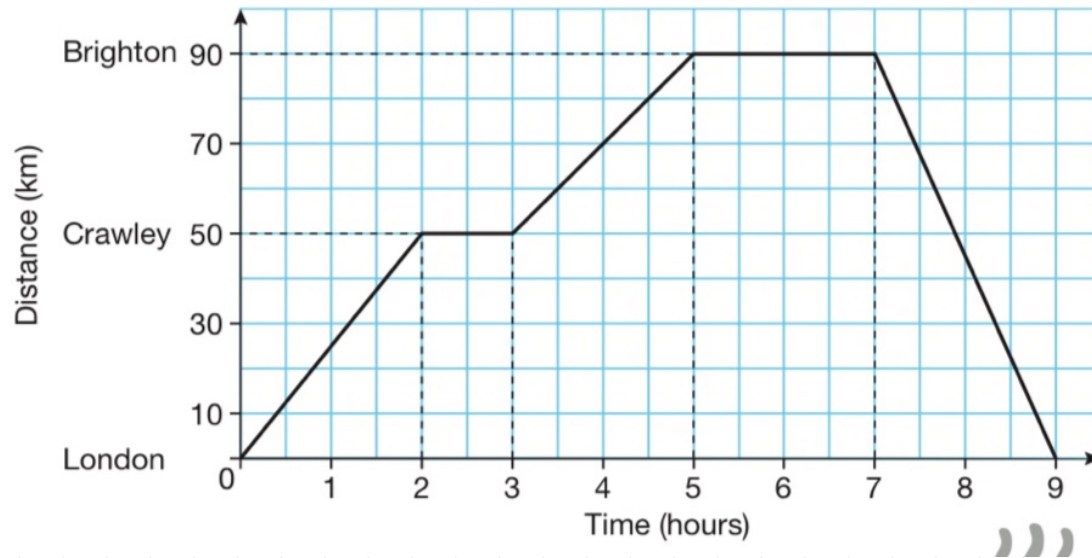
A car goes from London to Brighton for a car show, and then return to London.



1) How long does the car stop for a car show at Brighton.

Motion Graphs

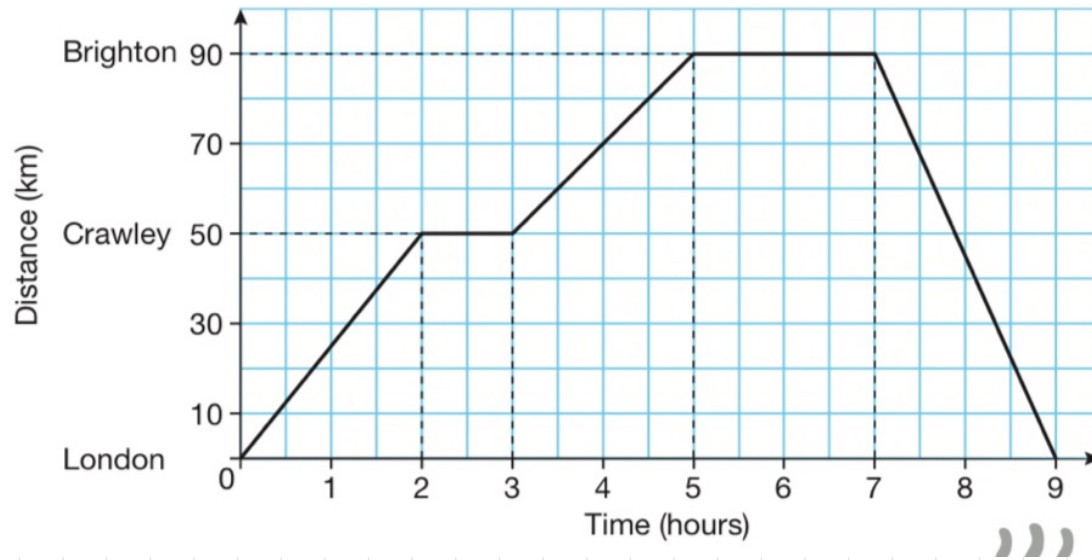
A car goes from London to Brighton for a car show, and then return to London.



2) What is the speed of the car from Crawley to Brighton.

Motion Graphs

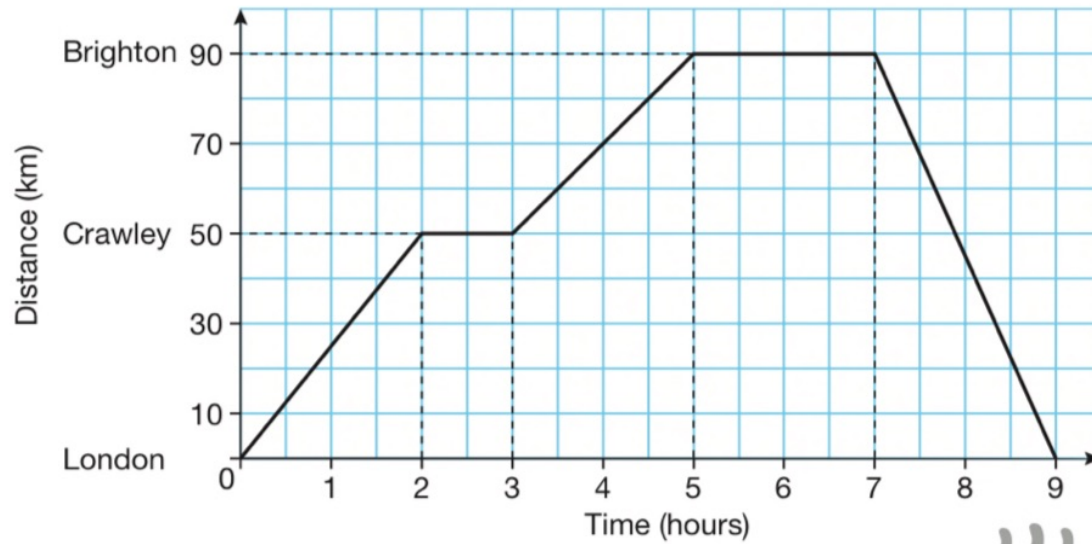
A car goes from London to Brighton for a car show, and then return to London.



3) What is the speed of the car from Brighton to London.

Motion Graphs

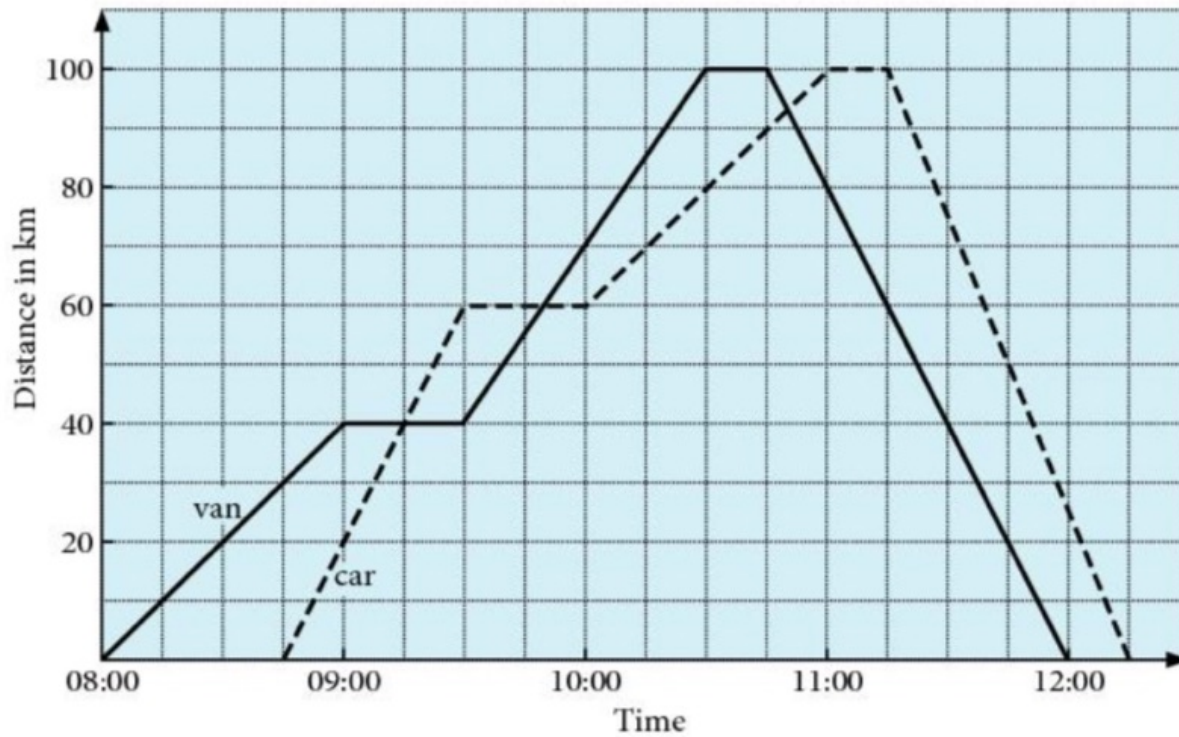
A car goes from London to Brighton for a car show, and then return to London.



4) Find average speed for the travel.

Motion Graphs

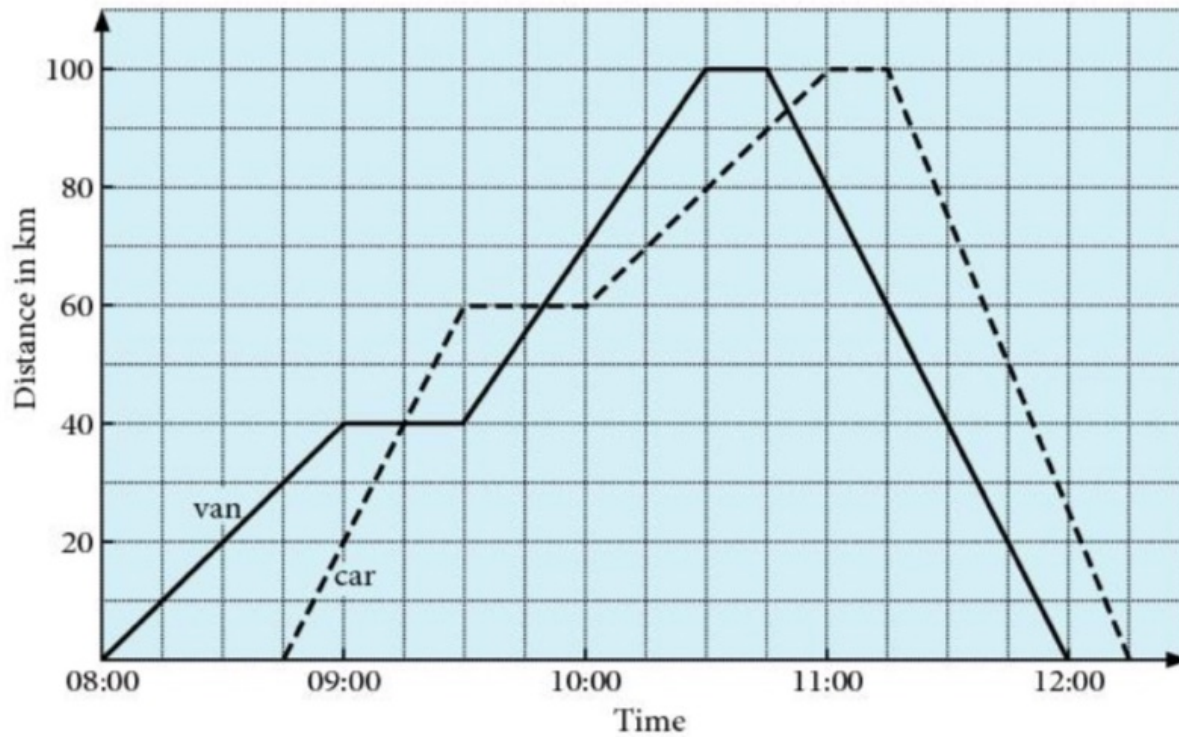
The graph shows the journeys made by a van and a car starting at London, travelling to Brighton and returning to London.



1) What time did the car first overtake the van?

Motion Graphs

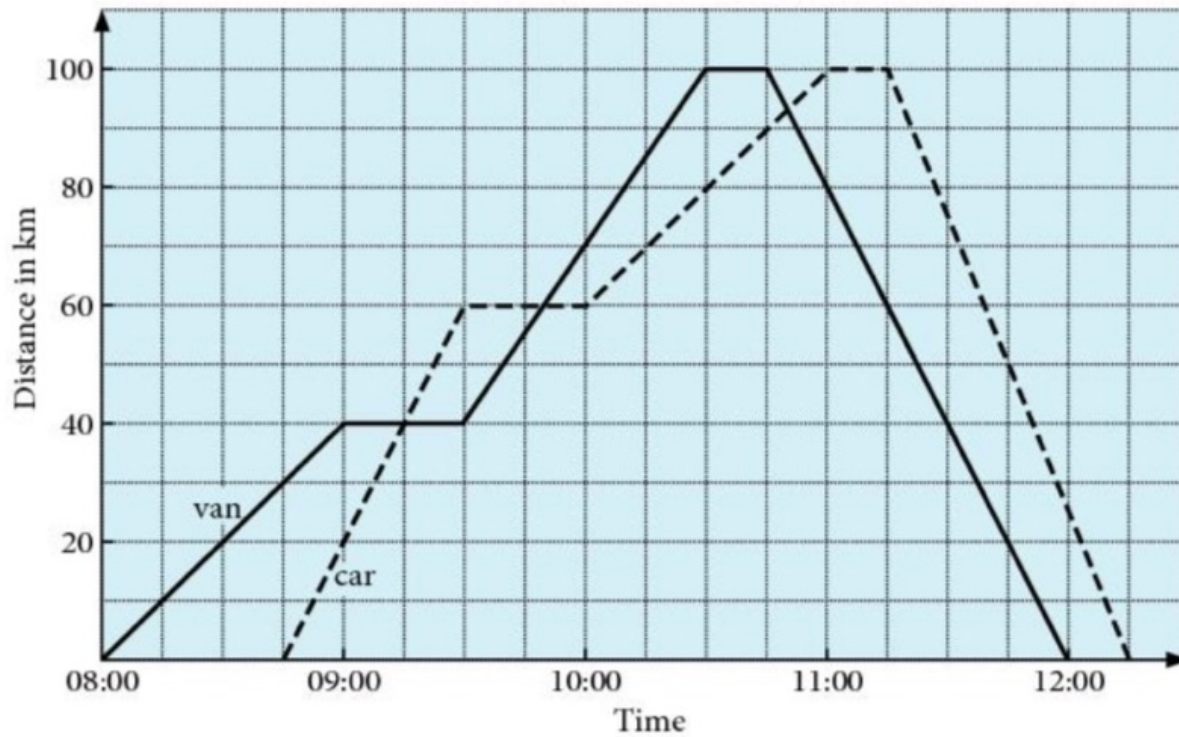
The graph shows the journeys made by a van and a car starting at London, travelling to Brighton and returning to London.



2) What speed was the van travelling between 09:30 and 10:00? (km/hr)

Motion Graphs

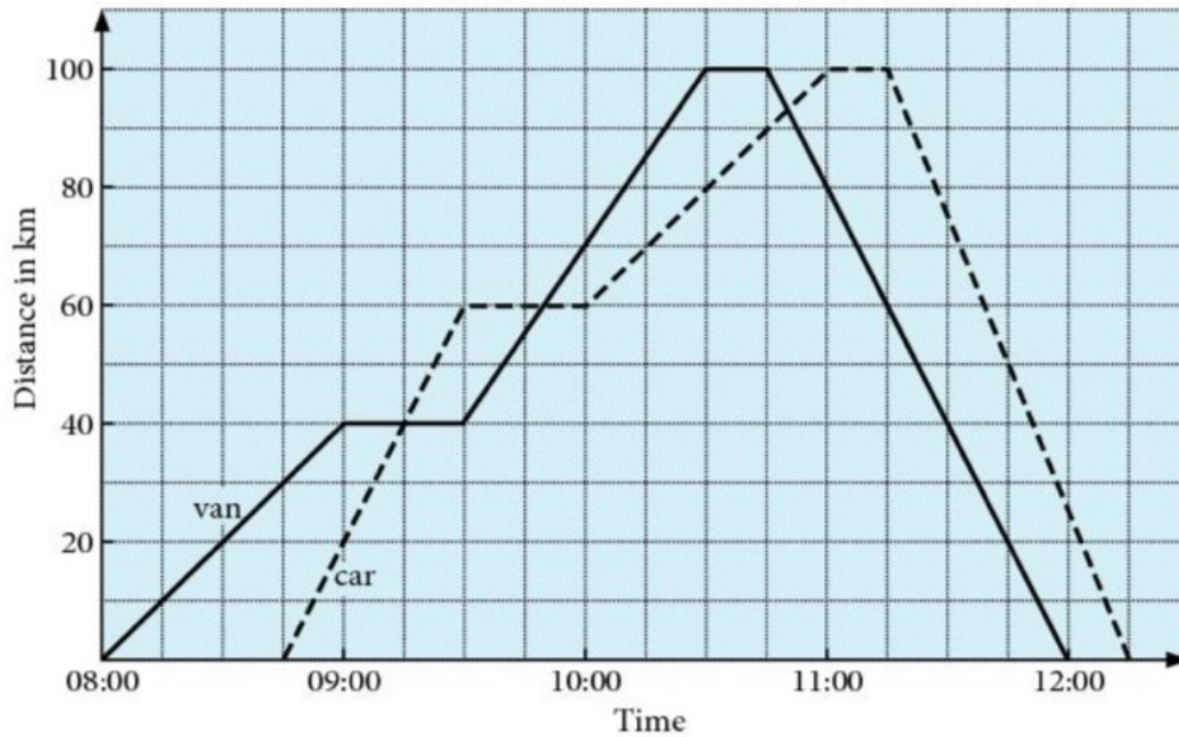
The graph shows the journeys made by a van and a car starting at London, travelling to Brighton and returning to London.



3) What was the greatest speed attained by the car during the entire journey?

Motion Graphs

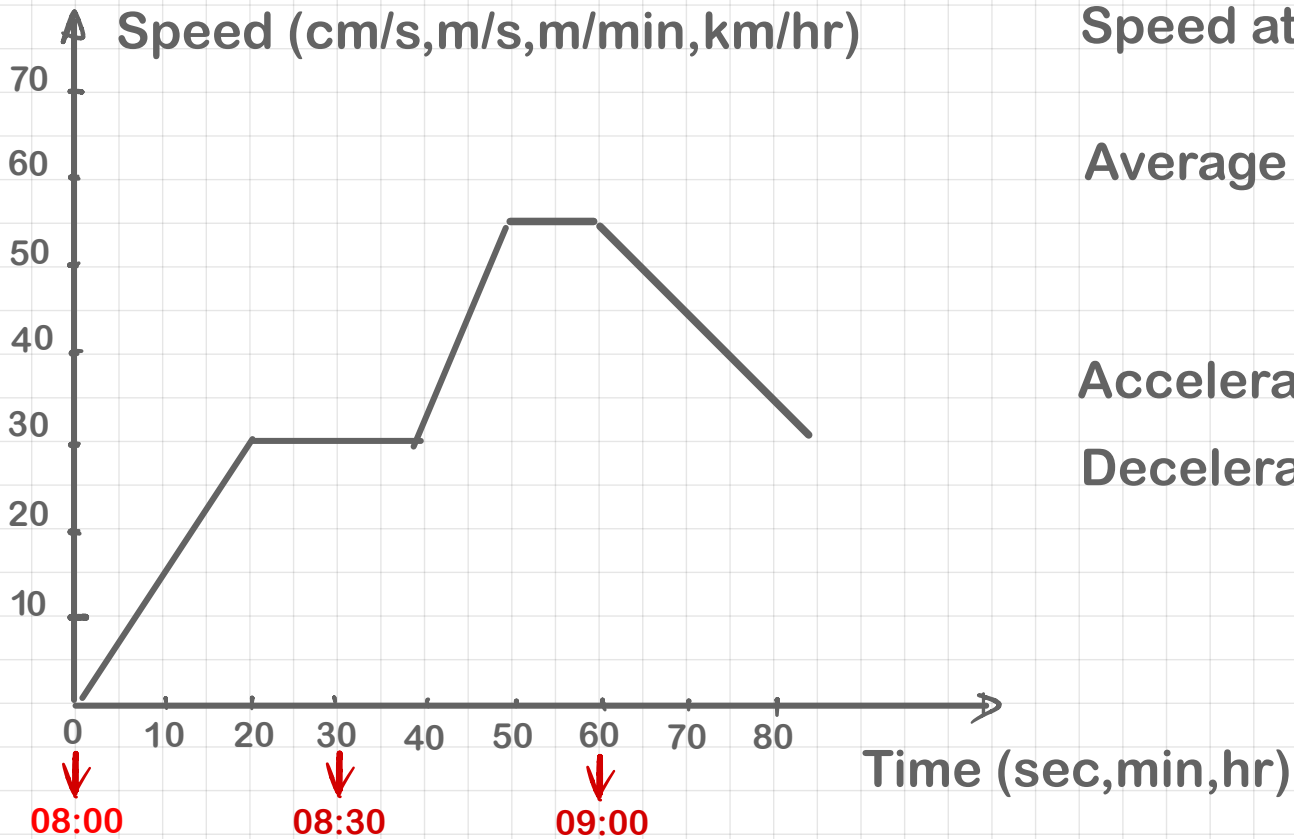
The graph shows the journeys made by a van and a car starting at London, travelling to Brighton and returning to London.



4) What was the average speed of the car over its entire journey?

Motion Graphs

Speed-Time Graphs



Distance \longrightarrow Area below graph

Speed at $t = \dots$ \longrightarrow Graph

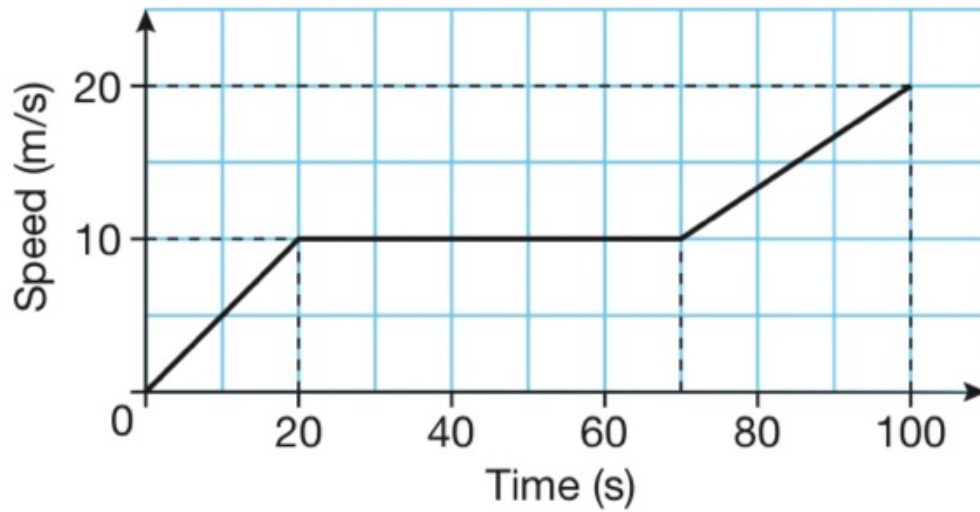
Average speed \longrightarrow $\frac{\text{Total distance}}{\text{Total time}}$

Acceleration (+)
Deceleration (-) \longrightarrow Gradient of graph

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

Motion Graphs

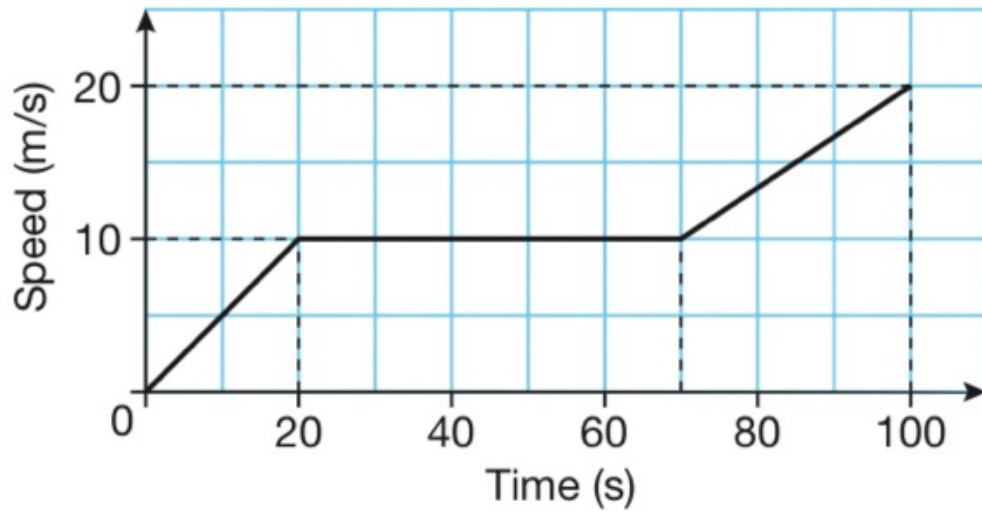
The speed-time graph show the journey of a cyclist.



1) Find the distance travelled in the first 60 sec.

Motion Graphs

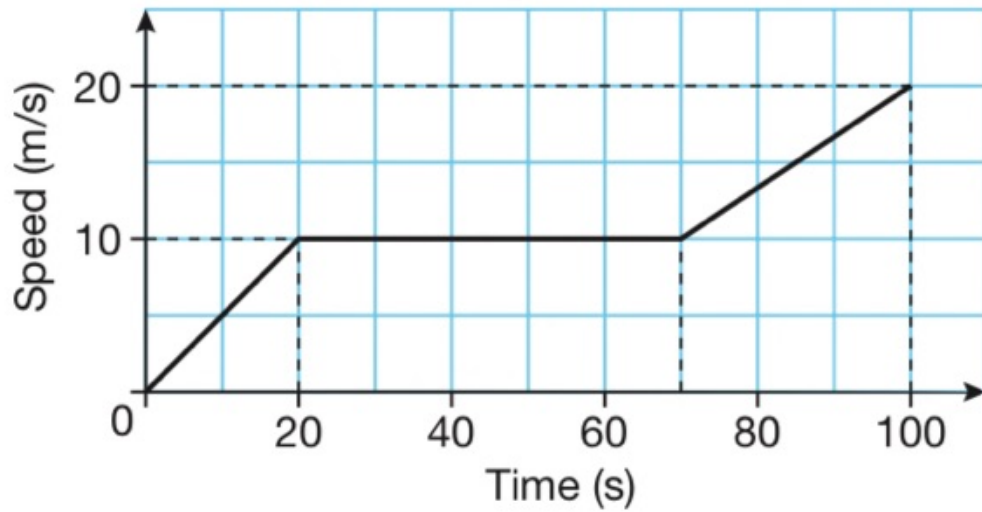
The speed-time graph show the journey of a cyclist.



2) Find the total distance travelled.

Motion Graphs

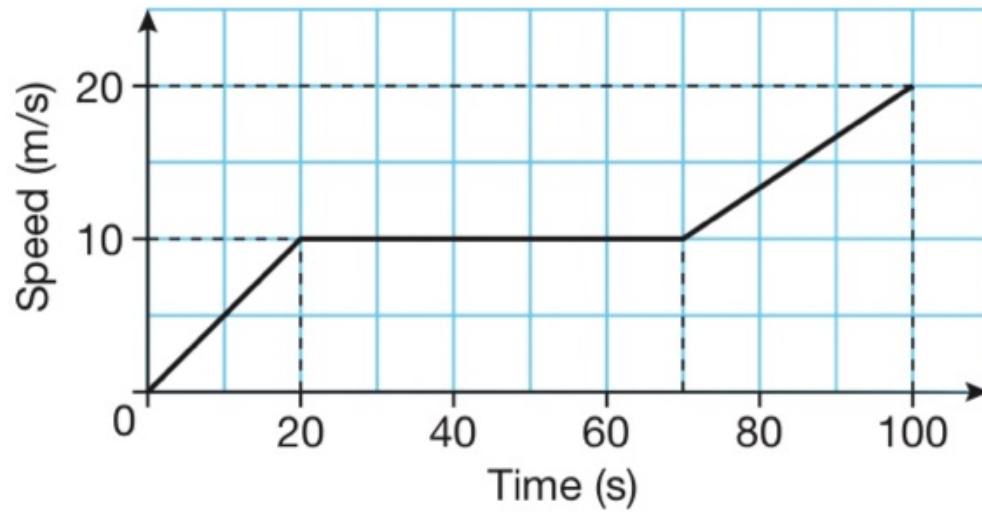
The speed-time graph show the journey of a cyclist.



3) Find the average speed of the cyclist.

Motion Graphs

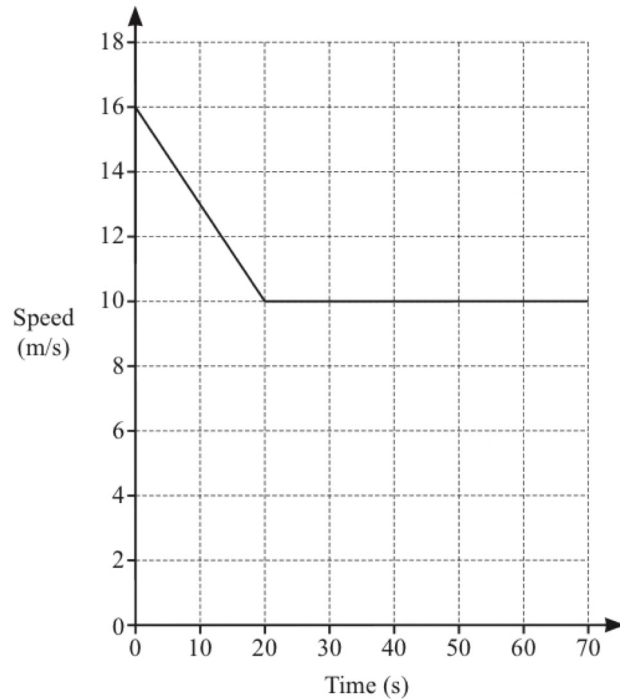
The speed-time graph show the journey of a cyclist.



4) Find the acceleration when $t = 80$ sec

Motion Graphs

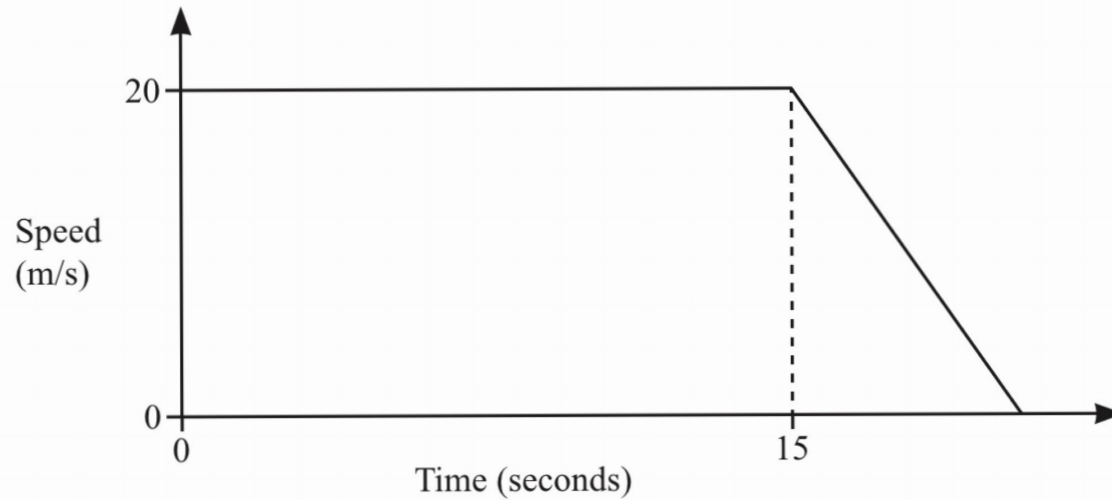
Exercise: The speed-time graph show the journey.



Calculate the deceleration of car during the first 20 sec.

Motion Graphs

Exercise: The speed-time graph show the journey.



A car travels by decelerating at 2.5 m/s^2 . Find the total distance travelled.