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International Examinations Papers

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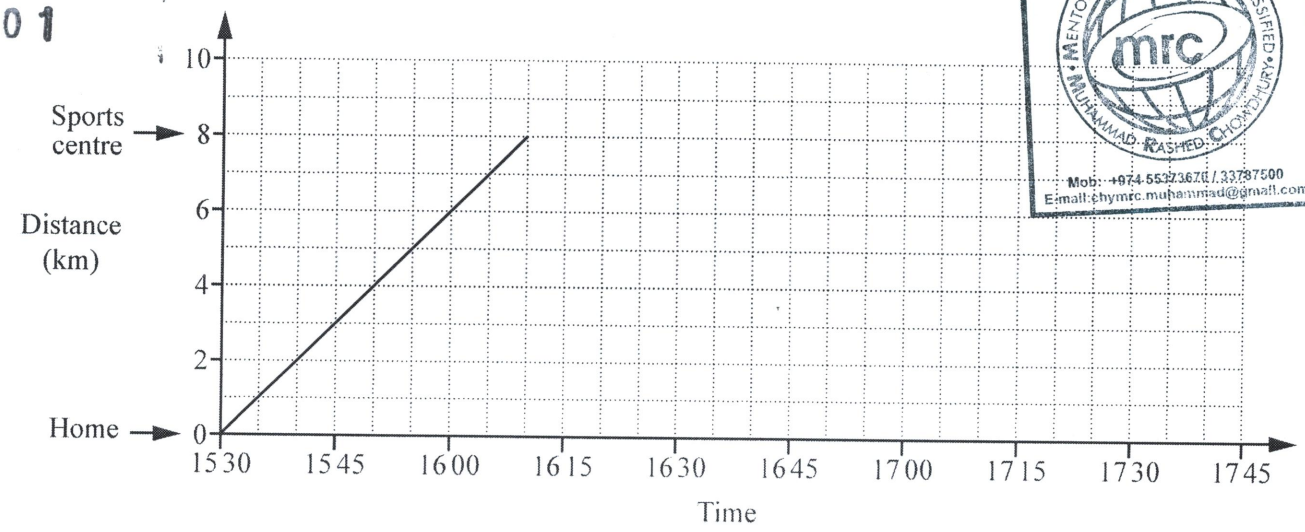
MATHEMATICS -CORE

TOPIC- Interpreting & using graphs

0 1



Sonali cycles from home to the sports centre.
The travel graph shows her journey.

(a) At what time does she arrive at the sports centre?

..... [1]

(b) Work out Sonali's cycling speed in kilometres per hour.

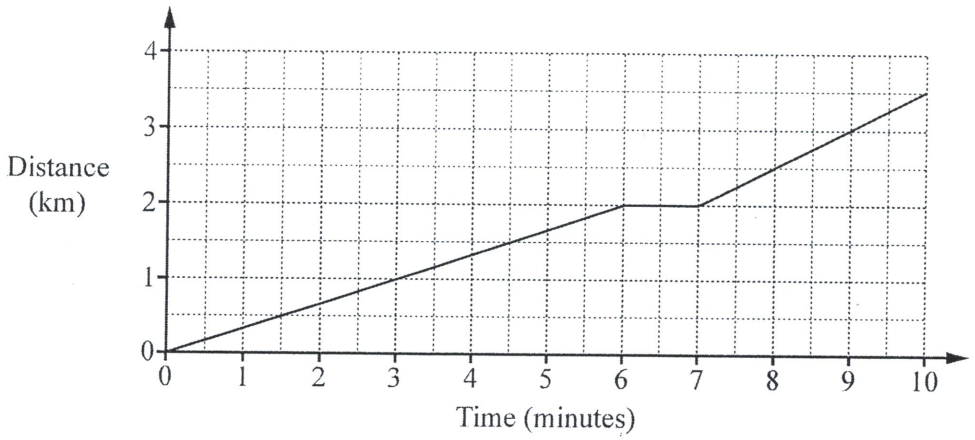
..... km/h [2]

(c) Sonali stays at the sports centre for 45 minutes.
She then takes 30 minutes to cycle home.

Complete the travel graph. [2]

0 2 The distance-time graph shows the first 10 minutes of a cycle journey.

12-N-16



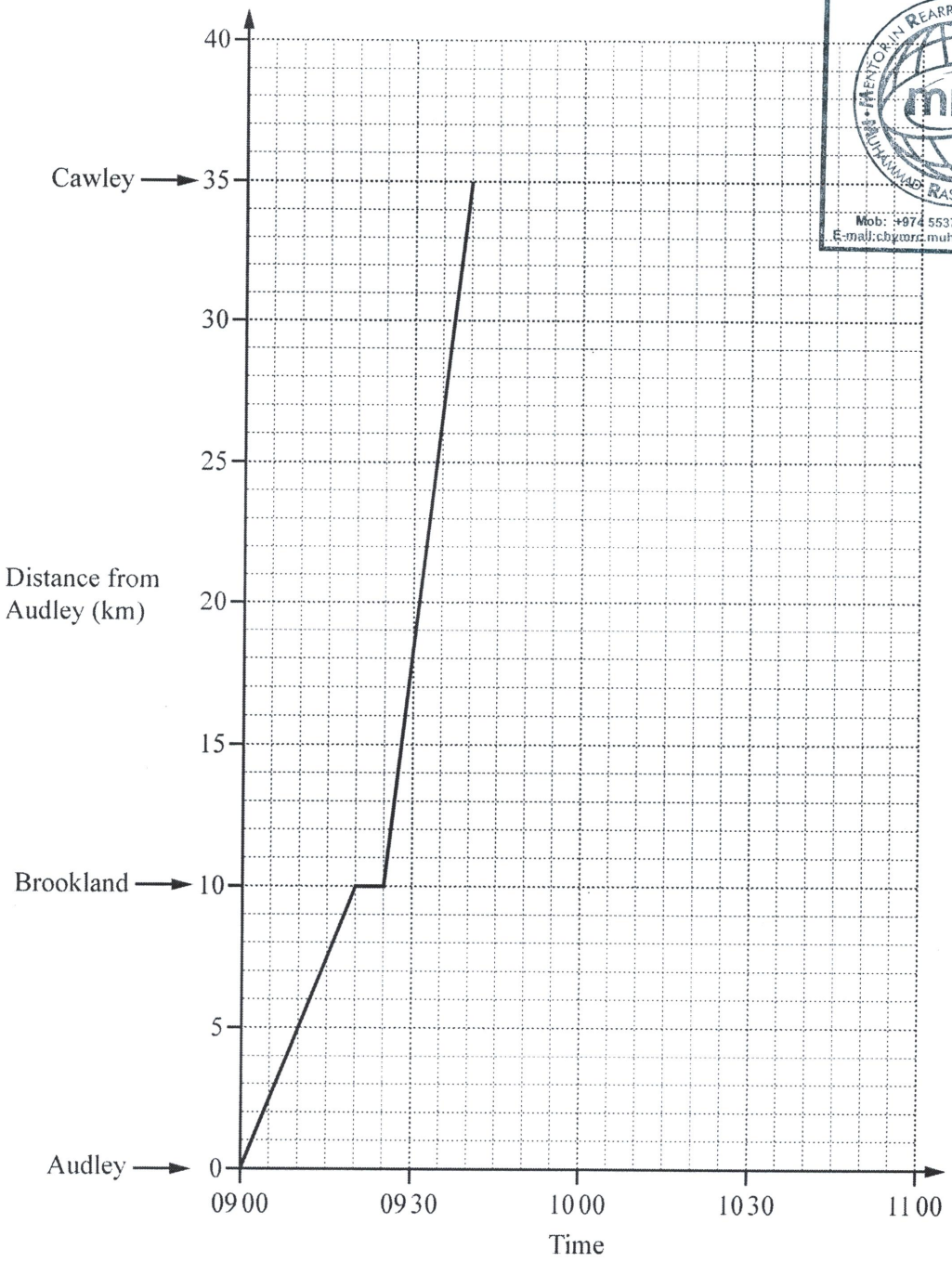
(a) After how many minutes did the cyclist stop?

..... minutes [1]

(b) How many kilometres did the cyclist travel in the first 8 minutes?

..... km [1]

0 3



The grid shows the travel graph for a train travelling from Audley to Cawley, stopping at Brookland.

(a) **(i)** Between which two towns is the train journey fastest?
Give a reason for your answer.

Answer(a)(i) From ..... to ..... is fastest because

..... [1]

(ii) Calculate the speed of the train, in kilometres per hour, between Brookland and Cawley.

Answer(a)(ii) ..... km/h [2]

(b) When the train reaches Cawley, it waits for 10 minutes.
It then returns to Audley without stopping at Brookland.
The return speed of the train is 70 km/h.

(i) Complete the travel graph for this train. [2]

(ii) Write down the time this train arrives at Audley.

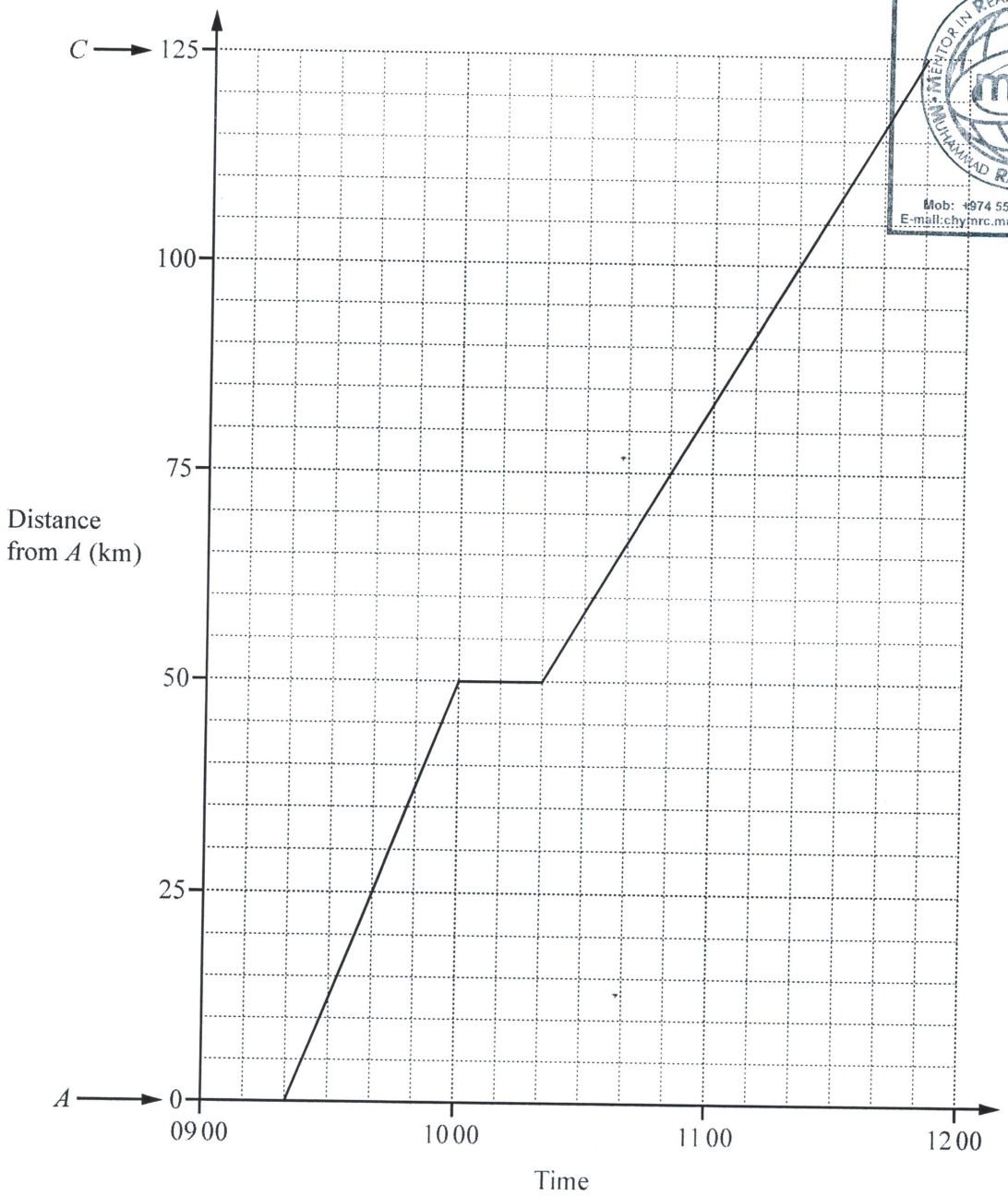
Answer(b)(ii) ..... [1]

(c) Trains leave Audley for Cawley every 100 minutes.
The first train of the day is the 09 00 train.

Write down the time that the fourth train leaves Audley for Cawley.

Answer(c) ..... [2]

0 4 The travel graph shows a journey of a train from A to C, stopping at B.



(a) Write down the time that the train leaves A.

Answer(a) ..... [1]

(b) Write down the time that the train stops at B.

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

(c) For how many minutes did the train stop at B?

Answer(c) ..... min [1]

(d) Work out the average speed of the train between A and C.

Answer(d) ..... km/h [3]

(e) Another train leaves C at 09 50 and arrives at A at 11 40 without stopping.
It travels at a constant speed.

(i) On the grid, draw the travel graph for this train. [1]

(ii) At what time do the two trains pass each other?

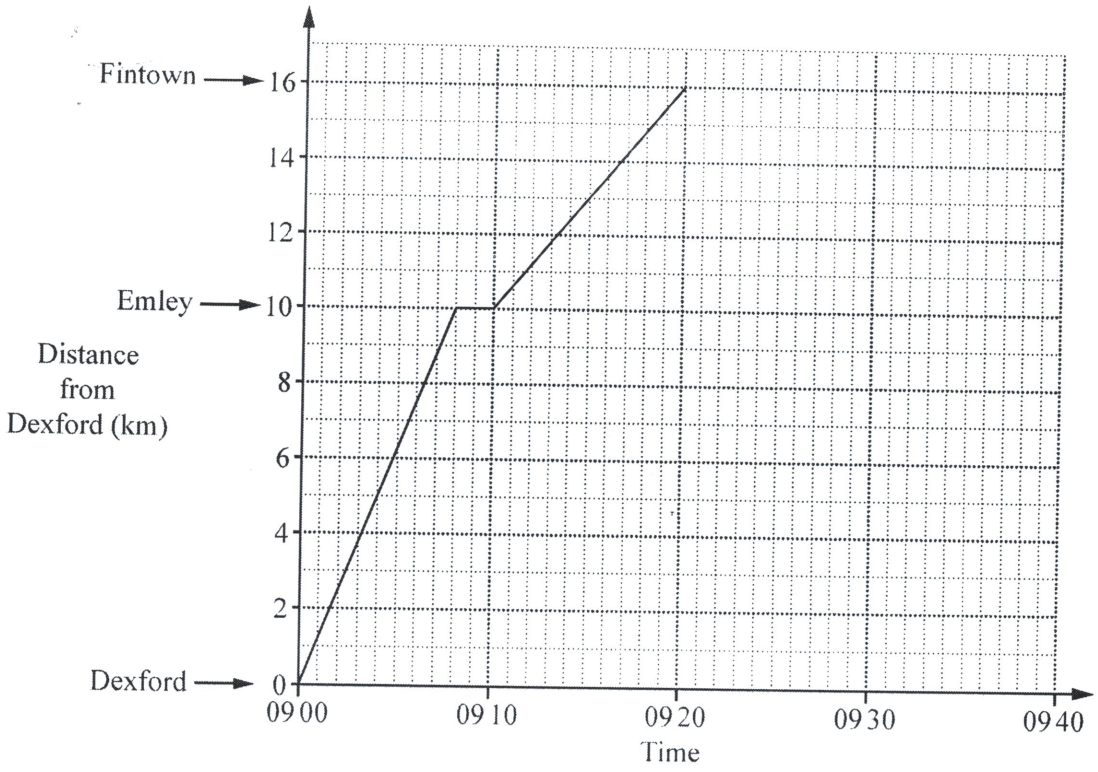
Answer(e)(ii) ..... [1]

(f) A ticket from A to C costs 2345 rupees.
The exchange rate is 1 rupee = \$0.024 .

Calculate the cost of the ticket in dollars.

Answer(f) \$ ..... [1]

05



The grid shows the travel graph for a train travelling from Dexford to Fintown, stopping at Emley.

(a) **(i)** Write down the distance the train travels in the first 8 minutes.

Answer(a)(i)..... km [1]

(ii) Calculate the average speed, in kilometres per hour, for the journey from Dexford to Fintown.

Answer(a)(ii)..... km/h [3]

(b) The train waits at Fintown for 4 minutes.
The train then returns to Dexford without stopping at Emley.
The return speed of the train is 80 km/h.

(i) Complete the travel graph. [2]

(ii) Change 80 km/h to metres per second.

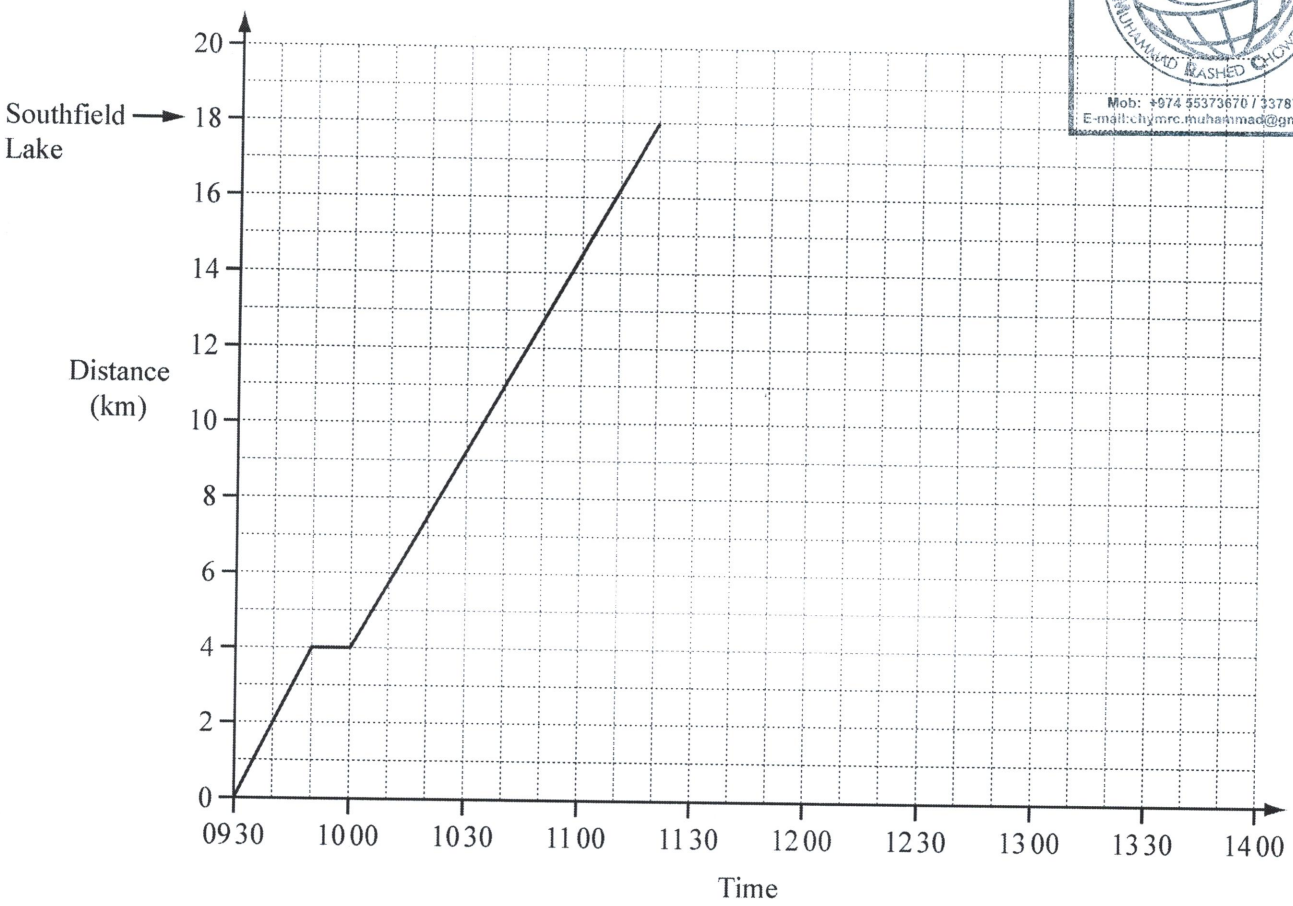
Answer(b)(ii)..... m/s [2]

(c) Trains leave Dexford for Fintown every 75 minutes.
The train that leaves Dexford at 09 00 is the first train of the day.

Write down the time that the fourth train leaves Dexford for Fintown.

Answer(c)..... [2]

0 6 Sylvain leaves his house at 09 30 to cycle to Southfield Lake.
He cycles for 4 km then waits for his friend Michel.
Both boys then cycle to the lake together.
The travel graph shows Sylvain's journey.



(a) Write down how long Sylvain waits for Michel.

Answer(a) ..... min [1]

(b) Is Sylvain's speed faster before or after he meets Michel?
Explain how you know.

Answer(b) ..... because .....

..... [1]

(c) Write down the time Sylvain and Michel arrive at the lake.

Answer(c) ..... [1]

(d) Sylvain and Michel stay at the lake for 50 minutes.
They then cycle back to Sylvain's house at a speed of 10 km/h.

(i) Find how long it takes them to cycle the 18 km back to Sylvain's house.
Give your answer in hours and minutes.

Answer(d)(i) ..... h ..... min [2]

(ii) Complete the travel graph. [2]

(e) Manon plans to go to Southfield Lake by bus from High Street.
Here is the bus timetable.

Railway Station	0845	0915	0945	1015	1045	1115
High Street	0857	0927	0957	1027	1057	1127
Hospital	0912	0942	1012	1042	1112	1142
Southfield Lake	0921	0951	1021	1051	1121	1151
Country Park	0950	1020	1050	1120	1150	1220

(i) Manon arrives at Southfield Lake just before 1130.

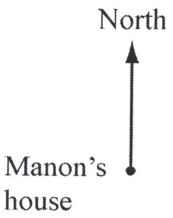
Write down the time of the bus she caught from High Street.

Answer(e)(i) ..... [1]

(ii) How long does the journey from High Street to Southfield Lake take?

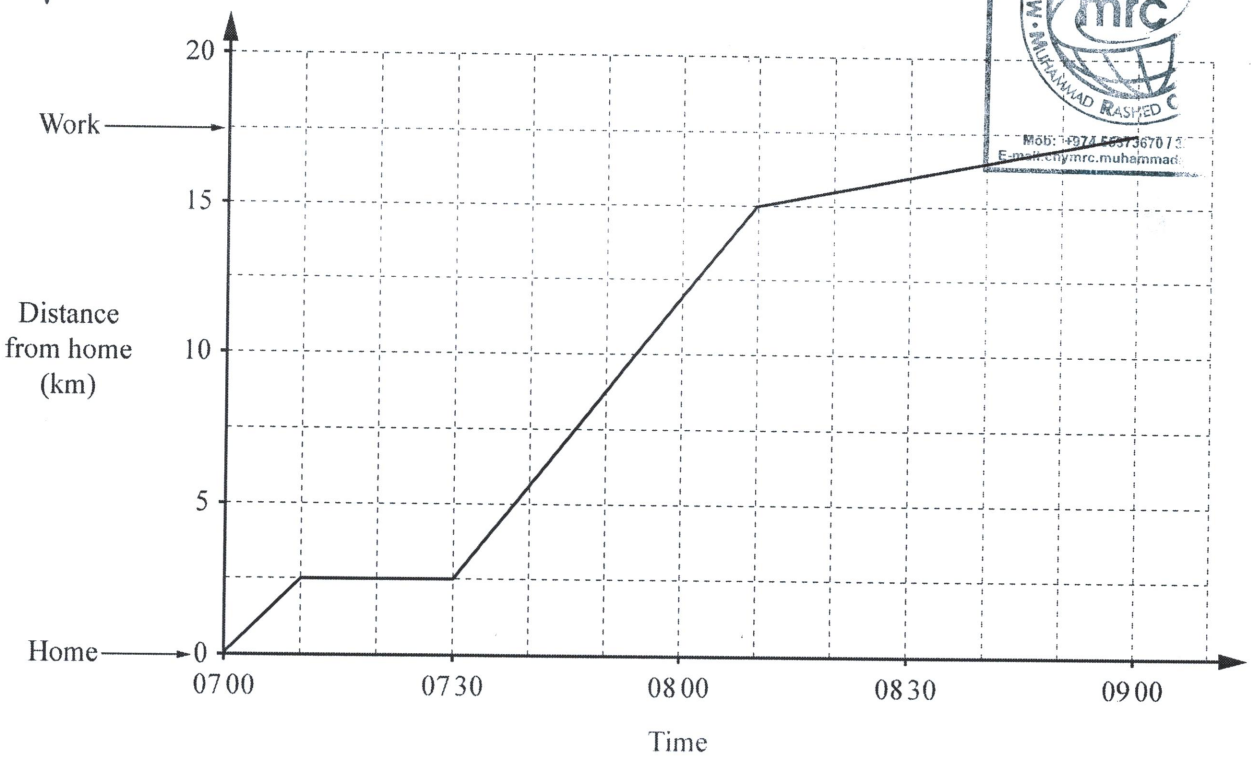
Answer(e)(ii) ..... min [1]

(f) Southfield Lake is 13 km from Manon's house on a bearing of 110°.
Mark the position of the lake on the scale drawing below.
Use a scale of 1 centimetre represents 4 kilometres.



[2]

07 **(a)** This graph shows Gianna's journey to work.



(i) How far did Gianna travel to work?

..... km [1]

(ii) Explain what happened at 0710.

..... [1]

(iii) Calculate the average speed for Gianna's journey to work.

..... km/h [2]

(b) Gianna earns $1320 each month.
She divides her money in the ratio Bills : Leisure : Other = 12 : 5 : 7.

Work out how much she spends on each.

Bills = $.....

Leisure = $.....

Other = $..... [3]

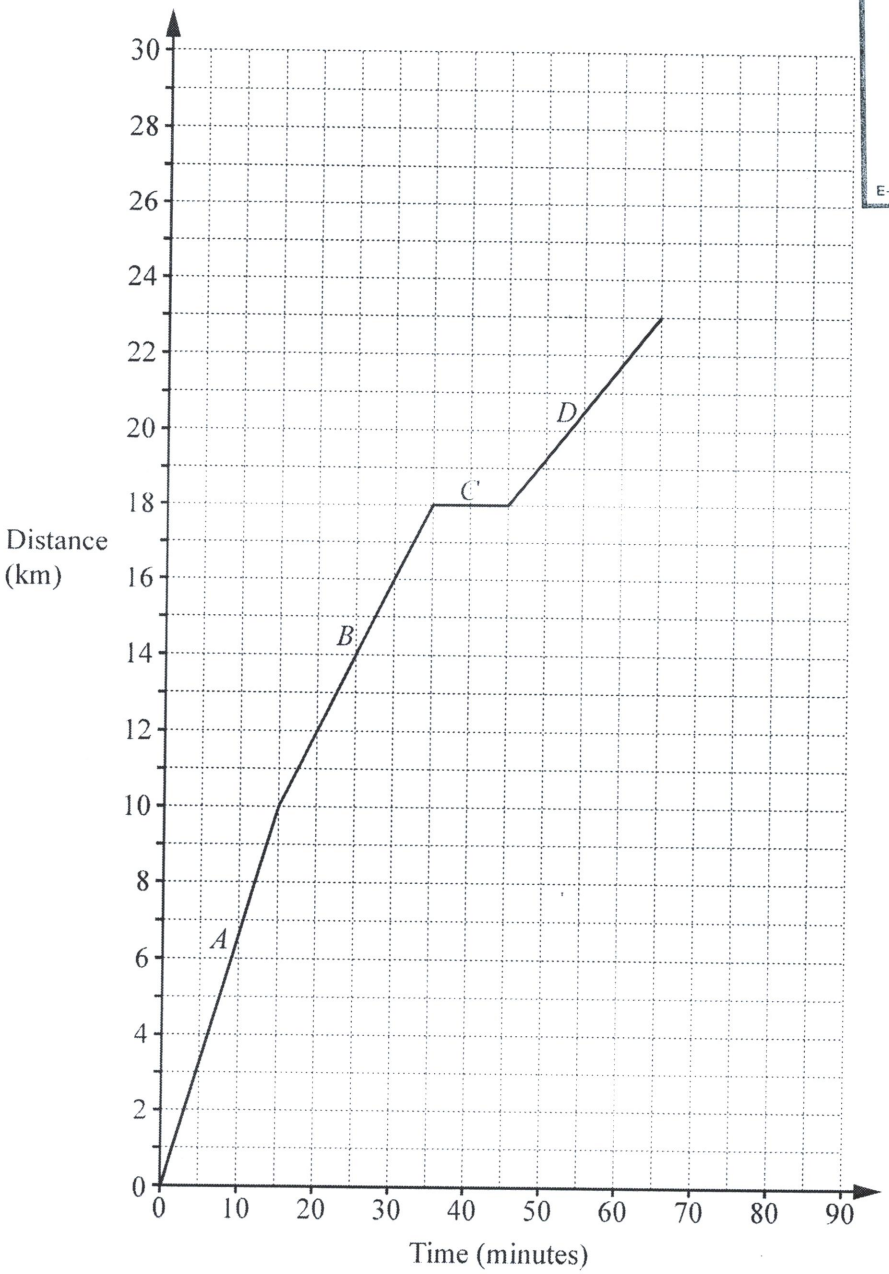
(c) Gianna invests \$5000 for 3 years at a rate of 2.1% per year compound interest.

Calculate the amount she will have at the end of the 3 years.
Give your answer correct to 2 decimal places.

\$..... [4]

[Turn over

08



The diagram shows the distance-time graph for the first 65 minutes of a bicycle journey.

(a) There are four different parts to the journey labelled *A*, *B*, *C* and *D*.

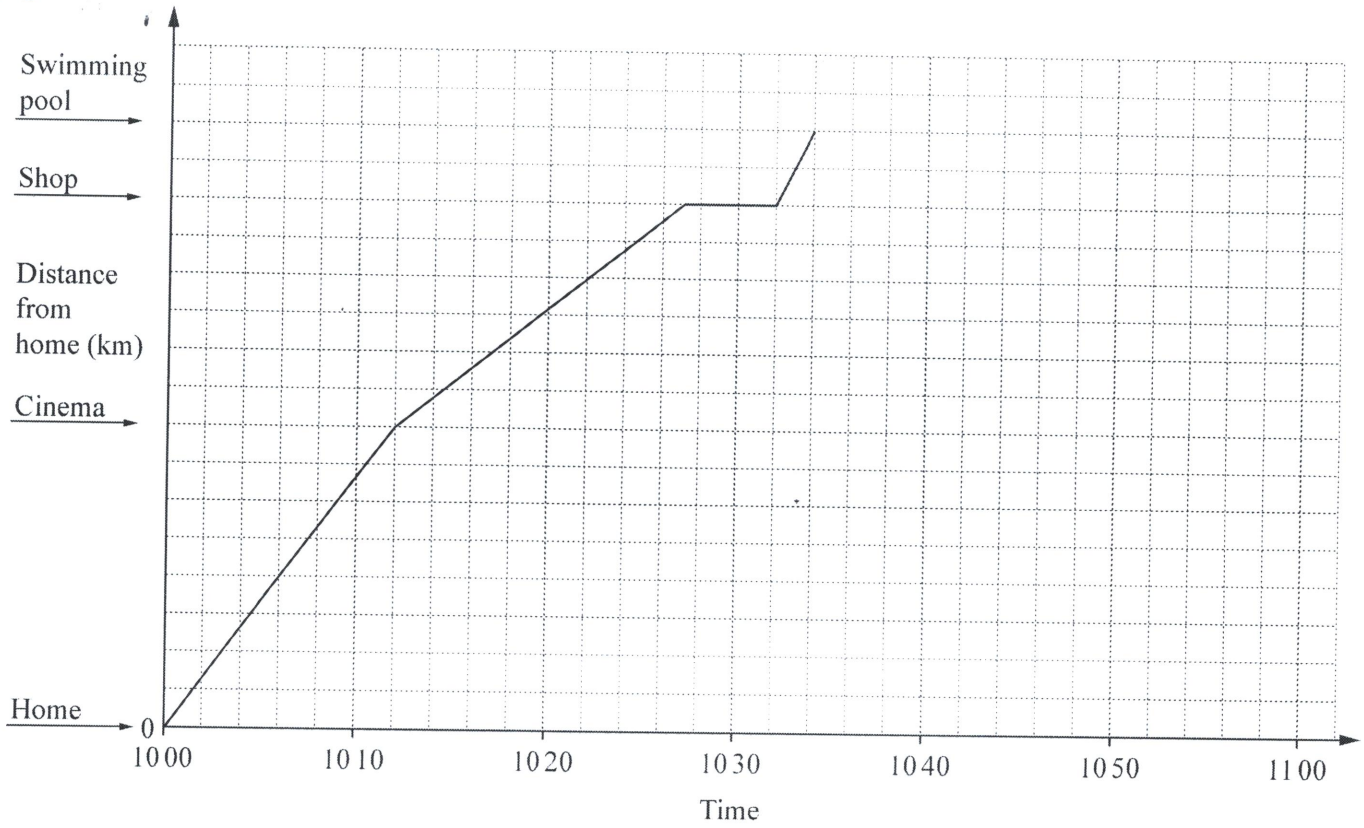
Write down the part of the journey with the fastest speed.

..... [1]

(b) After the first 65 minutes the bicycle travels at a constant speed of 20 km/h for 15 minutes.

Draw this part of the journey on the diagram. [1]

0 9



Abjit cycles from his home to the swimming pool.
The travel graph for his journey is drawn on the grid.
On his journey he passes the cinema and the shop.

(a) Write down where Abjit stops on his journey to the swimming pool.

..... [1]

(b) Abjit is cycling fastest between the shop and the swimming pool.

Explain how you know this from looking at the graph.

..... [1]

(c) Abjit cycles at 20 km/h from his home to the cinema.
This part of the journey takes 12 **minutes**.

(i) Show that the distance from Abjit's home to the cinema is 4 km.

[2]

(ii) Complete the scale on the vertical axis of the grid by showing at least two other values. [1]

(d) Calculate the speed, in km/h, that Abjit cycles from the cinema to the shop.

..... km/h [2]

(e) When Abjit arrives at the swimming pool it is closed.
Without stopping at the swimming pool he cycles home at a constant speed.
It takes him 24 minutes to cycle home.

Complete the travel graph for his journey home. [1]

(f) Calculate the average speed, in km/h, for the **whole journey**.

..... km/h [3]

(g) Abjit's bicycle wheel has a radius of 29 cm.

(i) Calculate the circumference of the wheel.
Give your answer correct to 1 decimal place.

..... cm [3]

(ii) Calculate the number of complete turns the wheel makes when travelling 500 m.

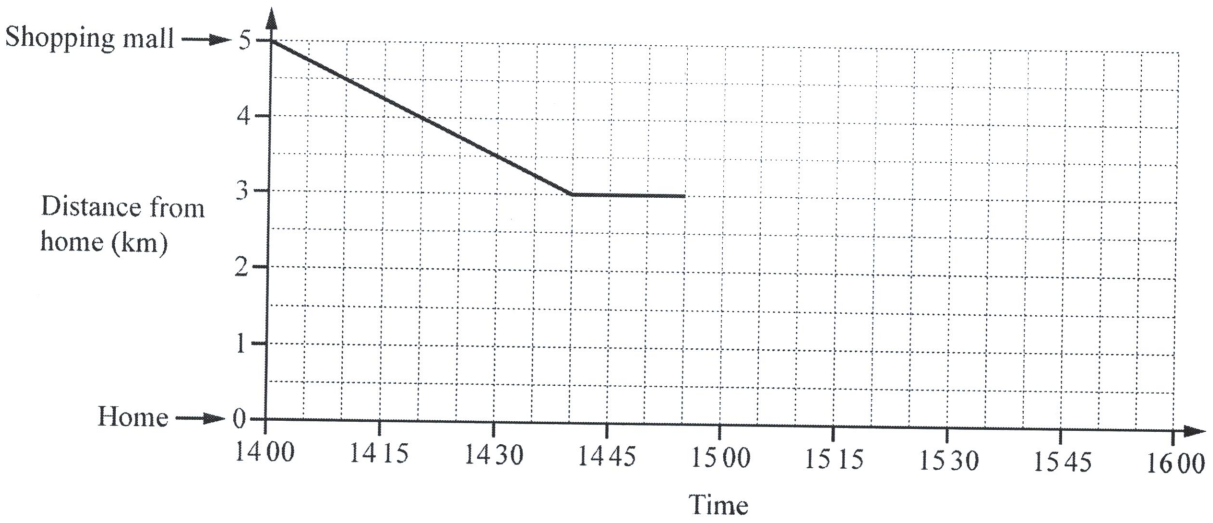
..... [2]

10 **(a)** Maria travels by bus to the shopping mall.
She leaves home at 11 50 and arrives at the shopping mall at 12 17.

How many minutes does it take Maria to travel from home to the shopping mall?

Answer(a) ..... min [1]

(b)



Maria walks home from the shopping mall.
The travel graph shows part of her journey.

(i) Maria stops at her friend's house on the way home.

How far from the shopping mall does her friend live?

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

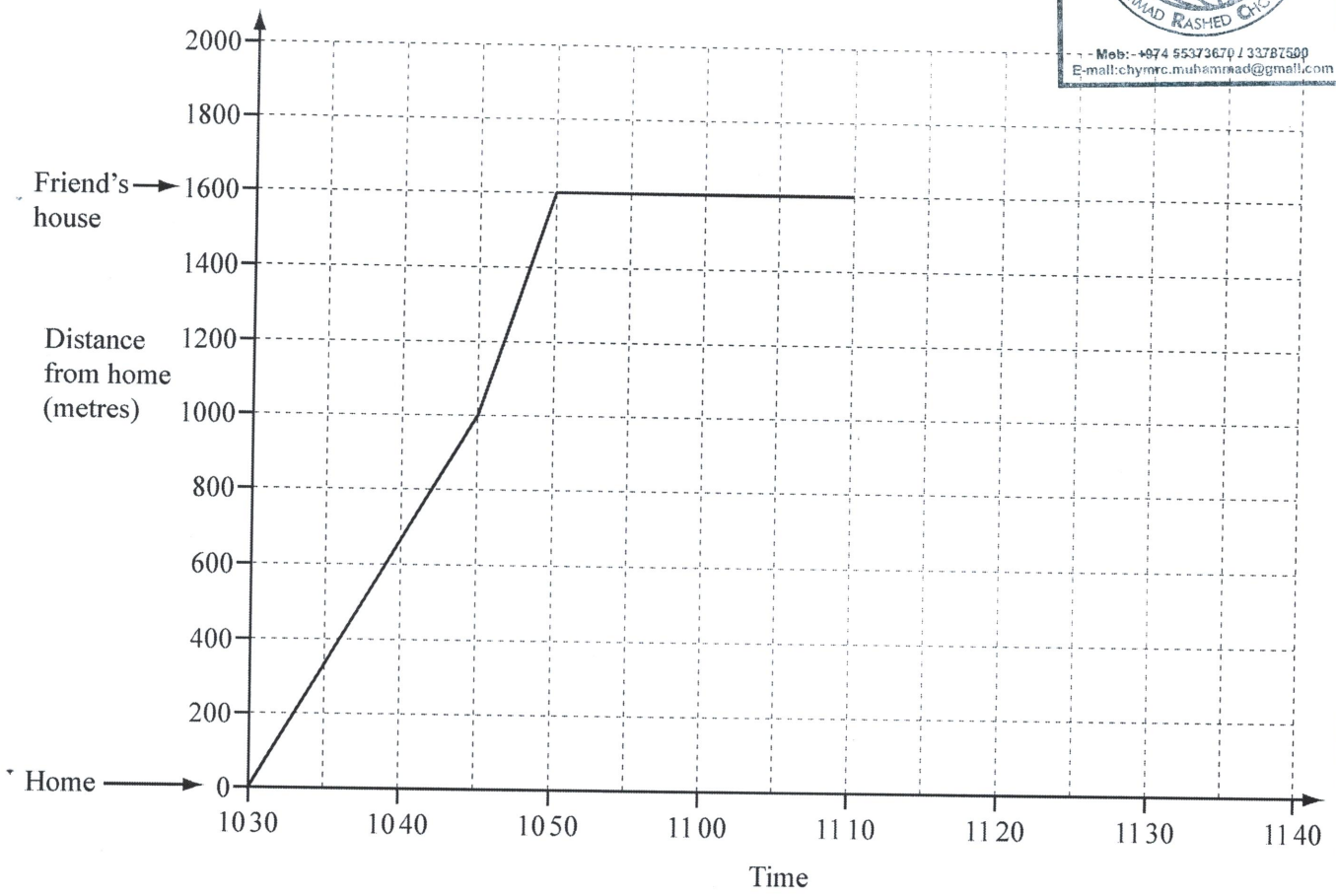
(ii) Maria leaves her friend's house at 14 55.
She walks the rest of the way home at a constant speed of 4 km/h.

Complete the travel graph.

[2]

For Examiner's Use

11 The travel graph shows Natasha's visit to her friend's house.
She starts by walking and then runs.
She stays at her friend's house until 11 10 before returning home.



(a) **(i)** How far does Natasha **walk** on the journey to her friend's house?

Answer(a)(i) ..... m [1]

(ii) Find Natasha's average speed, in metres per minute, on the journey to her friend's house.

Answer(a)(ii) ..... m/min [2]

(iii) How long does Natasha stay at her friend's house?

Answer(a)(iii) ..... min [1]

(b) Natasha returns home at a constant speed of 64 metres per minute.

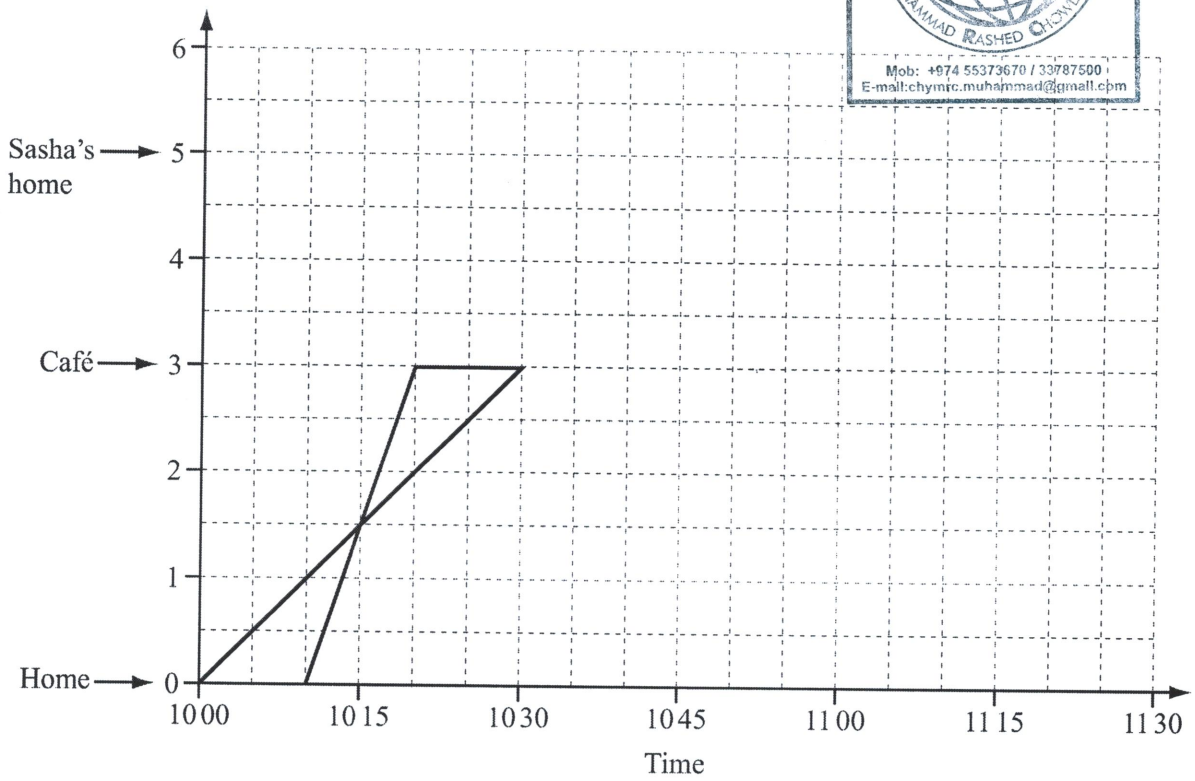
For Examiner's Use

(i) Complete the travel graph. [2]

(ii) Write down the time she arrives home.

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

12



For Examiner's Use

Poppy and Toni go to a café which is 3 km from their home.
They take the same route.

Poppy leaves home at 1000 and walks.
Toni leaves home at 1010 and cycles.
These journeys are shown on the travel graph.

(a) **(i)** How long does Toni wait at the café before Poppy arrives?

Answer(a)(i) ..... min [1]

(ii) The graphs cross at 1015.
Describe what this means.

Answer(a)(ii) .....

..... [1]

(iii) Calculate Toni's average speed from home to the café in kilometres per hour.

Answer(a)(iii) ..... km/h [2]

(b) Poppy and Toni stay at the café until 10 50.

For Examiner's Use

(i) At 10 50 Poppy walks to visit her friend Sasha.
Sasha's home is 5 km from Poppy's home.
Poppy walks at the same speed as before.

Complete the travel graph for Poppy. [2]

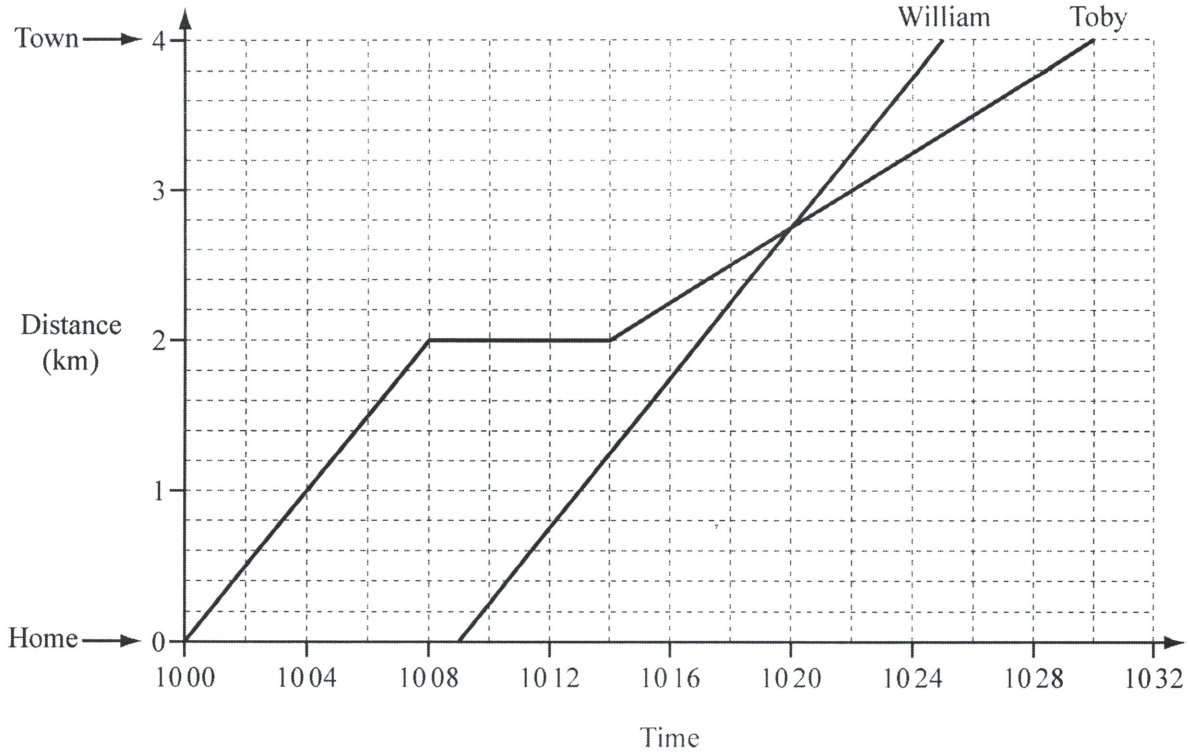
(ii) At 10 50 Toni starts to cycle home.
At 10 55, when she has travelled half the distance home, her bicycle has a puncture.
She then walks the rest of the way home at 4.5 km/h.

Complete the travel graph for Toni. [2]

(iii) Calculate the average speed for Toni's journey home from the café.

Answer(b)(iii) ..... km/h [3]

13



Toby and William cycled into town.
Their journeys are shown on the travel graph.

(a) For how many minutes did Toby stop on his journey into town?

Answer(a) ..... min [1]

(b) Explain what happened at 1020.

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

(c) Work out how long William took to cycle into town.

Answer(c) ..... min [1]

(d) Calculate William's speed in km/h.

Answer(d) ..... km/h [2]

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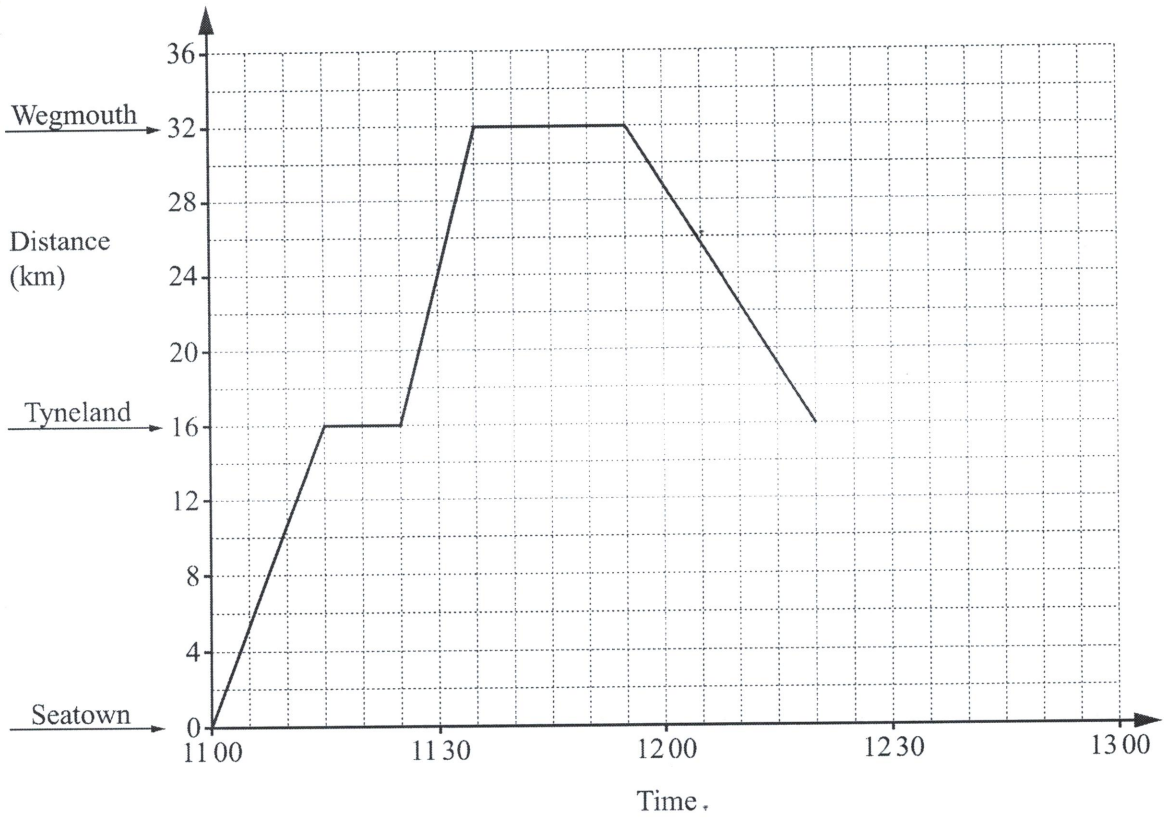
7 14



The diagram shows the travel graph for a bus travelling between three towns.

(a) **(i)** For how many minutes does the bus stop at Wegmouth?

..... minutes [1]

(ii) Write down the time the bus leaves Wegmouth.

..... [1]

(iii) The speed of the bus from Tyneland to Wegmouth is 96 km/h.

Change 96 km/h to metres per second.

..... m/s [2]

(b) On the journey back from Wegmouth, the bus stops for 15 minutes in Tyneland.
It then travels at a constant speed of 64 km/h to Seatown.

Complete the travel graph.

[3]

(c) A cyclist leaves Seatown at 11 15 and travels at a constant speed to Wegmouth.
She arrives in Wegmouth at 12 30.

(i) On the travel graph, draw this journey. [1]

(ii) Write down the time when the cyclist meets the bus.

..... [1]

(iii) How far is the cyclist from Wegmouth when she meets the bus?

..... km [1]

(d) Mrs Jones travels on the bus to Wegmouth.
The probability that she stands on the bus is 0.4 .

(i) Write down the probability that she does not stand on the bus.

..... [1]

(ii) Mrs Jones travels on the bus 85 times.

Work out the expected number of times that she stands on the bus.

..... [1]

(e) In one week, a bus driver works five days.
On four days he works from 9 am to 5 pm.
On one day he works from 3 pm to 10 pm.

(i) Find the total number of hours he works in this week.

..... hours [2]

(ii) Each day he is paid $18 per hour before 7 pm.
After 7 pm he is paid 25% extra per hour.

Calculate how much the bus driver is paid for this week.

$ ..... [3]

[Turn over