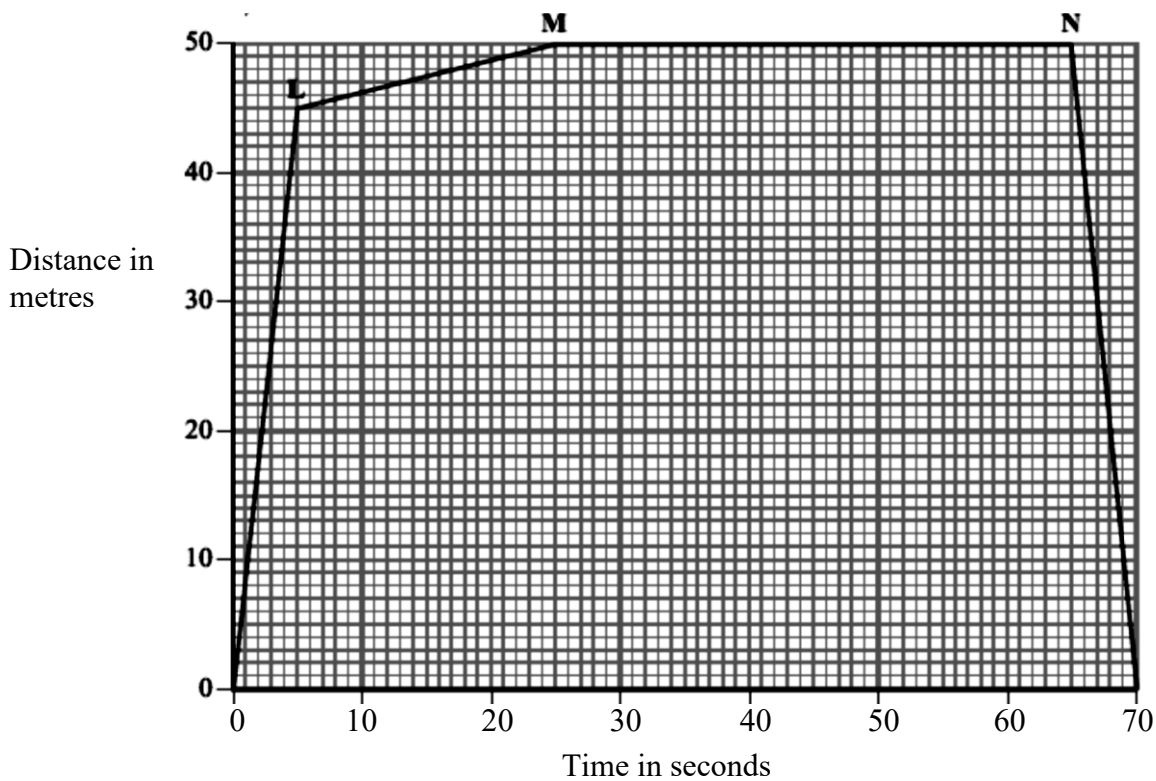


### Motion Graphs

1. The distance-time graph shows the journey made by a cyclist from his home to a shop and back.



(a) Explain how you would work out speed from a distance-time graph.

(b) What happens during the following sections shown on the graph?

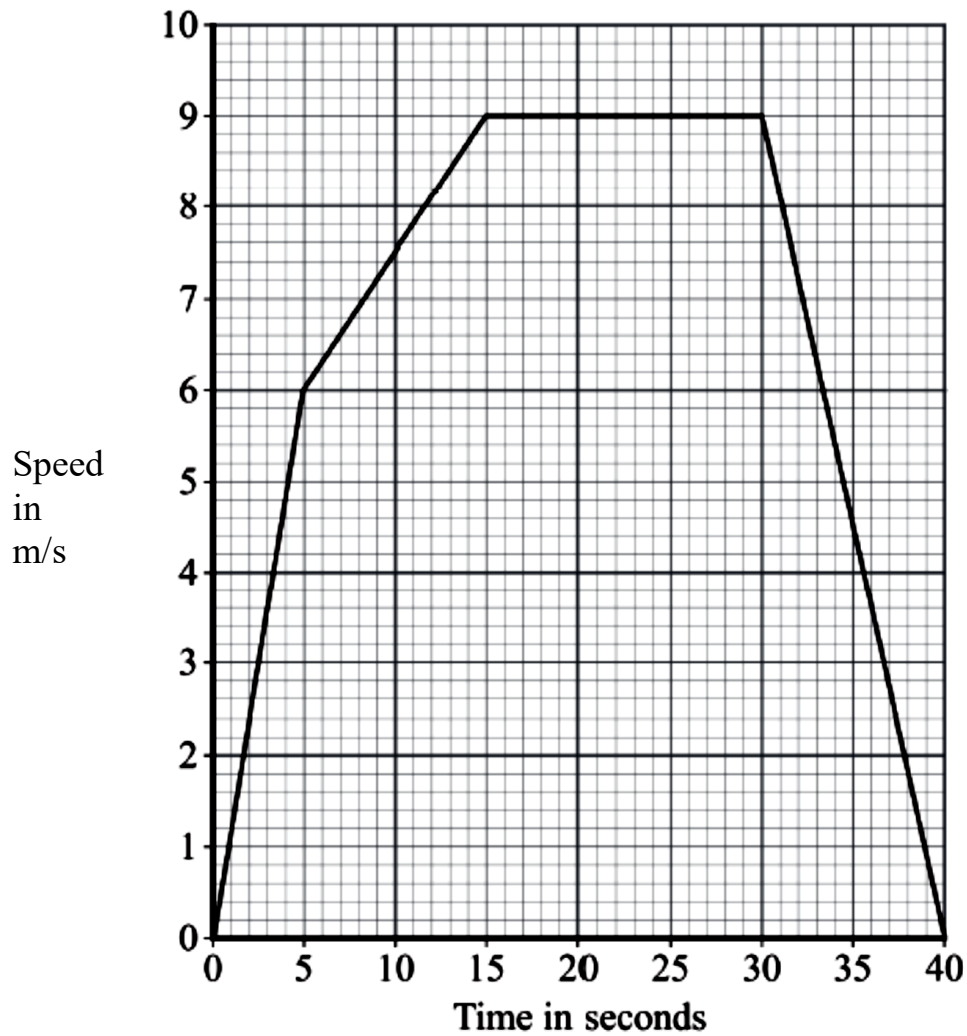
(i) Section LM

(ii) Section MN

(iii) During the last 5 seconds of the journey.

(c) Work out the speed of the cyclist for the section of the journey shown by LM on the graph.

2. The diagram given below shows the speed-time graph for the motion of another cyclist.



(a) Describe his motion during the following time intervals:

(i) during the first 5 seconds

(ii) between 15 seconds and 30 seconds.

(iii) during the last 10 seconds

(b) Explain how you would work out the acceleration from a speed-time graph.

(c) Work out the distance travelled by the cyclist during the first 5 seconds of his journey.

(d) Work out the average speed of the cyclist for the whole journey.

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3.

A car is travelling at 20 m/s. It accelerates uniformly at  $3 \text{ m/s}^2$  for 5 s.

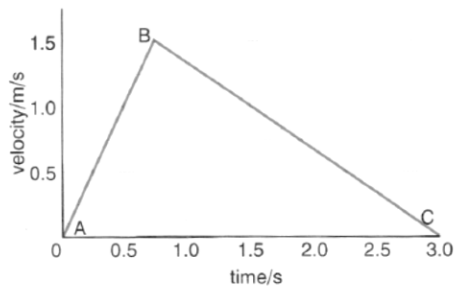
*a)* Draw a velocity-time graph for the car during the period that it is accelerating. Include numerical detail on the axes of your graph.

*b)* Calculate the distance the car travels while it is accelerating.

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4.

Look at the velocity/time graph for a toy tractor.

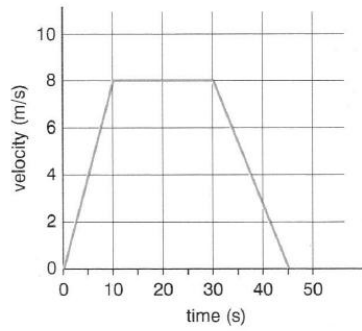


Calculate the total distance travelled by the tractor from A to C.

(3 marks)

5.

The graph shows how the velocity of a cyclist varies.



**a) i)** Between what times was the cyclist travelling at a constant speed? ..... (1)

**ii)** How can you tell from the graph? ..... (1)

Calculate the acceleration of the cyclist during the first 10 s. .... (3)

Use the graph to find the total distance travelled by the cyclist. .... (3)

