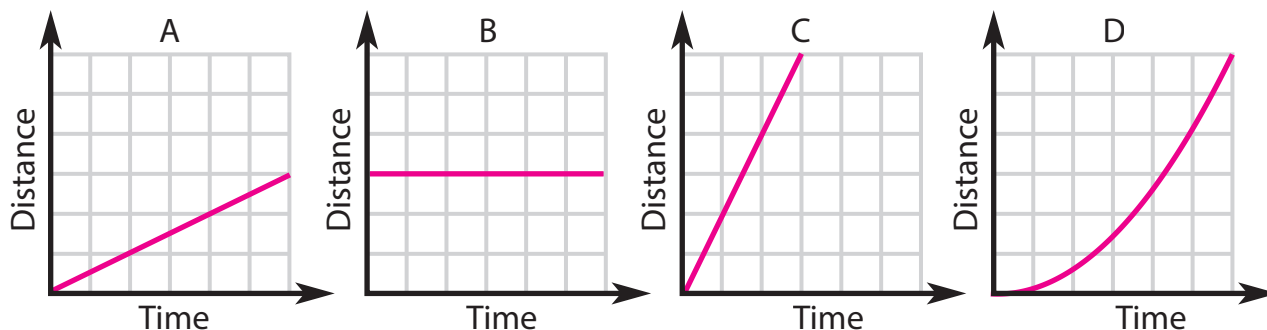


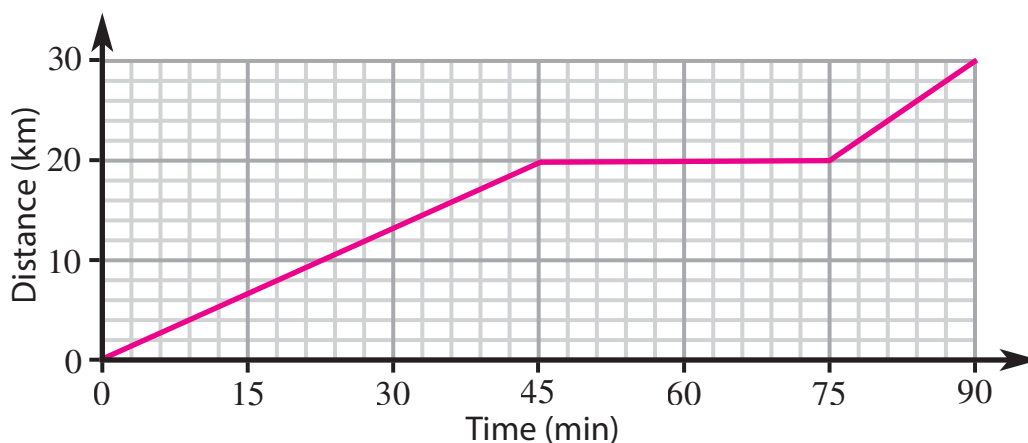
## Distance-Time Graphs Practice

In a **distance-time** graph, the total distance travelled so far is plotted against the time since the journey started.



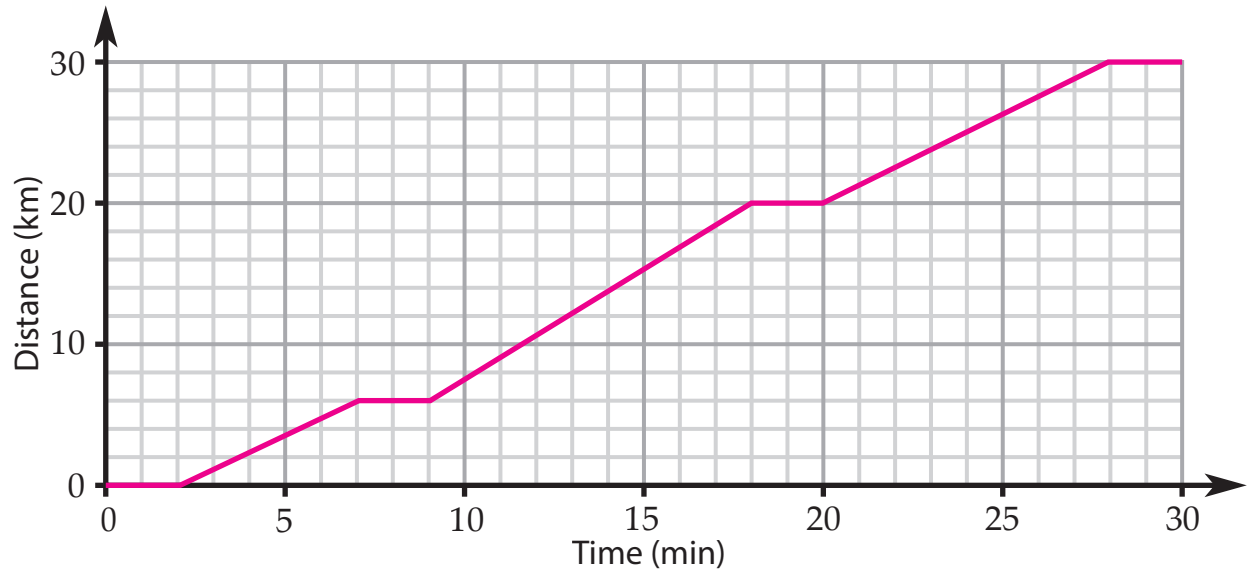
- 1 Which of the graphs A-D (with the same axis scales) best matches these descriptions?
- (a) stationary
  - (b) moving slowly at a steady speed
  - (c) moving quickly at a steady speed
  - (d) getting faster

A wolf and a sheep agree to a 30 km race. The sheep jogs the whole way at a steady speed. The wolf runs, then goes to sleep for 30 minutes before running the rest of the race. The two animals reach the finish at the same time. Here is the distance-time graph for the wolf.



- 2 Use this graph of the wolf's motion to answer these questions.
- (a) On the same axis, draw the distance-time graph for the sheep. Label the point where the sheep passes the wolf. Remember that the animals finish at the same time.
  - (b) How far from the start does the sheep pass the wolf?
  - (c) When does the sheep pass the wolf?

Here is a distance-time graph showing a train's journey into a city.



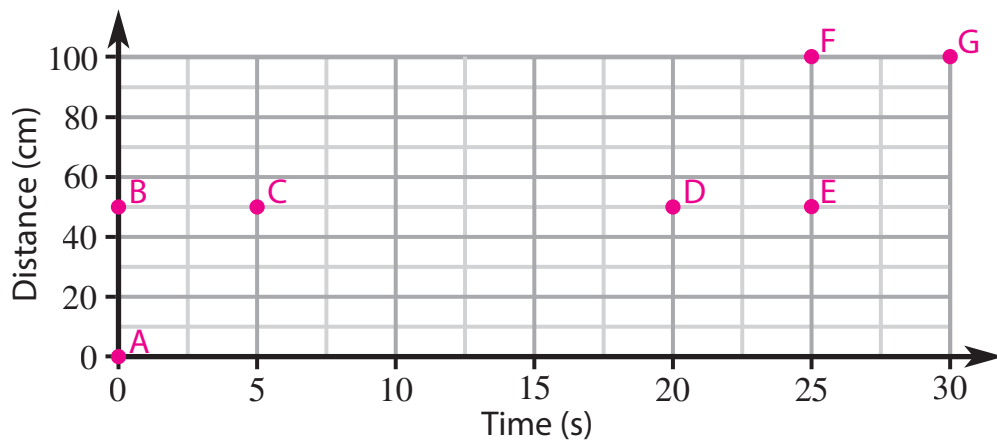
- 3 This question is about the train in the graph above.
- (a) How many stations did the train stop at (or start from)?
  - (b) How much time did the train spend at each station?
  - (c) How far is it from the first station (where the train started) to the second station?
- 
- 4 This question is also about the train in the graph.
- (a) How much time did it take for the train to travel between the first two stations?
  - (b) How far did the train move each minute between the first two stations?
  - (c) What was the speed of the train between the first two stations in km/h? (Hint: Think how far the train would go if it went at that speed for a whole hour.)
  - (d) Mark the fastest part of the motion with an F on the graph.
- 5 Calculate the speed of the train in Q4 (c) in m/s. Hint: how far does it go each second?
- 6 Another train only stops at the first and last station. In between, it goes at the speed of the train in Q4 (c). How much time does it take to travel between the first and last stations?

- 7 An ant and a snail share the work of carrying a leaf one metre. The ant runs the first 50 cm with the leaf, and the snail travels the second 50 cm with the leaf.

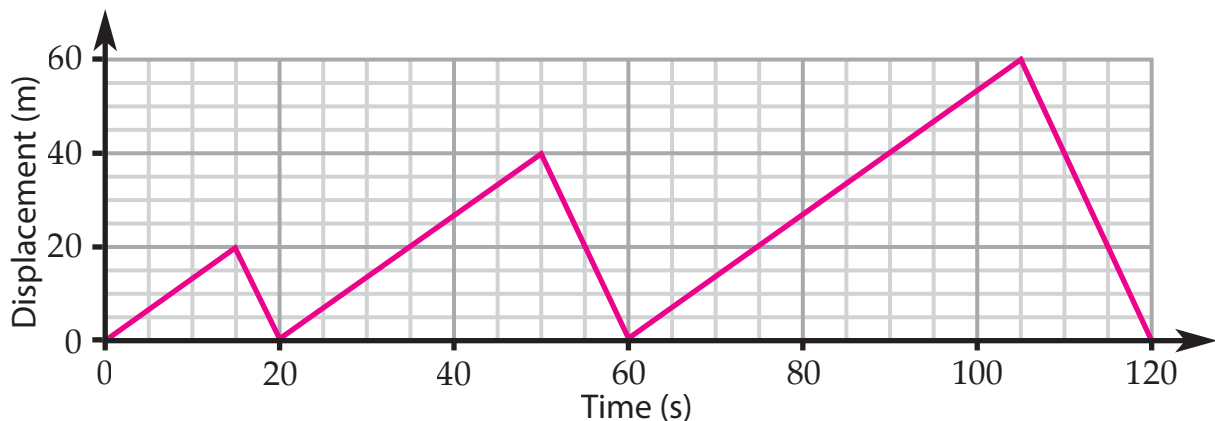
(a) The ant runs 10 cm each second. How much time does it take to run its distance?

(b) The snail moves 2.5 cm each second. How much time does it take to move its distance?

(c) Use the axes to plot a distance-time graph for the leaf's journey. Write down which points your line goes through (it goes through **some** of the labelled points).



An athlete is doing circuit training. This graph shows their displacement, which is their distance from the start line of a 100 m track. They jog away from the start line, and run back to it.



- 8 Use the graph of the athlete's motion to answer these questions.

(a) Does the athlete stop for a break? How can you tell?

(b) How far does the athlete **jog** in total?

(c) How fast does the athlete **run**? Give your answer in m/s.