

Exam Style Questions



MITCHELL MATHS

Distance Time Graphs

Guidance

- Always show your working
- Calculator allowed unless otherwise stated
- Check your answers
- Make sure you read the question before attempting.

Skills	Questions	Completion
Draw Distance-Time graphs	Q1 – Q4	
Analysing Distance-Time graphs	Q5 – Q10	



Question 1

Harry is taking a trip to his Auntie's house who lives 50 miles away.

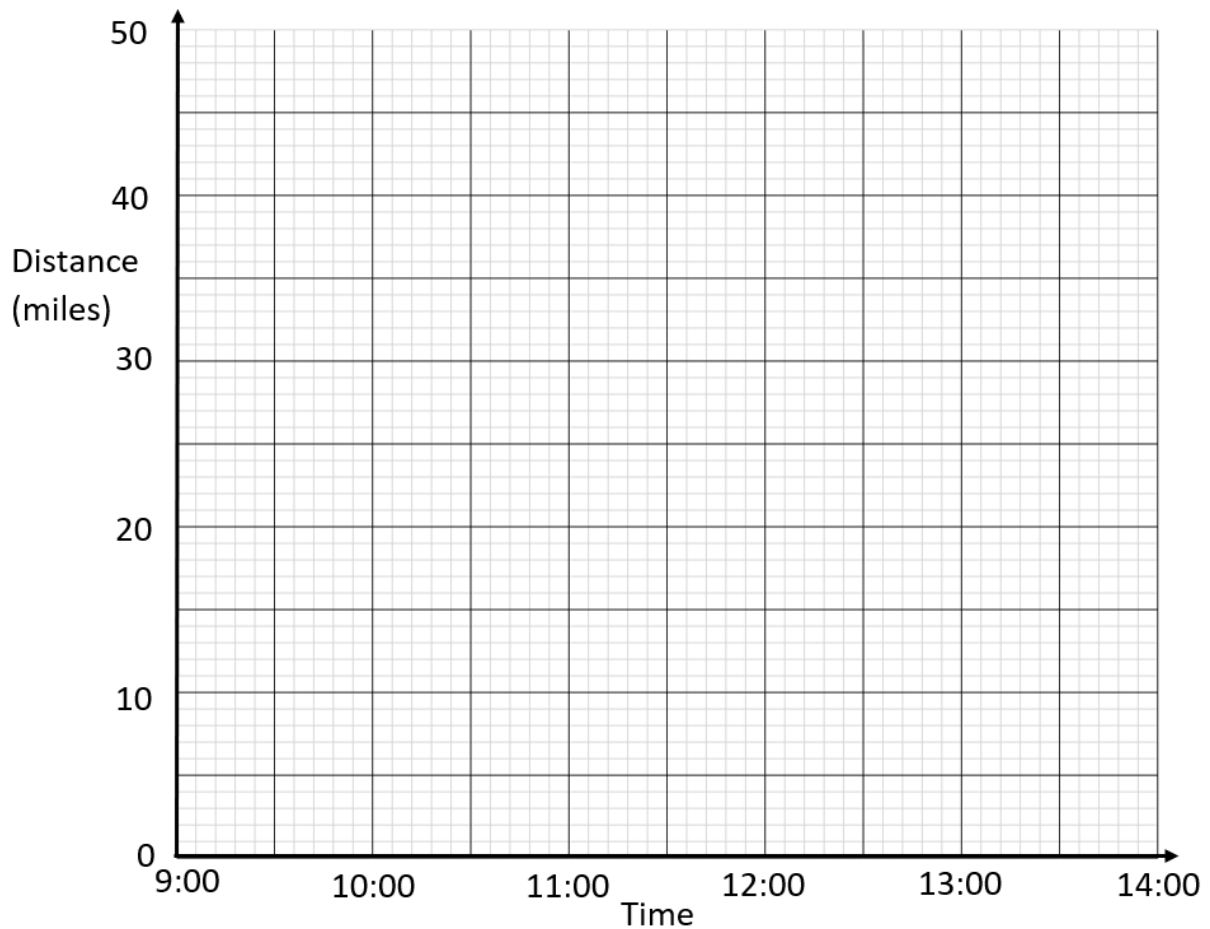
He travels for the first hour at a average speed of 30 mph.

He then stops in a service station and has some breakfast. He is there for 30 minutes.

The remainder of the journey to his Auntie's house takes 30 minutes.

Harry stays at his Auntie's house for 1.5 hours.

He then travels home at an average speed of 40 mph.



Complete the Distance – Time Graph to show this information

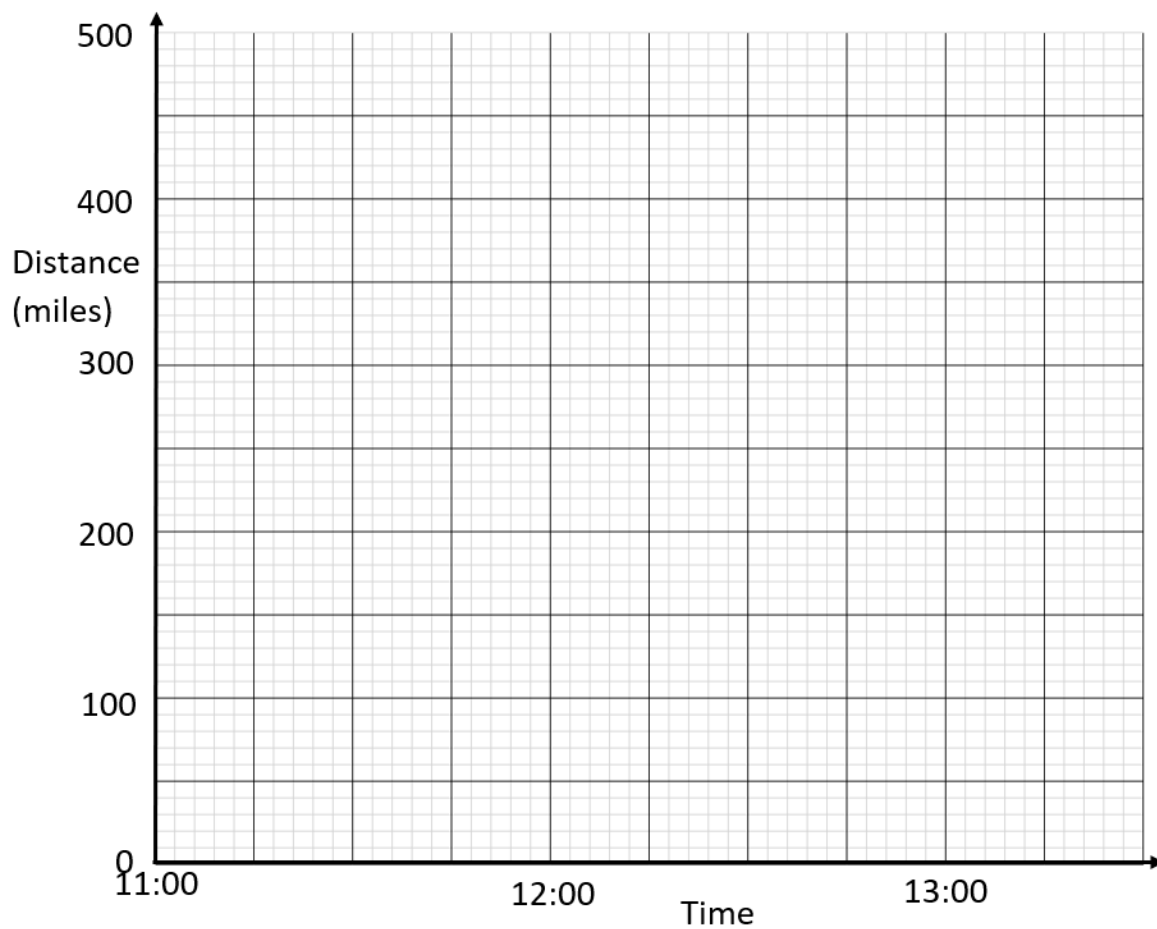


Question 2

A plane takes off at 11:00am. For the first 45 minutes of the journey it travels at speed of 240mph.

For the next 45 minutes the plane travels at an average speed of 300 mph.

The plane is then slowed for the next 30 minutes to 100mph as it comes in to land.



- Complete the Distance – Time Graph
- How far did the plane travel in total?



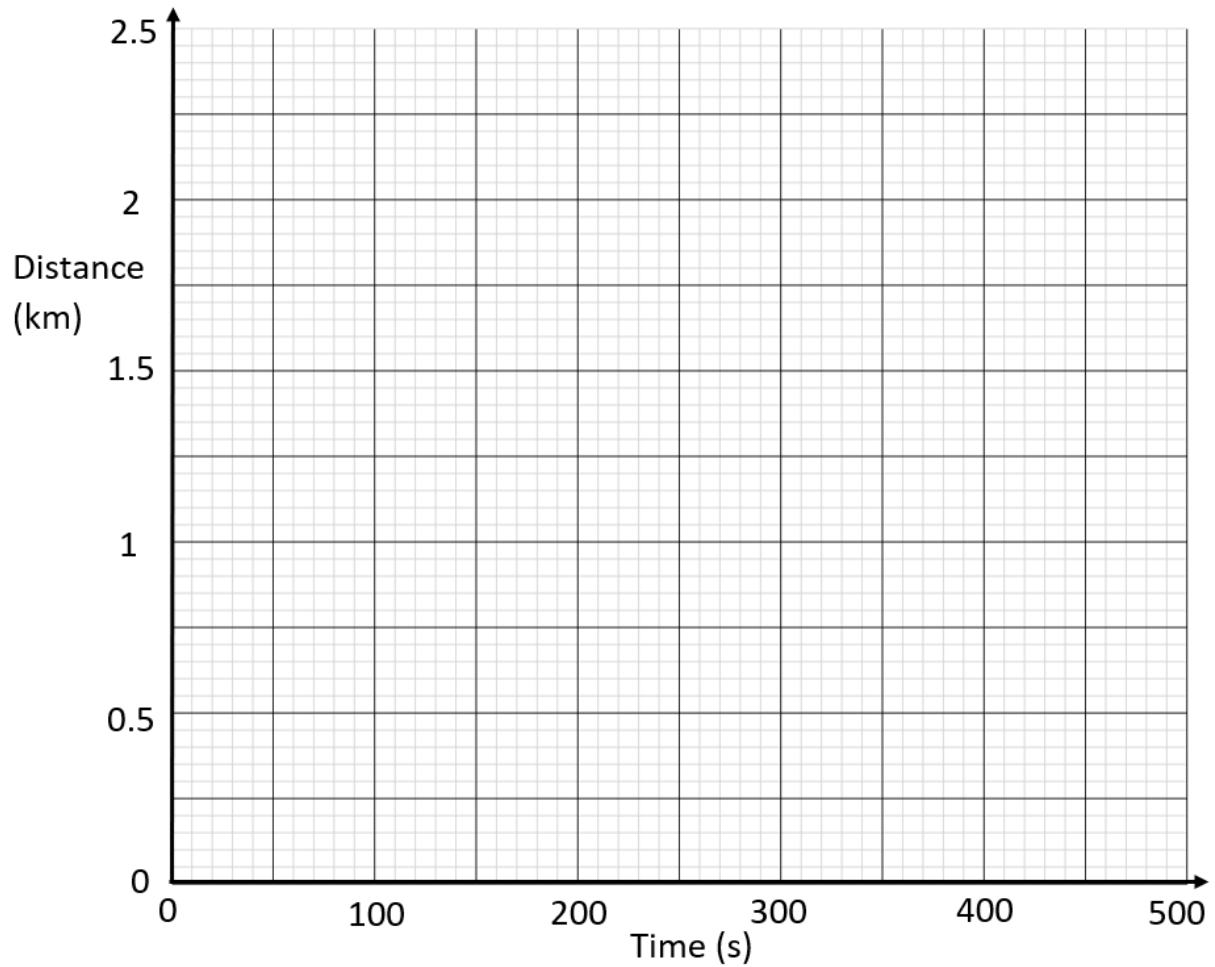
Question 3

Martin takes part in a 2.5km race.

He runs the first $\frac{2}{5}$ of the race at an average pace of 5 m/s

For the next $\frac{1}{5}$ of the race he slows to an average pace of 4 m/s

He runs the remainder of the race in a 150 seconds



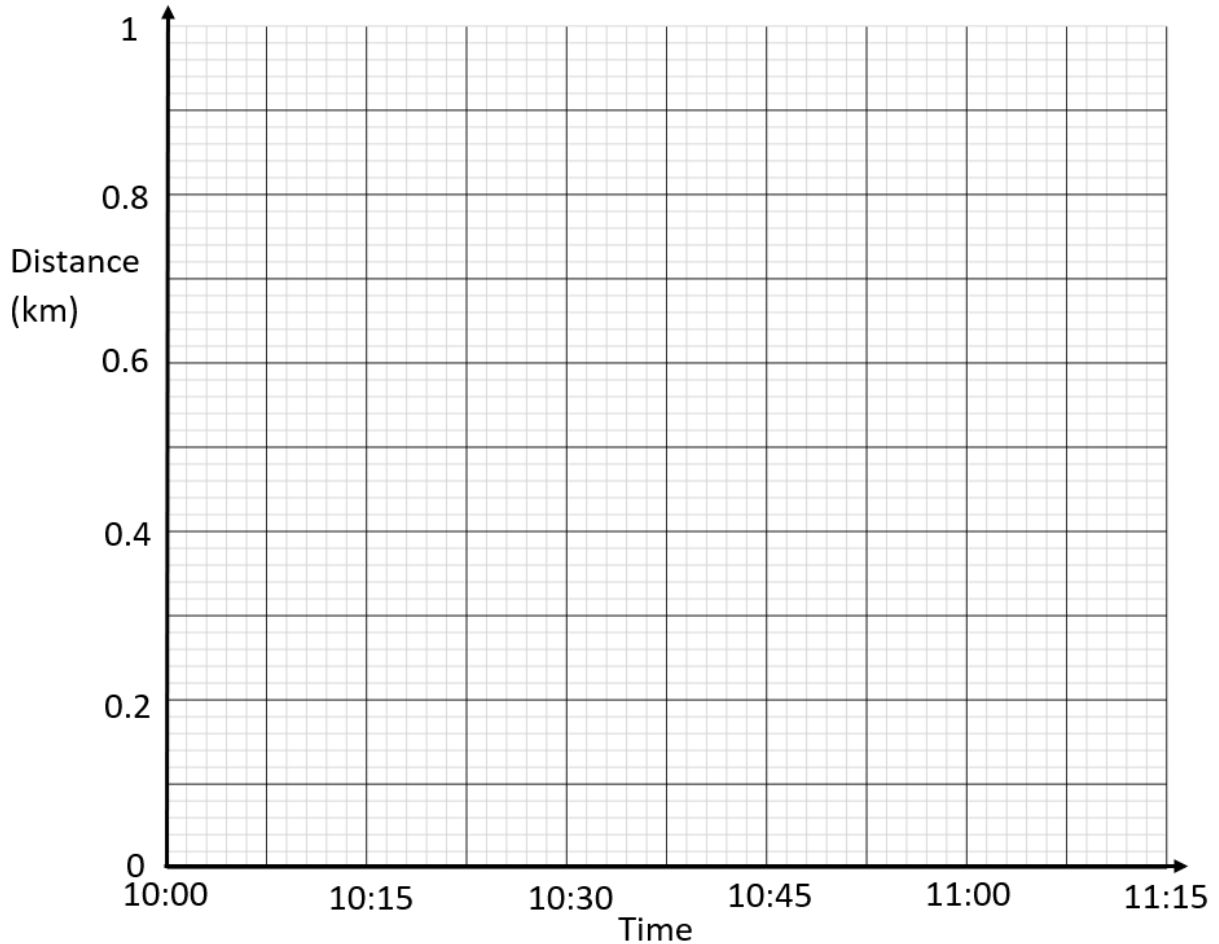
- Complete the distance – time graph to show this information
- How long did the race take? (Give your answer in minutes and seconds)



Question 4

The park is located 1 km from Sarah's house. Sarah cycles to the park setting off for the park at 10:00. On her way to the park at 10:15 she stops off at her friend's house for 15 minutes. Her friend's house is 0.5 km from the park.

After she leaves her friend's house she cycles the remainder of the journey at a speed of 2 km / h. Sarah stayed at the park for 15 minutes before cycling home. Sarah arrived home for 11:15

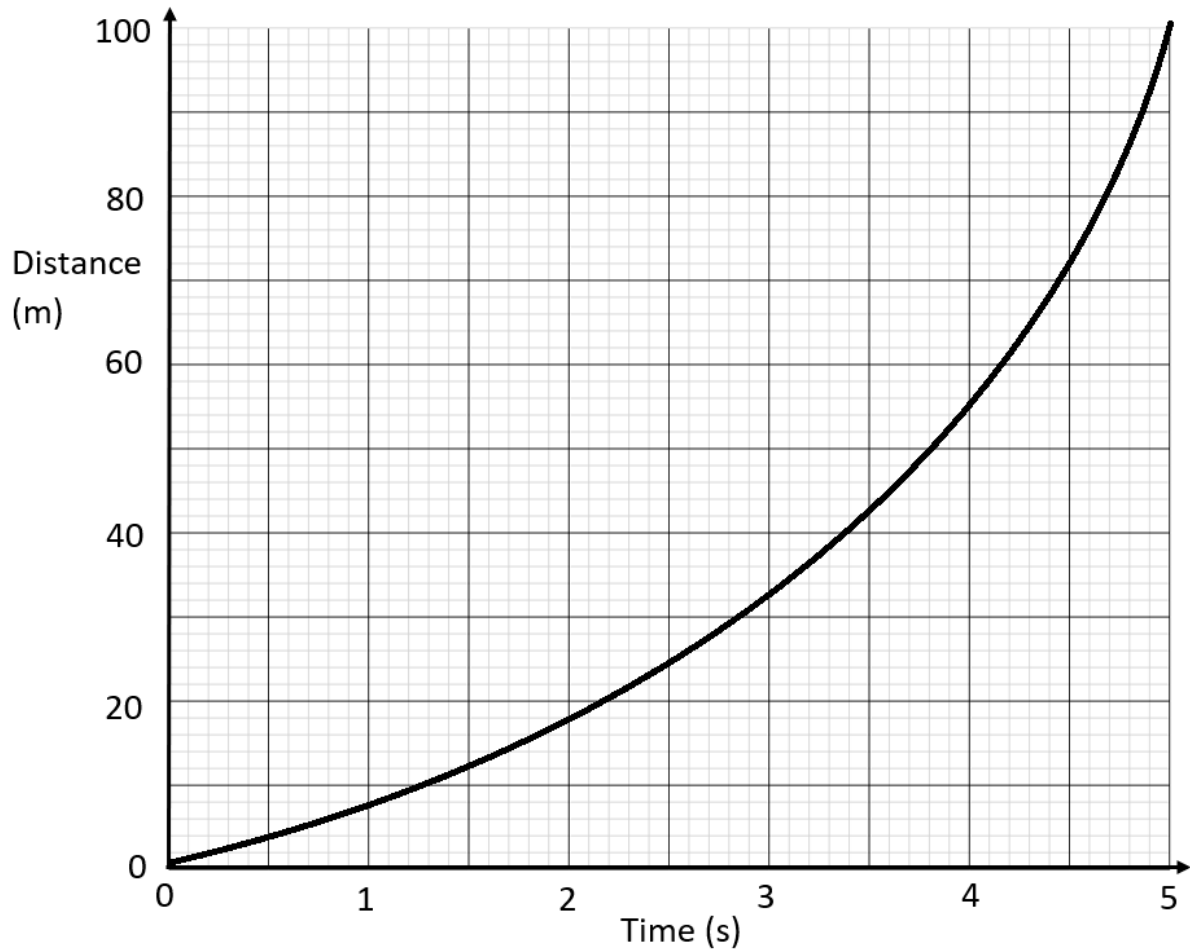


- Complete the distance-time graph.
- At what speed did Sarah travel home?



Question 5

The following distance time graph shows a car accelerating from a stationary position.

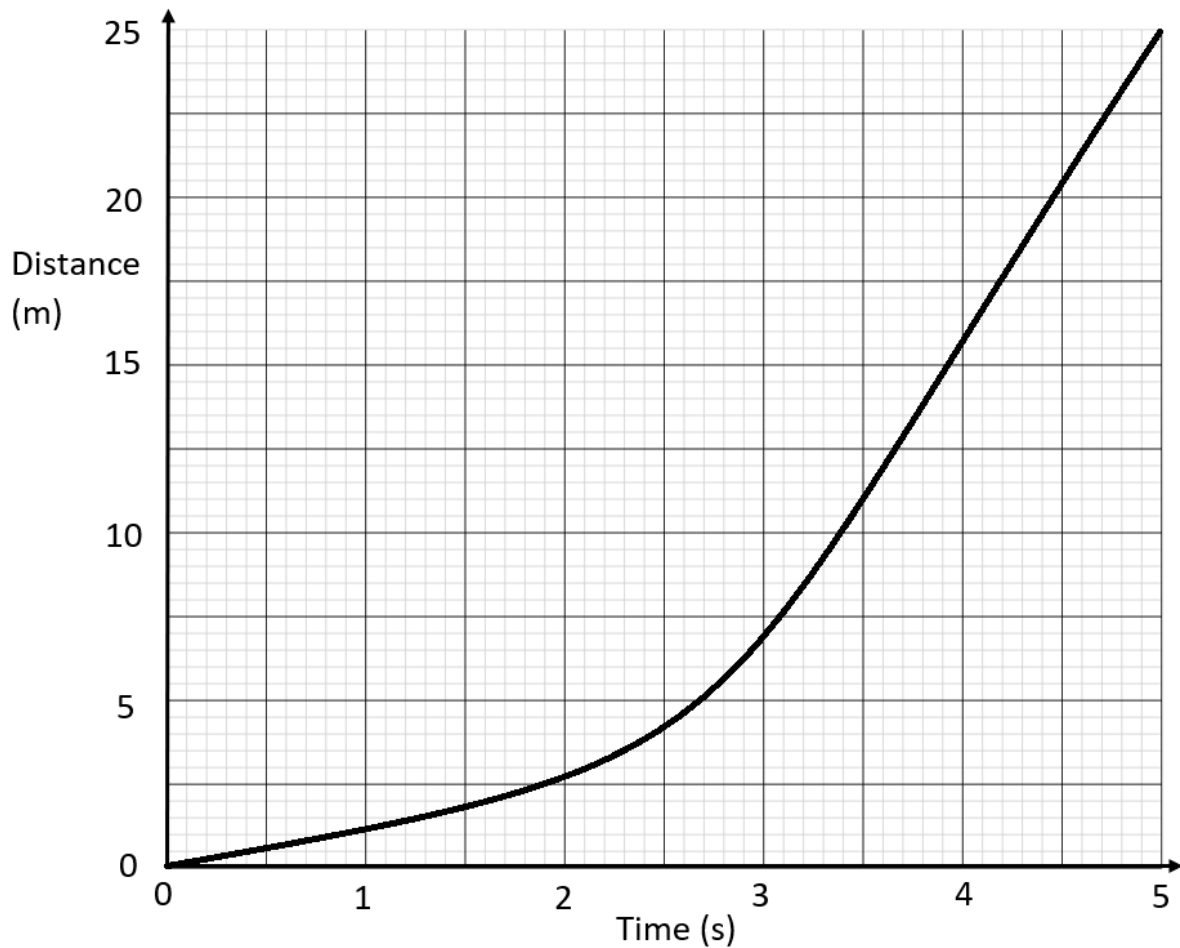


- a. Estimate the speed of the car at 3 seconds.



Question 6

The following graph shows the acceleration of a sprinter over the first 25m of a race.

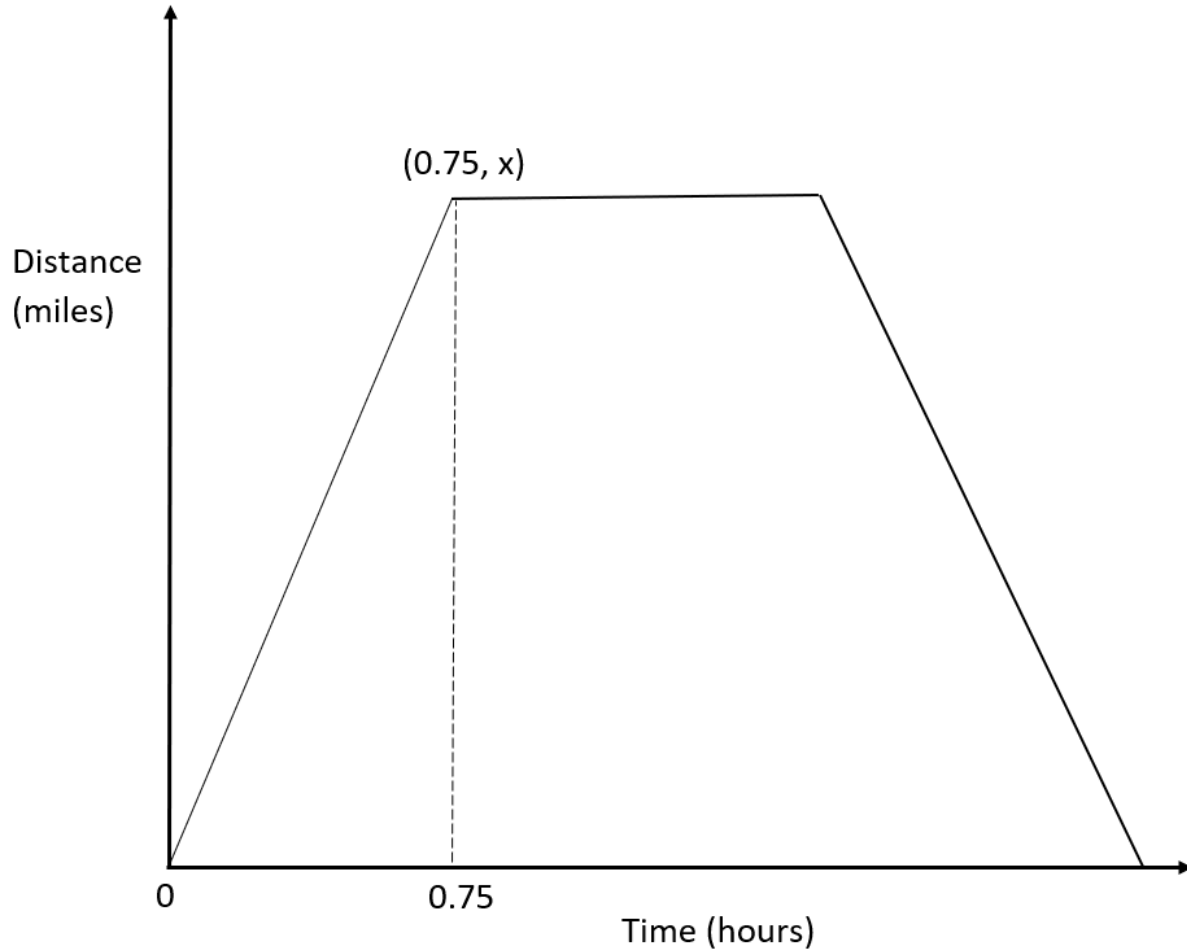


- At what time did the sprinter stop accelerating
- Estimate the sprinter's speed at exactly 2 seconds.
- Calculate the sprinter's average speed over the first 25m



Question 7

Samantha drives to her Grandmothers and back.

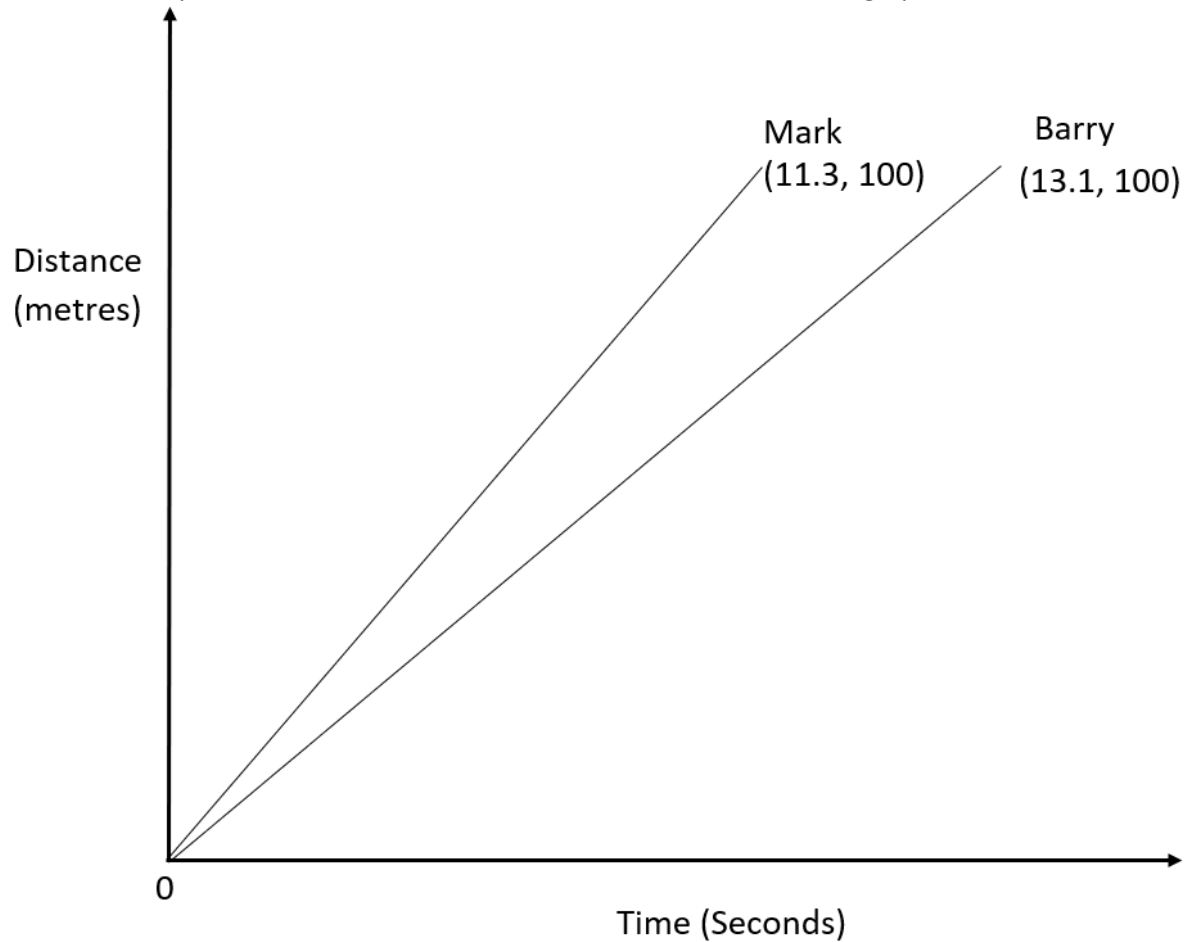


- a. Samantha's average speed on her way to her Grandmothers house was 48mph. Calculate the value of x .



Question 8

Mark and Barry raced over a 100m. This is shown in the distance – time graph below.



- Who won the race?
- Calculate the difference in velocity between Mark and Barry.



Question 9

A boat trip leaves the port and travels to a island which is located 50 km away. When the trip reaches the island the tourists have 90 minutes until the boat heads back.

The boat travels back at an average pace of 40km/h.

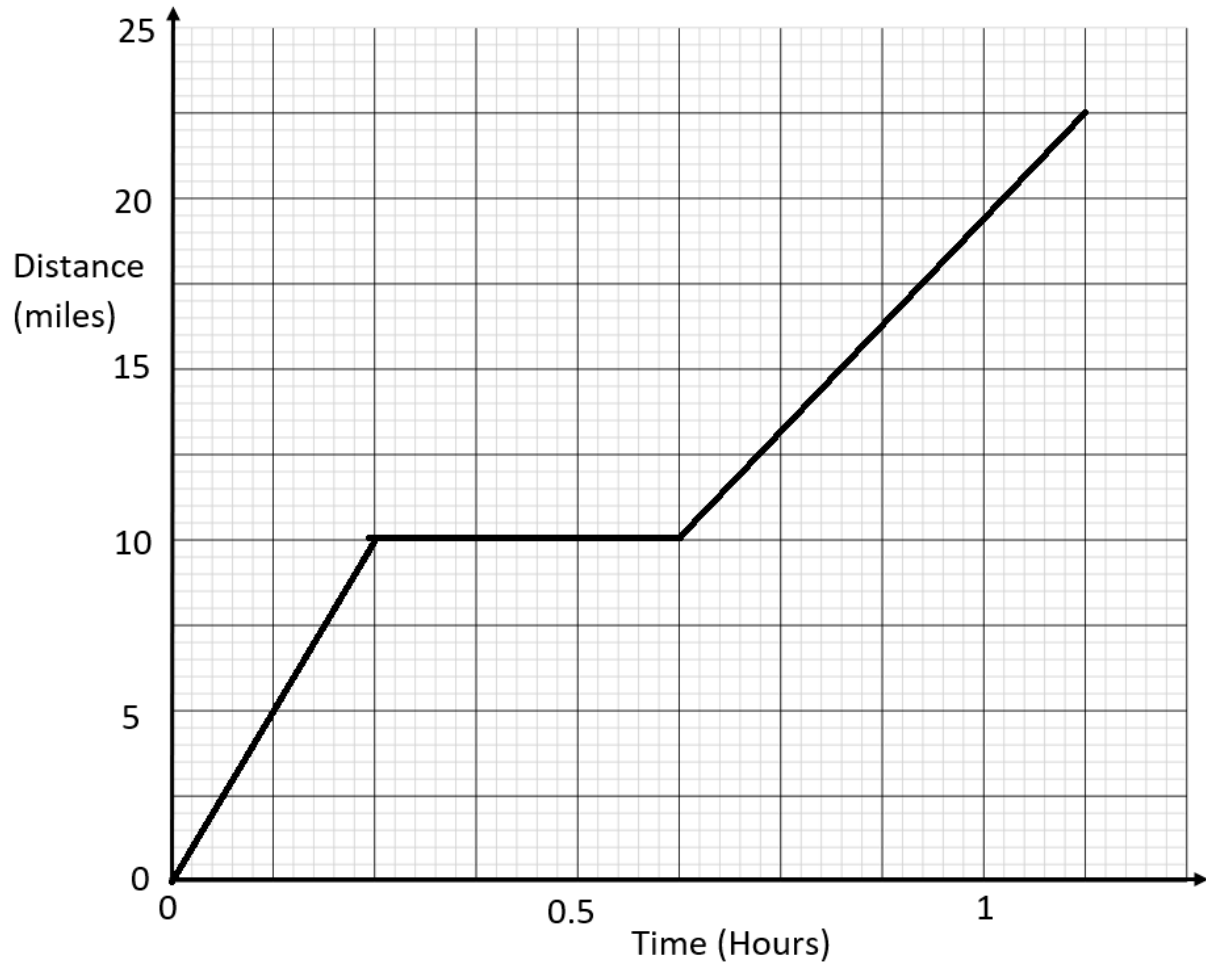


- Complete the distance – time graph
- Calculate the speed of the boat on the journey there.



Question 10

The travel graph below shows Evie's trip to work. On her way to work she stopped off at the shop.

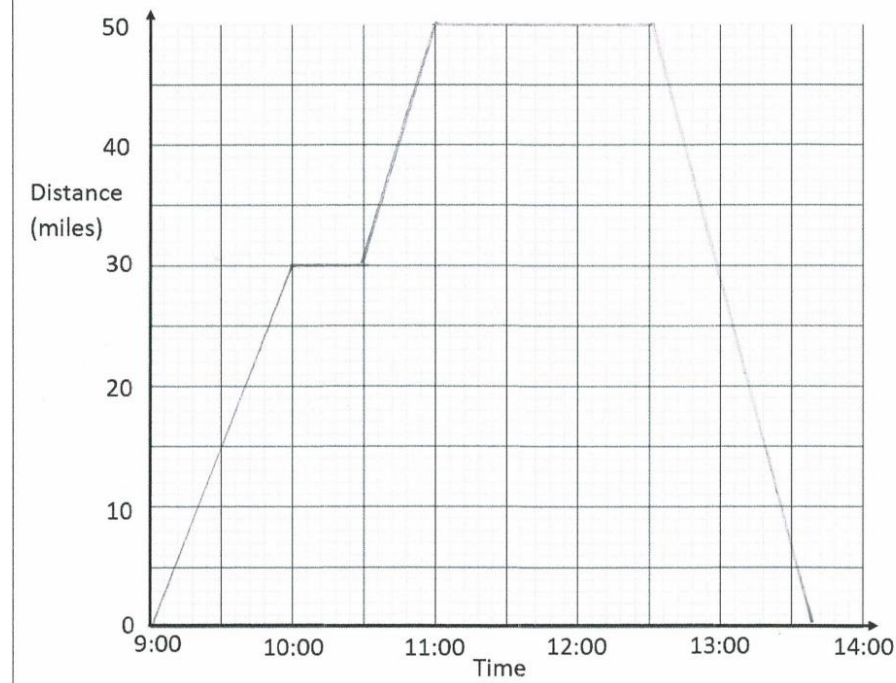


- Calculate the time that Evie spent at the shop.
- Calculate the average speed for the whole journey.

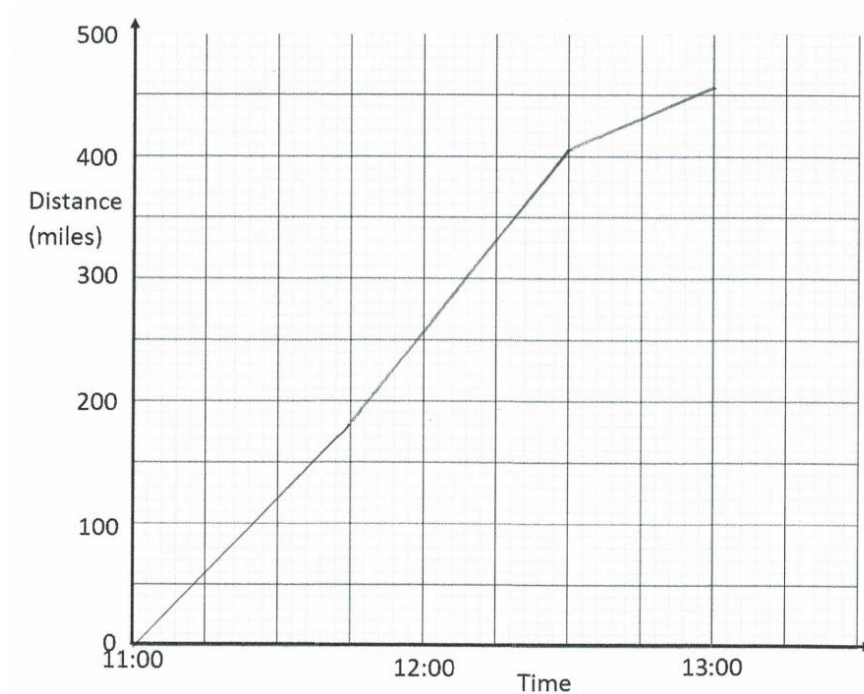


Answers

Question 1:



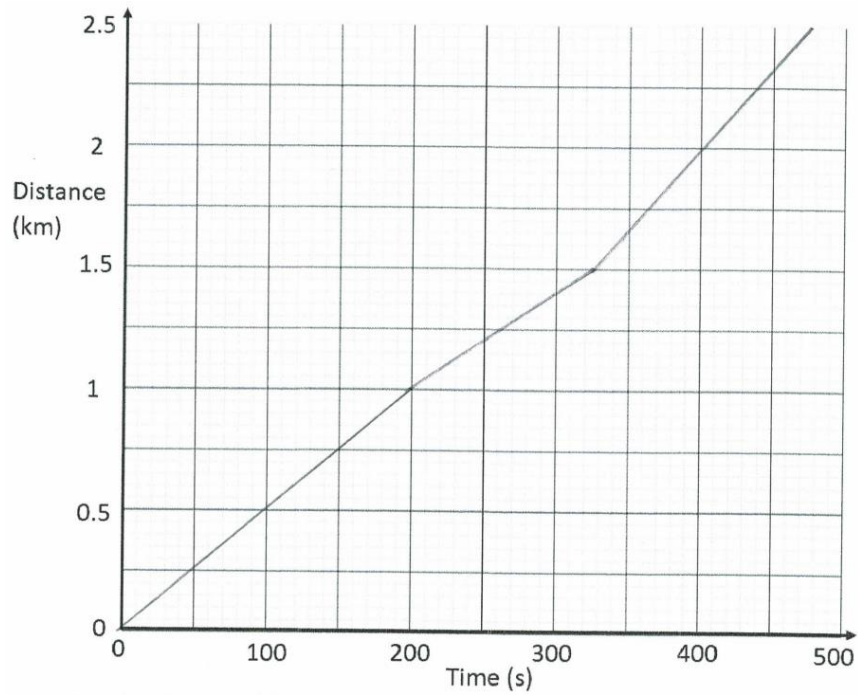
Question 2:



$b = 455$ miles

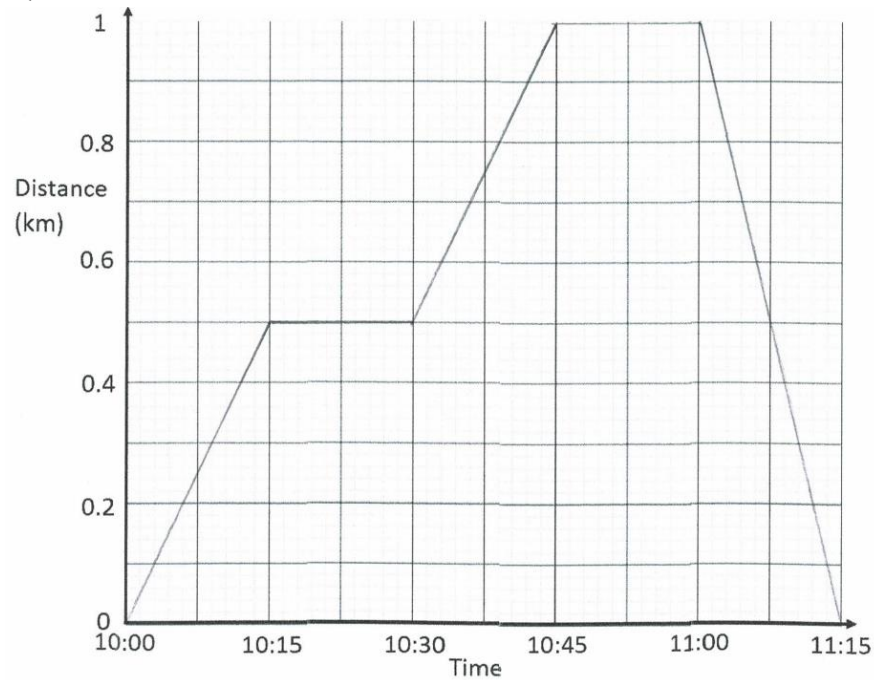


Question 3:



$b = 7$ minutes 45 seconds

Question 4:



$b = 4\text{km/hr}$



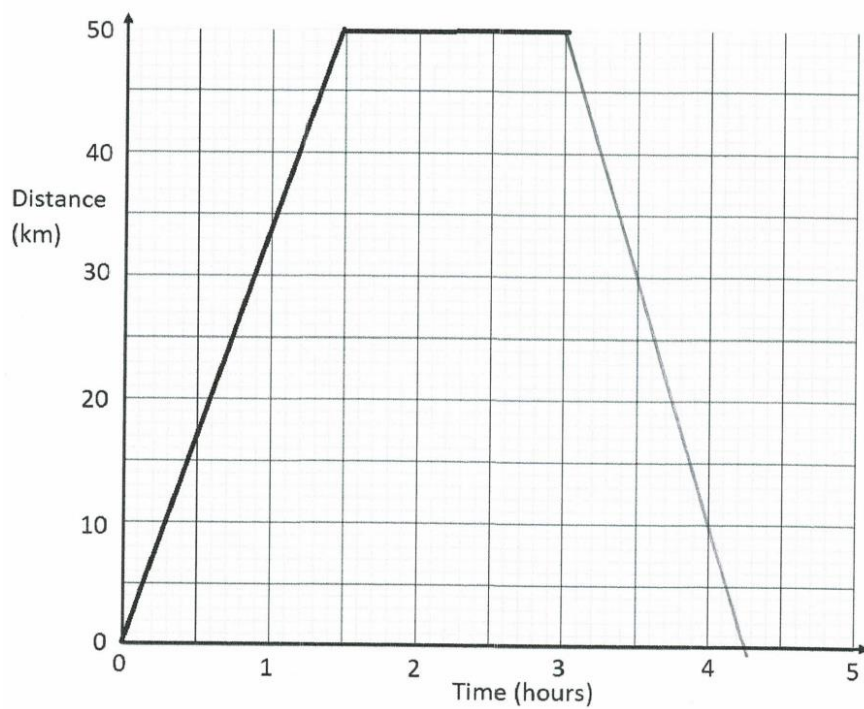
Question 5: 17.6 m/s (approx)

Question 6: a. 3.2 seconds b. 2.3 m/s (approx) c. 5m/s

Question 7: $x = 36$

Question 8: a. Mark b. 1.22 m/s

Question 9:



$b = 33.3 \text{ m/s}$

Question 10: a. 45 minutes b. 20mph