

Name: \_\_\_\_\_

## Examination Practice Graphs

**Date:**

**Time:**

**Total marks available:**

**Total marks achieved:** \_\_\_\_\_

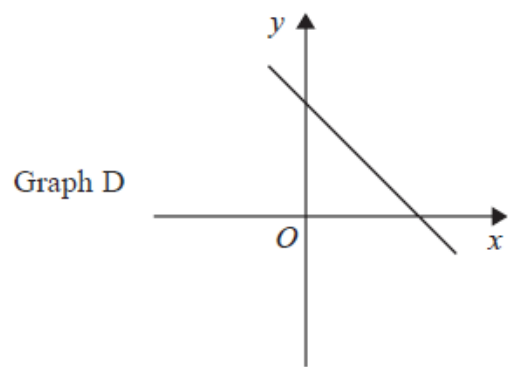
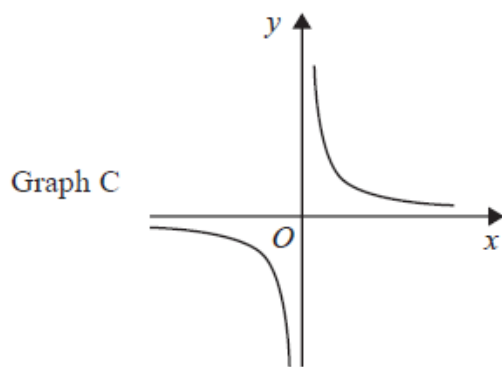
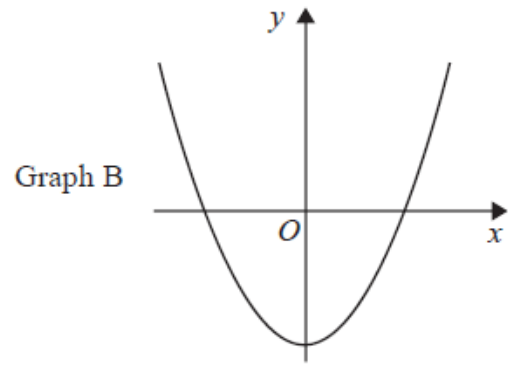
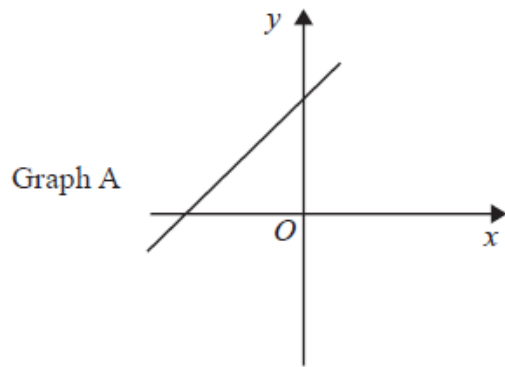
These are some past exam questions on graphs.

**SRH**

## Questions

Q1.

Here are four graphs.



Each of the equations in the table is the equation of one of the graphs.

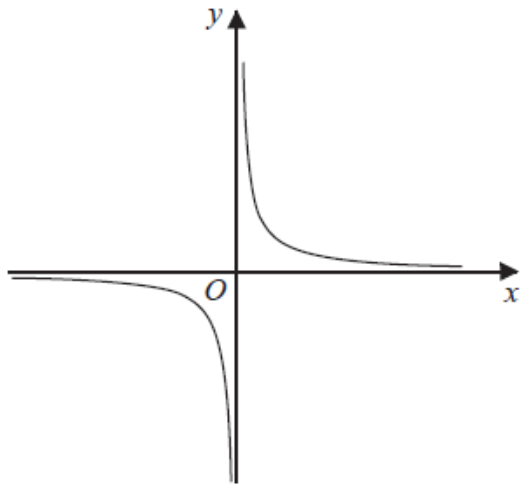
Complete the table.

Equation	Letter of graph
$y = x^2 - 7$	
$y = 3 - 2x$	
$y = 2x + 3$	
$y = \frac{1}{x}$	

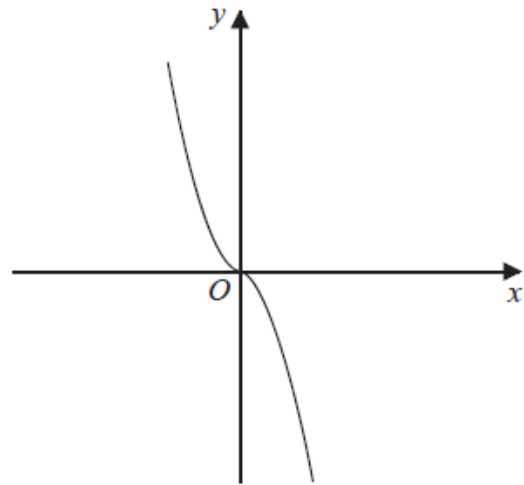
**(Total for question = 2 marks)**

Q2.

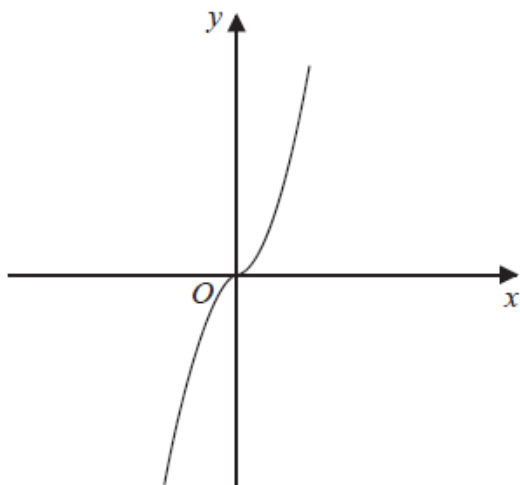
The diagram shows four graphs.



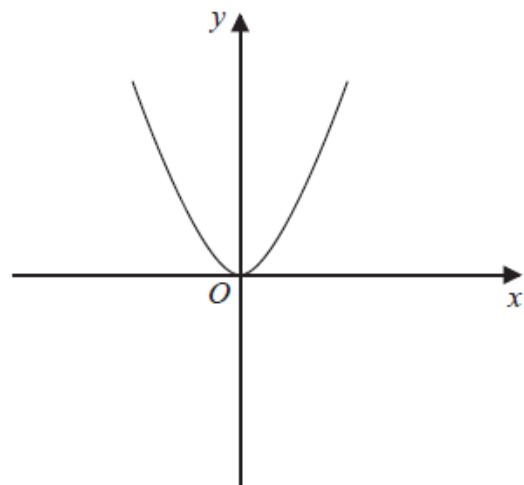
Graph A



Graph B



Graph C



Graph D

Each of the equations in the table is the equation of one of the graphs.

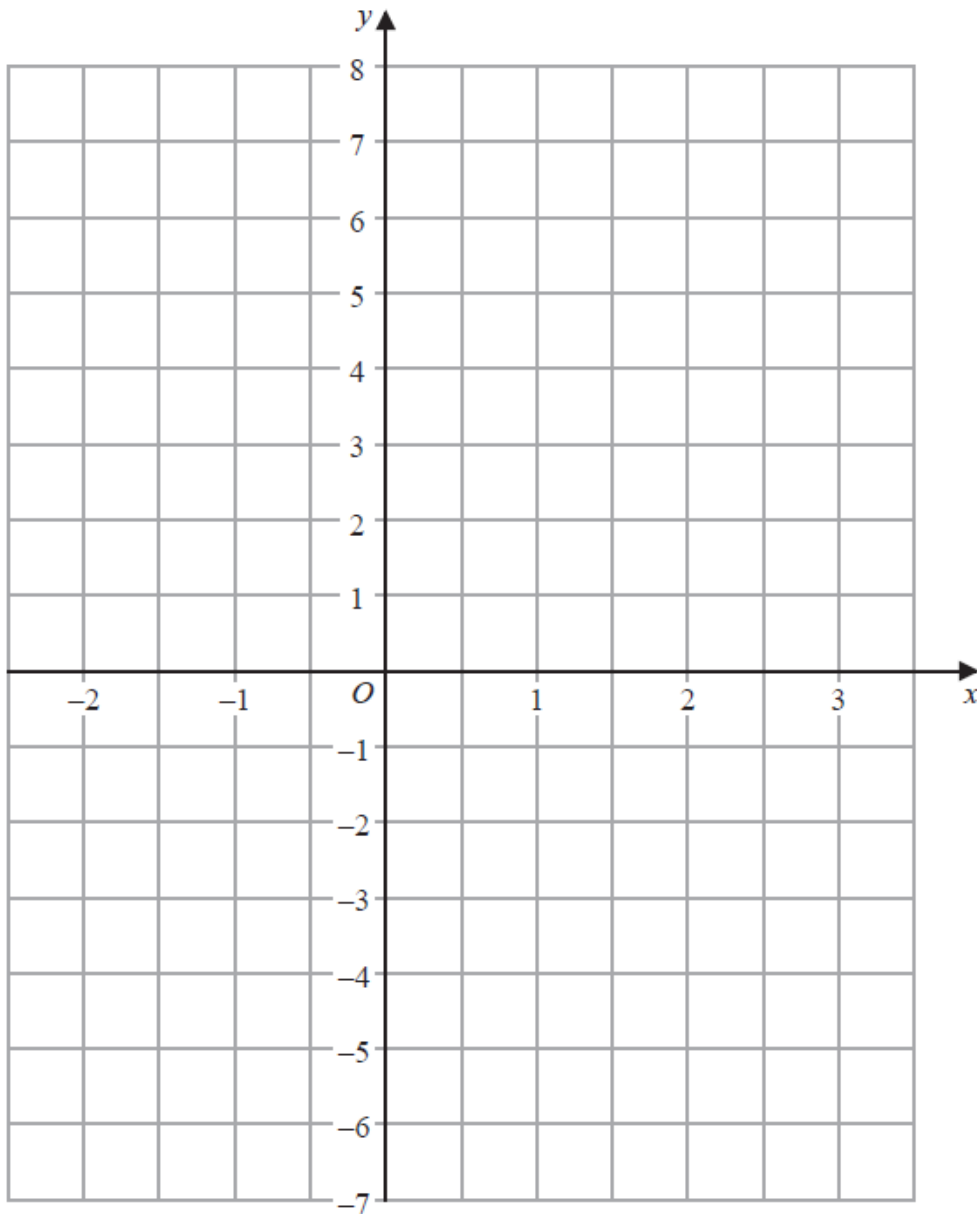
Complete the table.

Equation	Letter of graph
$y = -x^3$	
$y = x^3$	
$y = x^2$	
$y = \frac{1}{x}$	

**(Total for question = 2 marks)**

Q3.

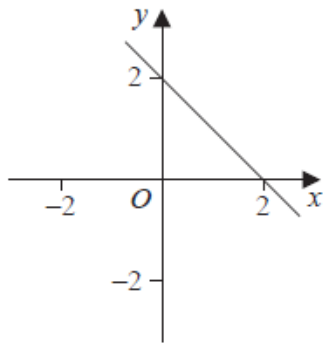
On the grid below, draw the graph of  $y = 2x - 2$  for values of  $x$  from  $-2$  to  $3$



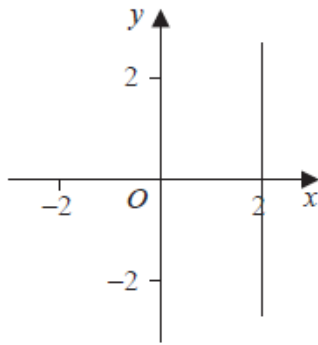
**(Total for question = 3 marks)**

Q4.

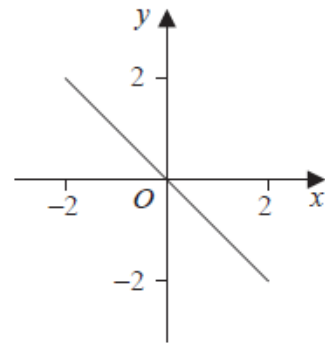
Here are six straight line graphs.



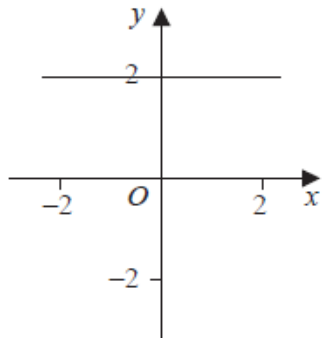
Graph A



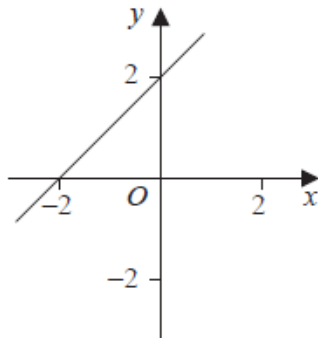
Graph B



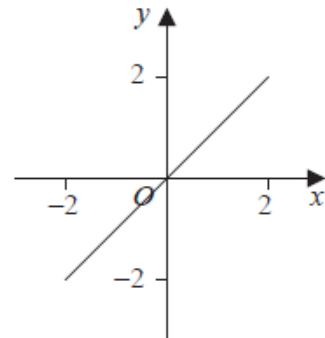
Graph C



Graph D



Graph E



Graph F

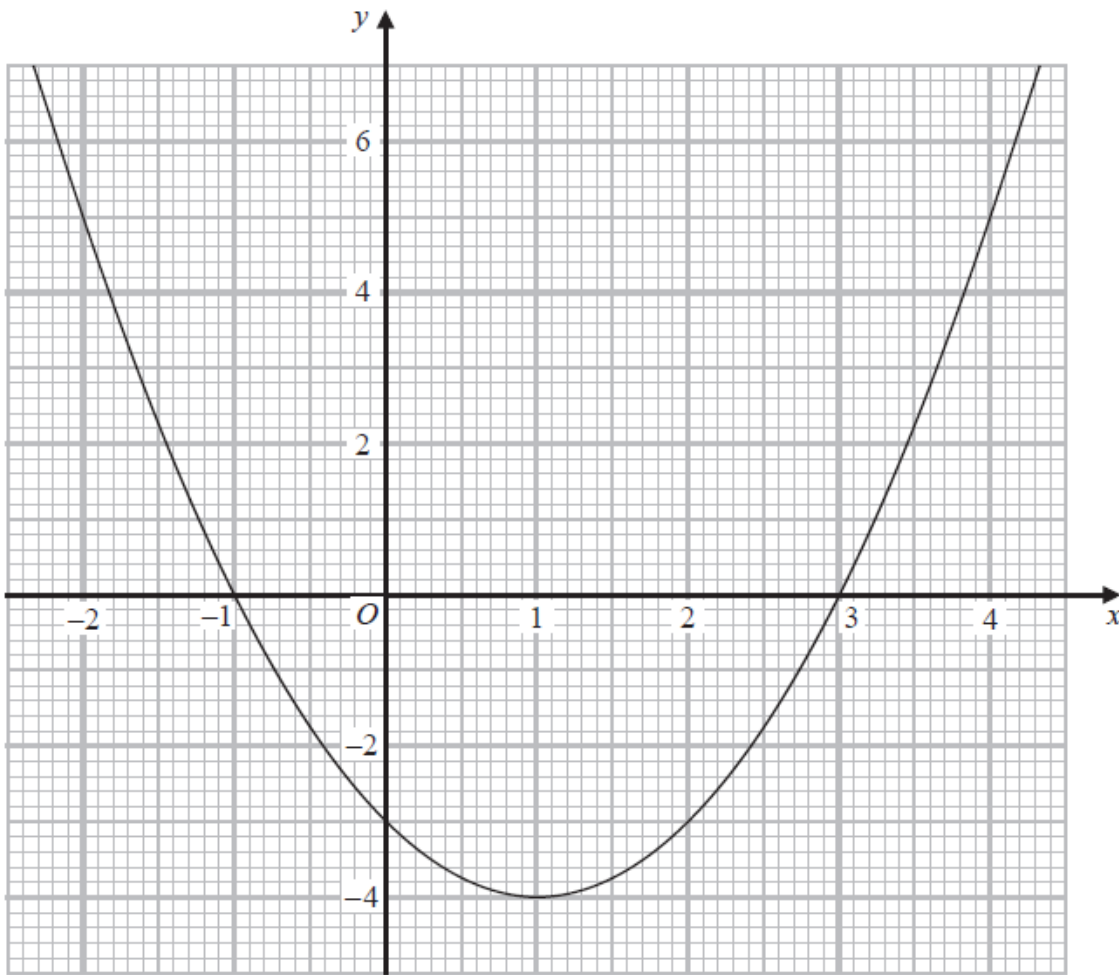
Match each equation in the table to the correct graph.  
Write the letter of the graph in the table.

Equation	Graph
$y = 2$	
$y = x$	
$x + y = 2$	

**(Total for question = 2 marks)**

Q5.

Here is the graph of  $y = x^2 - 2x - 3$



(a) Write down the coordinates of the turning point on the graph of  $y = x^2 - 2x - 3$

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

(1)

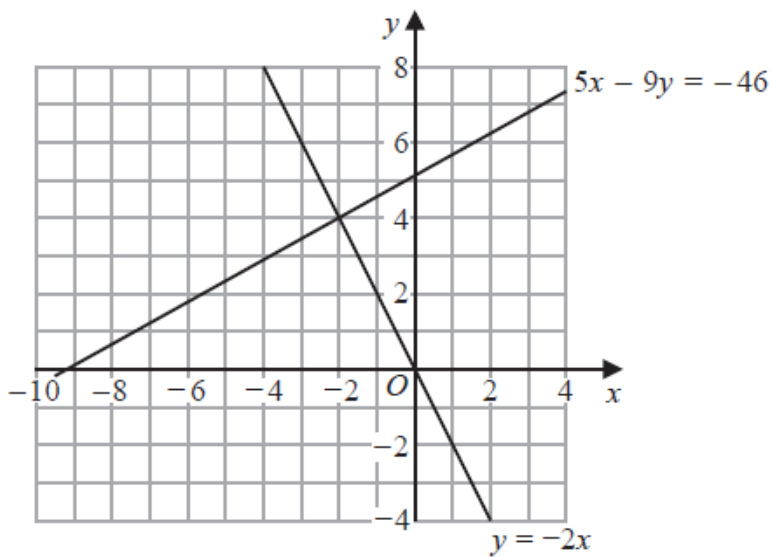
(b) Use the graph to find the roots of the equation  $x^2 - 2x - 3 = 0$

.....

(2)

**(Total for question = 3 marks)**

Q6.



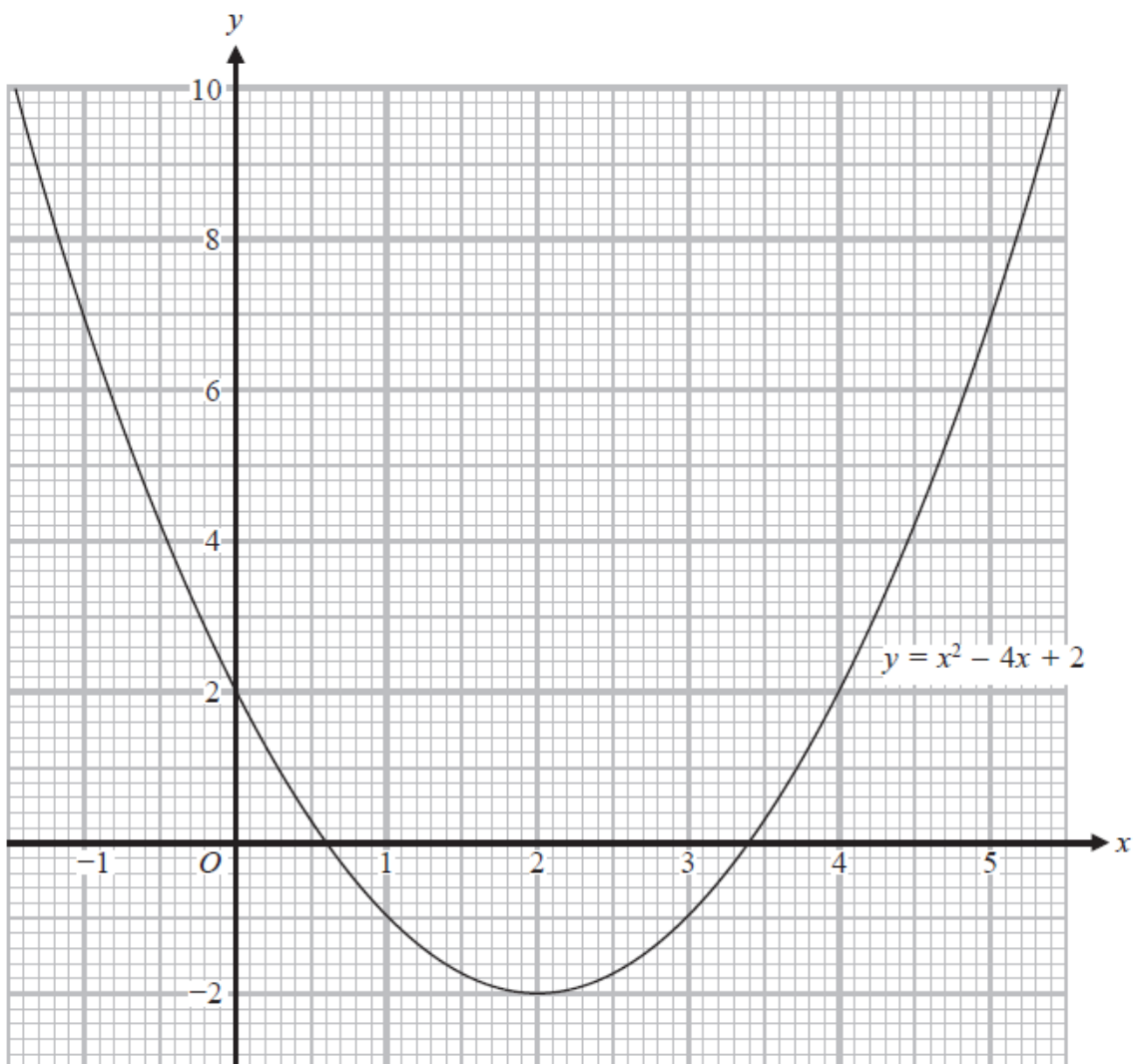
(a) Use these graphs to solve the simultaneous equations

$$\begin{aligned} 5x - 9y &= -46 \\ y &= -2x \end{aligned}$$

$x = \dots\dots\dots$

$y = \dots\dots\dots$

(1)



(b) Use this graph to find estimates for the solutions of the quadratic equation  $x^2 - 4x + 2 = 0$

.....

(2)

**(Total for question = 3 marks)**

Q7.

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

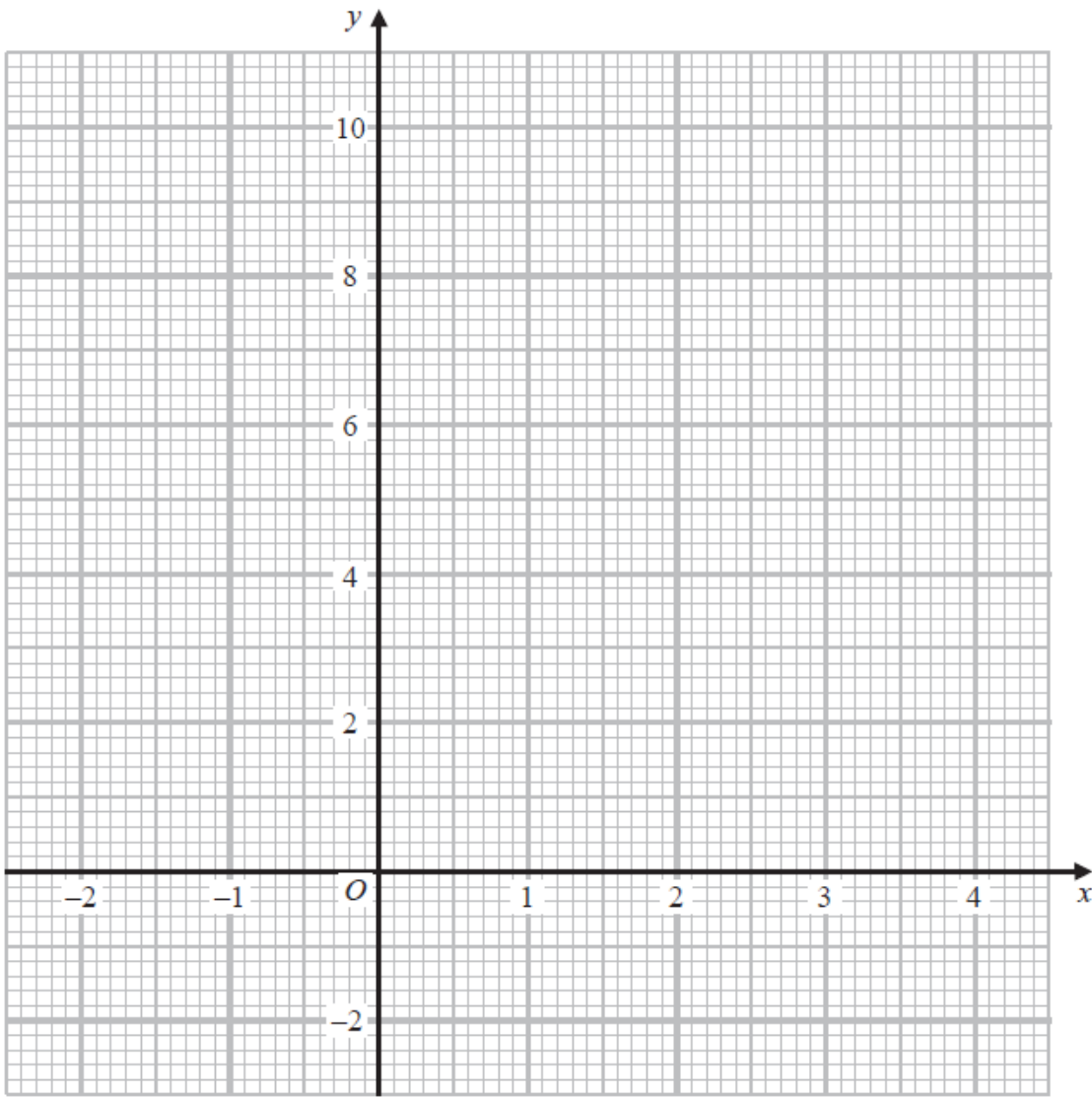
$x$	-2	-1	0	1	2	3	4
$y$	10		2			5	

(2)

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

(2)





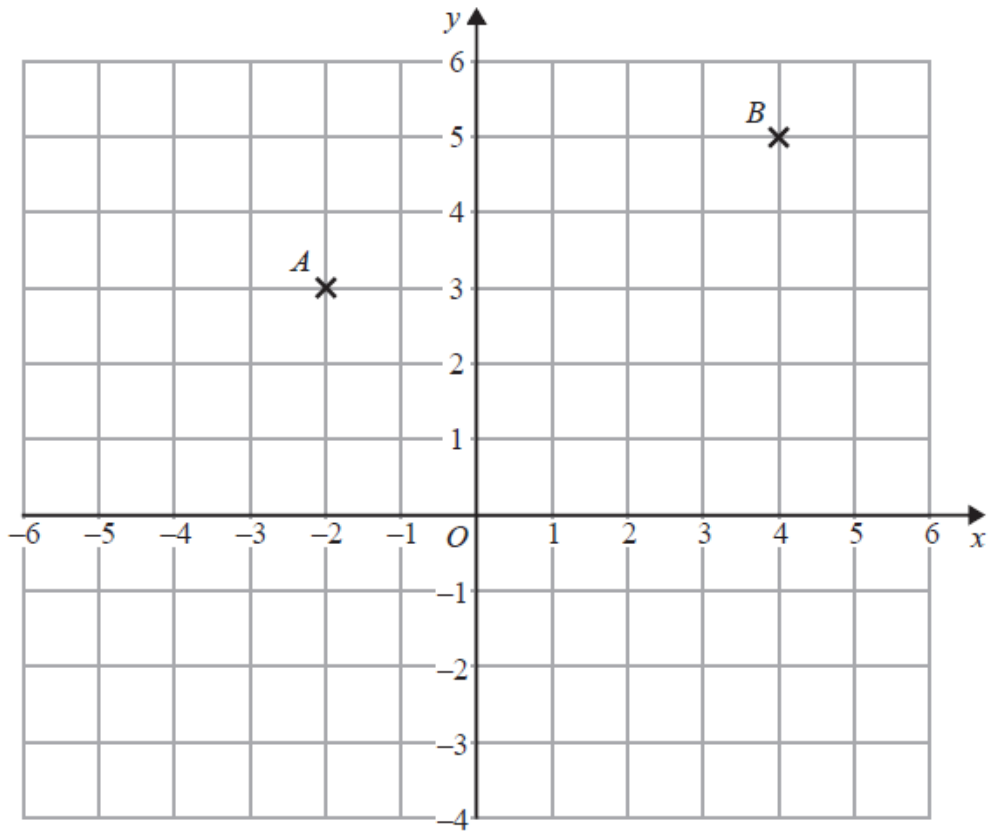
(c) Use your graph to find estimates of the solutions of the equation  $x^2 - 2x + 2 = 4$

.....

(2)

**(Total for question = 6 marks)**

Q8.



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

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

(b) Find the coordinates of the midpoint of  $AB$ .

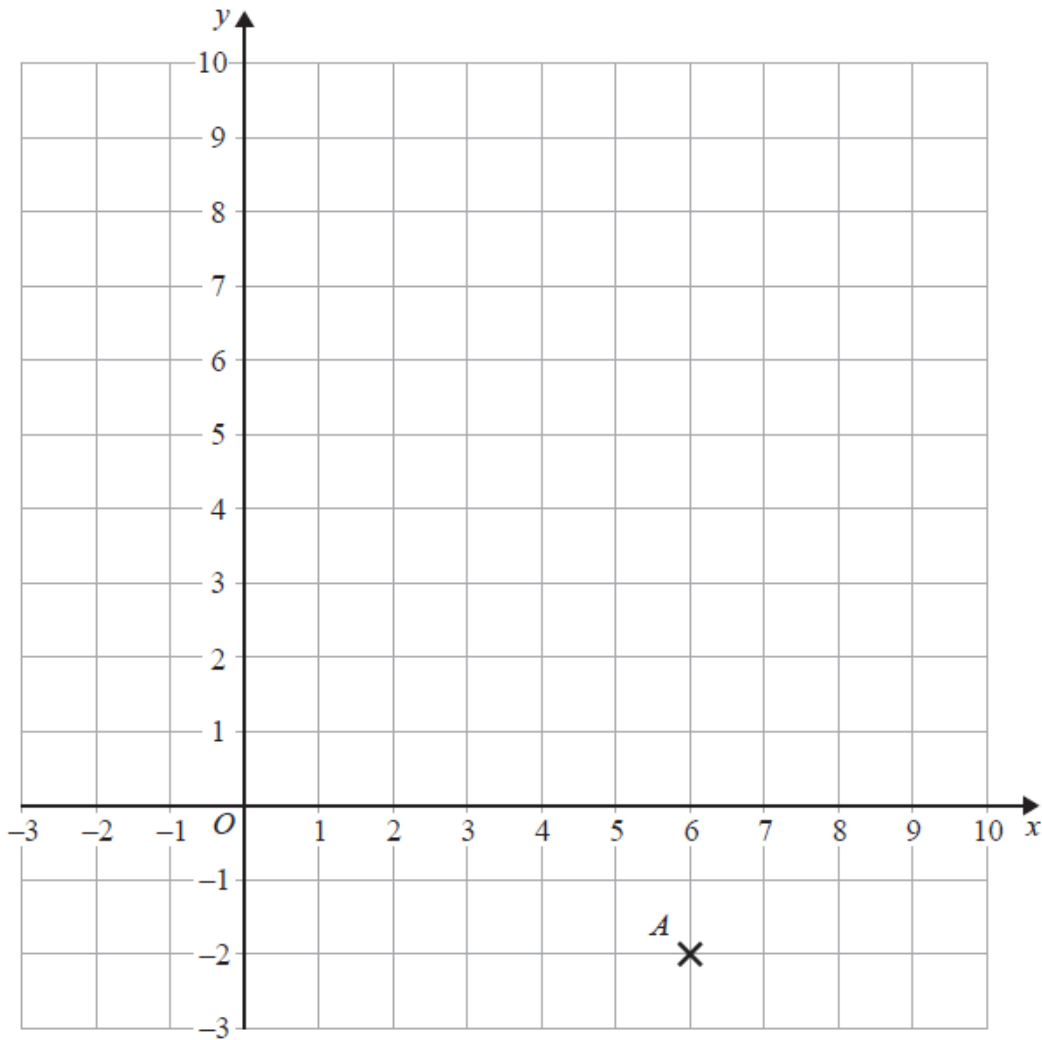
(....., .....) (1)

(c) On the grid, draw the line with equation  $y = -3$

(1)

**(Total for question = 3 marks)**

Q9.



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

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

(1)

(b) (i) Plot the point with coordinates (2, 9).

Label this point B.

(1)

(ii) Does point B lie on the straight line with equation  $y = 4x + 1$ ?

You must show how you get your answer.

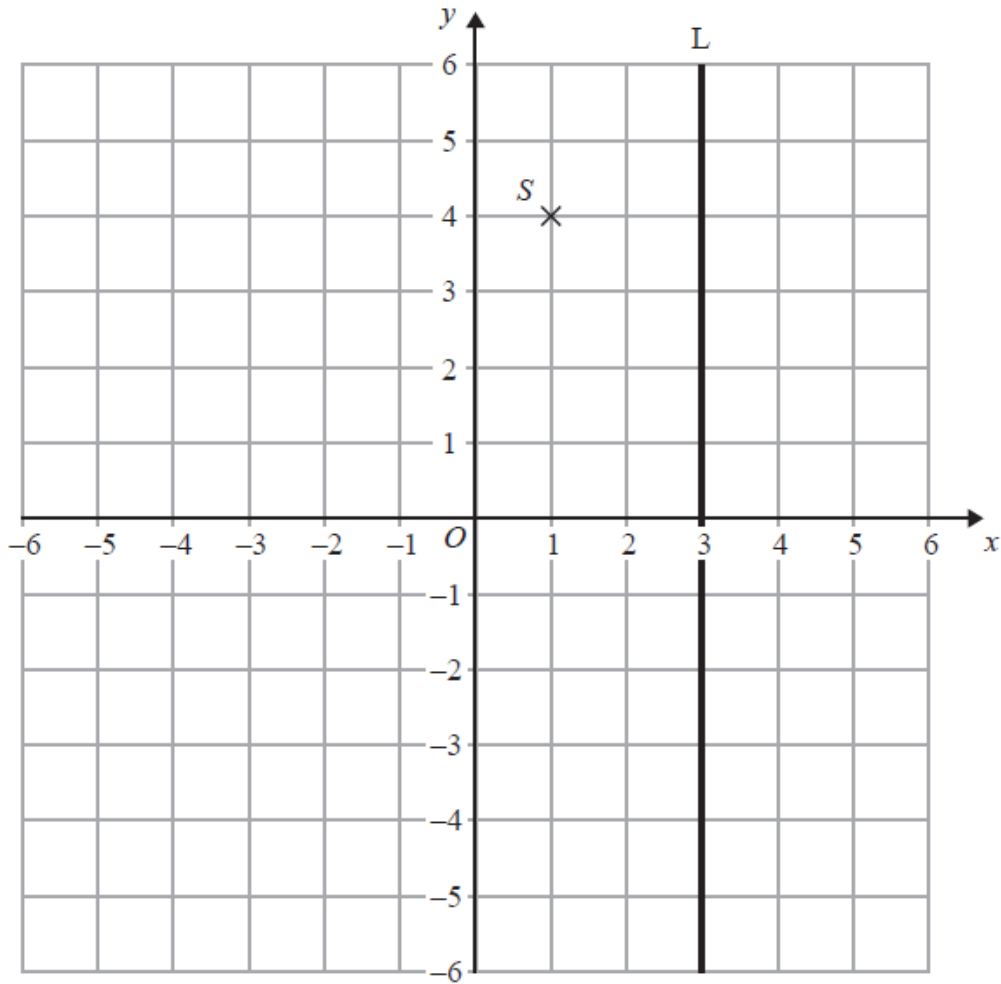
.....  
 .....

(1)

(c) On the grid, draw the line with equation  $x = -2$

(1)

Q10.



(a) Write down the coordinates of the point  $S$ .

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

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

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

(1)

(c) Write down an equation of the line  $L$ .

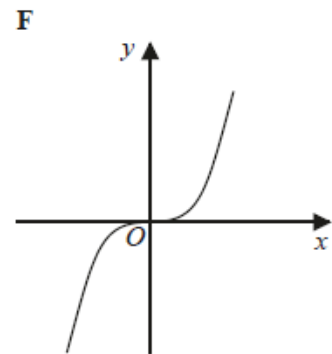
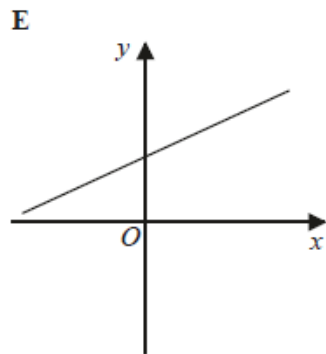
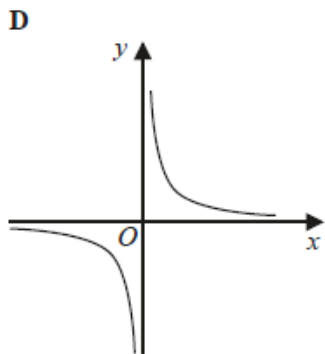
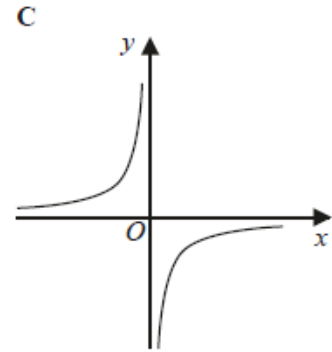
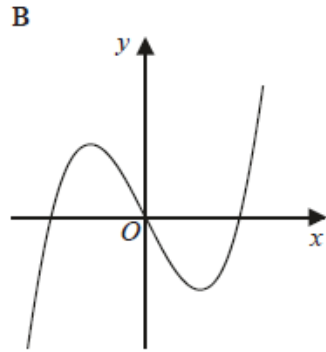
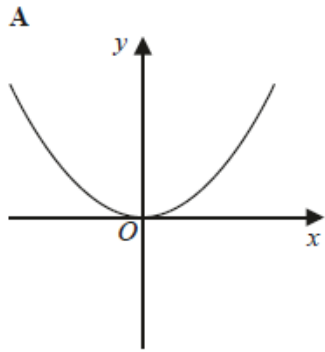
.....

(1)

(Total for Question is 3 marks)

Q11.

Here are six graphs.



Write down the letter of the graph that could have the equation

(a)  $y = x^3$

.....  
(1)

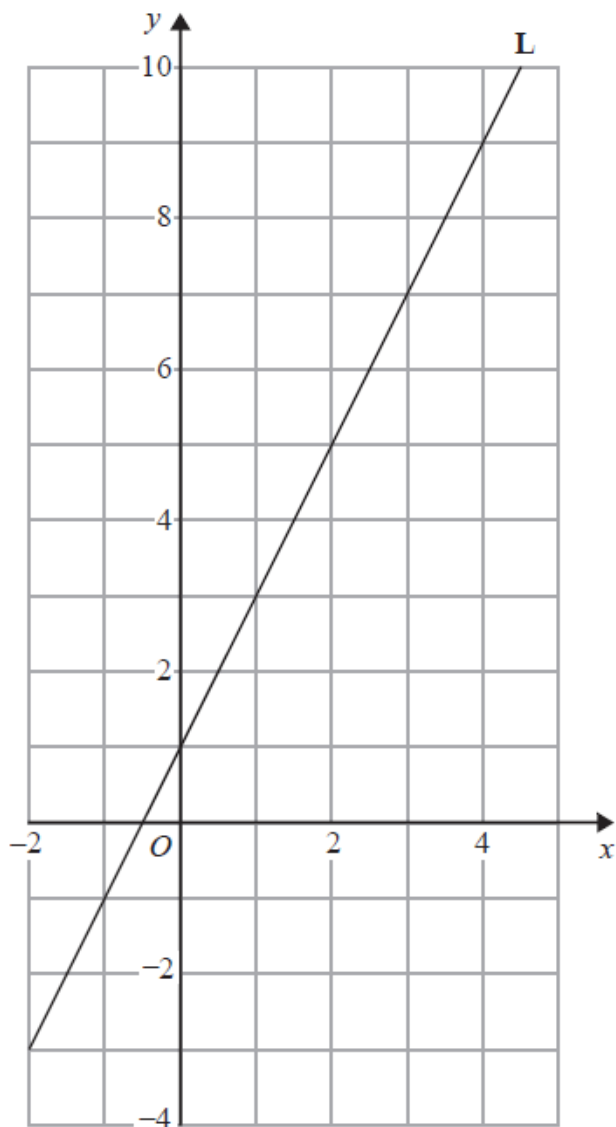
(b)  $y = \frac{1}{x}$

.....  
(1)

(Total for question = 2 marks)

Q12.

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



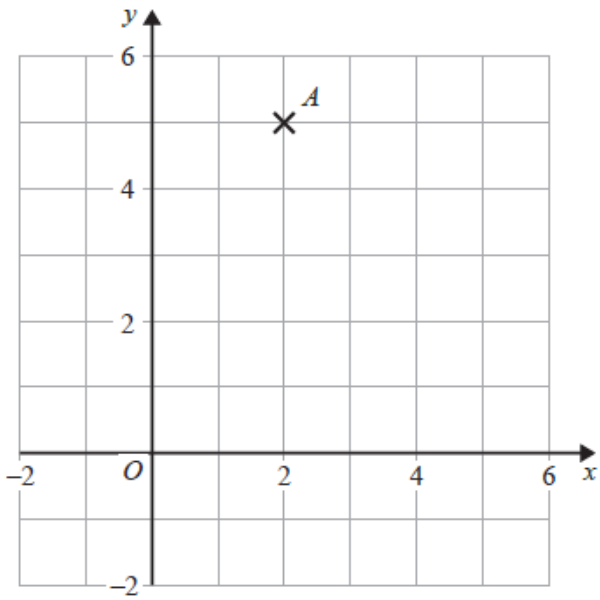
Find an equation for the straight line **L**.  
Give your answer in the form  $y = mx + c$

.....

**(Total for question is 3 marks)**

Q13.

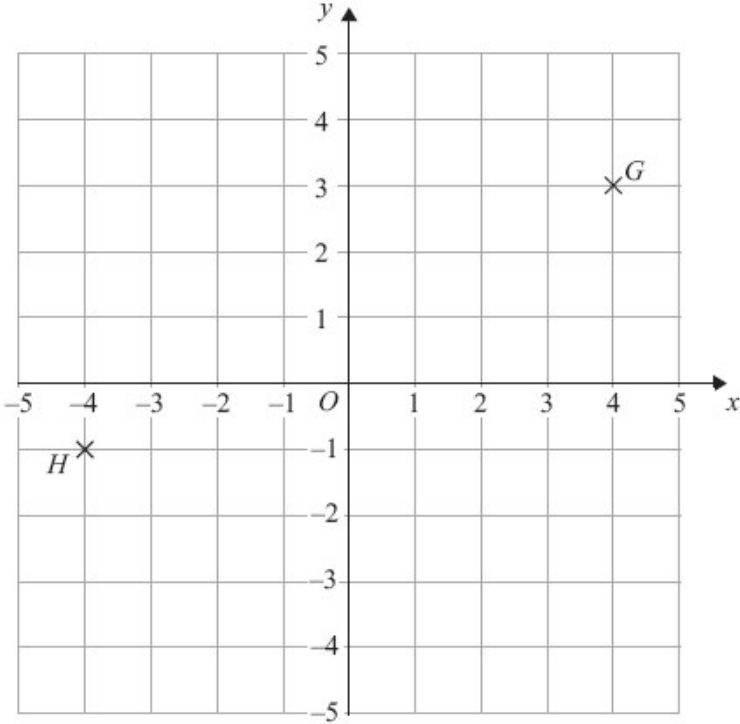
Find an equation of the straight line with gradient 3 that passes through point A.



.....

**(Total for question = 2 marks)**

Q14.



(a) (i) Write down the coordinates of the point G.

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

(ii) Write down the coordinates of the point  $H$ .

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

(2)

(b) Find the coordinates of the midpoint of  $GH$ .

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

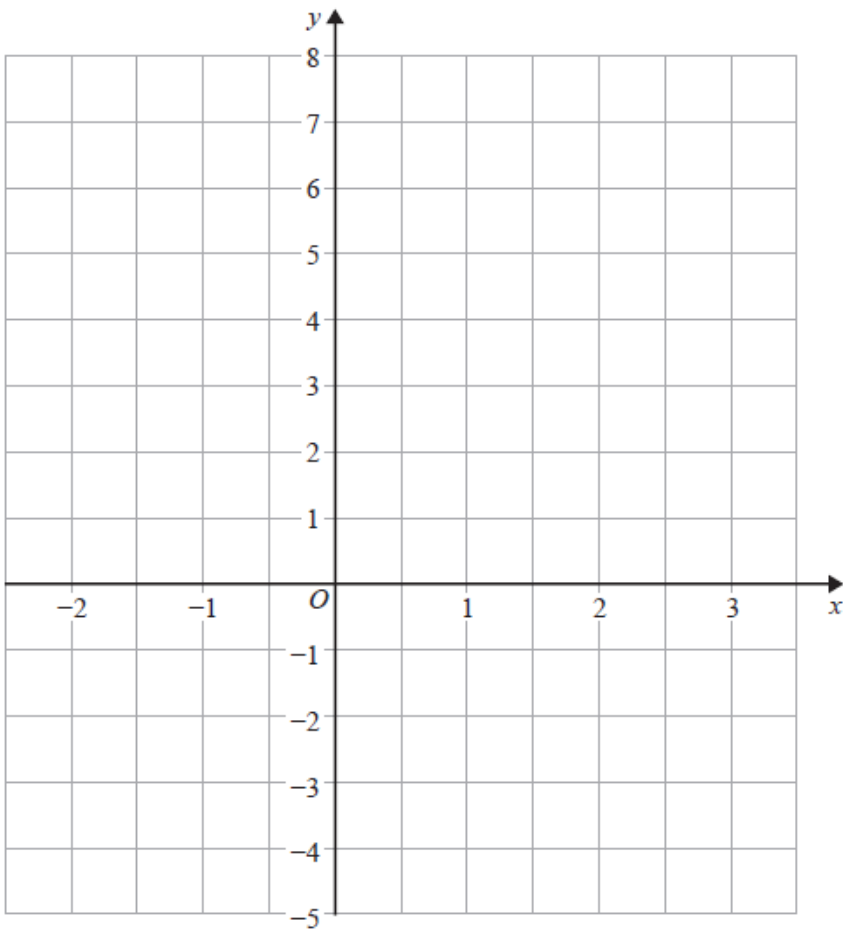
(2)

**(Total for Question is 4 marks)**

Q15.

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

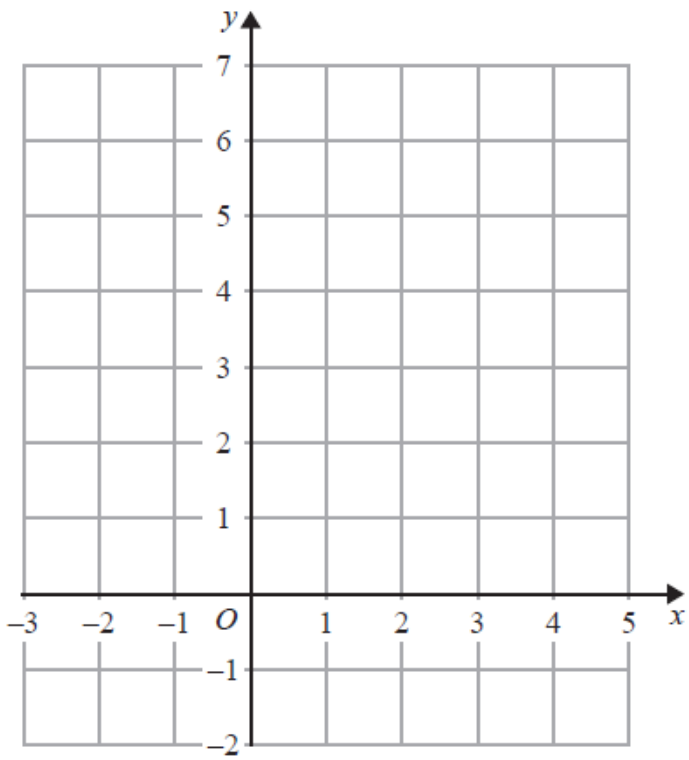




**(Total for question = 3 marks)**

Q16.

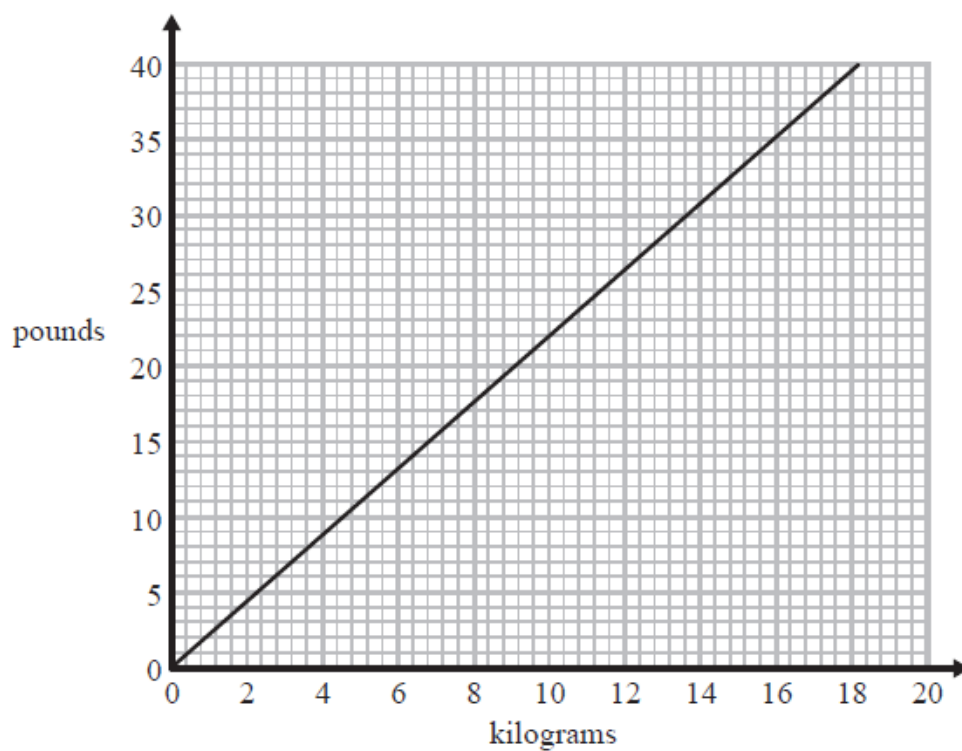
On the grid, draw the graph of  $y = \frac{1}{2}x + 3$  for values of  $x$  from  $-2$  to  $4$



**(Total for question = 3 marks)**

Q17.

You can use this graph to change between pounds and kilograms.



(a) Change 13 pounds to kilograms.

..... kilograms

(1)

A trolley can carry a maximum weight of 200 pounds.

Jack has 4 bags of potatoes.

Each bag of potatoes weighs 25 kilograms.

\*(b) Can the trolley carry the 4 bags of potatoes at the same time?

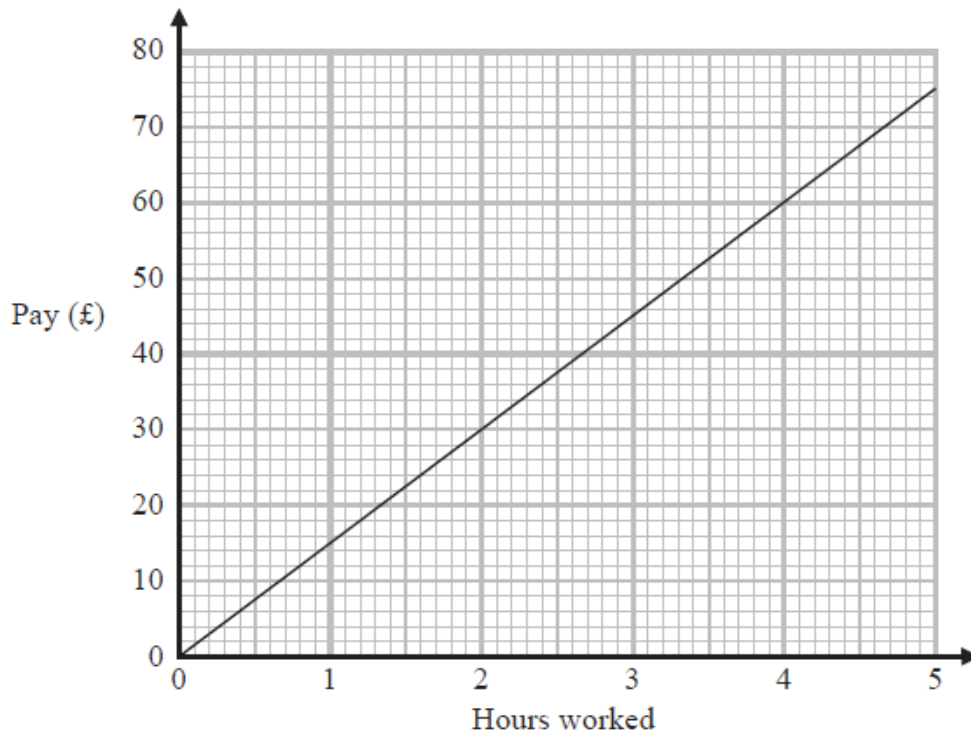
You must show your working.

(3)

**(Total for question = 4 marks)**

Q18.

Nazima uses this graph to find out how much money she is paid for the number of hours she has worked.



(a) How much money is Nazima paid for each hour she works?

£ .....

(1)

Last week Nazima worked for 36 hours.

(b) How much money was Nazima paid?

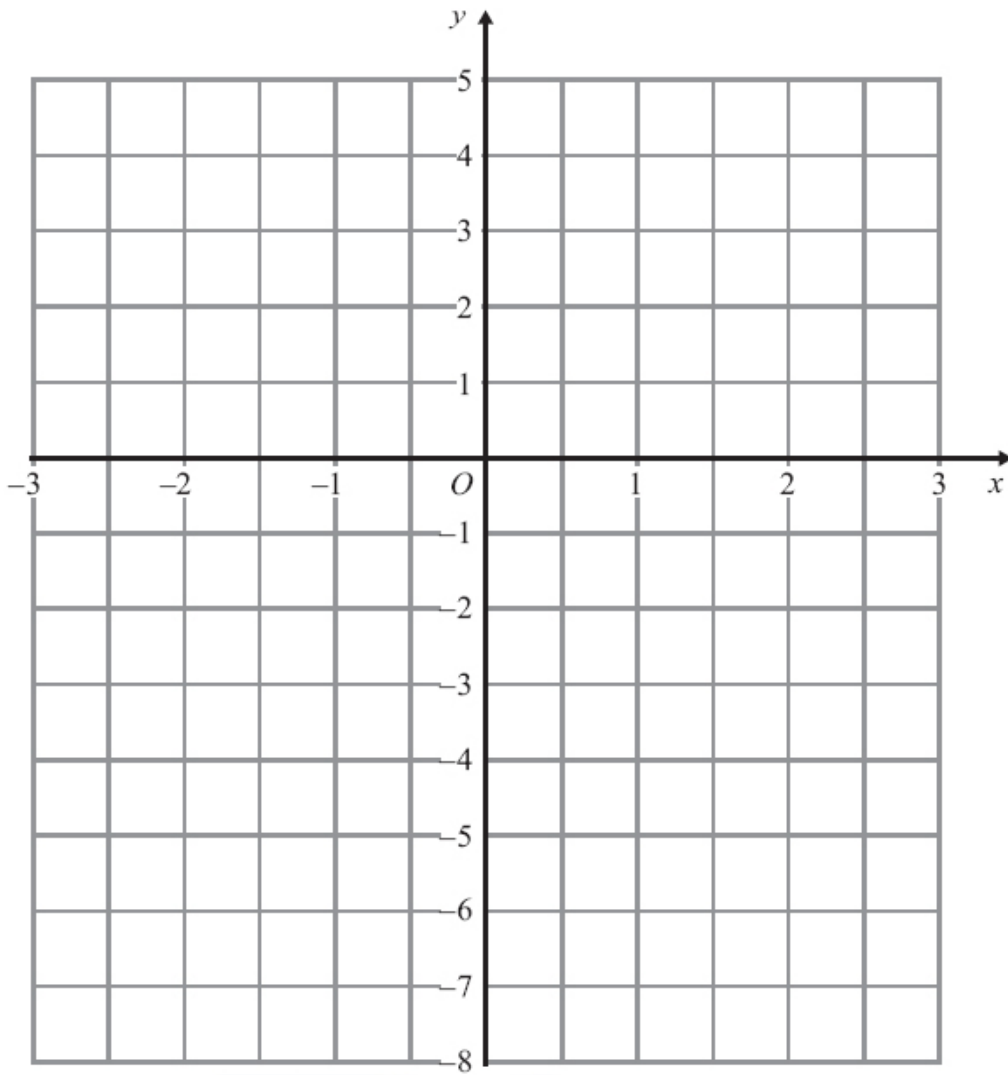
£ .....

(2)

**(Total for question = 3 marks)**

Q19.

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



**(Total for Question is 3 marks)**

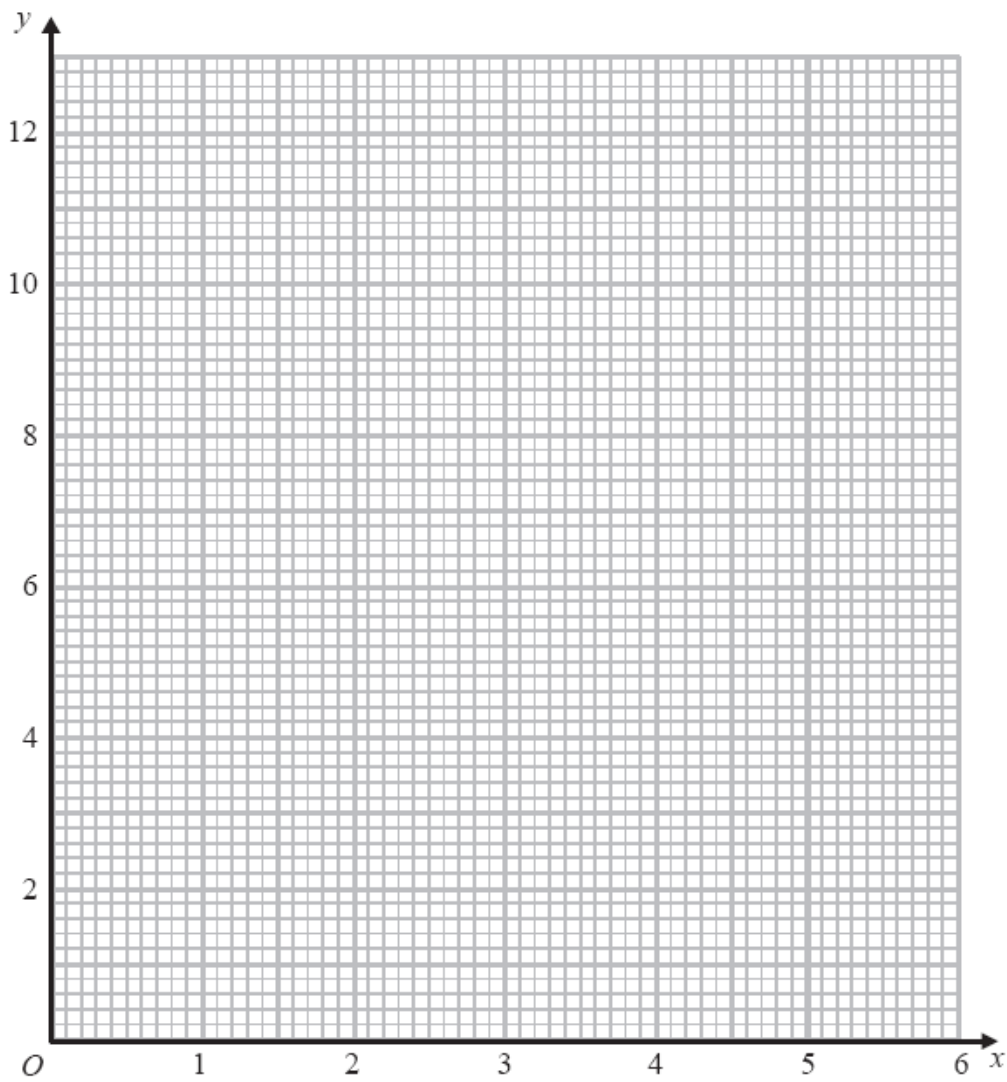
Q20.

(a) Complete the table of values for  $y = \frac{6}{x}$

$x$	0.5	1	1.5	2	3	4	5	6
$y$		6		3		1.5		

**(2)**

(b) On the grid below, draw the graph of  $y = \frac{6}{x}$  for values of  $x$  from 0.5 to 6



(2)

**(Total for question = 4 marks)**

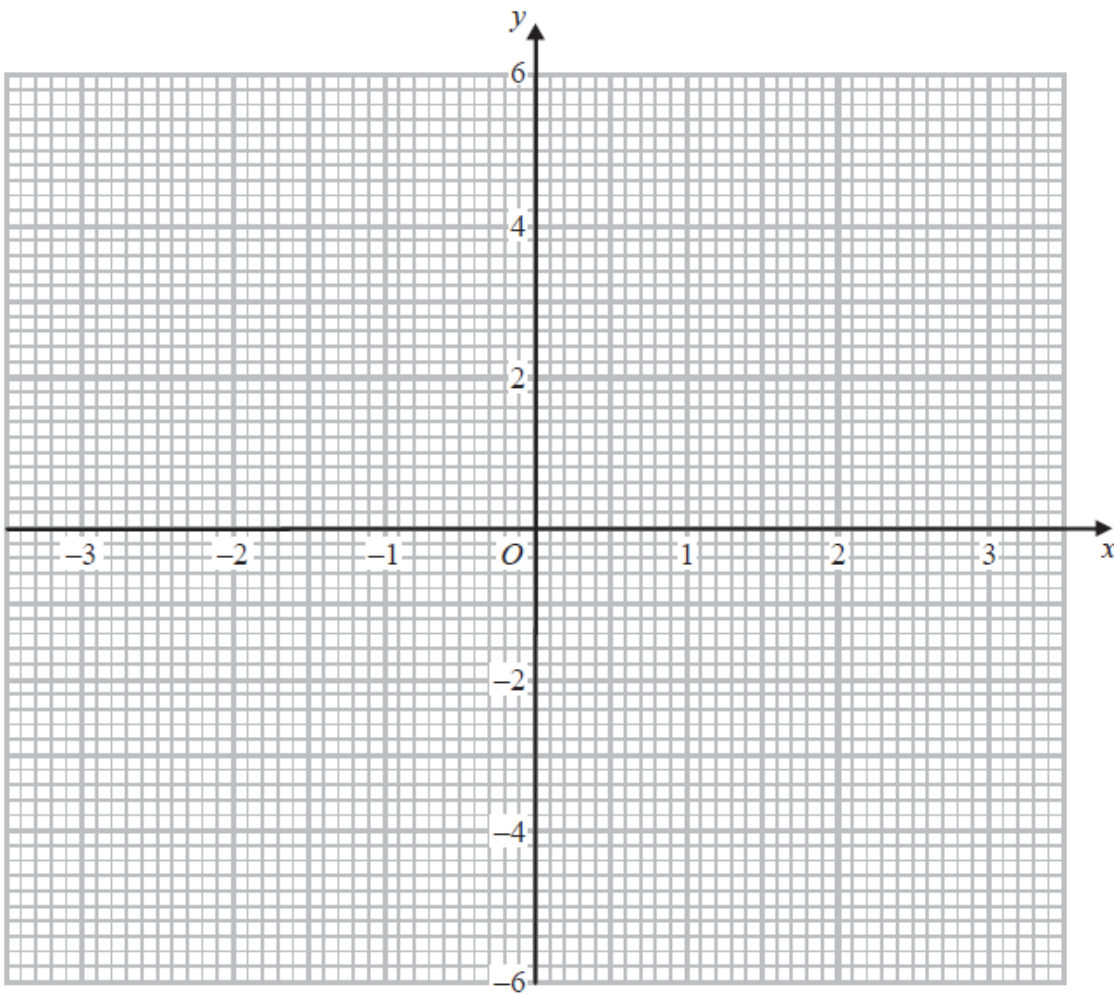
Q21.

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

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

(2)

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



(2)

**(Total for question = 4 marks)**

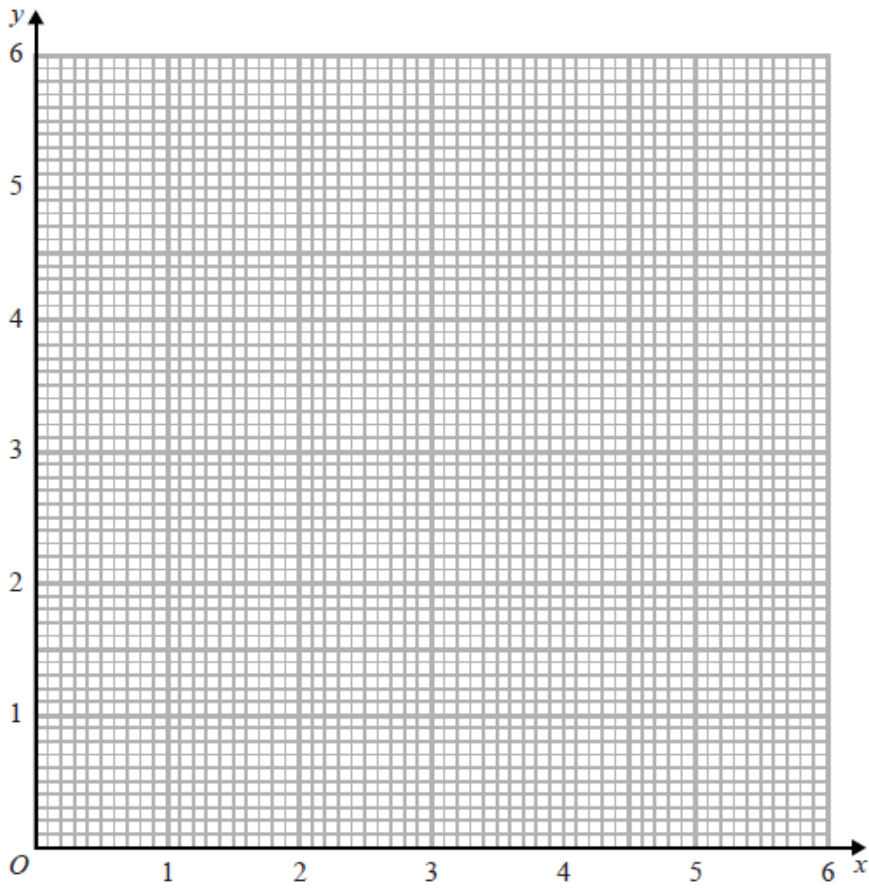
Q22.

(a) Complete the table of values for  $y = \frac{3}{x}$

$x$	0.5	1	2	3	4	5	6
$y$		3	1.5		0.75		

(2)

(b) On the grid, draw the graph of  $y = \frac{3}{x}$  for values of  $x$  from 0.5 to 6

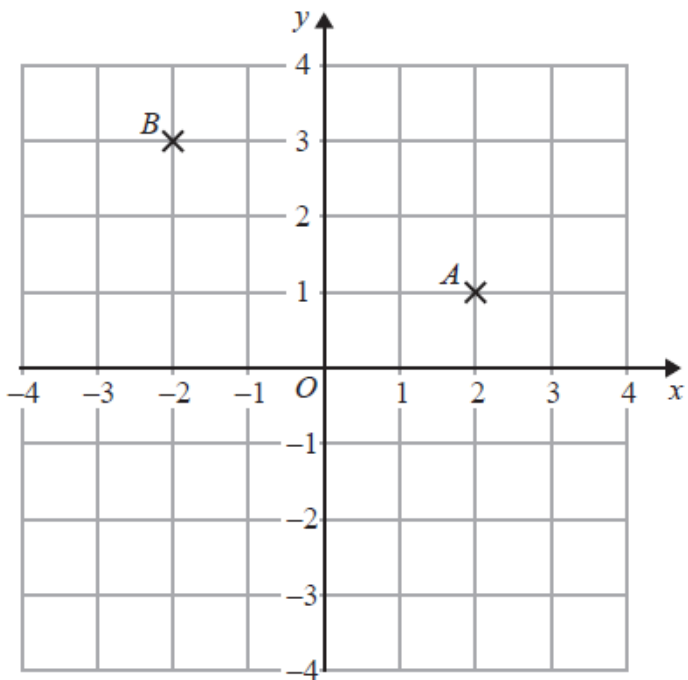


(2)

**(Total for question = 4 marks)**

Q23.





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

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

(1)

(b) Write down the coordinates of the point B.

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

(1)

(c) On the grid, mark with a cross (x) the point  $(-3, -1)$ .  
Label this point C.

(1)

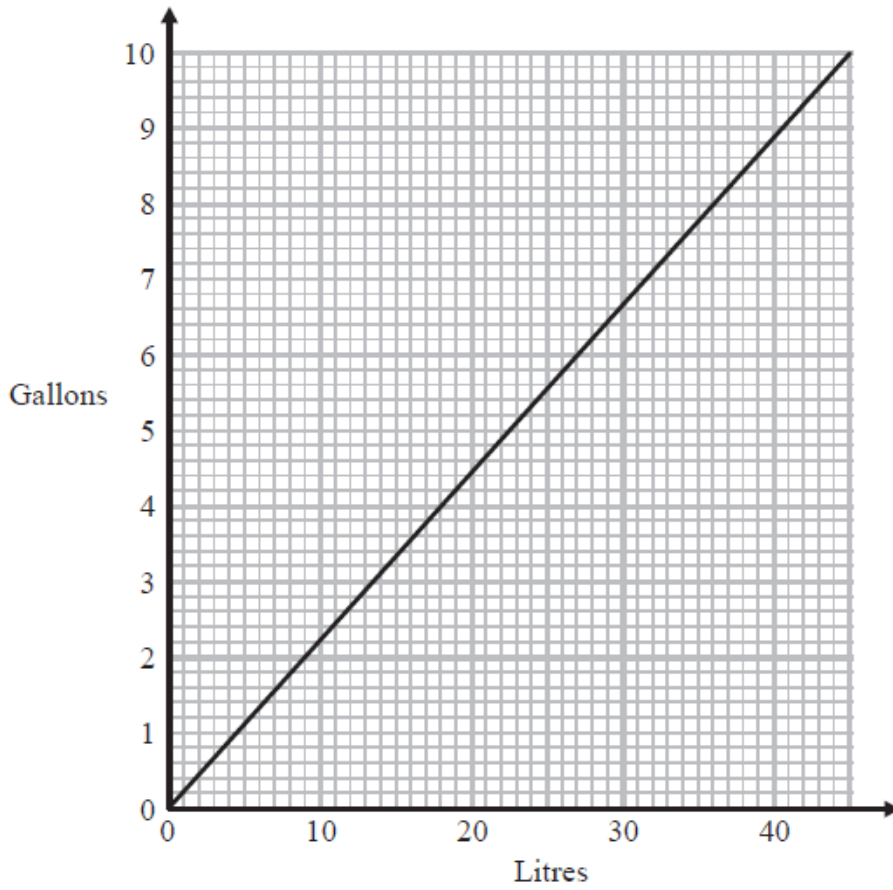
(d) On the grid, draw the line  $x = 3$

(1)

**(Total for question = 4 marks)**

Q24.

You can use this graph to change between litres and gallons.



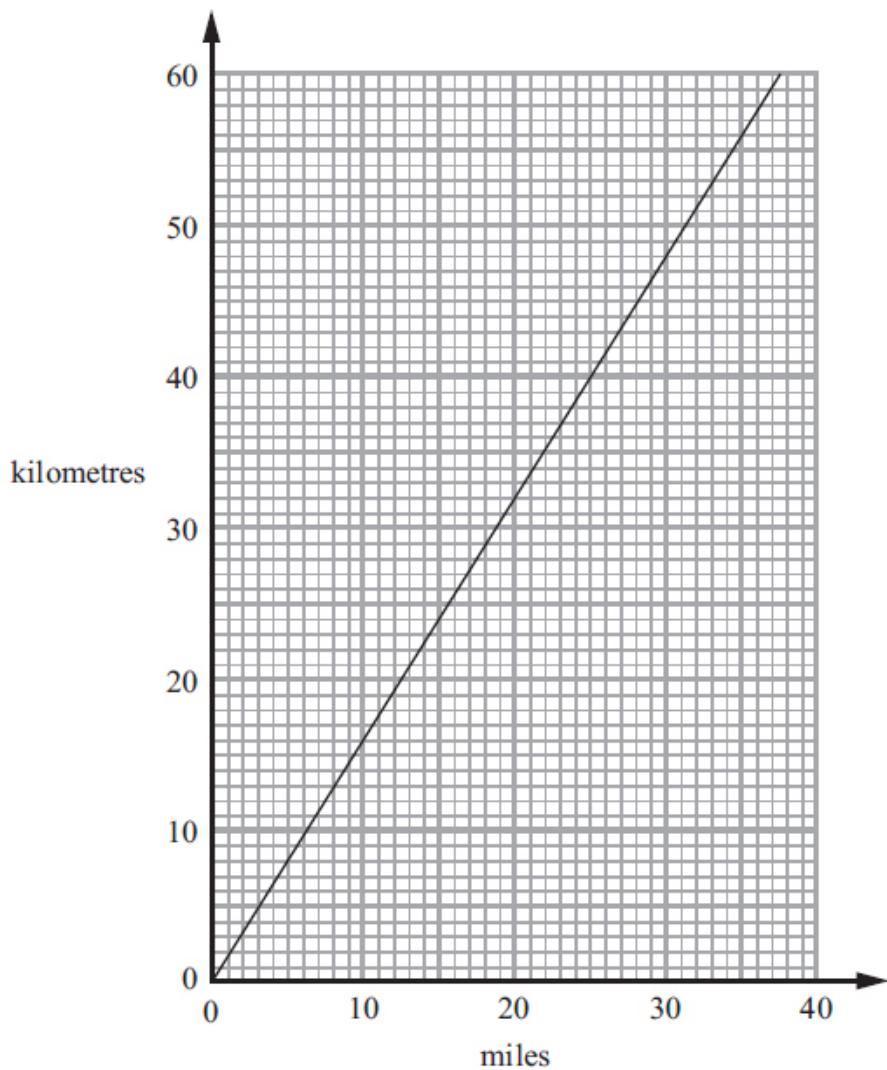
Which is the greater, 60 litres or 12 gallons?  
 You must show how you get your answer.

.....

**(Total for question = 2 marks)**

Q25.

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



(a) Use the graph to change 30 miles to kilometres.

..... kilometres

(1)

(b) Use the graph to change 40 kilometres to miles.

..... miles

(1)

(c) Change 100 miles to kilometres.

..... kilometres

(2)

**(Total for Question is 4 marks)**

## Mark Scheme

Q1.

Question	Working	Answer	Mark	Notes
		B D A C	B2 (B1)	for all four correctly matched (for 2 correctly matched)

Q2.

Question	Answer	Mark	Mark scheme	Additional guidance
	B C D A	B2 (B1)	cao for two or three correct)	

Q3.

Question	Answer	Mark	Mark scheme	Additional guidance														
	Line Drawn	B3	for a correct line drawn between $x = -2$ and $x = 3$	Accept freehand line drawn														
		(B2)	for a correct straight-line segment through at least 3 of $(-2, -6), (-1, -4), (0, -2), (1, 0), (2, 2), (3, 4)$	Ignore any incorrect points														
			or for all of the above points plotted but not joined	Table of values <table border="1"> <tr> <td><math>x</math></td> <td>-2</td> <td>-1</td> <td>0</td> <td>1</td> <td>2</td> <td>3</td> </tr> <tr> <td><math>y</math></td> <td>-6</td> <td>-4</td> <td>-2</td> <td>0</td> <td>2</td> <td>4</td> </tr> </table>	$x$	-2	-1	0	1	2	3	$y$	-6	-4	-2	0	2	4
$x$	-2	-1	0	1	2	3												
$y$	-6	-4	-2	0	2	4												
		(B1)	for at least 2 correct points stated or plotted	Ignore any incorrect points Coordinates may be in a table or working														
			or a single line drawn with positive gradient through $(0, -2)$	Do not accept $y = -2$ drawn														
			or a single line with gradient 2)															

Q4.

Question	Answer	Mark	Mark scheme	Additional guidance
	D, F, A	C2	for all 3 correct	
		(C1)	for 1 or 2 correct)	

Q5.

Question	Answer	Mark	Mark scheme	Additional guidance
(a)	1, -4	B1	cao	Brackets are given on the answer line, ignore any extra brackets seen
(b)	-1 and 3	B2	for both correct answers	
		B1	for one correct solution or $(x + 1)(x - 3)$ or $(-1, 3)$	

Q6.

Question	Answer	Mark	Mark scheme	Additional guidance
(a)	-2, 4	B1	cao	If answers are stated as coordinates, award M1 for both coordinates and M0 for one coordinate. With no extras
(b)	0.55 to 0.65, 3.35 to 3.45	M1	for correct method, eg marking intercepts with $x$ -axis or one correct answer or both solutions given as a coordinate eg $(0.6, 3.4)$ or $(0.6, 0)$ $(3.4, 0)$	
		A1	for answers in the ranges 0.55 to 0.65 and 3.35 to 3.45	

Q7.

Question	Answer	Mark	Mark scheme	Additional guidance
(a)	(10), 5, (2), 1, 2, (5), 10	B2 (B1)	for all 4 values correct for 2 or 3 correct values)	
(b)	Graph	M1  A1	fit (dep on B1) for plotting at least 5 of their points correctly for a fully correct curve drawn	Accept a freehand curve drawn that is not made of line segments
(c)	-0.65 to -0.8 and 2.65 to 2.8	M1  A1	for $v = 4$ drawn or intersection with $y = 4$ or $y = x^2 - 2x - 2$ drawn or 1 correct value (fit a quadratic) fit a quadratic graph or for answers in the range 2.65 to 2.8 and -0.65 to -0.8	If answers stated as coordinates, award M1 for both coordinates and M0 for one coordinate

Q8.

Question	Working	Answer	Notes
a		(4, 5)	B1
b		(1, 4)	B1
c		Correct line	B1

Q9.

Question	Working	Answer	Mark	Notes
(a)		(6, -2)	B1	cao
(b) i		Correct point	B1	cao for point marked at (2, 9)
(b) ii		Yes with reasoning	B1	Yes with correct substitution $4 \times 2 + 1 = 9$ or by drawing correct line on diagram
(c)		Correct line	B1	for drawing line $x = -2$ cao

Q10.

PAPER: IMA0_2F				
Question	Working	Answer	Mark	Notes
(a)		(1, 4)	1	B1 cao
(b)		cross at (-3, 2)	1	B1 for cross at (-3, 2)
(c)		$x = 3$	1	B1 cao

Q11.

Question	Answer	Mark	Mark scheme	Additional guidance
(a)	F	B1	cao	
(b)	D	B1	cao	

Q12.

Paper 1MA1:3F			
Question	Working	Answer	Notes
		$y = 2x + 1$	M1 for a method to find the gradient M1 for a method to find the $c$ in $y = mx + c$ A1 $y = 2x + 1$ oe in this format

Q13.

Question	Working	Answer	Mark	Notes
		$y = 3x - 1$	M1  A1	for $y = 3x + c$ or a line drawn with gradient 3 passing through $A$ oe



Q14.

	Working	Answer	Mark	Notes
(a)(i)		( 4, 3 )	2	B1 cao
(ii)		( -4, -1 )		B1 cao
(b)		( 0, 1 )	2	M1 for ( 0, 1 ) marked on the graph or ( 0, y ) or ( x, 1 ) A1 cao

Q15.

Question	Working	Answer	Mark	Notes
		$y = 2x + 1$ drawn	3	M1 at least 2 correct attempts to find points by substituting or line drawn with gradient of 2 or line drawn with y intercept at 1 M1 at least 2 correct points plotted or line segment of $y = 2x + 1$ drawn A1 correct line between $x = -2$ and $x = 3$

Q16.

Question	Working	Answer	Mark	Notes																
	$y = \frac{1}{2}x + 3$ <table border="1" data-bbox="204 230 446 286"> <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>2</td> <td>2.5</td> <td>3</td> <td>3.5</td> <td>4</td> <td>4.5</td> <td>5</td> </tr> </table>	x	-2	-1	0	1	2	3	4	y	2	2.5	3	3.5	4	4.5	5	Correct line from (-2, 2) to (4, 5)	3	<p><b>(Table of values / calculation of values)</b>            M1 for at least 2 correct attempts to find points by substituting values of <math>x</math>.            M1 ft for plotting at least 2 of their points (any points plotted from their table must be correctly plotted)            A1 for correct line between <math>x = -2</math> and <math>x = 4</math></p> <p><b>(No table of values)</b>            M1 for at least 2 correct points with no more than 2 incorrect points plotted            M1 for at least 2 correct points (and no incorrect points) plotted <b>OR</b> line segment of <math>y = \frac{1}{2}x + 3</math> drawn            A1 for correct line between <math>x = -2</math> and <math>x = 4</math></p> <p><b>(Use of <math>y = mx + c</math>)</b>            M1 for line drawn with gradient of <math>\frac{1}{2}</math>  <b>OR</b> line drawn with a <math>y</math> intercept of 3            M1 for line drawn with gradient of <math>\frac{1}{2}</math>  <b>AND</b> line drawn with a <math>y</math> intercept of 3            A1 for correct line between <math>x = -2</math> and <math>x = 4</math></p> <p>SC : B2 for correct line from <math>x = 0</math> to <math>x = 4</math></p>
x	-2	-1	0	1	2	3	4													
y	2	2.5	3	3.5	4	4.5	5													

PAPER: IMA0 1F				
Question	Working	Answer	Mark	Notes
(a)		5.8 to 6	1	B1 for an answer in the range 5.8 to 6
* (b)		No (supported)	3	M1 for a correct conversion of any amount (lb to kg or kg to lb) excepting that in (a) M1 (dep M1) for a complete method to convert 100 kg (from $25 \times 4$ ) to lb (to compare with 200 lb) or to convert 50 lb (from $200 \div 4$ ) to kg (to compare with 25 kg) C1 for "no" and a comparison with a converted weight of 212 - 228 pounds or 88 - 94 kg

Q18.

Question	Answer	Mark	Mark scheme	Additional guidance
(a)	15	B1	14 to 16	
(b)	540	M1	for a complete method, eg $30 \times (36 \div 2)$ or $45 \times (36 \div 3)$ or $60 \times (36 \div 4)$ or ft "hourly rate from (a)" $\times 36$	May be seen using a complete build up method for "45" allow 44 to 46 ft for accuracy
		A1	for 540 or ft (a)	Condone use of mixed rates eg $75 \times 7 + 16 = 541$

Q19.

Question	Working	Answer	Mark	Notes												
	<p>Table of values</p> <table border="1"> <tr> <td>x</td> <td>-2</td> <td>-1</td> <td>0</td> <td>1</td> <td>2</td> </tr> <tr> <td>y</td> <td>-7</td> <td>-5</td> <td>-3</td> <td>-1</td> <td>1</td> </tr> </table> <p>OR</p> <p>Using <math>y = mx + c</math> Gradient 2 intercept -3</p>	x	-2	-1	0	1	2	y	-7	-5	-3	-1	1	<p>Single line drawn from (-2, -7) to (2, 1)</p>	3	<p><b>(Table of values)</b> M1 for at least 2 correct attempts to find points by substituting values of x. M1 (dep) ft for correctly plotting at least 2 of their points (any points plotted from their table must be plotted correctly) A1 for the correct line from (-2, -7) to (2, 1) OR <b>(No table of values)</b> M2 for at least 2 correct points (and no incorrect points) correctly plotted or for a line segment of the graph of <math>y = 2x - 3</math> drawn (ignore any additional incorrect line segments) [M1 for at least 3 correct points plotted with no more than 2 incorrect points] A1 for the correct line from (-2, -7) to (2, 1) OR <b>(Use of <math>y = mx + c</math>)</b> M2 for a single straight line of gradient 2, passing through (0, -3) [M1 for a single straight line of gradient 2 or for a single straight line passing through (0, -3)] A1 for the correct line from (-2, -7) to (2, 1)</p>
x	-2	-1	0	1	2											
y	-7	-5	-3	-1	1											

Q20.

Question	Working	Answer	Mark	Notes
(a)		12, 4, 2, 1.2, 1	B2 (B1)	for fully correct table (allow fractions or decimals) for 3 or 4 of 12, 4, 2, 1.2, 1
(b)		Correct curve	M1 A1	ft (dep on B1 in (a)) for plotting at least 6 points from their table correctly for a fully correct curve

Q21.

5MB3F_01 November 2015				
Question	Working	Answer	Mark	Notes
(a)		0, 4, 3, -5	2	M1 for one correct value, could be taken from graph A1 cao
(b)		correct curve	2	M1 for at least 4 points plotted correctly from table A1 for correct curve drawn

Q22.

Question	Working	Answer	Mark	Notes																
(a)	<table border="1"> <tr> <td>x</td> <td>0.5</td> <td>1</td> <td>2</td> <td>3</td> <td>4</td> <td>5</td> <td>6</td> </tr> <tr> <td>y</td> <td>6</td> <td>3</td> <td>1.5</td> <td>1</td> <td>0.75</td> <td>0.6</td> <td>0.5</td> </tr> </table>	x	0.5	1	2	3	4	5	6	y	6	3	1.5	1	0.75	0.6	0.5	Correct table	2	M1 2 or 3 entries correct A1 all 4 table entries correct
x	0.5	1	2	3	4	5	6													
y	6	3	1.5	1	0.75	0.6	0.5													
(b)		Graph	2	M1 (dep on M1) for 6 or 7 points plotted from table A1 correct graph drawn																

Q23.

PAPER: 1MA0_1F				
Question	Working	Answer	Mark	Notes
(a)		2, 1	1	B1 cao
(b)		-2, 3	1	B1 cao
(c)		Point marked	1	B1 for point marked at (-3, -1)
(d)		Line $x = 3$ drawn	1	B1 for line $x = 3$ drawn

Q24.

Question	Working	Answer	Notes
		60 litres with evidence	M1 reads from graph, eg $30l = 6.6$ gals or $6$ gals = $27l$ C1 60 litres with sufficient evidence

Q25.

Question	Working	Answer	Mark	Notes
(a)		48	1	B1 for an answer in the range 47.5 to 48.2
(b)		25	1	B1 cao
(c)	$32 \times 5$ $16 \times 10$ $100 \times 1.6$	155 to 165	2	M1 for complete method reading from graph then multiplying by a suitable scale factor. Eg $1.6 \times 100$ , $8 \times 20$ , $16 \times 10$ , $32 \times 5$ , $40 \times 4$ , $48 \times 3\frac{1}{3}$ or valid use of answer to (a) or (b) A1 for answer in the range 155 to 165 or ft on their answers to either (a) or (b)