Name: _____

IGCSE (9-1) Maths
topics new to Foundation tier:
Equations of straight lines

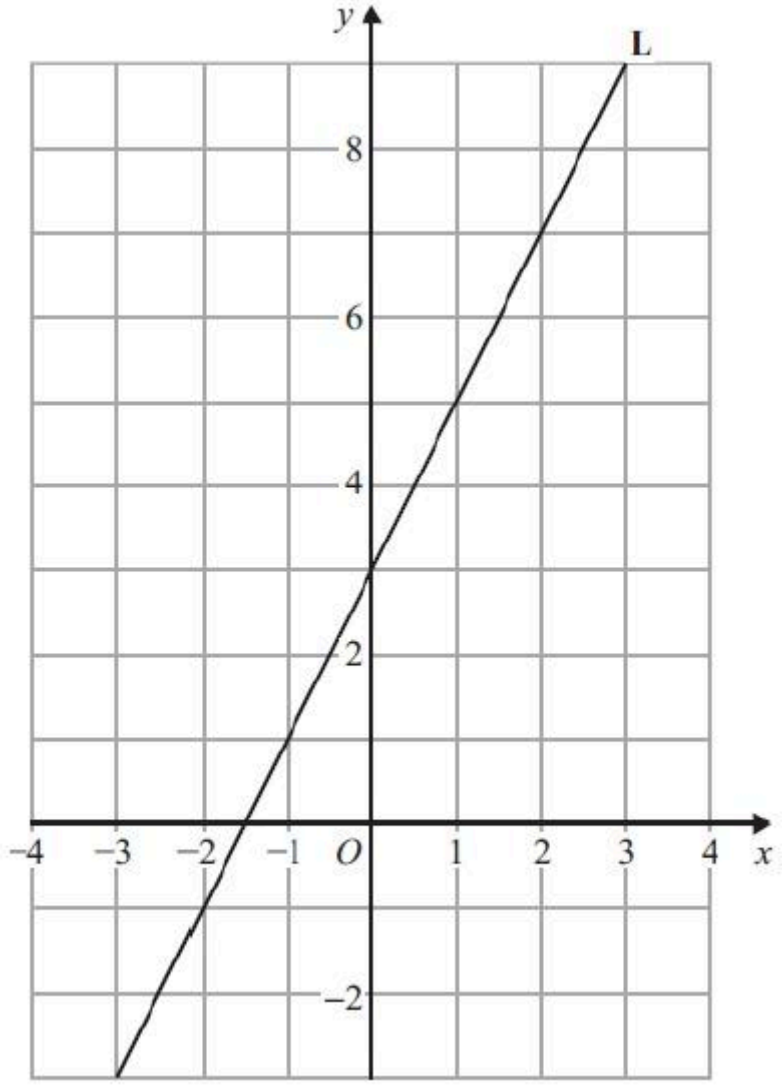
Date:

Time: 45 minutes

Total marks available: 40

Total marks achieved: _____

Q1. Here is a straight line **L** drawn on a grid.

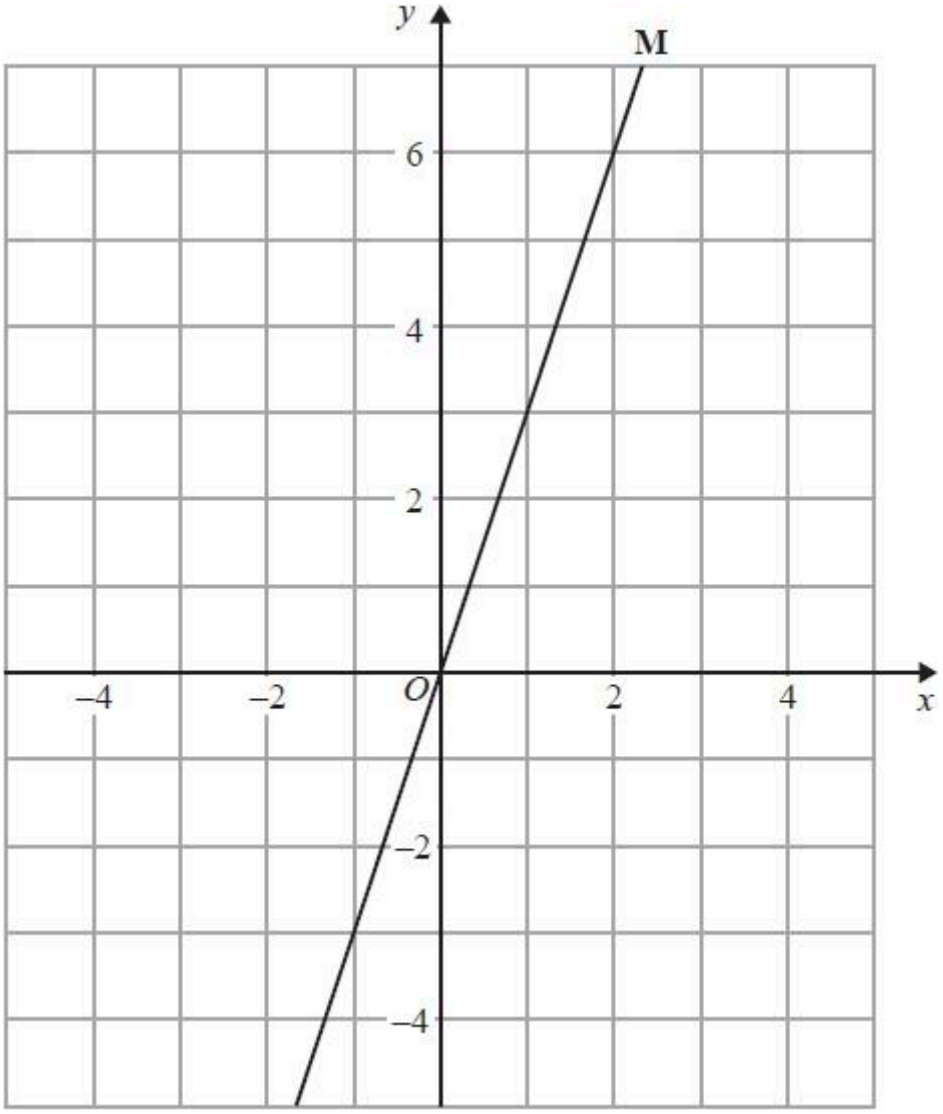


(i) Find the gradient of **L**.

(ii) Find an equation of **L**.

(Total 4 marks)

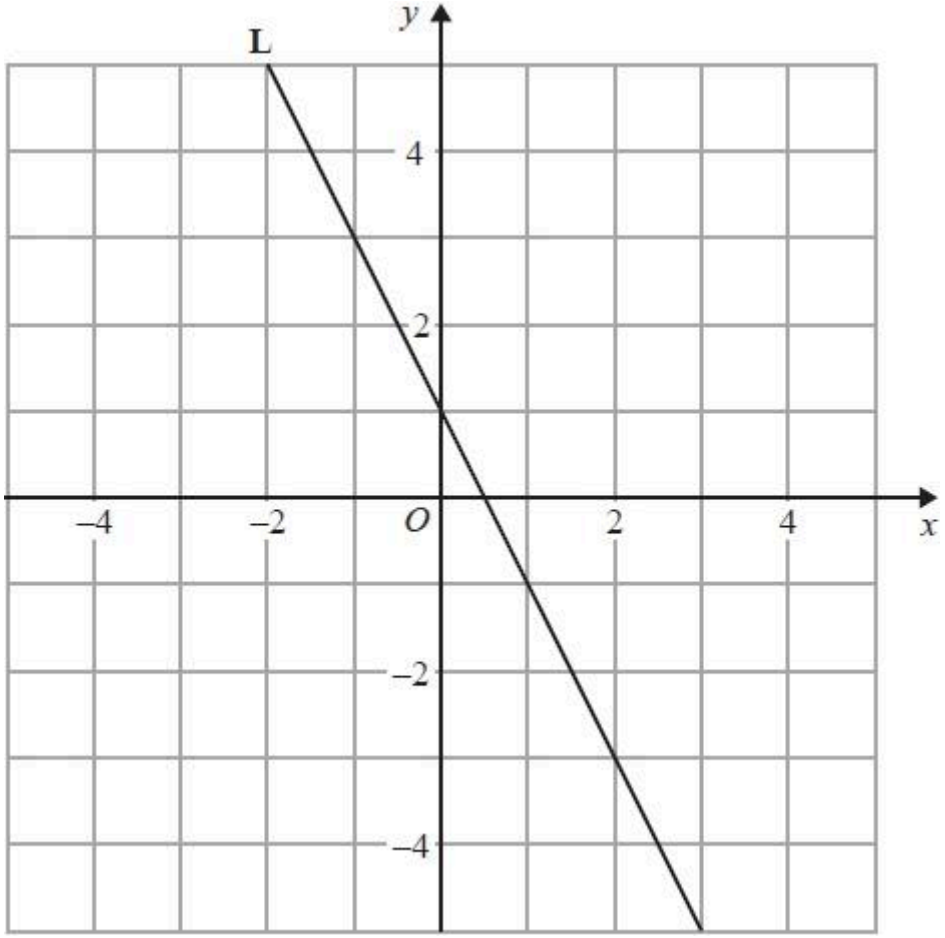
Q2. The straight line **M** is drawn on the grid below.



(*a*) Work out the gradient of **M**.

(2)

The straight line **L** is drawn on the grid below.

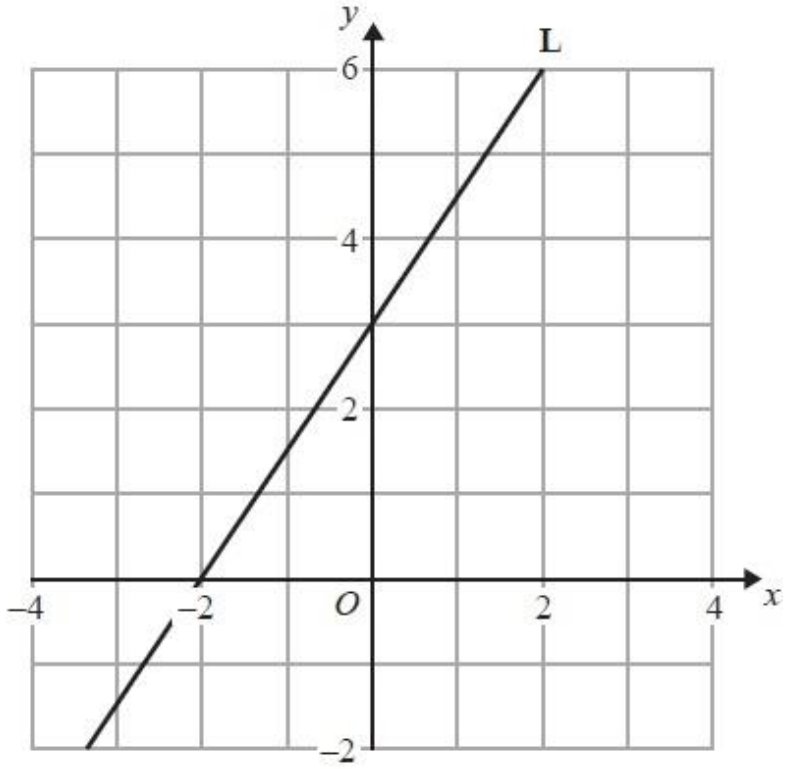


(*b*) Find an equation of **L**.

(2)

(Total 4 marks)

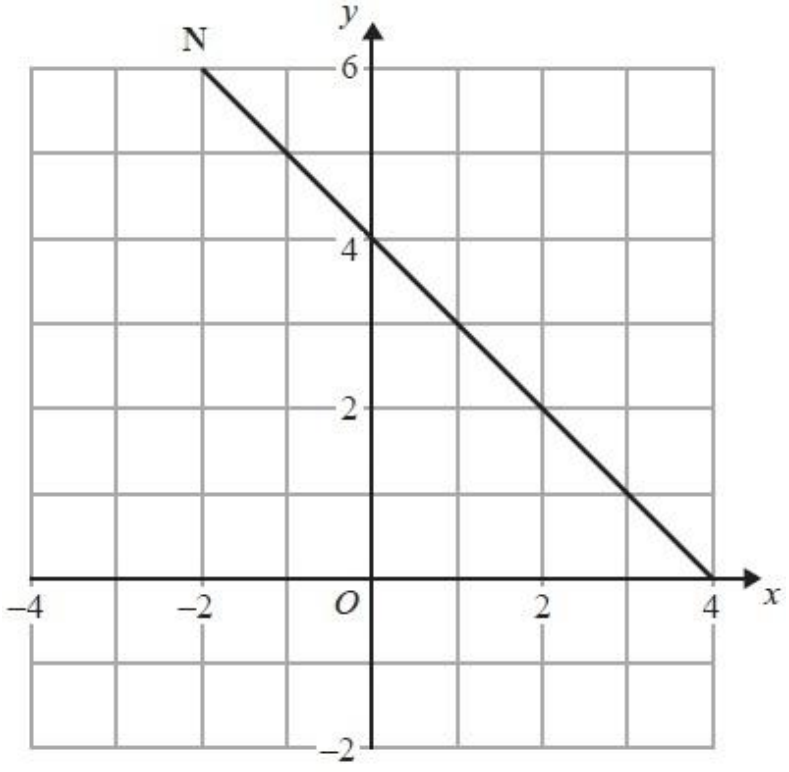
Q3. The line **L** is drawn on the grid below.



(*a*) Work out the gradient of the line **L**.

(2)

The line **N** is drawn on the grid below.



(*b*) Find an equation of the line **N**.

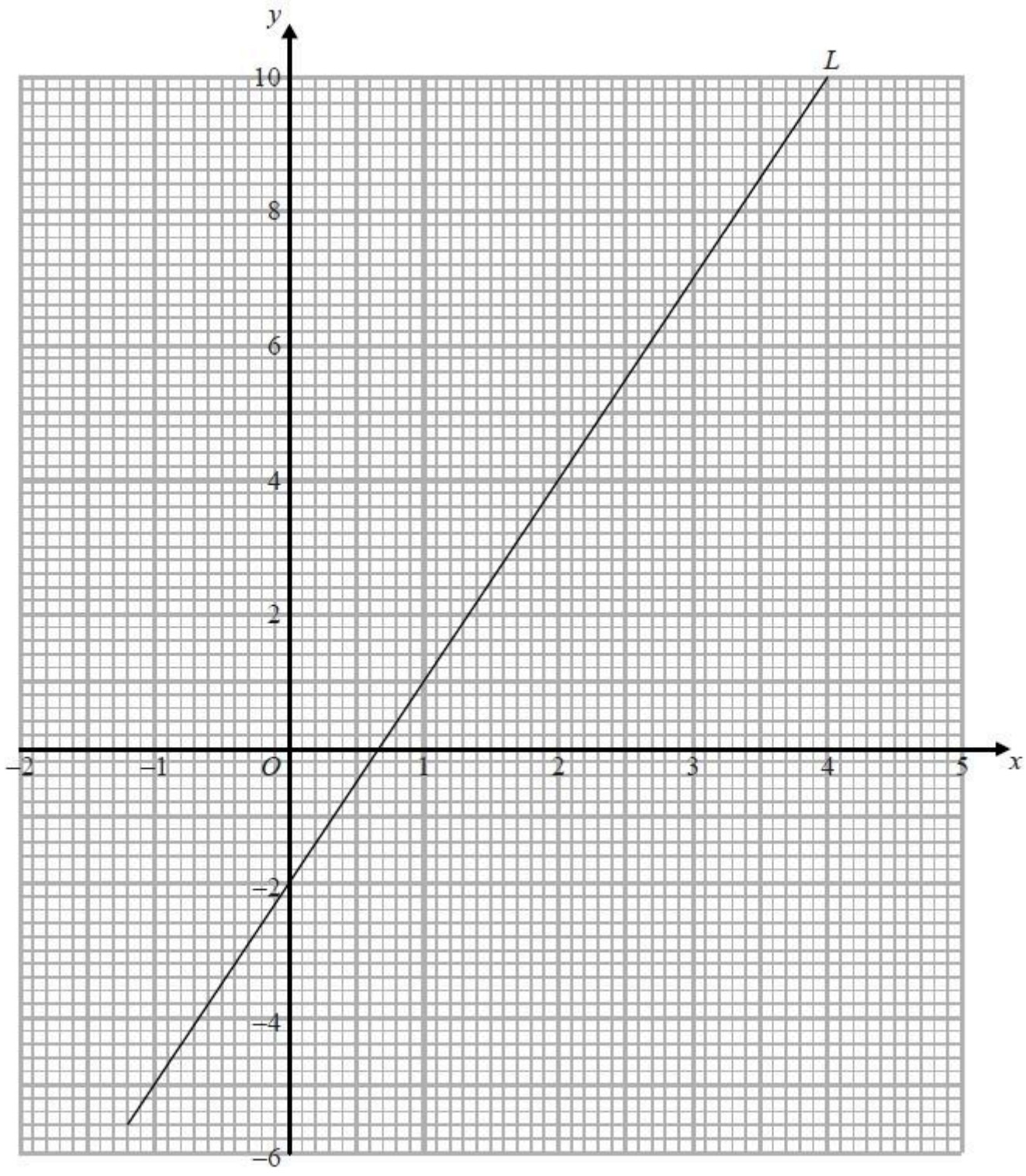
(3)

(Total 5 marks)

Q4. The line L is shown on the grid.

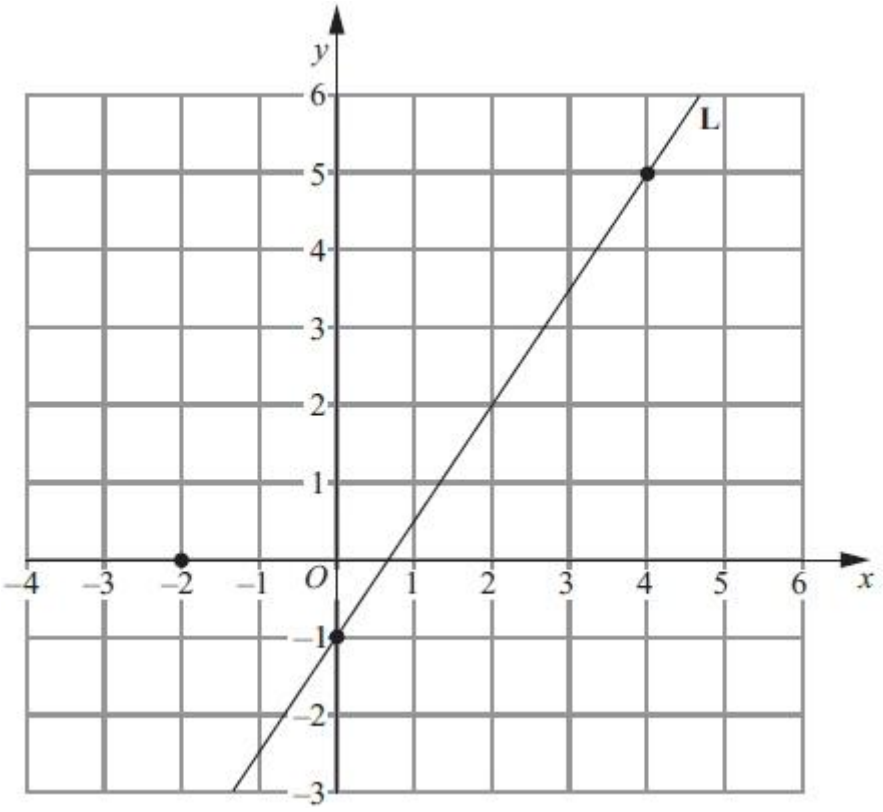
(i) Work out the gradient of the line L.

(ii) Find an equation of the line L.



(Total 4 marks)

Q5. The points (0, −1) and (4, 5) lie on the straight line **L**.



(*a*) Work out the gradient of **L**.

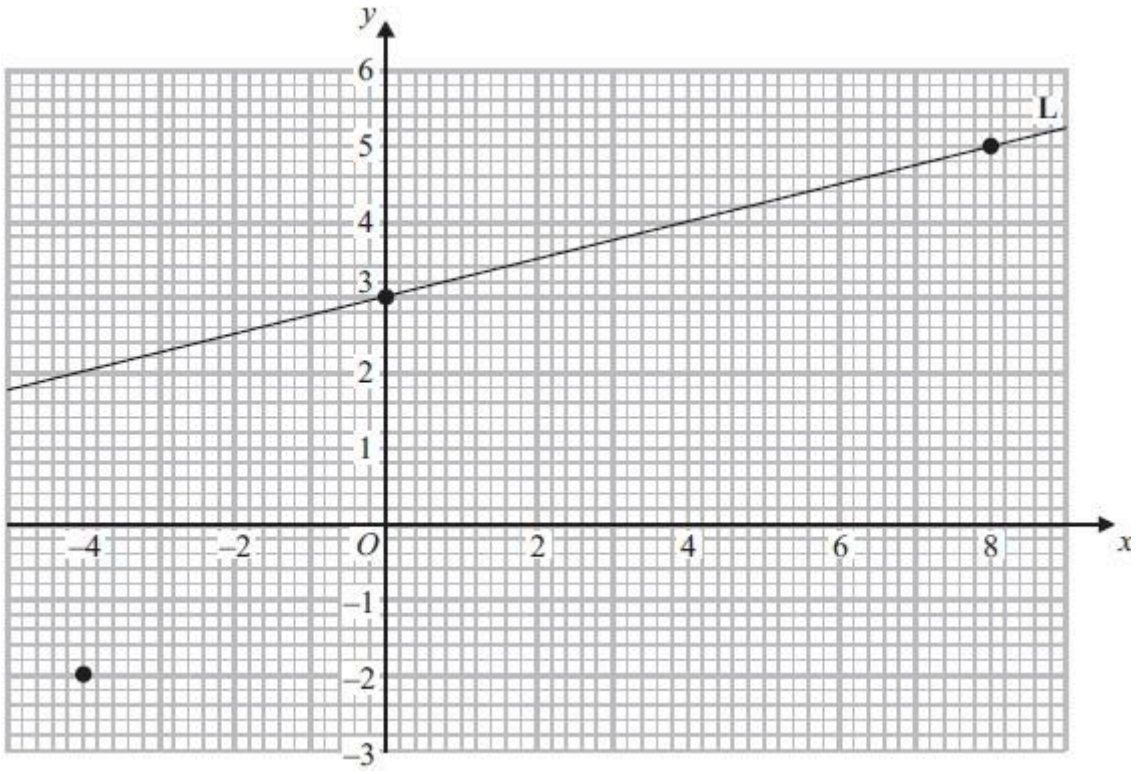
(2)

(*b*) Write down an equation of **L**.

(1)

(Total 3 marks)

Q6. The points with coordinates (0, 3) and (8, 5) lie on the straight line **L**.



(*a*) Work out the gradient of **L**.

(2)

(*b*) Write down an equation of **L**.

(1)

(Total 3 marks)

Q7. The straight line **L** has equation $3x - 2y = 15$

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

(3)

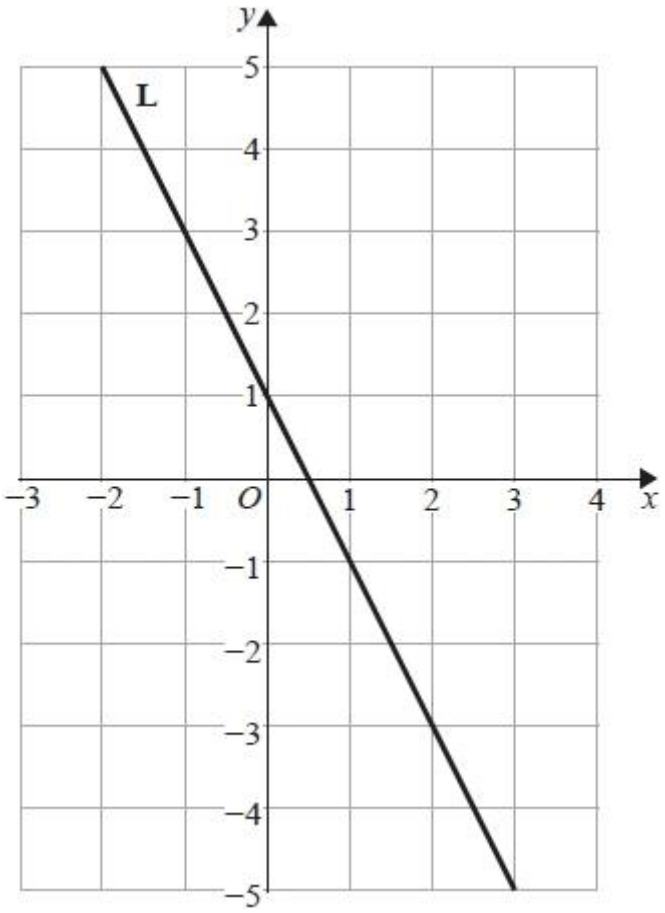
(*b*) Find the coordinates of the point where **L** crosses the *y*-axis.

(..... , ...)

(1)

(Total 4 marks)

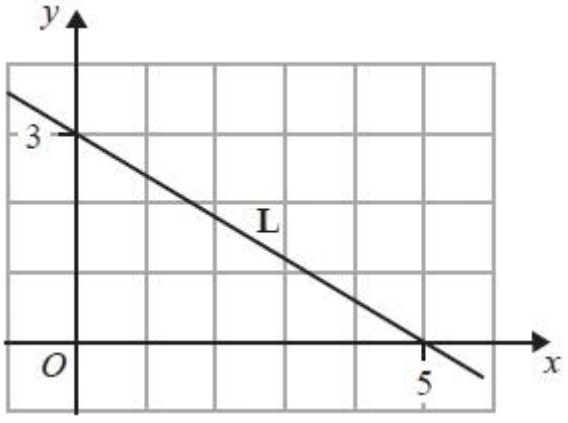
Q8. Here is the straight line **L** drawn on a grid.



Find an equation for **L**.

(Total 2 marks)

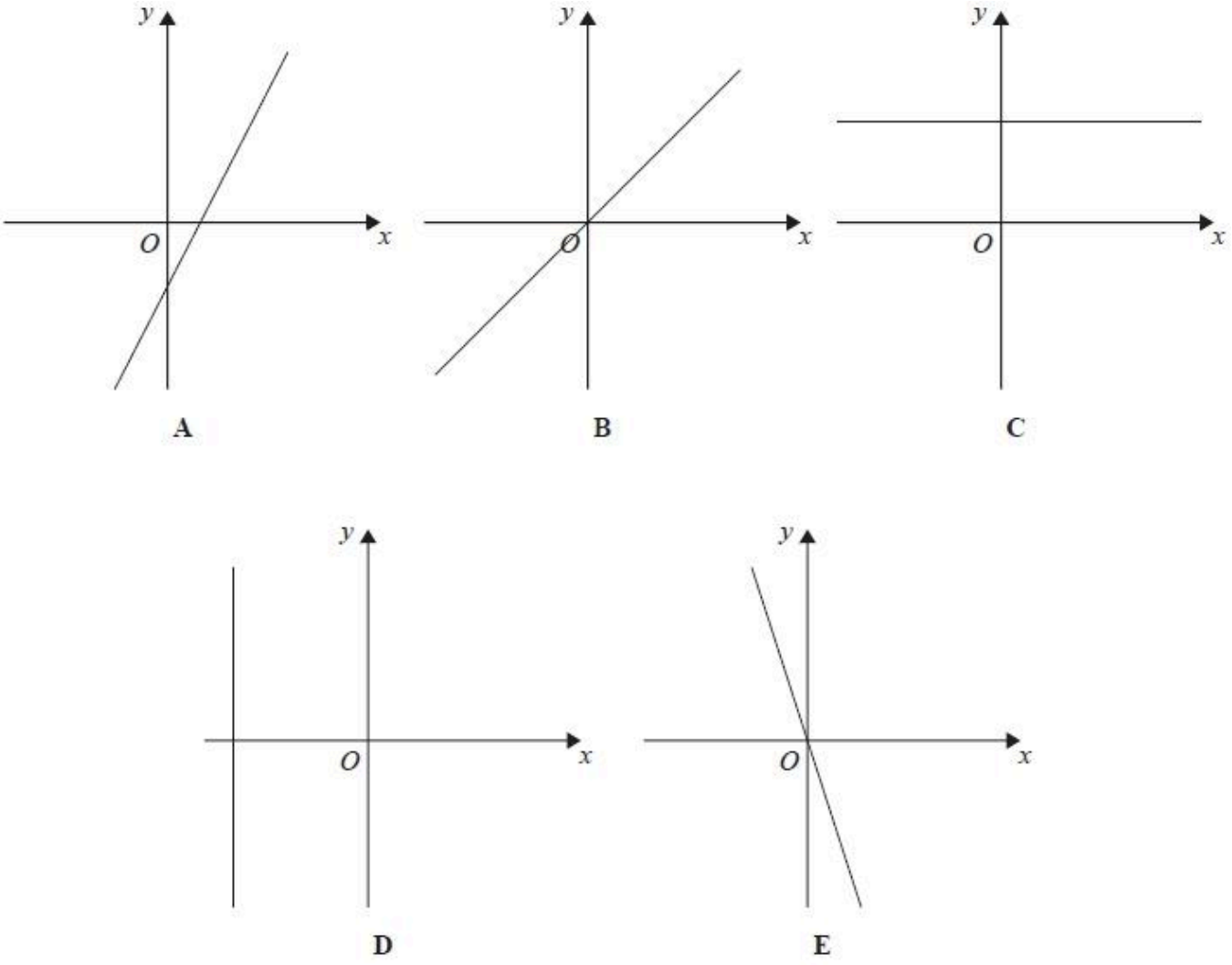
Q9. The straight line **L** is shown on the grid.



Find an equation of **L**.

(Total 3 marks)

Q10. Here are five sketch graphs.



The equations of these graphs are given in the table.

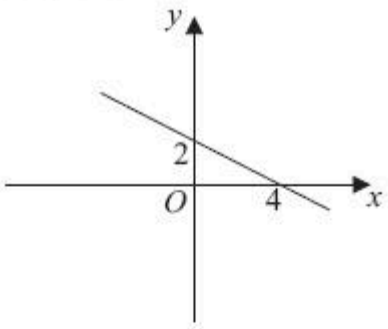
Equation	Graph
$y = 3$	.....
$y = 2x - 2$	.....
$y = -3x$	.....
$y = x$	.....
$x = -4$	.....

Match the letter of the graph to its equation.

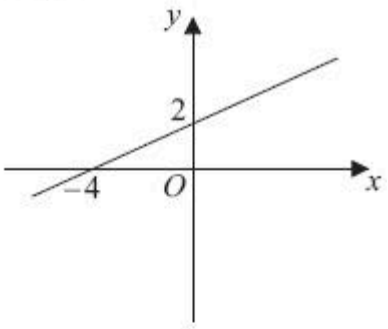
(Total 3 marks)

Q11. Here are the graphs of 6 straight lines.

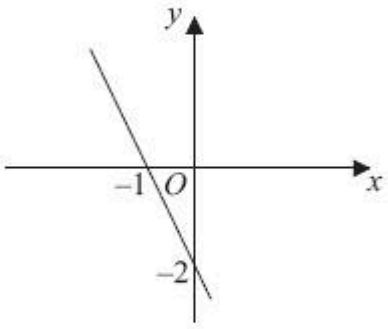
Graph **A**



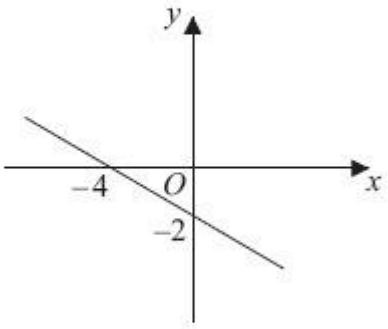
Graph **B**



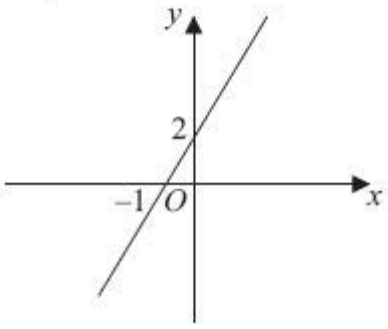
Graph **C**



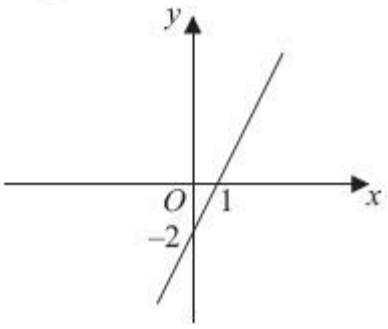
Graph **D**



Graph **E**



Graph **F**



Match each of the graphs **A**, **B**, **C**, **D**, **E** and **F** to the equations in the table.

Equation	$y = \frac{1}{2}x + 2$	$y = 2x - 2$	$y = -\frac{1}{2}x + 2$	$y = -2x - 2$	$y = 2x + 2$	$y = -\frac{1}{2}x - 2$
Graph						

(Total 3 marks)

Q12. **L** is a straight line.
The gradient of **L** is 4
L passes through the point (0, 2).

Write down an equation of the straight line **L**.

(Total 2 marks)

Mark Scheme

Q1.

PAPER: AAL20_01				
Question	**Working**	**Answer**	**Mark**	**Notes**
(i)	$\frac{5-1}{1--1}$	2	4	M1 for method to find the gradient eg sight of right angled triangle with "height" divided by "base" A1 cao
(ii)		$y = 2x + 3$		M1 for use of m = "2" oe or y = "2"$x + c$ or for $y = mx + 3$ or "2"$x + 3$ A1 ft

Q2.

AAL20_01 January 2016 Level 2					
Question		**Working**	**Answer**	**Mark**	**Notes**
	(a)		3	2	M1 for a complete method to find the gradient A1 cao
	(b)		$y = -2x + 1$	2	M1 for using $m = -2$ oe, eg $(y =) -2x + c$ or for $(y =) mx + 1$ A1 for $y = -2x + 1$ oe

Q3.

PAPER: AAL20_01				
Question	**Working**	**Answer**	**Mark**	**Notes**
(a)		1.5	2	M1 for complete method to find gradient , eg sight of right-angled triangle with their height divided by their base or for $(y =)1.5x$ (+3) seen A1 for 1.5 oe
(b)		$y = -x + 4$	3	M1 for gradient = −1 oe M1 for intercept 4 used A1 for $y = -x + 4$ oe

Q4.

Award in Algebra AAL20					
Question		Working	Answer	Mark	Notes
	(i)		3	2	M1 for attempt to find difference is y divided by difference in x can be evidenced by drawing a right angled triangle and marking lengths on it A1 for 3
	(ii)		$y = 3x - 2$	2	M1 ft for eqn of the form $y = mx + c$ with $m =$ "3" or $c = -2$ A1 cao

Q5. [parts a–b only]

Q	Working	Answer	Mark	Notes
(a)	Correct $v \div h$	1.5 oe	2	M1 e.g. $6 \div 4$ A1 accept improper fractions (e.g 3/2) N.B. $1.5x$ = M1A0
(b)		$y =$ "1.5"$x -$ 1oe	1	B1 ft from (a)
(c)	$y =$ "1.5"$x +$ c oe or "1.5"$x + 3$ or $0 = -2$ x gradient from (a) + c	$y =$ "1.5"$x +$ "c" oe	2	M1ft from (a) $c \neq -1$ (c must be a numeric value) (substituting $y = 0$ and $x = -2$ into $y = mx + c$) A1ft "c" = follow through using numeric value of gradient in (a)
				Total 5 marks

Q6. [parts a–b only]

Question	Working	Answer	Mark	Notes	
(a)	Correct v ÷ h eg 2 ÷ 8 or $\frac{5-3}{8-0}$ oe	0.25 oe	2	M1 or $y=mx+3$ with any (x, y) on L substituted eg. 5 = 8m + 3 A1	
(b)		$y="0.25"x+3$ oe	1	B1 ft Accept equivalents (e.g. $4y = x + 12$)	Gradient used must be 0.25 **or** the gradient found in (a)
(c)		$y="0.25"x-1$ oe e.g. $4y=x-4$	2	M1ft for $y="0.25"x+c$ ($c \neq -1$) **or** $c = -1$ as a statement **or** $"0.25"x-1$ **or** $L="0.25"x-1$ **or** $-2="0.25" \times 4+c$ A1ft from "0.25" with $c = -1$ or c evaluated	
					Total 5 marks

Q7. [parts a–b only]

Question	Working	Answer	Mark	Notes
(a)	$2y=3x-15$ or $-2y=15-3x$ or $1.5x-y=7.5$		3	M1 Or for finding the coordinates of two correct points that lie on the line
	$y=1.5x-7.5$ or $y=\frac{3x-15}{2}$ or $y=\frac{15-3x}{-2}$ oe			M1 or $\frac{\text{difference of } y \text{ values}}{\text{difference of } x \text{ values}}$ for any two correct points on the line
		1.5		A1 oe Do not penalise a mistake in the constant term if the correct answer is given. SCB2 for $1.5x$ SCB1 ft from their $y = ax + b$
(b)		(0, –7.5)	1	B1 oe
(c)	$0=1.5\times-2+c$ or $3\times-2=k$ or $y-0=1.5(x--2)$		2	M1 ft 1.5 from (a) or $c = 3$
		$y=1.5x+3$		A1 ft 1.5 from (a) or $3x-2y=-6$ or $y=1.5(x+2)$ oe
				Total 6 marks

Q8.

Question	Working	Answer	Mark	Notes
		$y = -2x + 1$	2	M1 For $y = -2x + c$ ($c \neq 1$) or $y = mx + 1$ or for a correct method to find the gradient or $m = -2$ and $c = 1$ stated A1 or $-2x + 1$ or $L = -2x + 1$ oe
				Total 2 marks

Q9.

The correct answer, unless clearly obtained by an incorrect method, should be taken to imply a correct method.

Question	Working	Answer	Mark	Notes
	(Gradient =) $-\frac{3}{5}$ or $(m =)\ -\frac{3}{5}$	$y = -\frac{3}{5}x + 3$ oe	3	M1 Allow (gradient or m) $= \frac{3}{5}$ or $(y =) -\frac{3}{5}x + c$ (c may be a number) M1 Indep $(y =) mx + 3$ (m may be a number except 0) Allow y intercept or $c = 3$ stated A1 oe Eg Accept $5y + 3x = 15$ or $y - 3 = -\frac{3}{5}(x - 0)$ or $y - 0 = -\frac{3}{5}(x - 5)$ SC B2 for $-\frac{3}{5}x + 3$ or $L = -\frac{3}{5}x + 3$
				Total 3 marks

Q10.

PAPER: AAL20_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
			C, A, E, B, D	3	B3 for all correct (B2 for 3 or 4 correct B1 for 2 correct)

Q11.

Question		Working	Answer	Mark	Notes
			BFACED	3	B3 for all 6 correct (B2 for 4 or 5 correct) (B1 for 2 or 3 correct)

Q12. [part a only]

PAPER: 5MB2H 01					
Question		**Working**	**Answer**	**Mark**	**Notes**
	(a)		$y = 4x + 2$	2	B2 for $y = 4x + 2$ oe (B1 for $y = 4x + c$ or $4x + 2$ or $L = 4x + 2$)
	(b)		$y = 4x - 14$	3	B1 for gradient = 4 M1 for $-6 = '4' \times 2 + c$ or $y - -6 = '4'(x - 2)$ A1 for $y = 4x - 14$ oe