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EDEXCEL INTERNATIONAL GCSE MATHS: QUESTIONS BY TOPIC

Graphs (A4)

International GCSE Mathematics A (4MA1) · Foundation tier

66 questions · 240 marks · Mark schemes included

Past papers June 2018 - June 2025 · 4 sub-topics

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HOW TO USE THIS BOOKLET

Questions are grouped by sub-topic and run from the lowest to the highest mark tariff, then oldest paper first.

Click any row below to jump straight to that sub-topic or question.

On every question page, click ANSWER in the top-right corner to jump to its mark scheme; < QUESTION brings you back.

A gold bar in the left margin marks exactly where the question sits on the original page.

Diagrams, graphs, grids and tables are printed exactly as they appear in the original papers.

Each question is filed under its main topic; longer questions may also test skills from other topics.

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2. Q25	IGCSE Paper 2FR November 2020	2	5
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QUESTIONS

66 questions · 240 marks · 4 sub-topics

SUB-TOPIC A4a

COORDINATES & STRAIGHT-LINE GRAPHS

Sub-topic A4a · 44 questions · 160 marks · lowest tariff first



- 22 Point A has coordinates $(-3, 11)$
Point B has coordinates $(47, b)$
The midpoint of AB has coordinates $(a, -19)$

Find the value of a and the value of b .

$$a = \dots\dots\dots$$

$$b = \dots\dots\dots$$

(Total for Question 22 is 2 marks)

- 23 Pedro drove from Toulouse to Montpellier in 2 hours 42 minutes.
He drove at an average speed of 90 km/hour.
- Janine drove from Toulouse to Montpellier along the same route as Pedro.
The journey took her 3 hours.

Work out Janine's average speed for the journey.

..... km/hour

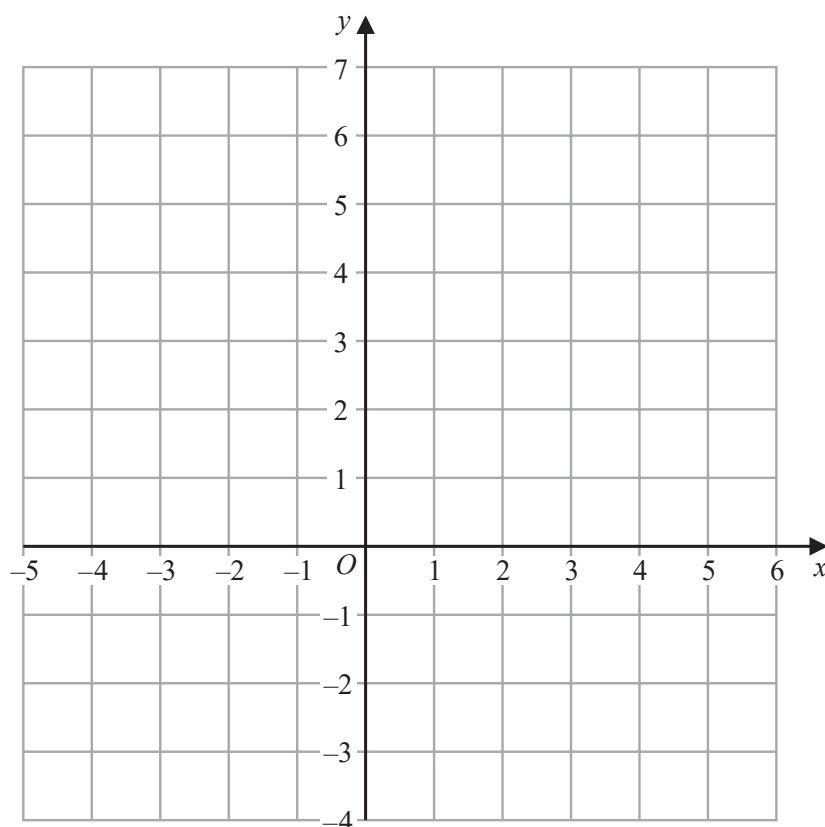
(Total for Question 23 is 4 marks)



24 Show, by shading on the grid, the region that satisfies all three of the inequalities

$$x \leq 4 \quad \text{and} \quad y \geq -2 \quad \text{and} \quad y \leq x$$

Label the region **R**.



(Total for Question 24 is 3 marks)

25 Find the gradient of the straight line with equation $5x + 2y = 7$

(Total for Question 25 is 2 marks)



- 24** The mean number of goals scored by a hockey team in 8 matches is 6
The team plays 2 more matches and scores k goals in each match.
The mean number of goals scored by the hockey team in the 10 matches is 7

Work out the value of k

$$k = \dots\dots\dots$$

(Total for Question 24 is 3 marks)

- 25** A straight line passes through the points with coordinates $(0, -3)$ and $(2, 0)$
Find an equation of the line.

(Total for Question 25 is 2 marks)



25 In a sale, normal prices are reduced by 15%

The sale price of a dishwasher is 612 Swiss francs.

Work out the normal price of the dishwasher.

..... Swiss francs

(Total for Question 25 is 3 marks)

26 A straight line, **L**, is parallel to the line with equation $y = 2 - 5x$

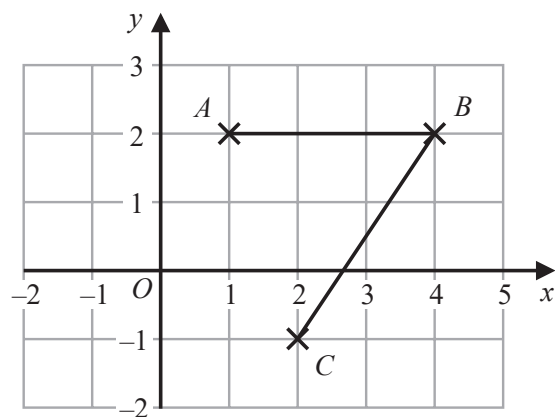
The line **L** passes through the point (0, 6)

Find an equation of the line **L**

.....
(Total for Question 26 is 2 marks)



- 4 The diagram shows points A , B and C on a square grid.



- (a) Write down the coordinates of C .

(..... , ...)
(1)

- (b) Measure the length of BC .
Give your answer in centimetres.

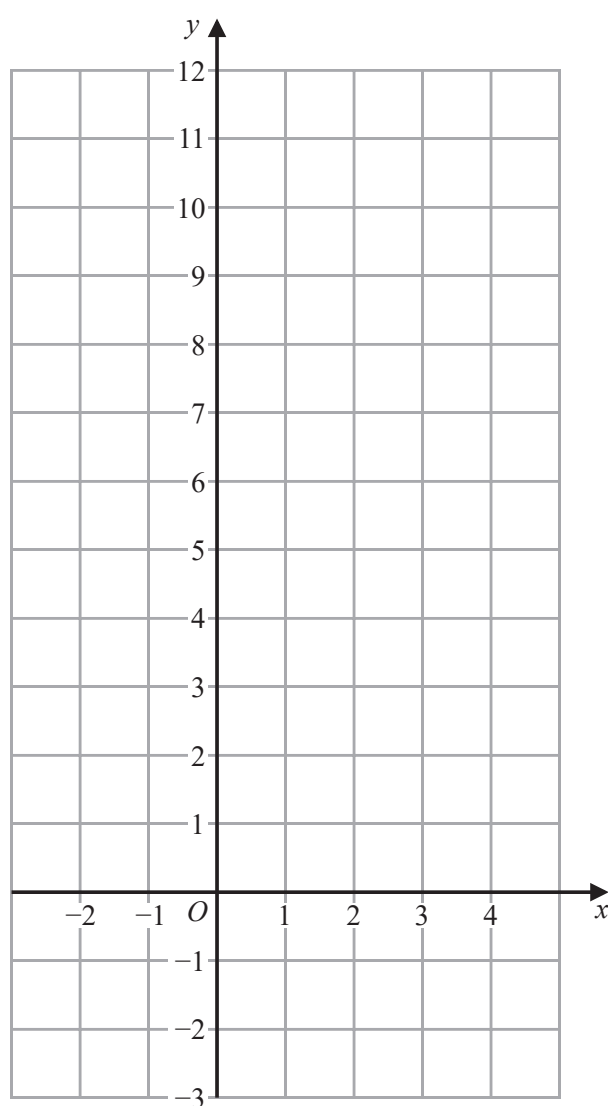
..... cm
(1)

- (c) On the grid, mark with a cross (X) the point D so that $ABCD$ is a parallelogram.
Label this point D .

(1)

(Total for Question 4 is 3 marks)

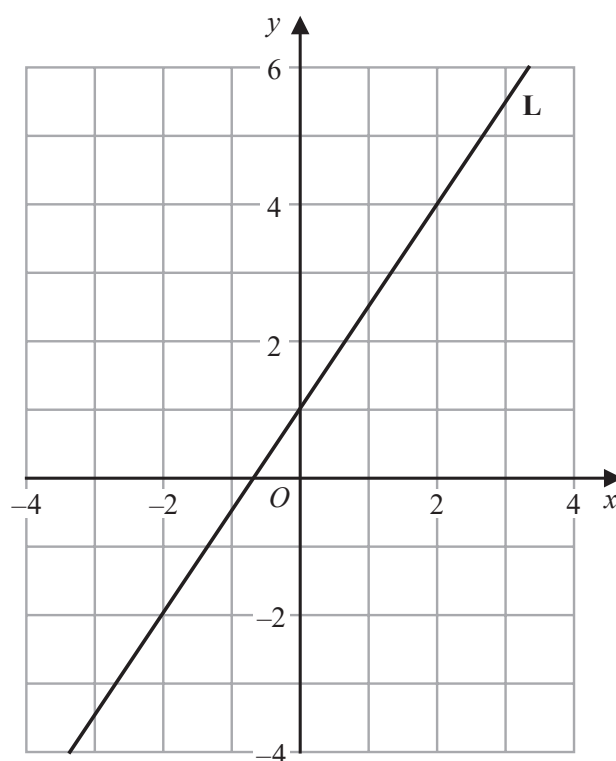
14 On the grid, draw the graph of $y = 2x + 3$ for values of x from -2 to 4



(Total for Question 14 is 3 marks)



24 The line **L** is drawn on the grid.



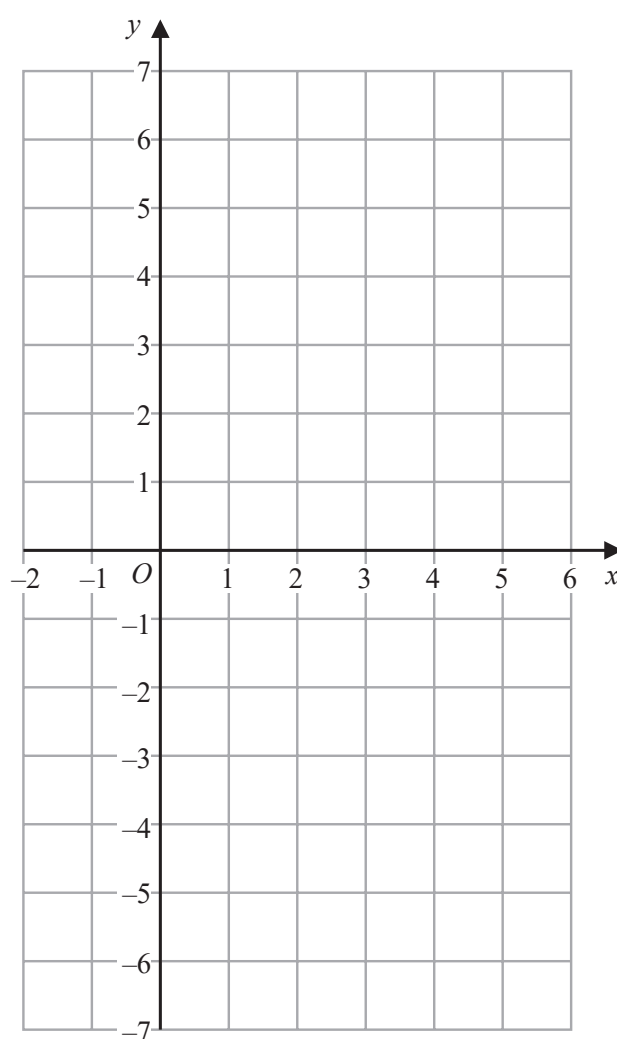
Find an equation for **L**.

(Total for Question 24 is 3 marks)

TOTAL FOR PAPER IS 100 MARKS



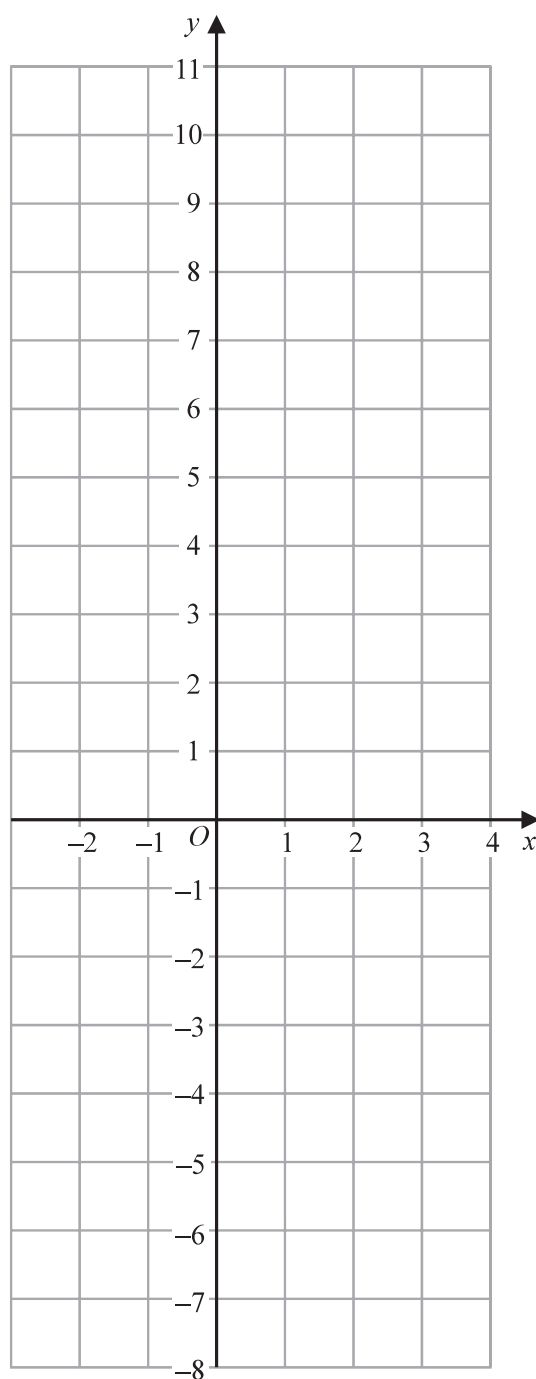
11 On the grid, draw the graph of $y = 2x - 3$ for values of x from -1 to 5



(Total for Question 11 is 3 marks)



12 On the grid, draw the graph of $y = 3x - 1$ for values of x from -2 to 3



(Total for Question 12 is 3 marks)



25 Henri buys a yacht for 150 000 euros.

The yacht depreciates in value by 18% each year.

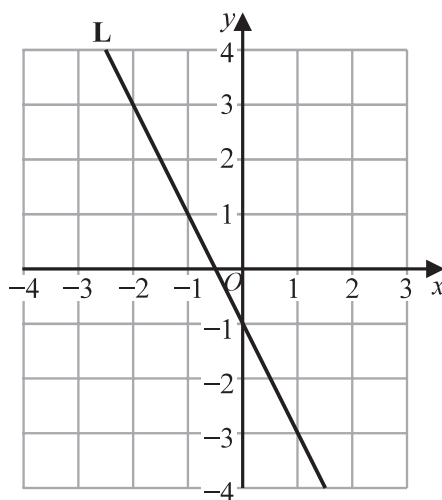
Work out the value of the yacht at the end of 3 years.

Give your answer correct to the nearest euro.

..... euros

(Total for Question 25 is 3 marks)

26 Line **L** is drawn on the grid.



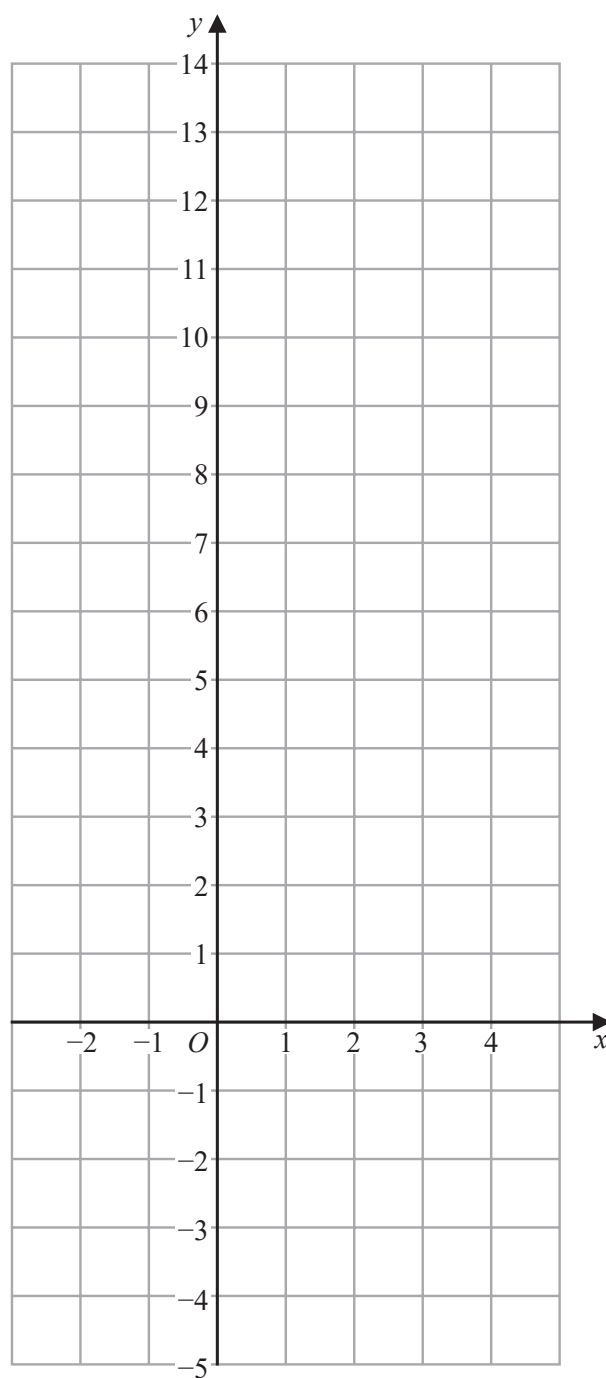
Find an equation for **L**.

.....

(Total for Question 26 is 3 marks)



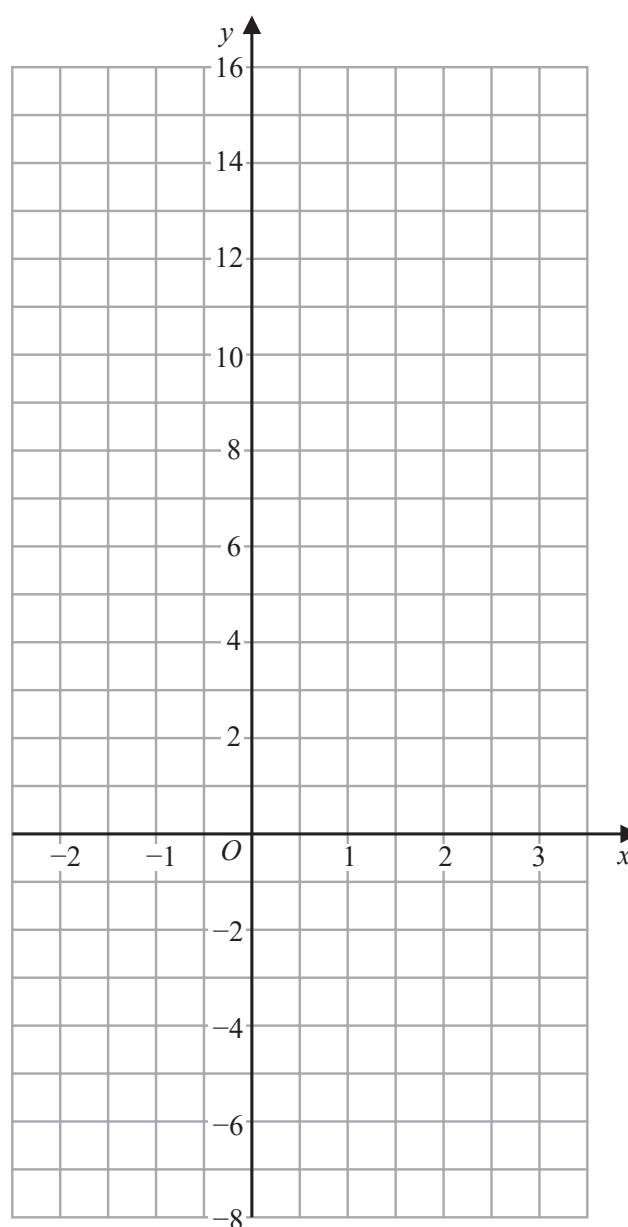
11 On the grid, draw the graph of $y = 3x + 2$ for values of x from -2 to 4



(Total for Question 11 is 3 marks)



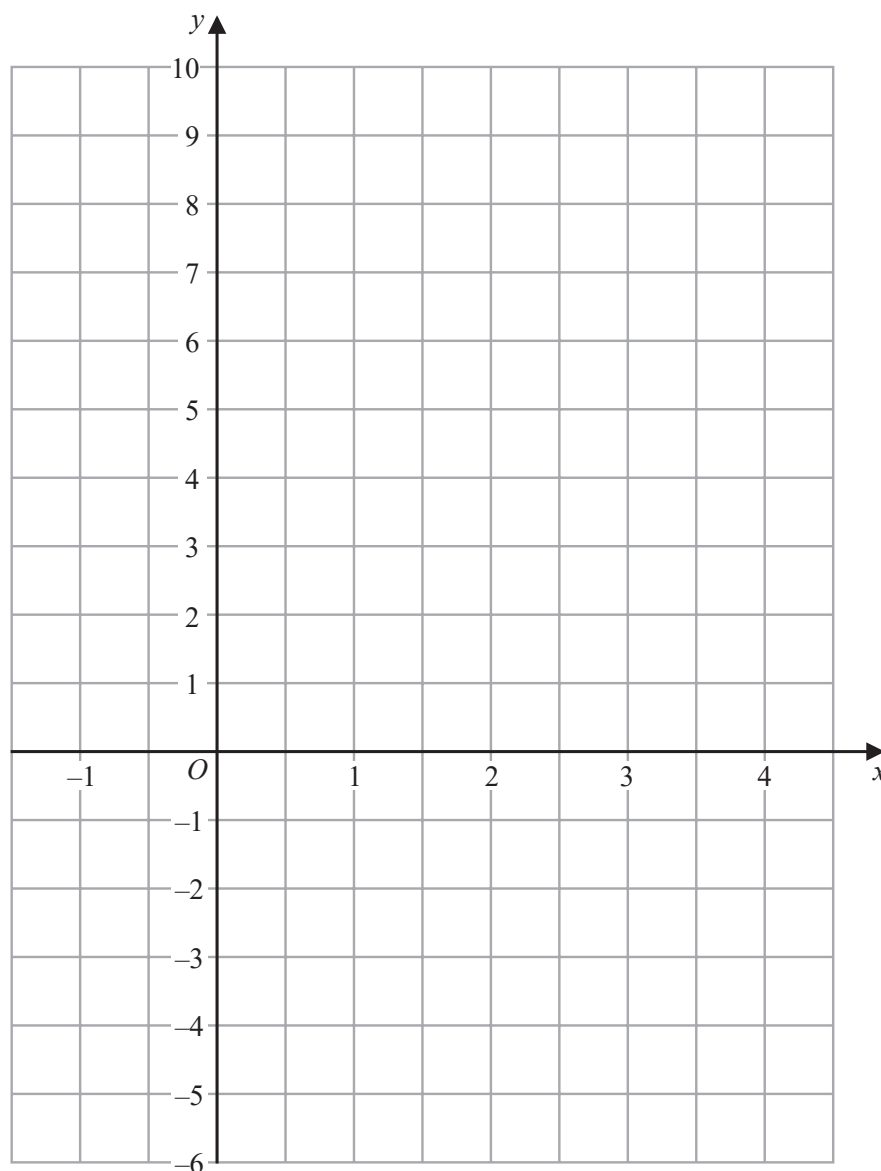
16 On the grid, draw the graph of $y = 7 - 4x$ for values of x from -2 to 3



(Total for Question 16 is 3 marks)



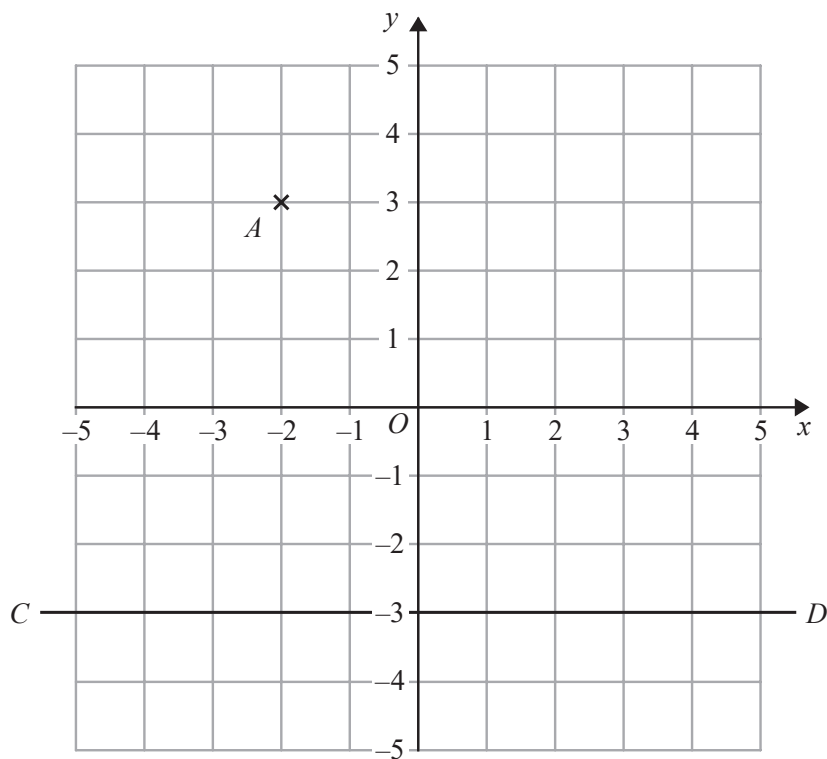
11 On the grid, draw the graph of $y = 3x - 2$ for values of x from -1 to 4



(Total for Question 11 is 3 marks)



- 5 The diagram shows the point A and the line CD on a grid.



- (a) Write down the coordinates of point A .

(....., ...)
(1)

The point B has coordinates $(4, -2)$

- (b) On the grid, mark with a cross (X) the point B .
Label the point B .

(1)

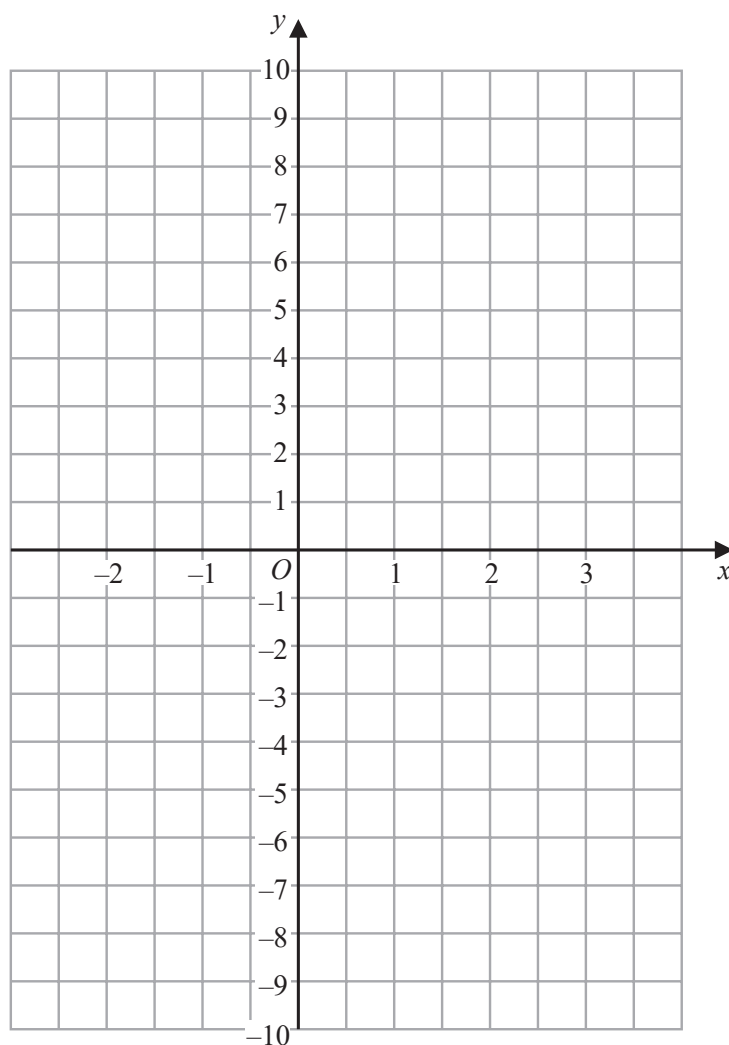
- (c) Write down an equation of the line CD .

.....
(1)

(Total for Question 5 is 3 marks)

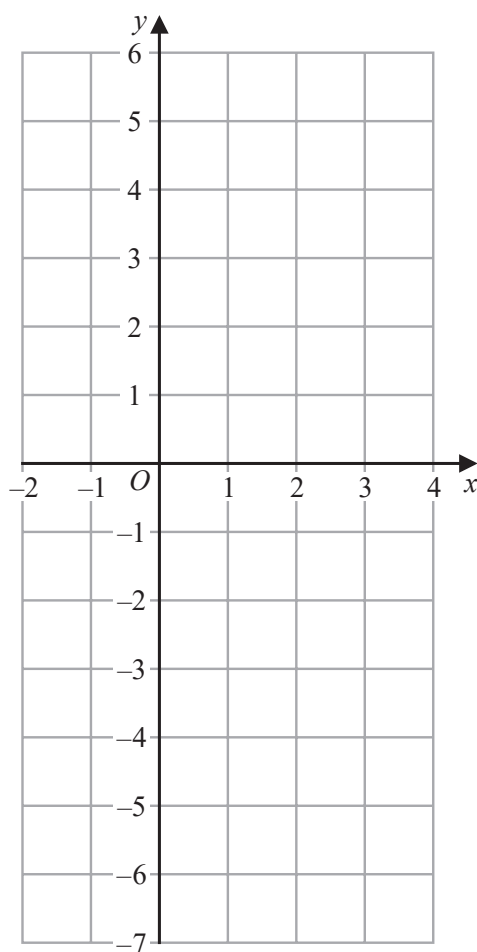


14 On the grid below, draw the graph of $y = 1 - 3x$ for values of x from -2 to 3



(Total for Question 14 is 3 marks)

14 On the grid, draw the graph of $y = 2x - 3$ for values of x from -2 to 4



(Total for Question 14 is 3 marks)



25 The straight line **L** has equation $2y + 7x = 10$

(a) Find the gradient of **L**

.....
(2)

(b) Find the coordinates of the point where **L** crosses the y -axis.

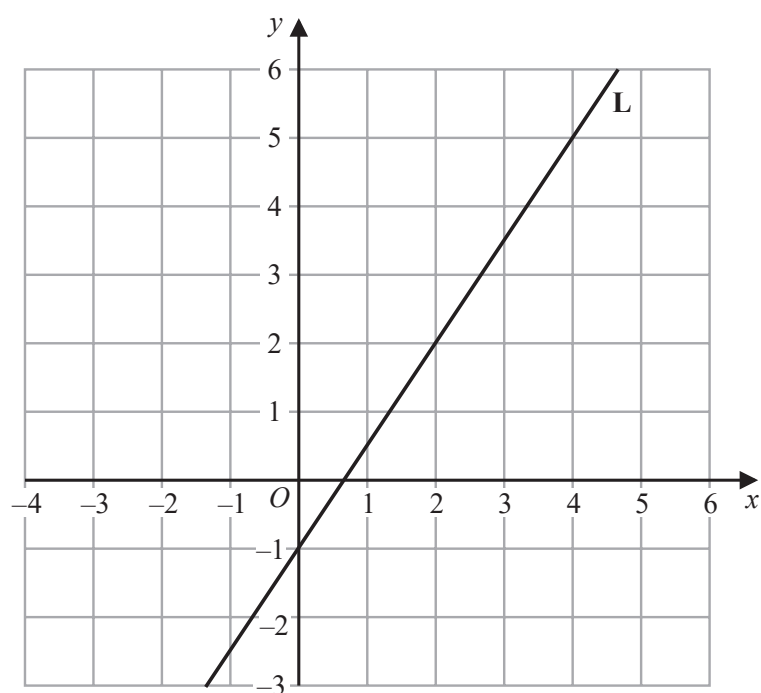
(....., ...)
(1)

(Total for Question 25 is 3 marks)

TOTAL FOR PAPER IS 100 MARKS



26 Line **L** is drawn on the grid.



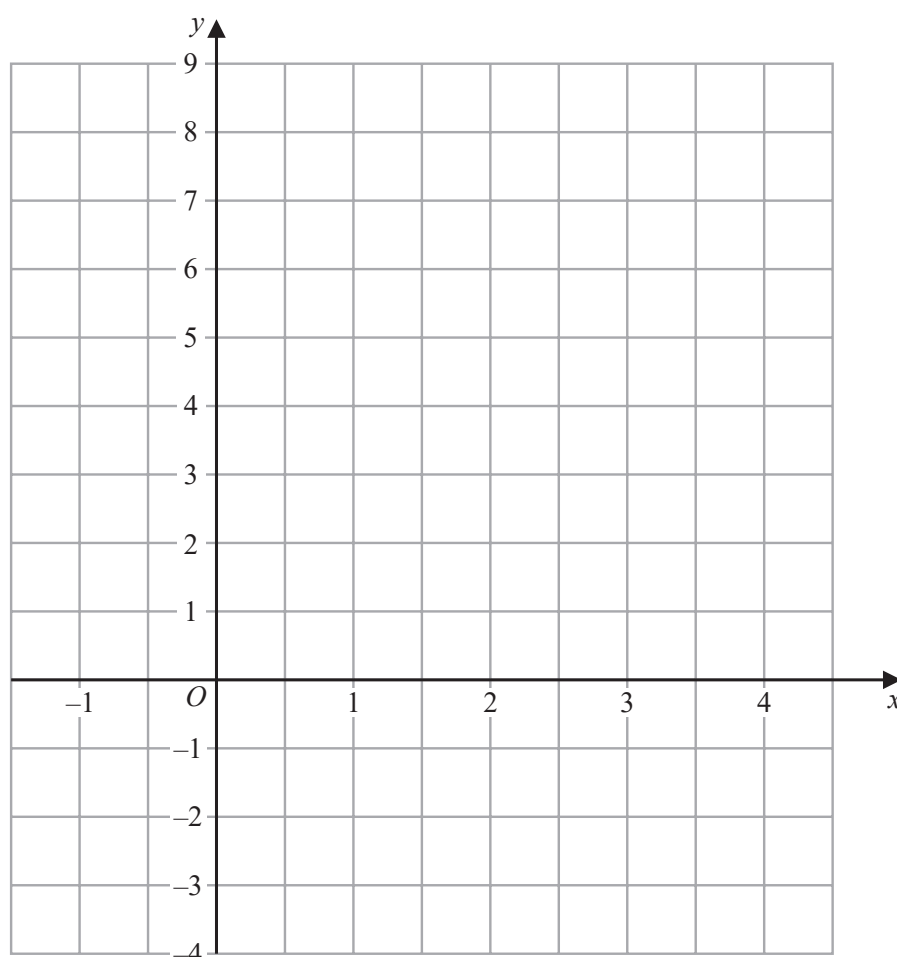
Find an equation for **L**

Give your answer in the form $y = mx + c$

(Total for Question 26 is 3 marks)



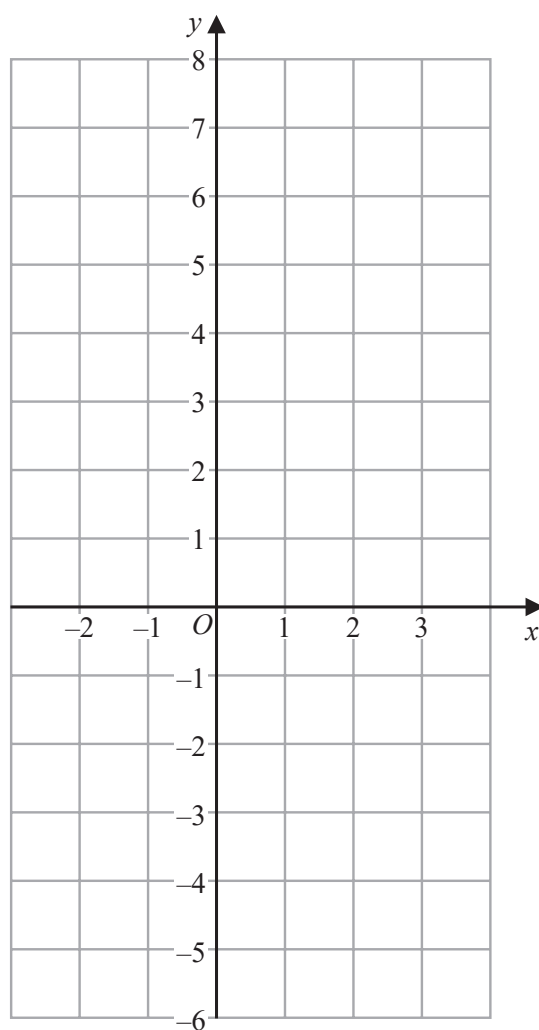
14 On the grid, draw the graph of $y = 2x - 1$ for values of x from -1 to 4



(Total for Question 14 is 3 marks)



11 On the grid below, draw the graph of $y = 1 - 2x$ for values of x from -2 to 3



(Total for Question 11 is 3 marks)

21 The points A and B are on a coordinate grid.

The coordinates of A are $(6, 4)$

The coordinates of B are $(17, j)$ where j is a constant.

The midpoint of AB has coordinates $(k, 15)$ where k is a constant.

Find the value of j and the value of k

$$j = \dots\dots\dots$$

$$k = \dots\dots\dots$$

(Total for Question 21 is 3 marks)

22 Solve the simultaneous equations

$$5x + 4y = -2$$

$$2x - y = 4.4$$

Show clear algebraic working.

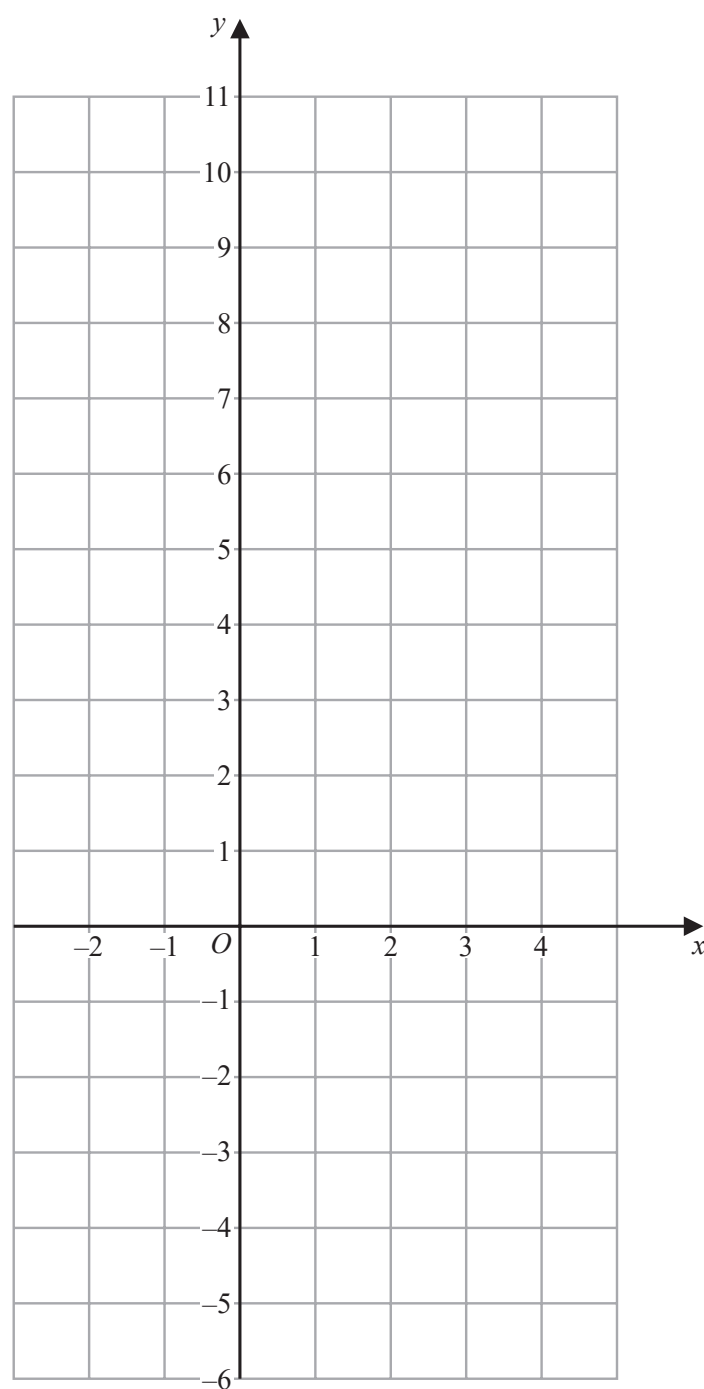
$$x = \dots\dots\dots$$

$$y = \dots\dots\dots$$

(Total for Question 22 is 3 marks)



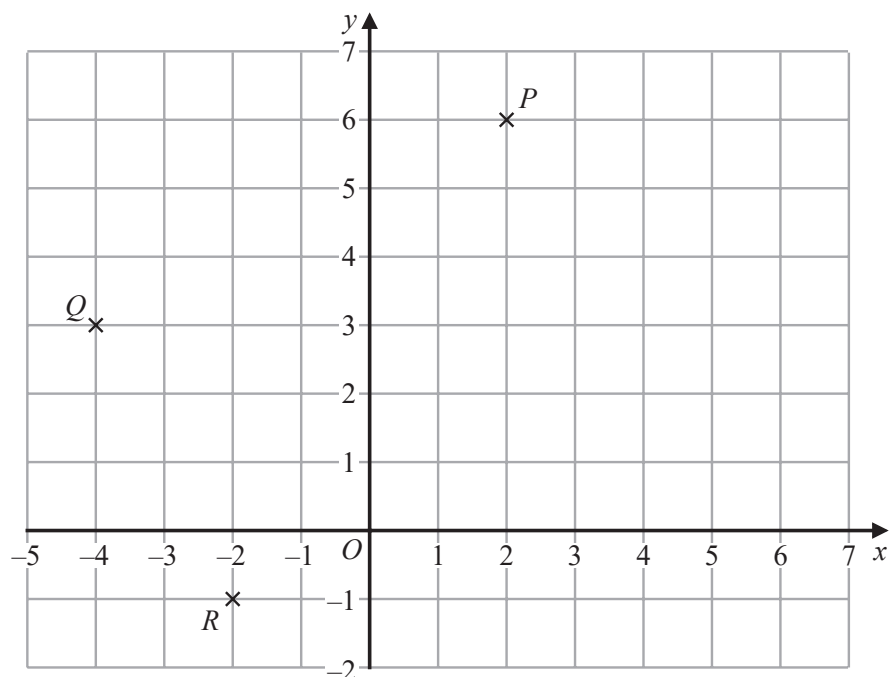
19 On the grid, draw the graph of $5x + 2y = 10$ for values of x from -2 to 4



(Total for Question 19 is 3 marks)



4



(a) Write down the coordinates of the point

(i) P

(....., ...)
(1)

(ii) Q

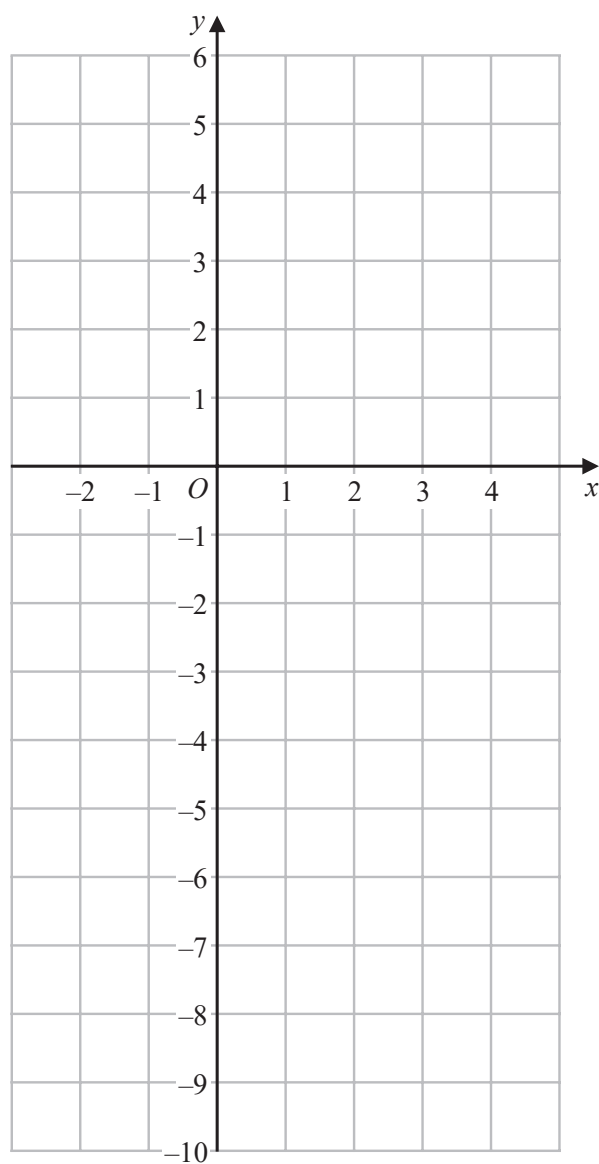
(....., ...)
(1)

(b) On the grid above, mark with a cross ($\times$) the point S so that $PQRS$ is a rectangle.

(1)

(Total for Question 4 is 3 marks)

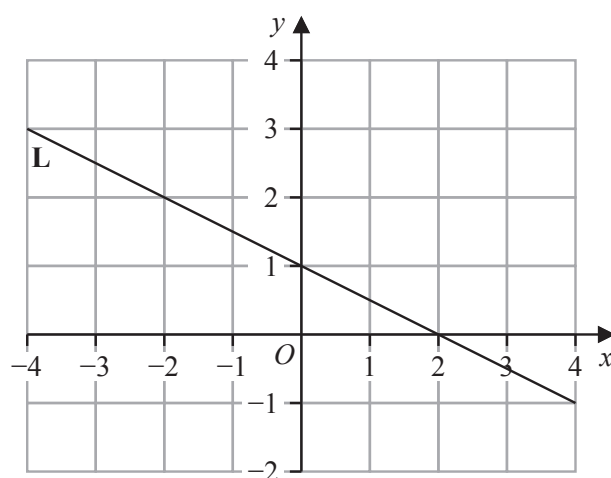
13 On the grid, draw the graph of $y = 2x - 3$ for values of x from -2 to 4



(Total for Question 13 is 3 marks)



24 Line **L** is drawn on the grid.



Find an equation for **L**

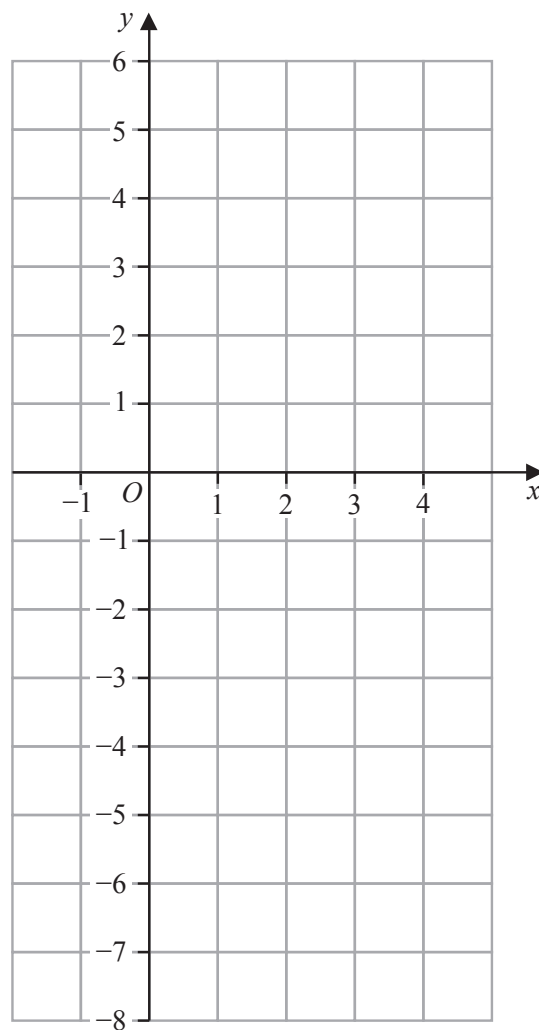
Give your answer in the form $y = mx + c$

(Total for Question 24 is 3 marks)

TOTAL FOR PAPER IS 100 MARKS

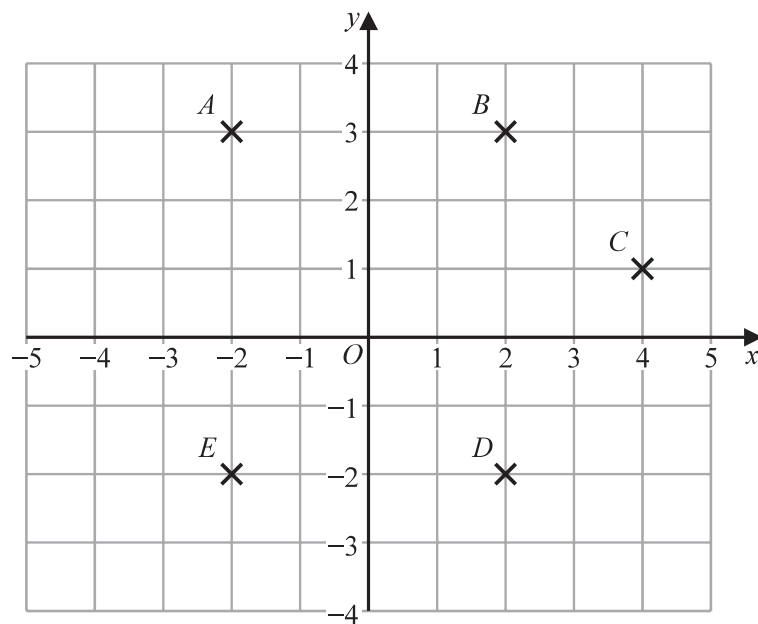


11 On the grid, draw the graph of $y = 2x - 5$ for values of x from -1 to 4



(Total for Question 11 is 3 marks)

7



(a) Write down the coordinates of point *B*.

(....., ...)
(1)

(b) Write down the letter of the point with coordinates (2, -2)

.....
(1)

(c) Find the coordinates of the midpoint of *AC*.

(....., ...)
(2)

(Total for Question 7 is 4 marks)



- 14** The point A has coordinates $(5, -4)$
 The point B has coordinates $(13, 1)$

(a) Work out the coordinates of the midpoint of AB .

(..... , ...)
 (2)

Line L has equation $y = 2 - 3x$

(b) Write down the gradient of line L .

.....
 (1)

Line L has equation $y = 2 - 3x$

(c) Does the point with coordinates $(100, -302)$ lie on line L ?
 You must give a reason for your answer.

.....

 (1)

(Total for Question 14 is 4 marks)

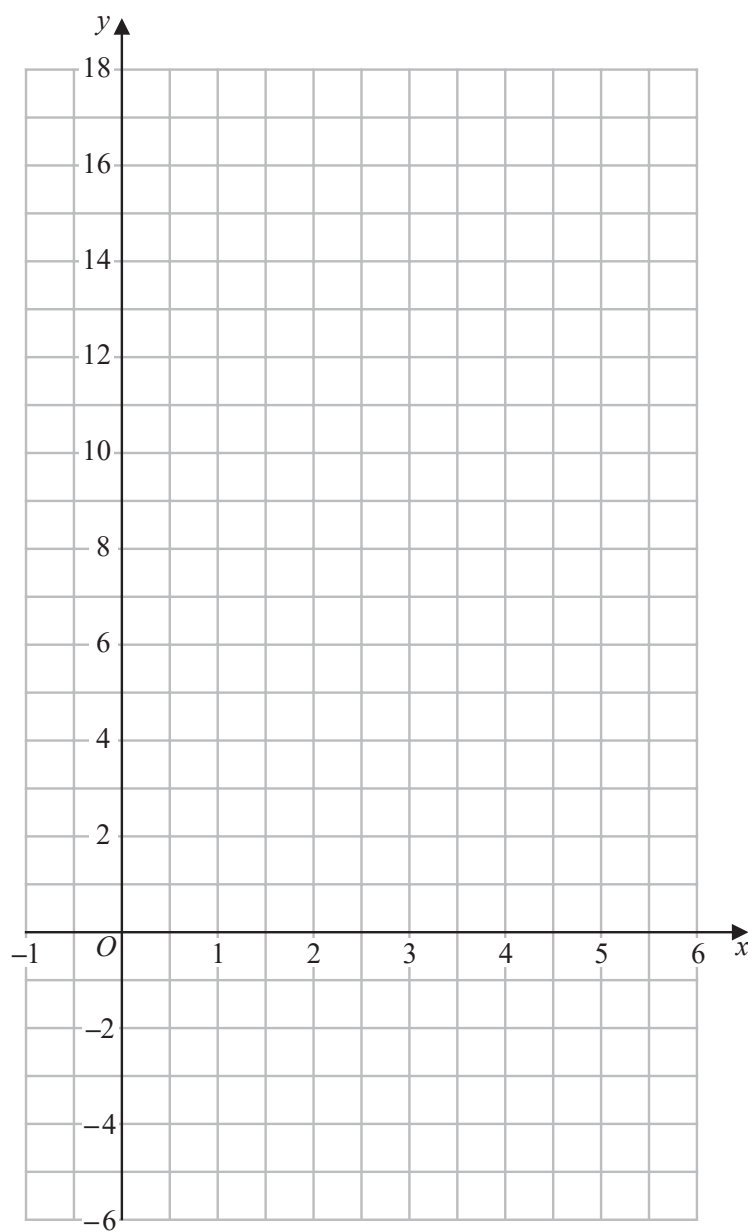


8 (a) Complete the table of values for $y = 3x - 1$

x	-1	0	1	2	3	4	5	6
y		-1		5			14	

(2)

(b) On the grid, draw the graph of $y = 3x - 1$ for values of x from -1 to 6

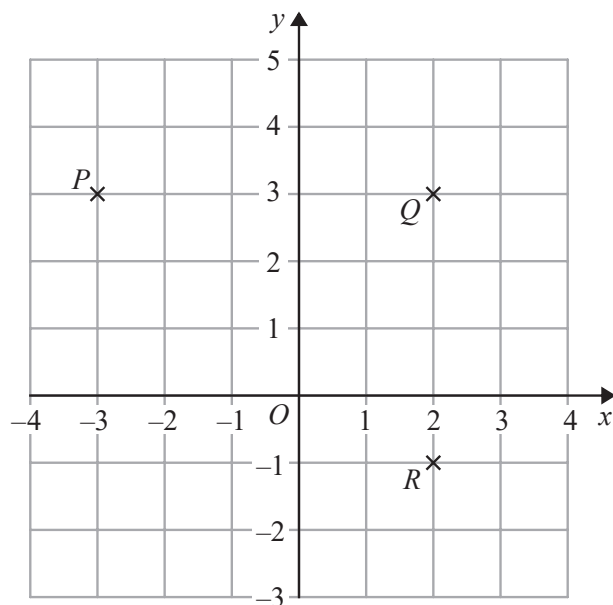


(2)

(Total for Question 8 is 4 marks)



7 P , Q and R are three points marked on a grid.



(a) Write down the coordinates of point Q .

(....., ...)
(1)

S is the point such that $PQRS$ is a rectangle.

(b) Find the coordinates of point S .

(....., ...)
(1)

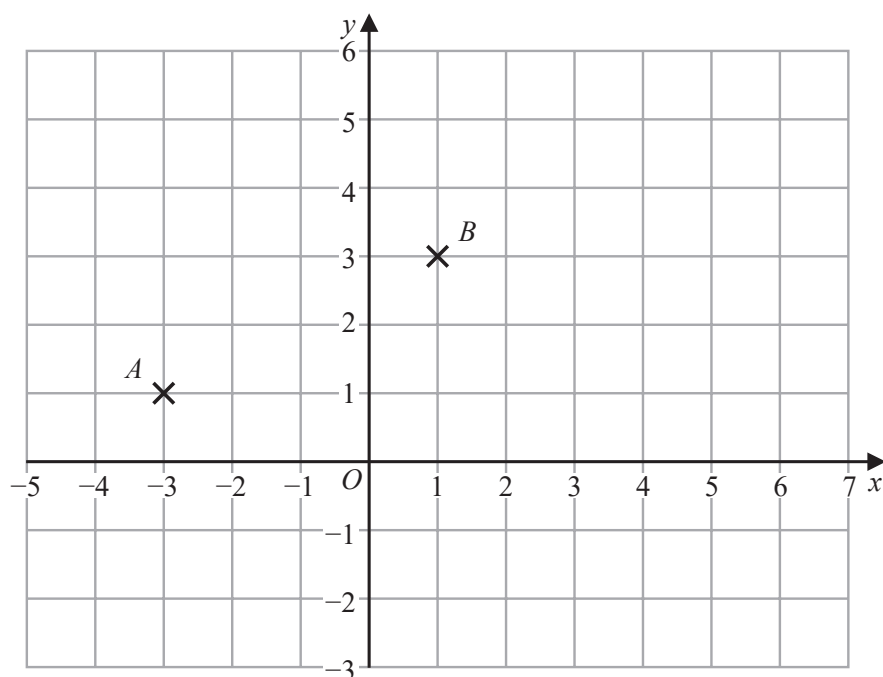
(c) Find the coordinates of the midpoint of PR .

(....., ...)
(2)

(Total for Question 7 is 4 marks)



- 5 The diagram shows points A and B marked on a grid of squares.



- (a) On the grid, draw the line with equation $y = -2$

(1)

M is the midpoint of AB

- (b) Find the coordinates of M

(....., ...)
(2)

D is the point with coordinates $(5, d)$ where $d > 0$
The triangle ABD is an isosceles triangle.

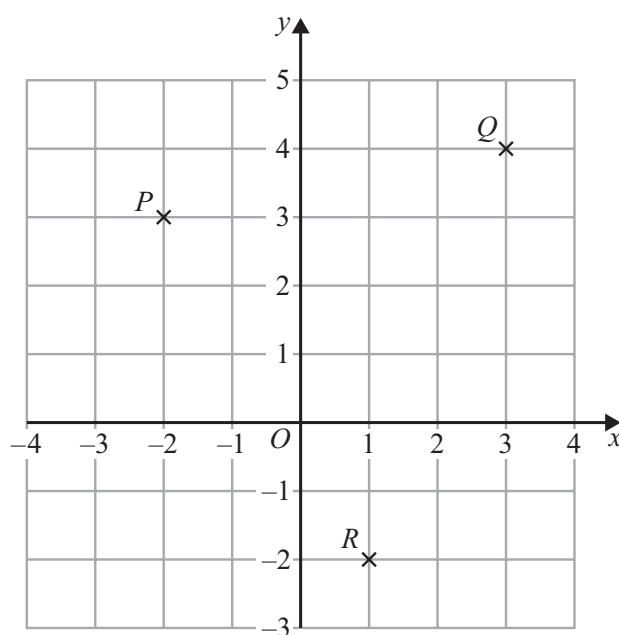
- (c) Find the value of d

$d =$
(1)

(Total for Question 5 is 4 marks)



- 5 The diagram shows three points, P , Q and R , marked on a grid.



- (a) Write down the coordinates of point P

(....., ...)
(1)

- (b) On the grid, mark with a cross ($\times$) the point with coordinates $(3, -1)$
Label this point T

(1)

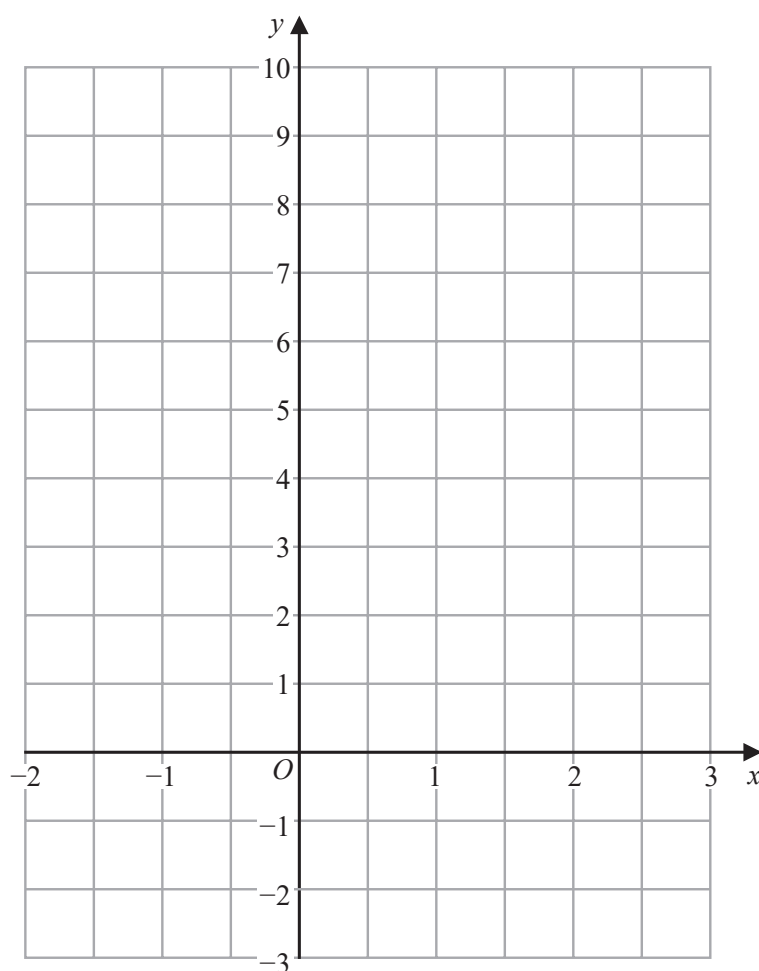
- (c) Find the coordinates of the midpoint of QR

(....., ...)
(2)

(Total for Question 5 is 4 marks)



- 19 (a) On the grid, draw the graph of $y = 2x + 3$ for values of x from -2 to 3



(3)

- (b) Show, by shading on the grid, the region that satisfies **all three** of the inequalities

$$x \leq 2$$

$$y \geq 1$$

$$y \leq 2x + 3$$

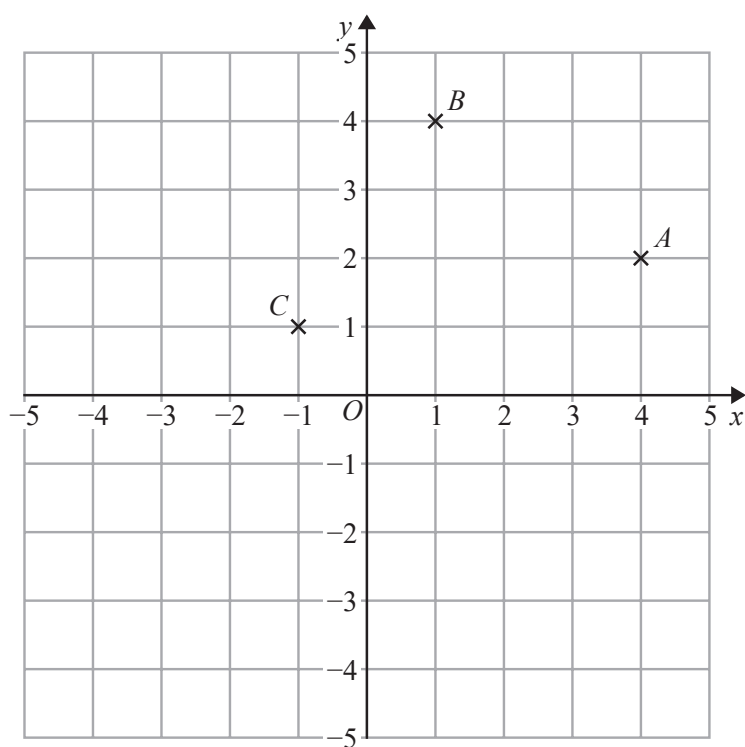
Label the region **R**.

(2)

(Total for Question 19 is 5 marks)



- 5 A , B and C are three points marked on a grid.



- (a) On the grid, draw the line with equation $x = -3$
Label the line L.

(1)

M is the midpoint of AB .

- (b) Find the coordinates of M .

(....., ...)
(2)

D is the point so that $ABCD$ is a square.

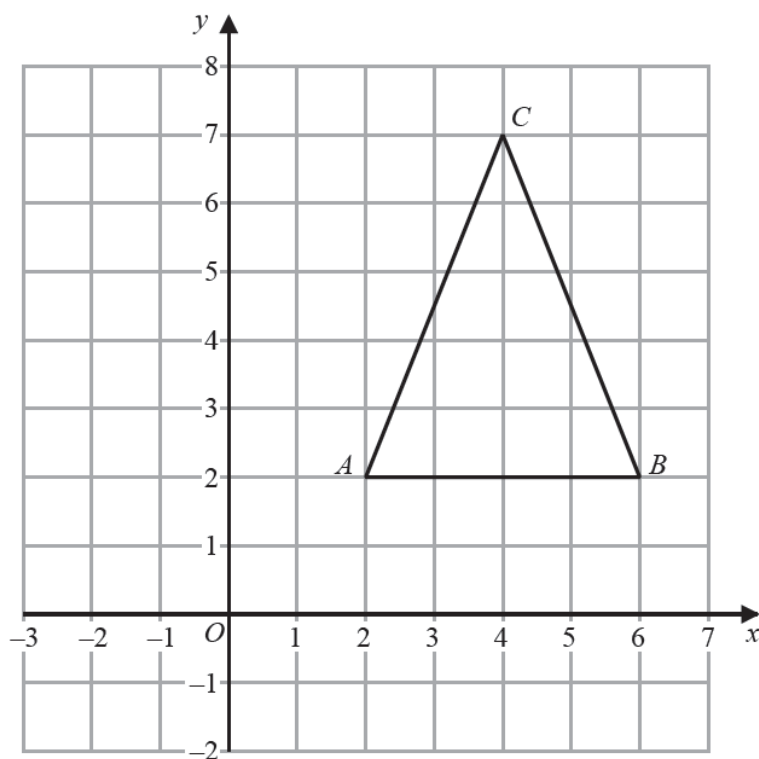
- (c) Find the coordinates of D .

(....., ...)
(2)

(Total for Question 5 is 5 marks)



- 6 The diagram shows a triangle ABC drawn on a grid.



- (a) Write down the coordinates of point B .

(,)
(1)

- (b) On the grid, mark with a cross ($\times$) the point with coordinates $(4, -1)$
Label this point D .

(1)

- (c) What type of triangle is triangle ABC ?

(1)

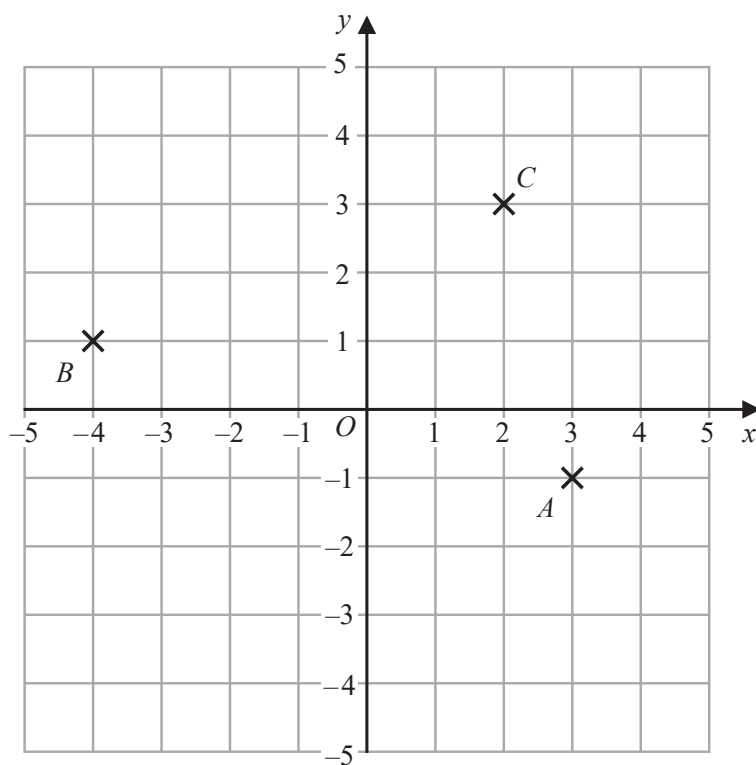
- (d) Find the coordinates of the midpoint of the line AC .

(,)
(2)

(Total for Question 6 is 5 marks)



- 7 The diagram shows three points, A , B and C , marked on a grid.



- (a) Write down the coordinates of point A .

(....., ...)
(1)

The coordinates of the point D are $(-2, -4)$

- (b) On the grid, mark with a cross ($\times$) the position of D .
Label the cross D .

(1)

- (c) Find the coordinates of the midpoint of BC .

(....., ...)
(2)

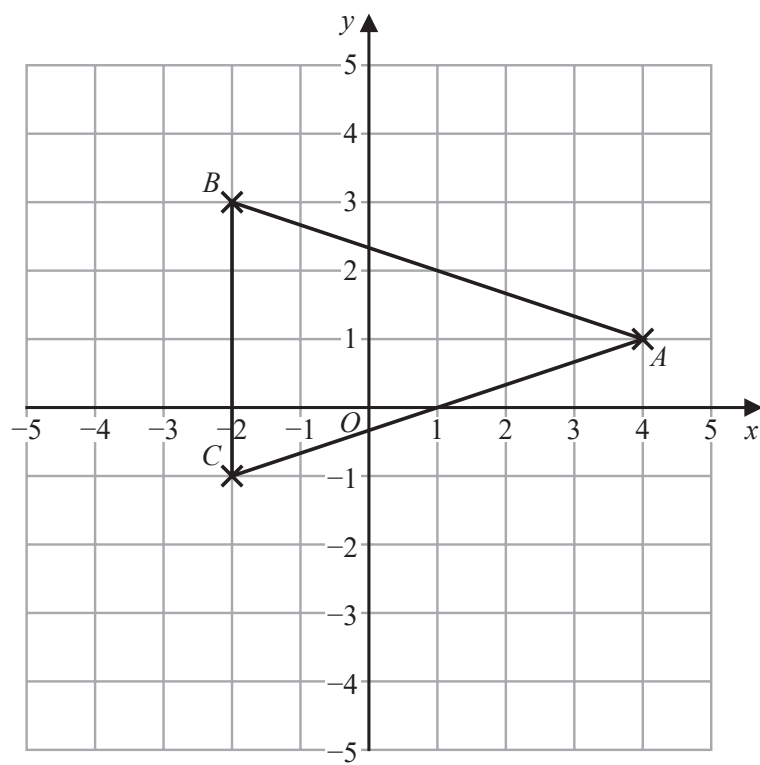
- (d) On the grid, draw the line with equation $x = 4$

(1)

(Total for Question 7 is 5 marks)



- 4 The points A , B and C , shown on the grid, are the vertices of triangle ABC .



- (a) Write down the coordinates of the point B .

(....., ...)
(1)

- (b) Write down the mathematical name of triangle ABC .

.....
(1)

The coordinates of point D are $(1, -4)$

- (c) On the grid, mark with a cross ($\times$) the position of D .
Label the point D .

(1)

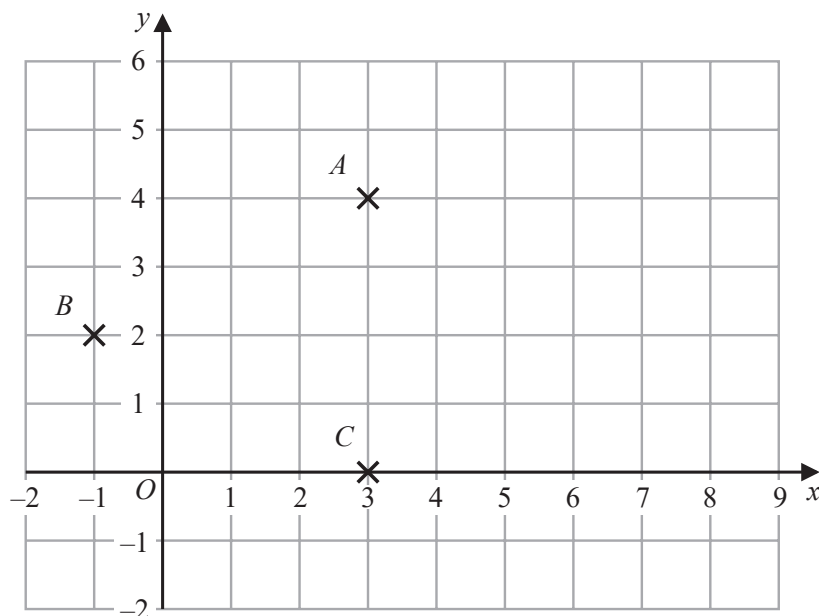
- (d) Find the coordinates of the midpoint of AB .

(....., ...)
(2)

(Total for Question 4 is 5 marks)



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



(a) Write down the coordinates of

(i) point A

(....., ...) (2)

(ii) point B

(....., ...)
(2)

D is the point such that $ABCD$ is a rhombus.

(b) On the grid, mark with a cross ($\times$) the point D
Label this point D

(1)

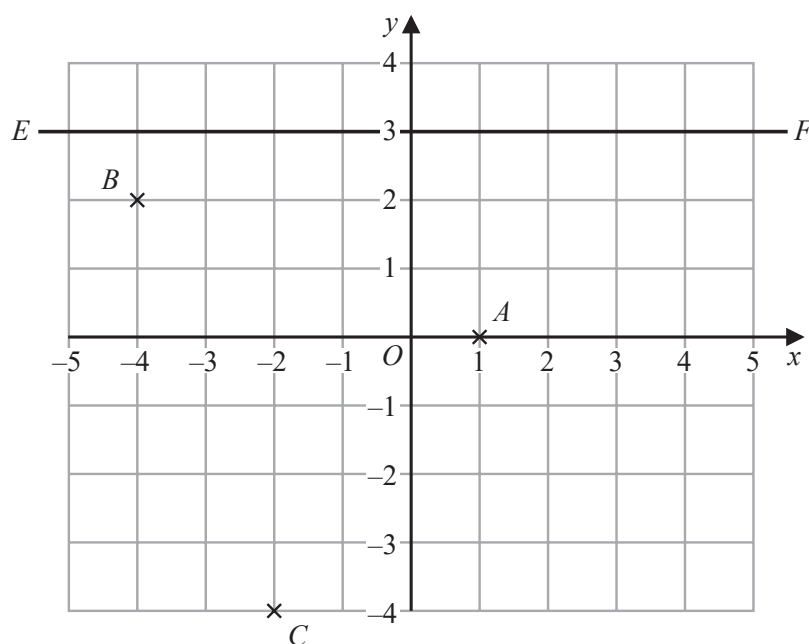
(c) Find the coordinates of the midpoint of AB

(....., ...)
(2)

(Total for Question 2 is 5 marks)



- 4 The diagram shows three points, A , B and C , and a line EF on a grid.



- (a) Write down the coordinates of the point A

(....., ...)
(1)

The coordinates of the point D are $(3, -2)$

- (b) On the grid, mark with a cross ($\times$) the position of D
Label the cross D

(1)

- (c) Find the coordinates of the midpoint of BC

(....., ...)
(2)

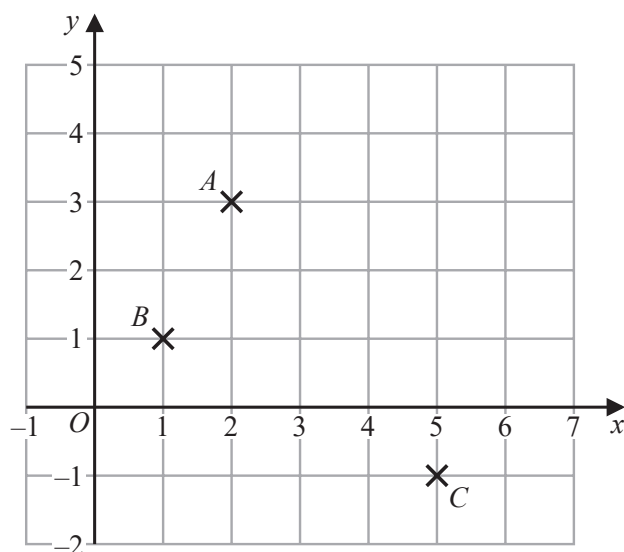
- (d) Write down the equation of the line EF

.....
(1)

(Total for Question 4 is 5 marks)



- 5 The diagram shows three points, A , B and C , marked on a grid.



- (a) Write down the coordinates of point A

(....., ...)
(1)

- (b) On the grid, mark with a cross ($\times$) the point D so that $ABCD$ is a rectangle.

(1)

- (c) Find the coordinates of the midpoint of AC

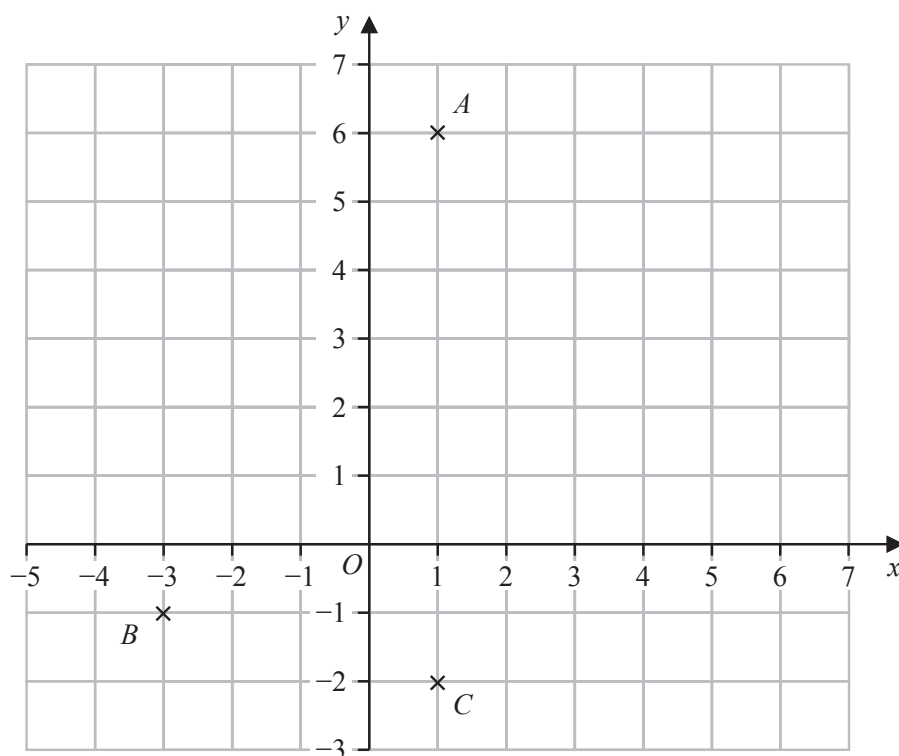
(....., ...)
(2)

- (d) On the grid, draw the line with equation $y = 4$

(1)

(Total for Question 5 is 5 marks)

- 4 The diagram shows three points, A , B and C , marked on a grid.



- (a) Write down the coordinates of point A

(..... , ...)
(1)

- (b) Write down the coordinates of point B

(..... , ...)
(1)

M is the midpoint of the line AC

- (c) On the grid, mark with a cross ($\times$) the point M
Label the point M

(1)

The point D is such that the shape $ABCD$ is a kite.

- (d) On the grid, mark with a cross ($\times$) the point D
Label the point D

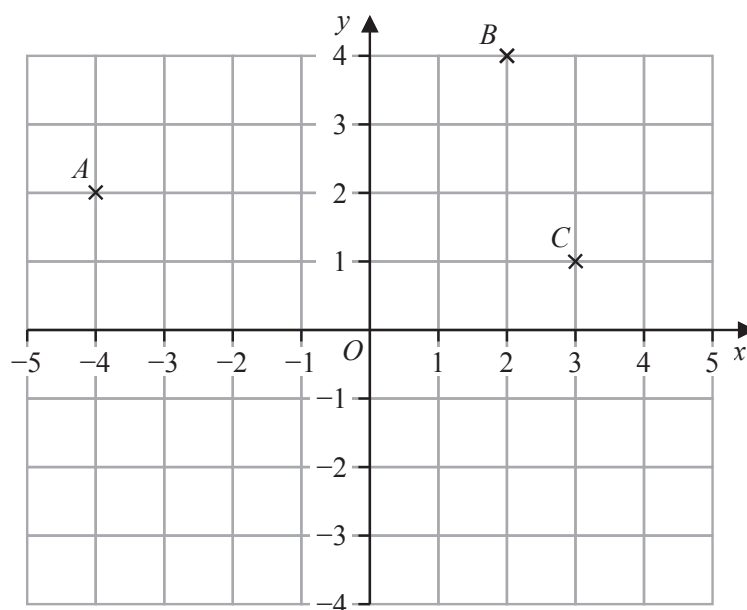
(1)

- (e) How many lines of symmetry has kite $ABCD$?

.....
(1)

(Total for Question 4 is 5 marks)

- 9 The diagram shows three points, A , B and C , marked on a grid.



- (a) Write down the coordinates of A

(..... , ...)
(1)

- (b) Find the coordinates of the midpoint of AB

(..... , ...)
(2)

D is the point on the grid so that $ABCD$ is a rectangle.

- (c) Find the coordinates of D

(..... , ...)
(2)

(Total for Question 9 is 5 marks)

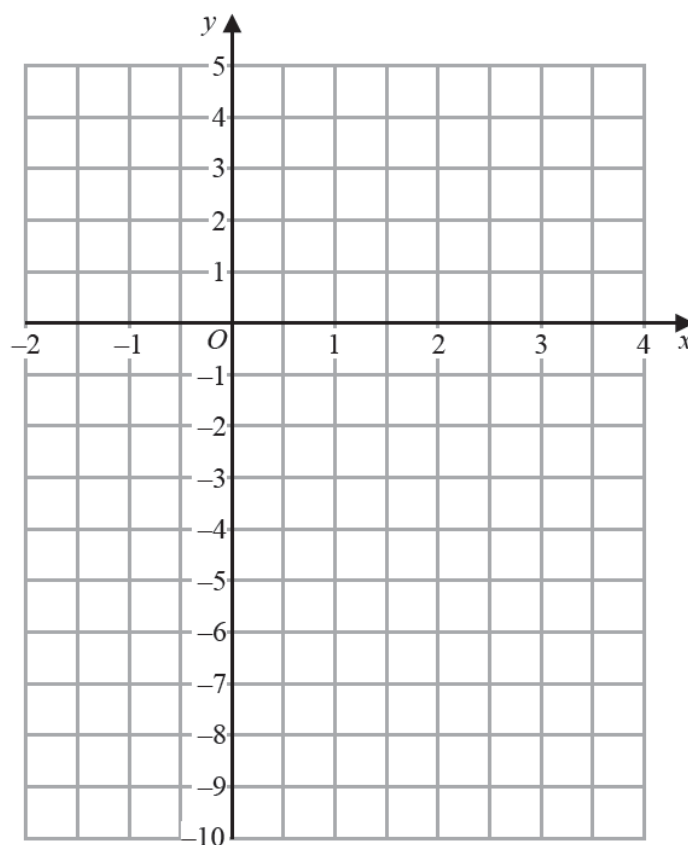


13 (a) Complete the table of values for $y = 2x - 5$

x	-2	-1	0	1	2	3	4
y		-7			-1	1	

(2)

(b) On the grid, draw the graph of $y = 2x - 5$ for values of x from -2 to 4



(2)

(c) Mark with a cross (×) a point on the grid that has coordinates satisfying both

$$x < 2 \text{ and } y > 2x - 5$$

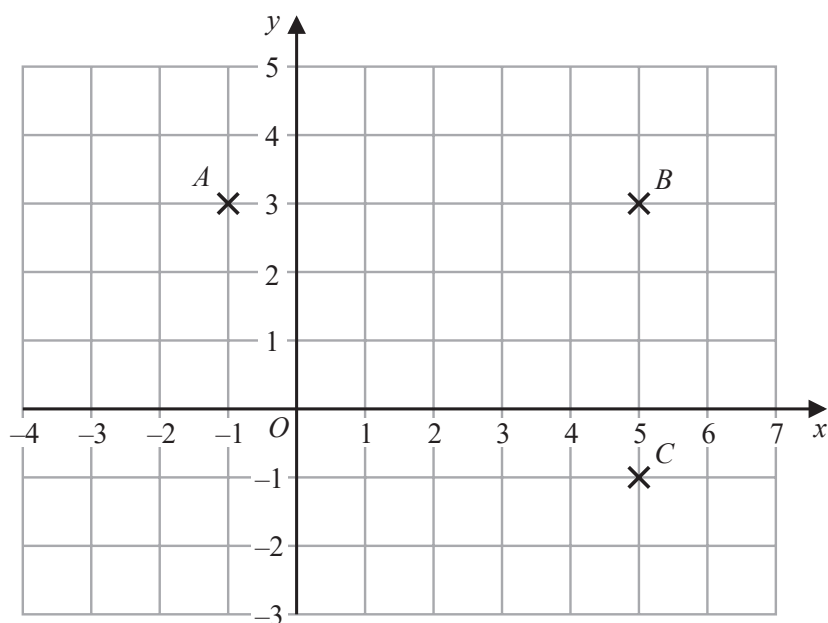
Label this point P .

(2)

(Total for Question 13 is 6 marks)



- 7 The three points A , B and C are marked on a centimetre grid.



- (a) Write down the coordinates of A

(....., ...)
(1)

- (b) Find the coordinates of the midpoint of BC

(....., ...)
(2)

- (c) Work out the area of triangle ABC

..... cm^2
(2)

D is the point on the grid so that $ABCD$ is a rectangle.

- (d) On the grid, mark with a cross (X) the point D
Label this point D

(1)

(Total for Question 7 is 6 marks)



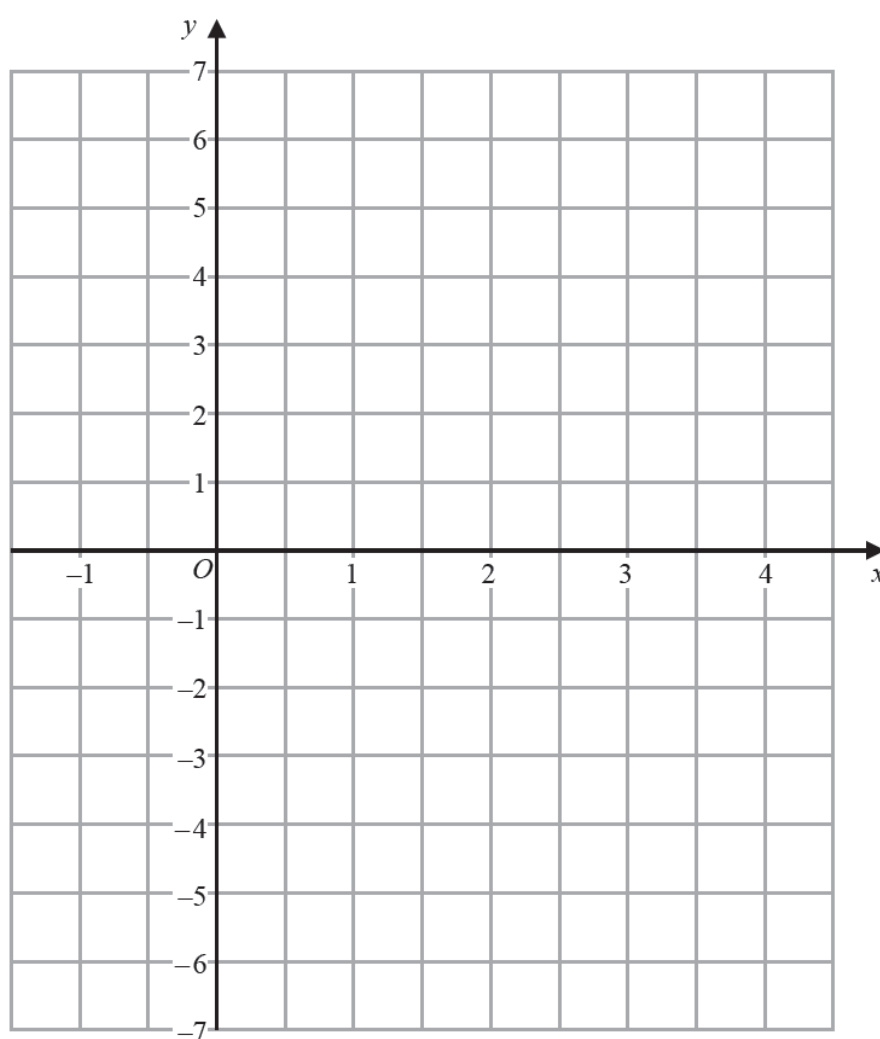
SUB-TOPIC A4b

QUADRATIC & OTHER GRAPHS

Sub-topic A4b · 12 questions · 41 marks · lowest tariff first

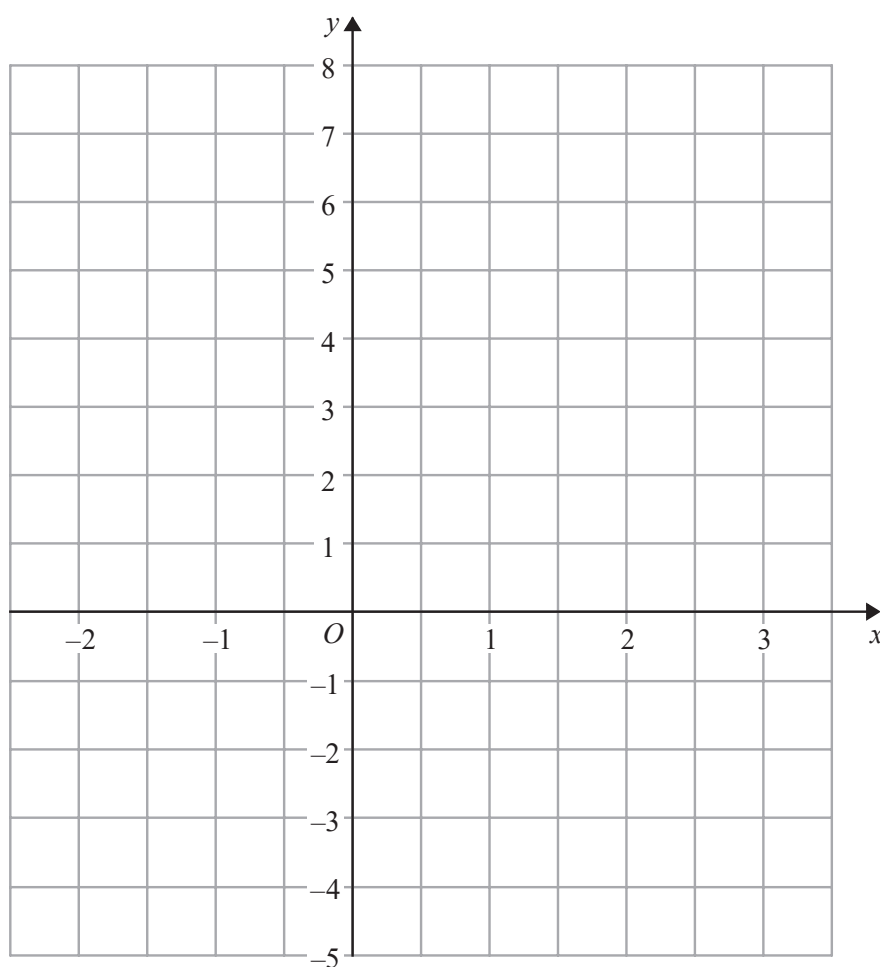


12 On the grid, draw the graph of $y = 2x - 3$ for values of x from -1 to 4



(Total for Question 12 is 3 marks)

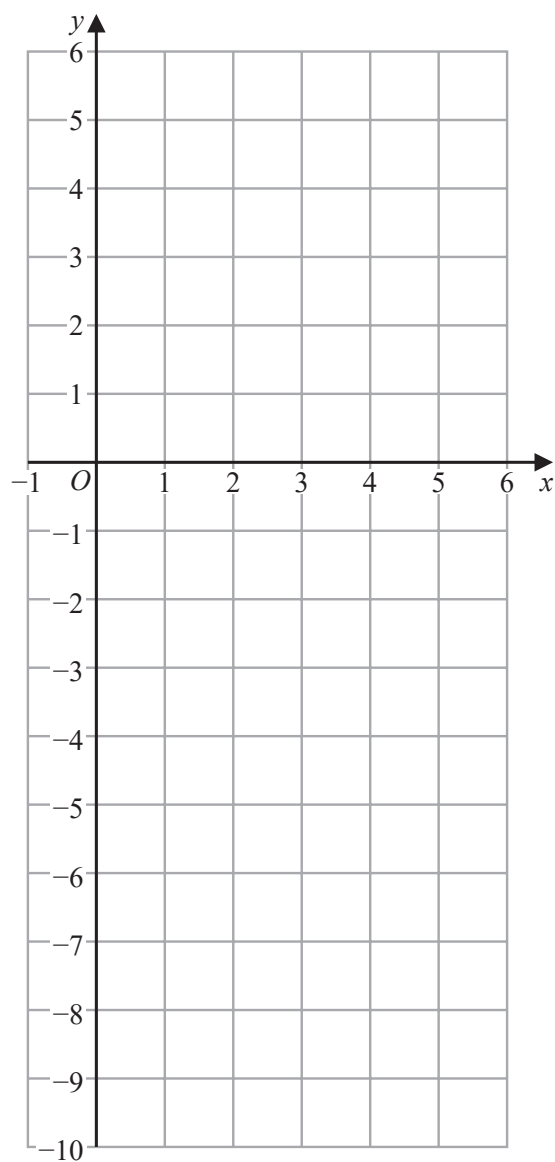
11 On the grid, draw the graph of $y = 3 - 2x$ for values of x from -2 to 3



(Total for Question 11 is 3 marks)



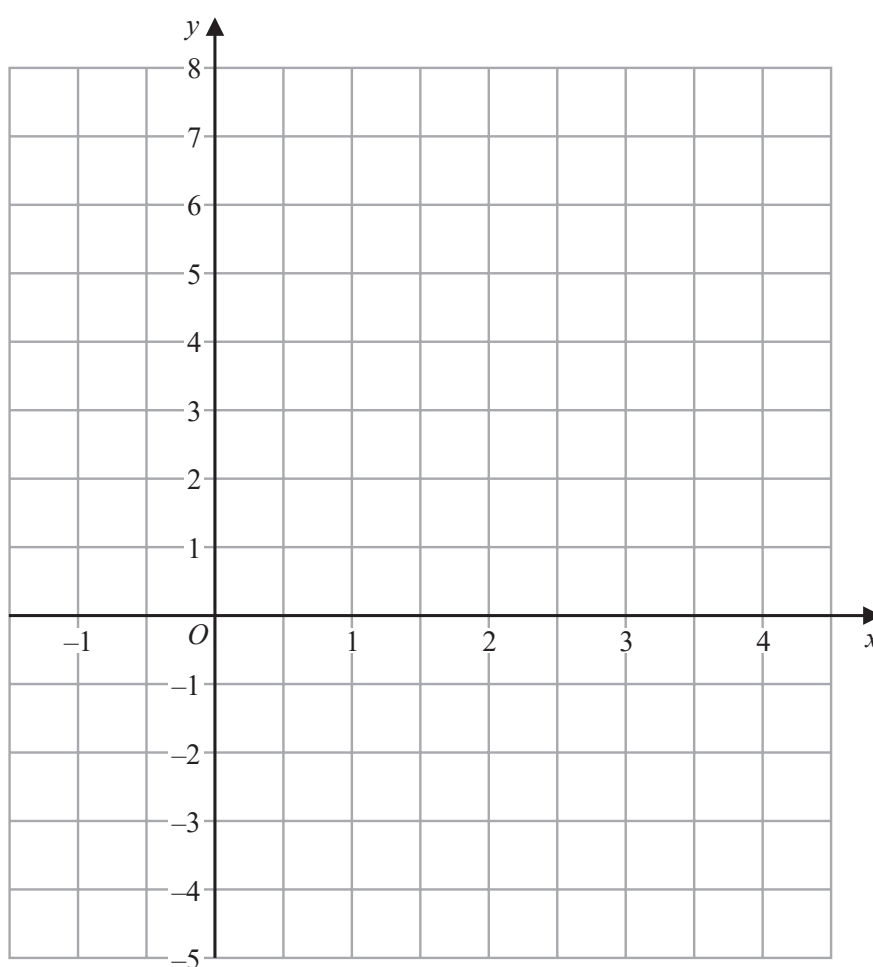
13 On the grid, draw the graph of $y = -2x + 3$ for values of x from -1 to 5



(Total for Question 13 is 3 marks)



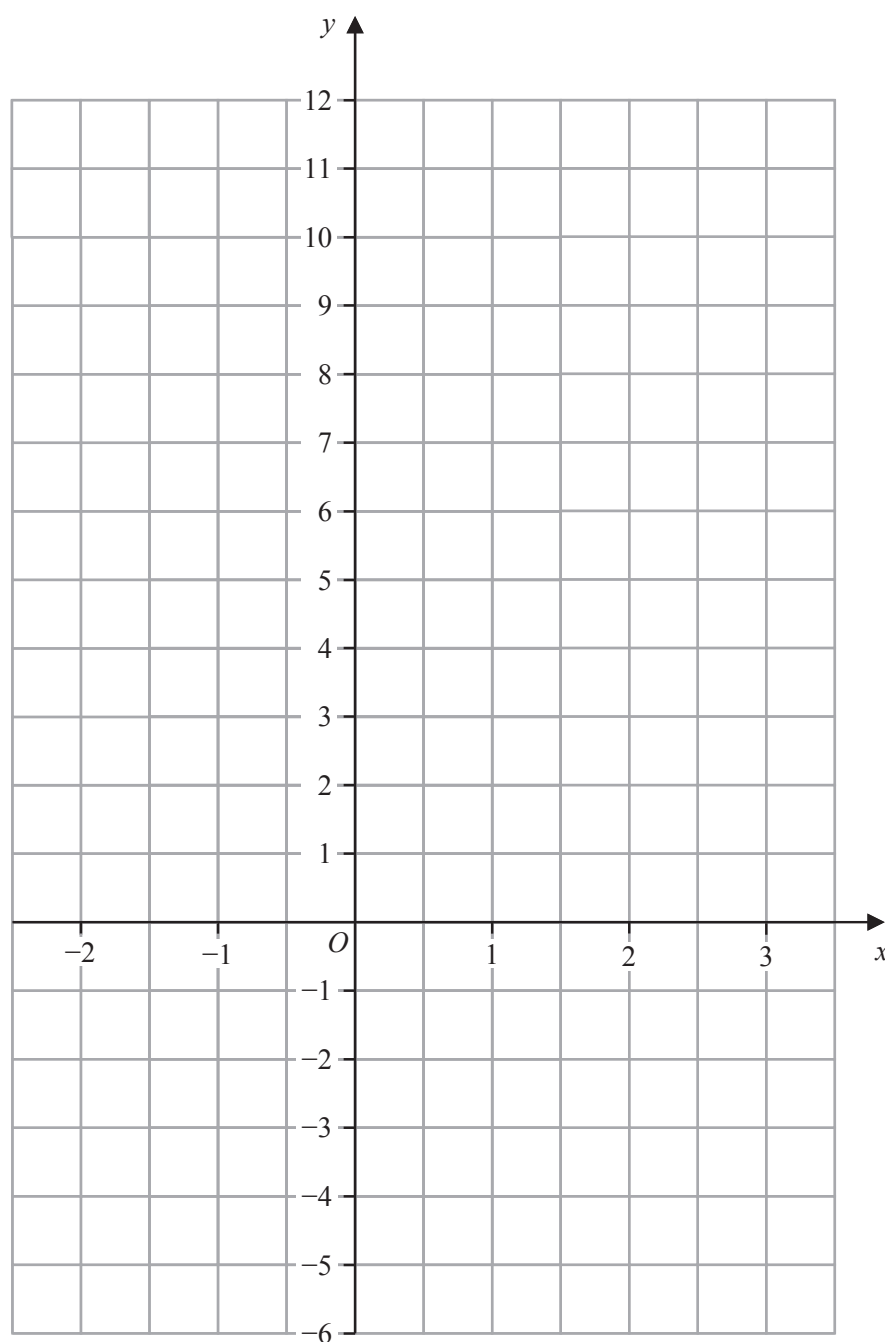
12 On the grid, draw the graph of $y = 4 - 2x$ for values of x from -1 to 4



(Total for Question 12 is 3 marks)



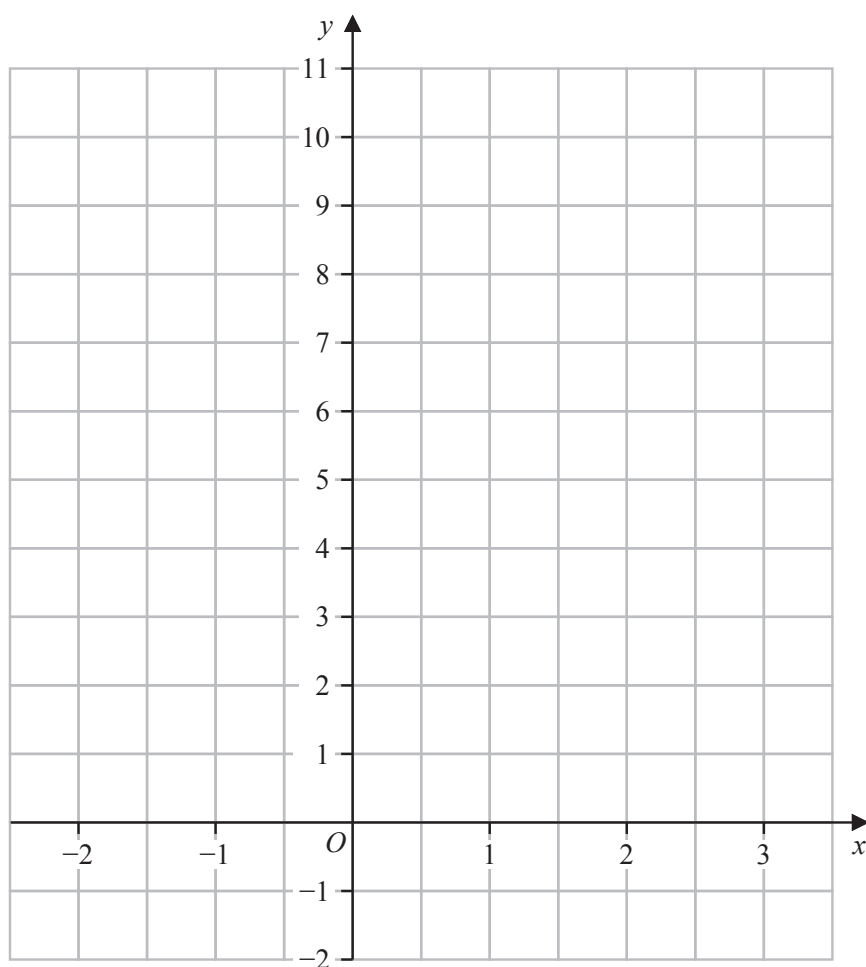
12 On the grid below, draw the graph of $y = 5 - 3x$ for values of x from -2 to 3



(Total for Question 12 is 3 marks)



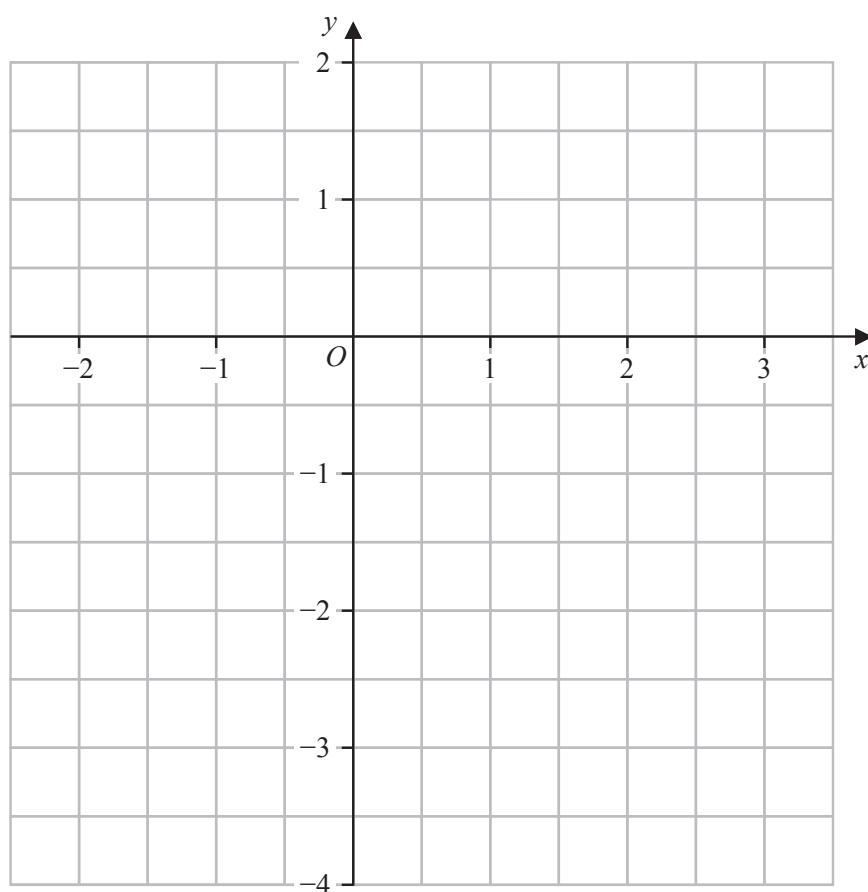
13 On the grid, draw the graph of $y = 5 - 2x$ for values of x from -2 to 3



(Total for Question 13 is 3 marks)



12 On the grid below, draw the graph of $y = \frac{1}{2}x - 1$ for values of x from -2 to 3



(Total for Question 12 is 3 marks)

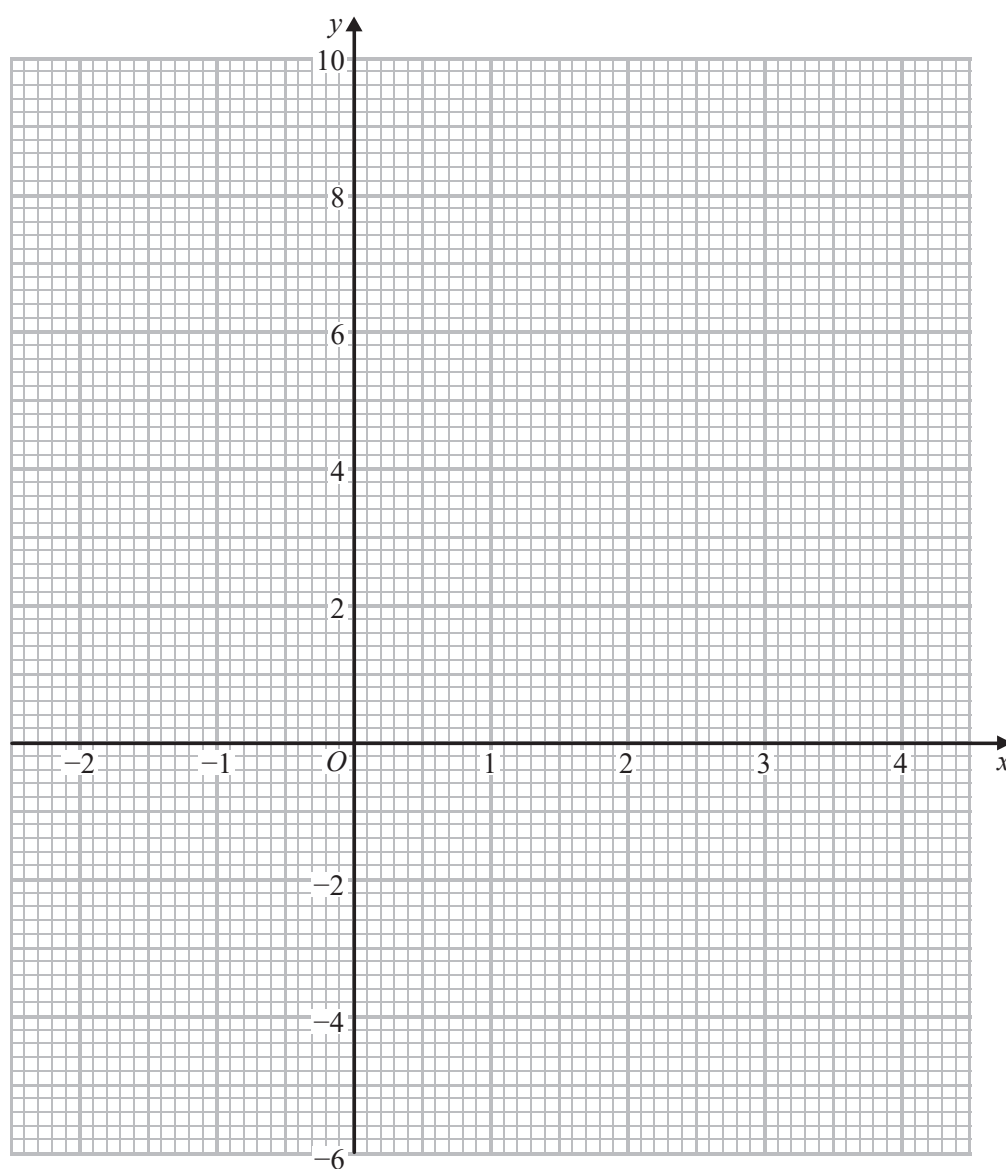


18 (a) Complete the table of values for $y = x^2 - 3x - 1$

x	-2	-1	0	1	2	3	4
y			-1		-3		3

(2)

(b) On the grid, draw the graph of $y = x^2 - 3x - 1$ for all values of x from -2 to 4



(2)

(Total for Question 18 is 4 marks)

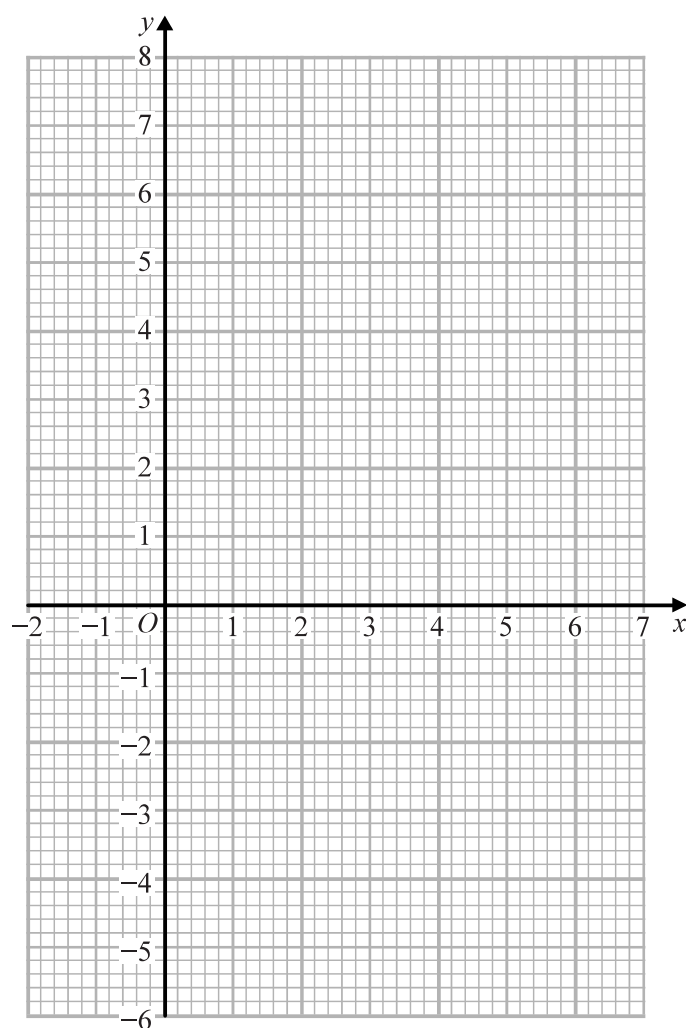


19 (a) Complete the table of values for $y = 1 + 5x - x^2$

x	-1	0	1	2	3	4	5	6
y		1		7	7		1	

(2)

(b) On the grid, draw the graph of $y = 1 + 5x - x^2$ for values of x from -1 to 6



(2)

(Total for Question 19 is 4 marks)

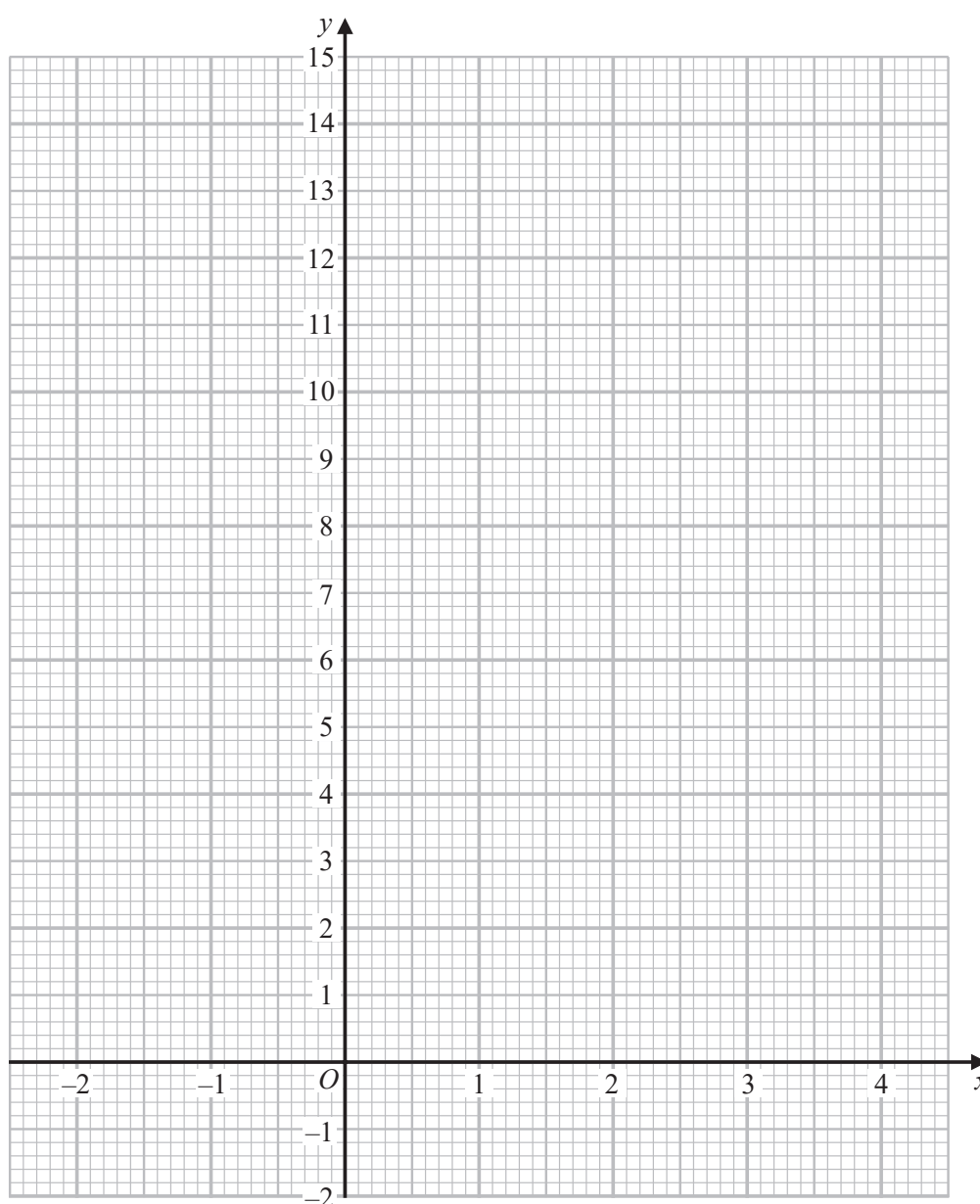


18 (a) Complete the table of values for $y = x^2 - 4x + 3$

x	-2	-1	0	1	2	3	4
y		8	3			0	

(2)

(b) On the grid, draw the graph of $y = x^2 - 4x + 3$ for values of x from -2 to 4



(2)

(Total for Question 18 is 4 marks)

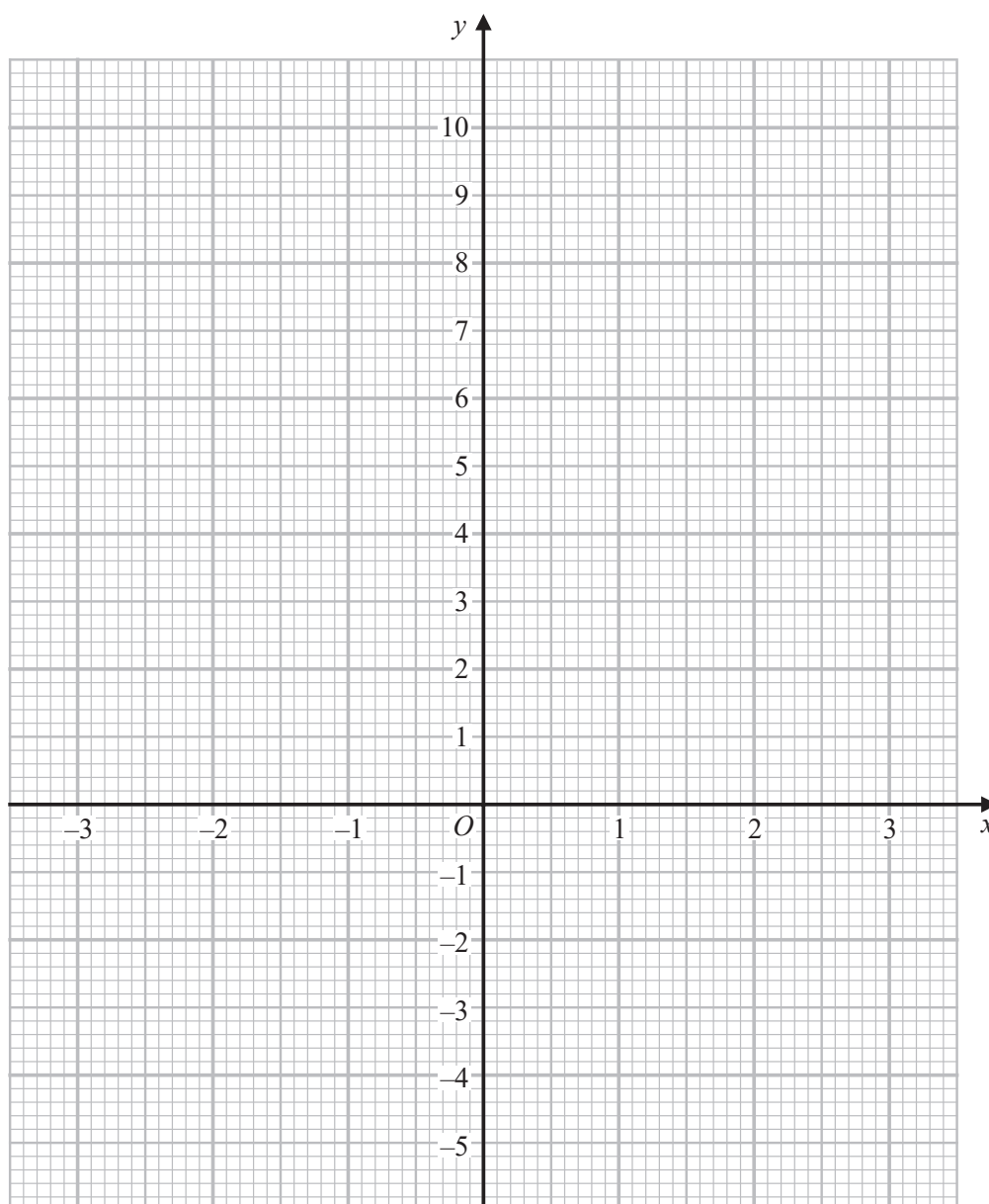


20 (a) Complete the table of values for $y = x^2 - x - 4$

x	-3	-2	-1	0	1	2	3
y		2			-4		

(2)

(b) On the grid below, draw the graph of $y = x^2 - x - 4$ for values of x from -3 to 3



(2)

(Total for Question 20 is 4 marks)

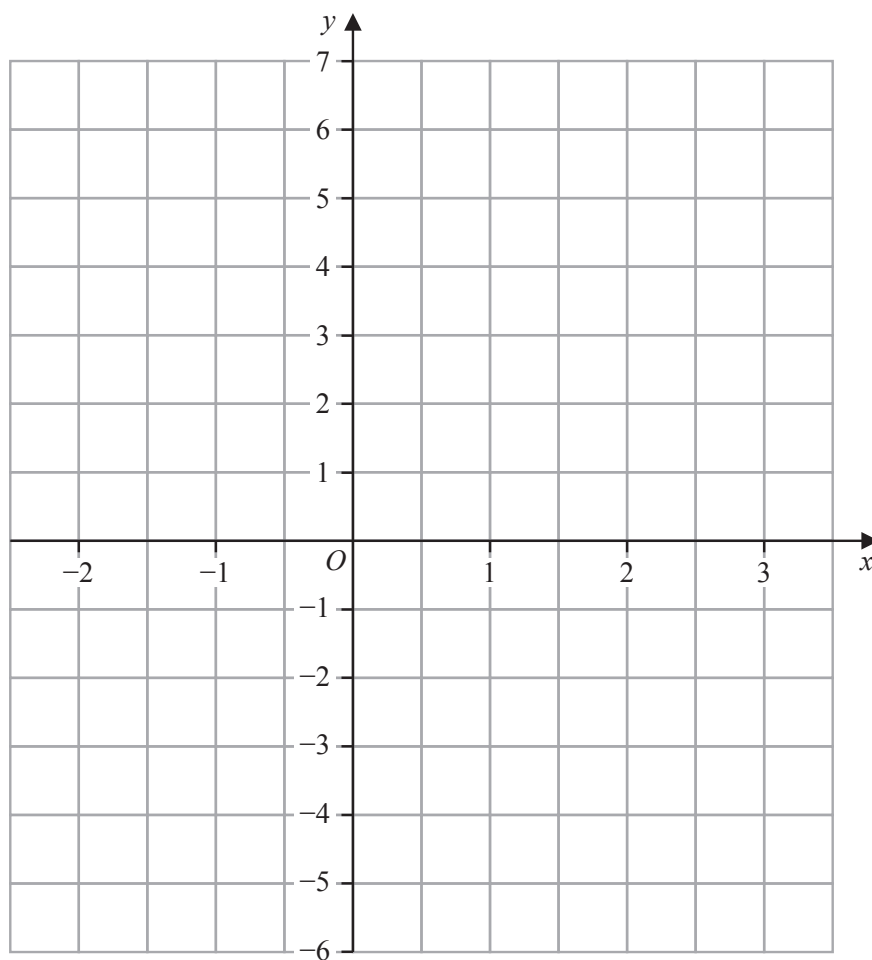


8 (a) Complete the table of values for $y = 2x - 1$

x	-2	-1	0	1	2	3
y			-1			5

(2)

(b) On the grid, draw the graph of $y = 2x - 1$ for values of x from -2 to 3



(2)

(Total for Question 8 is 4 marks)



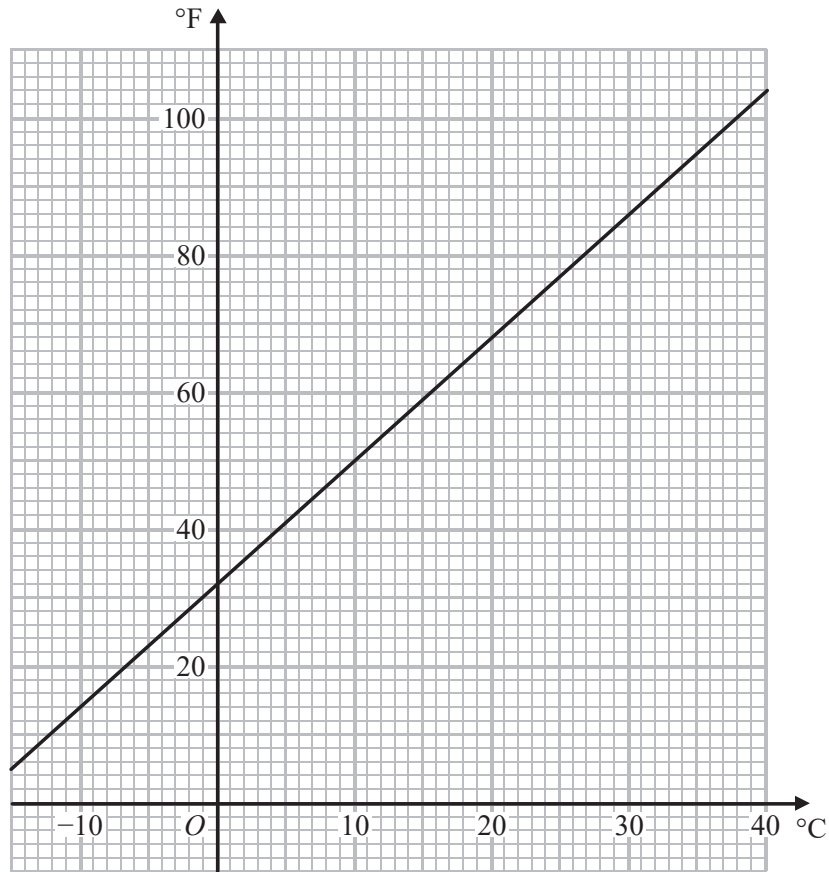
SUB-TOPIC A4c

REAL-LIFE GRAPHS & RATES OF CHANGE

Sub-topic A4c · 9 questions · 35 marks · lowest tariff first



- 9 You can use this graph to change between temperatures in degrees Celsius ($^{\circ}\text{C}$) and temperatures in degrees Fahrenheit ($^{\circ}\text{F}$).



The temperature in Dubai on Monday increased by 20°C from midnight to midday.

- (a) What is this temperature increase in degrees Fahrenheit?

..... $^{\circ}\text{F}$
(2)

Maninder says,

“ 30°C is the same as 86°F , therefore 60°C will be the same as 172°F .”

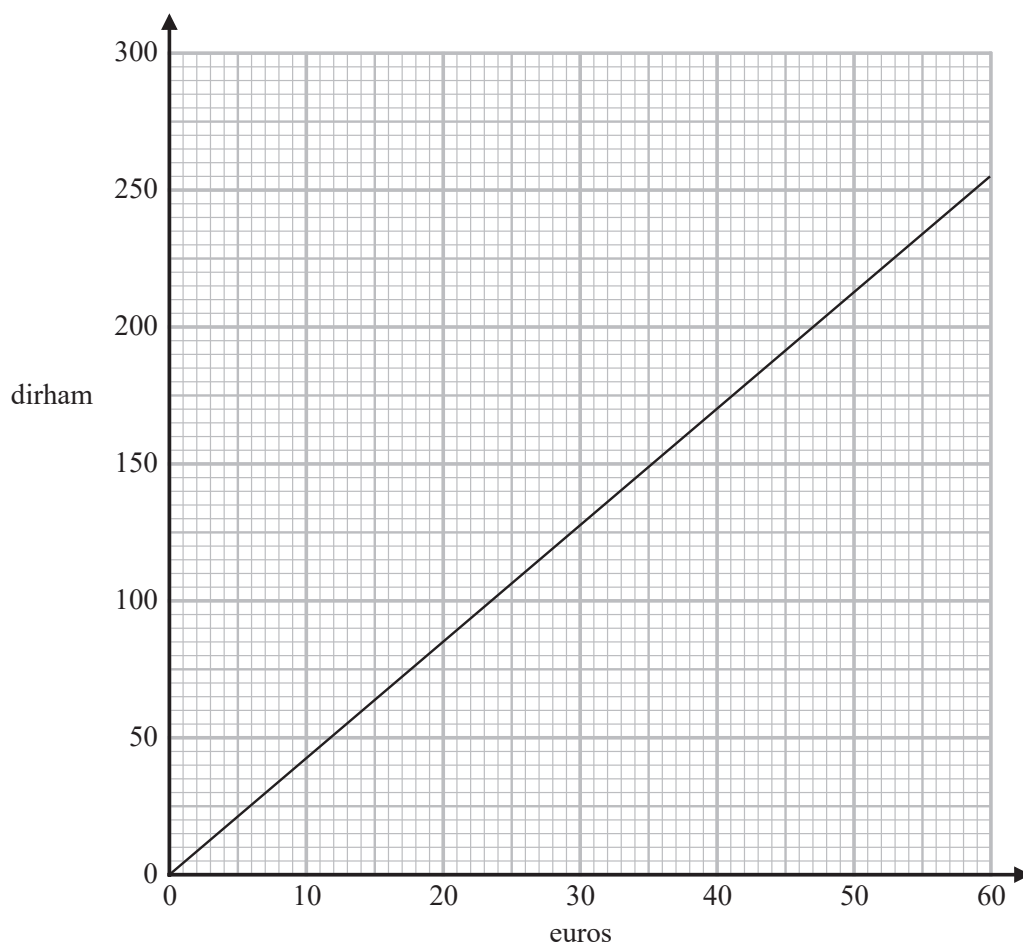
- (b) Is Maninder correct?
Give a reason for your answer.

.....
.....
(1)

(Total for Question 9 is 3 marks)



16 The graph below can be used to change between euros and dirham.



(a) Use the graph to change 200 dirham to euros.

..... euros
(1)

The price of a jacket is 90 euros in France and 400 dirham in the United Arab Emirates.

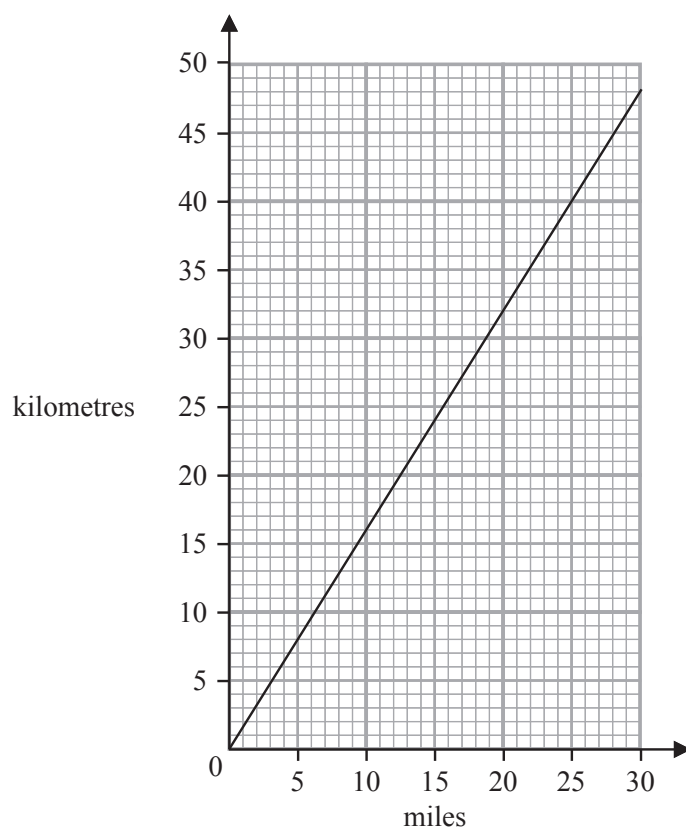
(b) In which of these countries is the jacket cheaper?
You must show your working.

.....
(2)

(Total for Question 16 is 3 marks)



10 This graph can be used to change between miles and kilometres.



(a) Use the graph to change 25 miles to kilometres.

..... kilometres
(1)

Amy gets travel expenses when she drives as part of her job.
She gets \$0.80 for every kilometre she drives.

For one journey Amy got \$19.20

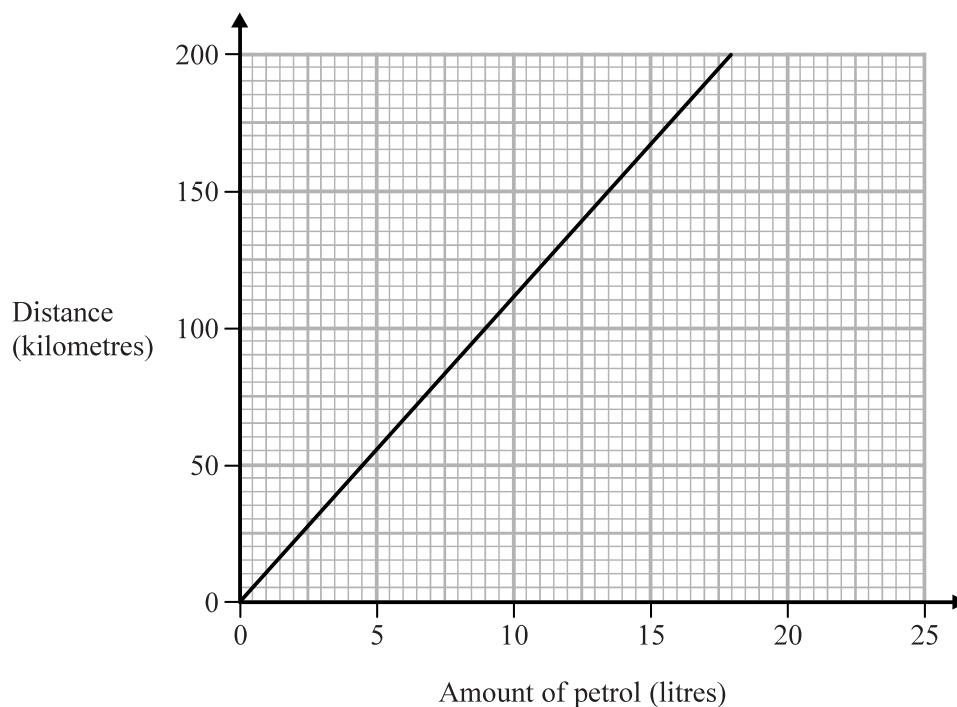
(b) Work out the number of miles she drove.

..... miles
(2)

(Total for Question 10 is 3 marks)



- 15 This graph can be used to find the distance travelled, in kilometres, by Chuck's car and the amount of petrol, in litres, used.



Chuck travels 150 kilometres in his car.

- (a) Using the graph, find the amount of petrol used.

..... litres
(1)

Chuck lives in Fiji.

He puts petrol into the petrol tank of his car.

This petrol costs him 16.24 Fiji dollars.

1 litre of petrol in Fiji costs 2.03 Fiji dollars.

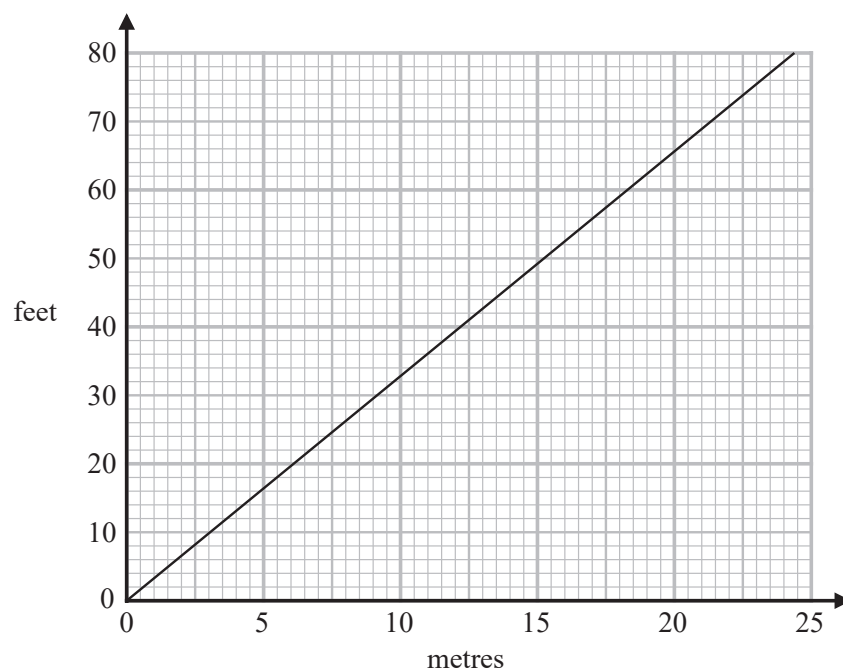
- (b) Find the distance that Chuck's car travels on the petrol he put in his car.

..... kilometres
(3)

(Total for Question 15 is 4 marks)



9 Below is a conversion graph to change between metres and feet.



(a) Use the graph to change

(i) 10 metres to feet,

.....feet

(ii) 50 feet to metres.

.....metres
(2)

Joss lives 820 metres above sea level.

Nicky lives 2850 feet above sea level.

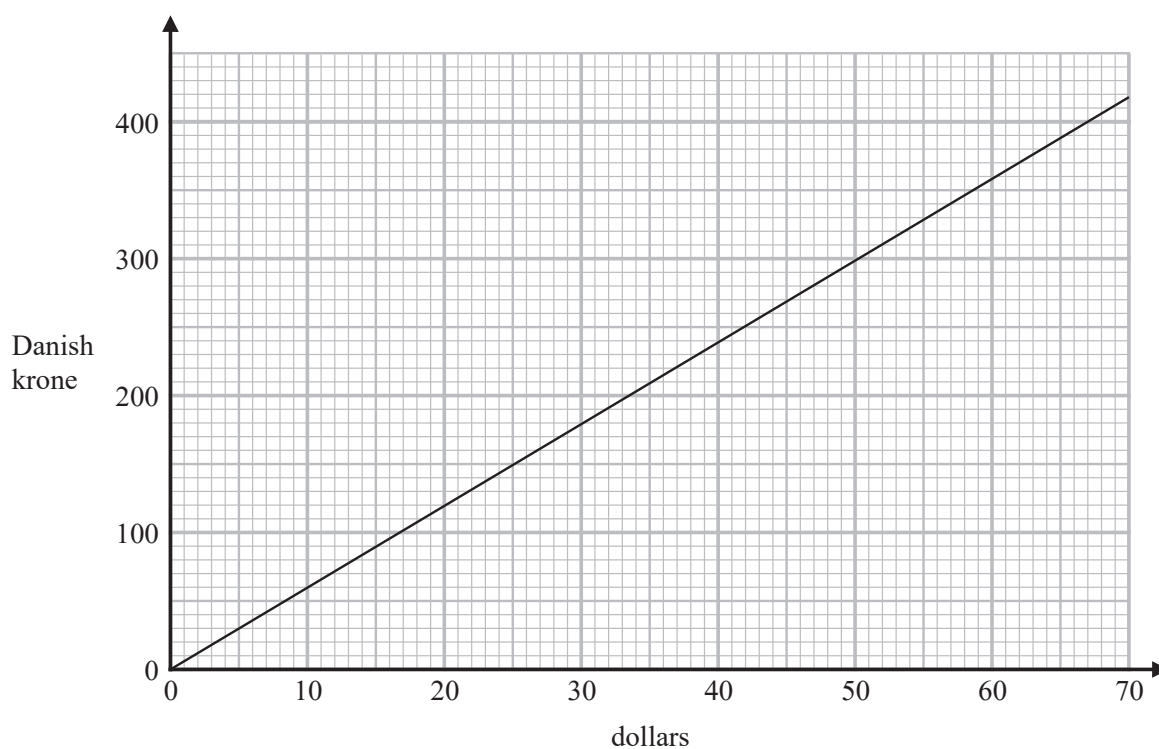
(b) Which is the greater, 820 metres or 2850 feet?

You must show how you get your answer.

(2)

(Total for Question 9 is 4 marks)

10 The graph below can be used to change between dollars and Danish krone.



(a) Change 40 dollars to Danish krone.

..... Danish krone
(1)

(b) Change 350 Danish krone to dollars.

..... dollars
(1)

Robert needs 950 Danish krone to pay for a hotel stay.
He has 170 dollars.

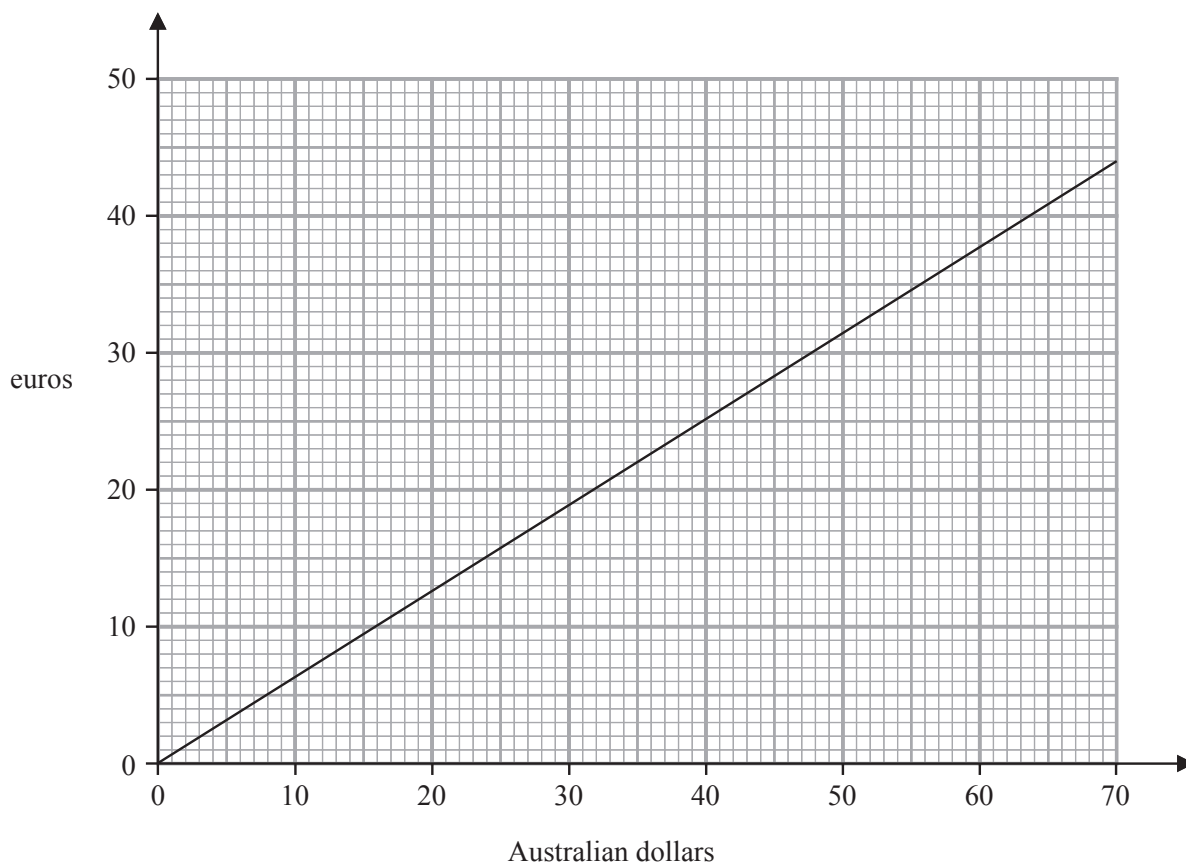
(c) Show that Robert has enough money to pay for his hotel stay.

(2)

(Total for Question 10 is 4 marks)



- 11 The graph below can be used to change between Australian dollars and euros.



- (a) Use the graph to change

- (i) 35 Australian dollars to euros

..... euros
(1)

- (ii) 20 euros to Australian dollars

..... Australian dollars
(1)

Lachlan changes 500 Australian dollars to euros.

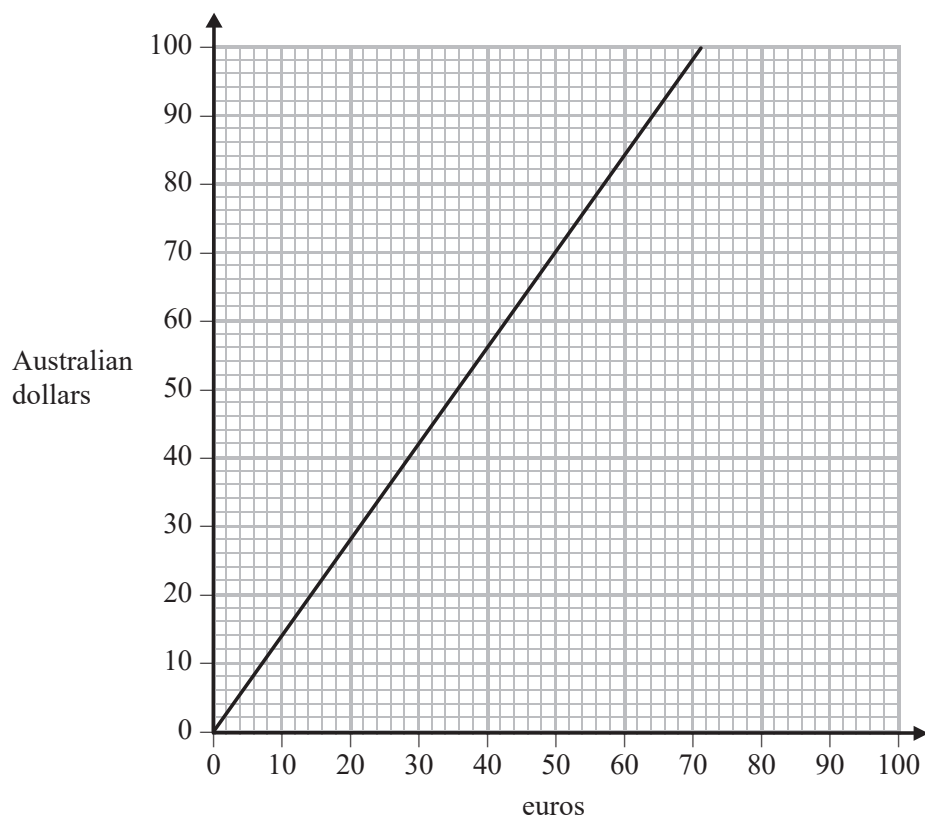
- (b) Work out how many euros he should receive.

..... euros
(2)

(Total for Question 11 is 4 marks)



13 Here is a conversion graph to change between euros and Australian dollars.



(a) Use the graph to change

(i) 50 euros to Australian dollars,

.....Australian dollars

(ii) 90 Australian dollars to euros.

.....euros

(2)

Sheila is on holiday in Italy and is going to the United Arab Emirates.
She knows that

1 Australian dollar = 2.7 dirhams

(b) Change 500 euros to dirhams.

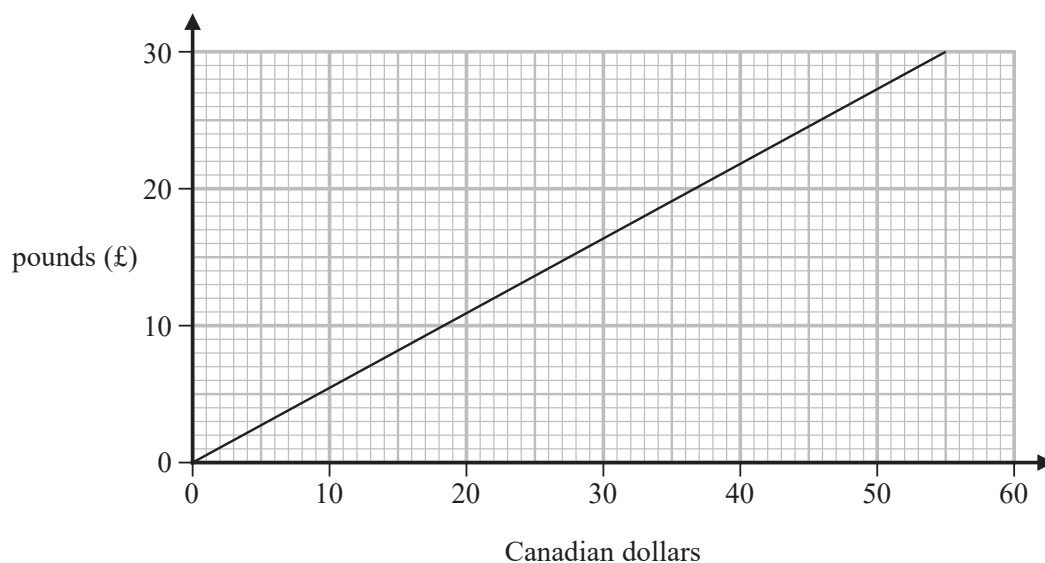
.....dirhams

(3)

(Total for Question 13 is 5 marks)



13 Here is a conversion graph to change between Canadian dollars and pounds (£)



(a) Use the graph to change

(i) 46 Canadian dollars to pounds (£)

£.....

(ii) £10 to Canadian dollars.

..... Canadian dollars
(2)

Alana is on holiday in London and is going to Paris.
She is going to book a hotel in Paris.
She knows that

$1 \text{ pound (£)} = 1.2 \text{ euros}$

(b) Change 528 euros to Canadian dollars.

..... Canadian dollars
(3)

(Total for Question 13 is 5 marks)



SUB-TOPIC A4d

GRAPH TRANSFORMATIONS & CIRCLE EQUATIONS

Sub-topic A4d · 1 question · 4 marks · lowest tariff first



- 25** Two circles, C_1 and C_2 , are drawn on a centimetre grid, with a scale of 1 cm for 1 unit on each axis.

The centre of circle C_1 is at the point with coordinates $(-1, 3)$ and the radius of C_1 is 13 cm.

The centre of circle C_2 is at the point with coordinates $(7, 18)$ and the radius of C_2 is 6 cm.

- (a) Work out the distance between the centre of C_1 and the centre of C_2

..... cm
(3)

- (b) Explain why circle C_1 intersects circle C_2

.....
.....
(1)

(Total for Question 25 is 4 marks)

TOTAL FOR PAPER IS 100 MARKS



MARK SCHEMES

official mark schemes, in the same order as the questions



22	e.g. $a = (-3 + 47) \div 2 (= 22)$ or $\frac{11+b}{2} = -19$ ($b = -38 - 11 = -49$) or method to add 25 to -3 or method to subtract 25 from 47 or method to subtract 30 from -19 or method to subtract 60 from 11		2	M1 for a correct method to find either coordinate or one coordinate correct. Look for correct method on their diagram, if used.
		$a = 22, b = -49$		A1 both correct
Total 2 marks				

23	Use of 2 hrs 42 mins = 2.7 hrs or 162 mins		4	B1
	e.g. $90 \times 2.7 (= 243)$ or e.g. $\frac{90}{60} \times 162 (= 243)$ or e.g. $\frac{S}{90} = \frac{2.7}{3}$			M1 for use of $D = S \times T$ (accept use of their time e.g. 90×2.42) or for setting up an equation using proportion
	e.g. "243" $\div 3$ or ($S =$) $90 \times \frac{2.7}{3}$			M1 (dep on M1) for their $D \div 3$ or for solving their equation
		81		A1
Total 4 marks				

25	$y = \frac{7-5x}{2}$ or $y = \frac{7}{2} - \frac{5}{2}x$ or $y = 3.5 - 2.5x$ or $2y = 7 - 5x$ oe		2	M1 for making y or $2y$ the subject
		-2.5		A1 for $-\frac{5}{2}$ or -2.5
				Total 2 marks

26	$\cos 35^\circ = \frac{15}{AB}$ or $\sin 55^\circ = \frac{15}{AB}$		5	M1
	$(AB =) \frac{15}{\cos 35^\circ} (=18.3)$ or $(AB =) \frac{15}{\sin 55^\circ} (=18.3)$			M1 NB 18.3(116...)
	'18.3' $\times 4$ (= 73.2)			M1 dep 1st M1
	$80 - '18.3' \times 4$ or $80 - '73.2'$			M1
		6.75		A1 accept 6.75 – 6.8
				Total 5 marks

Alternative Mark Scheme for Q26 [do not mix and match with above MS]				
26	15×4 (= 60)		5	M1
	$\cos 35^\circ = \frac{'60'}{AE}$ or $\sin 55^\circ = \frac{'60'}{AE}$			M1
	$(AE =) \frac{'60'}{\cos 35^\circ} (= 73.2)$ or $(AE =) \frac{'60'}{\sin 55^\circ} (= 73.2)$			M1 dep 1st M1
	$80 - '73.2'$			M1
		6.75		A1 accept 6.75 – 6.8
				Total 5 marks



Question	Working	Answer	Mark	Notes
25		$y = 1.5x - 3$	2	B2 oe B1 for $y = 1.5x + c$ (where c can be zero) or $y = mx - 3$ (where m is any value but $m \neq 0$ or 1.5) or $1.5x - 3$ or Gradient = 1.5 oe eg $m = \frac{3}{2}$ or a clear calculation for gradient oe (must be labelled or the meaning shown by their diagram or working)
				Total 2 marks

25	1 – 0.15 (= 0.85) or 100(%) – 15(%) (= 85(%)) or $\frac{612}{85}$ (= 7.2) oe		3	M1 may be seen embedded Do not allow (1 – 15%) unless processed correctly
	612 ÷ “0.85” oe or 612 ÷ “85” × 100 oe or “7.2” × 100			M1 for a complete method
	Correct answer scores full marks (unless from obvious incorrect working)	720		A1
				Total 3 marks

26	eg $y = -5x (+ k)$ or $y - a = -5(x - b)$ or eg $y = mx + 6$ or $y - 6 = m(x - 0)$ or eg $-5x + 6$ or $L = -5x + 6$		2	M1 for the equation of any line with gradient –5 other than $y = 2 - 5x$ or for the equation of any line passing through the point (0, 6) or the correct line missing ‘y =’ or with the wrong subject
	Correct answer scores full marks (unless from obvious incorrect working)	$y = -5x + 6$		A1 oe equation eg $y = 6 - 5x$ or $y - 6 = -5(x - 0)$ or $y + 5x = 6$
				Total 2 marks

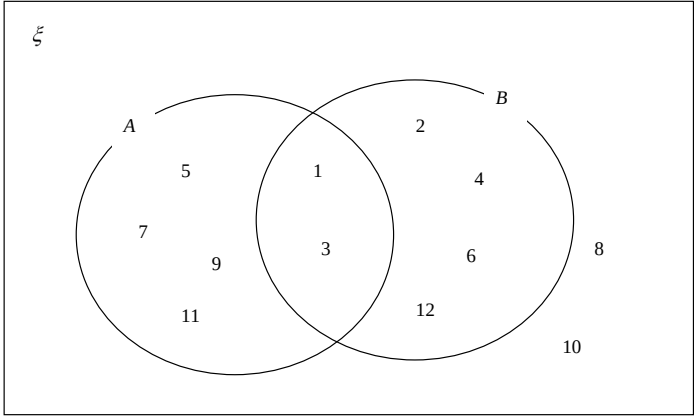
Question	Working	Answer	Mark	Notes
4 (a)		(2, -1)	1	B1
(b)		3.6	1	B1 Allow 3.4 to 3.8 and answers written as fractions in this range eg $3\frac{1}{2}$
(c)		D marked at (-1, -1)	1	B1
Total 3 marks				
5 (a)		24	1	B1 Accept 32 or 40 or 48
(b)		2	1	B1
(c)		No It is divisible by 3	1	B1 Only consider reason if No is given. Allow any reason that shows a clear understanding of why 57 is not prime, eg it is divisible by 19 or 3 or equal to 3×19 .
Total 3 marks				
6 (a)		correct pattern	1	B1 5 dots $\times$ 5 dots open square
(b)		16, 20	1	B1
(c)	eg 4×13 or $14 + 14 + 12 + 12$ or $12 \times 4 + 4$ or 24, 28, 32, 36, 40, 44, 48, 52 or a fully correct diagram		2	M1 allow 1 arithmetical error in continuing the sequence to 13 terms
(d)		52 $4n$	1	A1 B1 oe eg $n + n + n + n$ or $4 + (n - 1)4$
(e)	$90 \div 4$ (= 22.5) or 88		2	M1 or continuing the sequence to 88 or 92 with just one error
		22		A1
Total 7 marks				

Question	Working	Answer	Mark	Notes
13 (a)(i)		70	1	B1 Accept 69 – 71
(ii)		64	1	B1 Accept 63 – 65
(b)	500 euros = $(500 \div 50) \times "70"$ (= 700) oe "700" $\times 2.7$	1890	3	M1 M1 A1 1880 – 1900, ft answer to (a)(i)
Total 5 marks				
14	$(-2, -1)(-1, 1)(0, 3)(1, 5)(2, 7)(3, 9)(4, 11)$	Correct line between $x = -2$ and $x = 4$	3	B3 For a correct line between $x = -2$ and $x = 4$ B2 for a correct line through at least 3 of $(-2, -1)(-1, 1)(0, 3)(1, 5)$ $(2, 7)(3, 9)(4, 11)$ OR for all of $(-2, -1)(-1, 1)(0, 3)(1, 5)(2, 7)$ B1 $(3, 9)(4, 11)$ plotted, not joined. For at least 2 correct points stated (may be in a table) OR For a line drawn with a positive gradient through $(0, 3)$ OR for a line with the correct gradient.
Total 3 marks				

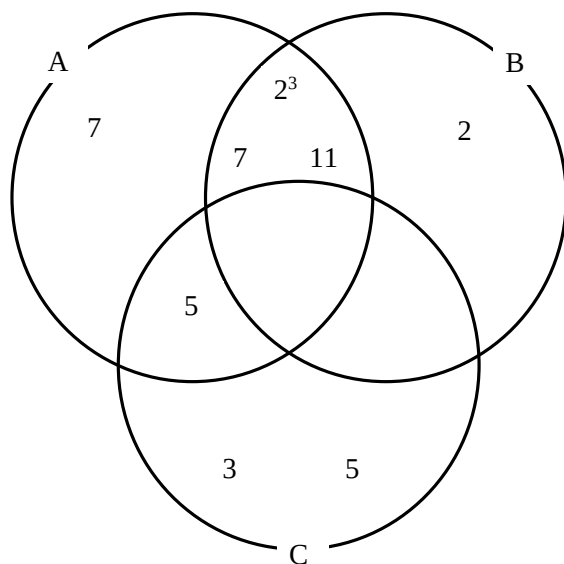
Question	Working	Answer	Mark	Notes
24	$3 \div 2 (=1.5)$ or eg $\frac{4-1}{2(-0)}$ or $c = 1$ $y = "1.5"x + c$ or $y = mx + 1$ or eg $y - 4 = m(x - 2)$	$y = 1.5x + 1$ oe	3	M1 for correct method to find gradient or the correct value of c . For gradient, may see a correct calculation, $3/2$ with evidence on diagram oe or $1.5x (+c)$ For value of c , allow $c = 1$, $y = 1$, ($L =$) $mx + 1$ oe M1 for use of $y = mx + c$ with either m or c or for ($L =$) $1.5x + 1$ (NB: $m \neq 0$) A1 oe eg $y - 4 = \frac{3}{2}(x - 2)$



18



20b



11	$(-1, -5)(0, -3)(1, -1)(2, 1)(3, 3)(4, 5)(5, 7)$	Correct line between $x = -1$ and $x = 5$	3	B3 For a correct line between $x = -1$ and $x = 5$ B2 for a correct line through at least 3 of $(-1, -5)(0, -3)(1, -1)(2, 1)(3, 3)(4, 5)(5, 7)$ OR for all of $(-1, -5)(0, -3)(1, -1)(2, 1)(3, 3)(4, 5)(5, 7)$ plotted, not joined. B1 For at least 2 correct points stated (may be in a table) OR For a line drawn with a positive gradient through $(0, -3)$ OR for a line with gradient of 2
Total 3 marks				
12	$(A =) \frac{1}{5} \times 75 (=15)$ oe or $\left(1 - \frac{1}{5}\right) \times 75 (=60)$ oe		3	M1
	$\frac{75 - "15"}{2} (=30)$ oe or $\frac{"75" - 15 - 4}{2} (=28)$ oe or $\frac{"75" - 15 + 4}{2} (=32)$ oe			M1 workings could be seen in an equation
		15, 32, 28		A1
Total 3 marks				
13		$T = 2p + 3c$	3	B3 [award B2 if $T = 2p + 3c$ is incorrectly simplified] (condone $T = 2 \times p + 3 \times c$) (B2) for $T = 2p + kc$ or $T = kp + 3c$ (k may be zero) or $2p + 3c$ (B1) for $2p$ or $3c$ or $T =$ a linear expression in p and c e.g. $T = p + c$
Total 3 marks				

12		<table><tr><td>x</td><td>-2</td><td>-1</td><td>0</td><td>1</td><td>2</td><td>3</td></tr><tr><td>y</td><td>-7</td><td>-4</td><td>-1</td><td>2</td><td>5</td><td>8</td></tr></table>	x	-2	-1	0	1	2	3	y	-7	-4	-1	2	5	8	Correct line between $x = -2$ and $x = 3$	3	B3 for a correct line between $x = -2$ and $x = 3$ (B2 for a correct straight line segment through at least 3 of $(-2, -7)$ $(-1, -4)$ $(0, -1)$ $(1, 2)$ $(2, 5)$ $(3, 8)$ or for all of $(-2, -7)$ $(-1, -4)$ $(0, -1)$ $(1, 2)$ $(2, 5)$ $(3, 8)$ plotted but not joined) (B1 for at least 2 correct points stated (may be in a table) or plotted or for a line drawn with a positive gradient through $(0, -1)$ or for a line with a gradient of 3)
		x	-2	-1	0	1	2	3											
y	-7	-4	-1	2	5	8													
$(-2, -7)$ $(-1, -4)$ $(0, -1)$ $(1, 2)$ $(2, 5)$ $(3, 8)$																			
					Total 3 marks														



26		$m = (-)4 \div 2$	$y = -2x - 1$	3	M1 B2	Correct method to work out the gradient accept $4 \div 2$ or $m = 2$ If not B2 then B1 for $L = -2x - 1$ or $-2x - 1$ or $y = 2x - 1$ or $y = -2x + c$
						Total 3 marks

Question	Working	Answer	Mark	Notes
27	$\sin 32 = \frac{BD}{3.1}$ $BD = 3.1 \times \sin 32 (= 1.6427\dots)$ $\cos 42 = \frac{3.1 \sin 32}{AB}$ Or $\frac{AB}{\sin 90} = \frac{3.1 \sin 32}{\sin 48}$ $AB = \frac{3.1 \sin 32}{\cos 42}$ or $AB = \frac{3.1 \sin 32}{\sin 48}$	2.21	5	M1 M1 Accept 1.6 or better M1 Dep or (AD =) "1.6.. x tan 42 {= 1.479} M1 Dep or (AB =) $\sqrt{1.479^2 + 1.6427^2}$ A1 2.21053... (Accept 2.20 → 2.22)
				Total 5 marks
				Total for Paper: 100 marks

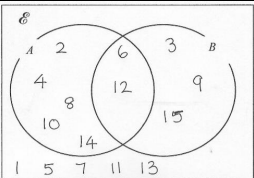


10	a		050	1	B1 $\pm 2^\circ$, condone 50
	b	7×2.5			M1 allow 6.8 – 7.2 for 7
			17.5	2	A1 accept 17-18
	c				M1 for a bearing of $115 \pm 2^\circ$ from A
					M1 for $20 \div 2.5 (= 8)$ or for an arc drawn 8 cm from B within tolerance
			C marked within tolerance	3	A1
Total 6 marks					

11	$(-2, -4) (-1, -1) (0, 2)$ $(1, 5) (2, 8) (3, 11) (4, 14)$	Correct line between $x = -2$ and $x = 4$	3	B3 for a correct line between $x = -2$ and $x = 4$ B2 for a correct straight line segment through at least 3 of $(-2, -4) (-1, -1) (0, 2) (1, 5) (2, 8) (3, 11) (4, 14)$ OR for all of $(-2, -4) (-1, -1) (0, 2) (1, 5) (2, 8) (3, 11) (4, 14)$ plotted but not joined OR for a line drawn with a positive gradient through $(0, 2)$ and clear intention to use a gradient of 3 B1 for at least 2 correct points stated (may be in a table) OR for a line drawn with a positive gradient through $(0, 2)$ OR for a line with a gradient of 3
Total 3 marks				

15	$15 \times 60 \times 60 (= 54\,000)$ oe or $\frac{60}{12} \times 60 \times 15 (= 4500)$ oe or $5 \times \frac{60}{12} \times 60 (= 1500)$ oe		4	M1	M2 for $\frac{15 \times 60 \times 60 \times 5}{12}$ (= 22 500)
	$'54000' \div 12 \times 5 (= 22\,500)$ oe or $'4500' \times 5 (= 22\,500)$ oe or $'1500' \times 15 (= 22\,500)$ oe			M1	
	$'22\,500' \times 0.002$ oe			M1	dep on M2 for a complete method
		45		A1	
Total 4 marks					

16	<table><tr><td>x</td><td>-2</td><td>-1</td><td>0</td><td>1</td><td>2</td><td>3</td></tr><tr><td>y</td><td>15</td><td>11</td><td>7</td><td>3</td><td>-1</td><td>-5</td></tr></table>	x	-2	-1	0	1	2	3	y	15	11	7	3	-1	-5	Correct line between $x = -2$ and $x = 3$	3	B3	for a correct line between $x = -2$ and $x = 3$
	x	-2	-1	0	1	2	3												
y	15	11	7	3	-1	-5													
$(-2, 15) (-1, 11) (0, 7) (1, 3) (2, -1) (3, -5)$	$(B2$ for a correct straight line segment through at least 3 of $(-2, 15) (-1, 11) (0, 7) (1, 3) (2, -1) (3, -5)$ or for all of $(-2, 15) (-1, 11) (0, 7) (1, 3) (2, -1) (3, -5)$ plotted but not joined) $(B1$ for at least 2 correct points stated (may be in a table) or plotted or for a line drawn with a negative gradient through $(0, 7)$ or for a line with a gradient of -4)																		
					Total 3 marks														

10	e.g. $4 \times 6 (= 24)$		4	M1	for finding the perimeter of square														
	e.g. $(\text{“}24\text{”} - 6) \div 2 (= 9)$			M1	for finding the length of the longest side in the triangle														
	e.g. $18 \times 3 + 6$ or $\text{“}9\text{”} \times 6 + 6$			M1	oe, allow their length of the longest side in the triangle as long as clearly stated or identified (could be on diagram)														
		60		A1	dep on M2														
Total 4 marks																			
11	<table><tr><td>x</td><td>-1</td><td>0</td><td>1</td><td>2</td><td>3</td><td>4</td></tr><tr><td>y</td><td>-5</td><td>-2</td><td>1</td><td>4</td><td>7</td><td>10</td></tr></table>	x	-1	0	1	2	3	4	y	-5	-2	1	4	7	10	3	3	B3 for a correct line between -1 and 4 B2 for a correct straight line segment through at least 3 of (-1, -5)(0, -2)(1, 1)(2, 4)(3, 7)(4, 10) OR for all of (-1, -5)(0, -2)(1, 1)(2, 4)(3, 7)(4, 10) plotted but not joined B1 for at least 2 correct points plotted or stated (ignore incorrect points) OR for a line drawn with a positive gradient through (0, -2) and clear intention to use a gradient of 3 OR a line drawn with a gradient of 3	
x	-1	0	1	2	3	4													
y	-5	-2	1	4	7	10													
Total 3 marks																			
12				3	B3 for all entries correct (B2 for 3 sections of the Venn diagram correct) (B1 for 2 sections of the Venn diagram correct)														
Total 3 marks																			

4	$8 + 3 \times 4.50 (= 21.5)$			M1
	$(30 - '21.5') \div 1.1 (= 7.72... \text{ or } 7) \text{ or } 8.5 \div 1.1 (= 7.72... \text{ or } 7)$			M1 method to find the number of packets of seeds – could be repeated addition
	$30 - '21.5' - '7' \times 1.1 \text{ or } 8.5 - 7.7$			M1 complete method to find the change
		0.8(0)	4	A1
				Total 4 marks

5	a	$(-2, 3)$	1	B1
	b	$(\times) \text{ at } (4, -2)$	1	B1 condone missing label as long as unambiguous
	c	$y = -3$	1	B1 oe
				Total 3 marks

14	<table><tr><td>x</td><td>-2</td><td>-1</td><td>0</td><td>1</td><td>2</td><td>3</td></tr><tr><td>y</td><td>7</td><td>4</td><td>1</td><td>-2</td><td>-5</td><td>-8</td></tr></table>	x	-2	-1	0	1	2	3	y	7	4	1	-2	-5	-8	Correct line between $x = -2$ and $x = 3$	3	B3 for a correct line between $x = -2$ and $x = 3$
	x	-2	-1	0	1	2	3											
y	7	4	1	-2	-5	-8												
(-2, 7) (-1, 4) (0, 1) (1, -2) (2, -5) (3, -8)	(B2 for a correct straight line segment through at least 3 of (-2, 7) (-1, 4) (0, 1) (1, -2) (2, -5) (3, -8) or for all of (-2, 7) (-1, 4) (0, 1) (1, -2) (2, -5) (3, -8) plotted but not joined)																	
				(B1 for at least 2 correct points stated (may be in a table) or plotted or for a line drawn with a negative gradient through (0,1) or for a line with a gradient of -3)														
Total 3 marks																		

14	$(-2, -7), (-1, -5), (0, -3), (1, -1), (2, 1), (3, 3), (4, 5)$	line $y = 2x - 3$ drawn	3	B3 For a correct line between $x = -2$ and $x = 4$ (B2 for a straight line segment through at least 3 of the given points OR for all of the points plotted and not joined OR for a line drawn through $(0, -3)$ with a clear attempt at a gradient of 2 (eg a line through $(0, -3)$ and $(1, -1)$)) (B1 for at least 2 correct points stated or plotted (may be in table); ignore any incorrect points either plotted or evaluated OR for a line drawn with positive gradient through $(0, -3)$ OR for a straight line with gradient 2)
Total 3 marks				

25	(a)	eg $2y = -7x(+10)$		2	M1 for $2y = -7x(+10)$ or an answer of $-3.5x$ oe or an answer of 3.5 oe
			-3.5		A1 oe
	(b)		$(0, 5)$	1	B1 cao
					Total 3 marks



25	$-4x \leq 11-3$ or $-4x \leq 8$ or $-x \leq 2$ or $3-11 \leq 4x$ or $-8 \leq 4x$		2	M1 allow equals sign or condone incorrect inequality sign for M1 only
		$x \geq -2$		A1 allow $-2 \leq x$ SCB1 for x and -2 with an incorrect sign between them or -2 as an answer
				Total 2 marks

26	$3 \div 2 (=1.5 \text{ or } \frac{3}{2})$ or eg $\frac{5-1}{4(-0)}$ or $c = -1$		3	M1	for correct method to find gradient or the correct value of c for gradient, may see a correct calculation or $\frac{3}{2}$ oe or $1.5x (+c)$ oe for value of c , allow $c = -1, y = -1, (L =) mx - 1$ oe
	$y = "1.5"x (+c)$ or $y = mx - 1$ or eg $y - 5 = m(x - 4)$			M1	for use of $y = mx + c$ with either m or c correct (NB: $m \neq 0$) or for $(L =) 1.5x - 1$ oe
		$y = \frac{3}{2}x - 1$		A1	oe eg $y = 1.5x - 1$
					Total 3 marks



14	$(-1, -3) (0, -1) (1, 1)$ $(2, 3) (3, 5) (4, 7)$	For a correct line between $x = -1$ and $x = 4$	3	B3 for a correct line between $x = -1$ and $x = 4$ B2 for a correct straight line segment through at least 3 of $(-1, -3) (0, -1) (1, 1) (2, 3) (3, 5) (4, 7)$ or for all of $(-1, -3) (0, -1) (1, 1) (2, 3) (3, 5) (4, 7)$ plotted but not joined B1 for at least 2 correct points stated (may be in a table) or plotted or for a line drawn with a positive gradient through $(0, -1)$ or for a line with a gradient of 2
Total 3 marks				

15	e.g. $\frac{4}{10}$ or 0.4 or 25% or 0.25		4	M1 for a correct conversion
	e.g. $1 - \frac{4}{10} - \frac{1}{4} \left(= \frac{7}{20} \right)$ or $1 - "0.4" - "0.25" (= 0.35)$ or $100 - 40 - "25" (= 35)$			M1 for a complete method to find proportion of money spent on petrol
	e.g. "their $\frac{7}{20}$ ":1 or "their 0.35":1 or "their 35":100			M1 for an equivalent ratio
		7 : 20		A1 cao SC M3 for 20 : 7
Total 4 marks				



11	<table><tr><td>x</td><td>-2</td><td>-1</td><td>0</td><td>1</td><td>2</td><td>3</td></tr><tr><td>y</td><td>5</td><td>3</td><td>1</td><td>-1</td><td>-3</td><td>-5</td></tr></table>	x	-2	-1	0	1	2	3	y	5	3	1	-1	-3	-5	Correct line between $x = -2$ and $x = 3$	3	B3 for a correct line between $x = -2$ and $x = 3$ (B2 for a correct straight line segment through at least 3 of $(-2, 5)$ $(-1, 3)$ $(0, 1)$ $(1, -1)$ $(2, -3)$ $(3, -5)$ or for all of $(-2, 5)$ $(-1, 3)$ $(0, 1)$ $(1, -1)$ $(2, -3)$ $(3, -5)$ plotted but not joined) (B1 for at least 2 correct points stated (may be in a table) or plotted or for a line drawn with a negative gradient through $(0, 1)$ or for a line with a gradient of -2)
	x	-2	-1	0	1	2	3											
y	5	3	1	-1	-3	-5												
$(-2, 5)$ $(-1, 3)$ $(0, 1)$ $(1, -1)$ $(2, -3)$ $(3, -5)$																		
				Total 3 marks														

Question	Working	Answer	Mark	Notes
21	$[k =] \frac{6+17}{2}$ or $[k =] 6 + \frac{17-6}{2}$ or $[j =] 4 + 2(15-4)$ or $[j =] 15 + (15-4)$ or $\frac{4+j}{2} = 15$		3	M1
	Correct answers score full marks (unless from obvious incorrect working) 1 correct answer will score M1A1 and both will score M1A1A1	26		A1
		11.5		A1 oe eg $\frac{23}{2}$ both answers the wrong way round scores M1A1 unless the correct answers are clearly labelled in working space
				Total 3 marks

18		Fully correct angle bisector with all relevant arcs shown	2	B2 for a fully correct angle bisector with all relevant arcs shown If not B2 then B1 for all arcs and no angle bisector drawn or for a correct angle bisector within the guidelines but no correct arcs or insufficient correct arcs
				Total 2 marks

19	<table><tr><td>x</td><td>-2</td><td>-1</td><td>0</td><td>1</td><td>2</td><td>3</td><td>4</td></tr><tr><td>y</td><td>10</td><td>7.5</td><td>5</td><td>2.5</td><td>0</td><td>-2.5</td><td>-5</td></tr></table>	x	-2	-1	0	1	2	3	4	y	10	7.5	5	2.5	0	-2.5	-5	Correct line	3	B3 for a correct line between $x = -2$ and $x = 4$ If not B3 then award B2 for a line segment through at least 3 of $(-2, 10), (-1, 7.5), (0, 5), (1, 2.5), (2, 0), (3, -2.5), (4, -5)$ or all points plotted correctly If not B2 then award B1 for at least 2 correct points plotted or stated (may be seen in a table) or for a line drawn with a negative gradient through $(0, 5)$ or for a line with a gradient of -2.5
x	-2	-1	0	1	2	3	4													
y	10	7.5	5	2.5	0	-2.5	-5													
				Total 3 marks																

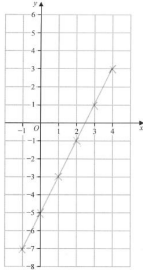
International GCSE Maths				
Where the mark scheme states otherwise, the correct answer, unless clearly obtained by an incorrect method, should be taken to imply a correct method				
Q	Working	Answer	Mark	Notes
1	(a)(i)	20	1	B1 cao
	(ii)	25	1	B1 cao
	(b)(i)	cube	1	B1 ignore misspelling
	(ii)	factor	1	B1 ignore misspelling
Total 4 marks				
2	(a)	8	1	B1 cao
	(b)	Correct shape drawn	1	B1
	(c)	2	1	B1 cao
	(d)	240	1	B1 cao
Total 4 marks				
3	(a)	Neptune	1	B1 cao allow -210
	(b)	630	1	B1 allow -630
Total 2 marks				
4	(a)(i)	(2, 6)	1	B1 cao
	(ii)	(-4, 3)	1	B1 cao
	(b)	Cross at (4, 2)	1	B1 cao
Total 3 marks				



12	(a)	$(0 \times 2) + (1 \times 5) + (2 \times 11) + (3 \times 7) + (4 \times 4) + (5 \times 1)$ (= 69) or $0 + 5 + 22 + 21 + 16 + 5$ (= 69)		3	M1 for at least 4 products added (need not be evaluated) or for 71
		"69" $\div$ 30			M1 dep on M1
		<i>Working not required, so correct answer scores full marks (unless from obvious incorrect working)</i>	2.3		A1
	(b)		0.21	1	B1 oe
Total 4 marks					

13	<table><tr><td>x</td><td>-2</td><td>-1</td><td>0</td><td>1</td><td>2</td><td>3</td><td>4</td></tr><tr><td>y</td><td>-7</td><td>-5</td><td>-3</td><td>-1</td><td>1</td><td>3</td><td>5</td></tr></table>	x	-2	-1	0	1	2	3	4	y	-7	-5	-3	-1	1	3	5	Correct line between $x = -2$ and $x = 4$	3	B3 for a correct line between $x = -2$ and $x = 4$ (B2 for a correct straight line segment through at least 3 of $(-2, -7)$ $(-1, -5)$ $(0, -3)$ $(1, -1)$ $(2, 1)$ $(3, 3)$ $(4, 5)$) or for all of $(-2, -7)$ $(-1, -5)$ $(0, -3)$ $(1, -1)$ $(2, 1)$ $(3, 3)$ $(4, 5)$ plotted but not joined) (B1 for at least 2 correct points stated (may be in a table) or plotted or for a line drawn with a positive gradient through $(0, -3)$ or for a line with a gradient of 2)
	x	-2	-1	0	1	2	3	4												
y	-7	-5	-3	-1	1	3	5													
	$(-2, -7)$ $(-1, -5)$ $(0, -3)$ $(1, -1)$ $(2, 1)$ $(3, 3)$ $(4, 5)$			Total 3 marks																

24		$y = -\frac{1}{2}x + 1$	3	B3 for $y = -\frac{1}{2}x + 1$ oe but must be in form $y = mx + c$ eg $y = -0.5x + 1$ (B2 for $(L \Rightarrow) -\frac{1}{2}x + 1$ or for $y = -\frac{1}{2}x + c$ or for $y = mx + 1$ where $m \neq 0$ or for a correct equation in the incorrect form eg $2y + x = 2$) (B1 for $(L \Rightarrow) -\frac{1}{2}x + c$ or $(L \Rightarrow) mx + 1$ where $m \neq 0$ or $m = -\frac{1}{2}$ or gradient = $-\frac{1}{2}$ oe eg $\frac{3 - (-1)}{-4 - 4}$)
				Total 3 marks

11	(-1, -7) (0, -5) (1, -3) (2, -1) (3, 1) (4, 3) 	For a correct line between $x = -1$ and $x = 4$	3	B3 for a correct line between $x = -1$ and $x = 4$ B2 for a correct straight line segment through at least 3 of (-1, -7) (0, -5) (1, -3) (2, -1) (3, 1) (4, 3) or for all of (-1, -7) (0, -5) (1, -3) (2, -1) (3, 1) (4, 3) plotted but not joined B1 for at least 2 correct points stated (may be in a table) or for a line drawn with a positive gradient through (0, -5) or for a line with a gradient of 2
Total 3 marks				

12	eg $\frac{42}{35}$ (=1.2) or $\frac{35}{42}$ (=0.833...) or $\frac{54}{35}$ (=1.54...) or $\frac{35}{54}$ (=0.648...)		3	M1 a method to find a correct ratio
	eg $54 \times "1.2"$ or $54 \div "0.833..."$ or $42 \times "1.54..."$ or $42 \div "0.648..."$			M1 for a complete method
	Correct answer scores full marks (unless from obvious incorrect working)	64.8		A1 accept 64.80
Total 3 marks				

Question		Working	Answer	Mark	Notes	
5	(i)		81	1	B1	
	(ii)		10	1	B1	
	(v)		23	1	B1	
						Total 3 marks
6	(a)	$\frac{40.194}{8.76}$	4.5883(56164)	2	M1 A1	40.194 or 8.76 seen or implied by 4.588 At least 4 digits reqd after decimal point.
	(b)		4.6	1	B1ft	For 4.6 or ft from (a) if at least 3 s.f.
						Total 3 marks
7	(a)		(2, 3)	1	B1	
	(b)		D	1	B1	
	(c)	$(-2 + 4) \div 2$ or $(3 + 1) \div 2$	(1, 2)	2	M1 A1	
						Total 4 marks



13	(a)			310	1	B1 for 308 – 312
	(b)	[8.3, 8.7]			4	B1 for 8.3 – 8.7
		'[8.3, 8.7]' × 20 (= '[166, 174]')	24 ÷ 20 (=1.2)			M1
		'[166, 174]' ÷ 24 ([6.9....., 7.3])	'[8.3, 8.7]' ÷ '1.2' ([6.9....., 7.3])			M1
				7		A1
Total 5 marks						

14	(a)	$\frac{5+13}{2}$ or $\frac{-4+1}{2}$		2	M1 for a correct method to find one coordinate or for one coordinate correct or for (-1.5, 9)
			(9, -1.5)		A1 Accept $(9, -\frac{3}{2})$
	(b)		-3	1	B1
	(c)		No with reason	1	B1 No (oe) and e.g. line goes through (100, -298) or (101.3..), -302) or $(\frac{304}{3}, -302)$ or $(3 \times 100) - 302 = -2$ not (+)2
Total 4 marks					



7	(a)		60	1	B1 for 60
	(b)	$3 \times 6 (=18)$		2	M1 for $3 \times 6 (=18)$
			20		A1 for 20
	(c)		+3	1	B1 or $\times \frac{8}{5}$
Total 4 marks					

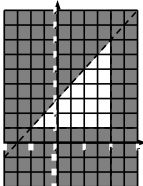
8	(a)		-4, (-1), 2, (5), 8, 11, (14), 17	2	B2 for -4, 2, 8, 11, 17
					(B1 for 3 or 4 correct values)
	(b)			2	M1 (may ft from (a) if B1 awarded) for at least 5 points correctly plotted – if no plots, use points at which graph crosses squares or M1
			Graph drawn		A1 for correct graph drawn from $x = -1$ to $x = 6$
Total 4 marks					

Question	Working	Answer	Mark	Notes
4 (a)		$\frac{11}{15}$	1	B1oe
(b)		$4\frac{3}{5}$	1	B1oe eg $4\frac{6}{10}$
(c)		$\frac{23}{100}$	1	B1oe eg $\frac{46}{200}$
(d)		0.4	1	B1 Accept 0.40
(e)		3.555, 3.61, 3.7, 3.82, 3.9	1	B1
Total 5 marks				
5	(BC =) $96 - 30 (=66)$ $96 + (66 \div 3)$ oe		3	M1
		118		M1
				A1
Total 3 marks				
6		9 hours 45 mins	2	B2 B1 for 9 hours or 45 minutes
Total 2 marks				
7 (a)		(2, 3)	1	B1
(b)		(-3, -1)	1	B1
(c)		(-0.5, 1)	2	B2 B1 for (-0.5, y) or (x, 1) or (1, -0.5)
Total 4 marks				

4	(a)		Qatar	1	B1
	(b)		9	1	B1 allow -9
	(c)		-4	1	B1
Total 3 marks					
5	(a)		Correct line	1	B1 line drawn at $y = -2$
	(b)		$(-1, 2)$	2	B2 for both coordinates correct If not B2, then B1 for one correct coordinate or $(2, -1)$
	(c)		$(d =) 1$	1	B1 accept $(5, 1)$
Total 4 marks					
6	(a)		Trapezium	1	B1
	(b)		F	1	B1
	(c)		4	1	B1 or "four"
	(d)		2	1	B1 or "two"
Total 4 marks					
7	$\frac{3}{8} \times \frac{5}{6}$ oe eg $0.375 \div 6 \times 5$ Allow $0.375 \times 0.83....$ oe		eg $\frac{3}{8} \times 48 = 18$ and eg $\frac{5}{6} \times 18 = 15$	3	M1 for showing intention to multiply the two given fractions or using a number of members that is a multiple of 48 to work out the number of right-handed children.
	eg $\frac{3}{8} \times \frac{5}{6} = \frac{15}{48}$ or $\frac{3}{8} \times \frac{5}{6} = \frac{15}{48}$ $0.375 \times 0.83.... = 0.31....$		"15" "48"		M1 For an attempt to multiply fractions or Dividing their 15 by their 48
			$\frac{5}{16}$		A1 dep on M1
	Total 3 marks				

Question	Working	Answer	Mark	Notes
4* (a)		75.2	1	B1 Allow $75\frac{1}{5}$ oe
(b)		A clear indication of marking the first notch after 260	1	B1 cao
Total 2 marks				
Question	Working	Answer	Mark	Notes
5 (a)		$(-2, 3)$	1	B1
(b)		T clearly marked	1	B1 A point clearly marked at $(3, -1)$ need not be labelled if meaning is clear
(c)		$(2, 1)$	2	B2 B1 for $(2, X)$ or $(Y, 1)$ or $(1, 2)$ or the midpoint unambiguously marked in the correct place on the diagram
Total 4 marks				
Question	Working	Answer	Mark	Notes
6 (a)		$3\frac{4}{5}$	1	B1
(b)		$\frac{4}{5}, \frac{28}{35}$	1	B1 Both fractions and no other fraction circled or clearly indicated in the list
(c)		$\frac{3}{10}$	1	B1 oe fraction
Total 3 marks				



Question	Working	Answer	Mark	Notes														
19 a		<table><tr><td>x</td><td>-2</td><td>-1</td><td>0</td><td>1</td><td>2</td><td>3</td></tr><tr><td>y</td><td>-1</td><td>1</td><td>3</td><td>5</td><td>7</td><td>9</td></tr></table>	x	-2	-1	0	1	2	3	y	-1	1	3	5	7	9	3	B3 For a correct line between $x = -2$ and $x = 3$ B2 For a correct straight line segment through at least 3 of $(-2, -1)$ $(-1, 1)$ $(0, 3)$ $(1, 5)$ $(2, 7)$ $(3, 9)$ OR for all of $(-2, -1)$ $(-1, 1)$ $(0, 3)$ $(1, 5)$ $(2, 7)$ $(3, 9)$ plotted but not joined B1 For at least 2 correct points plotted or stated (ignore incorrect points) OR for a line drawn with a positive gradient through $(0, 3)$ and clear intention to use a gradient of 2 (eg. a line through $(0, 3)$ and $(0.5, 5)$) OR a line drawn with a gradient of 2
x	-2	-1	0	1	2	3												
y	-1	1	3	5	7	9												
b			2	M1 for $x = 2$ and $y = 1$ drawn A1 for correct region identified NB: Region may be unshaded or shaded, condone missing label														

Question	Working	Answer	Mark	Notes
5	a	$x = -3$ drawn	1	B1 accept unlabelled
	b	$(2.5, 3)$	2	M1 or one coordinate correct A1
	c	$(2, -1)$	2	B2 (B1 D placed correctly on the grid)
6	a	64	1	B1
	b	$20 + 8 = 28$ $28 \div 4$	2	M1 for $+8$ or $\div 4$ A1
	c	10	2	M1 for 8×5 or 40 A1
7	a	4, 7, 5, 4	2	M1 attempt to find frequencies (at least 2 correct) A1 fully correct
	b	Completed bar chart	3	M1 for 4 bars + labels on bars A1 correct heights ft a completed table A1 fully correct ft a completed table inc label on y axis Allow different widths of bars, gaps or no gaps between bars

Question	Working	Answer	Mark	Notes
4 (a)	8.4 – 3.8	9.2	1	B1
		4.6	2	M1 At least one correct A1
		Bar correct height	1	B1 1.6 - 1.8 drawn
5 (a)		18	1	B1
		15 18	2	B1, B1
		Any correct pair	1	B1 14 and 15 or 15 and 16 or 15 and 22
6 (a)		(6, 2)	1	B1
		<i>D</i> plotted	1	B1
		Isosceles	1	B1
		(3, 4.5)	2	M1 or one coordinate correct or (4.5, 3) A1

7	a		(3, -1)	1	B1
	b		(×) at (-2, -4)	1	B1 condone missing label as long on unambiguous
	c		(-1, 2)	2	B2 B1 for (-1, a) where $a \neq 2$ or (b, 2) where $b \neq -1$
	d		$x = 4$ drawn	1	B1
					Total 5 marks

8			3	B3 For the correct time of 13 50 or 1.50 pm or 1.50 in the afternoon oe (B2 for 1.50 or 1.50 am or stating 2 hours 40 mins or 160 mins or intention to add all 4 times onto 11.10 B1 for intention to add all 4 times together or evidence of intention to add on 2 or 3 times to 11 10)
		13 50		Total 3 marks



Question	Working	Answer	Mark	Notes
4 (a)		$(-2, 3)$	1	B1
(b)		Isosceles	1	B1 allow incorrect spelling if meaning is clear
(c)		$(\times)$ at $(1, -4)$	1	B1 clearly indicated by cross or dot - condone missing label as long as unambiguous
(d)		$(1, 2)$	2	B2 for $(1, 2)$ (B1 for $(1, a)$ where $a \neq 2$ or $(b, 2)$ where $b \neq 1$ or $((-2 + 4) \div 2, a)$ or $(b, (3 + 1) \div 2)$ or for the midpoint unambiguously marked)
Total 5 marks				

International GCSE Maths				
Q	Working	Answer	Mark	Notes
1 (a)		El Salvador	1	B1
(b)		400	1	B1 Allow hundred oe
(c)		Bahamas & Syria	1	B1
(d)		Three thousand, three hundred and seventy one	1	B1
				Total 4 marks
2 (a)(i)		(3, 4)	1	B1
(ii)		(-1, 2)	1	B1
(b)		Cross at (7, 2)	1	B1
(c)		(1, 3)	2	B2 for (1, 3) (B1 for one coordinate correct)
				Total 5 marks



4	(a)		(1, 0)	1	B1
	(b)		Cross marked at (3, -2)	1	B1
	(c)		(-3, -1)	2	B2 for (-3, -1) If not B2 then award B1 for (-3, a) where $a \neq -1$ or (b, -1) where $b \neq -3$ or (-1, -3)
	(d)		$y = 3$	1	B1
					Total 5 marks

5	eg 2.5 kg = 2500 g or 400 g = 0.4 kg or 350 g = 0.35 kg		4	B1	for a correct conversion between g and kg
	eg 400 + 350 (= 750) or 0.4 + 0.35 (= 0.75) or 400 × 2 (= 800) or 0.4 × 2 (= 0.8)			M1	for method to find the weight of parcel B or C ft incorrect conversion
	eg 2500 – (400 + “750” + “800”) or 2.5 – (0.4 + “0.75” + “0.8”) (= 0.55)			M1	for a complete method ft incorrect conversion
	<i>Correct answer scores full marks (unless from obvious incorrect working)</i>	550		A1	
				Total 4 marks	

5	(a)		(2, 3)	1	B1
	(b)		For the point (6, 1) marked	1	B1 If not marked <i>D</i> then award marks so long as unambiguous.
	(c)		(3.5, 1)	2	B2 oe for both coordinates correct (B1 for a correct calculation for one coordinate $\frac{2+5}{2}$ or $\frac{3+1}{2}$ or for one correct coordinate or for (1, 3.5))
	(d)		line drawn	1	B1 horizontal line drawn – any length as long as unambiguous
Total 5 marks					
6	(a)		Octagon	1	B1
	(b)		8.6	1	B1 allow in range 8.4 – 8.8
	(c)		B, D	1	B1 both given
Total 3 marks					
7	(i)		unlikely	1	B1 Award unlikely together with a fraction. Accept incorrect spelling if meaning is clear
	(ii)		evens	1	B1
	(iii)		impossible	1	B1
Total 3 marks					



4	(a)		(1, 6)	1	B1
	(b)		(-3, -1)	1	B1
	(c)		Cross at (1, 2)	1	B1
	(d)		Cross at (5, -1)	1	B1
	(e)		1	1	B1 cao
Total 5 marks					

5	(a)		8 squares shaded	1	B1
	(b)		30	1	B1
	(c)		$\frac{8}{25}$	1	B1
	(d)		$6\frac{4}{7}$	1	B1
Total 4 marks					

8	eg $3 \times 1.8(0)$ (= 5.4(0)) or $4 \times 1.2(0)$ (= 4.8(0)) or $3 \times 1.8(0) + 4 \times 1.2(0)$ (= 10.2(0))		4	M1 for a method to find the cost of the birthday cards or the wrapping paper or the total cost of the birthday cards and the wrapping paper
	eg $17.1(0) - ("5.4(0)" + "4.8(0)")$ (= 6.9(0)) or $17.1(0) - "10.2(0)"$ (= 6.9(0))			M1 for a method to find the cost of 2 rolls of sticky tape
	eg $"6.9(0)" \div 2$			M1 for a complete method
	<i>Correct answer scores full marks (unless from obvious incorrect working)</i>	3.45		A1 if no other marks awarded, award SCB2 for an answer of 7.05 SCB1 for 14.1(0)
Total 4 marks				

9	(a)	(-4, 2)	1	B1 cao
	(b)	(-1, 3)	2	B2 (B1 for (-1, y) or (x, 3) or (3, -1) or the midpoint of AB unambiguously shown on diagram)
	(c)	(-3, -1)	2	B2 (B1 for (-3, y) or (x, -1) or (-1, -3) or D marked correctly on the diagram)
Total 5 marks				

Question	Working	Answer	Mark	Notes
12	e.g. $16s + 28s + 35s (= 79s)$ $6 \text{ min} + 4 \text{ min} + 4 \text{ min} + "79s" (= 15 \text{ min } 19s)$ $20 \text{ min} - "15 \text{ min } 19s"$	4 41	3	M1 Complete method to find the time taken by the three songs M1 (dep) A1
13 (a)	$-9, (-7), -5, -3, (-1), (1), 3$	Table	2	B2 all correct (B1 2 or 3 correct)
(b)		Correct line	2	M1 for at least 5 of their points plotted correctly (ft if at least B1 earned in (a)) A1
(c)		$\times$ P in a correct place	2	M1 for a point marked above their line or for a point marked to the left of $x = 2$ A1 for a point marked above their line and marked to the left of $x = 2$ (SC B1 for the correct region identified but no point plotted)
14 (a)		48	1	B1
(b)		14 641	1	B1

4	(a)		$\frac{7}{10}$	1	B1 oe eg $\frac{70}{100}$
	(b)		15	1	B1
	(c)	eg $35 \times 3 \div 5$ or 7×3 or $\frac{3}{5} \times 35$		2	M1 for a complete method
			21		A1
					Total 4 marks
5	(a)		1	1	B1 or one line (only) on the diagram clearly indicated
	(b)		2	1	B1
	(c)		126	1	B1 allow ± 2
					Total 3 marks
6	(a) (i)		27	1	B1
	(ii)		5, 16	1	B1 either or both indicated
	(b)	5 or 23 identified as a prime or $5 + 23$		2	M1 at least one prime identified
			28		A1
					Total 4 marks
7	(a)		$(-1, 3)$	1	B1
	(b)		$(5, 1)$	2	B1 for $x = 5$ B1 for $y = 1$
	(c)	$\frac{1}{2} \times 6 \times 4$ oe		2	M1 for a correct method
			12		A1
	(d)		D indicated at $(-1, -1)$	1	B1 label not required if coordinate clearly indicated
					Total 5 marks

Question	Working	Answer	Mark	Notes
12	$(-1, -5), (0, -3), (1, -1), (2, 1), (3, 3), (4, 5)$	Correct line	3	B3 for a correct line between $x = -1$ and $x = 4$ If not B3 then B2 for a line segment through at least 3 of $(-1, -5), (0, -3), (1, -1), (2, 1), (3, 3), (4, 5)$ or all points correctly plotted or a line drawn through $(0, -3)$ and with clear intention to use gradient of 2 E.g. a line through $(0, -3), (0.5, -1)$ If not B2 then B1 for at least 2 correct points stated or plotted (ignore incorrect points) or a line drawn with a positive gradient through $(0, -3)$ but not a line through $(0, -3)$ and $(2, 0)$ or a line with gradient 2

11	$(-2, 7)$ $(-1, 5)$ $(0, 3)$ $(1, 1)$ $(2, -1)$ $(3, -3)$	Correct line between $x = -2$ and $x = 3$	3	B3 for a correct line between $x = -2$ and $x = 3$ (B2 for a correct straight line segment through at least 3 of $(-2, 7)$ $(-1, 5)$ $(0, 3)$ $(1, 1)$ $(2, -1)$ $(3, -3)$) or for all of $(-2, 7)$ $(-1, 5)$ $(0, 3)$ $(1, 1)$ $(2, -1)$ $(3, -3)$ plotted but not joined) (B1 for at least 2 correct points stated (may be in a table) or plotted or for a line drawn with a negative gradient through $(0, 3)$ or for a line with a gradient of -2)
				Total 3 marks

12	$250 \div (2 + 3) (= 50)$			M1
	$50 \times 2 (= 100)$ or $50 \times 3 (= 150)$			M1
	$\frac{42}{100} \times '150' (= 63)$ or $0.42 \times '150'$ oe $(= 63)$			M1 (indep) for a method to find 42% of their amount for Haydn
	'100' – '63'			M1 (dep on M2) for finding difference between their amounts for Rose and Haydn
		37	5	A1
				Total 5 marks

12	(a)	$(0 \times 6) + (1 \times 5) + (2 \times 4) + (3 \times 7) + (4 \times 3) (= 46)$ or $0 + 5 + 8 + 21 + 12 (= 46)$		3	M1 for at least 4 products added or intention to add (need not be evaluated)
		'46' $\div$ 25			M1 dep on M1
			1.84		A1 SC B1 for answer only of 2.08 oe
	(b)		0.61	1	B1 oe 61% or $\frac{61}{100}$ oe
			Total 4 marks		

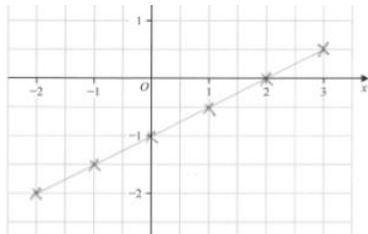
13	<table><tr><td>x</td><td>-1</td><td>0</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr><tr><td>y</td><td>5</td><td>3</td><td>1</td><td>-1</td><td>-3</td><td>-5</td><td>-7</td></tr></table>	x	-1	0	1	2	3	4	5	y	5	3	1	-1	-3	-5	-7	Correct line between $x = -1$ and $x = 5$	3	B3 for a correct line between $x = -1$ and $x = 5$ (B2 for a correct straight line segment through at least 3 of $(-1, 5)$ $(0, 3)$ $(1, 1)$ $(2, -1)$ $(3, -3)$ $(4, -5)$ $(5, -7)$ or for all of $(-1, 5)$ $(0, 3)$ $(1, 1)$ $(2, -1)$ $(3, -3)$ $(4, -5)$ $(5, -7)$ plotted but not joined) (B1 for at least 2 correct points stated (may be in a table) or plotted or for a line drawn with a negative gradient through $(0, 3)$ or for a line with a gradient of -2)
	x	-1	0	1	2	3	4	5												
y	5	3	1	-1	-3	-5	-7													
$(-1, 5)$ $(0, 3)$ $(1, 1)$ $(2, -1)$ $(3, -3)$ $(4, -5)$ $(5, -7)$	Total 3 marks																			

12	(-1, 6) (0, 4) (1, 2) (2, 0) (3, -2) (4, -4)	For a correct line between $x = -1$ and $x = 4$	3	B3 For a correct line between $x = -1$ and $x = 4$ B2 For a correct straight line segment through at least 3 of (-1, 6) (0, 4) (1, 2) (2, 0) (3, -2) (4, -4) OR for all of (-1, 6) (0, 4) (1, 2) (2, 0) (3, -2) (4, -4) plotted but not joined OR for a line drawn with a negative gradient through (0, 4) and clear intention to use a gradient of -2 B1 For at least 2 correct points stated (may be in a table) OR for a line drawn with a negative gradient through (0, 4) OR for a line with a gradient of -2
	Correct answer scores full marks (unless from obvious incorrect working)			Total 3 marks

12	<table><tr><td>x</td><td>-2</td><td>-1</td><td>0</td><td>1</td><td>2</td><td>3</td></tr><tr><td>y</td><td>11</td><td>8</td><td>5</td><td>2</td><td>-1</td><td>-4</td></tr></table>	x	-2	-1	0	1	2	3	y	11	8	5	2	-1	-4	Correct line between $x = -2$ and $x = 3$	3	B3 for a correct line between $x = -2$ and $x = 3$ (B2 for a correct straight line segment through at least 3 of $(-2, 11)$ $(-1, 8)$ $(0, 5)$ $(1, 2)$ $(2, -1)$ $(3, -4)$ or for all of $(-2, 11)$ $(-1, 8)$ $(0, 5)$ $(1, 2)$ $(2, -1)$ $(3, -4)$ plotted but not joined) (B1 for at least 2 correct points stated (may be in a table) or plotted or for a line drawn with a negative gradient through $(0, 5)$ or for a line with a gradient of -3)
	x	-2	-1	0	1	2	3											
y	11	8	5	2	-1	-4												
$(-2, 11)$ $(-1, 8)$ $(0, 5)$ $(1, 2)$ $(2, -1)$ $(3, -4)$				Total 3 marks														

13	(-2, 9) (-1, 7) (0, 5) (1, 3) (2, 1) (3, -1)	For a correct line between $x = -2$ and $x = 3$	3	B3 For a correct line between $x = -2$ and $x = 3$ (B2 For a correct straight line segment through at least 3 of (-2, 9) (-1, 7) (0, 5) (1, 3) (2, 1) (3, -1) OR for all of (-2, 9) (-1, 7) (0, 5) (1, 3) (2, 1) (3, -1) plotted but not joined OR for a line drawn with a negative gradient of -2 through (0, 5)) (B1 For at least 2 correct points stated (may be in a table) OR for a line drawn with a negative gradient through (0, 5) OR for a line with a gradient of -2)	Total 3 marks		

14	$\frac{1}{5} \times 1200 (= 240)$ oe or $1200 \div 5 (= 240)$ oe	20(%) or 0.2 or 0.42 or $\frac{42}{100}$ oe		4	M1 M2 for 744	
	$0.42 \times 1200 (= 504)$ or $\frac{42}{100} \times 1200 (= 504)$ oe	$\frac{1}{5} + \frac{42}{100} \left(= \frac{62}{100} \right)$ oe or $0.2 + 0.42 (= 0.62)$ or $20 + 42 (= 62)$			M1	
	$1200 - ("240" + "504") (= 456)$ oe or $1200 - "744" (= 456)$	$1 - \frac{62}{100} \left(= \frac{38}{100} = \frac{19}{50} \right)$ oe or $1 - "0.62" (= 0.38)$ or $100 - "62" (= 38)$			M1	
	Working not required, so correct answer scores full marks (unless from obvious incorrect working)			1.9	A1 oe	
Total 4 marks						

12	<table><tr><td>x</td><td>-2</td><td>-1</td><td>0</td><td>1</td><td>2</td><td>3</td></tr><tr><td>y</td><td>-2</td><td>-1.5</td><td>-1</td><td>-0.5</td><td>0</td><td>0.5</td></tr></table> (-2, -2) (-1, -1.5) (0, -1) (1, -0.5) (2, 0) (3, 0.5) 	x	-2	-1	0	1	2	3	y	-2	-1.5	-1	-0.5	0	0.5	Correct line between $x = -2$ and $x = 3$	3	B3 for a correct line between $x = -2$ and $x = 3$ (B2 for a correct straight line segment through at least 3 of (-2, -2) (-1, -1.5) (0, -1) (1, -0.5) (2, 0) (3, 0.5) or for all of (-2, -2) (-1, -1.5) (0, -1) (1, -0.5) (2, 0) (3, 0.5) plotted but not joined) (B1 for at least 2 correct points stated (may be in a table) or plotted or for a line drawn with a positive gradient through (0, -1) or for a line with a gradient of 0.5)
x	-2	-1	0	1	2	3												
y	-2	-1.5	-1	-0.5	0	0.5												
Total 3 marks																		

13	$3.6 \times 2.1 (= 7.56)$ or $0.3 \times 0.3 (= 0.09)$ or $3.6 \div 0.3 (= 12)$ or $2.1 \div 0.3 (= 7)$		4	M1
	“7.56” $\div$ “0.09” (= 84) or “12” $\times$ “7” (= 84)			M1
	“84” $\div 6 \times 17.5(0)$ oe			M1 for a complete method
	Correct answer scores full marks (unless from obvious incorrect working)	245		A1
Total 4 marks				

17		48 ÷ 2 (=24)		4	M1		
		"24" ÷ 3 = 8			M1	dep	M2 for "24"× $\frac{5}{3}$
		"8" × 5			M1	dep	
			40		A1		
		Alternative scheme					
		(5) : 3 : 6 oe		4	M1		
		48 ÷ 6 (=8) oe			M1	dep	M2 for 48× $\frac{5}{6}$
		"8" × 5 oe			M1	dep	
			40		A1		
					Total 4 marks		

18	a		9, 3, (-1), -3, (-3), -1, (3)	2	B2 If not B2 then award B1 for at least 2 correct values	
	b			2	M1 dep on B1 ft from (a) for at least 5 points plotted correctly	
			correct graph		A1 for the correct graph (clear intention to go through all the points and which must be curved at the bottom)	
					Total 4 marks	

						Total 3 marks
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Question		Working	Answer	Mark		Notes
19	(a)		-5, 5, 5, -5	2	B2	All 4 correct values If not B2 then B1 for 2 or 3 correct values
	(b)		Fully correct curve	2	M1 A1	Plotting at least 6 points correctly from their table dep on B1 in part(a) Do not accept horizontal line at top of curve or straight line segments
						Total 4 marks

20	(a)	$40 \div 16 \times 12$	30	2	M1 A1	$40 \times \frac{12}{16}$ oe
	(b)	$525 \div 100^2$	0.0525 oe	2	M1 A1	
						Total 4 marks

21		P(mint =) $1 - (0.35 + 0.32 + 0.12)$ (= 0.21) P(strawberry or mint =) $0.32 + "0.21"$	0.53 oe	3	M1 M1 A1	Or a correct equation summing to 1 Dep Allow 0.53/1
						Total 3 marks

22		$55 \div (6 + 3 + 2)$ (= 5) $(6 \times "5") - (2 \times "5")$	20	3	M1 M1 A1	or $\frac{6}{11} \times 55$ or $\frac{2}{11} \times 55$ or M2 for Won = 30 and Lost = 10
						Total 3 marks



18	(a)		15, 0, -1, 3	2	B2 for 4 correct values (B1 for 2 or 3 correct values)
	(b)	(-2, 15) (-1, 8) (0, 3) (2, -1) (3, 0) (4, 3)		2	M1 (dep on B1) ft from (a) for at least 5 points plotted correctly
			correct graph		A1 for a correct graph (clear intention to go through all the points and which must be curved at the bottom) Note: If a fully correct graph is shown, but an incomplete table is shown in (a), then award the marks for (a)
Total 4 marks					

19				4	B1 for 80
	for $\frac{a+75}{2} = 74$ oe or 73				M1 for setting up an equation using the median or for 73
	for $80 - 16 (= 64)$ oe				M1 for using the range correctly or for 64
		64, 73, 80			A1 answers can be in any order
Total 4 marks					

20	(a)	x	−3	−2	−1	0	1	2	3	2	B2	for all correct values, otherwise B1 for 3 or 4 correct values
		y	8	2	−2	−4	−4	−2	2			
	(b)									2	M1	dep on B1 scored in (a) for at least 5 points plotted correctly (ft their table)
						correct curve					A1	for a fully correct curve (all coordinates correct and correctly plotted and joined with a curve and curved between (0, −4) and (1, −4))
											Total 4 marks	



8	(a)		-5, -3, (-1), 1, 3, (5)	2	B2 for all correct values in the table (B1 for 2 or 3 correct values)
	(b)			2	M1ft for at least 5 points plotted correctly (within the circles on the overlay) ft their incorrect table (provided B1 scored in part (a)) or for correct line segment through at least 3 of (-2, -5) (-1, -3) (0, -1) (1, 1) (2, 3) (3, 5) or for a straight line with gradient 2 or for a straight line through (0, -1) with a positive gradient
		Correct answer scores full marks (unless from obvious incorrect working)	Correct line drawn		A1 for a correct line between $x = -2$ and $x = 3$ (clear intention to go through all the points and which must be a line – allow freehand) Ignore to the left of $x = -2$ and to the right of $x = 3$ (Note: If a fully correct graph is shown, but a blank table is shown in (a), then award 2 marks for (a) and 2 marks for (b))
					Total 4 marks



Question	Working	Answer	Mark	Notes	
8	(angle EAD or ADE or AED $\Rightarrow$) 60 (angle BCD $\Rightarrow$) $180 - 108$ ($\Rightarrow$) 72 (angle BAD $\Rightarrow$) $360 - (135 + \text{“}72\text{”} + 90)$ ($\Rightarrow$) 63) or (angle BAD $\Rightarrow$) $360 - 297$ ($\Rightarrow$) 63) or (angle EAB $\Rightarrow$) 123	123	5	B1 may be seen on diagram M1 may be seen on diagram M1 may be seen on diagram B1 (dep on M1) for at least one correct reason reason 1 : <u>Angles</u> on straight <u>line</u> add up to 180° or Angles on straight <u>line</u> add up to <u>180°</u> reason 2 : <u>Angles</u> in a <u>quadrilateral</u> (accept 4-sided shape) add up to 360° or Angles in a <u>quadrilateral</u> (accept 4-sided shape) add up to <u>360°</u> A1 for 123 and full reasons	
9	a	Two readings from graph 20°C apart eg. readings from 0°C ($30 - 34^\circ\text{F}$) and 20°C ($66 - 70^\circ\text{F}$)	36	2	M1 A1 accept answer in range $34 - 38$
	b		No with explanation	1	B1 e.g. graph does not go through (0,0) (accept 0) or temperatures in $^\circ\text{F}$ are not proportional to temperatures in $^\circ\text{C}$ or gives counter example that doubling does not work or 60°C is the same as 140°F ($135 - 145$) or 15°C is not 43°F

13	$0.32 \times 450 (= 144)$ oe or $\frac{2}{5} \times 375 (= 150)$ oe		3	M1
	$0.32 \times 450 (= 144)$ oe and $\frac{2}{5} \times 375 (= 150)$ oe			M1
		144 and 150 and $\frac{2}{5}$ of 375		A1
				Total 3 marks

14	2, 2, 5 and 5, 7 or seen on a ladder or at the end of branches OR for at least 3 multiples of both 20 and 35 e.g. 20, 40, 60, ... and 35, 70, 105, ...		2	M1
		140		A1 allow $2 \times 2 \times 5 \times 7$ oe
				Total 2 marks

15	$\pi \times 15^2 (= 225\pi)$		2	M1
		707		A1 awrt 707
				Total 2 marks

16	(a)	47	1	B1 Answer in range 46.5 – 47.5
	(b)		2	M1
	A correct method to convert either dirham to euros or euros to dirham e.g. 400 Dirham = 2×200 Dirham = $2 \times "47"$ (= 94) euros or 90 euros = $30 + 60 = 127.5 + 255 = 382.5$ Dirham			
		France with correct calculations		A1
				Total 3 marks

9	(a)		CM, CJ, CT, FM, FJ, FT, PM, PJ, PT	2	B2 for correct outcomes listed with no repeats and no extras (B1 for 5, 6, 7 or 8 correct outcomes listed, ignore repeats and ignore extras or for 9 correct outcomes listed, ignore repeats and ignore extras)
	(b)		$\frac{4}{7}$	1	B1 oe
					Total 3 marks

10	(a)		40	1	B1
	(b)	19.20 ÷ 0.80 (= 24) oe		2	M1 for a method to find the number of kilometres she drove
		Correct answer scores full marks (unless from obvious incorrect working)	15		A1 cao
					Total 3 marks

15	(a)		13.5	1	B1	
	(b)	16.24 ÷ 2.03 (= 8) reading from graph from their "8"		3	M1 M1 dep A1 ft	
			85 → 90			Dependent on 1 st M1 if not 85 → 90
Total 4 marks						
16	(a)		080°	1	B1	80° ok. Accept 78° → 82°
	(b)			3	M1 M1 A1	9 cm stated or shown on diagram 8.9 to 9.1 acceptable Correct bearing (118° to 122°)
			(×) in correct position			
Total 4 marks						



9	a i		33	1	B1 accept 32 – 34
	ii		15	1	B1 accept 15 – 16
	b	e.g. $820 \div 10 \times "33"$ (= 2706) or $2850 \div 50 \times "15"$ (= 855)		2	M1 method to convert 820 metres to feet or 2850 feet to metres, allow ft from (ai) or (aia) or a value for 820 m to feet in range (2620 – 2740) or a value for 2850 feet to m in range (830 – 900)
			2850 feet supported by working		A1 2850 selected (could be unambiguously circled, underlined or stated) with correct working and figures as above to justify result, ft from part (ai) or (aia)
Total 4 marks					

10	e.g. $360 - (30 + 45 + 165)$ (= 120)		4	M1 method to calculate One Stop Shoes angle
	e.g. $\frac{30}{45} \cdot 18$ (= 12) or $\frac{30}{120} \cdot 48$ (= 12) oe			M1 method to calculate ABC Shoes frequency
	e.g. $165 \div 45 \times 18$ (= 66) oe or $165 \div 30 \times "12"$ (= 66) oe or $165 \div "120" \times 48$ (= 66) oe or 18 + 48 having shown or implied that $120 + 45 = 165$ and a clear intention that this is the method for Superfast Trainers (= 66)			M1 method to calculate Superfast Trainers frequency
		12, 120, 66		A1 fully correct table
Total 4 marks				



10			240	1	B1 Accept 235 - 245
			58	1	B1 Accept 58 -59
	e.g. 950 ÷ 6 or $950 \div \frac{240}{40}$ oe or 50 × 3 + 8	e.g. 170 × 6 or $170 \times \frac{240}{40}$ oe or 300 × 2 + 420		2	M1 for a correct method that gives the exchange for 950 Danish krone to dollars or 170 dollars to Danish krone
	(1 dollar = 6 krone)				
	Working required	All figures accurate eg 950 Danish krone = 150 - 165 dollars (or clearly showing 170 is enough) or 170 dollars = 1000 - 1040 Danish krone (or clearly showing that 950 is less than 170 dollars) oe			A1
					Total 4 marks



Question	Working	Answer	Mark	Notes
11 (a)(i)		21.5 – 22.5	1	B1
(ii)		31 - 32	1	B1
(b)	eg $(31 \leq x \leq 32) \times 10$ or $(6 \leq y \leq 7) \times 50$ or $(12 \leq z \leq 13) \times 25$ or $(\text{answer to (a)(i)}) \times \frac{500}{35}$ oe		2	M1ft Students may use any valid method with examples shown on left – they may split the amount up into parts as well Readings from lines drawn on graphs may not be accurate but if no lines drawn then their value must be sensible.
	<i>Working not required, so correct answer scores full marks (unless from obvious incorrect working)</i>	300 - 325		A1 An answer in the range 300 – 325
Total 4 marks				



13	(a)(i)		25	1	B1 allow 24.5 to 25.5
	(ii)		18	1	B1 allow 17.5 to 18.5
	(b)	$528 \div 1.2 (=£440)$		3	M1
		allow leeway on reading graph eg (£440 =) ("440" $\div$ 20) $\times$ 37 (= 814) (£440 =) ("440" $\div$ 11) $\times$ 20 (= 800) (£440 =) ("440" $\div$ 10) $\times$ "18" (= 792) (£440 =) ("440" $\div$ 1) $\times$ 2 (= 880) (£440 =) ("440" $\div$ "25") $\times$ 46 (= 809.6) There are several acceptable calculations			M1 value read from graph and used to scale to £440 (ft their 18 from (ii) or their 25 from (i))
			800		A1 accept in the range 770 – 880 unless working incorrect
Total 5 marks					
14		3 hours 15 mins = 3.25 (hours) or $3\frac{1}{4}$ (hours) or $3\frac{15}{60}$ (hours) or 195 (mins)		3	B1 For converting 3 hrs 15 minutes into hours or minutes
		$18.2 \div "3\frac{1}{4}"$ oe or $18.2 \div "195" \times 60$			M1 For use of $D \div T$ allow $18.2 \div 3.15$ or their incorrect time conversion (must be clear that this is their time conversion) If B mark awarded then the value that gained that mark must be used here to gain this method mark.
			5.6		A1 oe
Total 3 marks					

25	(a)	$(18-3)^2 + (7-1)^2$ oe or $15^2 + 8^2 (= 289)$ oe		3	M1
		$\sqrt{(18-3)^2 + (7-1)^2} (= \sqrt{289})$			M1
			17		A1
	(b)	$13 + 6 > "17"$	correct reason	1	A1ft dep M1 Acceptable examples "They overlap by 2cm" "The distance between the centres is less than the sum of the radii" "17 is less than the distance than the total of the radii" "19 is bigger than the distance between the centres" Not acceptable examples "19 is greater than the distance between the circles" oe "The circumference of each circle overlaps"
					Total 4 marks