

Tutorial 10



1. (a) Convert the following speeds to kilometres per hour:

(i) 19 m/s

(ii) 25 m/s

(iii) 30 m/s

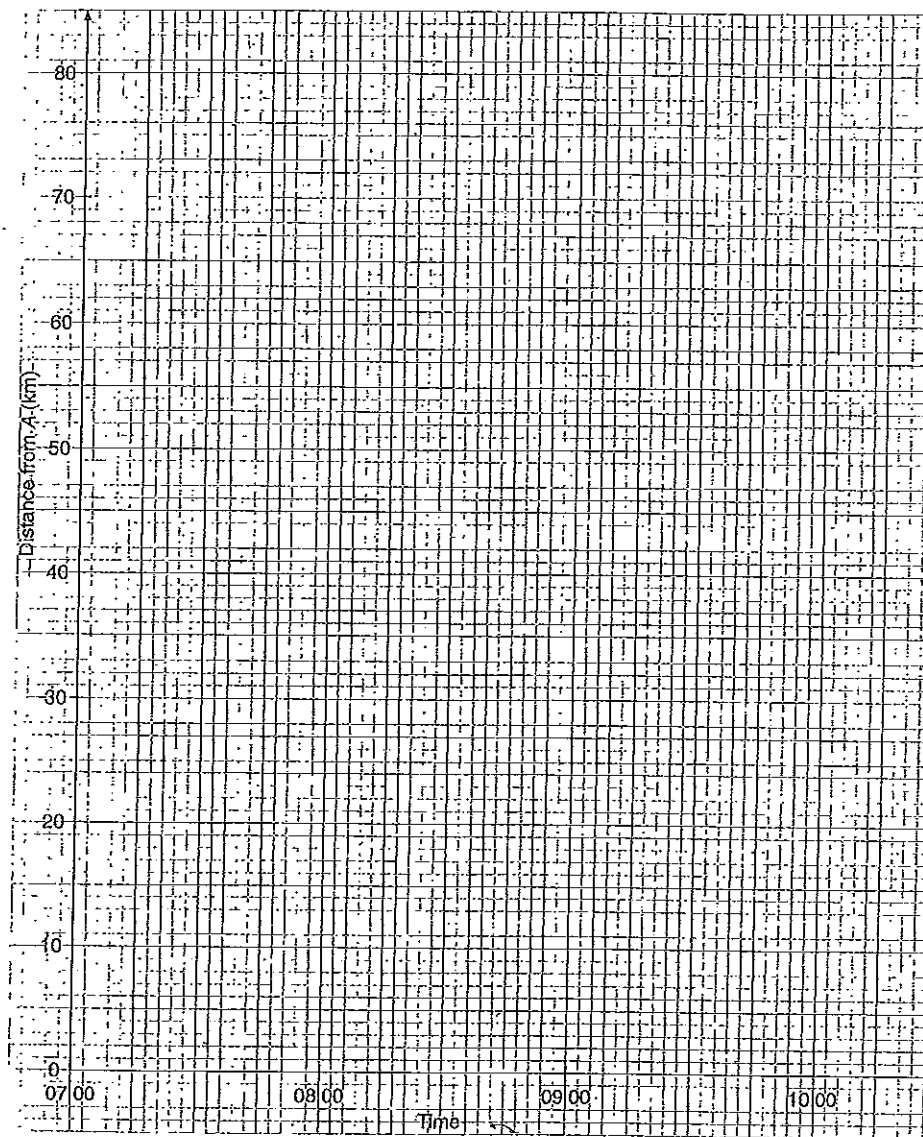
(b) Convert the following speeds to metres per second:

(i) 27 km/h

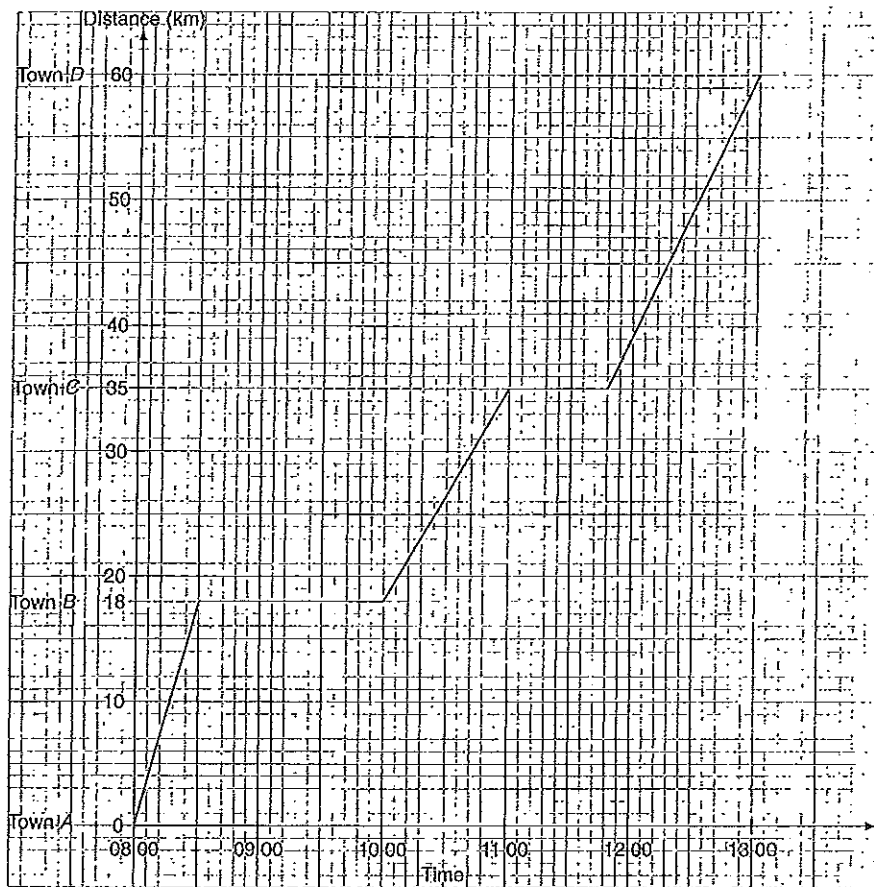
(ii) 54 km/h

(iii) 81 km/h

2. A motorist left Town A to a destination 80 km away. He travelled at a speed 40 km/h until 08 30 when he rested for half an hour. He then completed his journey at 50 km/h.
Draw the distance-time graph of the motorist on the given axes and use your graph to estimate the time he reached his destination.



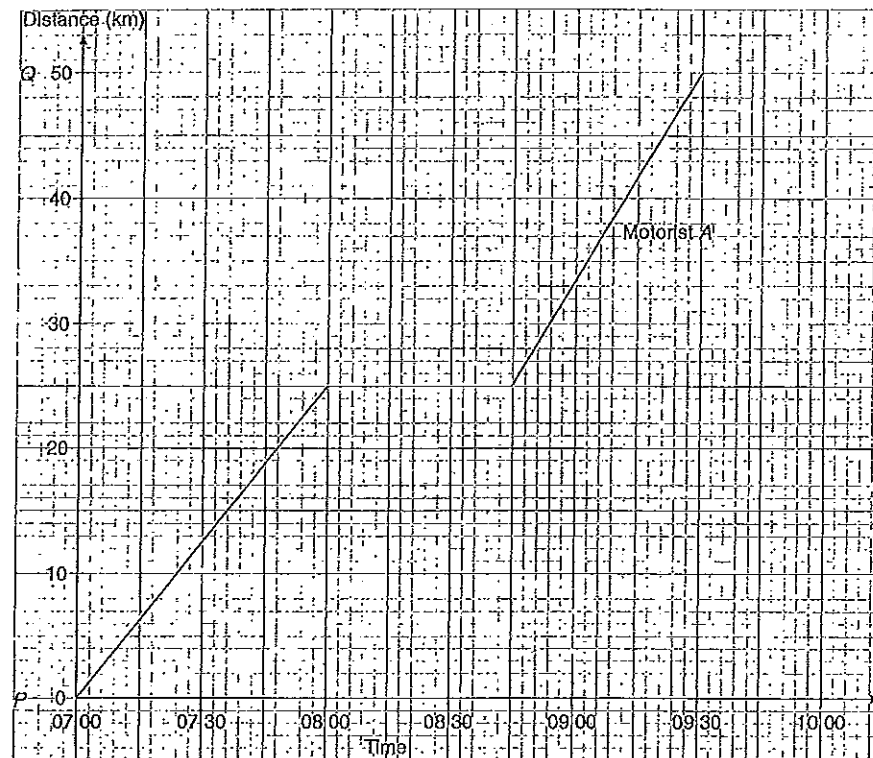
3. The travel graph shows the journey of a motorist from Town A to Town D. The motorist left Town A at 08 00.



Use the graph to find

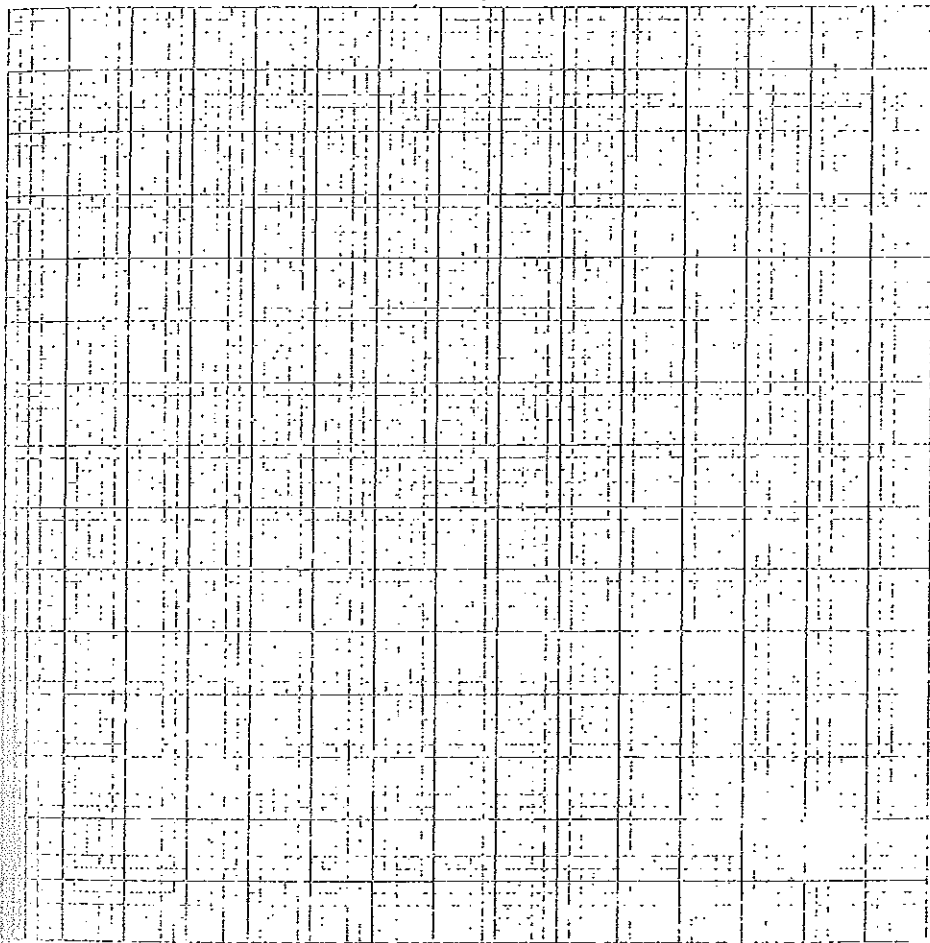
- (a) how long the motorist rested at
- Town B,
 - Town C,
- (b) the distance of the motorist from Town A at 10 24,
- (c) the average speed
- from 08 00 to 08 30,
 - from 10 00 to 11 00,
 - from 11 48 to 13 00,
 - for the whole journey.

4. Town P and Town Q are 50 km apart. The diagram below shows the distance-time graph of Motorist A which left Town P at 07 00 for Town Q.

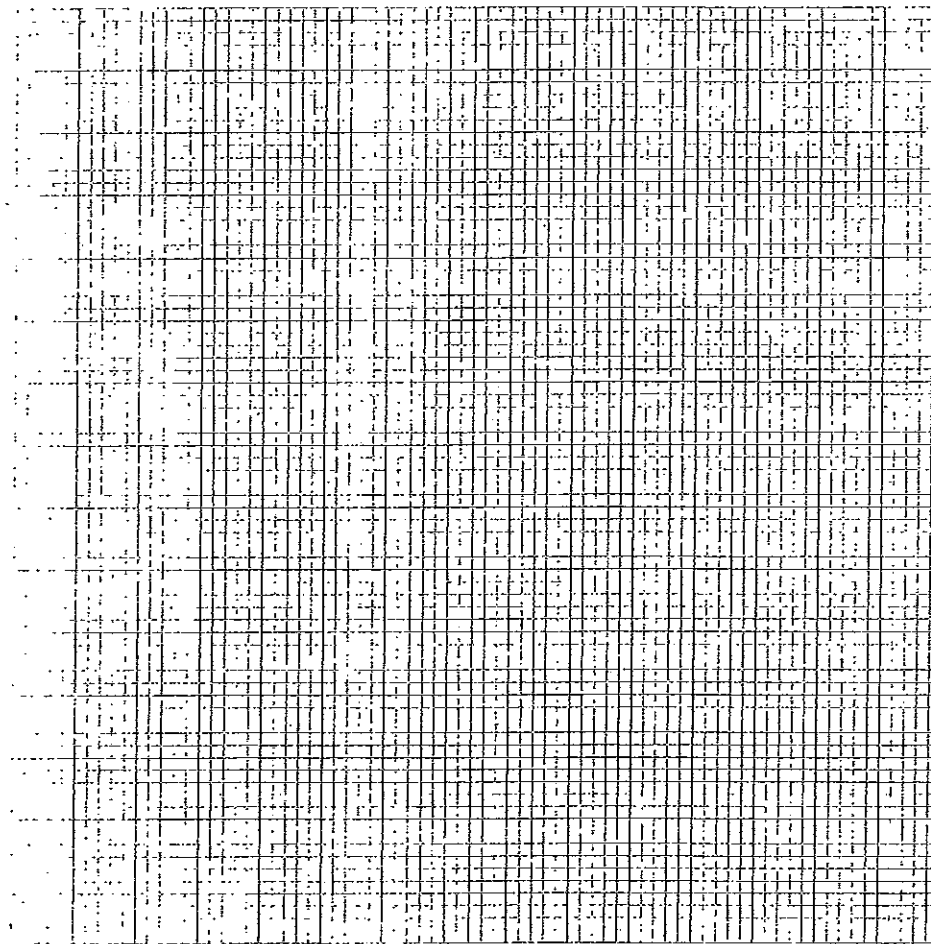


- (a) Find the speed of Motorist A from
- 07 00 to 08 00,
 - 08 00 to 08 45,
 - 08 45 to 09 30.
- (b) Find the average speed of Motorist A for the whole journey.
- (c) If Motorist A did not stop for a rest but continued his journey at his initial speed what time will he arrive at Town Q?
- (d) Motorist B left Town Q at 07 15 and travelled at an average speed of 20 km/h to Town P using the same route as Motorist A.
- Draw the distance-time graph of Motorist B on the given diagram.
 - At what time did Motorist B reach Town P?
 - At what time did the motorists pass each other?

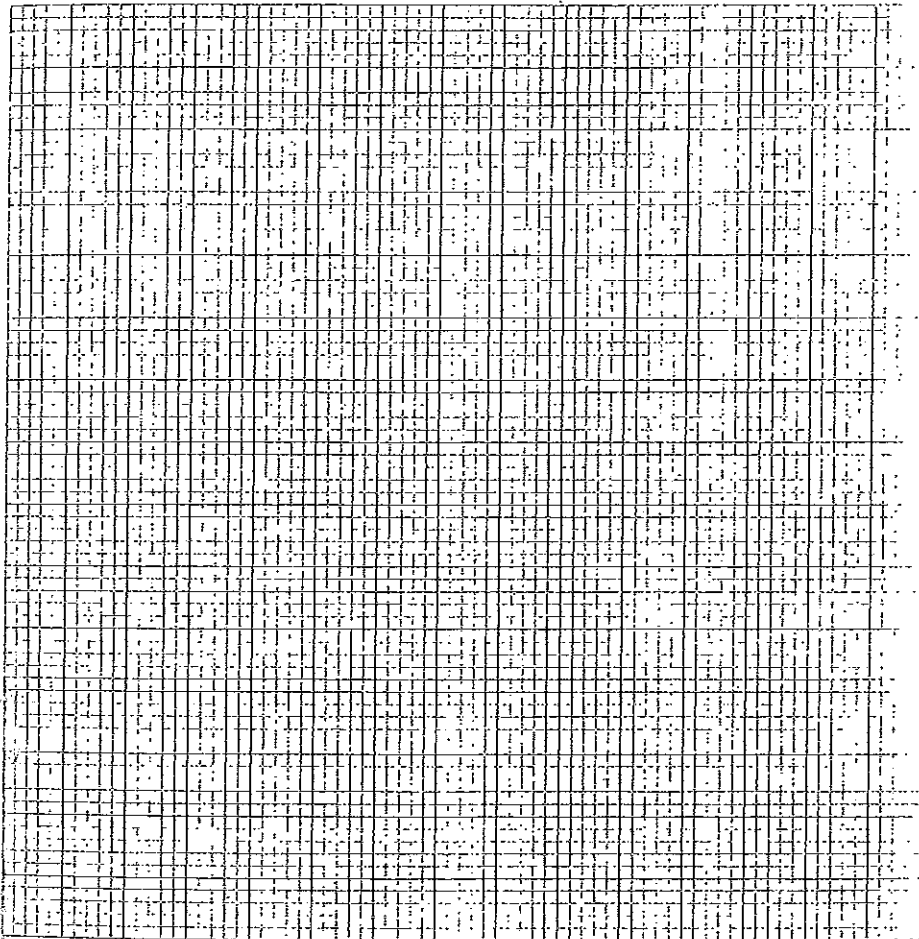
5. A motorist left Town A at 08 00 for Town B , 120 km away. He travelled at 20 km/h until 10 00. Then he travelled another 40 km at 50 km/h. He then completed his journey travelling at v km/h and arrived at Town B at 14 00.
- Draw the distance-time graph to represent the journey.
Use a scale of 2 cm to represent 1 hour on the horizontal axis and 1 cm to represent 10 km on the vertical axis.
 - Use your graph to find
 - the distance he travelled on the first part of the journey,
 - the time he spent on the second part of the journey,
 - the value of v ,
 - the average speed for the whole journey.



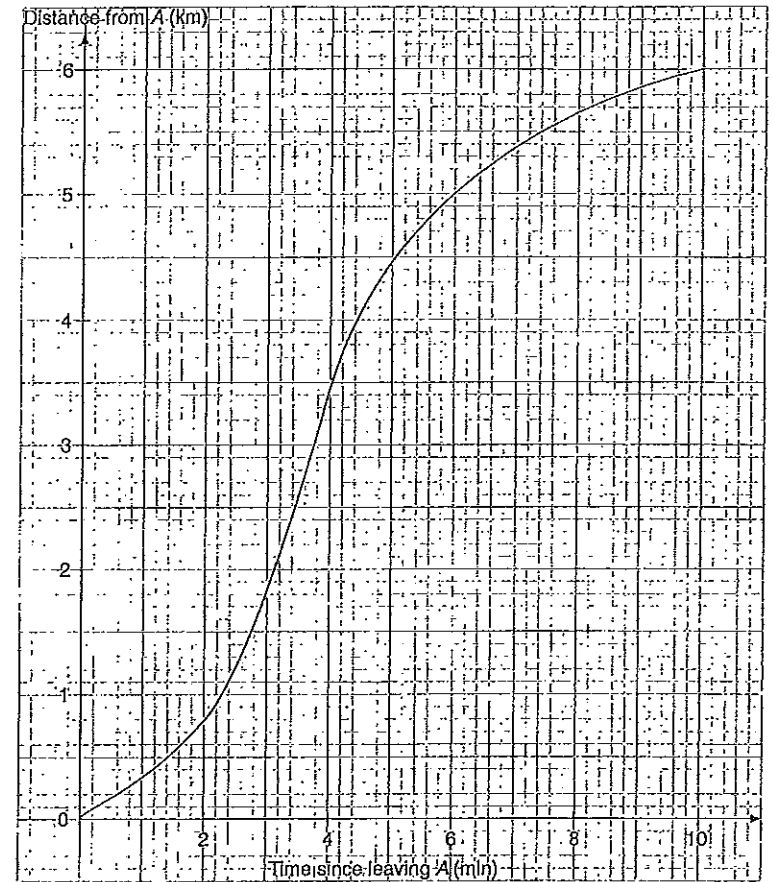
6. A motorist starts a 100 km journey at 09 00. He travelled at a constant speed u km/h and plans to arrive at his destination at 11 30. After travelling for 45 minutes he stopped for 30 minutes to change one of his car's tyre which had punctured. He then continued his journey at a speed of v km/h, so as to arrive at his destination at 11 30.
- Using a scale of 4 cm to represent 1 hour on the horizontal axis and 1 cm to represent 10 km on the vertical axis, draw the distance-time graph of the motorist.
 - Calculate the values of u and v .



7. Town X and Town Y are 36 km apart. A cyclist left Town X for Town Y at 08 00, cycling at 16 km/h. A motorist left Town Y for Town X at the same time as the cyclist, travelling at 24 km/h.
- (a) Draw the distance-time graphs of the cyclist and the motorist on the same axes. Use a scale of 4 cm to represent 1 hour on the horizontal axis and a scale of 2 cm to represent 10 km on the vertical axis.
- (b) Use your graph to find
- the time the cyclist passes the motorist,
 - the distance from Town Y when the cyclist passes the motorist,
 - how much longer the cyclist takes to complete the journey compared to the motorist,
 - the time when the cyclist and the motorist are 26 km apart.



8. The diagram shows the distance-time graph of a train that started its journey from A to B which was 6 km away.



From the graph, find

- the time taken to travel the first 3 km,
- the speed of the train, in kilometres per hour at a time of 6 minutes after leaving A ,
- the average speed of the train, in kilometres per hour, for the whole journey.

9. A motorist started from Town P and travelled to Town Q , 8 km away. The table below gives the time after the motorist left Town P and the distance from Town P .

Time (min)	0	2	4	6	8	10	12
Distance (km)	0	1	2.8	5.2	6.8	7.6	8

Using a scale of 1 cm to represent 1 min on the horizontal axis and a scale of 1 cm to represent 1 km on the vertical axis, plot a graph for the given values.

- (a) From your graph, find
- the approximate time taken to travel 3 km,
 - the speed of the motorist in kilometres per hour when the motorist had travelled 8 minutes,
 - the time taken to travel the last 2 km.
- (b) A motorcyclist left Town Q 2 minutes after the motorist left Town P . The motorcyclist travelled towards Town P at a uniform speed of 48 km/h.
- On the same axes, plot the graph of the motorcyclist's journey.
- From the graph, find
- the time taken by the motorcyclist to reach Town P ,
 - the distance from Town P when the motorist and the motorcyclist pass each other.

