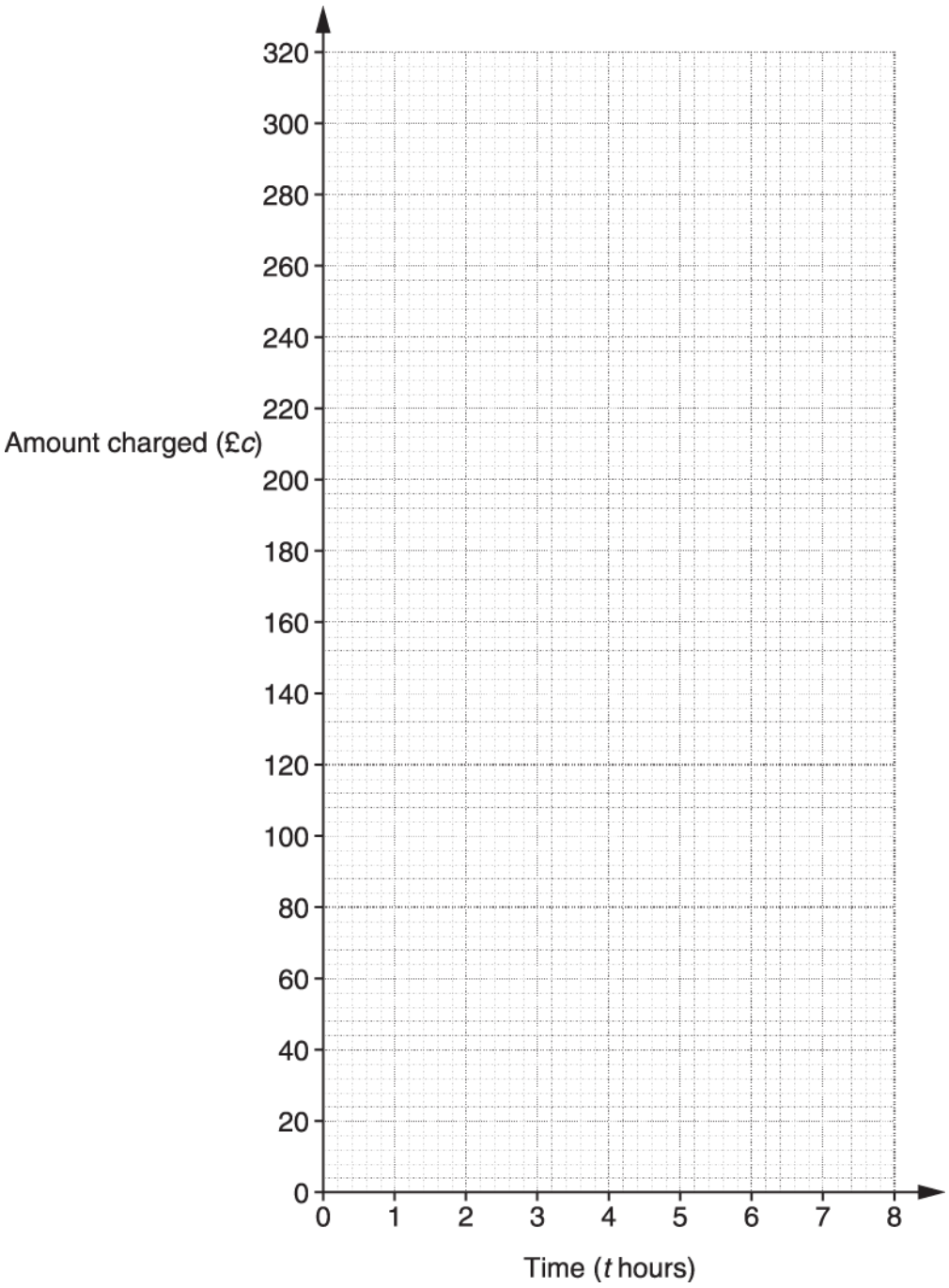
1(a). A plumber does three different tasks.

She records the time each task takes and the amount she charges.

Task	A	B	C
Time taken (t hours)	1	3	7
Amount charged (£c)	60	140	300

Plot these values on the grid and draw a straight line through them.


Amount charged (£c)
320
300
280
260
240
220
200
180
160
140
120
100
80
60
40
20
0
0 1 2 3 4 5 6 7 8
Time (t hours)

[2]

(b). The plumber charges a fixed call-out fee and an amount for each hour the task takes.

Complete the following.

The fixed call-out fee is £ _____ .

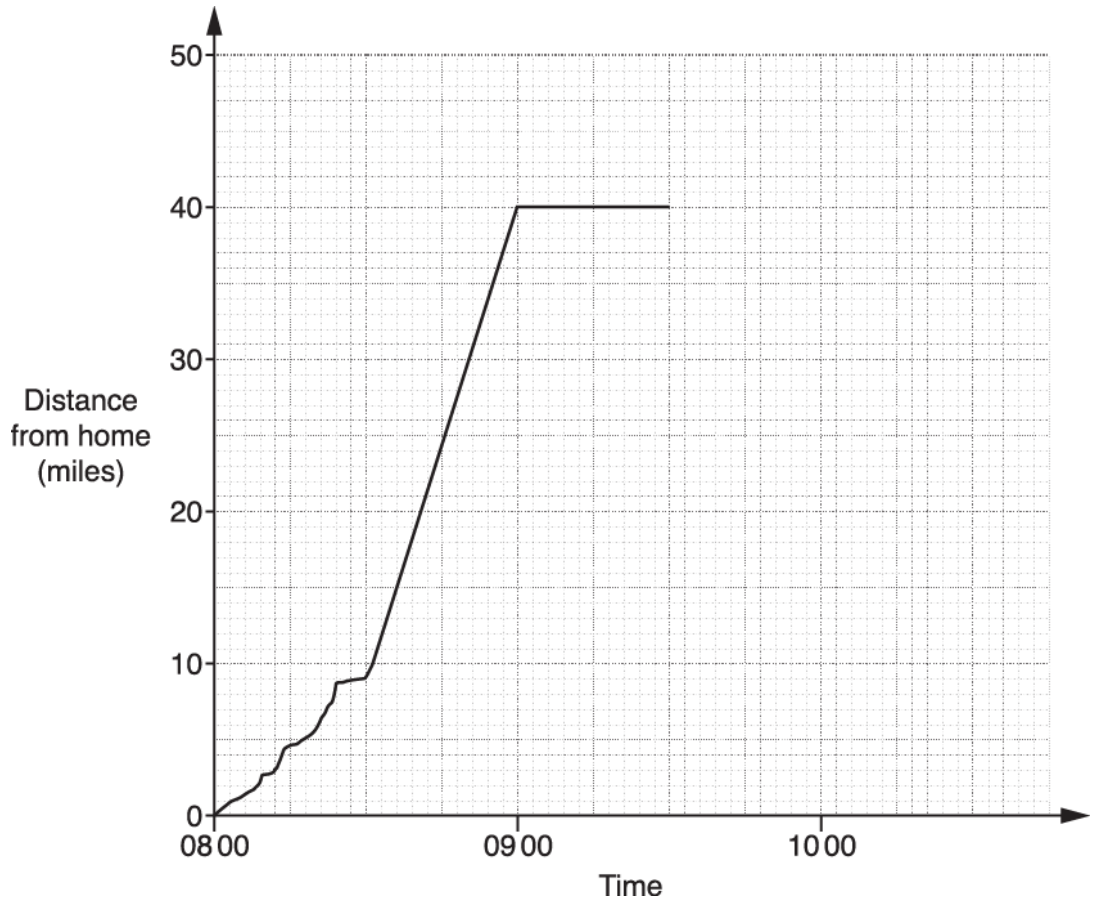
The amount for each hour is £ _____ .

[2]

(c). Use your answers to **part (b)** to work out the amount the plumber charges for a task that lasts 10 hours.

£ _____ [2]

2(a). The graph shows part of Helen's car journey.



(i) Between which times is Helen travelling through a busy city?
Give a reason for your answer.

from _____ to _____

because _____

[2]

(ii) How many miles did Helen drive between 08 30 and 09 00?

(ii) _____ miles

[1]

(iii) Helen stopped at 09 00.

For how many minutes does the graph show she stopped?

(iii) _____ minutes

[1]

(b). Helen arrived home at 10 36.

Complete the graph of her journey.

[2]

3(a). Anum has a job delivering leaflets.

He is paid £8 each week and then 4p for every leaflet he delivers.

One week, Anum delivers 100 leaflets.

How much is his pay that week?

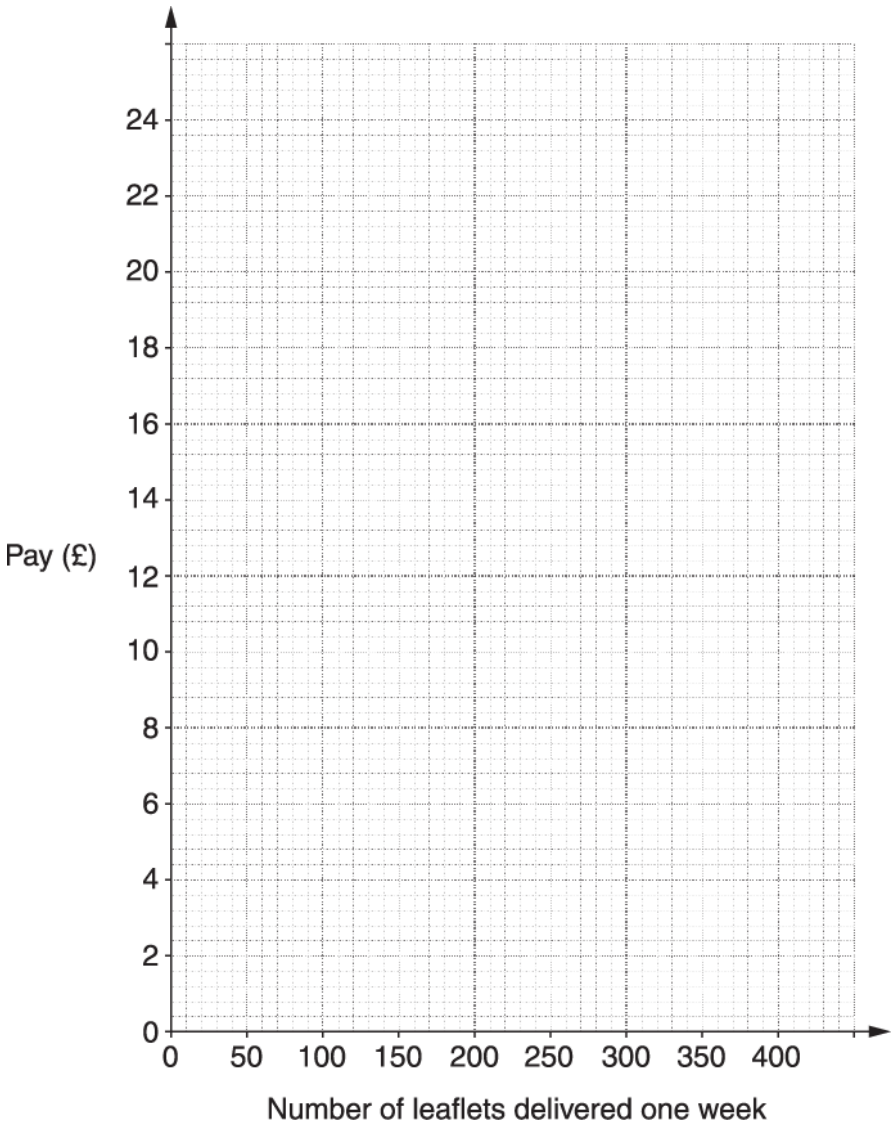
£ _____ [2]

(b). Complete this table.

Number of leaflets delivered one week	100	200	300	400
Pay (£)		16		

[2]

(c). Plot these values and draw a line graph showing Anum's pay for delivering up to 400 leaflets one week.



[3]

(d). Another week Anum's pay is £18.

How many leaflets did Anum deliver that week?

_____ [1]

(e). Anum writes down this formula for calculating his pay, £w, when he delivers n leaflets in a week.

$$w = 8 + 4 \times n$$

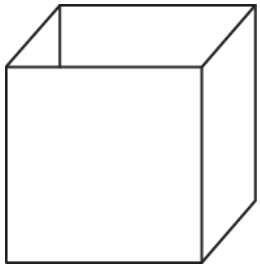
(i) Show that this formula does **not** give the correct pay for delivering 200 leaflets in a week.

[2]

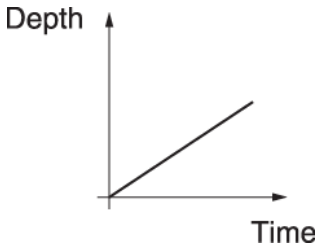
(ii) Change Anum's formula so that it does give the correct pay for delivering 200 leaflets in a week.

(ii) $w =$ _____ **[1]**

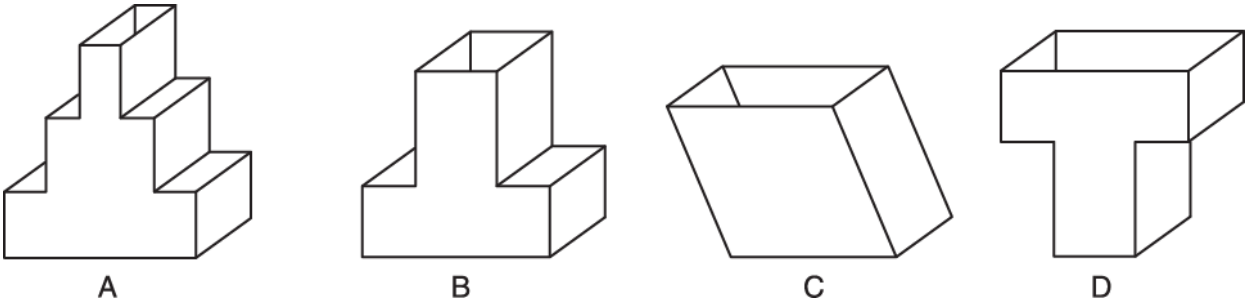
4(a). This empty container is filled with water at a constant rate.



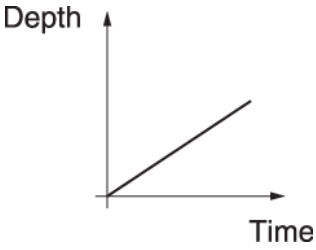
The graph of depth of water against time looks like this.



Four more empty containers are shown below.
Each of these containers is filled with water at a constant rate.

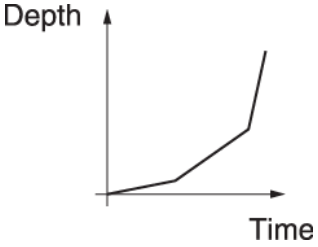


Choose which of these containers matches each of the graphs.



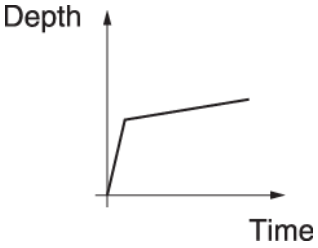
Container _____ **[1]**

(b).



Container _____ [1]

(c).



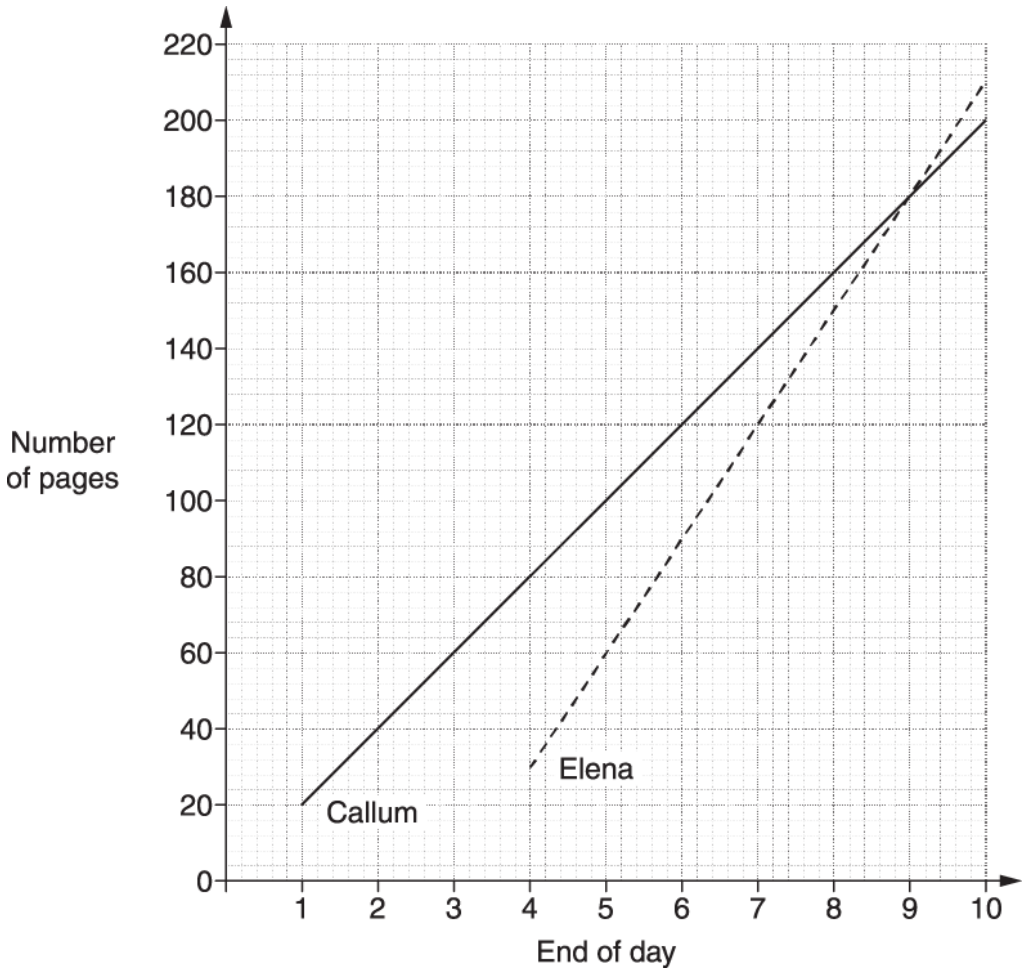
Container _____ [1]

5(a). Callum and Elena take part in a Sponsored Read.

Callum starts reading on day 1 and Elena starts reading on day 4.

They each record the overall number of pages they have read at the end of each day.

These results are shown on the graph.



(i) How many pages has Callum read by the end of day 5?

(i)_____ [1]

(ii) How many pages does Callum read each day?

(ii)_____ [1]

(iii) How many **more** pages has Elena read than Callum by the end of day 10?

(iii)_____ [1]

(b). Callum raises £2 for every 10 pages he reads.
Elena raises 15p for every page she reads.

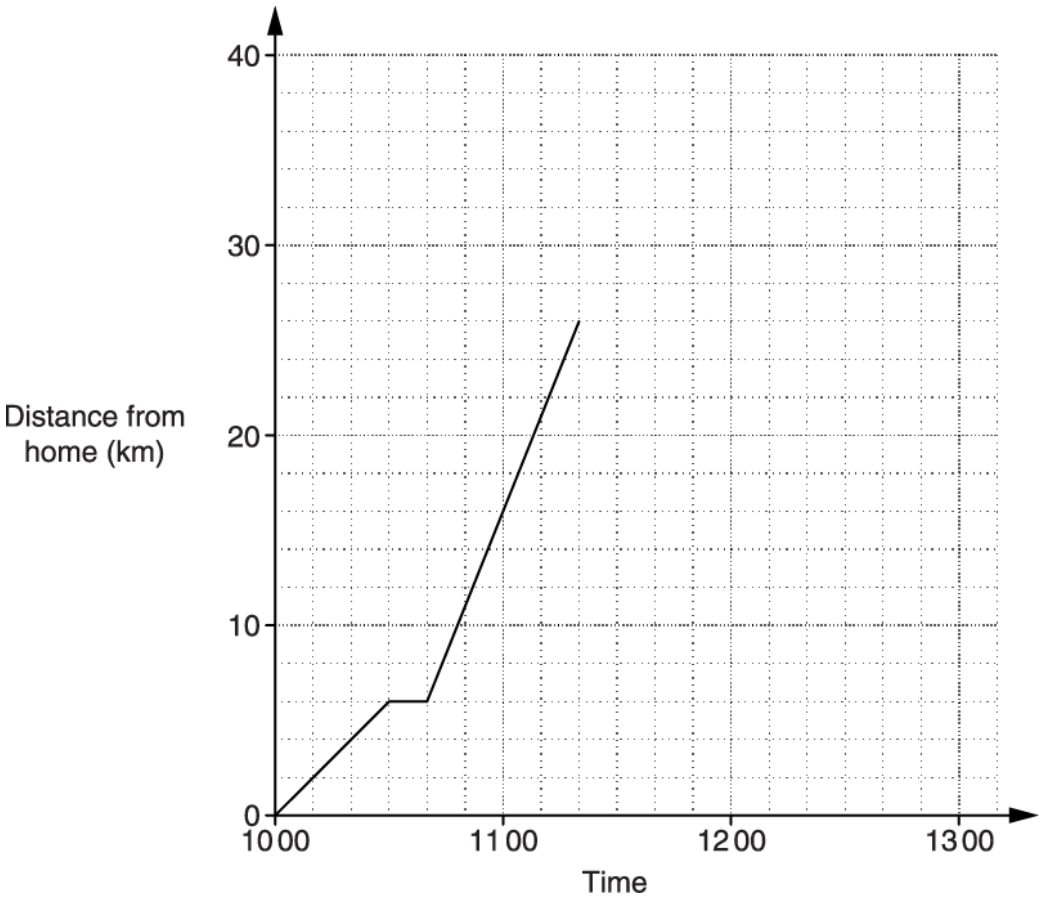
At the end of day 9, Elena says

"I have raised the same amount of money *as* Callum".

Is Elena correct?

[4]

6(a). The graph shows Liam's journey from his home to his uncle's house.



How far did Liam travel to his uncle's house?

_____ km [1]

(b). Liam spends exactly one hour at his uncle's house and then travels home without stopping.
His journey home takes 30 minutes.

Complete the graph of Liam's journey.

[2]

(c). Liam made one stop on his journey to his uncle's house.

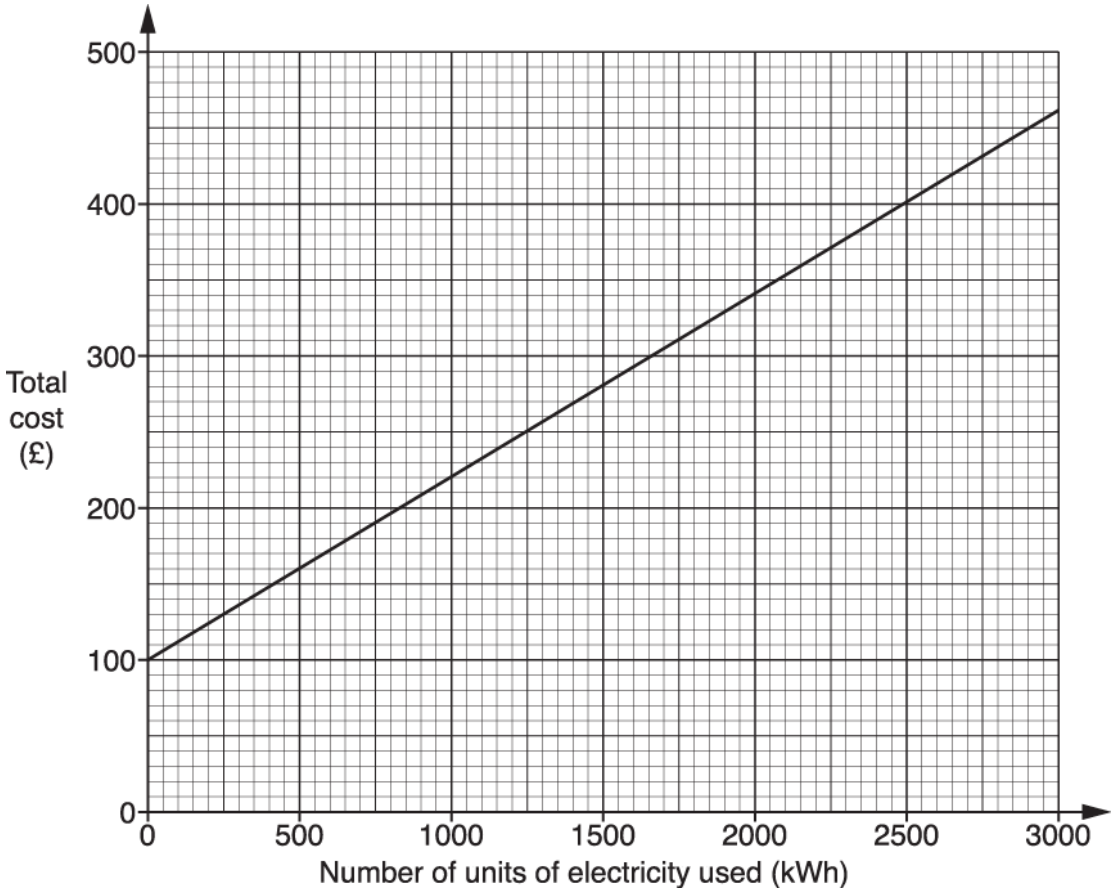
For how many minutes did he stop?

_____ minutes [1]

(d). How far did he travel in the first 30 minutes of his journey?

_____ km **[1]**

7(a). The graph shows the total cost of electricity for a year from the Electro2U company.



(i) Find the total cost of using 1000 units of electricity.

(i) £ _____ [1]

(ii) Find the cost per unit of electricity used.

(ii) _____ p [2]

(b). Another company, Power4less, has the following charges.

- Fixed charge of £200 per year
- Electricity price of 4p per unit used

(i) Complete the table below for Power4less charges.

Units of electricity used (kWh)	0	1000	2000	3000
Total cost (£)	200			

[2]

(ii) On the grid opposite, draw the graph of Power4less total costs.

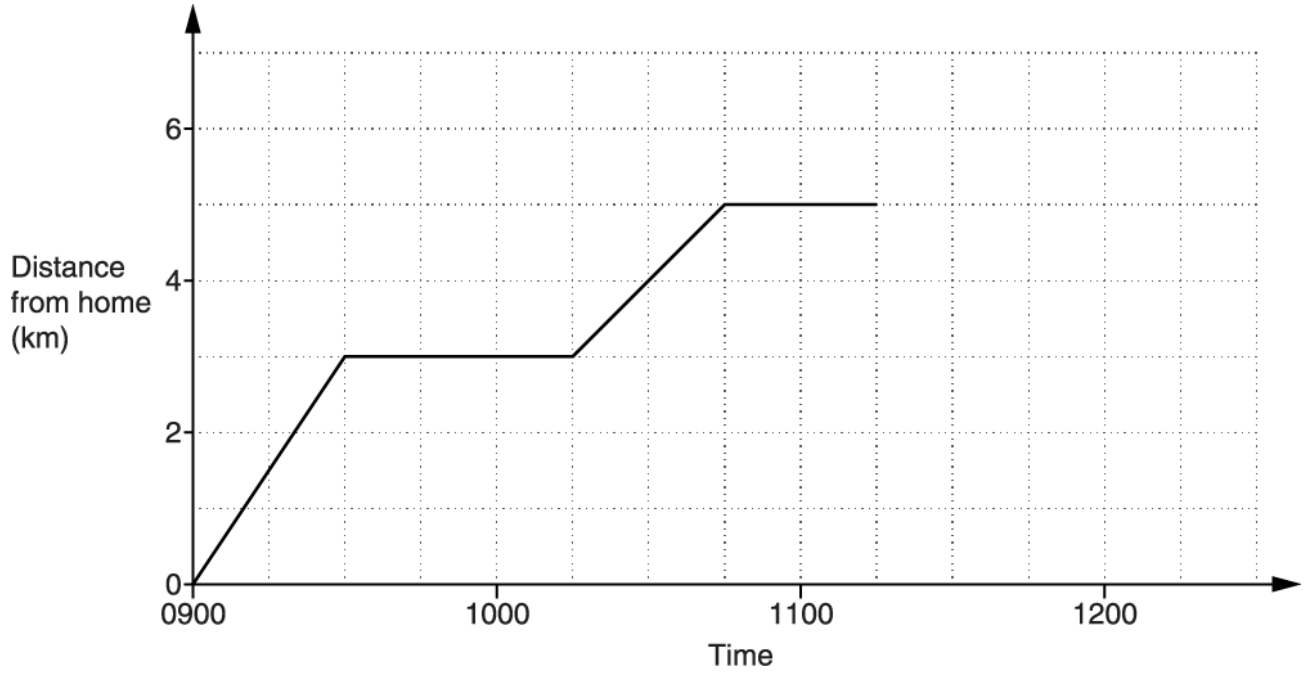
[2]

(c). The Roberts family use 2500 units of electricity in a year.

Which of the two companies will be cheaper for them to use for a year, and by how much?

_____ is cheaper by £ _____ **[2]**

8. Gabriel and his mum go to the shops and then to the Post Office.
This graph shows their journey.



(i) At what time did they arrive at the shops?

(i) _____ **[1]**

(ii) How long did they spend at the shops?

(ii) _____ minutes **[1]**

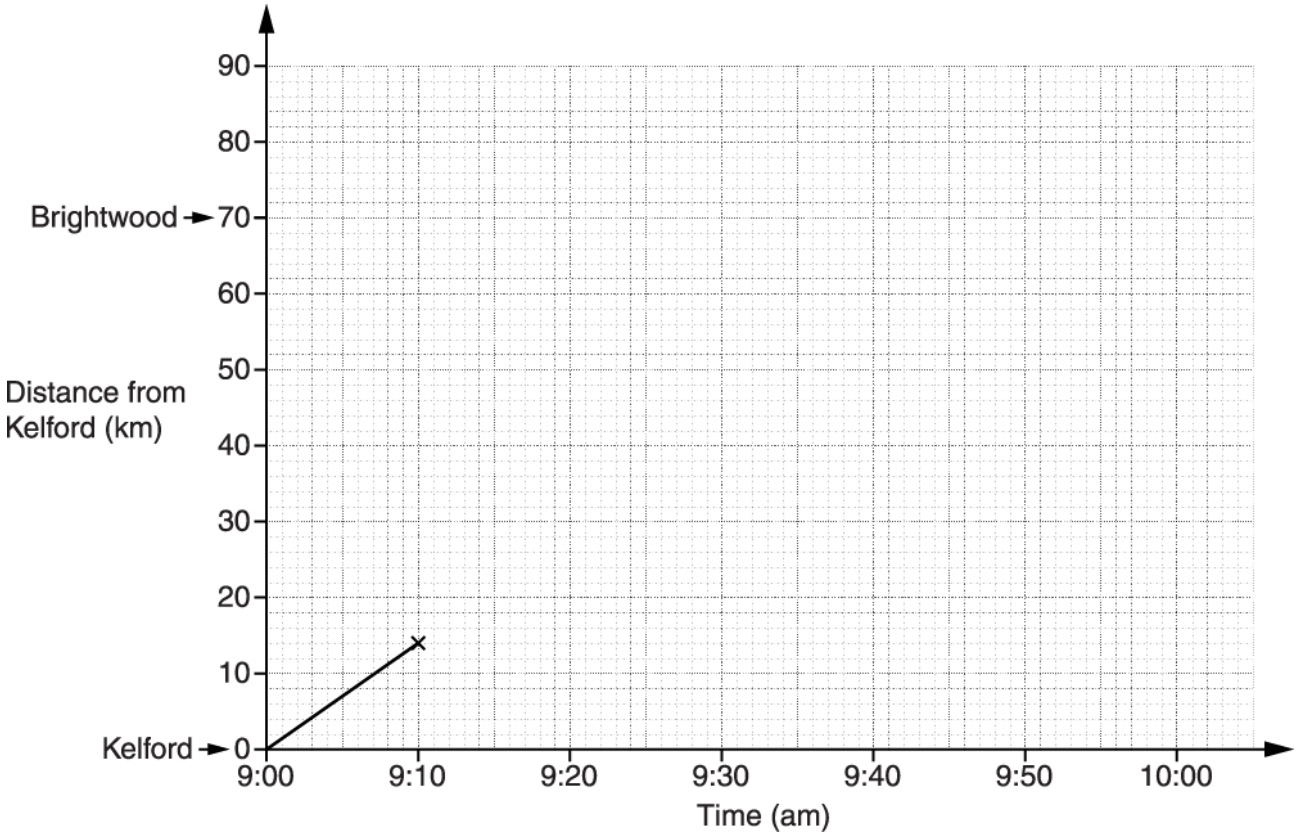
(iii) They arrived home 30 minutes after they left the Post Office.

Show their journey home on the graph.

[1]

9. A train travels from Kelford to Brightwood.

The graph shows the first ten minutes of the train's journey.



The two stations are 70 kilometres apart.

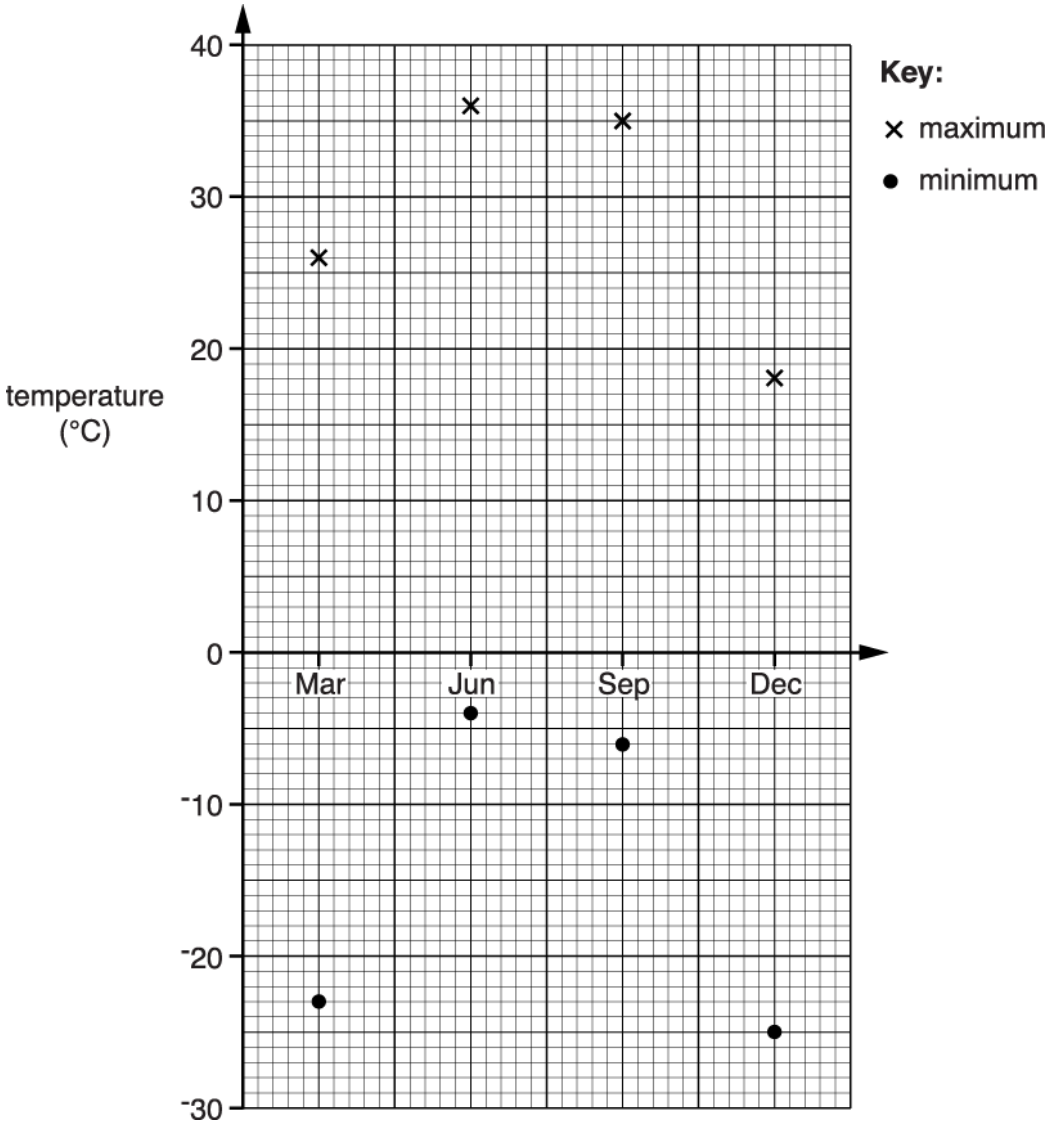
The train is due to arrive at Brightwood at 10:00 am.

Will it arrive on time if it continues to travel at the same speed?

Show clearly how you decide.

[3]

10(a). This graph shows the record maximum and record minimum temperatures in England and Wales for March, June, September and December in the last 50 years.



What was

(i) the record maximum temperature in June,

(i) _____ °C **[1]**

(ii) the record minimum temperature in March?

(ii) _____ °C **[1]**

(b). Describe how the record minimum temperature varied from March through to December.

_____

_____

_____ **[2]**

(c). How much warmer was the record maximum temperature in September than the record maximum temperature in December?

_____ °C **[1]**

(d). What is the difference between the record maximum and record minimum temperatures in September?

_____ °C **[1]**

11. An empty water tank is to be filled with water and then emptied.

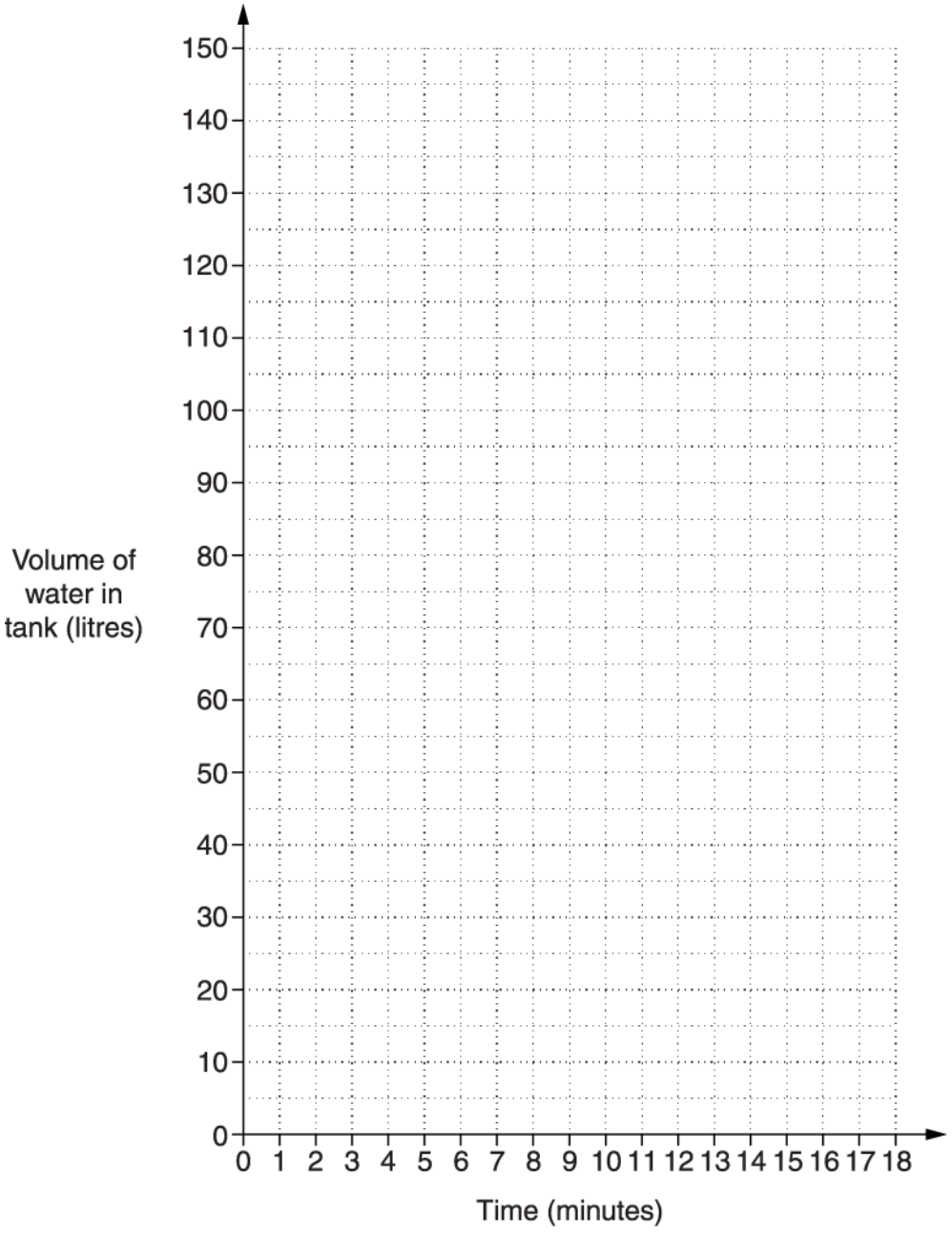
For the first 4 minutes it is filled at a constant rate of 20 litres per minute.

For the next 3 minutes it is filled at a constant rate of 15 litres per minute.

It is then left for 2 minutes.

It is then emptied at a constant rate of 25 litres per minute.

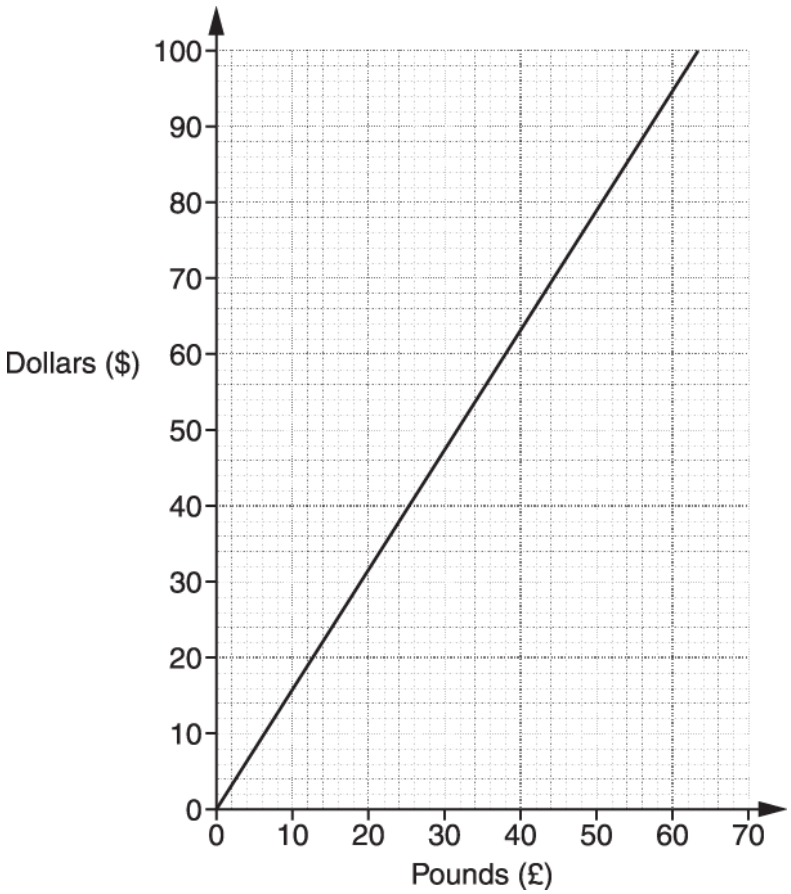
Show this information on the grid below.



[4]

12(a) This is a conversion graph between pounds and American dollars.

.



(i) Hilary changed £30 into dollars.

Use the graph to find how many dollars she received.

(a)(i) $ _____ [1]

(ii) Umar changed $66 into pounds.

Use the graph to find how many pounds he received.

(ii) £ _____ [1]

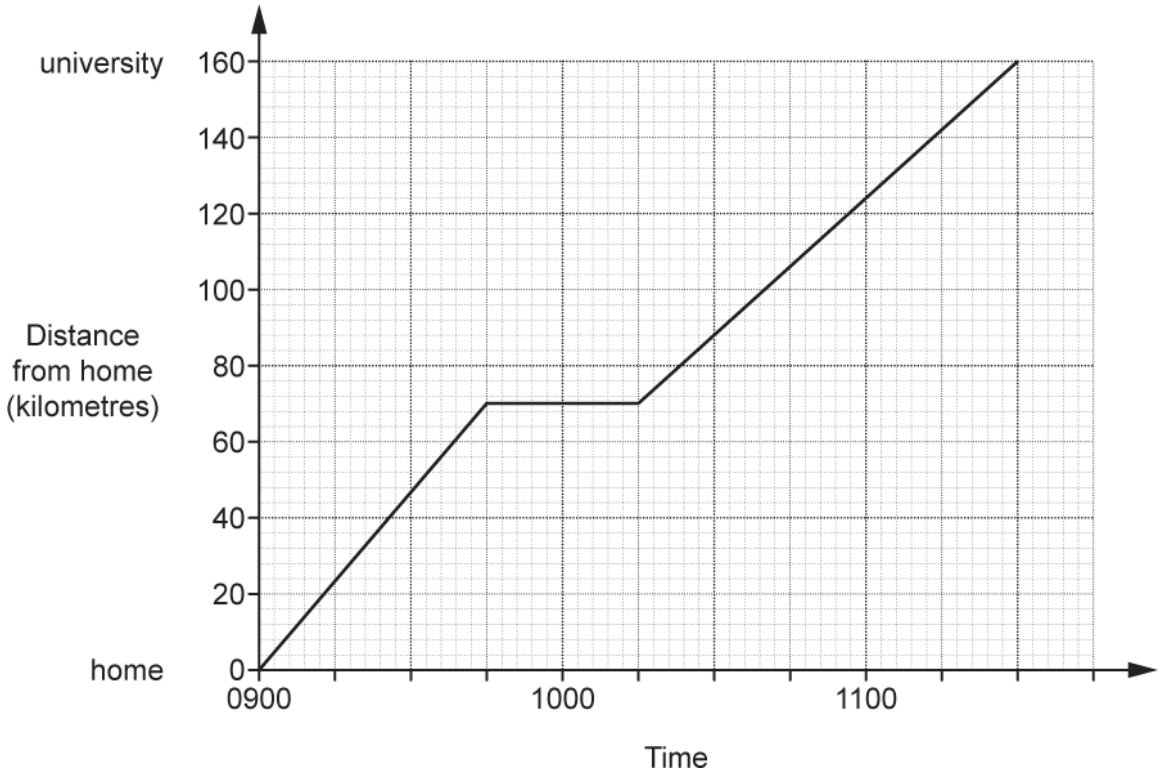
(b). Adele used the graph to work out how many dollars she would receive when changing £110 into dollars.

Use the graph to change £110 into dollars.
Explain how you obtained your answer.

---

[2]

13. The graph shows Mia's journey from her home to university.

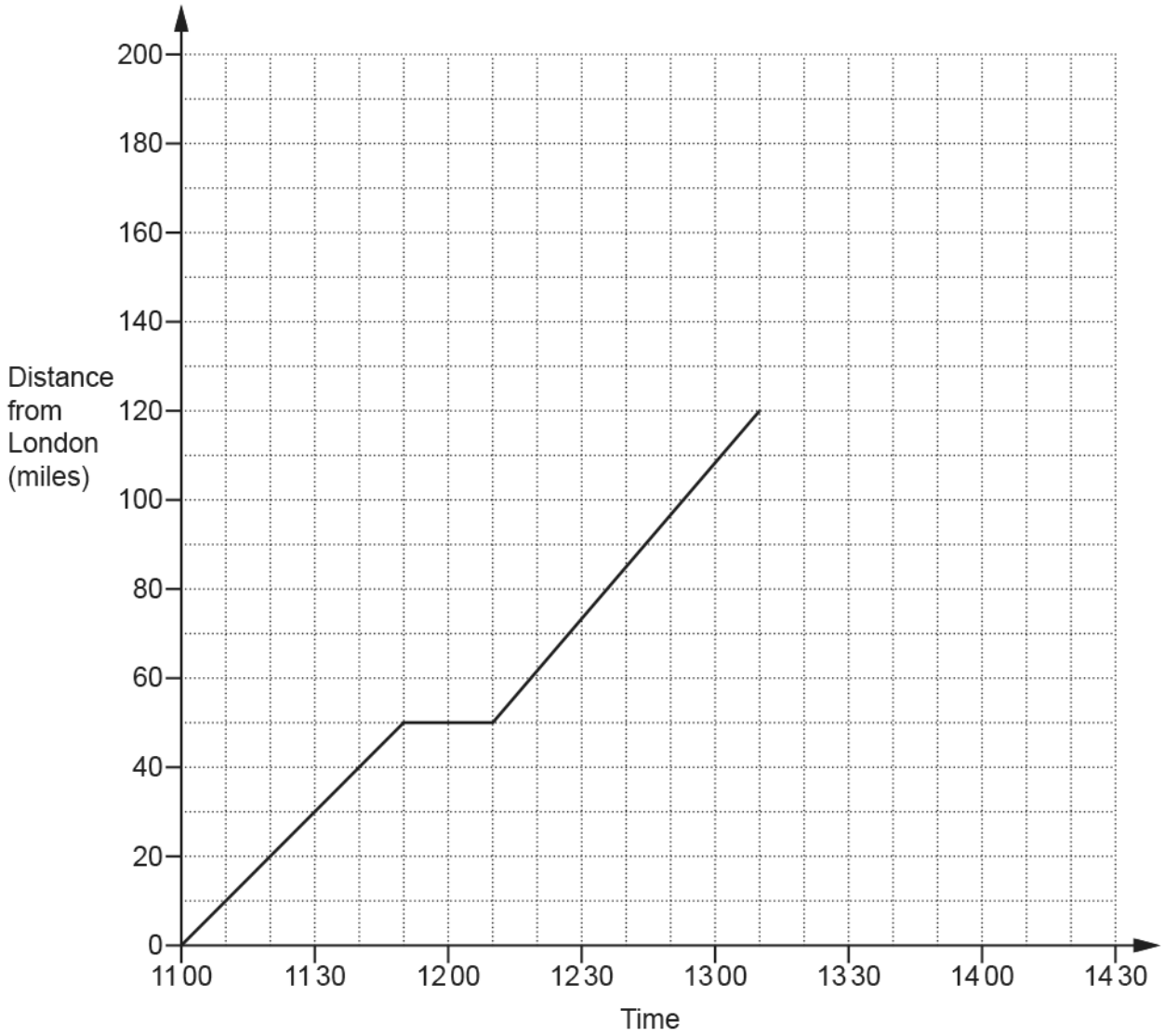


Calculate Mia's average speed for the whole journey.

_____ km/h **[3]**

14(a) This graph shows part of Lucy's car journey from London to Sheffield.

. The car made one stop at a service station.



Use the graph to answer these questions.

For how long did the car stop at the service station?

---------- minutes **[1]**

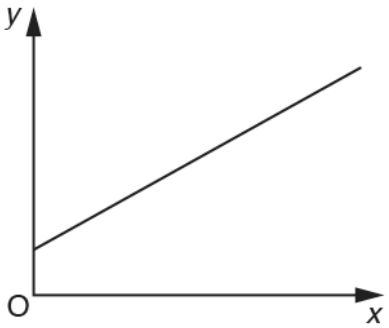
(b). Work out the average speed of the car, in miles per hour, between London and the service station.

---------- mph **[2]**

(c). Sheffield is 180 miles from London.
Lucy arrived in Sheffield at 14 20.

Complete the graph. **[2]**

15. A graph is drawn below.



Explain how you know that *y* is not directly proportional to *x*.

---**[1]**

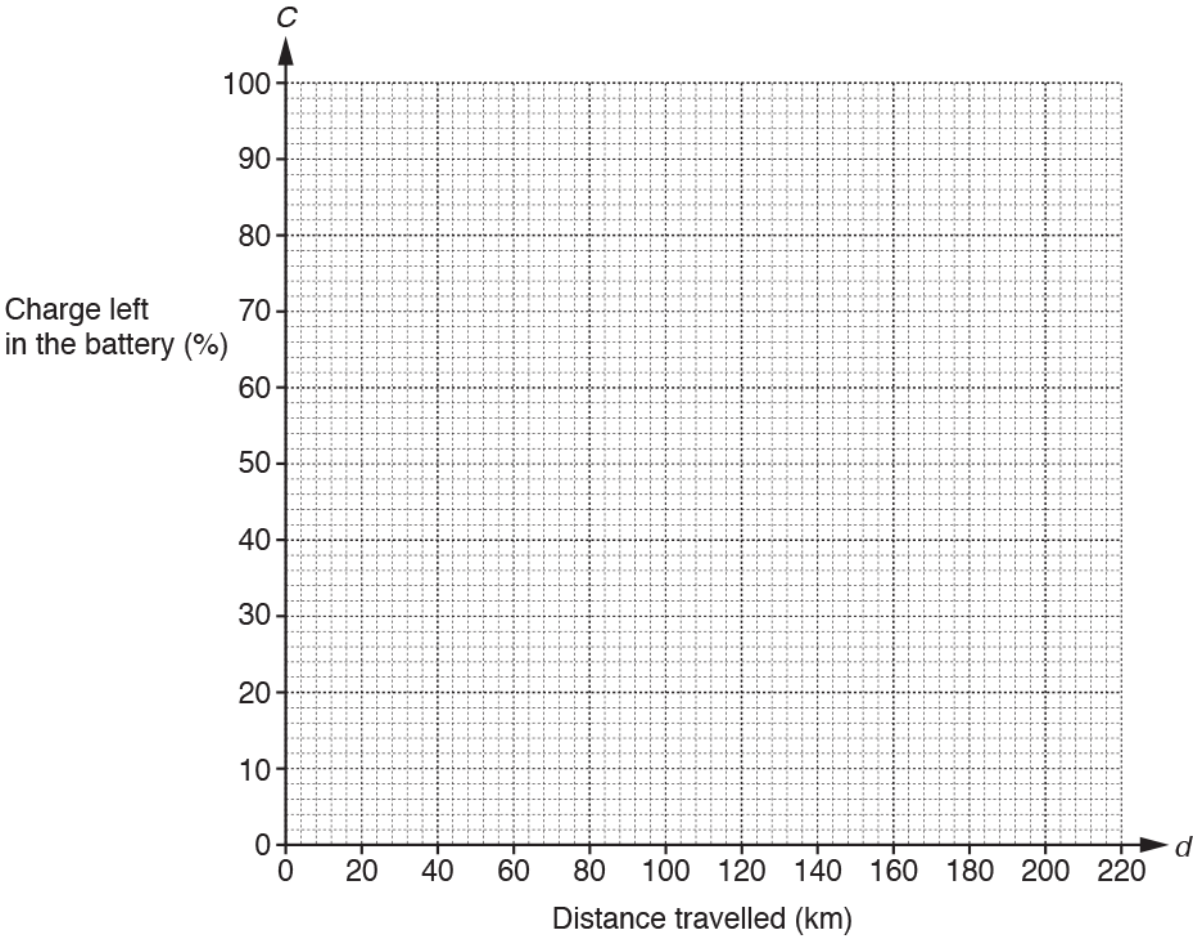
16(a) A company tests a new battery for an electric car.

. The distance the car travels, d km, and the charge left in the battery, C %, are measured.

Some measurements are shown in the table.

Distance travelled, d km.	0	50	100	150
Charge left in the battery, C %.	100	75	50	25

Plot these values on the grid and use them to draw a straight line.



[2]

(b).

(i) Use your line to estimate the greatest distance the car will travel.

------------------------------ km **[1]**

(ii) What assumption is made when estimating the greatest distance?

-- **[1]**

(c). For your line in part **(a)**, find

(i) the gradient,

------------------------------ **[1]**

(ii) the *C*-axis intercept.

------------------------------ **[1]**

(d). Use your answers to part **(c)** to write down the equation of your graph.

Give your equation in the form C = **ad** + b.

C = ------------------------------ **[1]**

(e).

(i) Use your equation to find the value of C when $d = 210$.

---------- [2]

(ii) Comment on your answer.

---------- [1]

END OF QUESTION PAPER

Question			Answer/Indicative content	Marks	Part marks and guidance	
1	a		Correct ruled line from (1, 60) to (7, 300)	2	**B1** for 3 points correct Examiner's Comments Many plotted the points correctly to gain a mark and most, but not all, joined them with a ruled line. Some, again, tried to connect the line to the origin. Very few freehand drawings were seen.	± 1 small square Condone freehand line for max 1 mark
	b		20 40	1 1	Examiner's Comments This was less well answered with the answers sometimes reversed but, more often, completely wrong.	
	c		420 nfww	2FT	**FT** *their* 40 × 10 + *their* 20 **M1** for *their* 40 × 10 soi 400 or for a multiple of 40 + *their* 20 or for 300 + 3 × *their* 40 oe Examiner's Comments This was not common but candidates often gained a follow through mark for correctly multiplying their hourly rate by 10. A common error was to read the value for 5 hours and double it.	
			Total	6		
2	a	i	8.00 to 8.30	1		

Question			Answer/Indicative content	Marks	Part marks and guidance	
		i	Uneven line oe or speed not constant oe	1	Indep	Must refer to the uneven line or speed not constant oe in some way isw incorrect statements
		ii	31	1		
		iii	30	1		
	b		Any line starting at (0930, 40) and finishing at (10.36, 0)	2	**B1** for any line starting at (0930, 40) and finishing at (k, 0) where k > 10 30	Line can be curved, wiggly, stepped etc, but not vertical
			Total	6		

Question			Answer/Indicative content	Marks	Part marks and guidance	
3	a		12	2	**M1** for £4 oe seen or 8 + 4 × 100 ÷ 100 Examiner's Comments Many correct answers were seen, although the usual arithmetic errors occurred. 24 and 32 were common errors for the final two entries in the table.	Condone 12.0
	b		(12) (16) **20 24**	1 + 1	Award marks for 20 and 24 only Examiner's Comments Many correct answers were seen, although the usual arithmetic errors occurred. 24 and 32 were common errors for the final two entries in the table.	
	c		*Their* four points correctly plotted	2	Centre of point or cross within half small square of intersection **B1** for 2 of *their* correct points	Use overlay and within circle when set to “fit to width” Ignore extras If columns then mark consistently left, middle or right of top

Question			Answer/Indicative content	Marks	Part marks and guidance	
			Line	1	Ruled **straight** line or good freehand passing through all four points from 100 to 400 leaflets Examiner's Comments Most candidates plotted their points accurately on the grid but those who had wrong answers were often not able to plot all the points. Follow through marks often meant that 1 mark was scored. A significant number of candidates joined the point (100, 12) to the origin. A pleasing number of candidates had a ruler. Some misinterpreted a line graph as a stick graph.	Use overlay and line within circles when set to "fit to width"
	d		250	1	Examiner's Comments Most candidates correctly gave the answer 250.	
	e	i	The answer is [£]808 and it should be [£]16 oe	2	**B1** for 808 seen or 16 as answer or read from table or graph	808 is from 8 + 4 × 200 not step in working

Question			Answer/Indicative content	Marks	Part marks and guidance	
		ii	[w =] [0].04 × n + 8 oe	1	Condone any correct form Examiner's Comments This was poorly answered with many candidates not evaluating the formula correctly. Most added 8 and 4 and multiplied by 200. Most did not read the information accurately and, even when reaching 2400, rewrote this as £24. They failed to appreciate the definition of the variables. Very few correct answers were seen for pat (ii); however, the very best candidates did obtain a correct formula.	$\frac{n}{25}$ + 8, 4 × n ÷ 100 + 8 etc Not 4 × n + 8 ÷ 100 or $\frac{4n+8}{100}$
			Total	11		

Question			Answer/Indicative content	Marks	Part marks and guidance	
4	a		C	1	Examiner's Comments This question also saw many candidates score marks. Parts (a), (b) and (c) were attempted with some success by all. Stronger candidates were usually successful on all parts.	
	b		A	1	Examiner's Comments This saw many candidates score marks. Parts (a), (b) and (c) were attempted with some success by all. Stronger candidates were usually successful on all parts.	
	c		D	1	Examiner's Comments This saw many candidates score marks. Parts (a), (b) and (c) were attempted with some success by all. Stronger candidates were usually successful on all parts.	
			Total	3		

Question			Answer/Indicative content	Marks	Part marks and guidance	
5	a	i	100	1		
		ii	20	1		
		iii	10	1	Condone 8 to 12 <u>Examiner's Comments</u> This was well answered.	
	b		Fully correct solution with working, annotation and correct money conventions and containing all of • 180 pages • Callum 18 × £2 oe = £36 • Elena 180 × 15p oe = £27 • Callum raises more oe or No	4	Accept p or £ form throughout	For these two alternative methods Bullets 2 and 3 may be Callum £2 per 10 pages Elena 15p × 10 = £1.50 per 10 pages
			Fully correct solution with some annotation and correct money conventions and containing all of • 180 [pages] • Callum = £36 • Elena = £27 • Callum raises more oe or No OR Solution with working, annotation and correct money conventions and containing **three** of • 180 [pages] • Callum 18 × £2 oe = £36 • Elena 180 × 15p oe = £27 • Callum raises more oe or *their* No	3–2	If wrong number of days used (e.g. 200) maximum mark is 2 Partial solution containing **two** of • 180 [pages] • [Callum] *their* 18 × £2 oe or £36 • [Elena] *their* 180 × 15p oe or £27 • Correctly identifies *their* highest or Callum raises more oe or *their* No	OR Callum £4 × 9 = £36 or 200p ÷ 10 = 20p Elena 20p – 15p = 5p and 5p × 180 = 900p For this method, bullets 1, 2 and 3 may be Callum 9 days, Elena 6 days Callum £4 a day, £4 × 9 = £36 Elena 30 × 15p = £4.50 a day and £4.50 × 6 = £27

Question			Answer/Indicative content	Marks	Part marks and guidance	
			Partial solution containing **one** of • 180 [pages] • [Callum] *their* 18 × £2 oe correct or £36 • [Elena] *their* 180 × 15p oe correct or £27 • Correctly identifies *their* highest or Callum raises more oe or *their* No following some working	1–0	No relevant work <u>Examiner's Comments</u> The first QWC question, was reasonably well answered with many scoring 2 marks from 4. Many candidates lost marks for not stating that they both read 180 pages on day 9 but simply assuming this in their answer (not a good idea with QWC). Many also could work out 180 × 15p but thought that the answer was £2700, because they did not include 'p' in their working to remind themselves. Others worked out the answer for week 10.	
			Total	7		

Question			Answer/Indicative content	Marks	Part marks and guidance	
6	a		26	1	Examiner's Comments This was very well attempted, with candidates able to read and interpret information from the distance-time graph. There were very occasional errors in interpreting the horizontal and vertical scales of the graph.	
	b		Horizontal line from (11 20, 26) to (12 20, 26) Line or curve from (n, 26) to (n + 30, 0)	1 1 1FT	For first mark, condone horizontal line omitted provided return journey starts at 12 20 FT *their n* Examiner's Comments This part was hard for candidates but many were successful. It was often possible to award one mark for one of the correct sections of the graph.	Allow freehand
	c		10	1	Examiner's Comments This was very well attempted, with candidates able to read and interpret information from the distance-time graph. There were very occasional errors in interpreting the horizontal and vertical scales of the graph.	

Question			Answer/Indicative content	Marks	Part marks and guidance	
	d		6	1	Examiner's Comments This was very well attempted, with candidates able to read and interpret information from the distance-time graph. There were very occasional errors in interpreting the horizontal and vertical scales of the graph.	
			Total	5		

Question			Answer/Indicative content	Marks	Part marks and guidance	
7	a	i	220	1		
		ii	12p	2	**M1** for (*their* 220 – 100) ÷ 1000 oe or clear correct attempt to find gradient of line After 0 scored **SC1** for answer 22[p] or 15[.3.][p] or 17[p] **Examiner's Comments** Part (i) was answered extremely well. The scale on the graph was correctly read by virtually all. In part (ii), many had no idea what was required. Some read a point on the line (*x, y*) and then divided the two values either *y/x* or *x/y*. There was some misreading of the scale in this part. Many did not consider whether their answer was sensible. £50 and £407 for one unit of electricity did not seem to be of concern. A few used the origin as a point on the line which did not take into account the fixed charge and gave answers such as 22p.	0.12 implies M1
	b	i	240, 280, 320	2	**B1** for 2 correct	

Question			Answer/Indicative content	Marks	Part marks and guidance	
		ii	Plots (0, 200), (1000, 240), (2000, 280) and (3000, 320) and joins with a ruled line	2	**B1FT** for 3 or 4 correct plots FT *their* table **Examiner's Comments** In part (i) the table was correctly completed by many candidates, but for some, it did not seem to be of concern that the values calculated could not fit onto the graph. 1000×4p = £400 was common. When the points were calculated correctly in part (i) then the graph was usually drawn correctly in part (ii) and follow through marks were also available here from the previous part. Some gained the follow through marks here but many could not fit the incorrect points on the grid.	Use template Accuracy ½ small square on FT plots
	c		Power4less by 100	2FT	FT *their* graph readings at 2500 **B1** for 100FT *their* readings **Examiner's Comments** This was very well answered. Some gained follow through marks here where their line stayed on the grid. For those with a line off the grid, many tried to estimate an answer for this part.	Accept Power4less by 90 to 110 Accuracy ±10 from *their* difference on graph
			Total	9		

Question			Answer/Indicative content	Marks	Part marks and guidance	
8		i	(0)930	1		accept half past 9, etc
		ii	45 minutes	1		
		iii	Line from (1115, 5) to (1145, 0)	1	Examiner's Comments Parts (i) and (ii) were also well answered. A common error in (i) was 1015, the time they left rather than arrived at the shops, and 75 in (ii) from starting at 0900 rather than 0930. In part (iii) many candidates clearly did not understand the idea of the graph; some ended their line at 1130 or 1200, others went in the wrong direction and a few drew vertical lines.	no vertical sections
			Total	3		

Question			Answer/Indicative content	Marks	Part marks and guidance	
9			**attempt** to extend the straight line from (9.10, 14) with a similar gradient	M1	Within blue lines on overlay	Allow alternative methods by applying e.g. **M1** for a correct and appropriate reading from the graph, **A1** for a correct figure from which they can use to answer the question, usually time or speed and **A1** for a fully correct response from all their work or **M1** for 6 km in 5 minutes or $\frac{6}{5}$, **A1** for 72 kmph **oe** and **A1** for arrives just before 1 hour [as 72 > 70] or **M1** for 14 km in 10 mins or $\frac{14}{10}$**oe** **A1** for 50 **A1** for e.g. arrives just before 1 hour or at 9.50
			correct ruled line or a sequence of correct points plotted e.g. every 10 minutes, within tolerance	A1	must be up to either the time=10.00 or the distance=70 lines and tolerance is between the red lines on the overlay for first 2 marks mark to the candidates advantage	
			fully correct response using **all** their evidence and a clear decision given	A1	tolerance ± $\frac{1}{2}$ small square if 0 scored **SC1** for yes it arrives at either 9.45 to 9.55 or 5 to 15 minutes early **Examiner's Comments** On the whole this was well attempted by candidates, with many gaining credit for correctly extending the line on the graph. These solutions were more successful than those who attempted to use average speed.	
			Total	3		

Question			Answer/Indicative content	Marks	Part marks and guidance	
10	a	i	36	1	Examiner's Comments Nearly all candidates were able to read off the correct maximum temperature.	
		ii	–23	1	Examiner's Comments The majority of candidates were able to read off the correct minimum temperature. A small number left off the negative sign.	
	b		(from March (–23) to June (–4)) **rises** (warms) (19°), (from June(–4) to September (–6)) **falls** (cools) (2 °) or **stays about the same**, (from September (–6) to December (–25)) **falls** (cools) (19°)	2	**B1** for a less good explanation For 2 marks must refer explicitly or implicitly to all three stages For 1 mark must compare at least the summer with the winter explicitly or implicitly No marks if only March and December are compared Examiner's Comments Candidates usually gave a response that showed some understanding of the changes of temperature on the graph through the year, although few gave a detailed enough explanation to gain two marks. Some only compared March and December and gained no marks for this.	Exemplar Response In March the temperature was very low, then June it went a lot warmer and stayed warmer through September and then it dropped again in December (2) In March the temperature was –23 rising to –4 in June. There was a drop of –2 in September giving a temperature of –6 which fell drastically to –25 in December (2) From March the temperature got higher through June and September and December it got colder than it was in March (1) The variation was in June and September the temperature was higher than in March and December (1) The temp got warmer through June and Sep but

Question			Answer/Indicative content	Marks	Part marks and guidance	
						droped back down in Dec (1) March was cold, June and September warmed up. In December it began to get cold again (1) During June and September the minimum temperature was higher as they are summer months. March is lower and December is the lowest because they are winter (1) In June and September the temperature increased and decreased in March and December during the winter (1) In March and December the temperatures were lower than the other months so it was much colder (1) The record shows that the minimum temperature is bad at first but gets better for 2 months but takes a turn for the worse (1) It started of cold in March then got **hotter** until September the the temperature dropped to December (1) From being colder in March it got warmer in June then still warmer in September however still dropped then through to December got colder (1) It got hotter as time passed on and then it started to decrease and get colder (1)

Question			Answer/Indicative content	Marks	Part marks and guidance	
						Because the temperature increased and decreased throughout the year (1) The temperature was very low in March then during summer the weather gradually rised but then dropped back down again when winter came (1) There is no correlation to the temperature, it began cold and rised from June to September then dropped again (1) Because the temperature increased and decreased throughout the year (1) From March through to December the minimum temperature dropped by 2 degreesC (0) The temperature went **down** to –4 then went **up** to –25 (0) There is only –2 difference from March to December where you would expect it to be warmer in March (0) The temperature in December decreased (0) It showed a negative correlation in March then became positive in June and then negative again in December (0) Because in March it start to get cold for December, so it drop down to near to the same temperature as December (0)

Question			Answer/Indicative content	Marks	Part marks and guidance	
						March is –22 minimum but December has more minimum by –25 (0) The temp varied by –2 degrees (0) Minimum temperature decreased rapidly from March to June but rising (only 3°) rapidly in September before rapidly increasing from –6° to –25 (0) Ignore irrelevant comments as part of an answer (anything regarding correlation is irrelevant) Condone temperature errors of one degree
	c		17	1	Examiner's Comments Most candidates found the difference in temperatures correctly.	
	d		41	1	Examiner's Comments In this part of the question a difference between a positive and a negative temperature was required; many found the correct answer, but some found the difference between the absolute values and gave an answer of 29.	Accept –41
			Total	6		

Question			Answer/Indicative content	Marks	Part marks and guidance	
11			Line from (0, 0) to (4, 80)	1	Ruled straight lines	Condone freehand straight
			Line from (4, 80) to (7, 125)	1FT	(n, m) to (n + 3, m + 45)	Points correct 'by eye'
			Line from (7, 125) to (9, 125)	1FT	(x, y) to (x + 2, y)	
			Line from (9, 125) to (14, 0)	1FT	Correct gradient down to (p, 0) After 0 **SC2** for 4 correct vertices **or SC1** for 2 correct vertices **Examiner's Comments** The graph question was answered well in general with many candidates having a graph with four sections correct and ruled. Many used a point to point method, plotting points for every one minute interval on the graph and this usually proved successful. Follow through marks were allowed where sections had been completed successfully after a previous error. Marks were also available for some correct points plotted at the start and the end of the four sections where lines had not been joined. Weaker candidates often plotted points at 20, 15 and 25 vertically and some drew bar charts.	Correct gradient 'by eye'
			Total	4		

Question			Answer/Indicative content	Marks	Part marks and guidance	
12	a	i	46.5 to 48	1		Answer may be seen on the graph
		ii	42	1	Examiner's Comments Most candidates could use the graph to convert pounds into dollars. Some were not careful enough reading off a value and gave an answer of 46 for which they were not awarded the mark.	Answer may be seen on the graph
	b		171 – 176	1		
			Acceptable explanation	1	Explanation can earn a mark even if answer not in correct range but any references to conversions need to be reasonable Examiner's Comments This was a more straightforward conversion, which candidates found easier, with many correct answers given. There were a small number of incorrect answers of 41.	Reasonable conversions would be £10 between 11 and 19 $ £50 between 71 and 80 $ 60 between 91 and 99 $ etc Response Half =£110 =£55. In dollars you can get $87 for £55. Then double it, to get you $174 for £110 (2) £50 = 78 100 = 156 10 = 16 156 + 16 = 172 $172 (2) 160 +16 =$176; 50=80 100=160 10=16 (2) 78×2=156. 156+16=$172. Found £50, doubled it and found £10 worth and added it the doubled £50 answer (2) £55=$88, £110=$176. I worked out how much you would get if you was to

Question	Answer/Indicative content	Marks	Part marks and guidance
			have £55 then doubled the answer (2) £64=$100 £60=£94 £50=$78. She will have 172 Dollars. I found two numbers which added up to 110 pound the found what they were in Dollars then added them together (2) first I did 110-60=50, £60=$94,£50=$78, 94+78=172$ (2) £10=$16=£100=$160; £100+£10=£110 $160+$16=$176 (2) $176; Every £10 is $16, every £100 is $160 (*Bare minimum*) (2) £10=$16, 16×11=176 (2) £10=$15, £50=$75, 75+75+15=$165 (*answer not in required range but values used are reasonable (1)*) $171, I worked out my answer by extending the graph (*answer in range but explanation not acceptable* (1)) £50=$79. £10=$12=79+79+12=$170. I worked out what £50 was in dollars then multiplied by 2 and added what £10 was worth in dollars (*answer not in range, but a good explanation with an inaccurate, but reasonable conversion for £10 (1)*) $178; I found £55 and doubled it (*answer not in*

Question			Answer/Indicative content	Marks	Part marks and guidance	
						range, but explanation just good enough) (1) $150, I have obtained it by drawing extra lines on my graph (0) On the graph I worked out what $100 would be in pounds which equals £66. I then worked out what $10 was which was £6 and added them together to make £72 (0) Ans $66. I know that £10 is equal to $6 so I found that amount and timesed it by 11 so it would be equal to £110 (0)
			Total	4		

Question			Answer/Indicative content	Marks	Part marks and guidance		
13			6 4	3	**M2** for 160 ÷ 2.5 **oe isw** Or **M1** for 160 and 2.5 **oe seen** or for attempt at 160 divided by *their* time interval **isw** Or for clear attempt to find gradient of line joining (09 00, 0) to (11 30, 160) or *their* dist divided by 2.5 **oe isw**	For M1, *their* time interval is in range 2 to 3 or 2h 30m or 1.5 or 3.5, accept 150 mins used	

Examiner's Comments
The majority of candidates knew that they were required to divide distance by time; many correctly drew a speed-distance-time triangle or wrote the formula and most were able to identify 160 (km) as the distance. There was less success in finding an appropriate time; many used the time given on the graph at the end of the journey (1130) instead of the length of time taken to complete the journey. Others attempting a time interval used it in an incorrect form, such as 2 h 30 min or 150 (min). All divisions proved challenging for many, except for those who just used
2 hours.

Question			Answer/Indicative content	Marks	Part marks and guidance
			Total	3	

Question			Answer/Indicative content	Marks	Part marks and guidance	
14	a		20	1	<u>Examiner's Comments</u> Part (a) was well answered with a majority realising that the horizontal part of the travel graph was the period when the vehicle was stationary. The most common misinterpretation of this period was 30 minutes.	
	b		60	2	**M1** for 50 miles in 50 min oe 50/50[x 60] <u>Examiner's Comments</u> In part (b) many realised that the car travelled 50 miles in 50 minutes and partly processed the figures to give 1 as an answer while the most frequent incorrect response here was 50 mph. Only a minority realised or calculated a speed of 60 mph.	
	c		Line from (1310, 120) to (1420, 180)	2	**B1** for line from (1310, 120) **B1** for line to (1420, 180) Extra stop allowed A non-decreasing curve is OK <u>Examiner's Comments</u> In part (c) many candidates scored both marks, however a common error was to arrive too early usually at 1410.	
			Total	5		

Question			Answer/Indicative content	Marks	Part marks and guidance		
15			[Line] does not go through (0, 0)	1		Accept origin, O	
			Total	1			

Question			Answer/Indicative content	Marks	Part marks and guidance		
16	a		4 points plotted and a ruled line joining	2	**B1** for 3 points correctly plotted	Line at least between (0, 100) and (150, 25) Use overlay as guide. ½ square accuracy	
	b	i	198 to 202	1	Do not FT their line		
		ii	Battery usage remains the same or Battery can be used right to 0% or Trend or pattern continues	1	Accept For every 50 km it uses 25%		
	c	i	$-\frac{1}{2}$ oe or –[0].5	1		Ignore units	
		ii	100	1	Accept 0, 100		
	d		$-\frac{1}{2}d + 100$	1	**FT** *their* **(c)(i)***d* + *their* **(c)(ii)**	Accept any letter for *d* (except *c*)	
	e	i	–5	2	**FT** *their* **(d)** if linear in *d*. **B1** for correct substitution of 210	$-\frac{1}{2} \times 210 + 100$ Accept any letter for *d* (except *c*)	

Question			Answer/Indicative content	Marks	Part marks and guidance	
		ii	Impossible [as battery cannot have negative charge] oe	1	FT *their* (i) only if *their* equation gives negative outcome Examiner's Comments Many candidates gained both marks in part (a) although inaccurate plotting or drawing often led to the loss of one mark. Few candidates had a sharp pencil, although many did have a ruler. In part (b) many gained the mark for estimating the greatest distance travelled. A few gave the answer 150 from reading the last point plotted or gave an incorrect intersection with the horizontal axis. Few were able to state a valid assumption. The simple answer that the trend shown in the graph continues was rarely seen. Part (c)(i) was very rarely answered correctly but many gained the mark for part (ii). Candidates were generally unable to answer parts (d) and (e) and many gave no response. Part (d) was sometimes a calculation and, as an equation was often not seen in part (d), there was no valid work in part (e). The final comment was sometimes an explanation of how a previous calculation was carried out.	
			Total	10		