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

Surname	Other names

Centre number | | | | | |

Candidate number | | | | |

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Inequalities and regions

Time allowed: 40 minutes

Subject code **0580**

Mathematics

Questions from Paper 1, Paper 2 and Paper 4

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

/ 30

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 30 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 x is an integer where $x > -4$ and $x \leqslant 2$.

Write down all the possible values of x.

..... [2]

Solving linear inequalities Click for more variations

2 Represent the inequality $-4 < x \leqslant 3$ on the number line.



[2]

Solving linear inequalities Click for more variations

3 Solve.

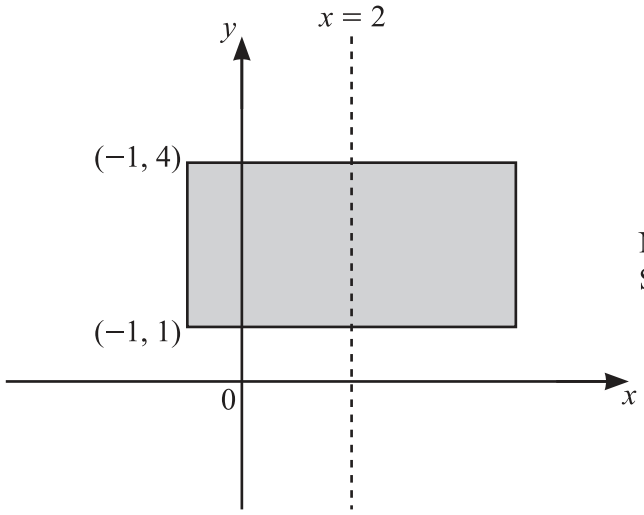
$12x - 3 \geqslant 4x + 13$

..... [2]

Solving linear inequalities Click for more variations

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4



The diagram shows a rectangle with a line of symmetry at $x = 2$.
Two vertices of the rectangle are at $(-1, 1)$ and $(-1, 4)$.

The shaded region is defined by the inequalities $a \leqslant x \leqslant b$ and $c \leqslant y \leqslant d$.

Find the values of a, b, c and d.

$a =$ .....

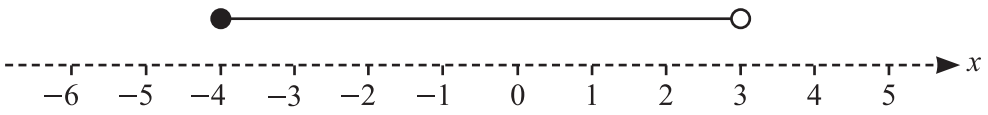
$b =$ .....

$c =$ .....

$d =$ ..... [2]

Finding inequalities from regions Click for more variations

5 **(a)** Write down the inequality represented on the number line.



..... [2]

(b) Write down the smallest integer that satisfies the inequality $d > -3\frac{1}{4}$.

..... [1]

(a) Solving linear inequalities (b) Solving linear inequalities Click for more variations

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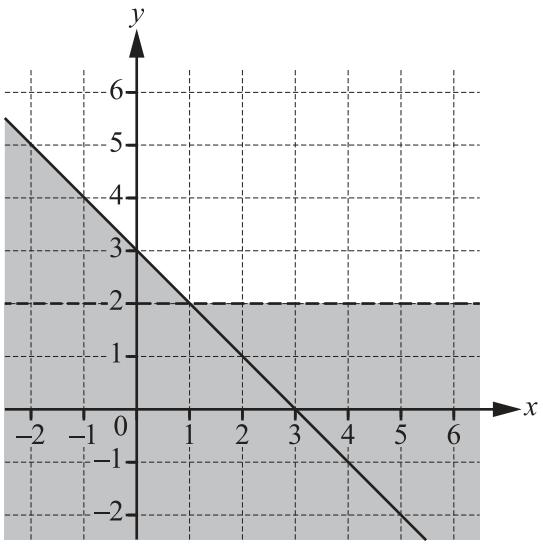
6 Solve.

$$4 - 3x \geqslant \frac{6 - x}{5}$$

..... [3]

Solving linear inequalities Click for more variations

7



Find the two inequalities that define the region on the grid that is **not** shaded.

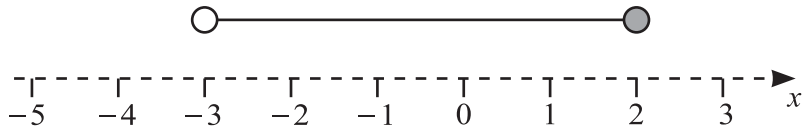
.....

..... [3]

Finding inequalities from regions Click for more variations

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8 **(a)**



Write down the inequality represented in the diagram.

..... [2]

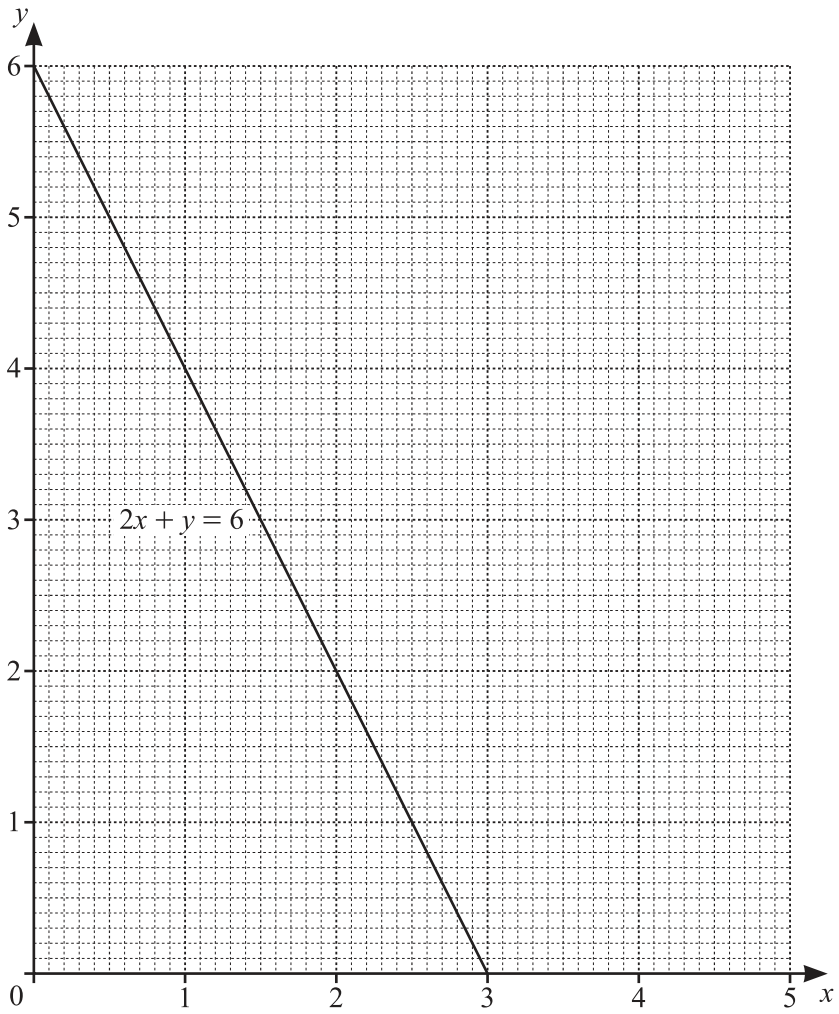
(b) Write down the integer values of x that satisfy the inequality $-4 < 2x \leqslant 8$.

..... [2]

(a) Solving linear inequalities (b) Solving linear inequalities Click for more variations

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9



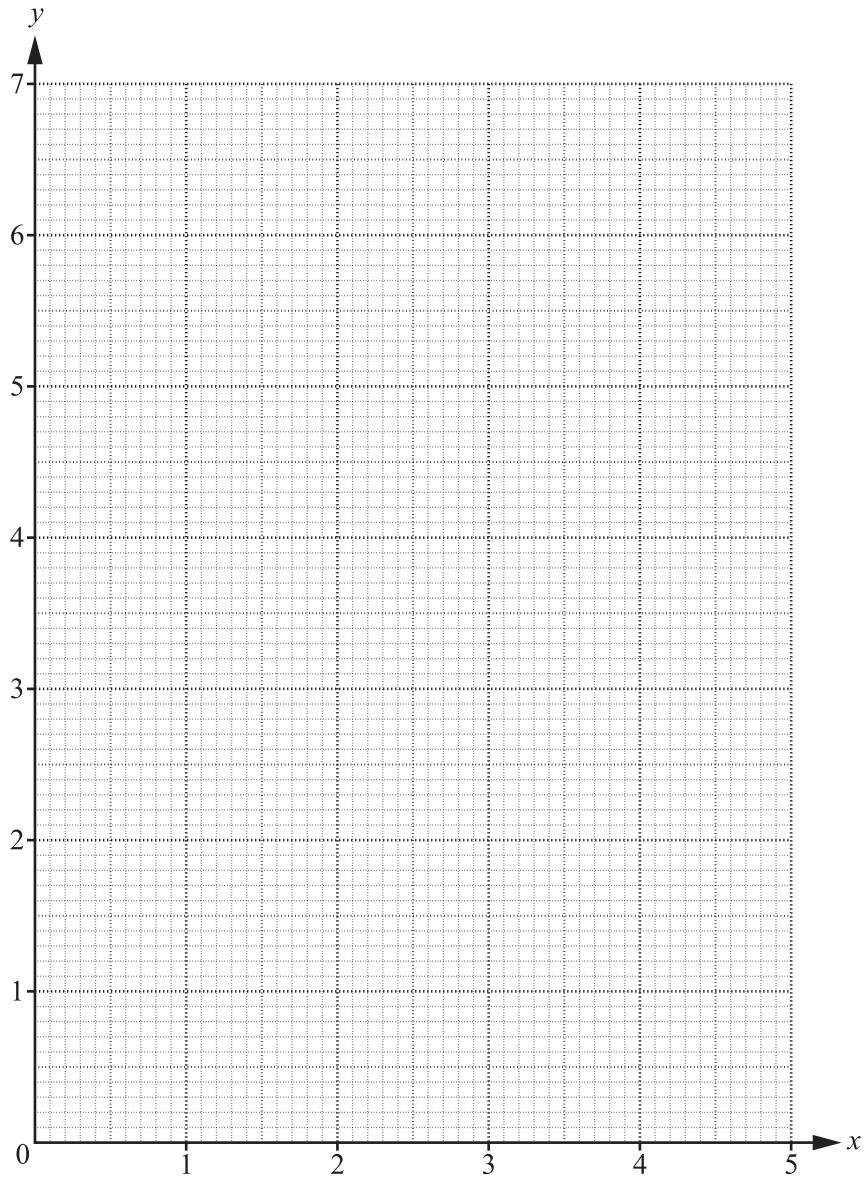
By shading the **unwanted** regions of the grid, find and label the region R that satisfies the following inequalities.

$$y \leqslant 5 \qquad 2x + y \geqslant 6 \qquad y \geqslant x + 1$$ [4]

Representing inequalities as regions Click for more variations

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10



The region R satisfies these inequalities.

$y \leqslant 2x$ $\quad$ $3x + 4y \geqslant 12$ $\quad$ $x \leqslant 3$

On the grid, draw and label the region R that satisfies these inequalities.
Shade the **unwanted** regions.

[5]

Representing inequalities as regions Click for more variations

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