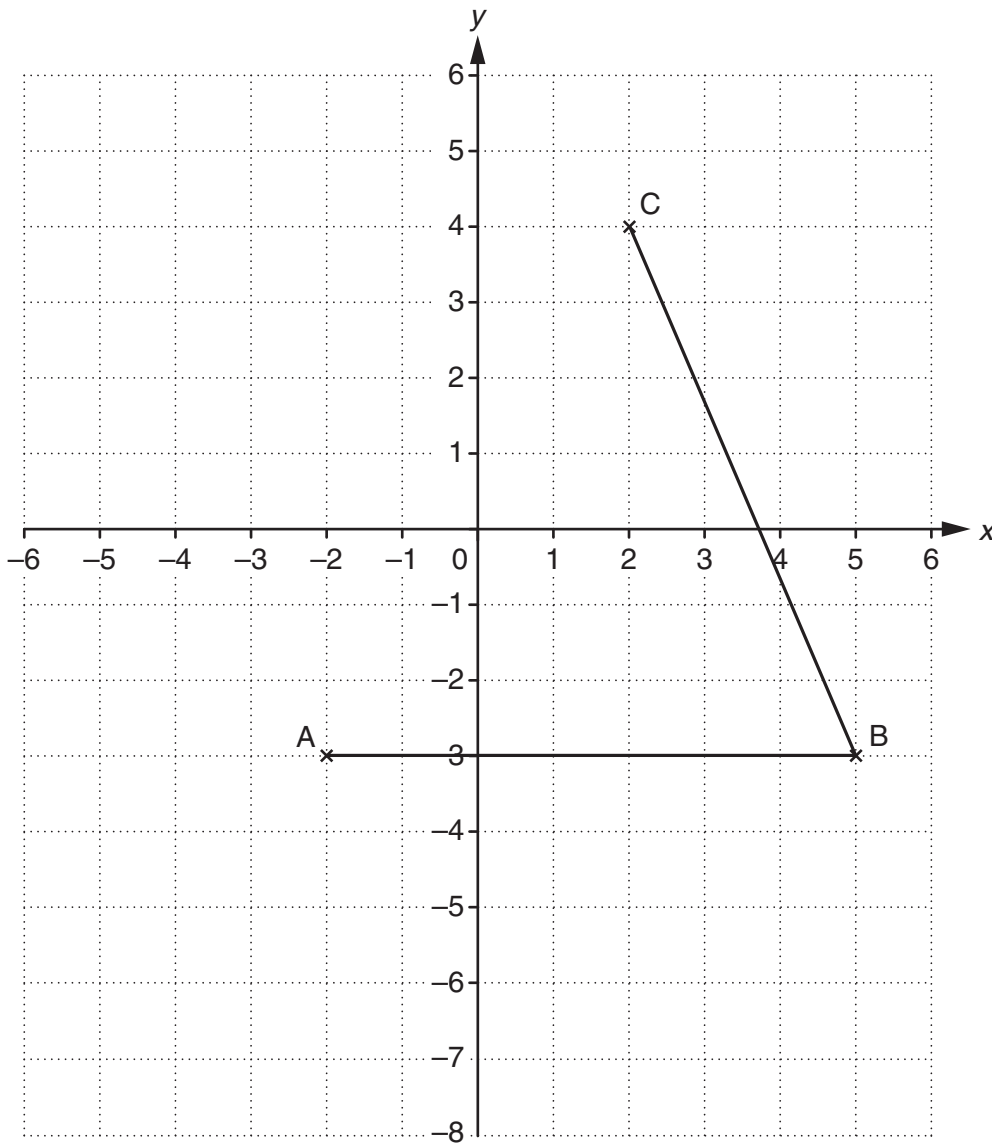


1 Points A, B and C are plotted on a one-centimetre square grid.



(a) Plot the point with coordinates  $(-4, 5)$ . Label it D. [1]

(b) Write down the coordinates of the midpoint of BC.

(b) ( ..... , ..... ) [1]

(c) E is a point

- that is 5 cm from A
- whose coordinates are **both** different from those of A
- whose coordinates are whole numbers.

Find possible coordinates for E.

(c) ( ..... , ..... ) [2]

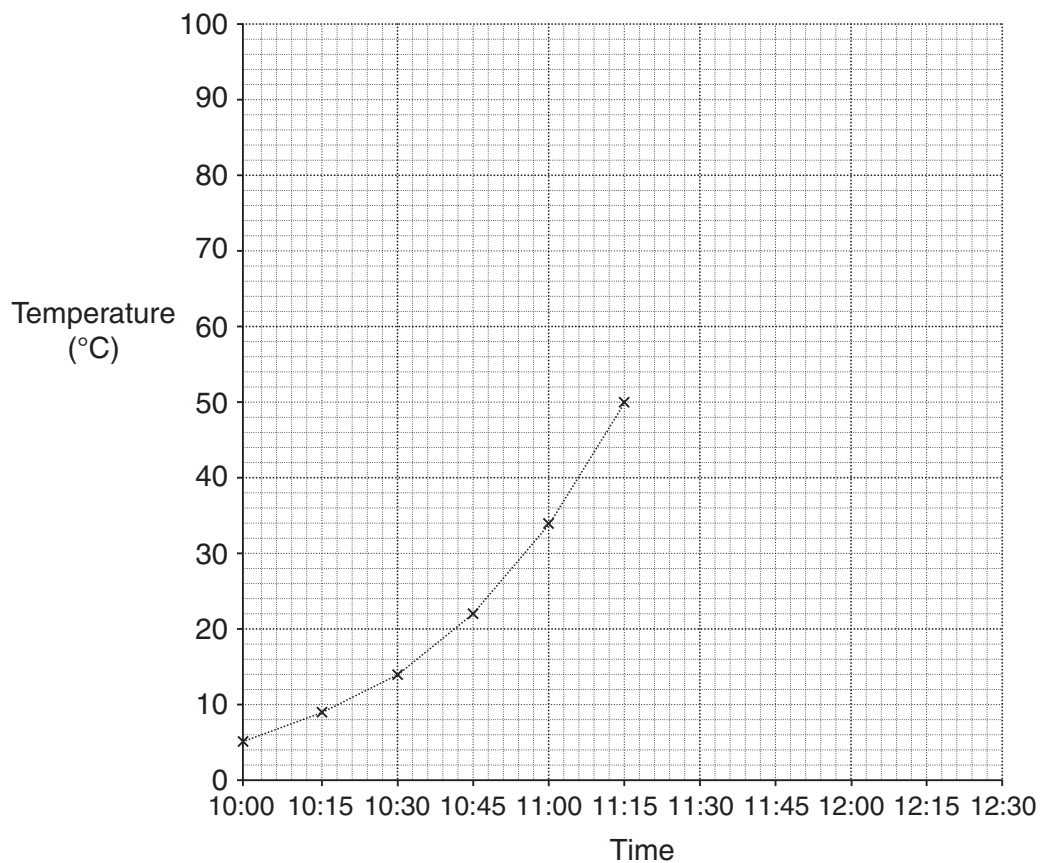
- (d) Bisect angle ABC on the grid opposite, using a ruler and a pair of compasses.  
Do not rub out your construction lines.

[2]

- 2 Maxine is cooking a chicken.  
 She uses a meat thermometer to check when her chicken is cooked.  
 She puts the chicken in the oven at 10:00.  
 This table shows the temperature in the chicken every 15 minutes.

Time	10:00	10:15	10:30	10:45	11:00	11:15	11:30	11:45	12:00	12:15	12:30
Temperature (°C)	5	9	14	22	34	50	65	77	87	92	80

- (a) Complete this time series graph to show Maxine's data.  
 The first six points have been plotted for you.



[2]

(b) Maxine turns the oven off when the temperature in the chicken first reaches  $83^{\circ}\text{C}$ .  
Use your graph to estimate the following.

(i) The time that Maxine turned the oven off.

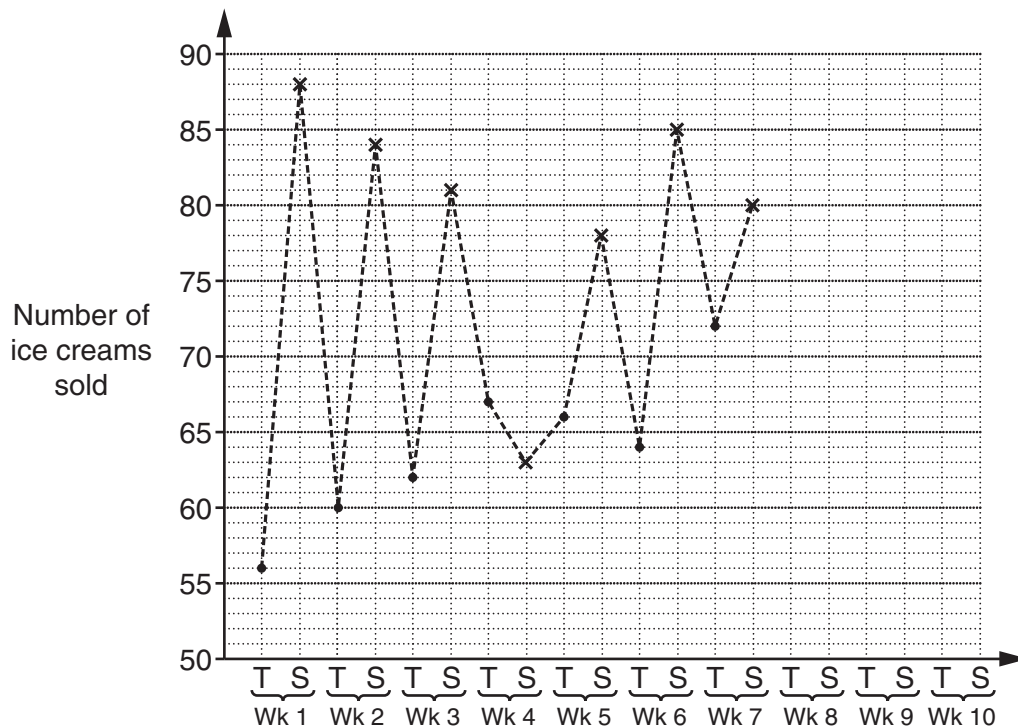
(b)(i) ..... [1]

(ii) The number of **minutes** that the chicken took to first reach  $83^{\circ}\text{C}$ .

(ii) ..... minutes [1]

- 3 Robin sells ice creams at a market on Thursdays and Saturdays.  
He records how many ice creams he sells on each of these days for 10 weeks.

Week (Wk)	1	2	3	4	5	6	7	8	9	10
Thursday (T)	56	60	62	67	66	64	72	74	77	78
Saturday (S)	88	84	81	63	78	85	80	84	86	83



- (a) Complete the time series graph.  
The first 7 weeks have been done for you.

[2]

- (b) Look at the time series graph.

Make two comments about Robin's data.

(1) \_\_\_\_\_  
\_\_\_\_\_

(2) \_\_\_\_\_  
\_\_\_\_\_

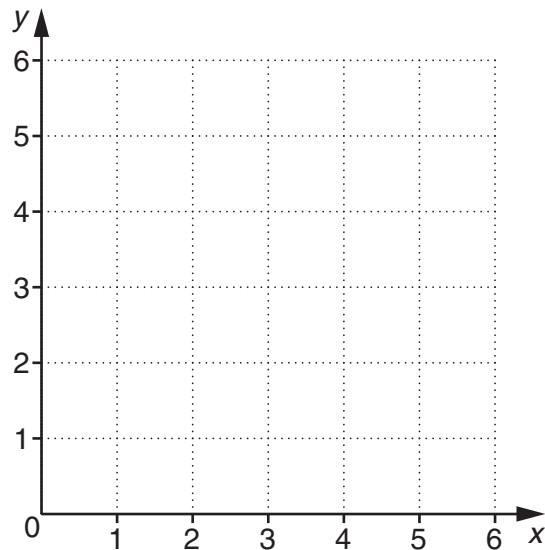
[2]

4 (a) Complete the table for  $2x + 3y = 12$ .

$x$	0	4.5	
$y$			0

[2]

(b) Draw the graph of  $2x + 3y = 12$  for  $0 \leq x \leq 6$ .

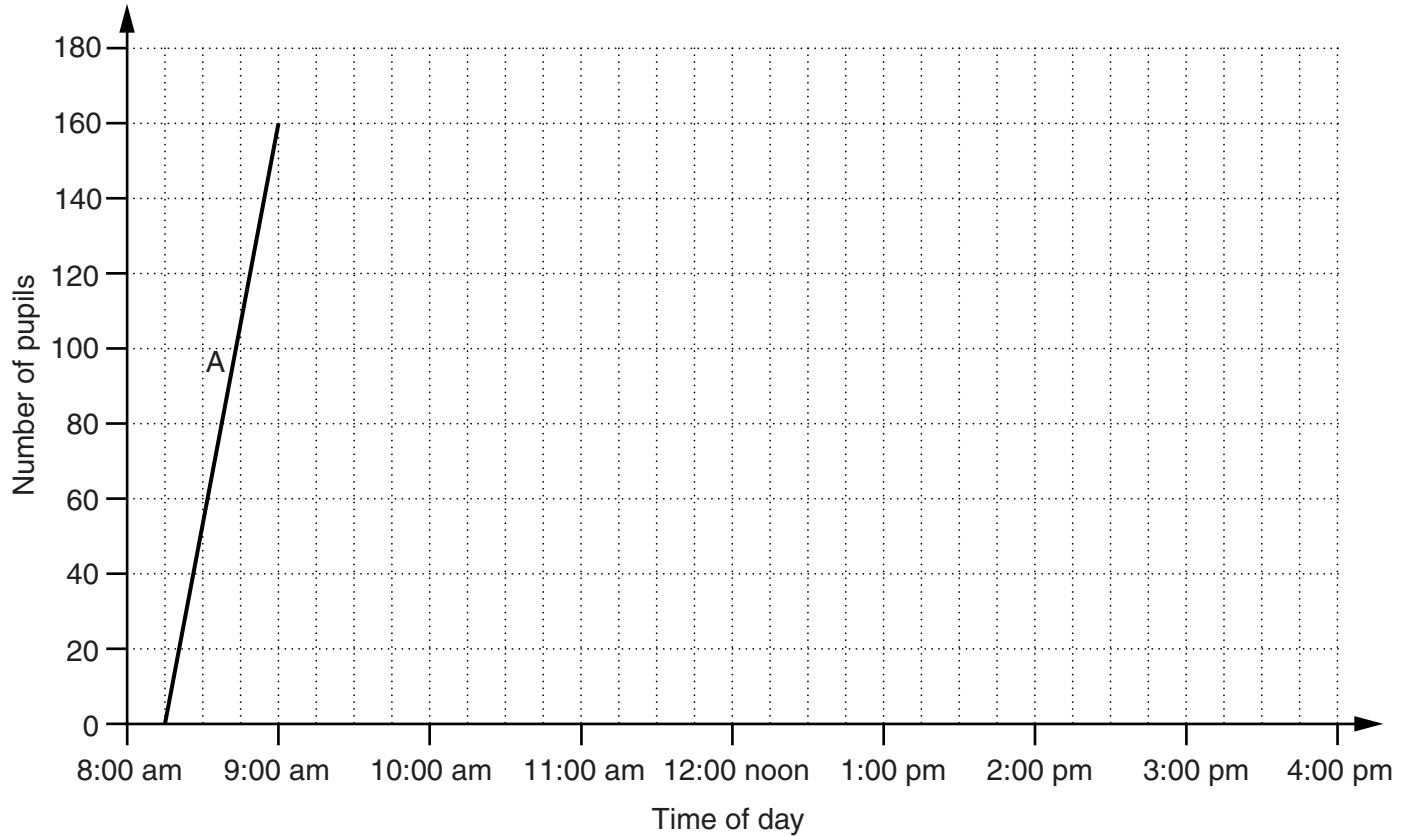


[2]

(c) Use your graph to find the gradient of the line  $2x + 3y = 12$ .

(c) \_\_\_\_\_ [2]

- 5 A primary school has 180 pupils.  
The headteacher records the number of pupils at the school throughout the course of one day.  
She shows the results on a graph.



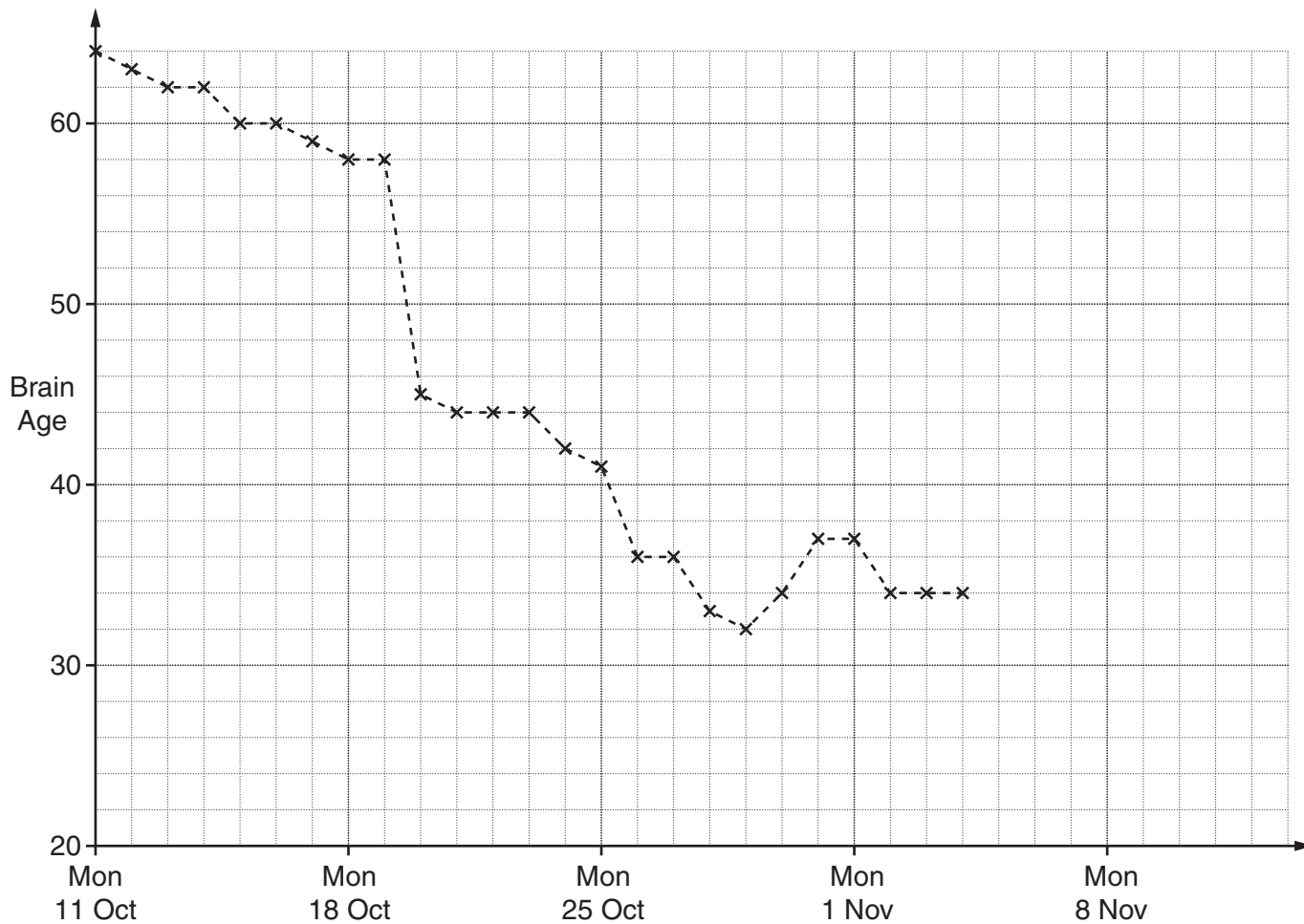
Complete the graph using the descriptions in the table.  
Section A has been drawn for you.

Section	Description
A	The school opens at 8:15 am and 160 pupils have arrived by 9:00 am.
B	All 180 pupils have arrived by 10:00 am.
C	All the pupils stay in school until lunchtime at 12:00 noon. At this time, half of the pupils leave the school to go home for lunch. They have all returned by 1:00 pm.
D	All pupils stay in school until it finishes at 3:00 pm. All the pupils have left by 3:30 pm.

- 6 Sam bought an electronic game on Monday 11th October. The game gives him word and number puzzles to test how well his brain works. He can practise the puzzles to try to improve. The game gives him a 'Brain Age' to show how well he is doing.

The Brain Age can range from 65, which is very poor, to 20, which is best.

The game uses a time series graph to show Sam's Brain Age.



(a) Complete the time series graph with this information.

Date	Sam's Brain Age
Fri 5 Nov	34
Sat 6 Nov	34
Sun 7 Nov	33
Mon 8 Nov	31
Tues 9 Nov	30
Wed 10 Nov	30
Thur 11 Nov	28



- (b) One day Sam discovers a method to get much better scores.

On what date did Sam discover this method?

(b) \_\_\_\_\_ [1]

- (c) Sam realises he does not do as well when he is ill.  
Sam was ill for two days in October.

On which dates was he ill?

(c) \_\_\_\_\_ [1]

- (d) Sam's father, John, also likes to play the game occasionally.

Date	John's Brain Age
Tues 12 Oct	38
Wed 20 Oct	30
Sat 23 Oct	35
Mon 1 Nov	28
Thur 11 Nov	29

- (i) On the grid, draw the time series graph for John's Brain Age. [1]

- (ii) Sam thinks he will soon be able to get a better Brain Age than his father all the time.

Is Sam correct?  
Explain your answer.

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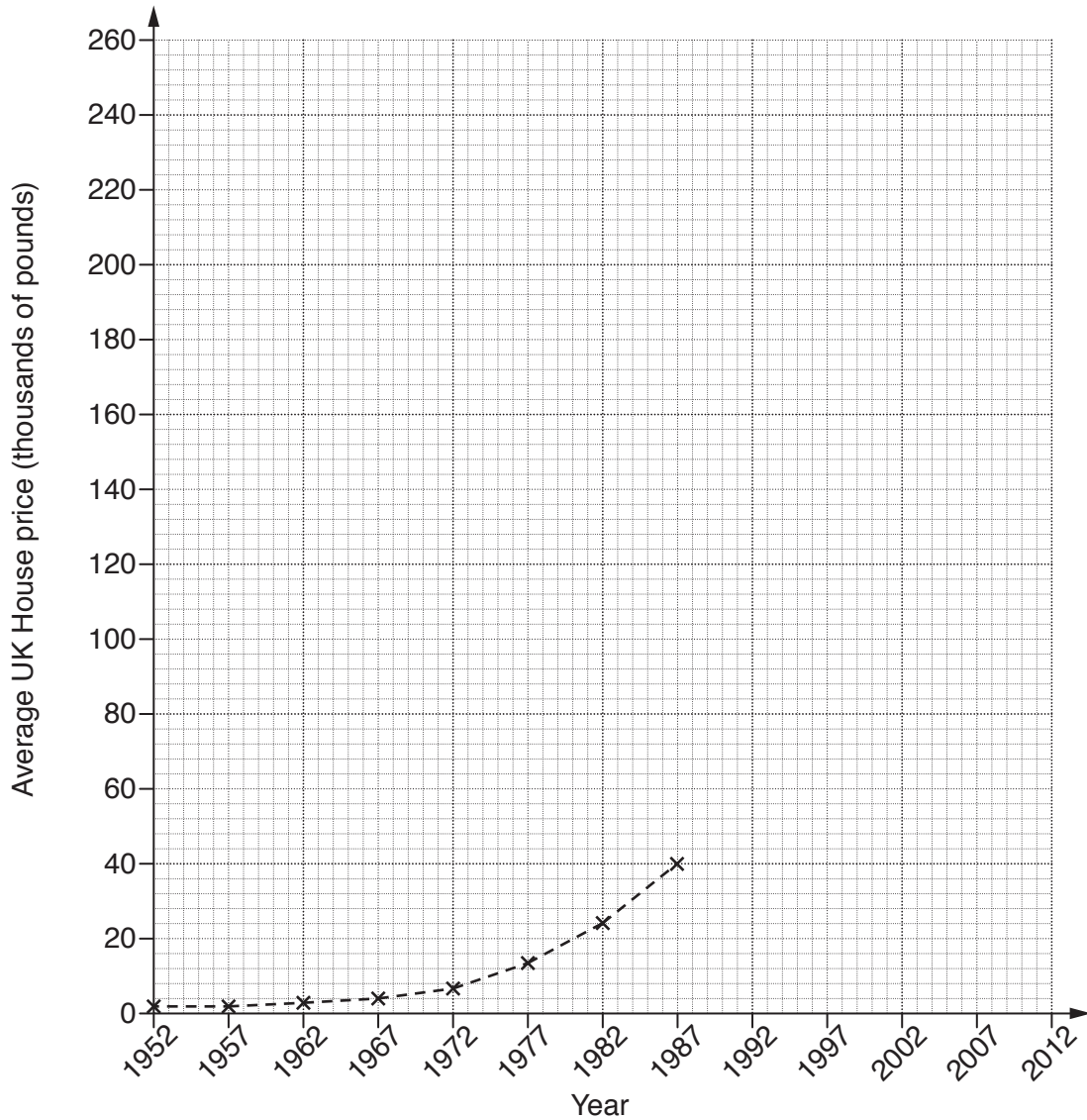


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[2]

7 This table shows the average price of a house in the UK every five years from 1952 to 2012. The prices are given to the nearest £1000.

Year	1952	1957	1962	1967	1972	1977	1982	1987	1992	1997	2002	2007	2012
Price (thousands of pounds)	2	2	3	4	7	14	24	40	61	76	128	223	246



(a) Complete the time series graph to show all the data. [2]

(b) In which 5 year period did the average house price increase the most?

(b) from ..... to ..... [1]

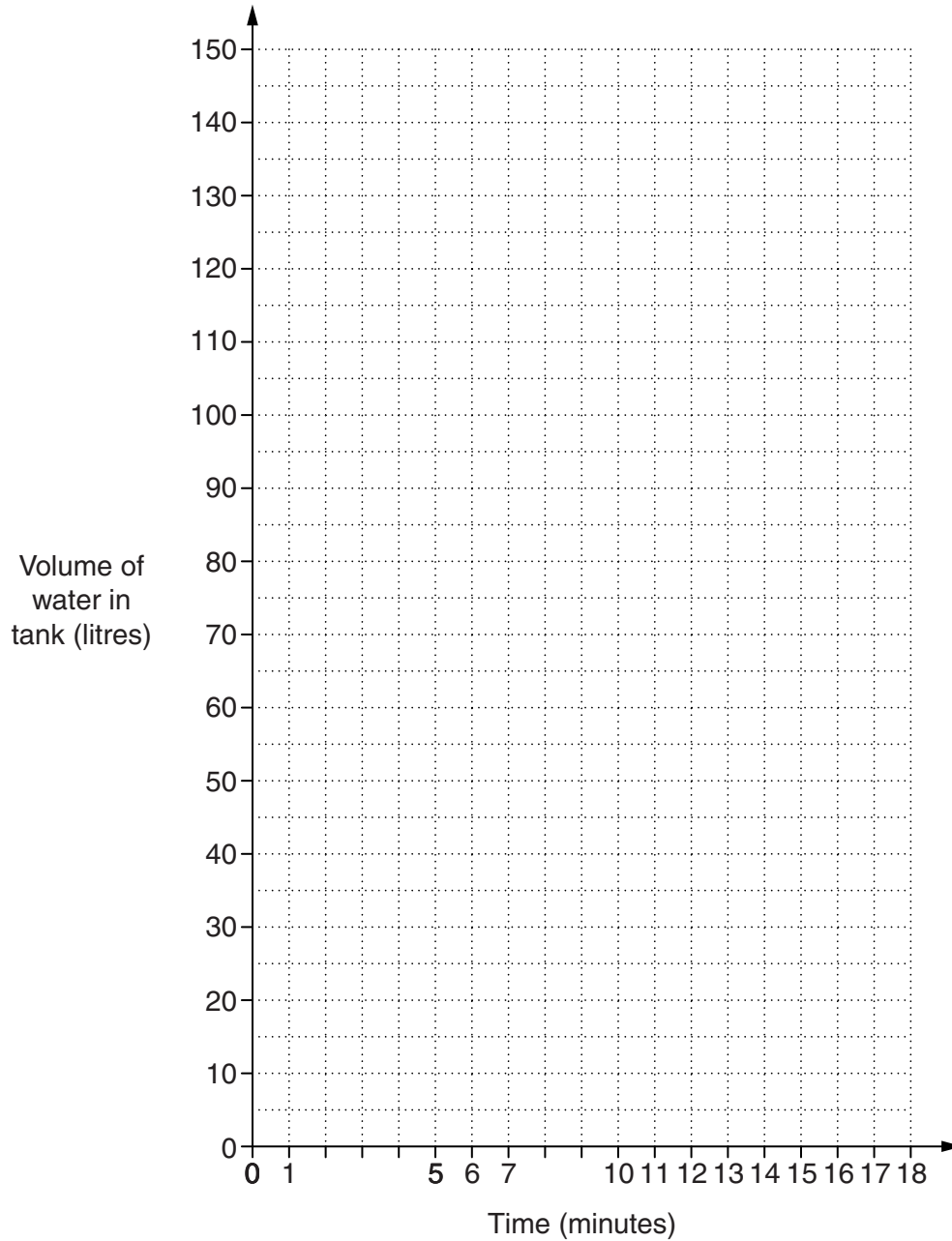
(c) Helen said that house prices did not increase from 1952 to 1957.

Explain why Helen might be wrong. Use figures to support your answer.

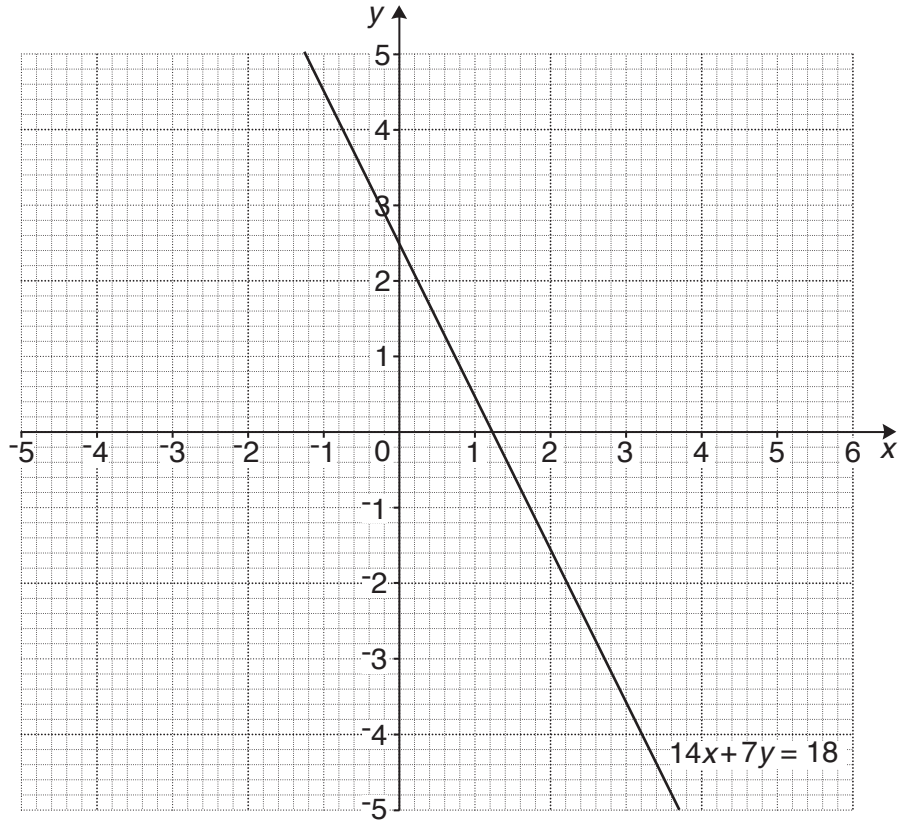
.....  
 ..... [2]

- 8 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.



9 (a) The grid shows the graph of  $14x + 7y = 18$ .



(i) Complete this table of values for  $y = 2x + 2$ .

$x$	-3	0	1
$y$			

[2]

(ii) On the grid, draw the straight line graph of  $y = 2x + 2$ .

[2]

(iii) Use your graph to find the approximate solution of these simultaneous equations.

$$14x + 7y = 18$$

$$y = 2x + 2$$

(a)(iii)  $x =$  \_\_\_\_\_

$y =$  \_\_\_\_\_ [1]

(b) (i) Use **algebra** to find the **exact** solution of these simultaneous equations.

$$14x + 7y = 18$$

$$y = 2x + 2$$

(b)(i)  $x =$  \_\_\_\_\_

$y =$  \_\_\_\_\_ [4]

(ii) Explain why reading off the graph did not give the **exact** solution to these simultaneous equations.

\_\_\_\_\_  
\_\_\_\_\_ [1]