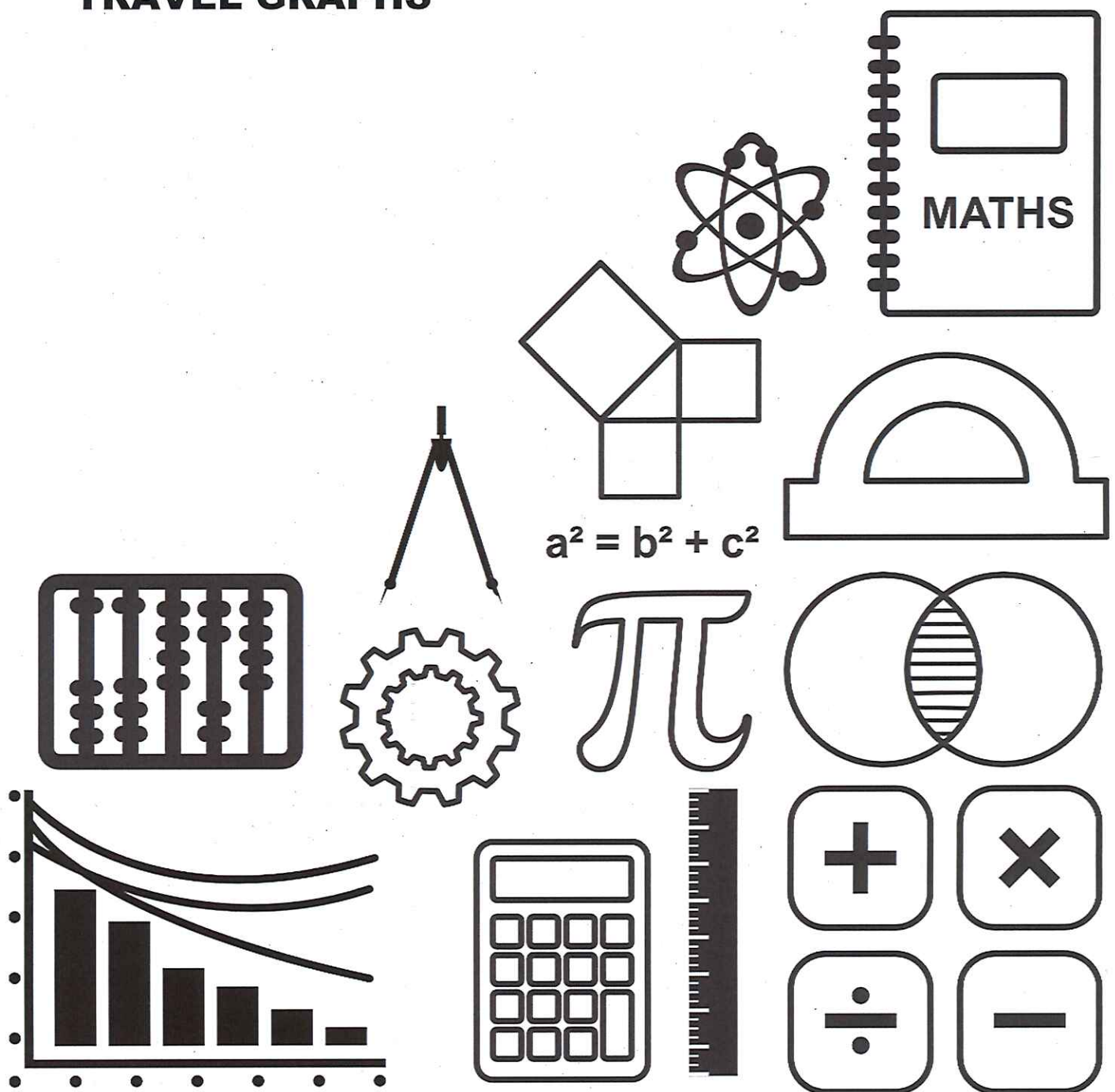
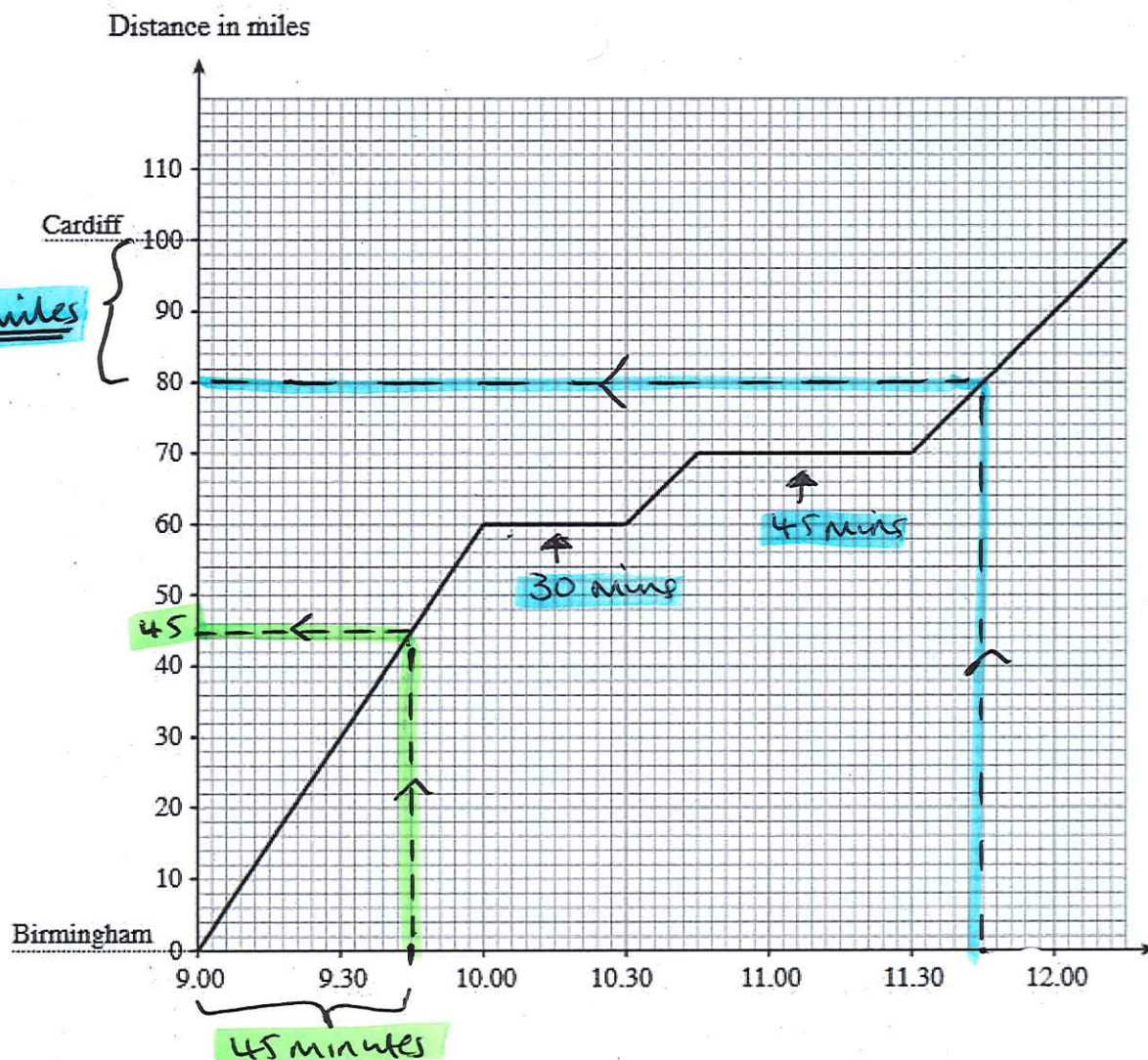


GCSE TOPIC BOOKLET TRAVEL GRAPHS

SOLUTIONS



1. By road, Cardiff is 100 miles from Birmingham. The graph below shows Christopher's journey by car from Birmingham to Cardiff.



- (i) How far did Christopher travel in the first 45 minutes?

45 miles

- (ii) What is the total time that Christopher was at rest?

$30 + 45 = 75 \text{ minutes}$ (1 hr 15 minutes)

- (iii) How far from Cardiff was Christopher at 11.45?

20 miles

[3]

John travelled from his home to a service area, stayed there for a while and returned home. The graph shows John's journey.

- (a) How far did he travel in the first hour?

40 miles

[1]

- (b) For how many minutes did he stay at the service area?

$3.39 \rightarrow 4.24 = \underline{45 \text{ minutes}}$

[1]

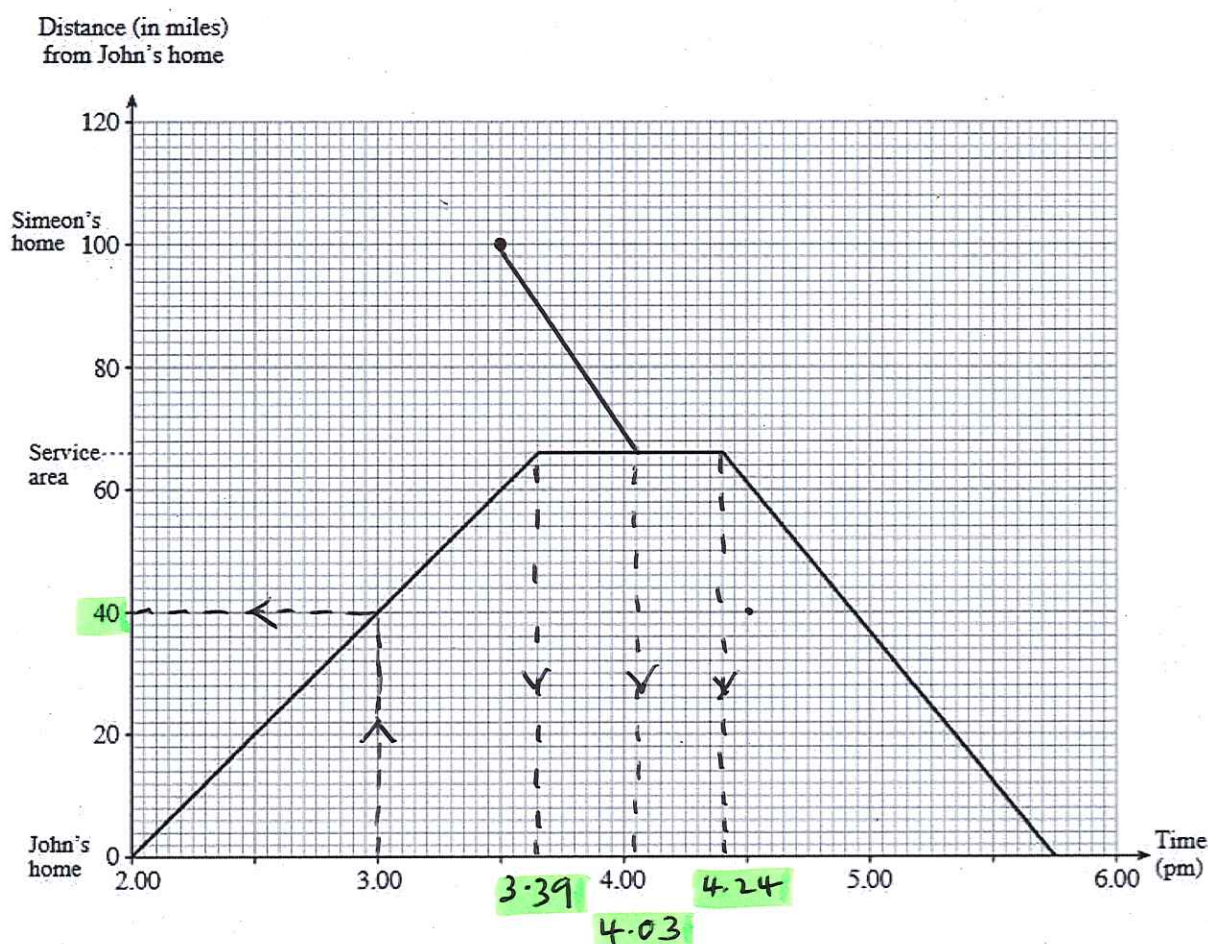
- (c) Simeon lives 100 miles from John. Simeon left his house at 3.30 pm and travelled at an average speed of 60 m.p.h. to the service area. Draw his journey on the graph paper.

[2]

- (d) At what time did Simeon arrive at the service area?

4.03 pm

[1]



3.

Helen cycles home from a village that is 30 miles from her home. The travel graph below represents her journey.

(a) How far did Helen cycle in the first hour?

$$30 - 17 = 13 \text{ miles}$$

[1]

(b) For how many minutes did Helen stop on her journey?

$$11:09 \rightarrow 11:45 = 36 \text{ minutes}$$

[1]

(c) Without calculating any speeds, explain how you can decide whether Helen was cycling faster before stopping or after she had stopped.

Helen was cycling faster before stopping because the gradient of the line is steeper

[1]

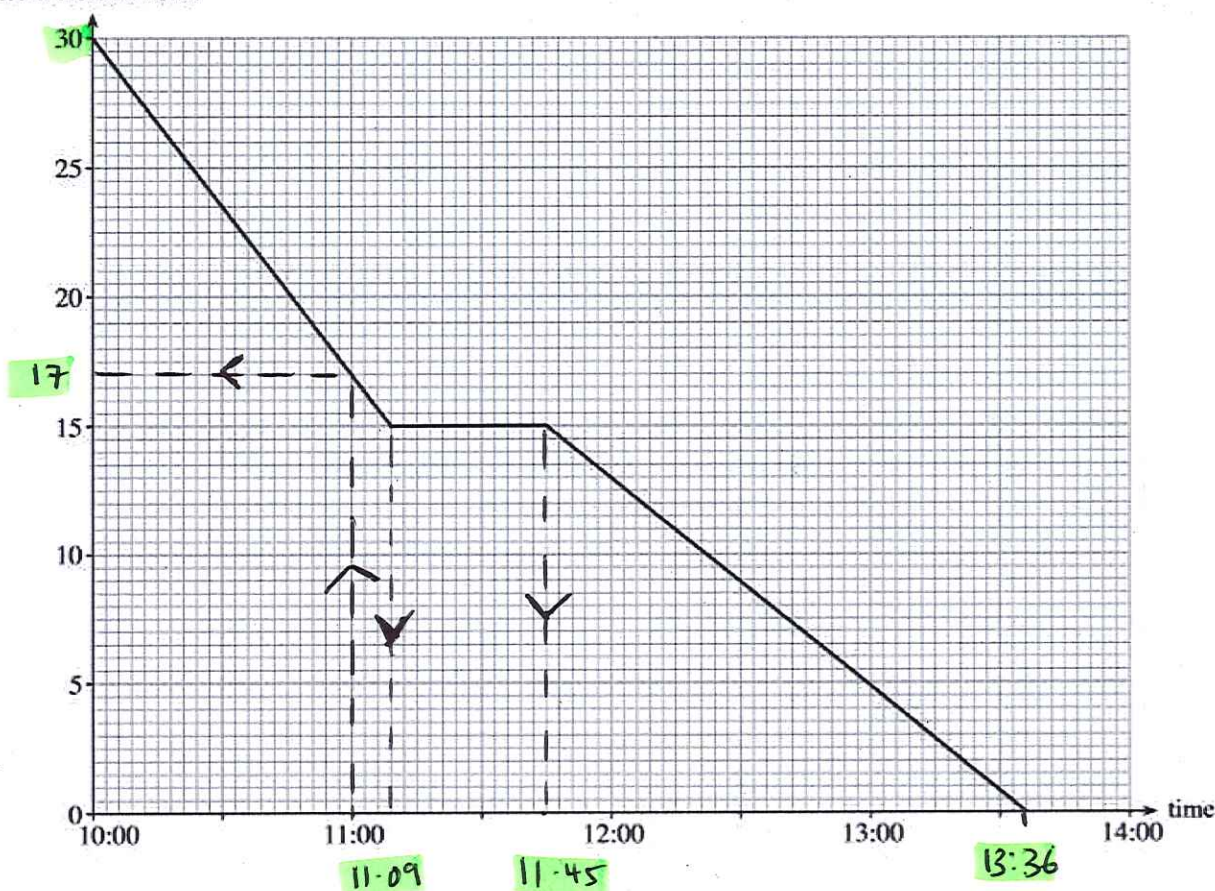
(d) At what time did she arrive home?

13:36

(1.36pm)

[1]

Distance (in miles)
from Helen's home



4. Chris goes for a drive in his car. He stops twice during his journey. The graph shows his journey.

(a) How far did Chris travel between 09:00 and 10:00?

$$40 - 10 = 30 \text{ miles}$$

[1]

(b) For how many minutes altogether did Chris stop on his journey?

$$42 \text{ minutes} + 30 \text{ minutes} = 72 \text{ minutes}$$

$$(1 \text{ hour } 12 \text{ minutes})$$

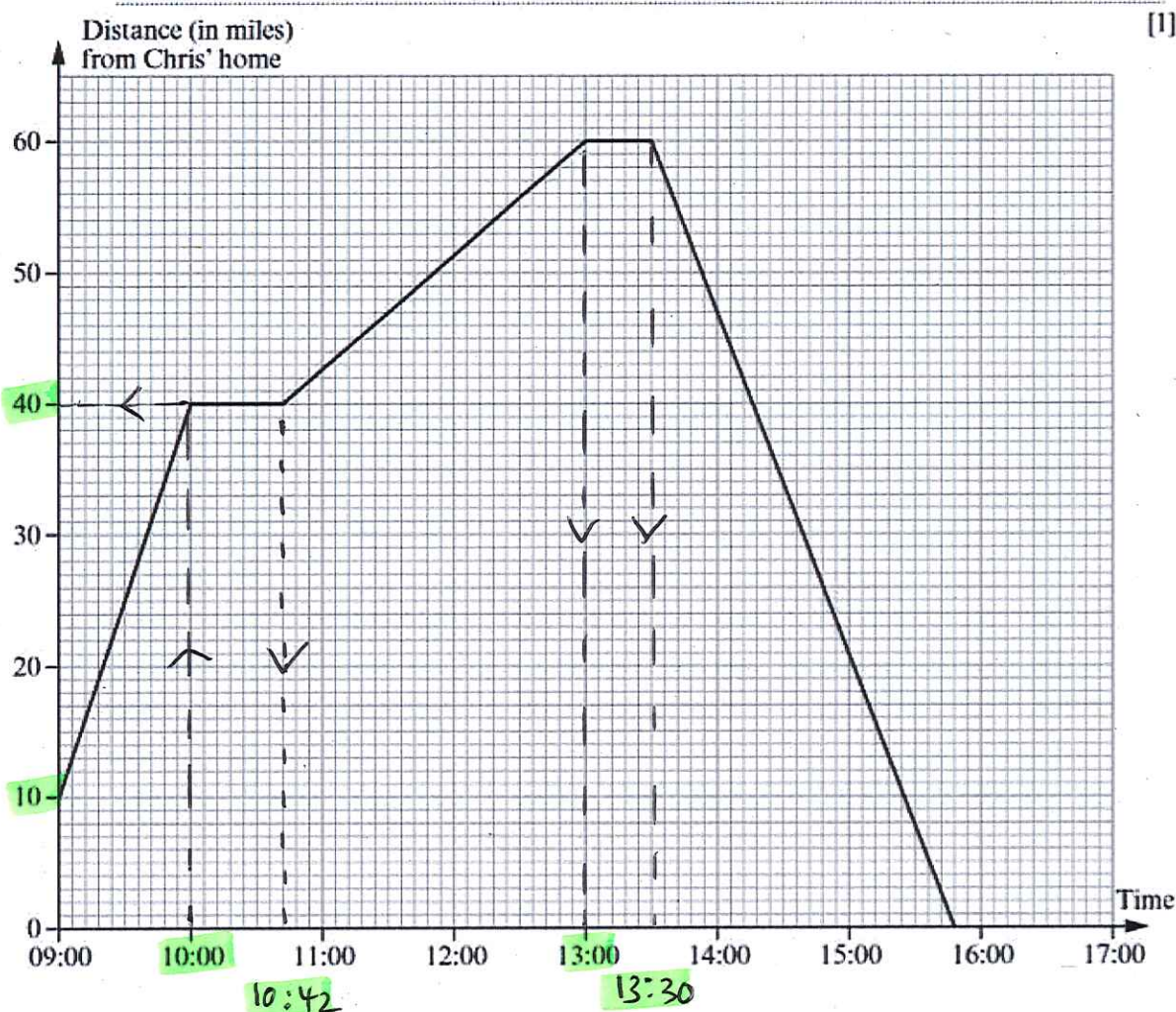
[1]

(c) Without calculating any speeds, explain how you can decide whether Chris was driving faster before or after stopping for the first time?

Faster before stopping because the line is steeper (bigger gradient).

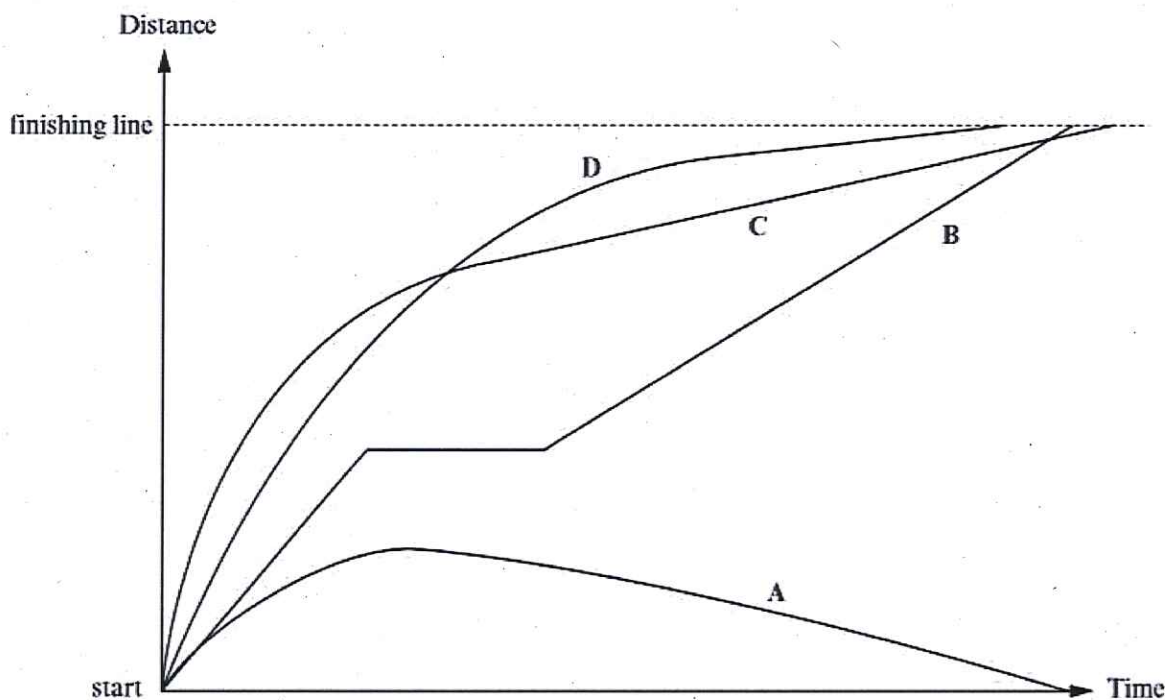
[1]

(d) At what time did he arrive home?



5.

Four pupils ran a race. The diagram shows their travel graphs.



(a) Who won the race? D [1]

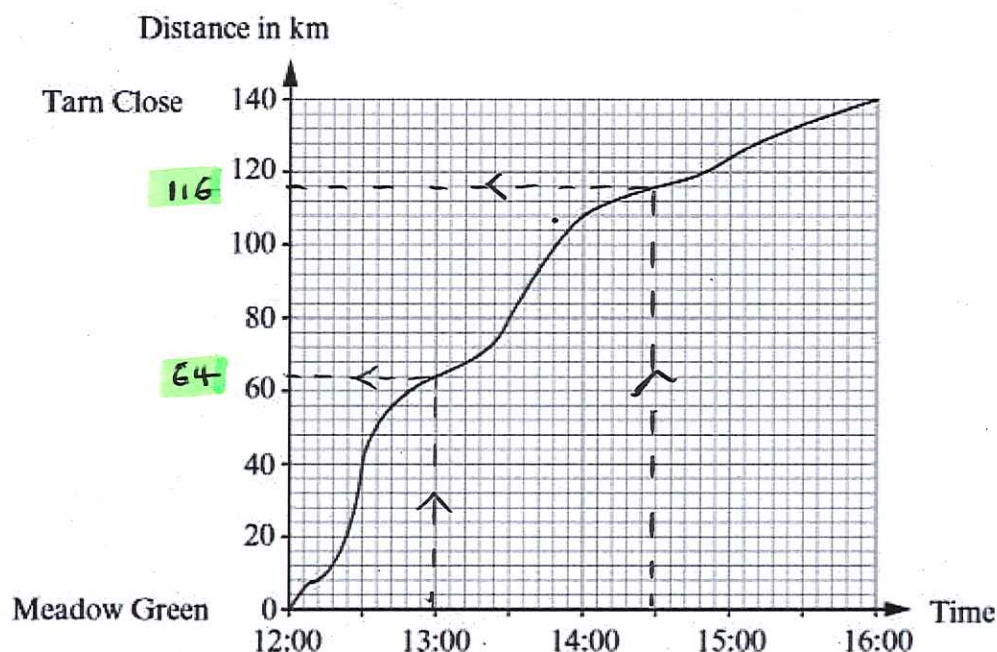
(b) Who was in the lead in the very early part of the race? C [1]

(c) Describe A's race.

A ran about a quarter of the race and then slowly returned to the start. A did not finish.

[1]

6. The distance-time graph shows a 140km journey from Meadow Green to Tarn Close.



- (a) (i) What is the distance travelled between 13:00 and 14:30?

$$\begin{array}{r} 116 \\ - 64 \\ \hline 52 \end{array} \quad \underline{\underline{52 \text{ km}}}$$

- (ii) Find the average speed for this part of the journey.

$$\begin{aligned} \text{average speed} &= \frac{\text{total distance}}{\text{total time}} = \frac{52}{1.5} \\ &= \underline{\underline{34.6 \text{ km/h}}} \quad \left(34\frac{2}{3} \right) \\ &\quad 34.7 \text{ (1dp)} \end{aligned}$$

[4]

- (b) Explain how you can tell from the graph that it took less time to travel the first 70 km of the journey than it took to travel the final 70 km of the journey.

The first 70km is much steeper (has a bigger gradient), the second 70km is less steep, so it is slower.

[1]

7. An express coach travelled from Bristol to Swansea. It stopped at a motorway services on the way. The travel graph below represents its journey from leaving Bristol up to the time it left the motorway services.

(a) How far from Swansea was the coach when it started out? [1]

114 miles

(b) How far did the coach travel in the first hour? [1]

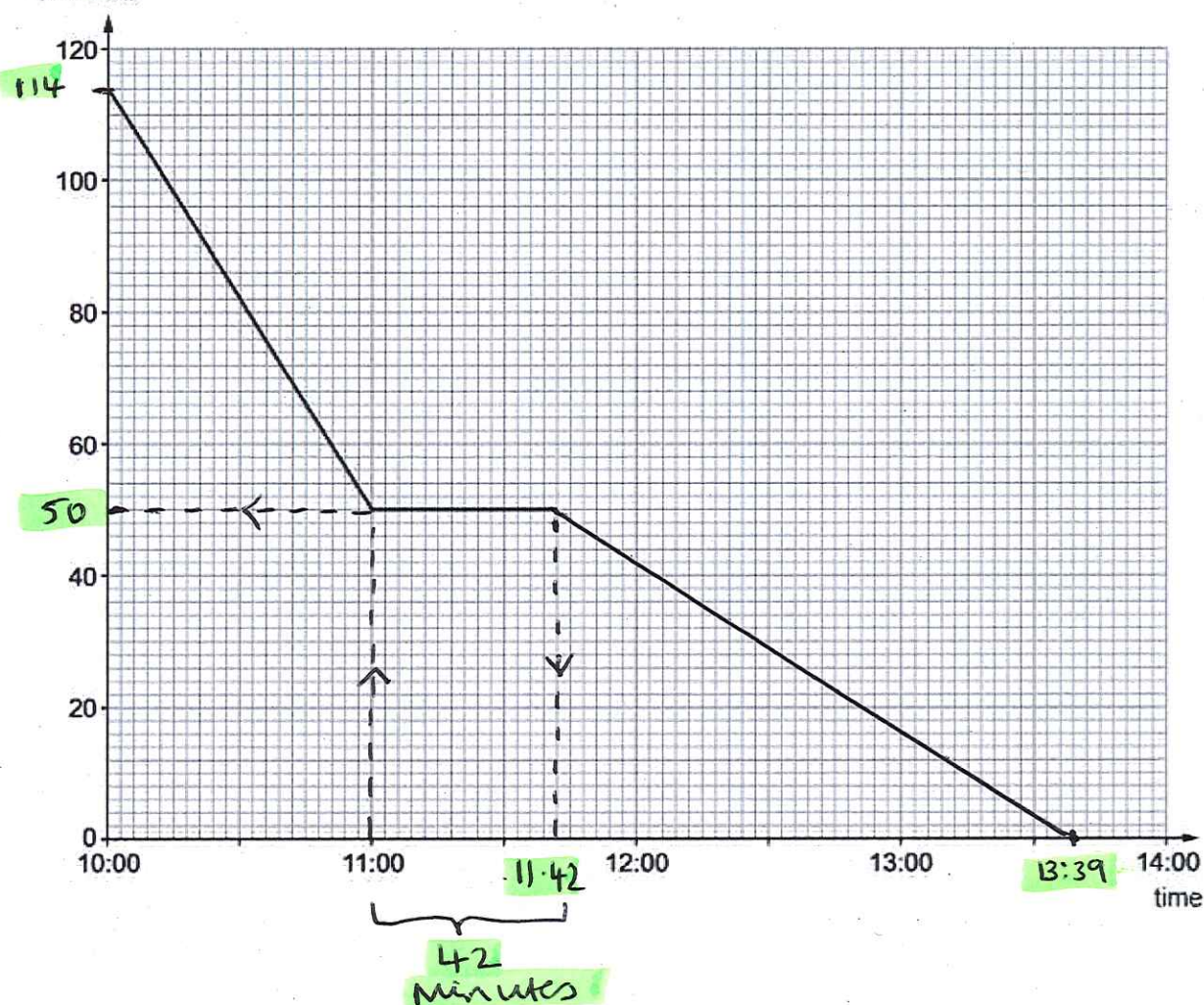
$$114 - 50 = \underline{64 \text{ miles}}$$

(c) For how many minutes did the coach stop at the motorway services? [1]

42 minutes

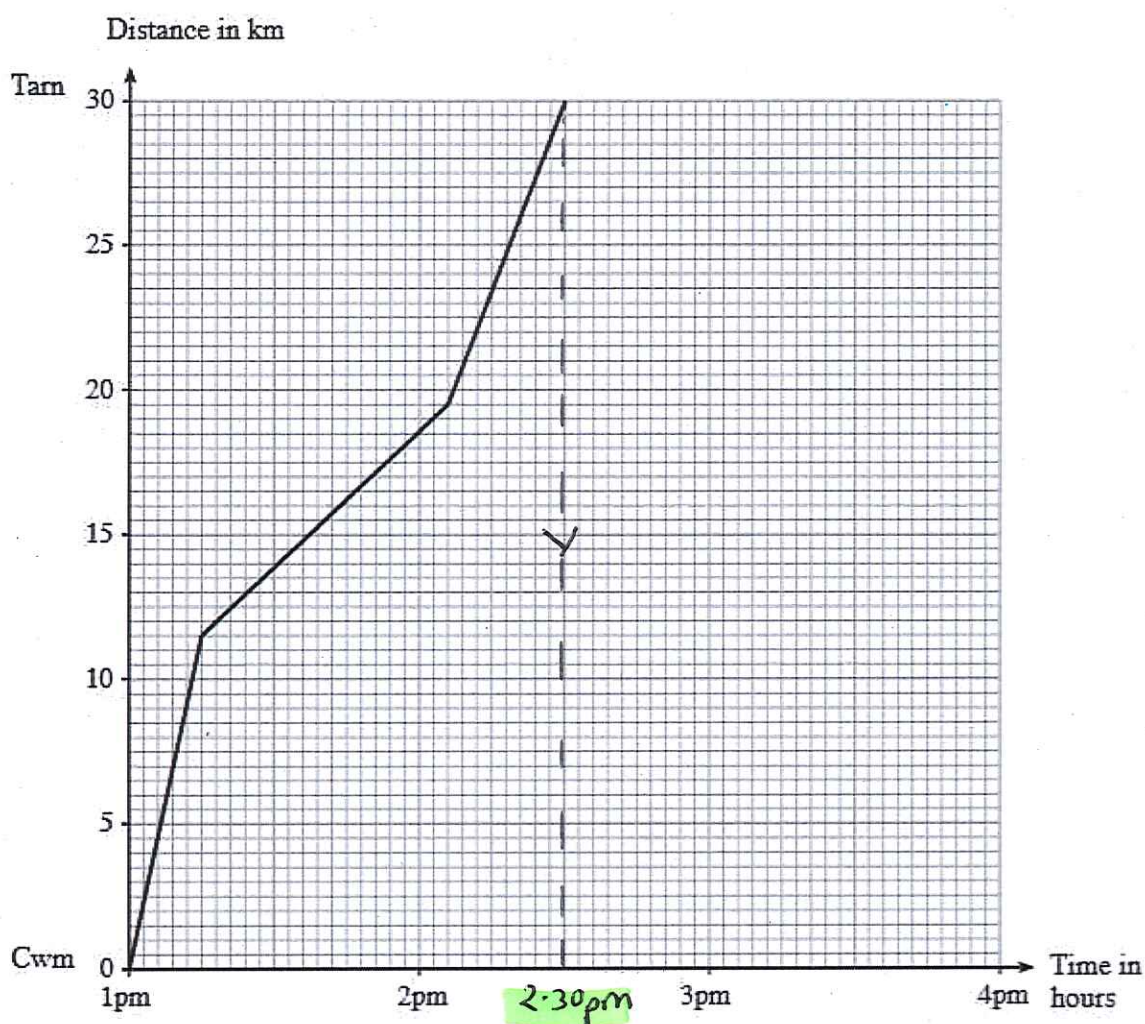
(d) After stopping at the motorway services, the coach was driven at a steady speed reaching Swansea at 13:39. Draw the graph for this part of its journey. [1]

Distance from Swansea
(in miles)



8.

The distance – time graph shows a 30 km journey from Cwm to Tam starting at 1 p.m.



Find the average speed for the 30 km journey.

$$\text{Average speed} = \frac{\text{Total distance}}{\text{Total time}} = \frac{30}{1.5} = \frac{60}{3} = 20 \text{ km/hour}$$

[2]