Write your name, centre number and candidate number in the boxes below.

Surname	Other names

Centre number | | | | | |

Candidate number | | | | |

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Equation of a straight line

Time allowed: 40 minutes

Subject code **0580**

Mathematics

Questions from Paper 1 and Paper 2

You must have: a ruler marked in centimetres and millimetres, a protractor, compasses, a pen, an HB pencil and an eraser.
You may use a calculator.

Total marks

/ 31

Instructions

- Answer every question in the space provided on this paper.
- Write in black or dark blue ink. Pencil may be used for diagrams and graphs.
- Fill in your name, centre number and candidate number above.
- Show your working: a correct method can earn marks even if the answer is wrong.
- Unless a question says otherwise, give answers that are not exact to 3 significant figures, and angles in degrees to 1 decimal place.

Information

- This paper has 10 questions worth 31 marks in total.
- The marks for each question or part are shown in brackets, for example [3].

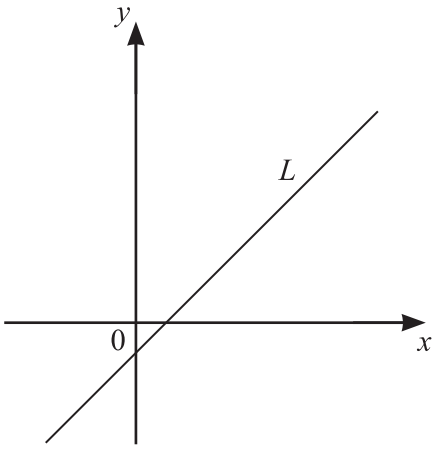
Advice

- Read every question through once before you write anything.
- Use the marks in brackets to judge how long to spend on each part.
- If you finish early, go back and check your working.

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Print at 100% (Actual size) so diagrams keep their real measurements.

1



Explain why the equation of line L in the diagram cannot be $y = x + 2$.

.....

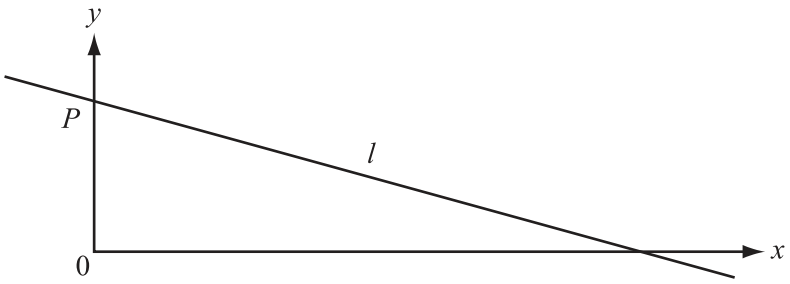
..... [1]

Equations of straight lines (y = mx + c) Click for more variations

1	The line crosses the y-axis below zero not above oe	**1**	

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2



NOT TO SCALE

The equation of the line l in the diagram is $y = 5 - x$.

(a) The line cuts the y-axis at P.

Write down the co-ordinates of P.

Answer(a) (..... , ...) [1]

(b) Write down the gradient of the line l.

Answer(b) ..... [1]

(a) Equations of straight lines (y = mx + c) (b) Equations of straight lines (y = mx + c) Click for more variations

2	**(a)**	(0, 5)	**1**	
	(b)	– 1	**1**	

3 The line $y = 2x - 5$ intersects the line $y = 3$ at the point P.

Find the coordinates of the point P.

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

Equations of straight lines (y = mx + c) Click for more variations

3	$(4,3)$	**2**	**B1** for each or **M1** for $3 = 2x - 5$ or better

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4 The equation of line L is $y = 4x - 3$.

Write down

(a) the co-ordinates of the point where the line L crosses the y-axis,

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

(b) the gradient of the line L,

..... [1]

(c) the equation of the line parallel to line L that passes through the origin.

..... [1]

(a) Equations of straight lines (y = mx + c) (b) Equations of straight lines (y = mx + c) (c) Parallel lines

Click for more variations

4	**(a)**	(0, –3)	**1**	
	(b)	4	**1**	
	(c)	$y = 4x$ [+0]	**1FT**	**FT** $y = $ *their* (b)x for numerical gradient only

5 A straight line, l, has equation $y = 5x + 12$.

(a) Write down the gradient of line l.

..... [1]

(b) Find the coordinates of the point where line l crosses the x-axis.

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

(a) Equations of straight lines (y = mx + c) (b) Equations of straight lines (y = mx + c) Click for more variations

5(a)	5	**1**	
5(b)	$(-\frac{12}{5}$ oe, 0)	**2**	**M1** for $5x + 12 = 0$

6 Find the equation of the straight line that passes through the points (2, −2) and (3, 10).

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

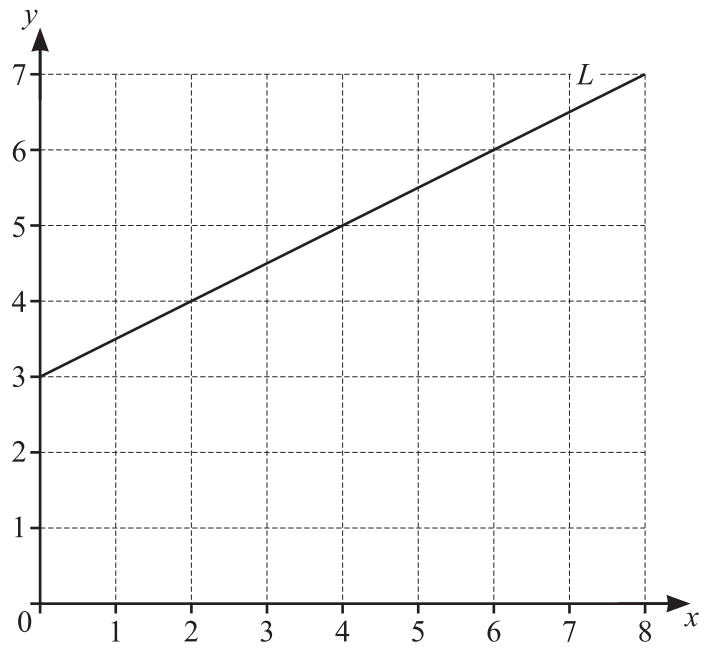
$y =$ ..... [3]

Equations of straight lines (y = mx + c) Click for more variations

6	$[y =]\ 12x - 26$ final answer	**3**	**M1** for $\frac{10 - -2}{3 - 2}$ oe **M1** for correct substitution of (2, –2) or (3, 10) into $y = (their\ m)x + c$ oe

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7 Line L is shown on the grid.



(a) Find the equation of line L in the form $y = mx + c$.

$y =$ ..... [2]

(b) Line L crosses the x-axis at P.

Find the coordinates of P.

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

(a) Equations of straight lines (y = mx + c) (b) Equations of straight lines (y = mx + c) Click for more variations

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7(a)	$[y =]\frac{1}{2}x + 3$ final answer	**2**	**B1** for $\frac{1}{2}x + c$ or **B1** for $mx + 3$ where $m \neq 0$
7(b)	$(-6, 0)$	**2**	**B1** for $(-6, j)$ or $(k, 0)$ or **M1** for $0 = their\ \frac{1}{2}x + 3$ or better

8 The points (2, 5), (3, 3) and (k, 1) all lie in a straight line.

(a) Find the value of k.

Answer(a) $k =$ ..... [1]

(b) Find the equation of the line.

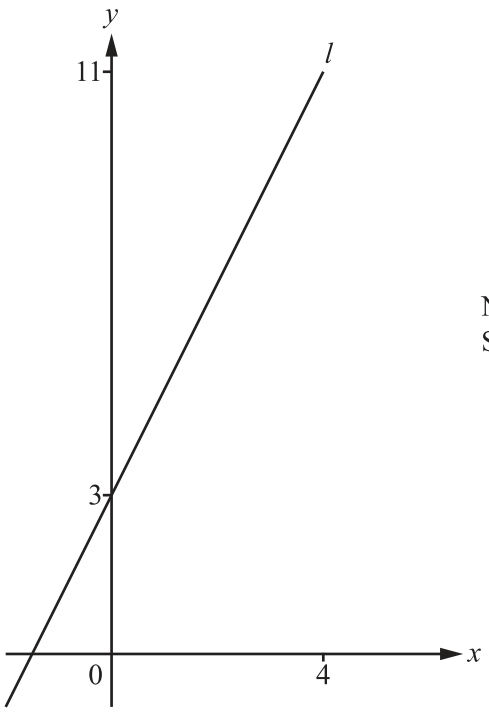
Answer(b) ..... [3]

(a) Gradient of a line (b) Equations of straight lines (y = mx + c) Click for more variations

8	**(a)** 4	1	
	(b) $y = -2x + 9$ oe	3	**M1** $\frac{5-3}{2-3}$ oe **M1** substitution of a point into their equation If **M1** only then **A1**ft for $y =$ "m"$x +$ "c" used correctly with their numeric values

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9



NOT TO SCALE

The diagram shows the straight line, l, which passes through the points (0, 3) and (4, 11).

(a) Find the equation of line l in the form $y = mx + c$.

Answer(a) $y =$ ..... [3]

(b) Line p is perpendicular to line l.

Write down the gradient of line p.

Answer(b) ..... [1]

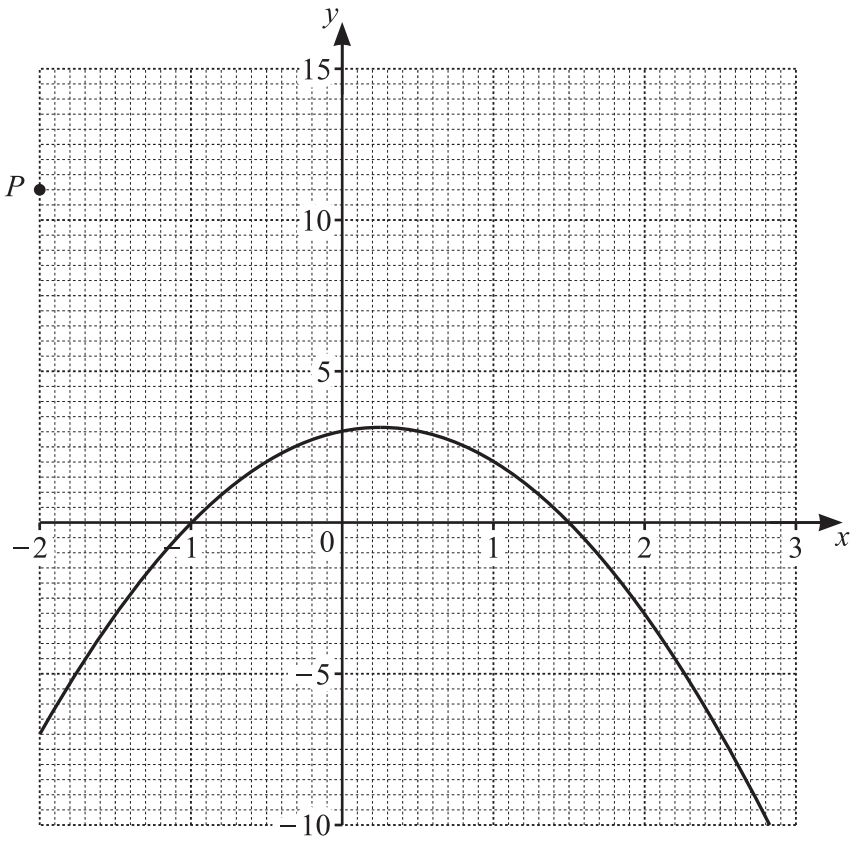
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(a) Equations of straight lines (y = mx + c) (b) Perpendicular lines Click for more variations

9	**(a)**	$[y =]\ 2x + 3$ cao	**3**	**M2** for correct unsimplified equation or **B1** for gradient = $(11 - 3) \div (4 - 0)$ or better and **B1** for $c = 3$
	(b)	$-\frac{1}{2}$ oe	**1FT**	$-1 \div$ *their m*

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10 The diagram shows the graph of $y = f(x)$ and the point $P(-2, 11)$.



The tangent from P touches the graph of $y = f(x)$ at the point (a, b).
The values of a and b are integers.

(a) By drawing this tangent, find the value of a and the value of b.

$a =$ ....., $b =$ ..... [2]

(b) Find the equation of the tangent.
Give your answer in the form $y = mx + c$.

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$y =$ ..... [3]

(a) Drawing a tangent to a curve (b) Equations of straight lines (y = mx + c) Click for more variations

10(a)	For correct ruled tangent and [a =] 1, [b =] 2	**2**	**B1** for correct ruled tangent or both values correct without a correct tangent
10(b)	[y =] $5 - 3x$	**3**	**3FT** *their* **(a)** provided $m < 0$, $c \neq 0$ **B1** for $(\textit{their} -3)x + c$ or **M1** for correct $\frac{\text{rise}}{\text{run}}$ for *their* line **B1** for $mx + c$ where c is the correct intercept for *their* graph, $m \neq 0$

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