Write your name, centre number and candidate number in the boxes below.

Surname	Other names

Centre number | | | | | |

Candidate number | | | | |

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Travel and conversion graphs

Time allowed: 55 minutes

Subject code **0580**

Mathematics

Questions from Paper 1, Paper 2, Paper 3 and Paper 4

You must have: a ruler marked in centimetres and millimetres, a protractor, compasses, a pen, an HB pencil and an eraser.
You may use a calculator.

Total marks

/ 46

Instructions

- Answer every question in the space provided on this paper.
- Write in black or dark blue ink. Pencil may be used for diagrams and graphs.
- Fill in your name, centre number and candidate number above.
- Show your working: a correct method can earn marks even if the answer is wrong.
- Unless a question says otherwise, give answers that are not exact to 3 significant figures, and angles in degrees to 1 decimal place.

Information

- This paper has 10 questions worth 46 marks in total.
- The marks for each question or part are shown in brackets, for example [3].

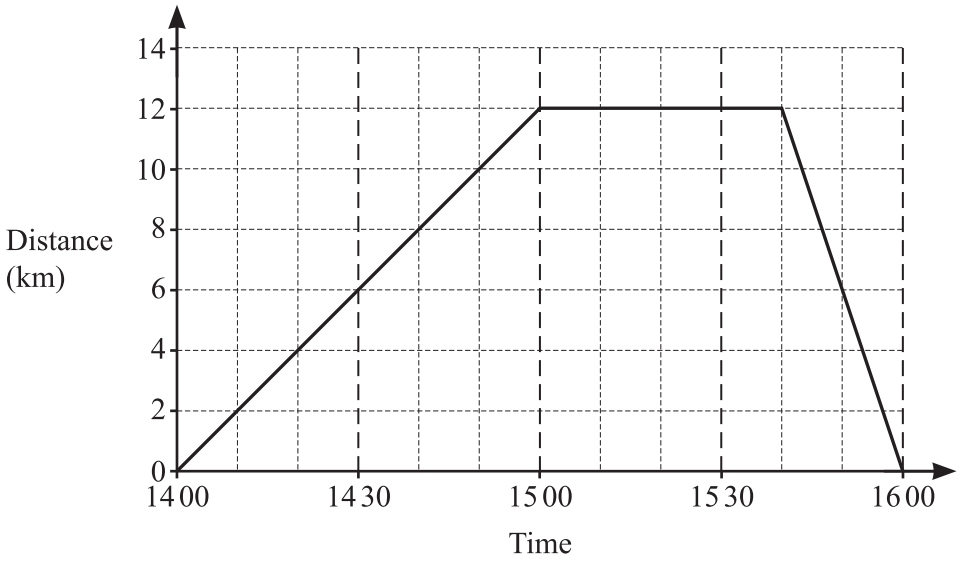
Advice

- Read every question through once before you write anything.
- Use the marks in brackets to judge how long to spend on each part.
- If you finish early, go back and check your working.

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Print at 100% (Actual size) so diagrams keep their real measurements.

1 The travel graph shows the journey of a bus.



(a) Find the distance the bus travels in the first 50 minutes.

..... km [1]

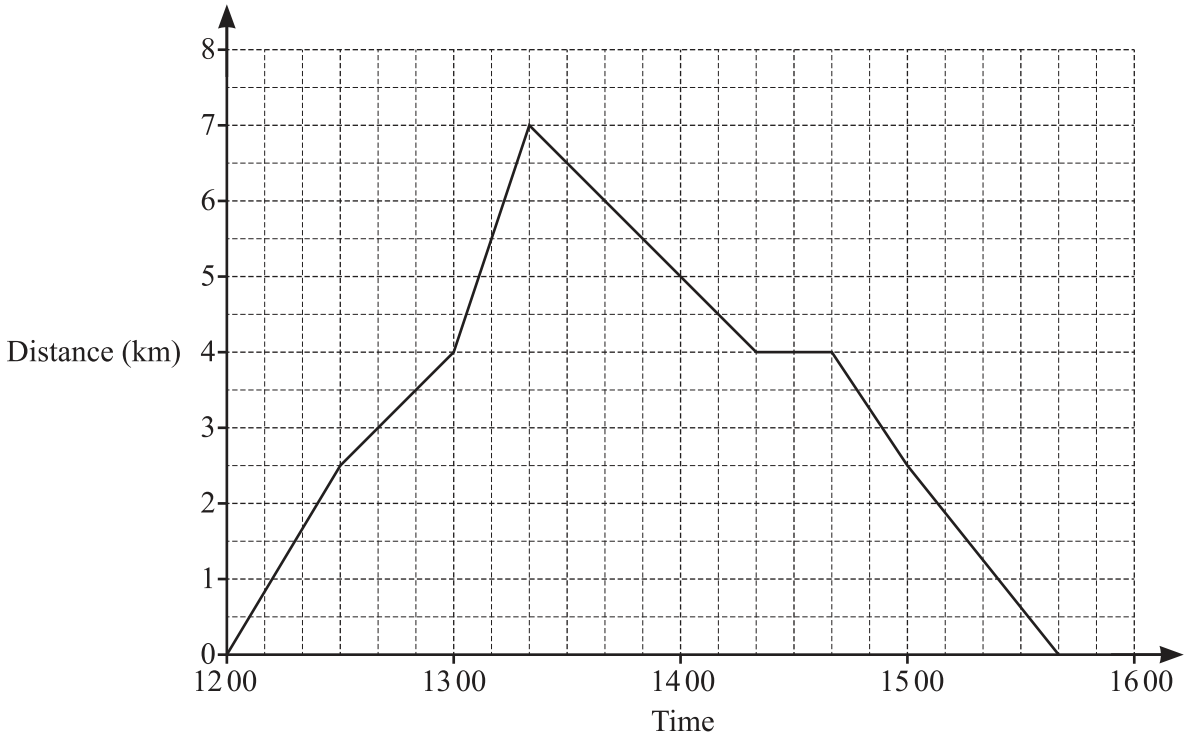
(b) Find how long, in minutes, the bus is stationary.

..... min [1]

(a) Distance-time graphs (b) Distance-time graphs Click for more variations

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2



The travel graph shows a student's journey.

(a) Explain what is happening between 14 20 and 14 40.

..... [1]

(b) Complete the statement.

The student is travelling fastest between the times ..... and .....

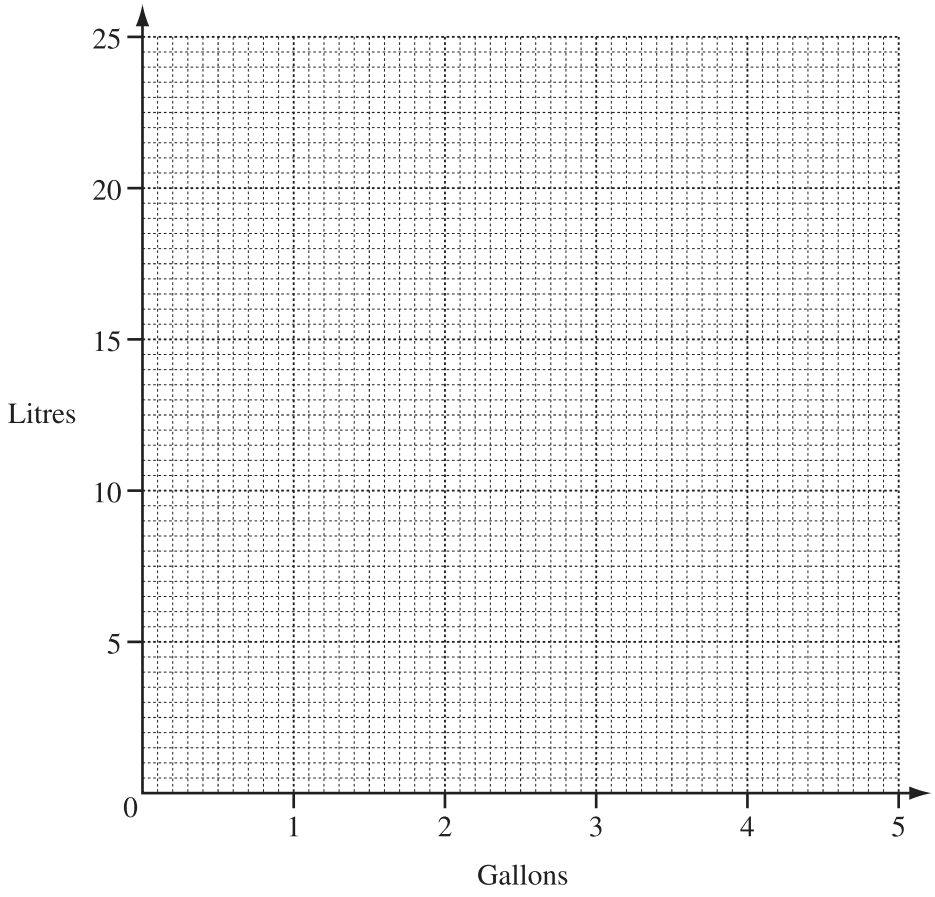
because ..... [2]

(a) Distance-time graphs (b) Distance-time graphs Click for more variations

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3 Mario says that 5 gallons = 22.5 litres.

(a) On the grid, draw a straight line to show the conversion rate that Mario uses.



[2]

(b) Use your graph to find

(i) the number of litres equivalent to 4 gallons,

Answer(b)(i) ..... litres [1]

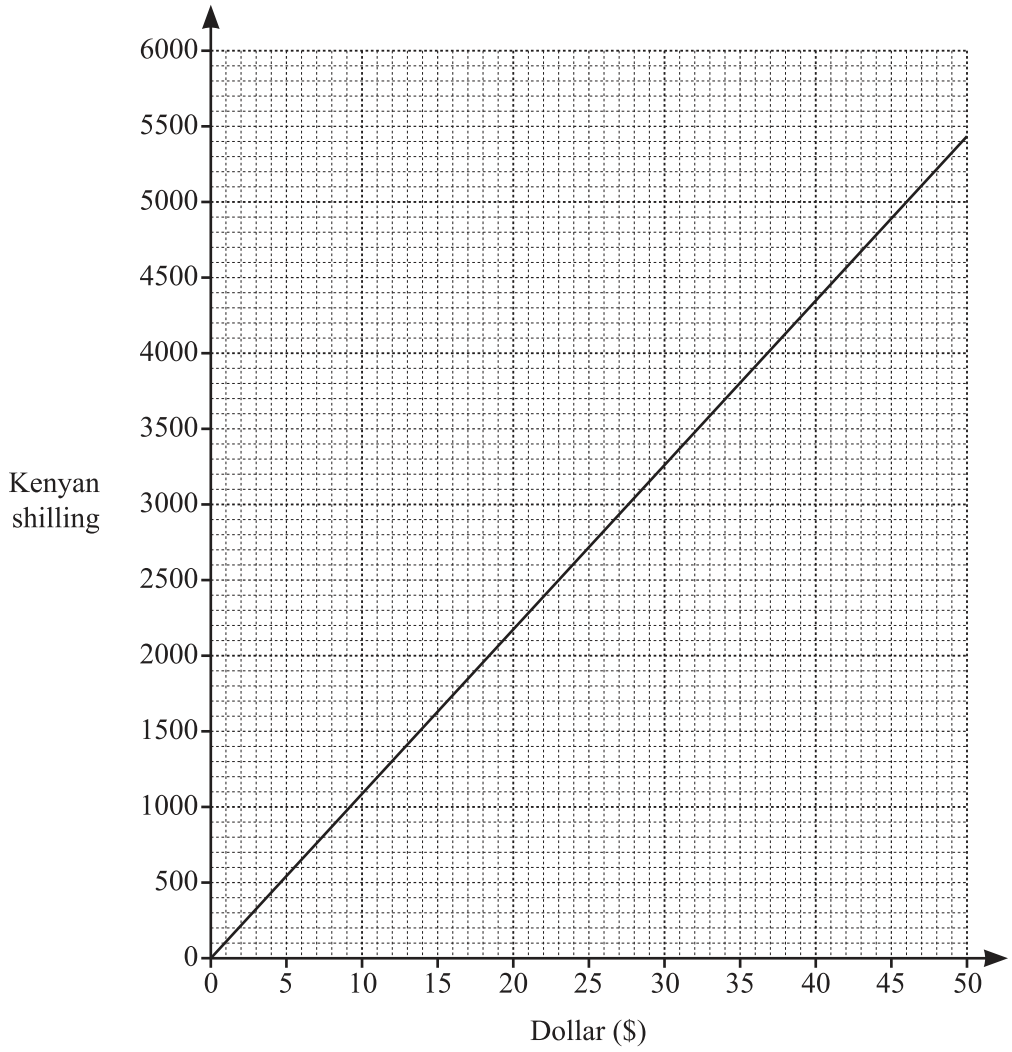
(ii) the number of gallons equivalent to 15 litres.

Answer(b)(ii) ..... gallons [1]

(a) Conversion graphs (b)(i) Conversion graphs (b)(ii) Conversion graphs Click for more variations

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4 The diagram shows a conversion graph for dollars and Kenyan shillings.



(a) Use the graph to change 5000 shillings to dollars.

$..... [1]

(b) Explain how to use this graph to change $420 to shillings.

.....

..... [1]

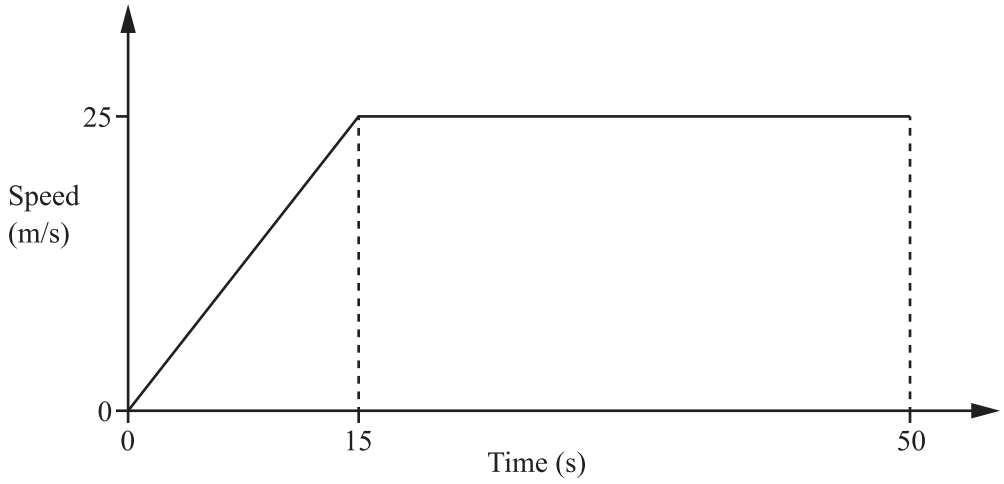
(c) The exchange rate is now $1 = 90 shillings.

On the grid, draw another line to show this exchange rate. [2]

(a) Conversion graphs (b) Conversion graphs (c) Conversion graphs Click for more variations

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5



The speed–time graph shows the first 50 seconds of a journey.

Calculate

(a) the acceleration during the first 15 seconds,

..... m/s^2 [1]

(b) the distance travelled in the 50 seconds.

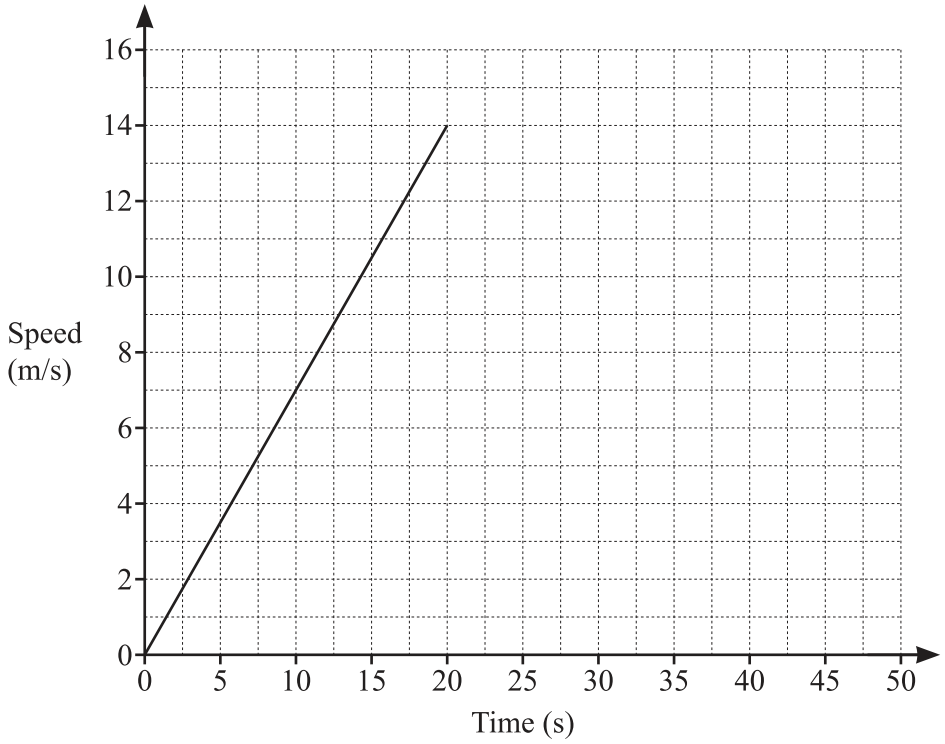
..... m [3]

(a) Speed-time graphs (b) Speed-time graphs Click for more variations

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6 A car starts its journey by accelerating from rest at a constant rate of $0.7\ m/s^2$ for 20 seconds, before reaching a constant speed of 14 m/s.
It then travels at 14 m/s for a distance of 210 m.
The car then decelerates at a constant rate of $1.4\ m/s^2$, before coming to a stop.

On the grid, complete the speed–time graph for the car's journey.



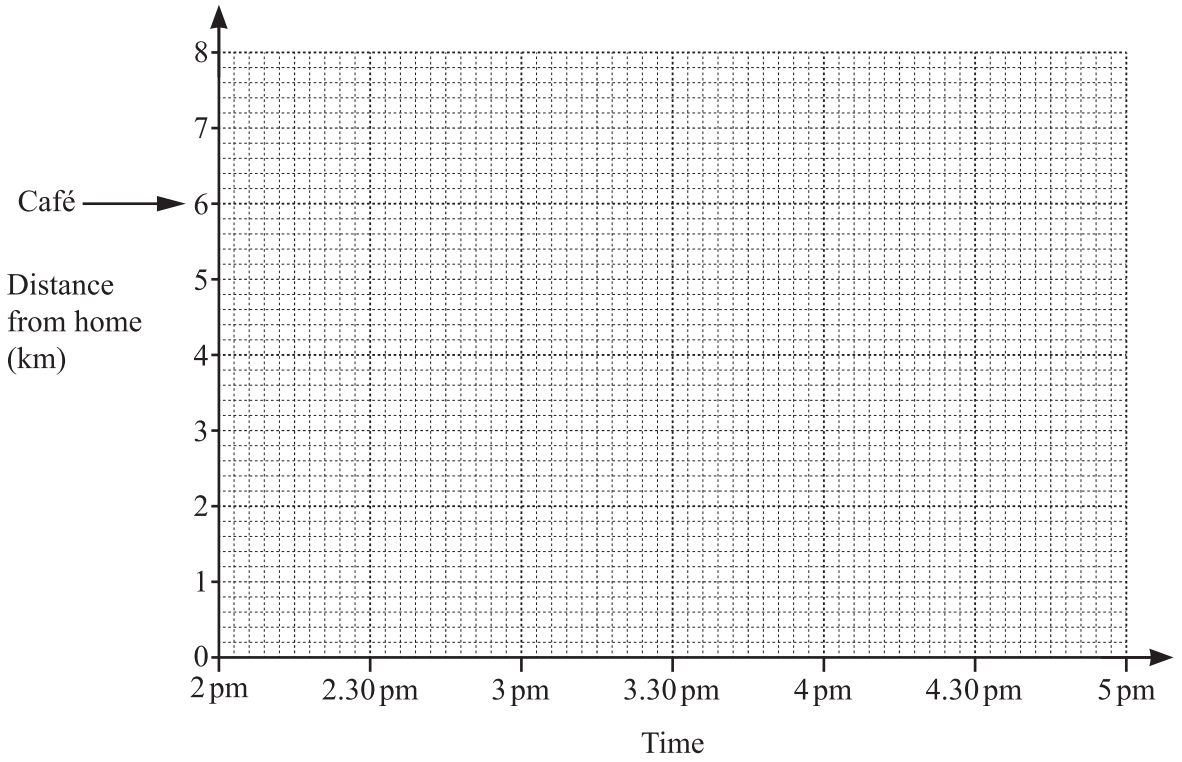
[3]

Speed-time graphs Click for more variations

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7 Samir leaves home at 2 pm.
He jogs 6 km to a café at a constant speed of 8 km per hour.
He stops to rest for 1 hour.
He then walks back home at a constant speed and arrives at 4.36 pm.

(a) On the grid, draw a travel graph to show Samir's whole journey.



[3]

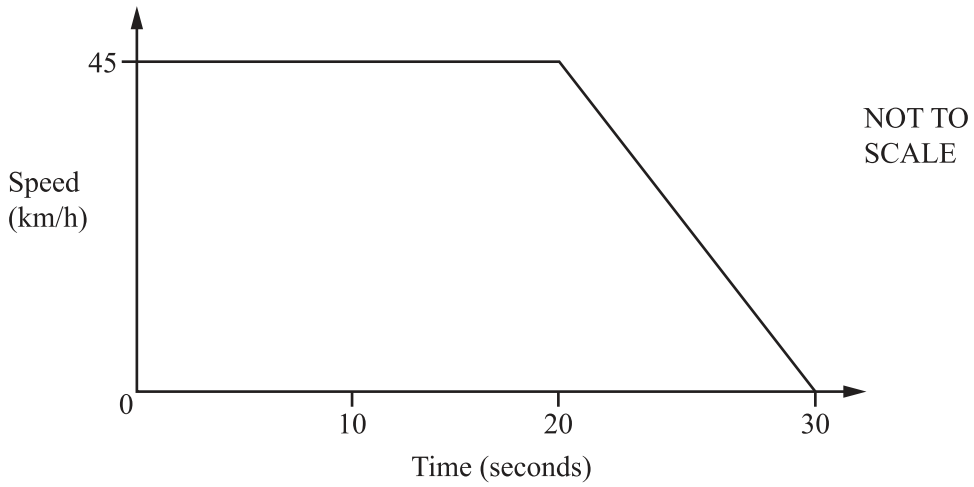
(b) Calculate Samir's average speed for the **whole** journey.

..... km/h [3]

(a) Distance-time graphs (b) Distance-time graphs Click for more variations

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8



The diagram shows the speed-time graph of a car.
The car travels at 45 km/h for 20 seconds.
The car then decelerates for 10 seconds until it stops.

(a) Change 45 km/h into m/s.

Answer(a) ..... m/s [2]

(b) Find the deceleration of the car, giving your answer in m/s^2.

Answer(b) ..... m/s^2 [1]

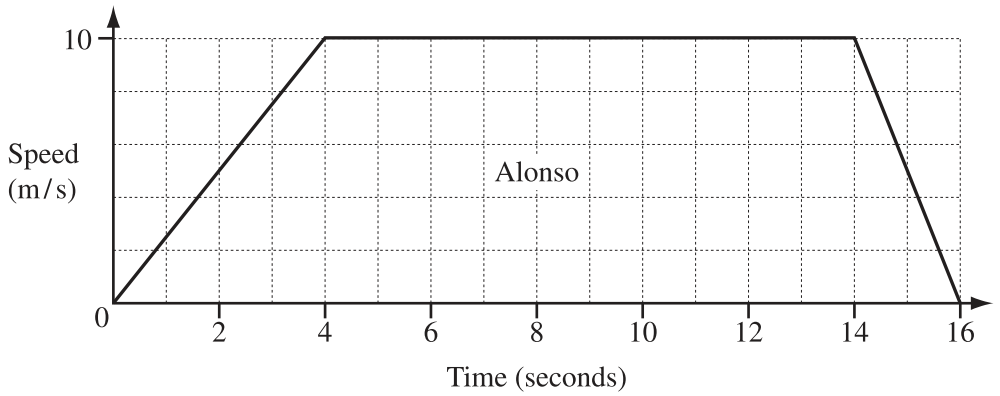
(c) Find the distance travelled by the car during the 30 seconds, giving your answer in metres.

Answer(c) ..... m [3]

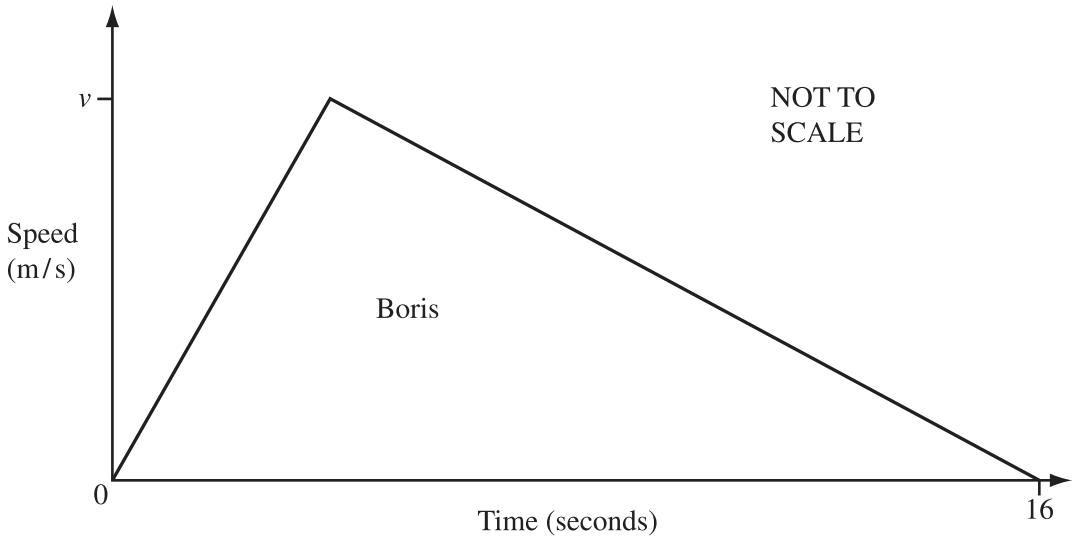
(a) Speed, density and pressure (b) Speed-time graphs (c) Speed-time graphs Click for more variations
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9 The graphs show the speeds of two cyclists, Alonso and Boris.

Alonso accelerated to 10 m/s, travelled at a steady speed and then slowed to a stop.



Boris accelerated to his maximum speed, v m/s, and then slowed to a stop.



Both cyclists travelled the same distance in the 16 seconds.

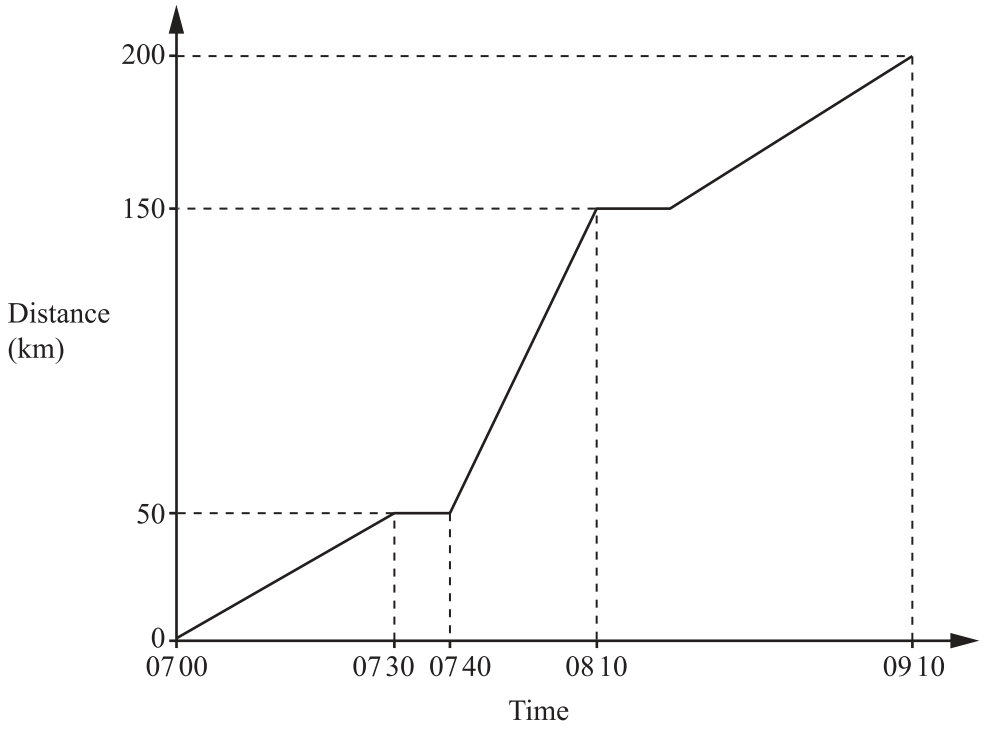
Calculate the maximum speed for Boris.
Show all your working.

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Answer ..... m/s [5]

Speed-time graphs Click for more variations

10 (a)



NOT TO SCALE

The distance-time graph shows the journey of a train.

(i) Find the speed of the train between 07 00 and 07 30.

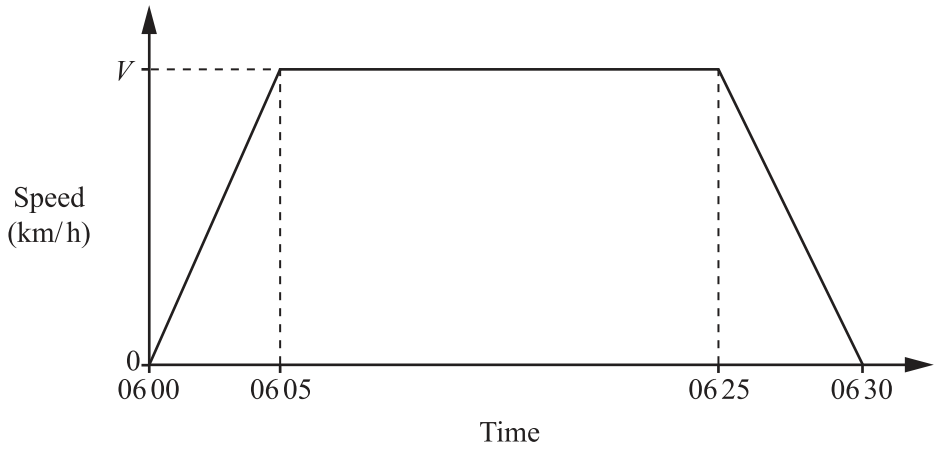
..... km/h [1]

(ii) Find the average speed for the whole journey.

..... km/h [3]

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(b)



The speed-time graph shows the first 30 minutes of another train journey.
The distance travelled is 100 km.
The maximum speed of the train is V km/h.

(i) Find the value of V.

$V =$ ..... [3]

(ii) Find the acceleration of the train during the first 5 minutes.
Give your answer in m/s^2.

..... m/s^2 [2]

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(a)(i) Distance-time graphs (a)(ii) Distance-time graphs (b)(i) Speed-time graphs (b)(ii) Speed-time graphs

Click for more variations