

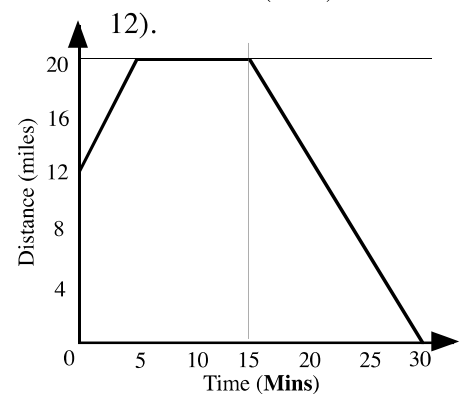
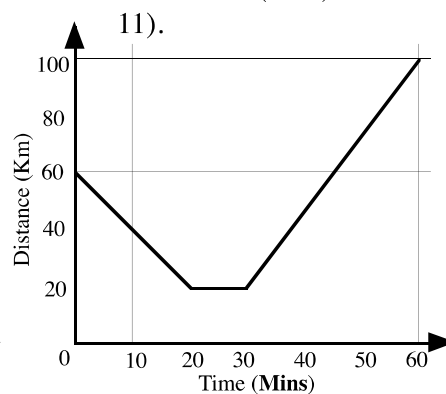
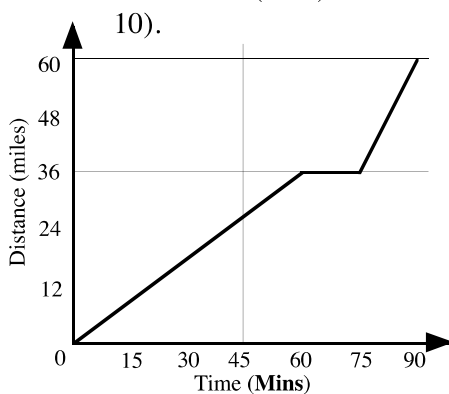
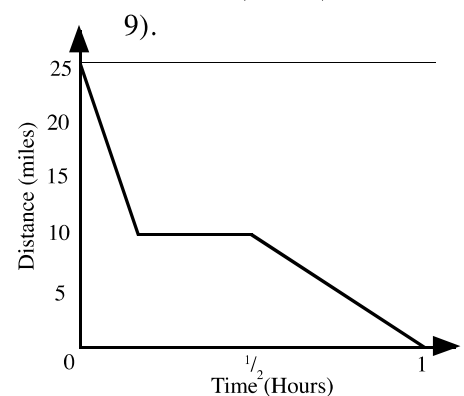
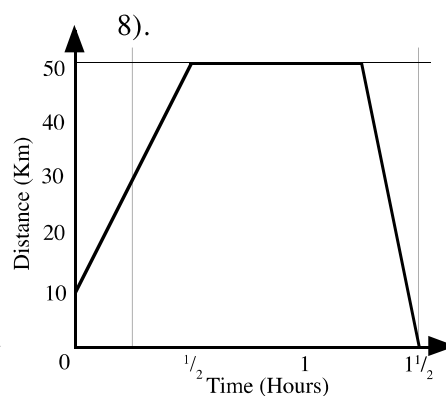
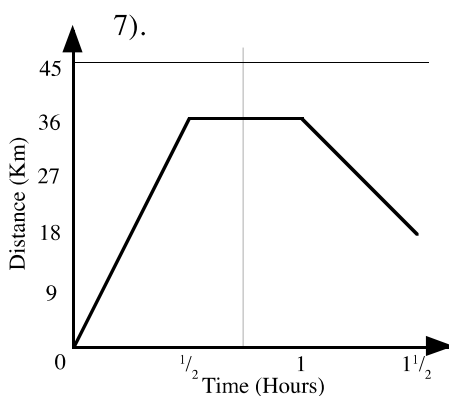
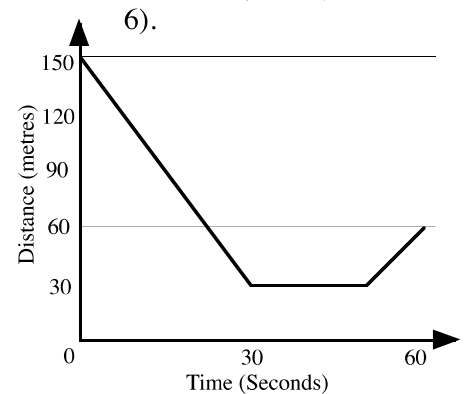
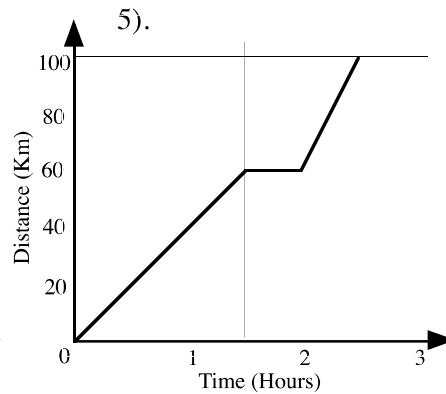
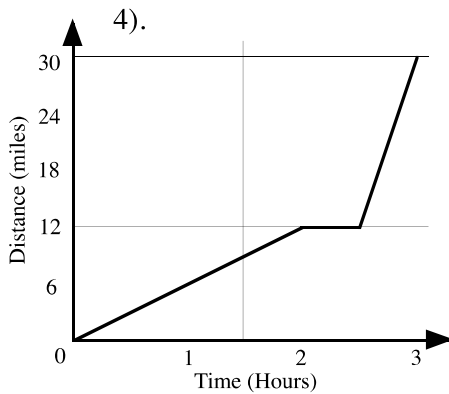
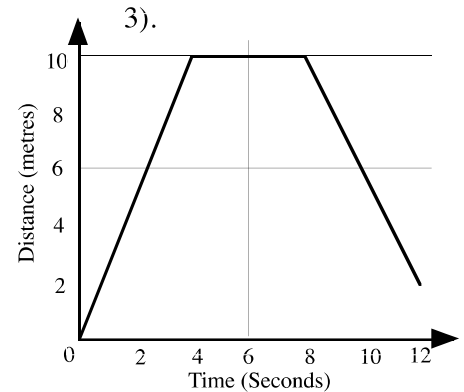
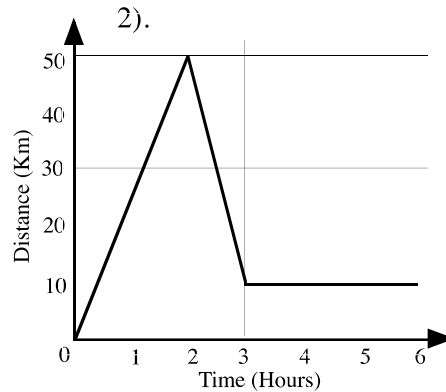
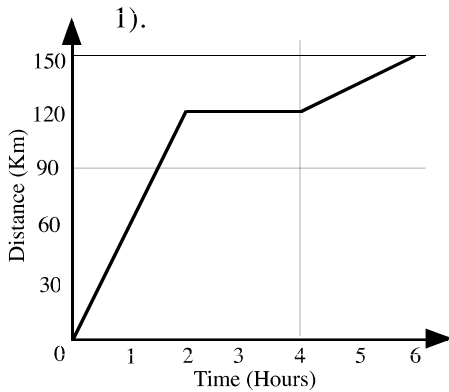
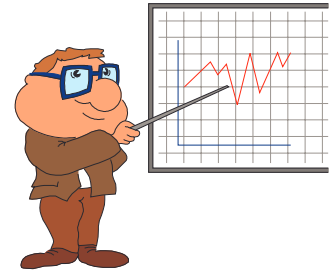
# Distance/Time Graphs 1.



A. Copy each graph onto squared paper and answer the questions.

For each graph find

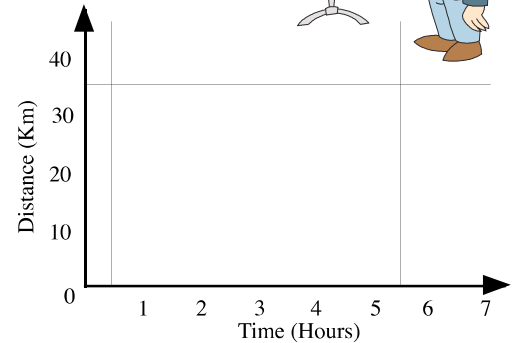
- the length of time spent stationary,
- the speed for the first moving part of the journey,
- the speed for the second moving part of the journey,
- the total distance travelled,
- the total time taken,
- the average speed for the **whole** journey.



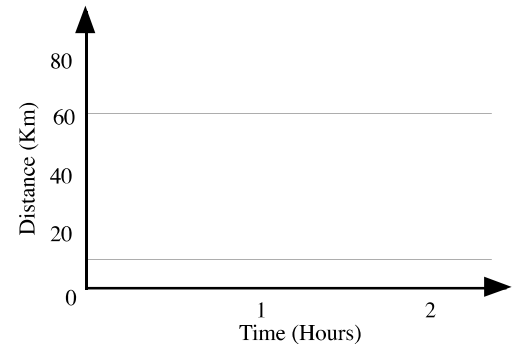
- B. For each set of questions plot the journey described on the given set of axes.  
Use A4 graph paper. The squares shown are 2 cm squares.



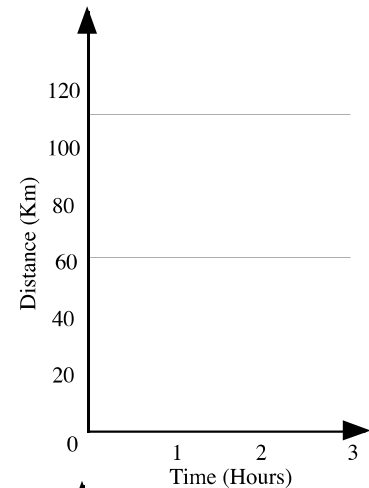
- 1). Start at 0 km. Travel at 10 km/h for 2 hours.  
Then travel at 40 km/h for 30 minutes. Rest for  $\frac{1}{2}$  hour.  
Now travel back **towards** 0 km at constant speed  
taking another 4 hours to arrive.  
For the last part of the journey what is the speed ?
- 2). Start at 50 km. Travel 40 km **towards** 0 km at 10 km/h.  
Then travel a further 10 km at 20 km/h.  
Return back to the 50 km mark arriving after 7 hours.  
For the last part of the journey what is the speed ?



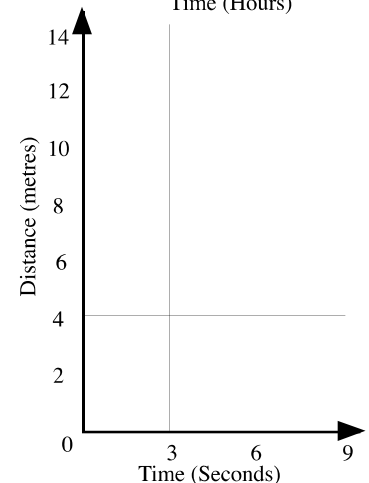
- 3). Start at 0 km. Travel at 80 km/h for 30 minutes.  
Then travel at 120 km/h for the next 20 minutes.  
Rest for 40 minutes.  
Return to 0 km travelling at 120 km/h.  
What time does it take to arrive back after starting ?
- 4). Start at 60 km and travel towards 0 km.  
Travel at 40 km/h for 1 hour. Rest for 20 minutes.  
Travel back towards the 60 km mark at 70 km/h.  
What time does it take to arrive back at the 60 km mark ?



- 5). Start 0 km. Travel at 80 km/h for  $1\frac{1}{2}$  hours.  
Rest for 20 minutes.  
Then travel back towards 0 km at 160 km/h for  $\frac{1}{2}$  hour.  
Now change speed and arrive back at 0 km after 3 hours.  
What is the speed for the last part of the journey ?
- 6). Start 140 km. Travel at 120 km/h **towards** 0 km for 60 minutes.  
Return towards the 140 km mark at 80 km/h for 30 minutes.  
Then rest for 40 minutes.  
Travel back to the 140 km mark at constant speed arriving  
after 3 hours from the starting time.  
What is the speed for the last part of the journey ?



- 7). Start at 0 km. Travel at 4 m/s for 3 seconds.  
Then travel a further 2 metres in 3 seconds. Rest for 1 second.  
Return back to 0 km in the next 2 seconds.  
What is the speed for the last part of the journey ?

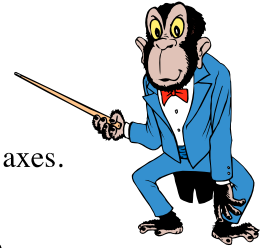


- 8). Start at 12 metres. Travel towards 0 m at 3 m/s for 3 seconds.  
Rest for 1 second.  
Travel back towards the 12 metre mark at 2 m/s.  
At what time do you arrive back at the 12 metre mark ?



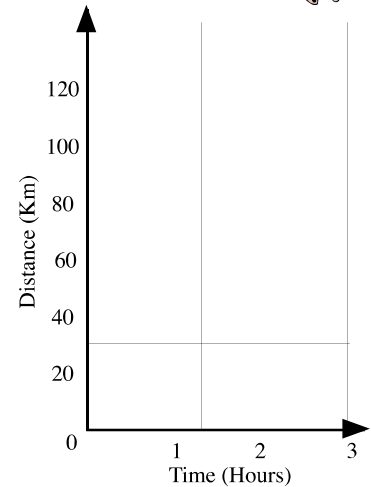


## Distance/Time Graphs 2.



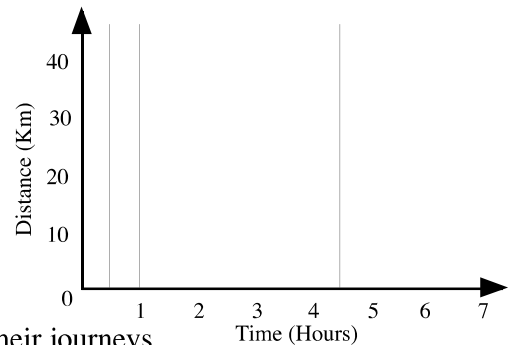
For each set of questions plot the journey described on the given set of axes.  
Use A4 graph paper. The squares shown are 2 cm squares.

- 1). Two towns A and B are 120 km apart.  
On the graph A is at 0 km and B is at 120 km.  
Bill sets off from A to travel to B and goes 80 km in  $2\frac{1}{2}$  hours.  
He rests for 30 minutes and then travels at constant speed to B arriving  $4\frac{1}{2}$  hours after starting out.  
Ian sets off to travel from A to B using the same route as Bill.  
He sets off  $1\frac{1}{2}$  hours after Bill leaves. He travels at a constant speed of 60 km/h all the way to B.
- Plot the two journeys on the graph.
  - Find the speed for each part of Bill's journey.
  - How far are they from A when they meet?
  - How long in time after **Bill** starts out do they meet?



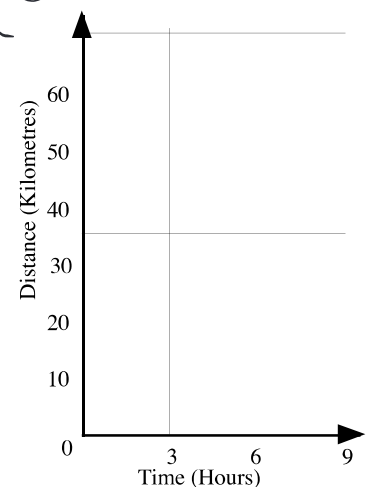
- 2). Two towns C and D are 40 km apart.  
On the graph C is at 0 km and D is at 40 km.  
Jenny sets off from C at 8 km/h for 2 hours, then rests for 1 hour. She continues on to D at a constant speed arriving 6 hours after she set off.  
At the same time as Jenny sets off Ann sets off from D to travel to C. She travels at 10 km/h for 1.5 hours then rests for 2 hours. She then continues onto C arriving 5 hours after setting off.

- Plot the two journeys on the graph.
- For each girl find the speed for the final part of their journeys.
- How far is Ann from C when she rests?
- How long in time is it before they meet?
- How far are they from C when they meet?



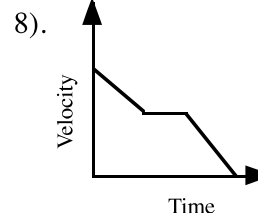
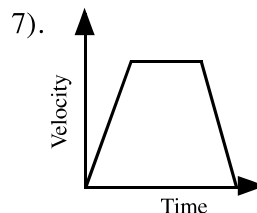
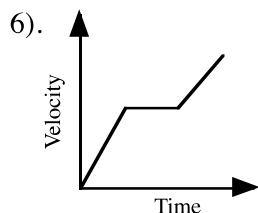
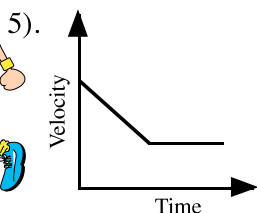
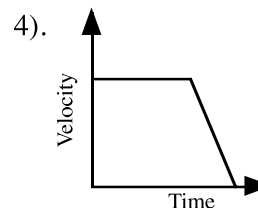
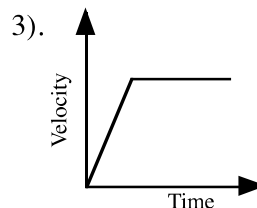
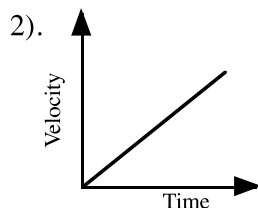
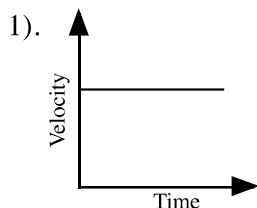
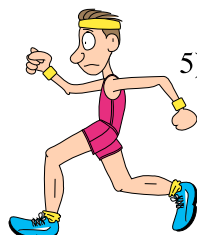
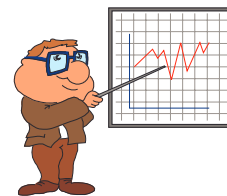
- 3). Two towns E and F are 60 km apart.  
On the graph E is at 0 km and F is at 60 km.  
Anjum travels from E to F. He sets off at a 14 km/h for  $2\frac{1}{2}$  hours and then rests for 30 minutes. He continues to F at constant speed arriving  $5\frac{1}{2}$  hours after starting out.  
Ben travels from F to E. He only starts his journey 2 hours after Anjum first sets out. Ben travels at 8 km/h for the next 4 hours and then rests for 1 hour. He then takes a further 2 hours to complete the journey to E at a constant speed.

- Plot the two journeys on the graph.
- Find the speed for the final part of both their journeys.
- How far is Anjum from E when he rests?
- How far is Ben from E when he rests?
- How far are they from E when they meet?
- How long in time is it before they meet?



## Velocity/Time Graphs.

A. Copy each graph and describe the journey.



B. Each of these events happens for 10 seconds.

V - A car travels at constant velocity for 5 s, then accelerates past another car for 5 s.

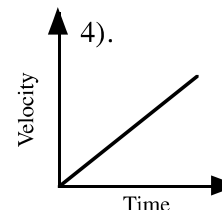
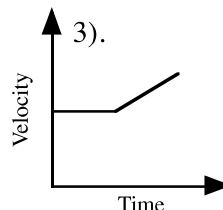
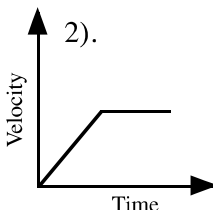
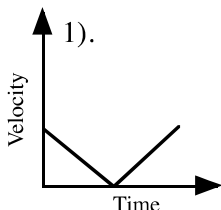
W - A ball is thrown straight up in the air and caught by the thrower.

X - A car accelerates from standing for 5 s, then travels at a constant velocity.

Y - A ball is rolled down a steep slope.

Z - A lift starts off from one floor and stops at the next.

i). Match 4 of the statements above to the velocity/time graphs below.



ii). Sketch a graph of the statement that hasn't been used.

C. Below are some distance/time and velocity/time graphs.  
Some are impossible! Where possible describe the journey for each graph.

