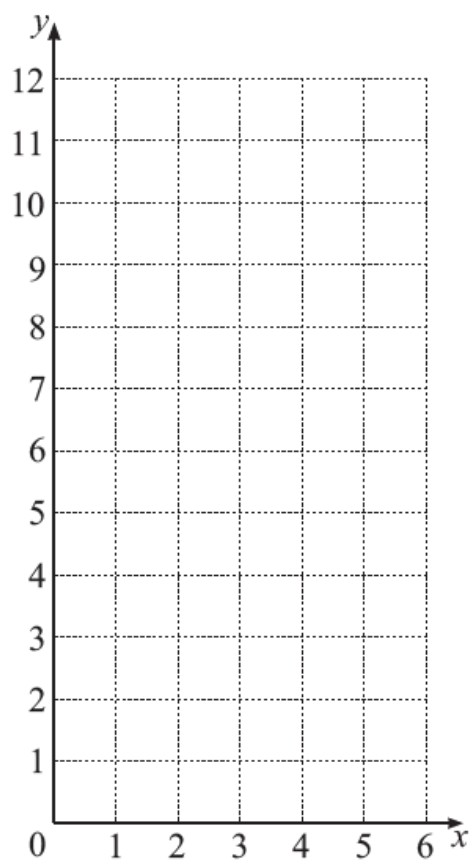


Graphs – Checkpoint Sec 1 Math**1. No.1****(a)** Complete the table of values for $y = 2x + 3$

x	0	1	2	3	4
y	3		7		

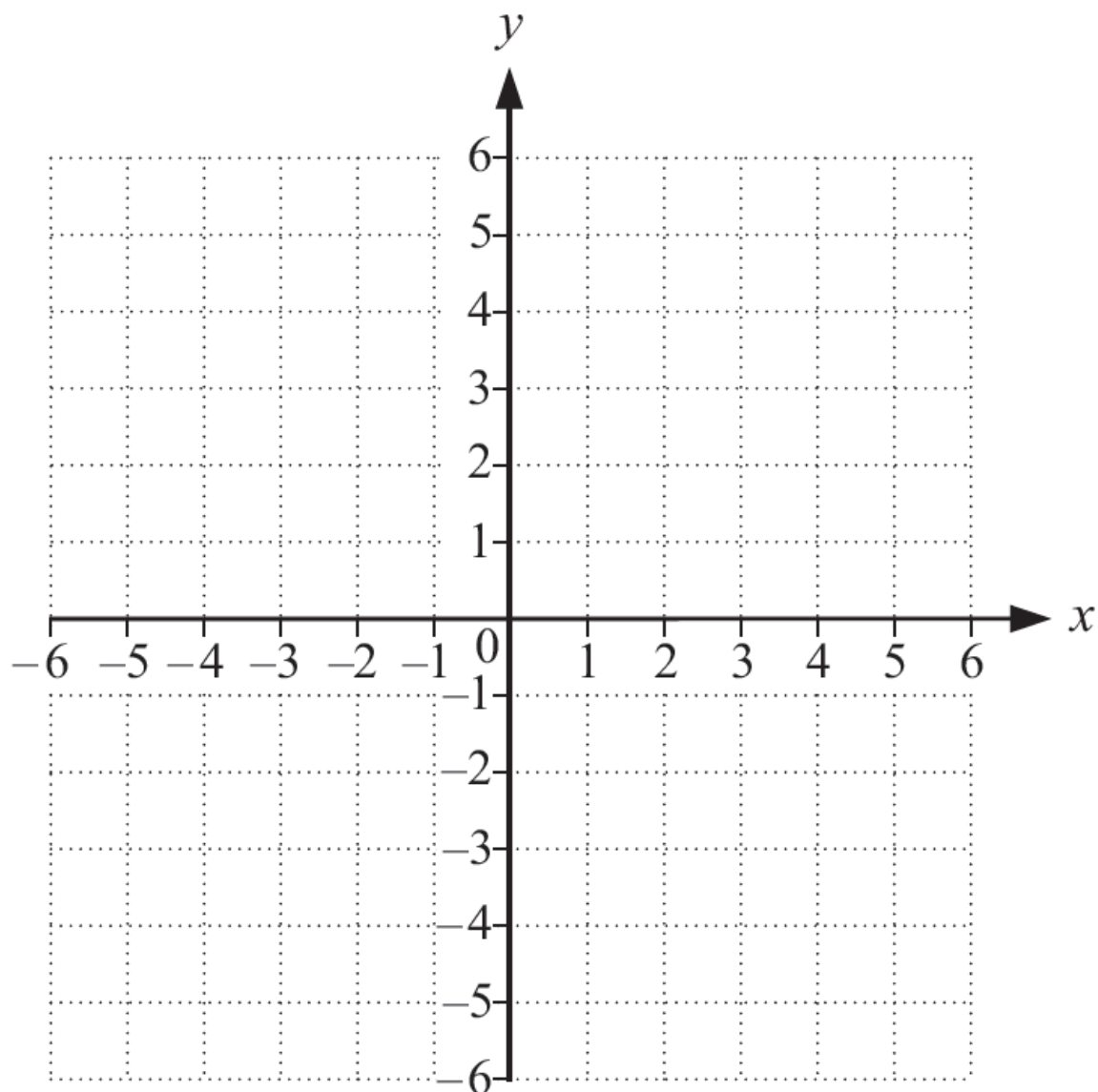
[1]

(b) Draw the graph of $y = 2x + 3$ 

[2]

2. No.4

Here is a grid.



(a) $A = (1, -1)$, $B = (-5, -2)$ and $C = (-3, 2)$

Plot points A , B and C on the grid.

[1]

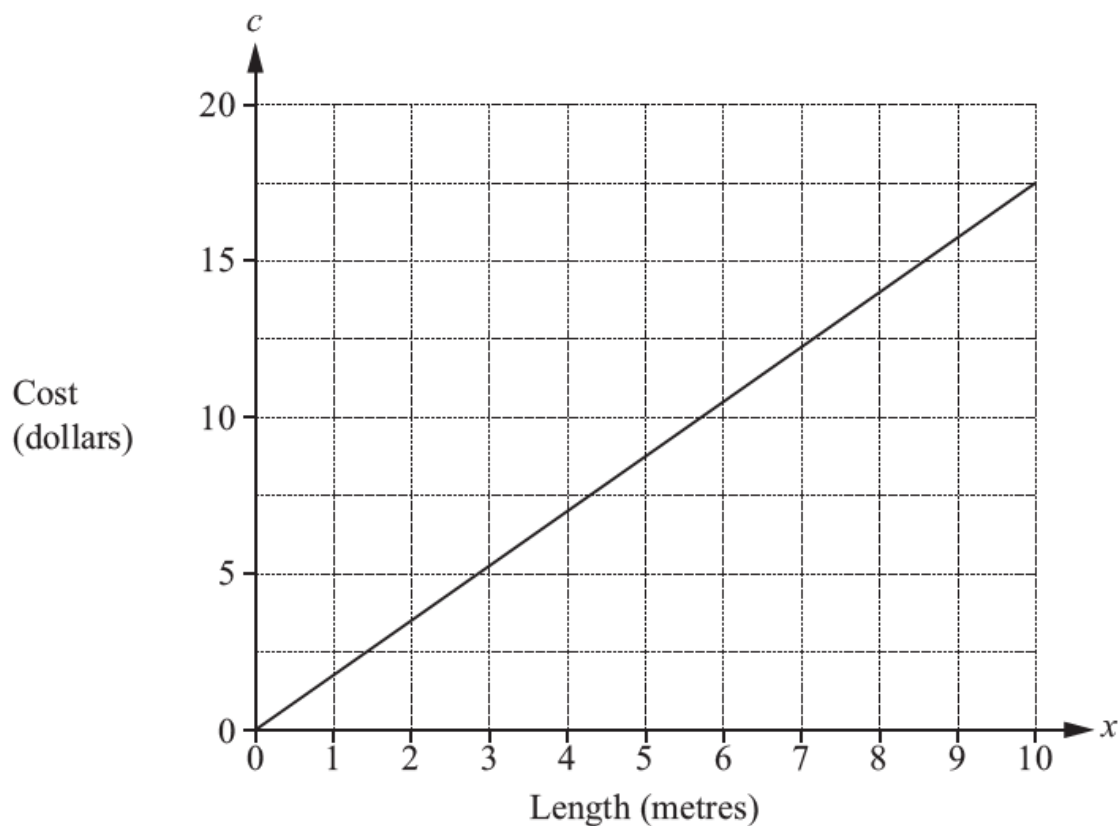
(b) $ABCD$ is a parallelogram.

Find the coordinates of point D .

$D = (\dots\dots\dots , \dots\dots\dots)$ [1]

3. No.24

The graph shows that the cost of electrical wire is proportional to the length of the wire.



(a) Use the graph to find a formula for the cost, c dollars, of a length of wire, x metres.

$$c = \dots\dots\dots [2]$$

(b) Calculate the cost of 23.4m of wire.

$$\$ \dots\dots\dots [1]$$

4. No.20

Two points A and B have coordinates $(-1, 4)$ and $(3, 6)$.Find the coordinates of the midpoint of AB .

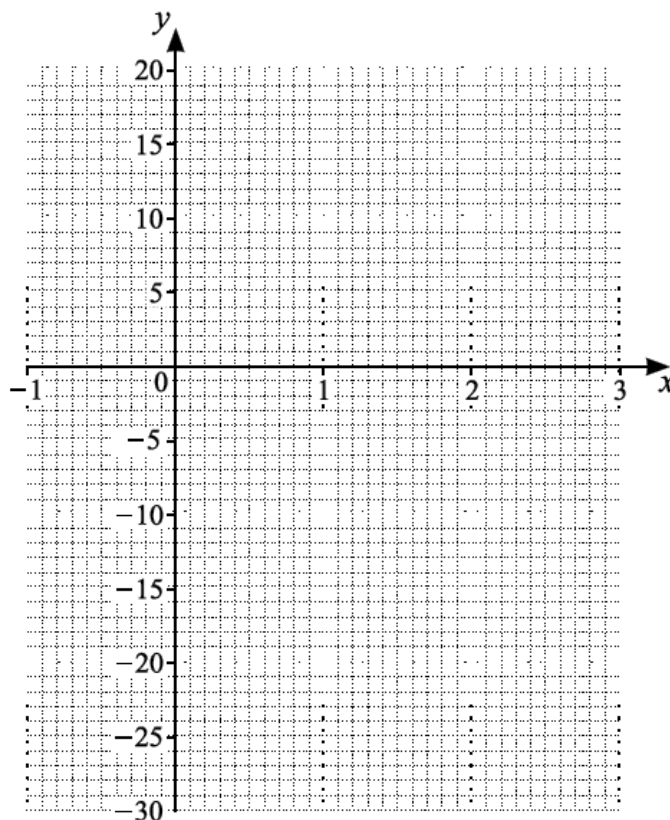
(..... , ...) [1]

5. No.7

(a) Complete this table of values for $y = 10x - 15$

x	-1	1	3
y			15

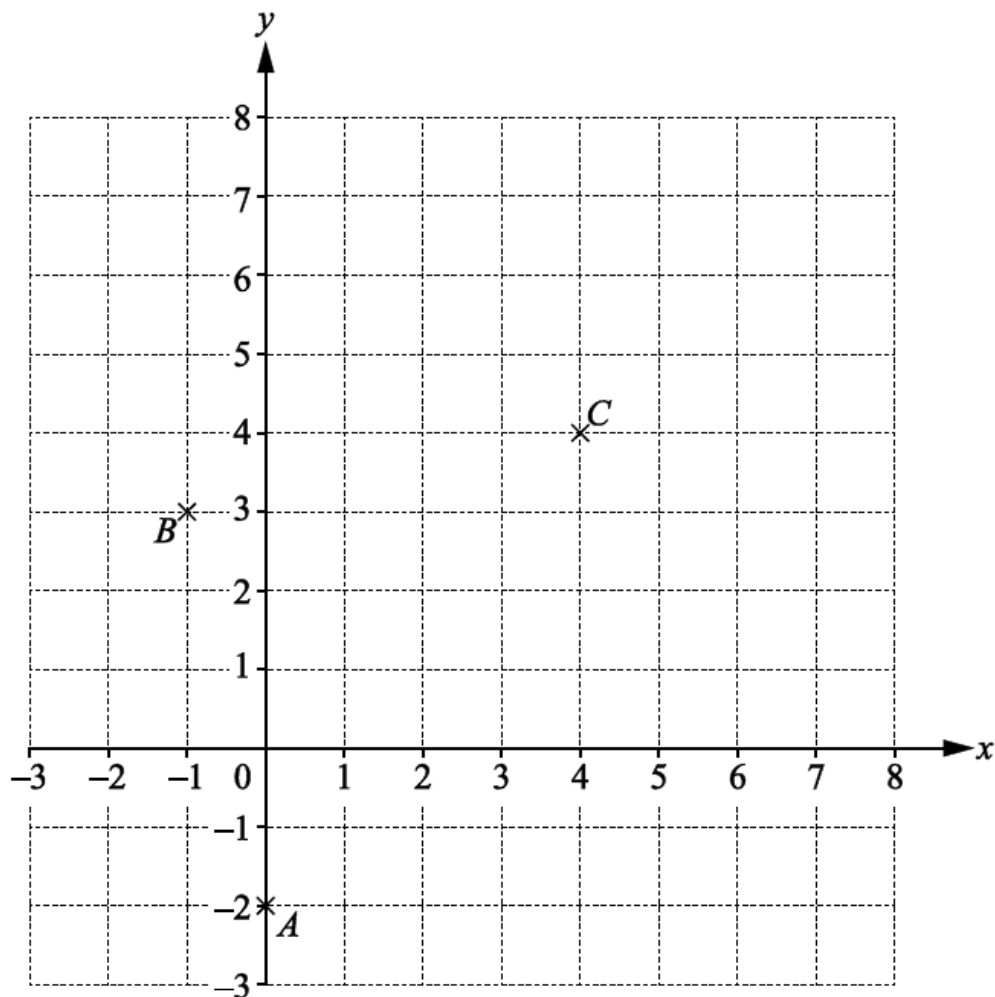
[1]

(b) Use the table to draw a graph of $y = 10x - 15$ 

[1]

6. No.9

The diagram shows three points, A , B and C .



(a) Find the coordinates of the midpoint of the line AC .

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

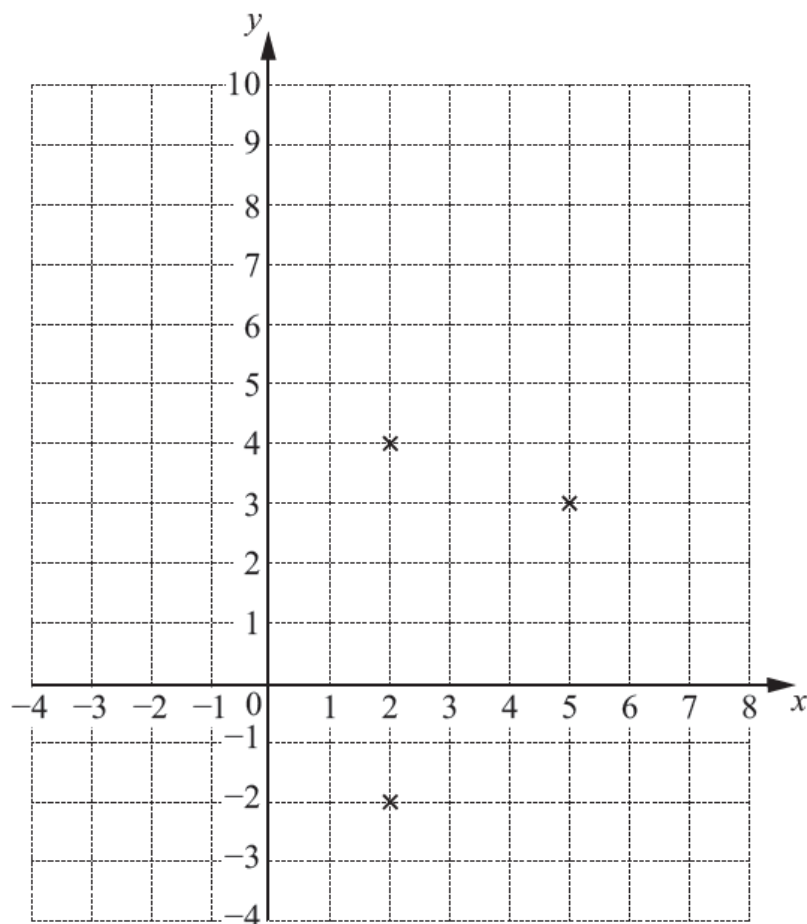
(b) $ABCD$ is a square.

Write down the coordinates of D .

$D = (..... , ...)$ [1]

7. No.13

The diagram shows the positions of three vertices of a parallelogram.



(a) Write down the coordinates of a possible position of the fourth vertex.

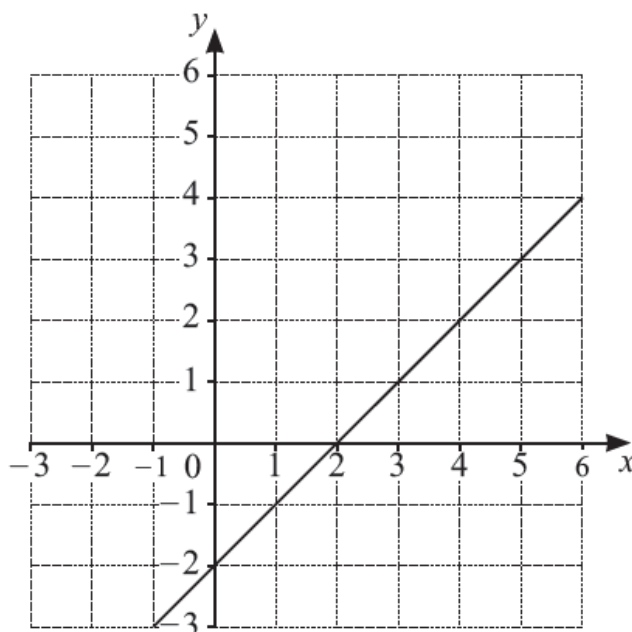
(..... , ...) [1]

(b) Write down the coordinates of a **different** possible position of the fourth vertex.

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

8. No.21

The grid shows a straight line.



(a) Draw a ring around the equation of the line.

$y = x + 2$

$y = 2x + 2$

$y = -2$

$y = x - 2$

$y = 2x - 2$

[1]

(b) A different equation is $2x + y = 4$ Complete the table of values for $2x + y = 4$

x	0		3
y		0	-2

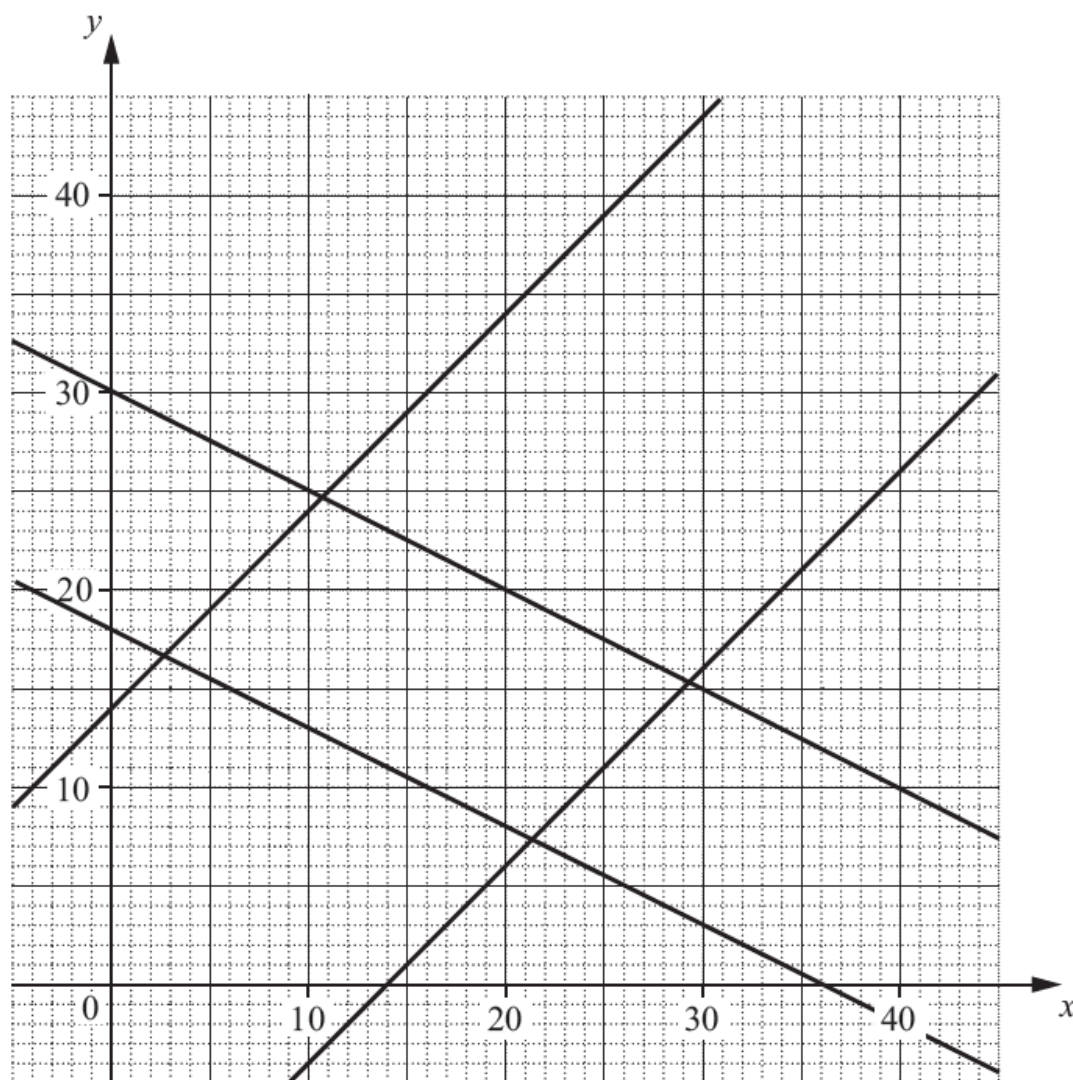
[1]

(c) Draw the line $2x + y = 4$ on the same grid.

[1]

9. No.24

Here is a graph of four lines.



The equations of the lines are

$$y = x + 14$$

$$y = x - 14$$

$$x + 2y = 36$$

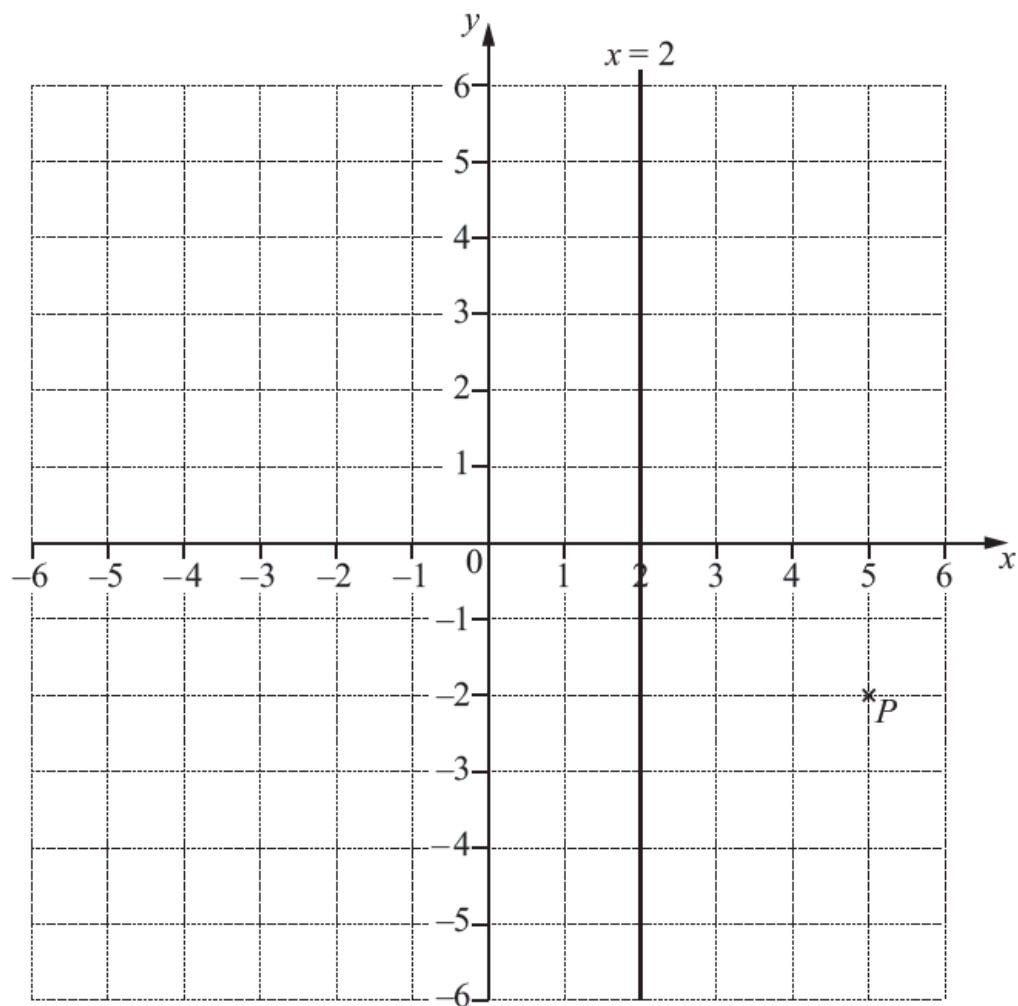
$$x + 2y = 60$$

Use the graph to find an approximate solution to these simultaneous equations.

$$y = x + 14 \quad \text{and} \quad x + 2y = 36$$

$$x = \dots\dots\dots \text{ and } y = \dots\dots\dots [2]$$

10. No.3



Q is the reflection of P in the line $x = 2$

Work out the coordinates of Q .

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

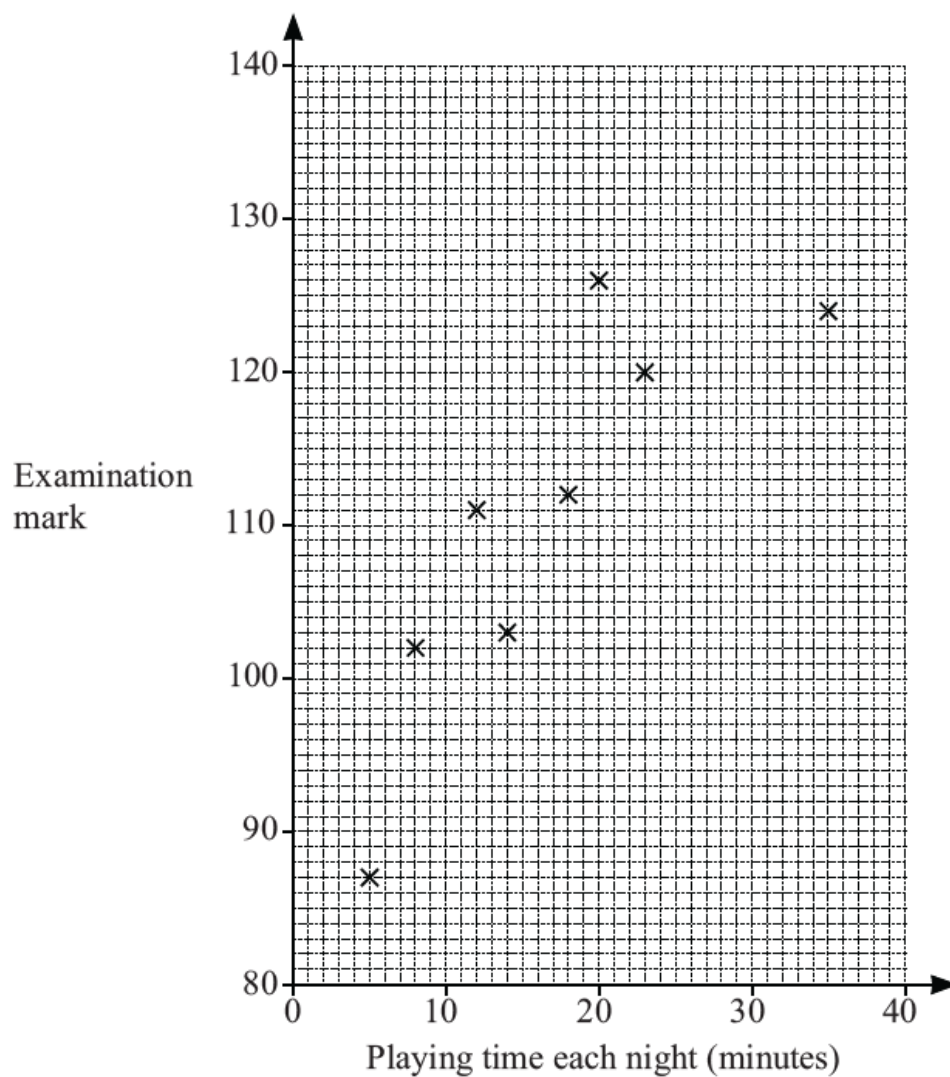
11. No.6

Yuri is a piano teacher.

He collects the examination marks of his students.

He asks each of them how many minutes they play their piano for each night.

The scatter diagram shows some of his data.



- (a) The playing times and examination marks of 2 more students are shown in the table.

Playing time each night (minutes)	Examination mark
12	106
30	125

Plot these values on the scatter diagram.

[1]

- (b) Describe the relationship between playing time and examination mark.

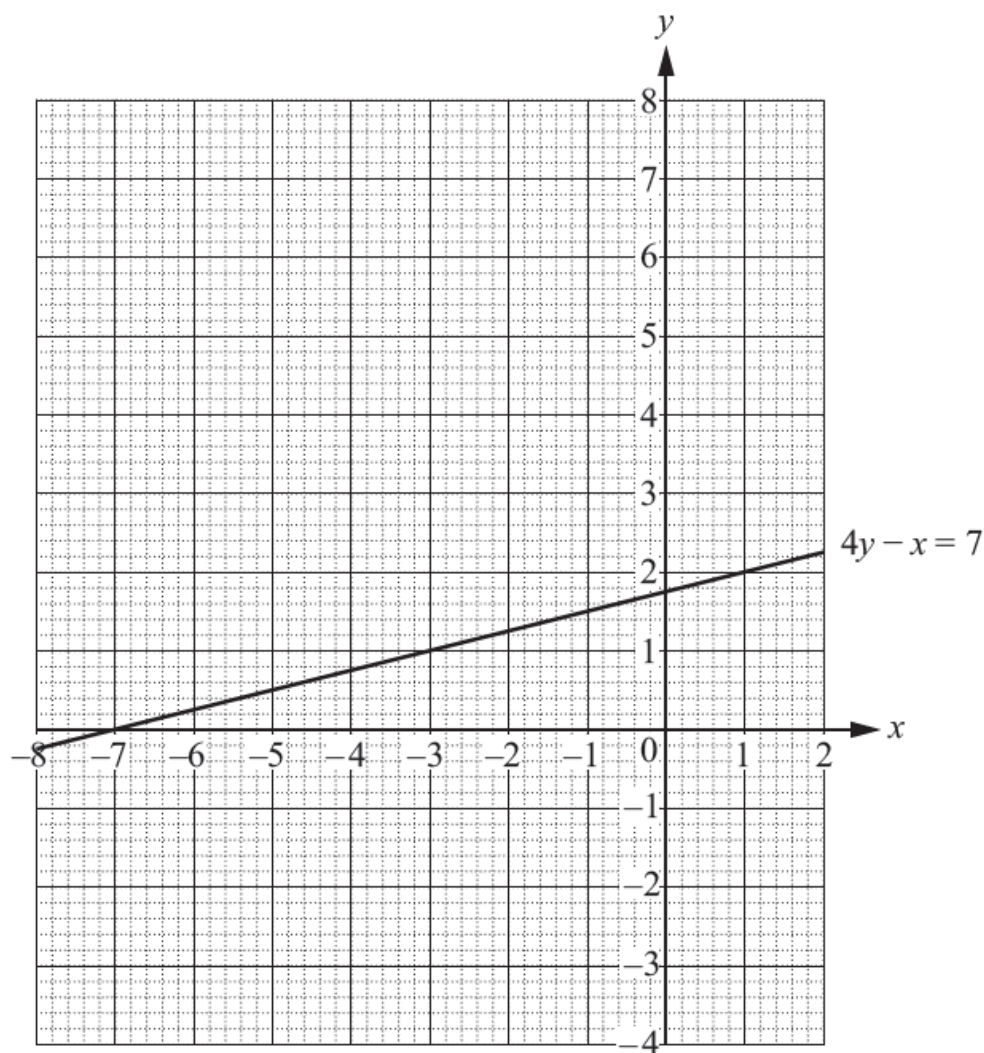
..... [1]

12. No.17

(a) Complete the table of values for $y - 2x = 6$

x	-4	-2	0
y	-2		

[1]

(b) The line $4y - x = 7$ is shown on the grid below.Draw the line $y - 2x = 6$ on the same grid.

[2]

(c) Use the graph to solve the simultaneous equations

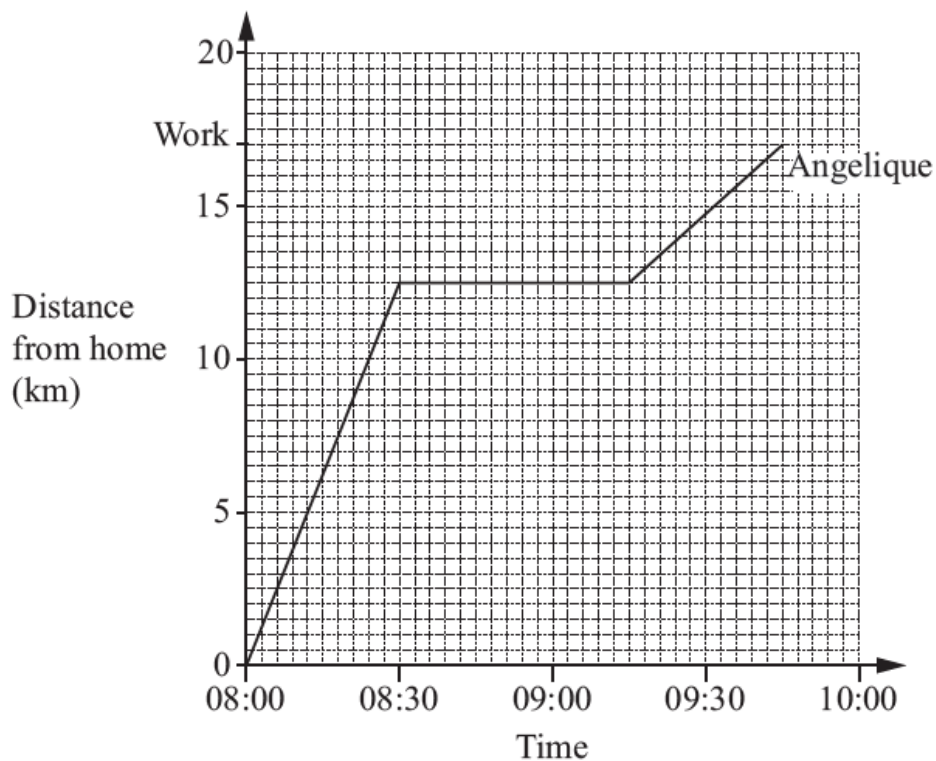
$$4y - x = 7 \quad \text{and} \quad y - 2x = 6$$

$$x = \dots\dots\dots$$

$$y = \dots\dots\dots [1]$$

13. No.15

The graph shows Angelique's journey to work.



(a) Write down the number of minutes Angelique stops for during her journey.

..... minutes [1]

(b) Safia takes exactly the same route to work.

She leaves at 08:30

It takes her 45 minutes to get to work.

She travels at a constant speed.

Draw Safia's journey on the grid.

[1]

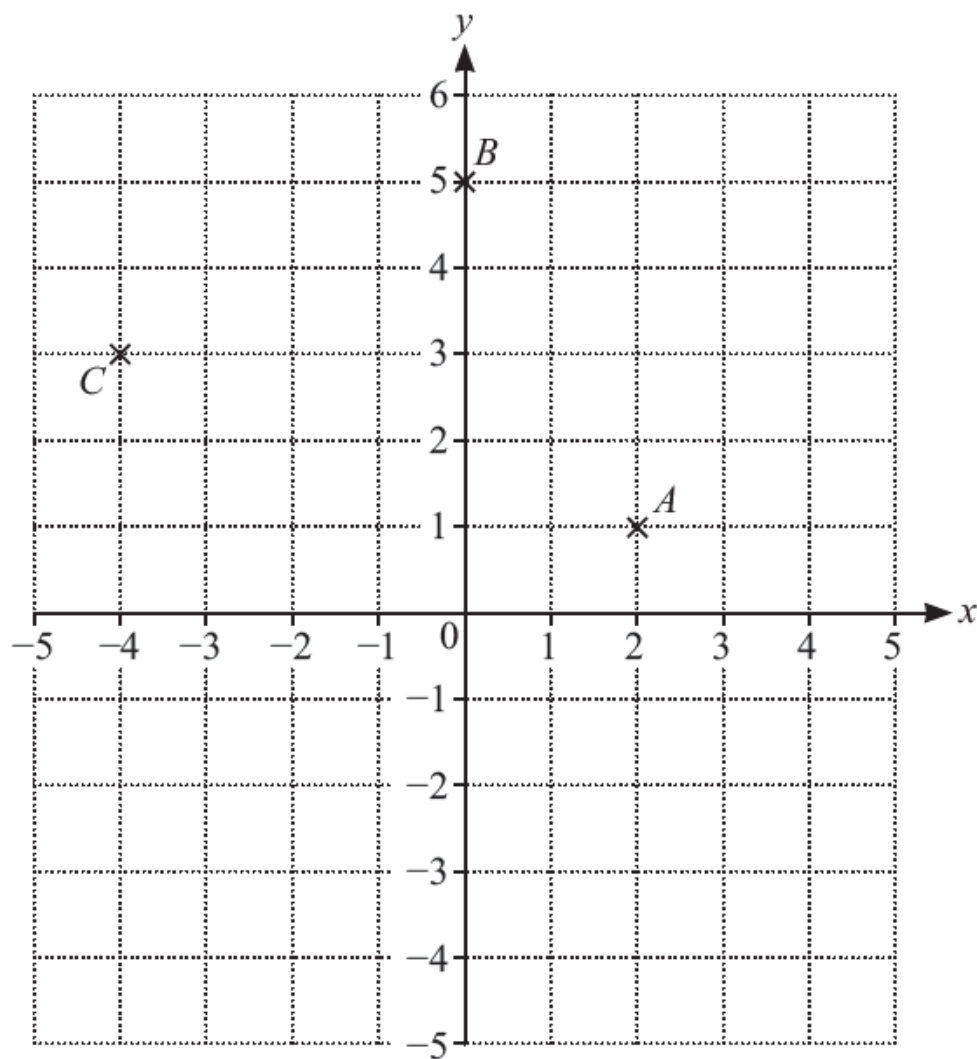
(c) Safia passes Angelique on her way to work.

Write down the time when she passes Angelique.

..... [1]

14. No.6

The grid shows the positions of three points, A , B and C .



$ABCD$ is a square.

Write down the coordinates of D .

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

15. No.13

The coordinates of point A are $(3, 8)$ and the coordinates of point B are $(9, 15)$.

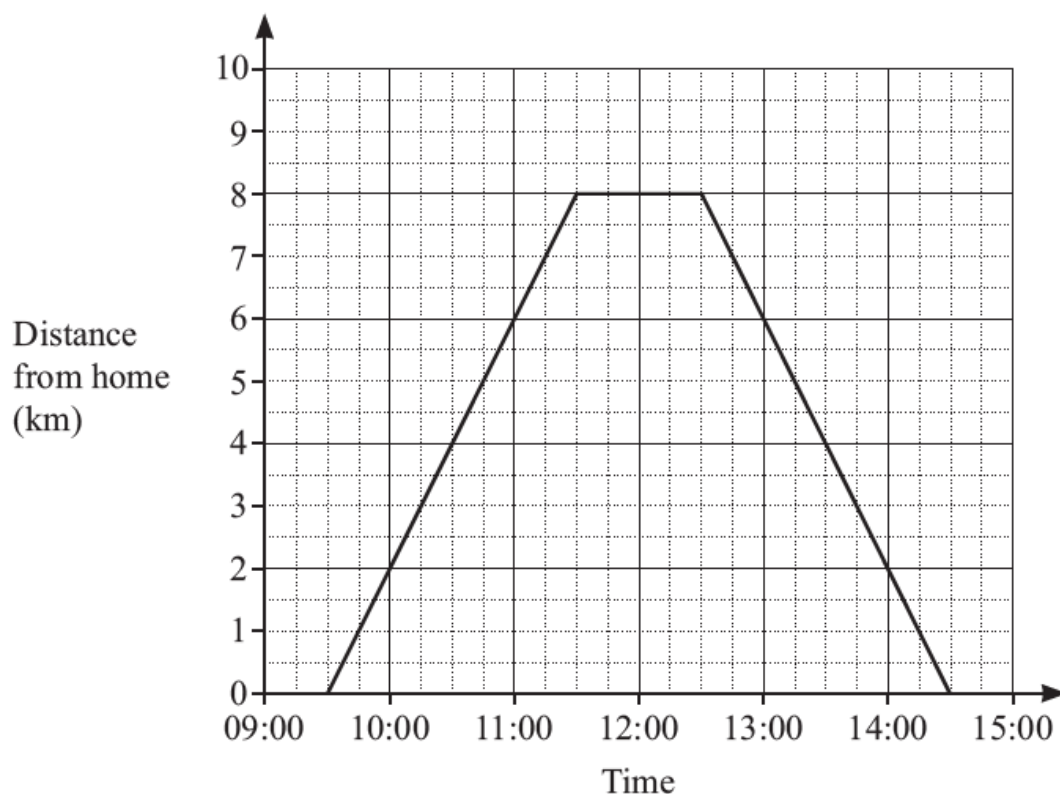
Find the coordinates of the midpoint of AB .

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

16. No.16

Angelique leaves home at 09:30 to go for a walk.

The graph shows information about her walk.



She walks 8 km, stops for a rest and then returns home the same way.

(a) Work out her speed on the return part of her journey.

..... km/h [1]

- (b) Carlos is Angelique's brother.
 He leaves home at 10:00
 He walks at 6 km/h in the same direction as Angelique.
 He walks for 90 minutes.

Draw a line on the graph to show his walk.

[1]

- (c) Estimate the time when Angelique and Carlos meet.

[1]

17. No.21

Here are the coordinates of five points.

Cross (×) the point that is **not** on the line with equation $y = 5x - 3$

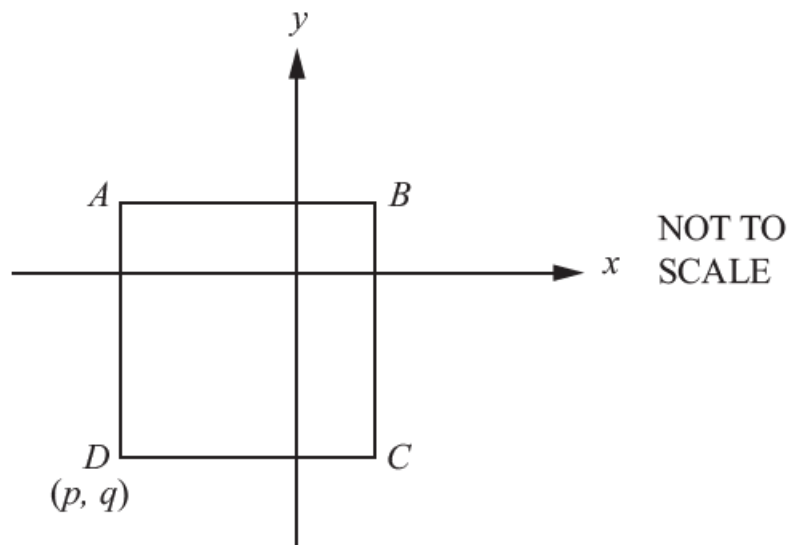
(8, 37)	☐
(-2, -7)	☐
(6, 27)	☐
(-5, -28)	☐
(0, -3)	☐

[1]

18. No.31

$ABCD$ is a square with side length 8 units.

The coordinates of D are (p, q) .



The square is translated so that point B moves to point D .

Write down the coordinates of the new point A in terms of p and q .

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

19. No.8

Here are the first three diagrams in a sequence.

```

  × ×
  × ○
  × ×

```

Diagram 1

```

  × × ×
  × ○ ○
  × ○ ○
  × × ×

```

Diagram 2

```

  × × × ×
  × ○ ○ ○
  × ○ ○ ○
  × ○ ○ ○
  × × × ×

```

Diagram 3

(a) Draw the next diagram in this sequence on the grid.

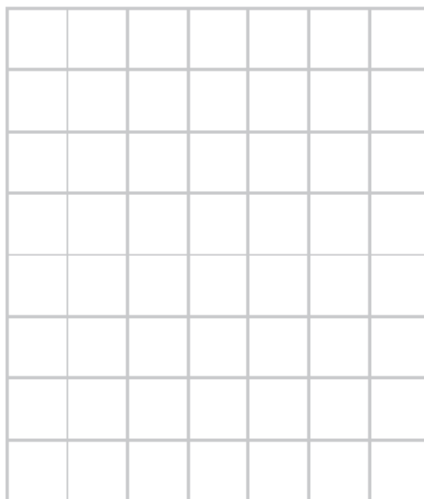


Diagram 4

[1]

(b) Explain why the number of circles in Diagram 5 will be 25

.....

..... [1]

(c) Find an expression for the number of **crosses** in Diagram n .

..... [2]

20. No.16

$A(5, 8)$ and $B(3, -2)$ are two points on a coordinate grid.

C is the midpoint of AB .

(a) Work out the coordinates of C .

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

(b) B is the midpoint of AD .

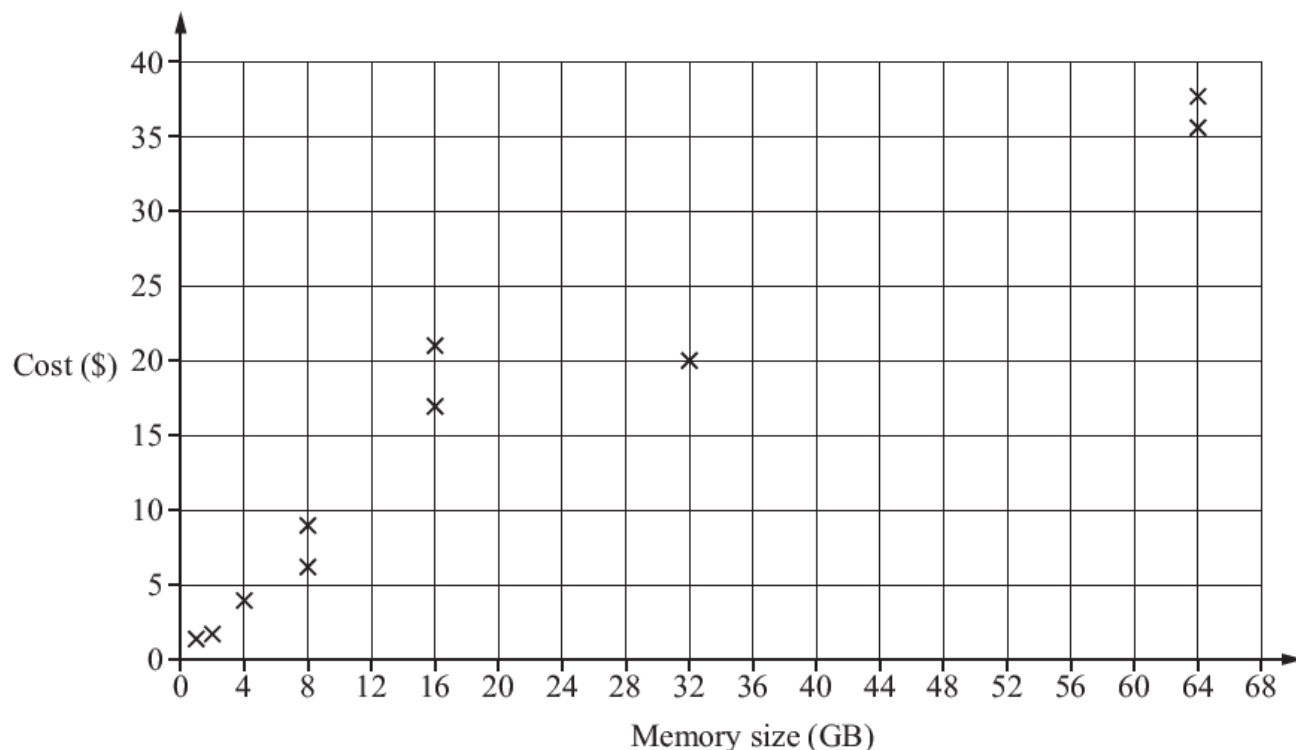
Work out the coordinates of D .

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

21. No.1

Jamila does a survey to find the cost in dollars (\$) and the memory size in gigabytes (GB) of memory sticks for computers.

The scatter graph shows the results of her survey.



- (a) Jamila buys a memory stick for \$8

Draw a ring around the most likely memory size for Jamila's memory stick.

1 GB

2 GB

8 GB

32 GB

64 GB

[1]

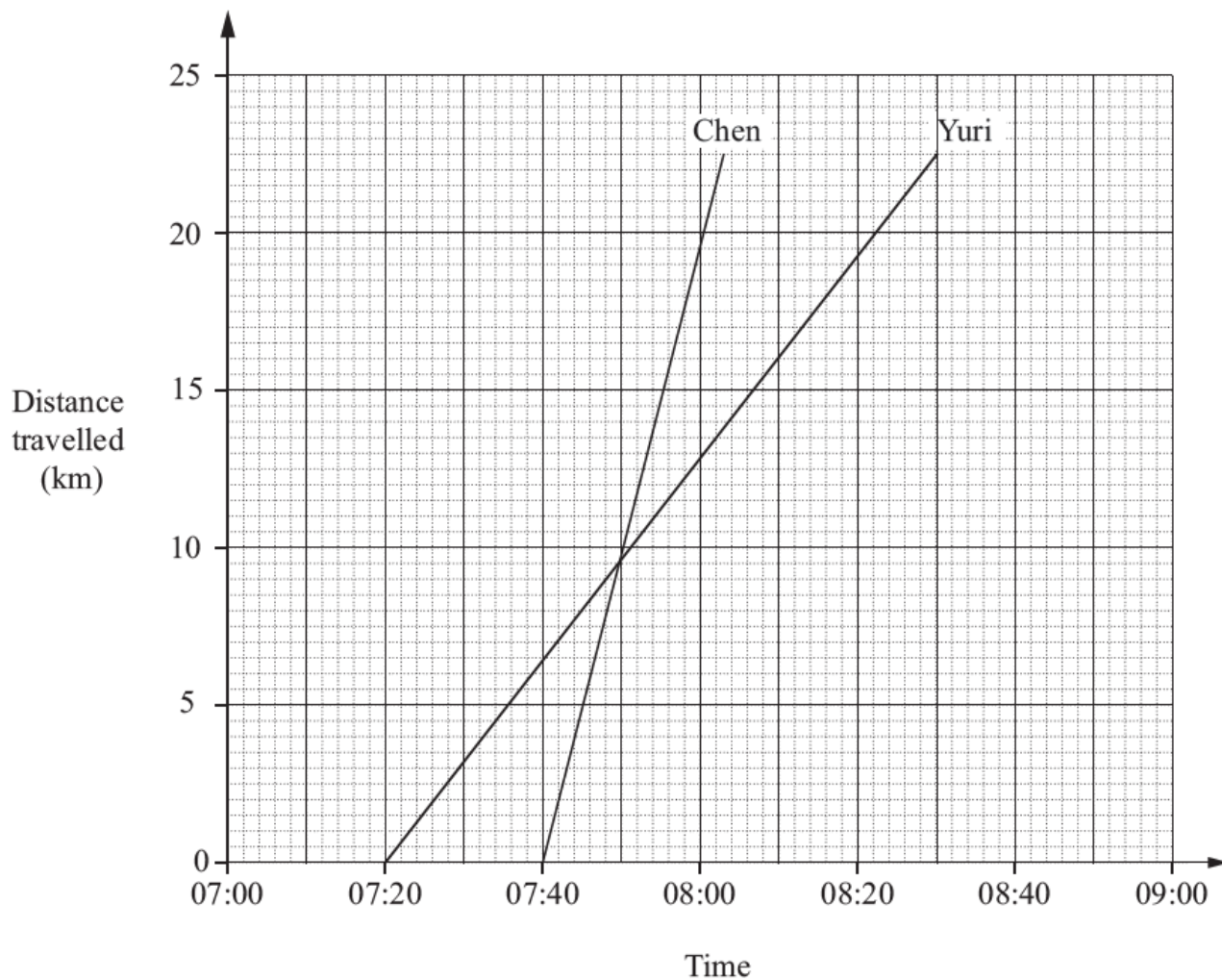
- (b) Describe the relationship between the memory size and cost of the memory sticks.

.....
 [1]

22. No.8

Chen and Yuri both travel to work along the same route.

Here is a travel graph showing their journeys.



(a) Write down the distance that they travel to work.

..... km [1]

(b) Chen passes Yuri on his way to work.

Write down the time at which Chen passes Yuri.

..... [1]

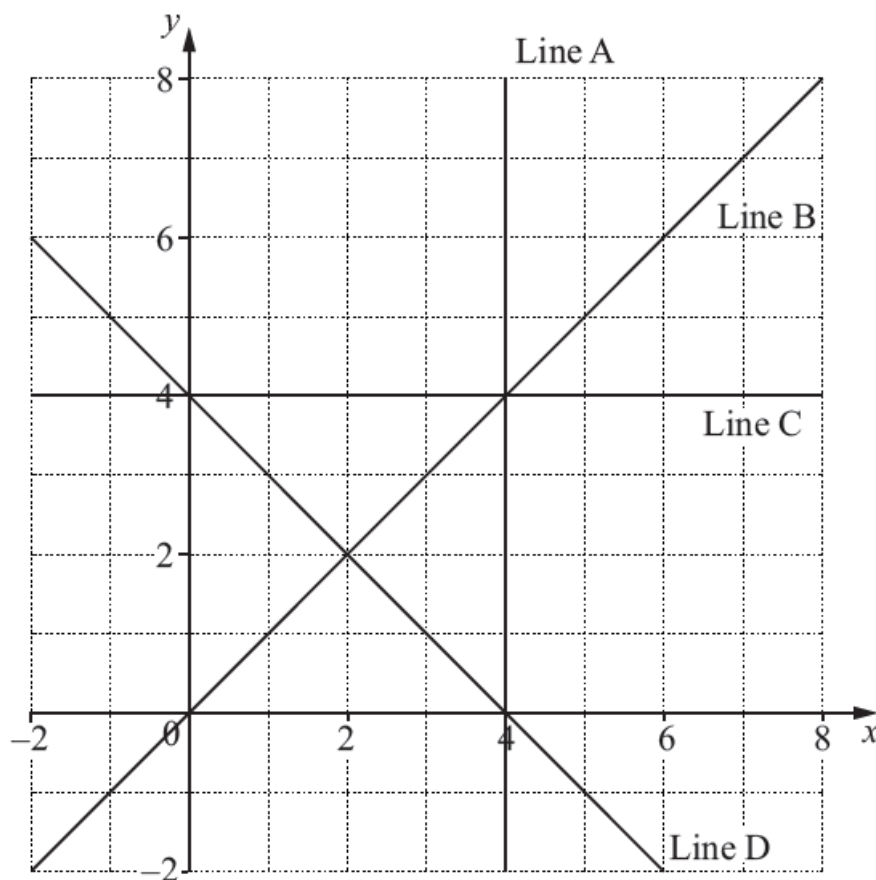
(c) Chen's journey takes 23 minutes.

Work out how much longer Yuri's journey takes.

..... minutes [1]

23. No.11

Four lines are shown on the grid.

(a) Draw a ring around the line that has equation $y = 4$

Line A

Line B

Line C

Line D

[1]

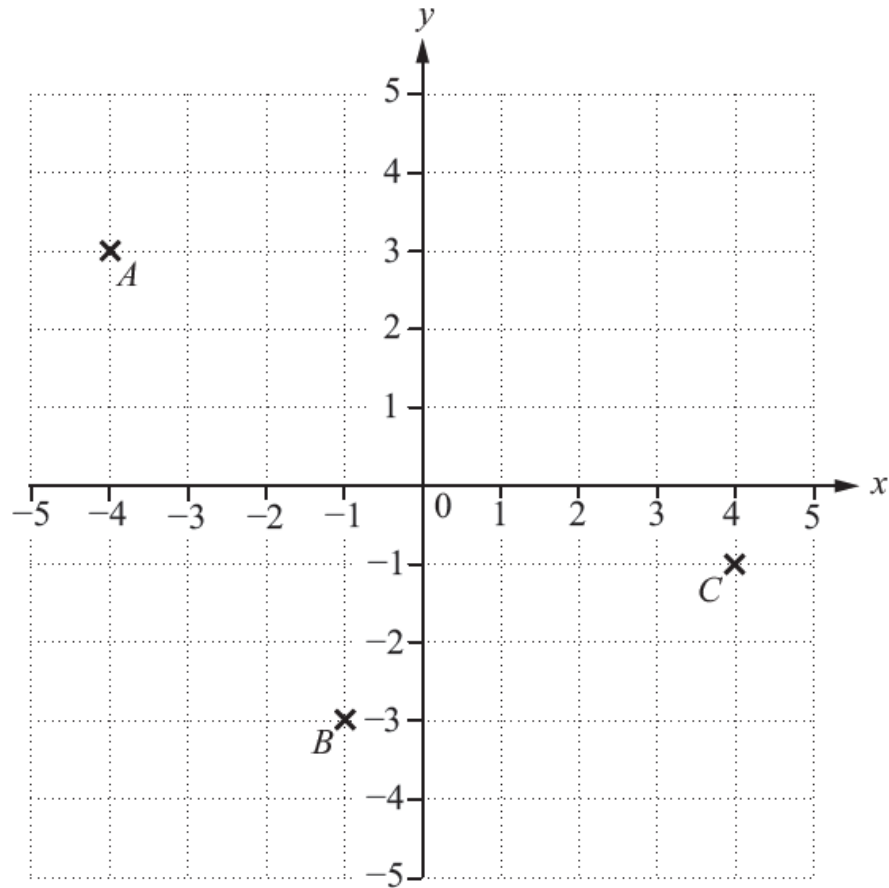
(b) Line E is parallel to Line A and passes through the point $(-2, 5)$.

Write down the equation of Line E.

[1]

24. No.18

The diagram shows points A , B and C plotted on a grid.



D is another point.

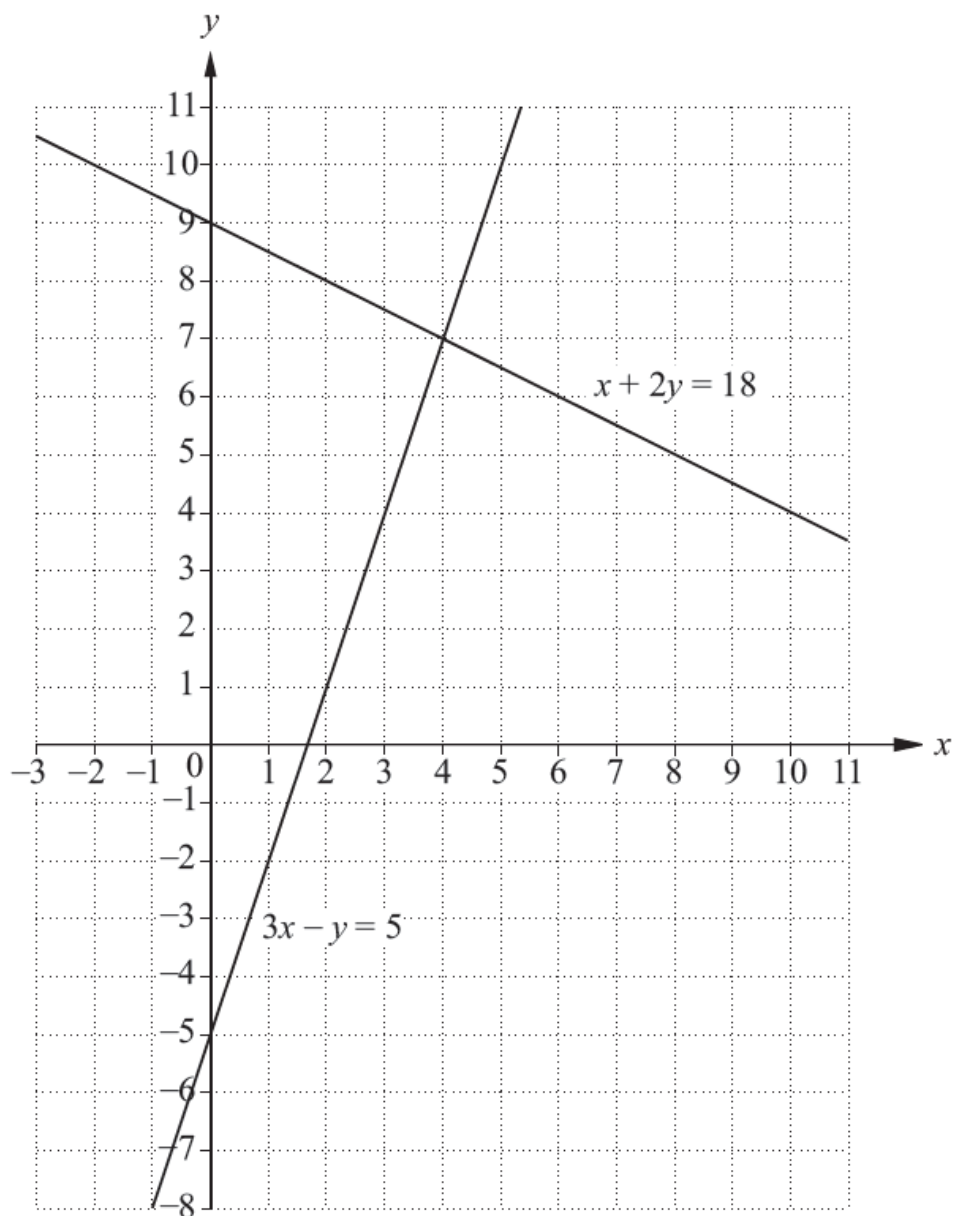
D has the same y -coordinate as A
and
 CD is parallel to BA .

Write down the coordinates of D .

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

25. No.26

Two lines with equations $x + 2y = 18$ and $3x - y = 5$ are drawn on the grid.



Use the graph to find the solution to the simultaneous equations

$$x + 2y = 18 \quad \text{and} \quad 3x - y = 5$$

$x =$

$y =$ [1]

26. No.25

 AB is a line segment. M is the midpoint of AB . A is the point $(7, 2)$. M is the point $(5, 6)$.Work out the coordinates of point B .

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

27. No.27

Write each of these lines in the correct position in the table.

$y = 4x + 1$

$y = -1$

$y = -6x$

$x + y = 11$

$y = 3x - 5$

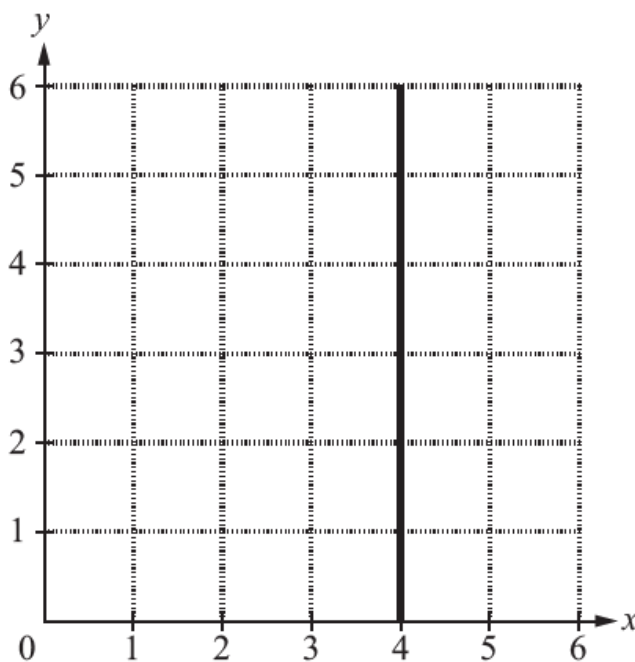
The first one has been written in for you.

Positive gradient	Zero gradient	Negative gradient
$y = 4x + 1$		

[2]

28. No.6

A line is drawn on a grid.



(a) Draw a ring around the equation of the line.

$x = 4$

$y = 4x$

$y = 4$

$x + y = 4$

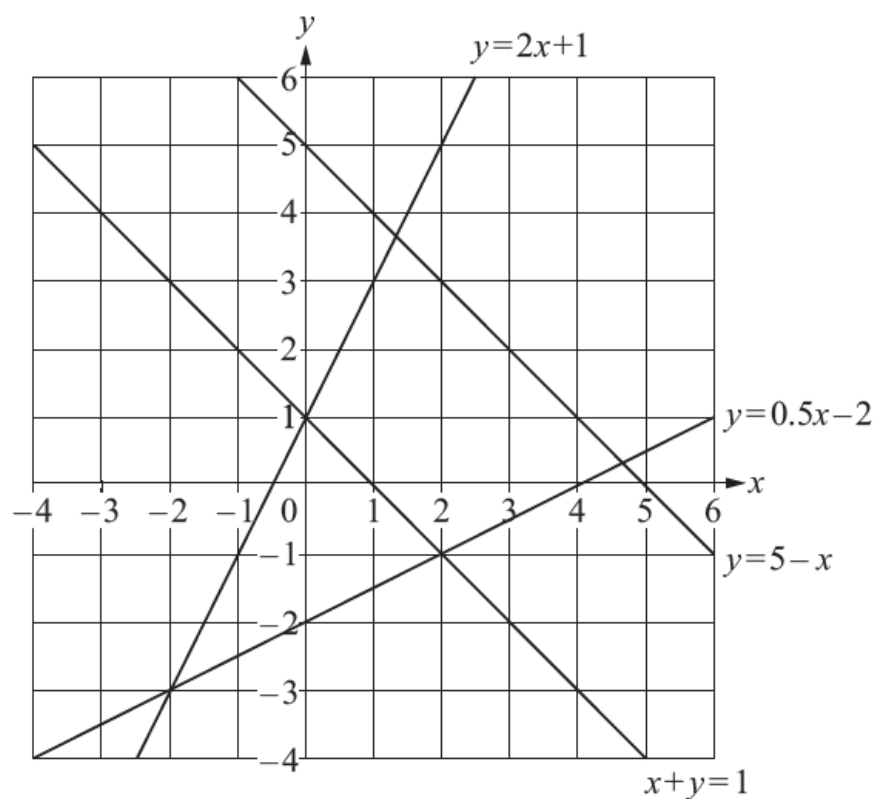
[1]

(b) Draw the line $y = 2$ on the grid.

[1]

29. No.9

The graph shows four straight lines.

(a) Draw a ring around the equations of the **two** lines that do not intersect each other.

$y = 2x + 1$

$y = 0.5x - 2$

$y = 5 - x$

$x + y = 1$

[1]

(b) Write down the solution to these simultaneous equations.

$y = 2x + 1$

$y = 0.5x - 2$

$x = \dots\dots\dots$

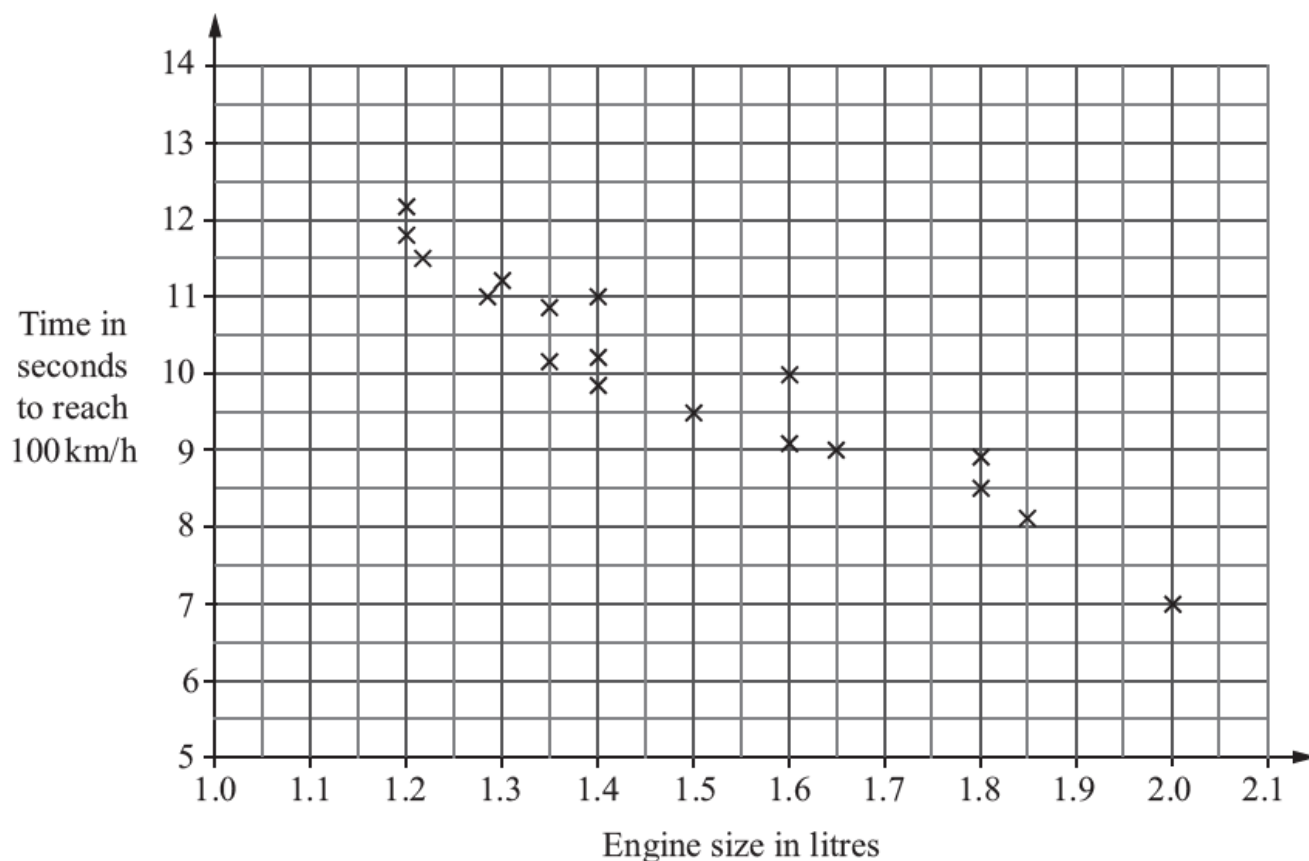
$y = \dots\dots\dots$

[1]

30. No.15

Some cars are surveyed to compare engine size, in litres, with the time taken to reach a speed of 100 km/h.

The results are shown on the scatter graph.



- (a) Another car has an engine size of 1.8 litres and takes 9.5 seconds to reach 100 km/h.

Add this data to the scatter graph.

[1]

- (b) Use the graph to estimate the time taken by a car with engine size 1.7 litres.

.....seconds [1]

31. No.13

Tick (✓) to show whether each of these facts about the line $y = 3x - 2$ is true or false.

	True	False
The line passes through the point (7, 19)	☐	☐
When x goes up by 1, y increases by 3	☐	☐
The line is parallel to the line $y = 4x - 2$	☐	☐
The line is steeper than the line $y = 2x + 1$	☐	☐

[2]

32. No.23

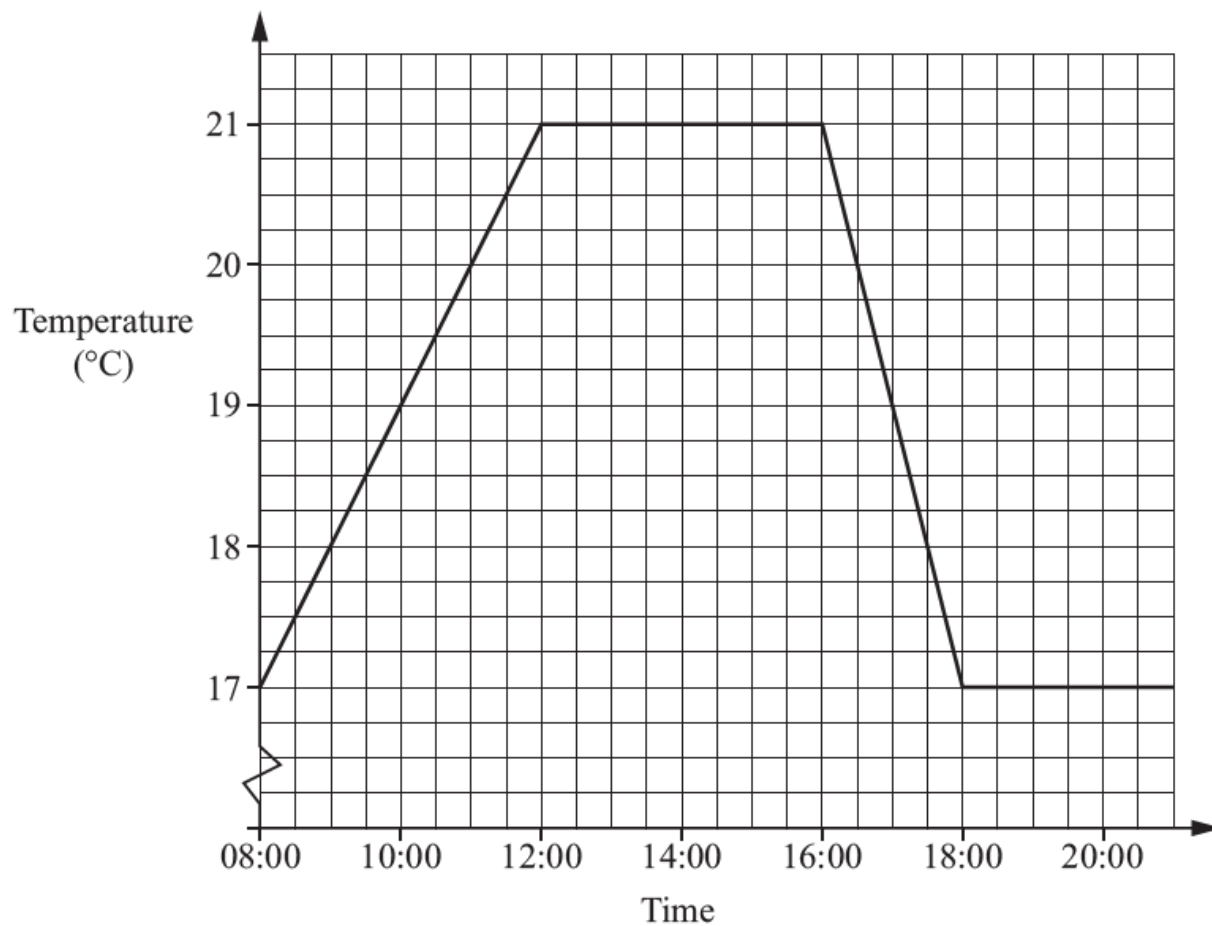
The graph of $2x + 4y = 15$ is a straight line.

Work out the gradient of the line.

..... [1]

33. No.3

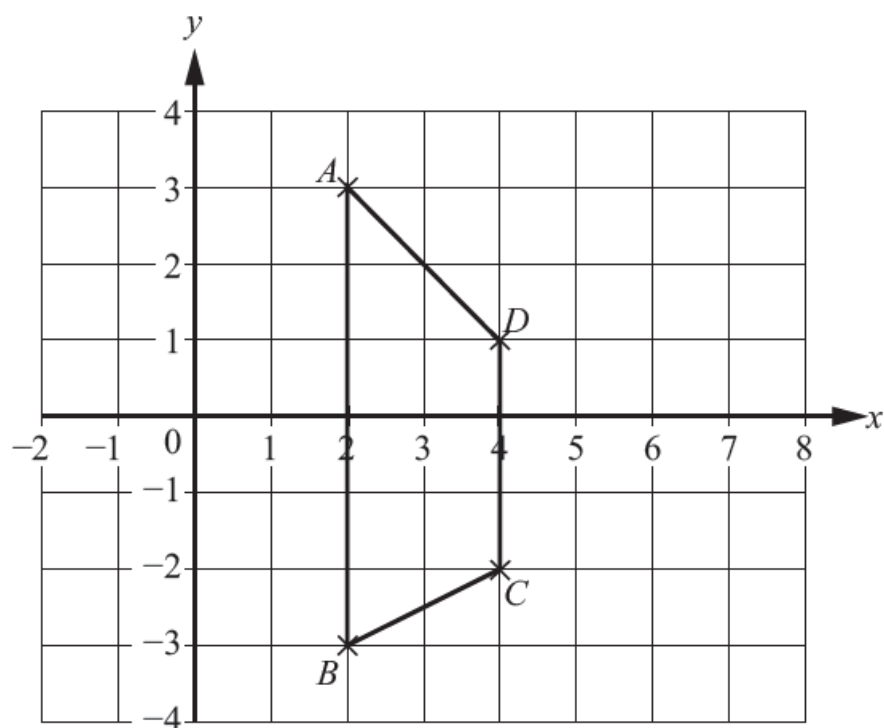
The graph shows the temperature of a room at different times during one day.



Work out the difference between the temperature at 11 am and at 5.30 pm.

..... °C [2]

34. No.9

Trapezium $ABCD$ is shown on the grid. E is a point on line AB .Angle $AED = 90^\circ$ Mark E on the grid with a cross (×).

[1]

35. No.18

A has coordinates $(2, -2)$.

B has coordinates $(10, 14)$.

C is the midpoint of AB .

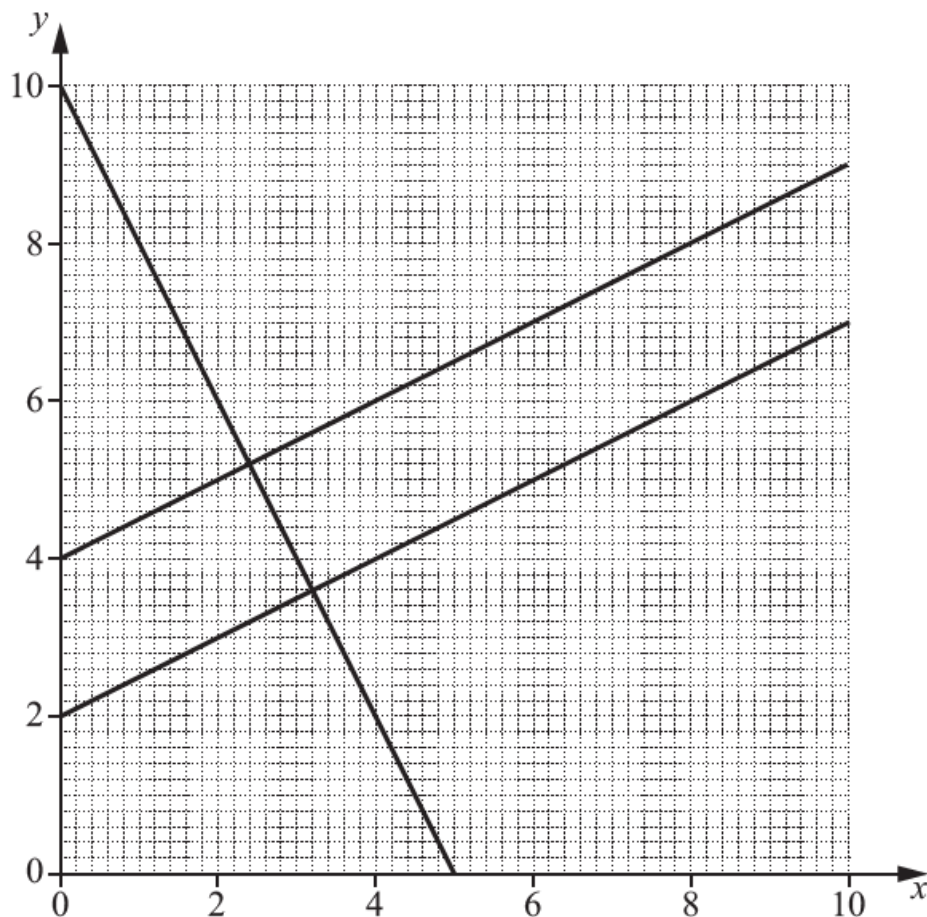
D is the midpoint of CB .

Find the coordinates of D .

(..... , ...) [3]

36. No.23

The lines with equations $2y = x + 4$, $2y = x + 8$ and $2x + y = 10$ are shown on the grid.



(a) Use the graph to solve these simultaneous equations.

$$2x + y = 10 \quad \text{and} \quad 2y = x + 4$$

$$x = \dots\dots\dots$$

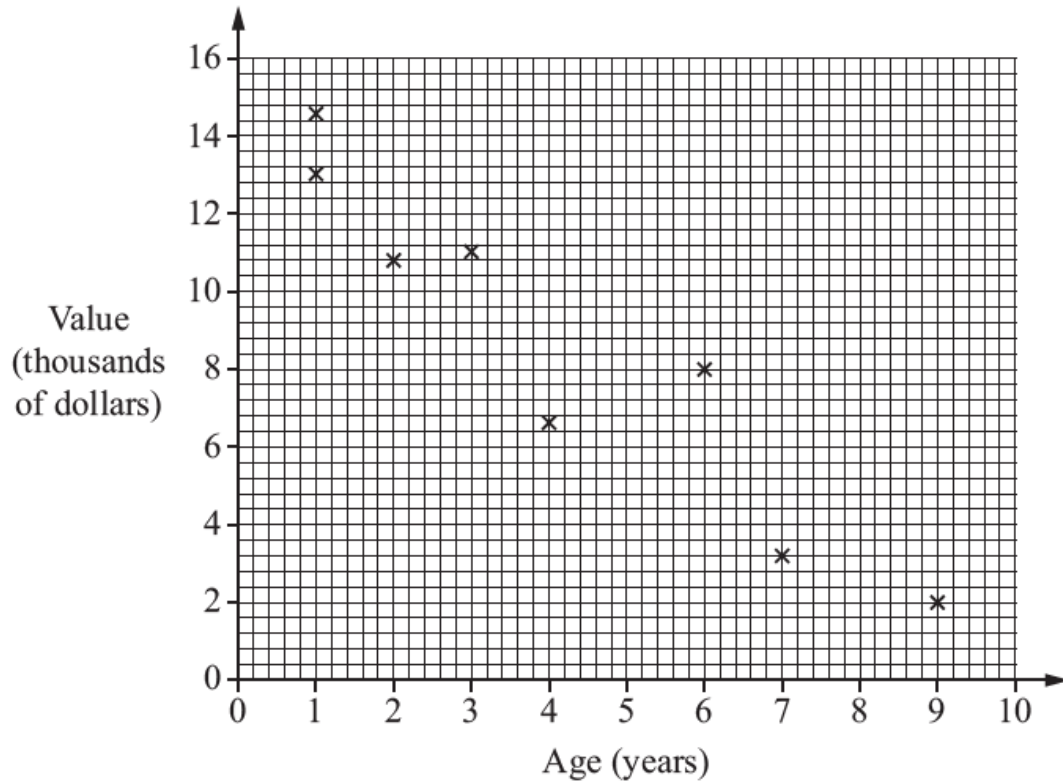
$$y = \dots\dots\dots [2]$$

(b) Draw the line $2x + y = 6$ on the grid.

[2]

37. No.3

The scatter graph shows the value (thousands of dollars) and the age (years) of eight cars.



A ninth car has a value of 11 thousand dollars and is 5 years old.

(a) Plot the information for the ninth car on the grid. [1]

(b) Find the median age of the nine cars.

..... years [1]

(c) Describe the relationship between the value of a car and its age.

.....
 [1]

38. No.20

The cost of a visit by a plumber is in two parts.

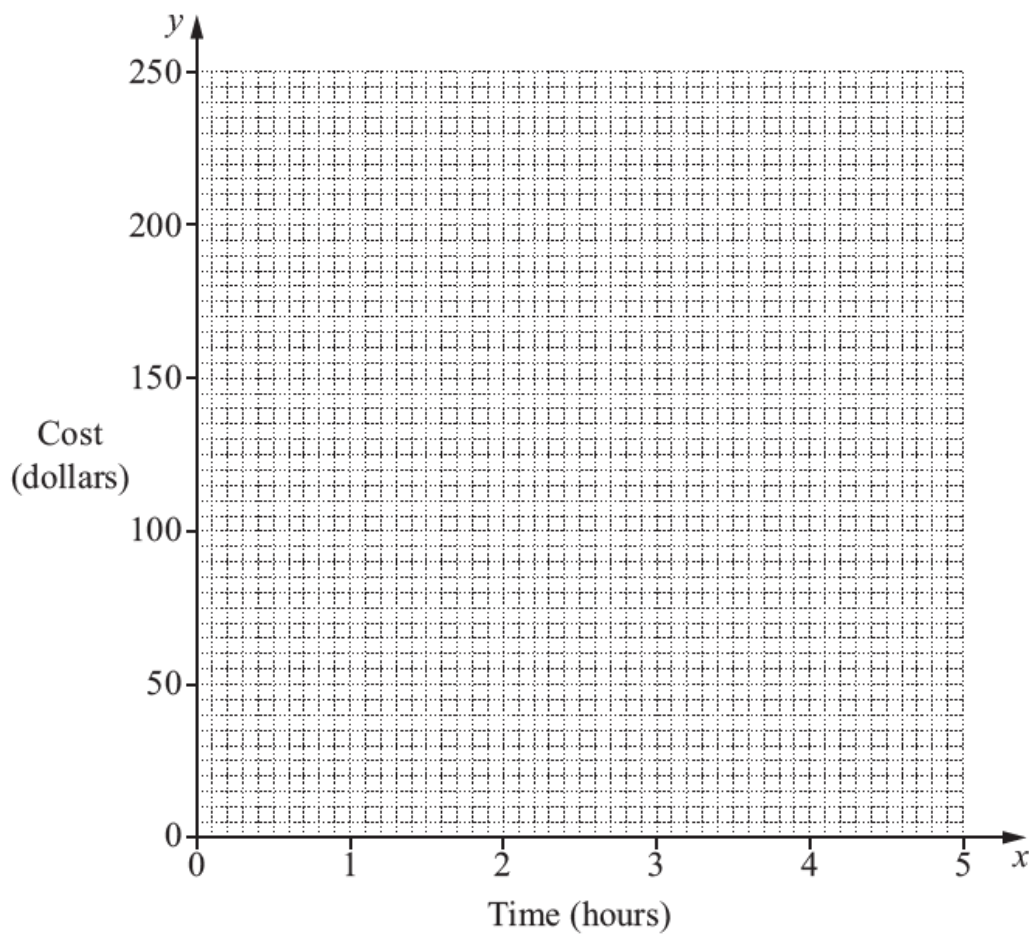
A charge of 70 dollars
and
30 dollars for each hour of the visit.

(a) Complete this formula for the cost, y dollars, of a visit that lasts x hours.

$$y = \boxed{} x + \boxed{}$$

[1]

(b) Draw a graph to show the costs of visits lasting up to 5 hours.



[1]

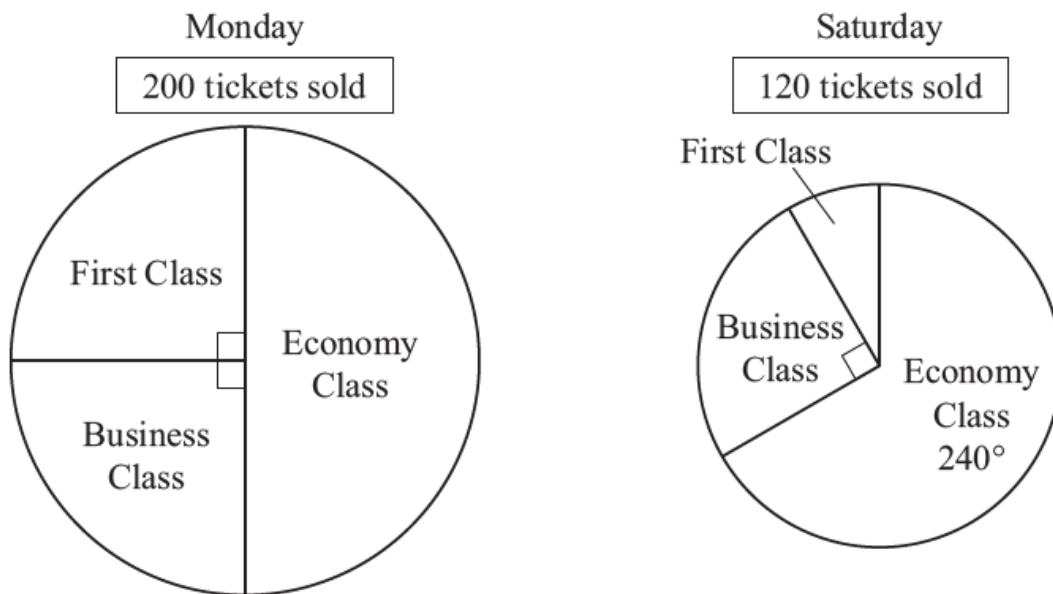
(c) A visit costs 115 dollars.

Use your graph to estimate the length of the visit, in hours.

..... hours [1]

39. No.15

The pie charts show information about tickets sold by an airline on Monday and Saturday.

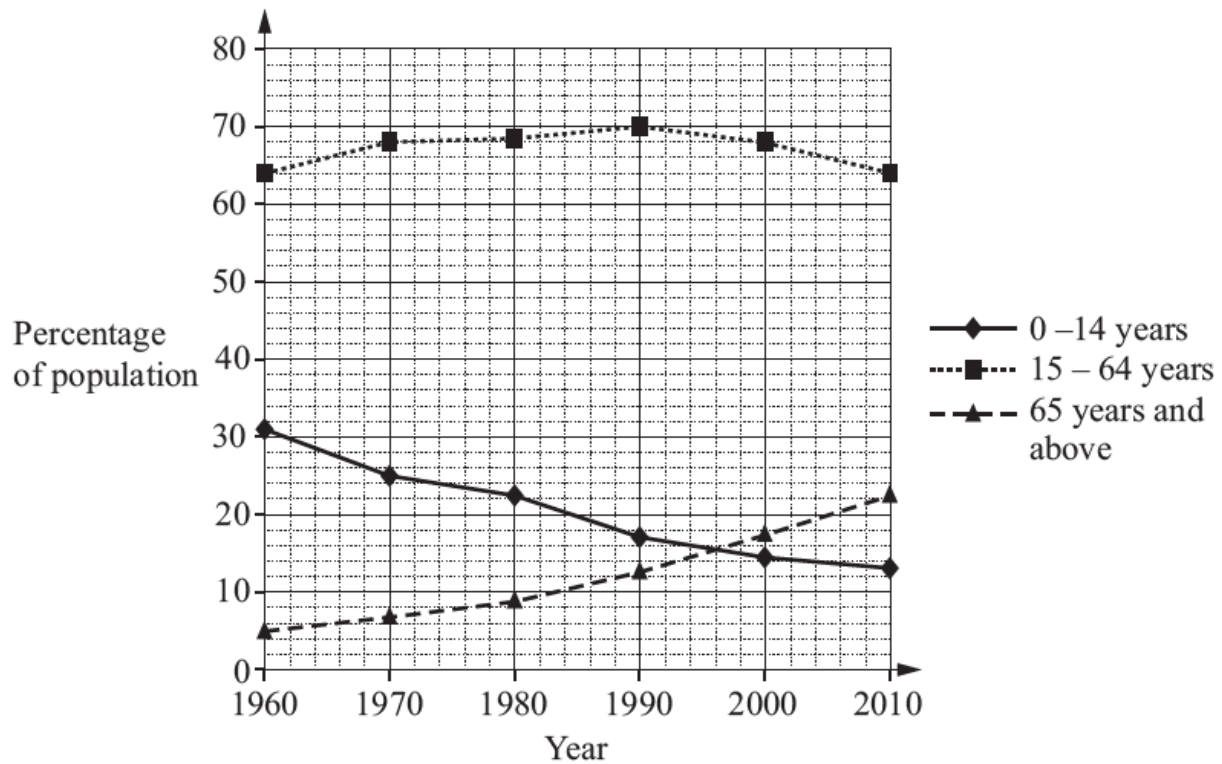


Find how many more Economy Class tickets were sold on Monday than on Saturday.

..... [2]

40. No.19

The diagram shows information about the ages of people living in a country between the years of 1960 and 2010



(a) People in this country are living longer than they used to.

Write down how the graph shows evidence for this.

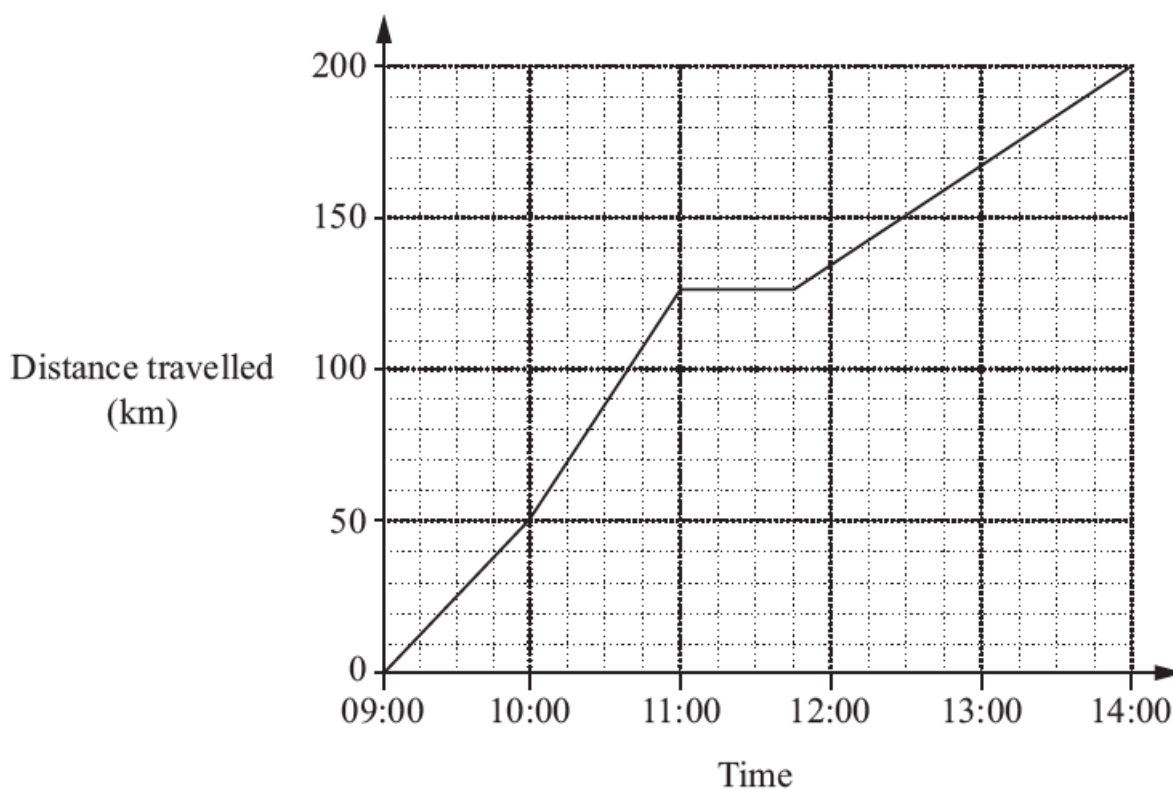
..... [1]

(b) Estimate the year when the percentage of people aged 65 years and above was first greater than the percentage of people aged 0 – 14 years.

..... [1]

41. No.12

Angelique travels between two towns 200 km apart.
This graph shows information about her journey.

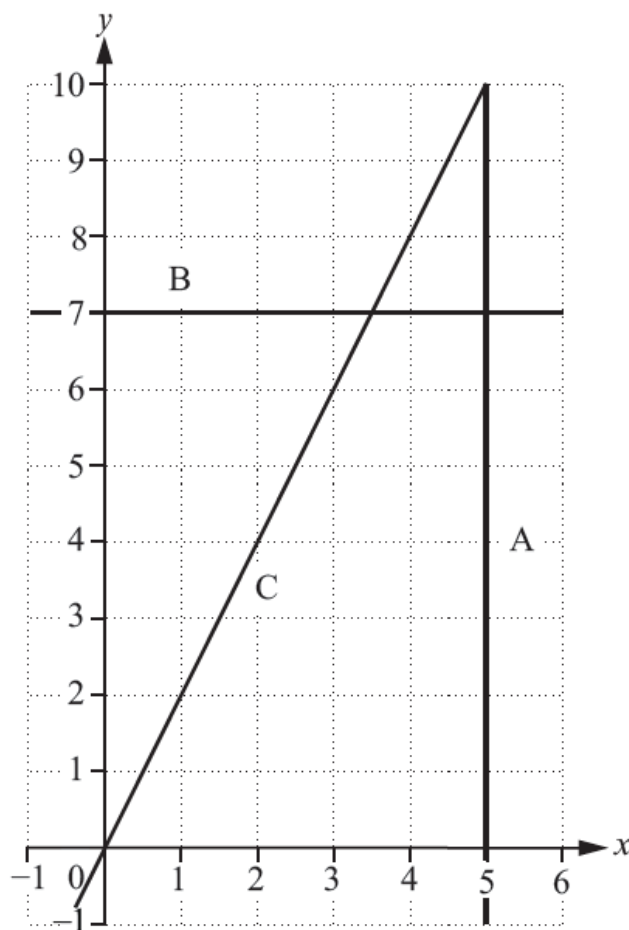


Write down the times to complete this sentence.

Angelique is travelling fastest between and [1]

42. No.6

The graph shows three straight lines A, B and C.



(a) Put a ring around the equation of line A.

$x + 5 = 0$

$x = 5$

$y = 5$

$y = 5x$

[1]

(b) Write down the equation of line B.

..... [1]

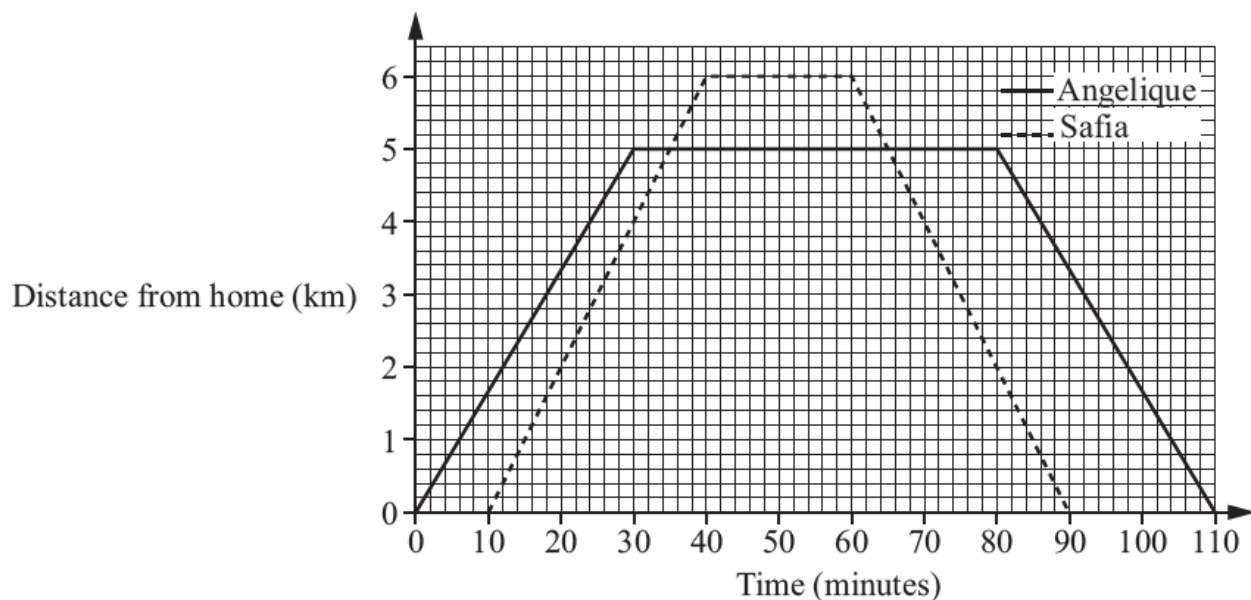
(c) Tick (✓) to show whether each of these facts about line C is true or false.

	True	False
The point (2, 4) lies on line C.	☐	☐
The y -coordinate is always two more than the x -coordinate.	☐	☐
The equation is $y = 2x$.	☐	☐

[1]

43. No.12

Angelique and Safia each go for a run.
The travel graph shows their runs.



(a) Angelique and Safia both stopped during their runs.

Work out how much longer Angelique stopped than Safia.

..... minutes [1]

(b) Complete the sentences.

..... runs the furthest distance.

She runs km in total. [1]

(c) Safia runs faster than Angelique.

Explain how the graph shows this.

.....
..... [1]

44. No.17

The coordinates of point A are $(1, 2)$ and the coordinates of point B are $(-3, 4)$.

Find the midpoint of the line AB .

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

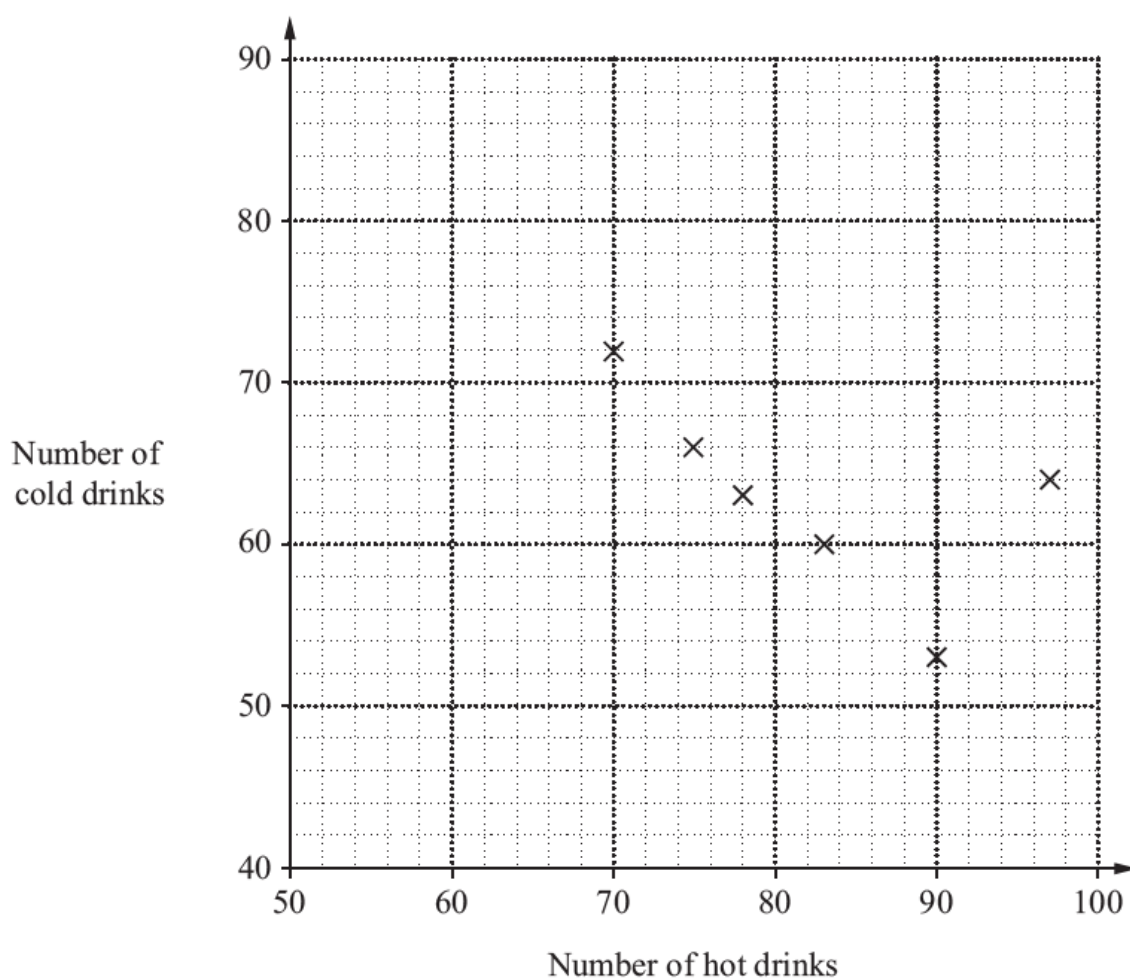
45. No.16

Anastasia owns a café.

She records the number of hot drinks and the number of cold drinks she sells on each of 10 days.

Number of hot drinks	78	83	70	75	90	97	60	68	84	74
Number of cold drinks	63	60	72	66	53	64	80	76	65	82

The data for the first 6 days has been plotted on the scatter graph.



(a) Complete the scatter graph by plotting the data for the remaining 4 days.

[2]

(b) State the type of correlation shown on the scatter graph.

[1]

46. No.20

- (a) A point lies on the line $3x + 2y = 12$
The x -coordinate of the point is 1

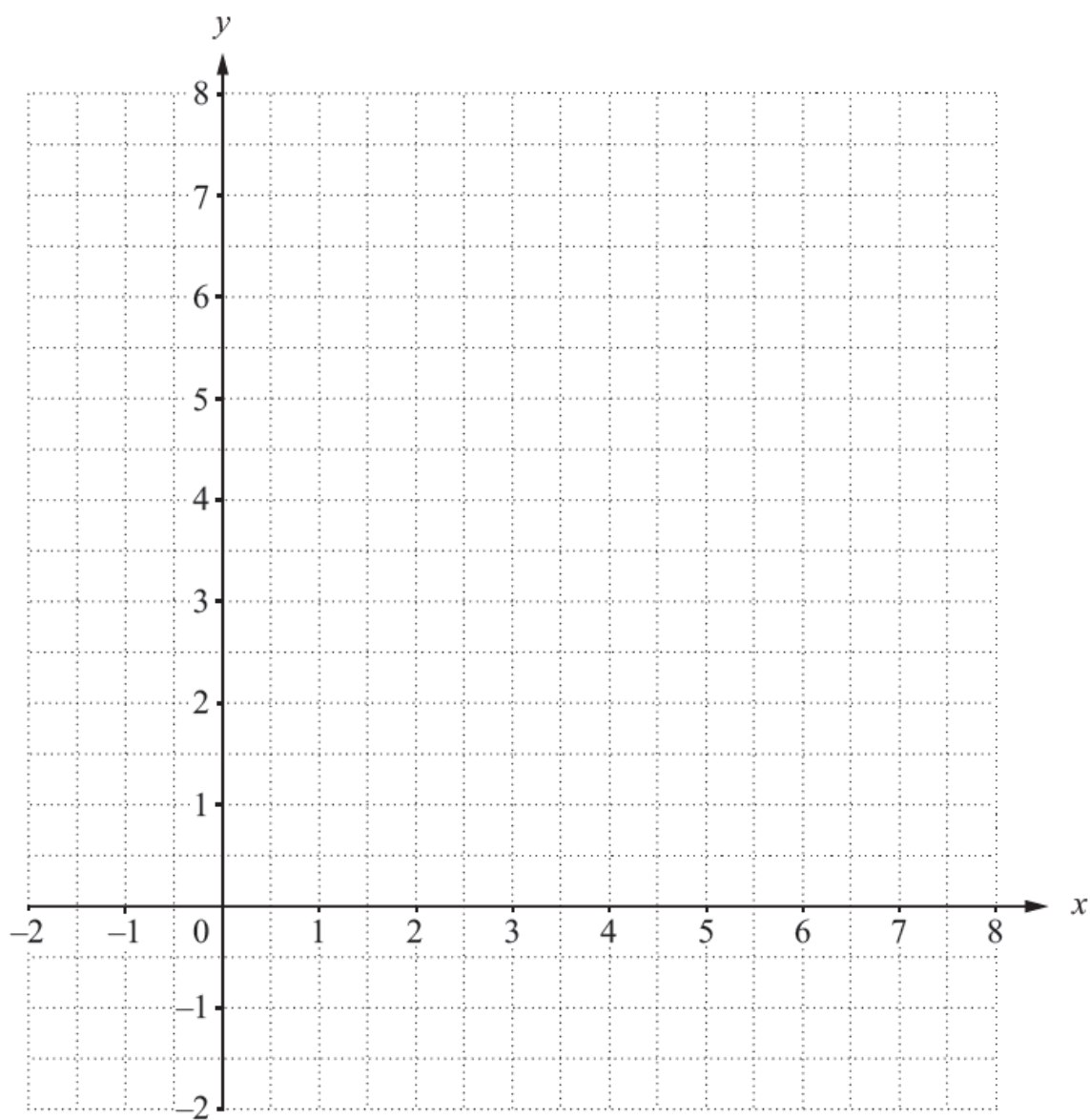
Work out the y -coordinate.

..... [2]

- (b) Work out the coordinates of the point where the line $3x + 2y = 12$ crosses the x -axis.

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

(c) Draw the graph of $3x + 2y = 12$



[1]