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

Surname	Other names

Centre number | | | | | |

Candidate number | | | | |

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Straight-line graphs and gradient

Time allowed: 40 minutes

Subject code **0580**

Mathematics

Questions from Paper 1, Paper 2 and Paper 3

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

/ 34

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 34 marks in total.
- The marks for each question or part are shown in brackets, for example [3].

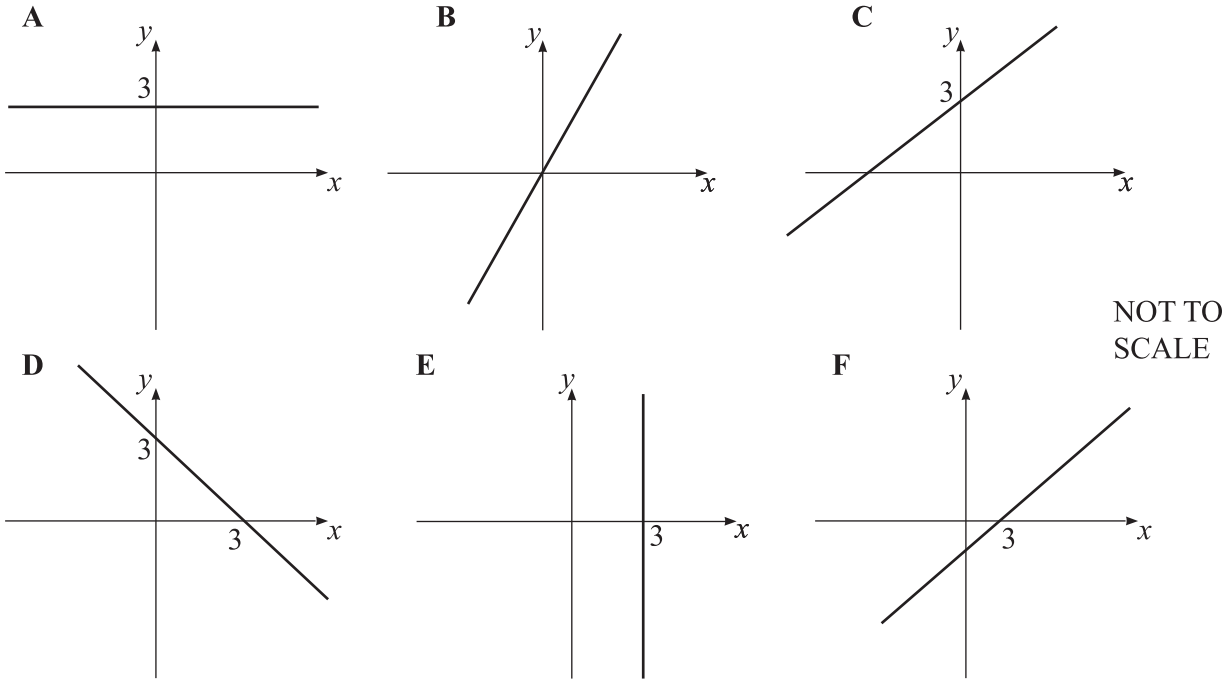
Advice

- 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



Write down the letter of the graph that shows these lines.

(a) $x = 3$

..... [1]

(b) $y = 3x$

..... [1]

(a) Drawing straight-line graphs (b) Drawing straight-line graphs Click for more variations

1(a)	E	**1**	
1(b)	B	**1**	

2 Find the gradient of the line joining the points $(-2, 7)$ and $(3, 1)$.

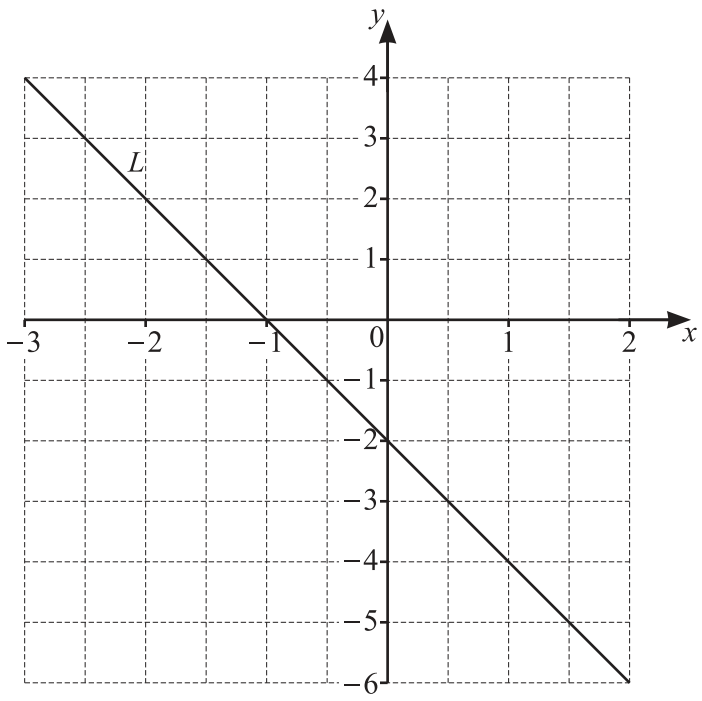
..... [2]

Gradient of a line Click for more variations

2	$-\frac{6}{5}$ oe	**2**	**M1** for $\frac{1-7}{3--2}$ oe

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3



Find the gradient of line L.

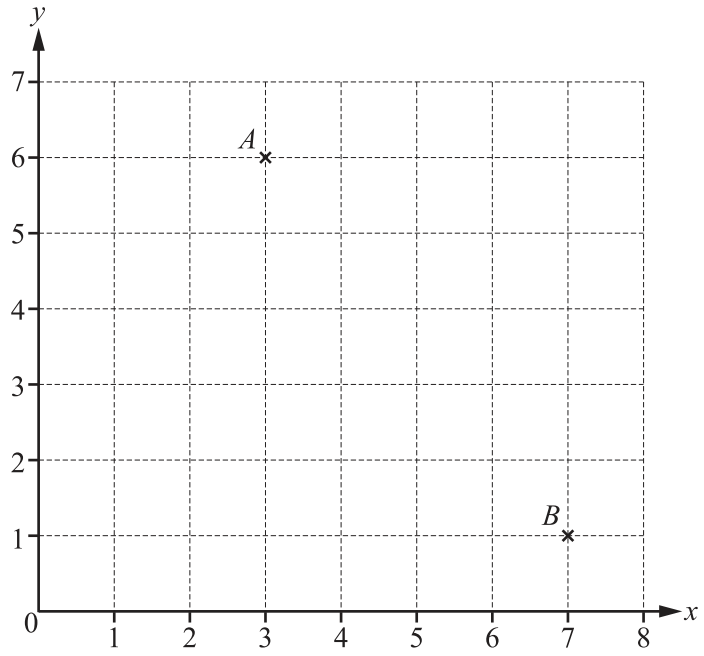
..... [2]

Gradient of a line Click for more variations

3	-2	**2**	**M1** for $\frac{-2k}{1k}$ or for $\frac{y_2 - y_1}{x_2 - x_1}$ for 2 points on the line

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4



Point A has co-ordinates (3, 6).

(a) Write down the co-ordinates of point B.

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

(b) Find the gradient of the line AB.

..... [2]

(a) Coordinates (b) Gradient of a line Click for more variations

4	**(a)**	(7 , 1)	**1**	
	(b)	-1.25 or $-\frac{5}{4}$ or $-1\frac{1}{4}$	**2**	**M1** for rise/run

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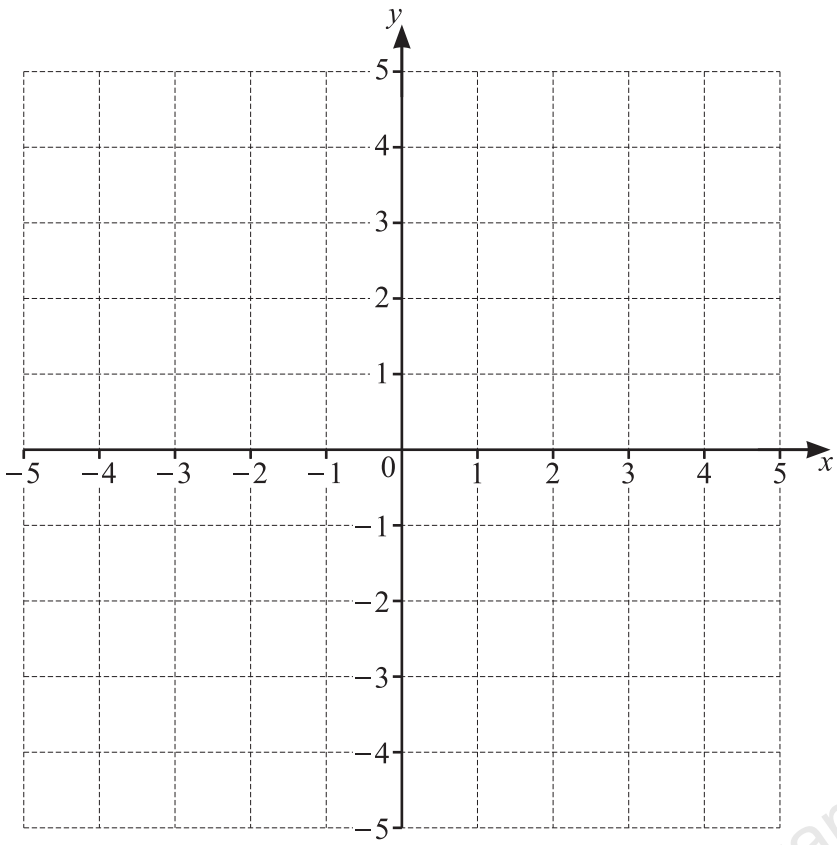
5 **(a)** Line A has equation $y = 3x + 1$.
Line B has equation $y = 3x - 1$.

Draw a ring around the description that is correct.

Line A intersects line B	Line A has a steeper gradient than line B	Line A is perpendicular to line B
Line A is parallel to line B	Line A and Line B intersect the y-axis at the same point	

[1]

(b)



On the grid, draw the graph of $y = 2x - 1$.

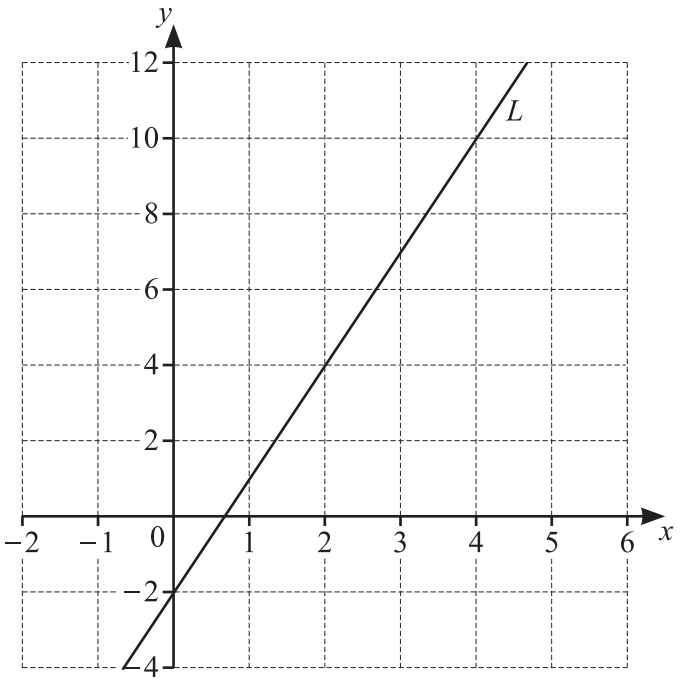
[2]

(a) Parallel lines (b) Drawing straight-line graphs Click for more variations

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5(a)	Circle around the statement Line A is parallel to line B	**1**	
5(b)	Correct graph of $y = 2x - 1$	**2**	**B1** for short or unruled line or for two correct coordinates plotted or for line with positive gradient passing through (0, –1) or for line with gradient 2

6



(a) Find the gradient of line L.

..... [2]

(b) Write down the equation of line L in the form $y = mx + c$.

$y =$ ..... [1]

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

6(a)	3	**2**	**M1** for $\frac{3k}{1k}$
6(b)	$y = 3x - 2$ oe	**1**	**FT** *their* **(a)**

7 A line has gradient 5.
M and N are two points on this line.
M is the point $(x, 8)$ and N is the point $(k, 23)$.

Find an expression for x in terms of k.

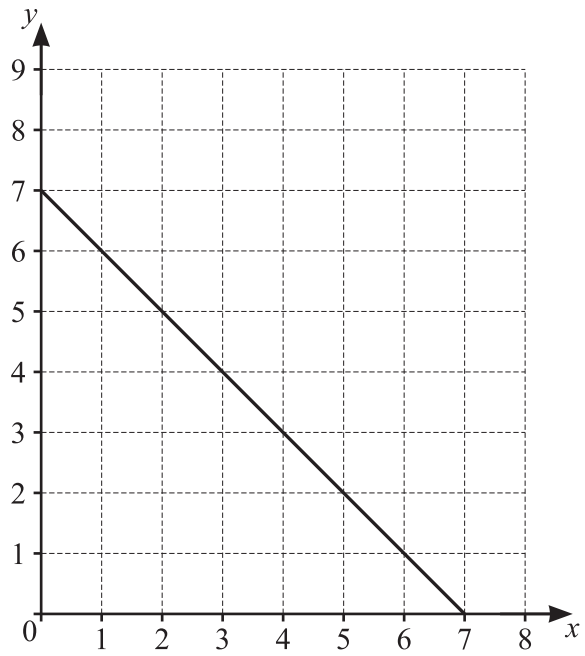
$x =$ ..... [3]

Gradient of a line Click for more variations

7	$k - 3$ or $-3 + k$	**3**	**M1** for $5 = \frac{23-8}{k-x}$ oe **M1** for $5(k - x) = 23 - 8$ or better e.g. $[x =] k - \frac{23-8}{5}$

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8



The line $x+y=7$ is drawn on the grid.

(a) On the grid, draw the line $y=2x+1$. [2]

(b) Use your graph to solve these simultaneous equations.

$$x+y=7$$
$$y=2x+1$$

$x =$ .....

$y =$ .....

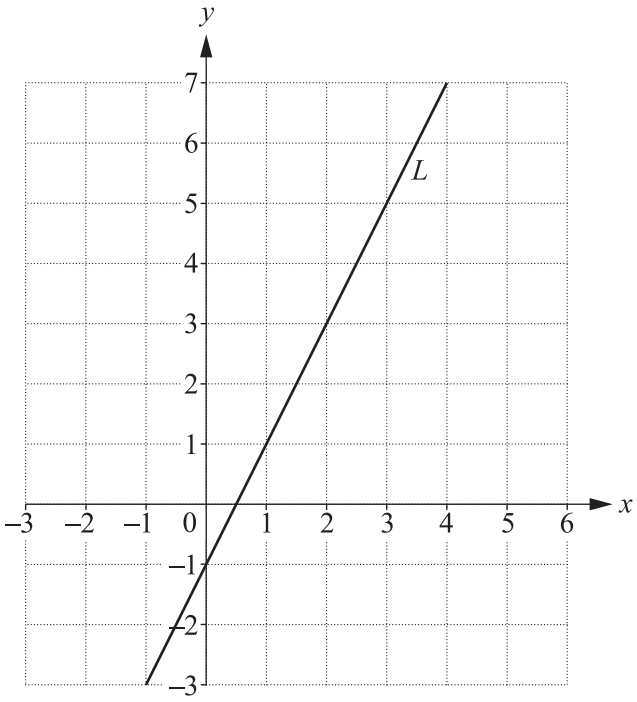
[1]

(a) Drawing straight-line graphs (b) Plotting curves and graphical solutions Click for more variations

8(a)	Correct line drawn	**2**	**M1** for a line with gradient 2 or for a line with positive gradient and intercept at $y = 1$
8(b)	[x =] 2, [y =] 5	**1**	FT intersection of *their* **(a)** with the given line

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9



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

..... [2]

(b) Write down the equation of the line parallel to the line L that passes through the point (0, 6).

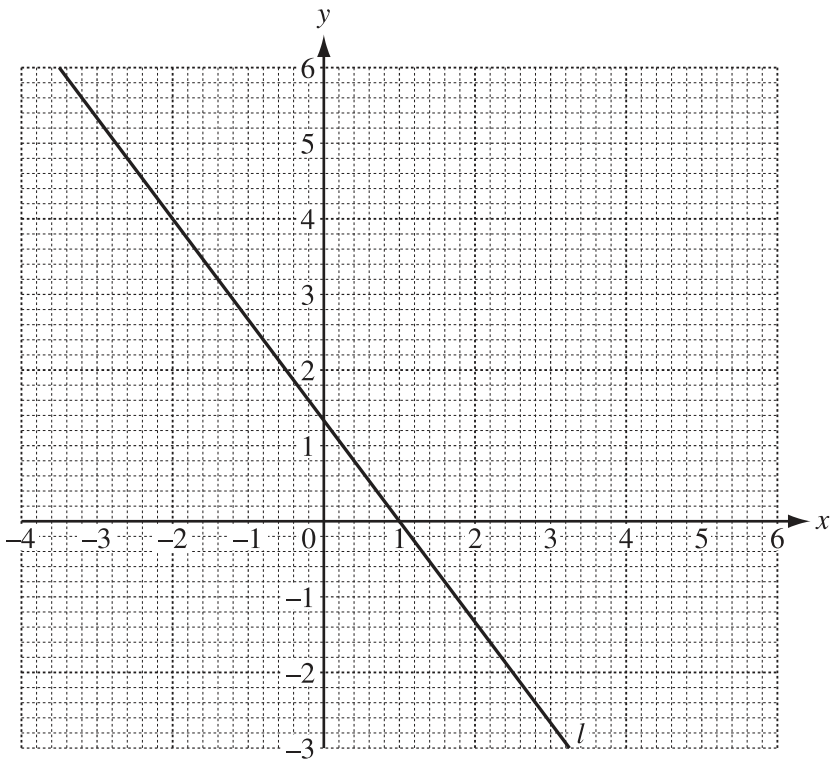
..... [2]

(a) Gradient of a line (b) Parallel lines Click for more variations

9 (a)	2 cao	**2**	**M1** for rise/run attempted e.g. 4/2 or other correct method for finding gradient or **SC1** for $y = 2x - 1$ as answer
(b)	$y = 2x + 6$ oe	**2FT**	**FT** for $y = their(a)x + 6$ **B1** for $y = mx + 6$ ($m \neq 0$ or 2) or $y = 2x$ [+ k] or $y = their(a)x$ [+ k] ($k \neq 6$) or for answer $2x + 6$ or answer $their(a)x + 6$

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10



(a) Find the gradient of the line l.

Answer(a) ..... [2]

(b) **(i)** Complete the table below for $x + 2y = 6$.

x	0	2	
y			0

[3]

(ii) On the grid, draw the line $x + 2y = 6$ for $-4 \leqslant x \leqslant 6$. [2]

(c) The equation of the line l is $4x + 3y = 4$.

Use your diagram to solve the simultaneous equations $4x + 3y = 4$ and $x + 2y = 6$.

Answer(c) $x =$ .....

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

(a) Gradient of a line (b)(i) Drawing straight-line graphs (b)(ii) Drawing straight-line graphs

(c) Plotting curves and graphical solutions Click for more variations

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10	**(a)** $\frac{-4}{3}$ oe, −1.2 to −1.4	**2**	**B1** for attempt at $\frac{\text{rise}}{\text{run}}$
	(b) **(i)** 3, 2, 6	**3**	**B1** for each value
	(ii) Correct continuous line	**2ft**	Minimum length (0,3) to (6,0) **B1** for plotting their 3 points
	(c) $x = -2$, $y = 4$	**2ft**	**B1** for their x, **B1** for their y from their intersections

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