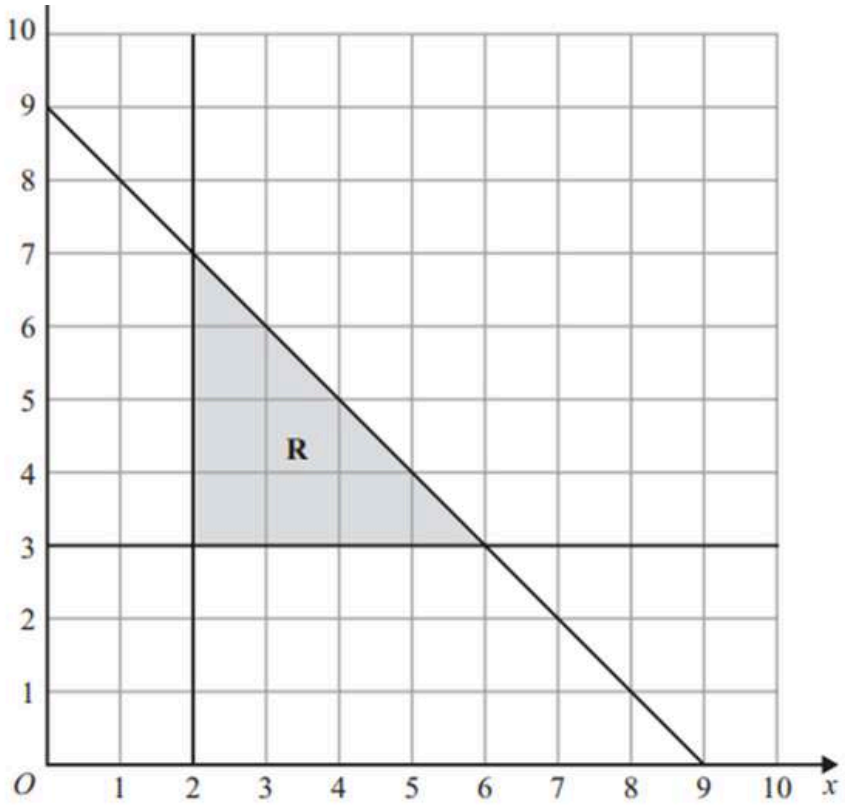
EDEXCEL IGCSE MATHEMATICS

UNIT 2 (MODULAR)

GRAPHS – GRAPHING INEQUALITIES



COMPILED BY:
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by Sir Muhammad Abdullah Shah

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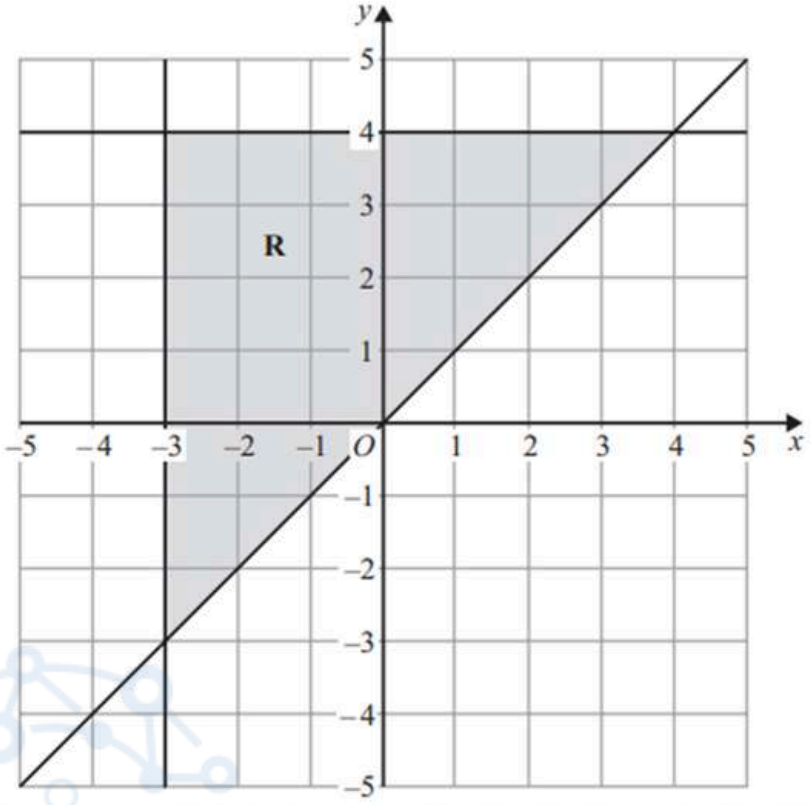
1. Nov 2025 2H/Q10b

The region **R**, shown shaded in the diagram, is bounded by three straight lines.



(b) Write down the three inequalities that define the region **R**

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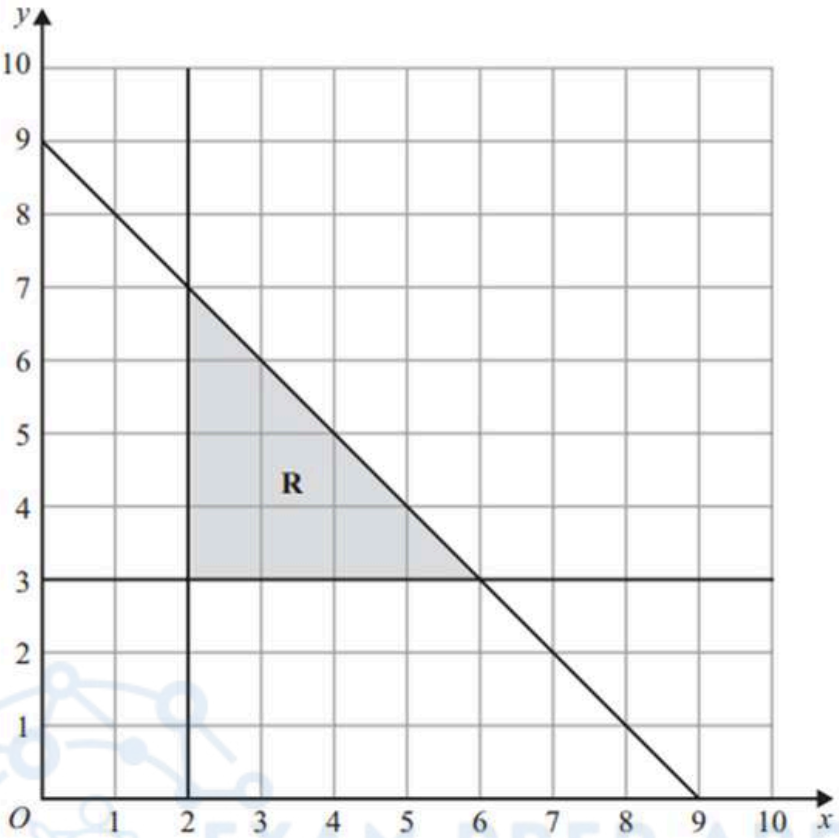
(3)

2. June 2025 2H/Q9b

The region **R**, shown shaded in the diagram, is bounded by three straight lines.



(b) Write down three inequalities that define the region **R**

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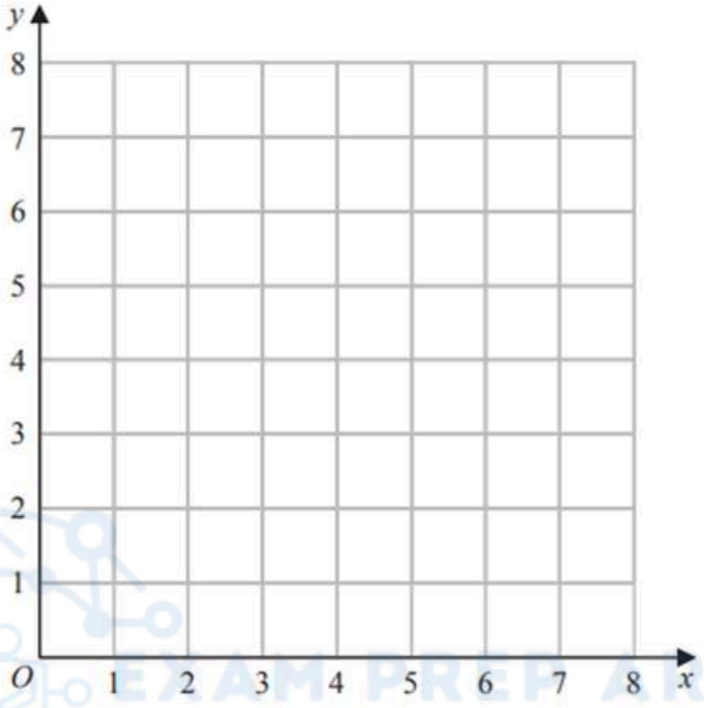
(3)

3. Nov 2024 2H/Q7

(a) On the grid, draw the straight line with equation

(i) $x = 3$ (ii) $y = 1$ (iii) $x + y = 7$

Label each line with its equation.



(3)

(b) Show, by shading on the grid, the region that satisfies all three of the inequalities

$x \geqslant 3$ $y \geqslant 1$ $x + y \leqslant 7$

Label the region **R**

(1)

(Total for Question 7 is 4 marks)

4. June 2024 2H/Q2

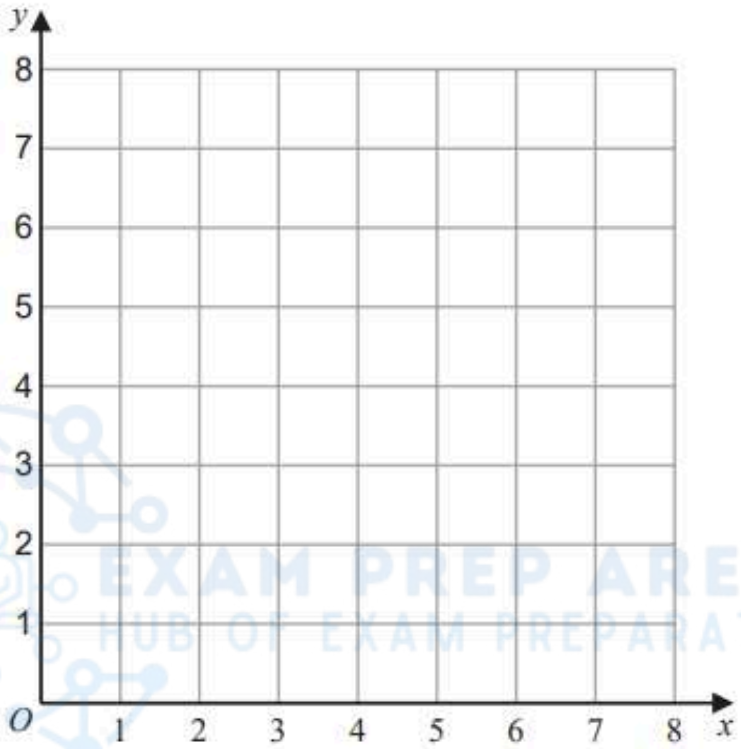
(a) On the grid, draw the straight line with equation

(i) $y = 2$

(ii) $x = 6$

(iii) $y = x + 1$

Label each line with its equation.



(3)

(b) Show, by shading on the grid, the region that satisfies all three of the inequalities

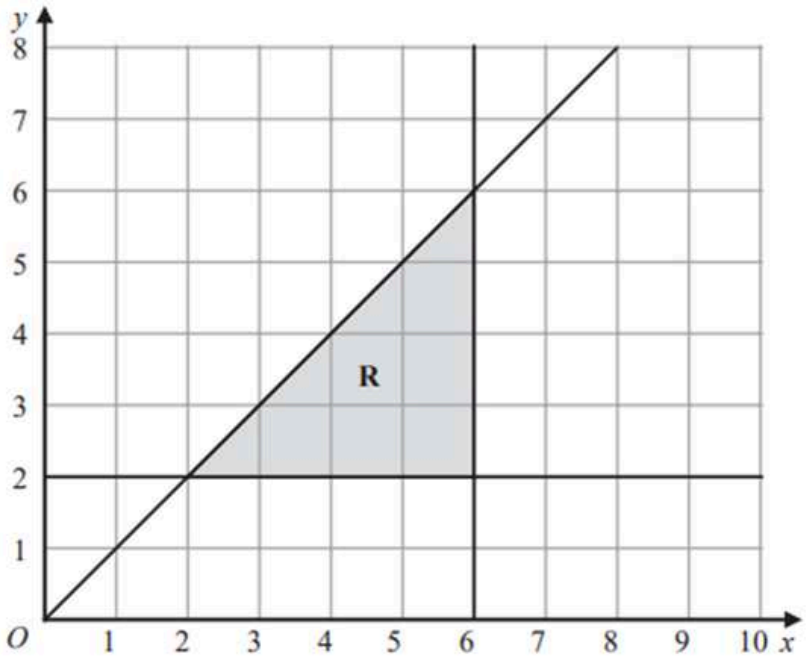
$y \geqslant 2$ $x \leqslant 6$ $y \leqslant x + 1$

Label the region **R**

(1)

(Total for Question 2 is 4 marks)

5. June 2023 2HR/Q8b



(b) Write down the three inequalities that represent the shaded region **R**

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.....

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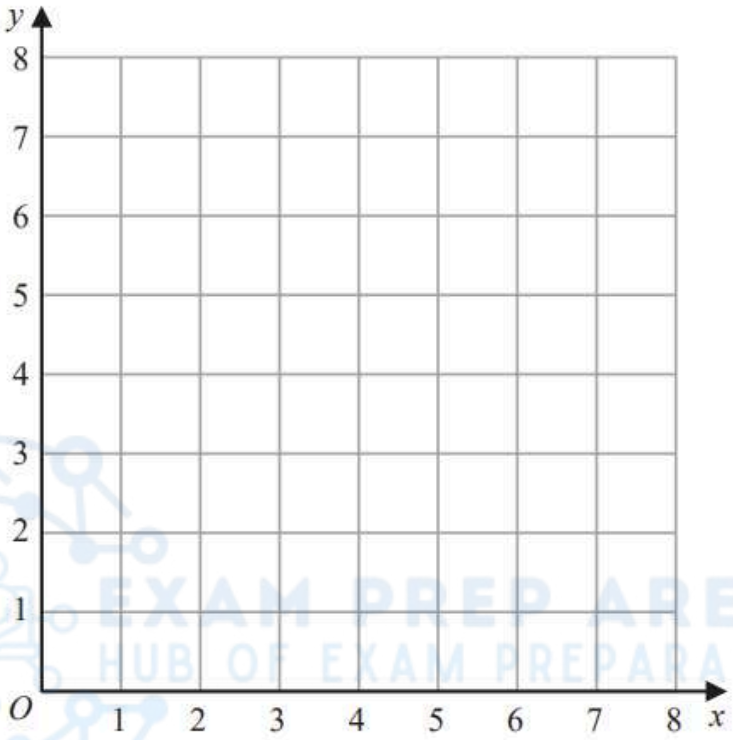
(3)

6. June 2022 2H/Q2

(a) On the grid, draw and label with its equation the straight line with equation

(i) $y = 1$ (ii) $x = 2$ (iii) $x + y = 7$



(3)

(b) Show, by shading on the grid, the region that satisfies **all three** of the inequalities

$y \geqslant 1$ $x \geqslant 2$ $x + y \leqslant 7$

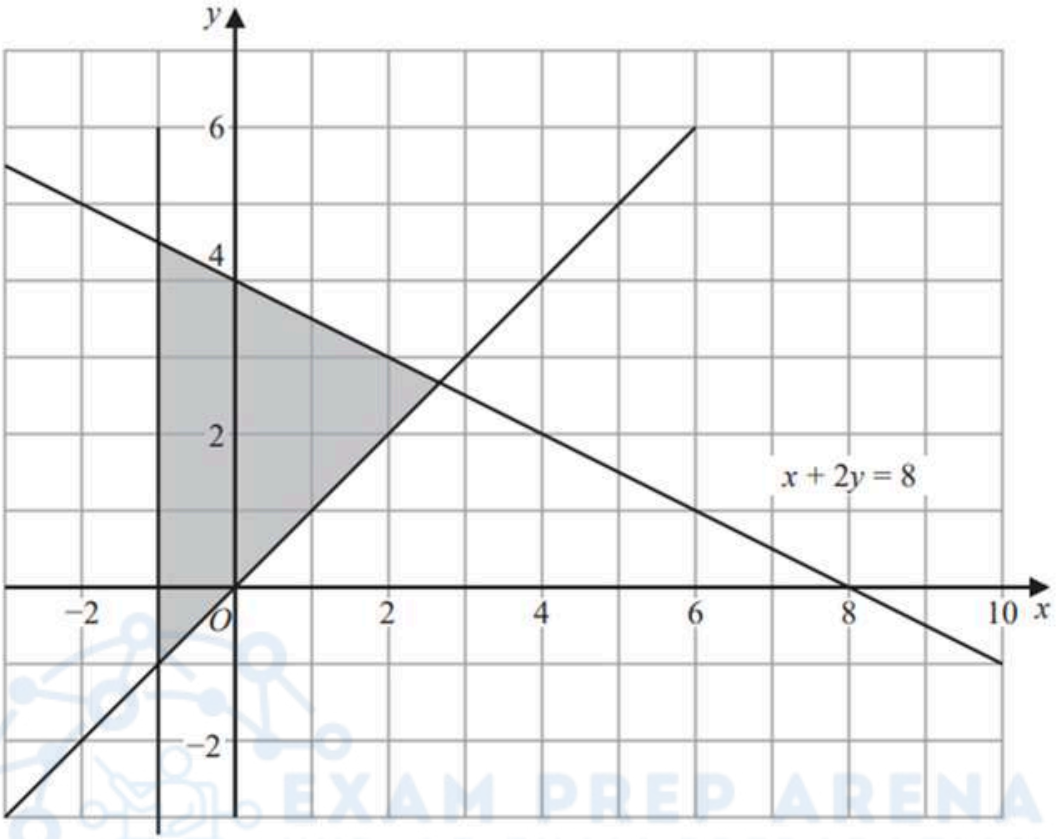
Label the region **R**.

(1)

(Total for Question 2 is 4 marks)

7. Jan 2022 2H/Q13

The shaded region in the diagram is bounded by three lines.
The equation of one of the lines is given.



Write down three inequalities that define the shaded region.

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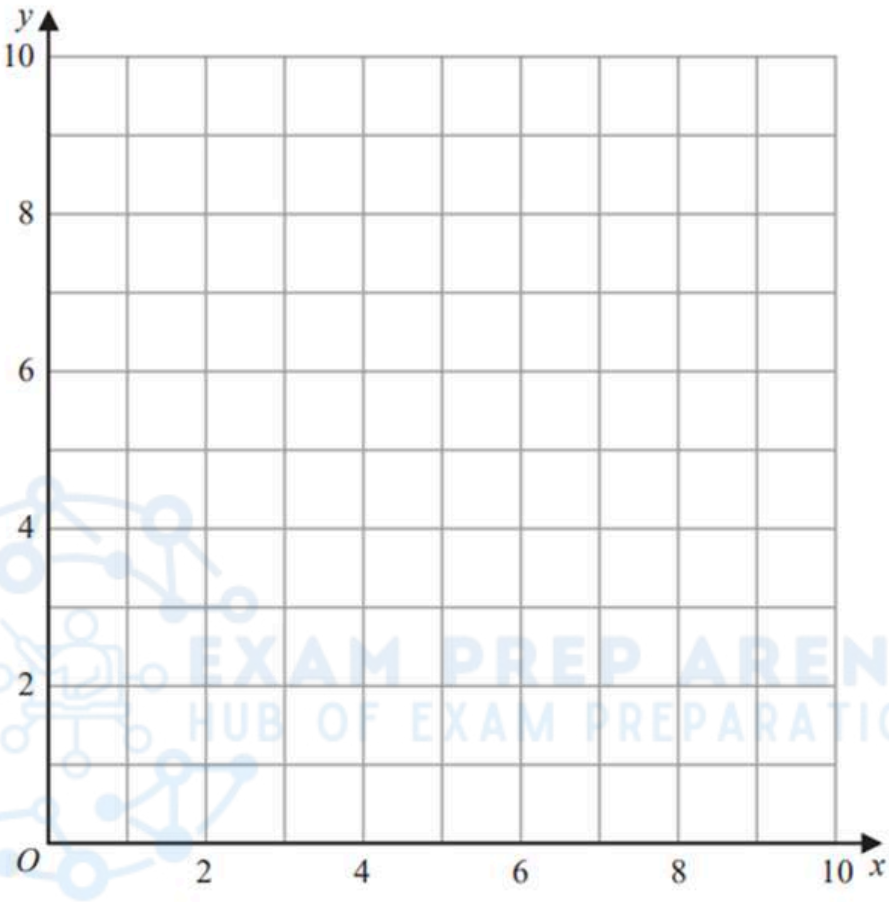
(Total for Question 13 is 3 marks)

8. Jan 2022 2HR/Q7b

(b) Show, by shading on the grid, the region defined by **all three** of the inequalities

$x \leqslant 6$ $y \geqslant 2$ $y \leqslant x + 1$

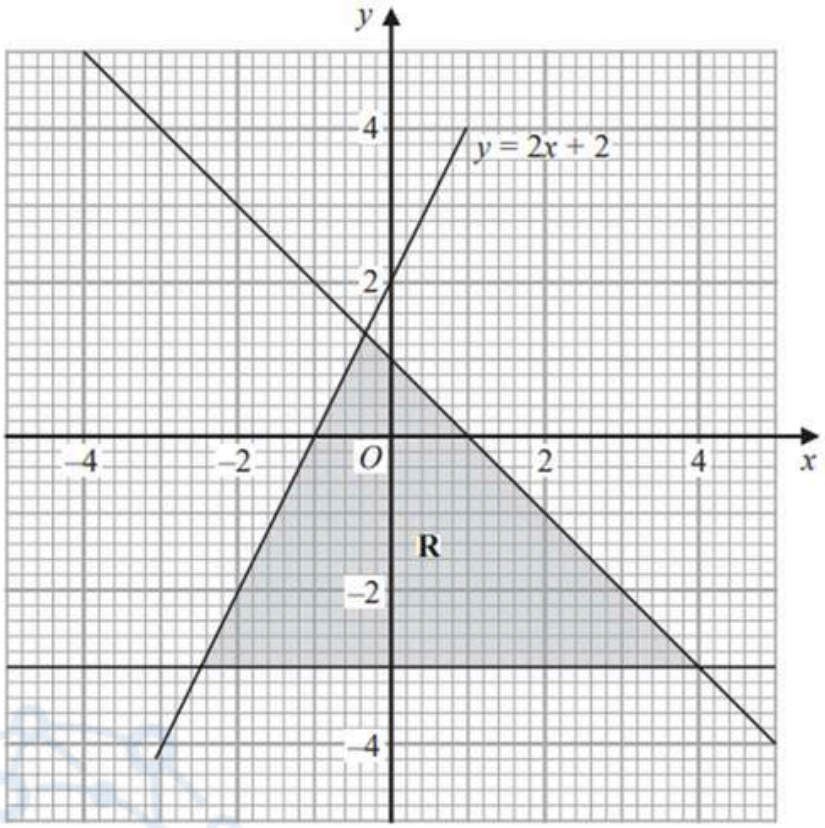
Label the region **R**



(3)

(Total for Question 7 is 5 marks)

9. Oct 2021 2H/Q13



The region **R**, shown shaded in the diagram, is bounded by three straight lines.

Write down the three inequalities that define **R**.

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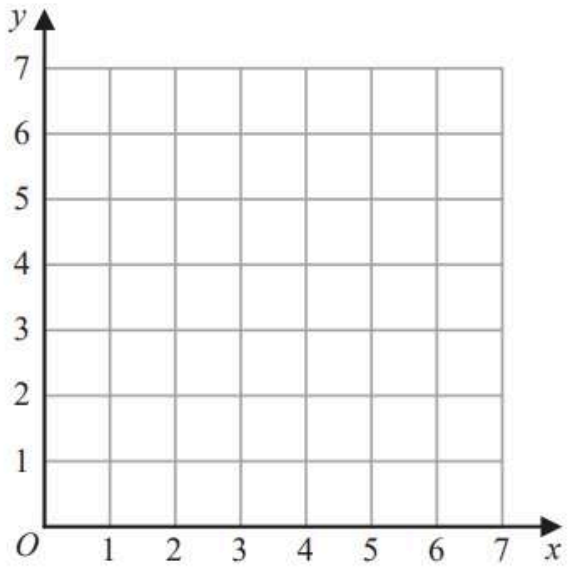
(Total for Question 13 is 3 marks)

10. Jan 2021 2H/Q4



(a) On the grid, draw and **label** the straight line with equation

(i) $x = 1.5$

(ii) $y = x$

(iii) $x + y = 6$

(3)

(b) Show, by shading on the grid, the region that satisfies **all three** of the inequalities

$x \geqslant 1.5$ $y \geqslant x$ $x + y \leqslant 6$

Label the region **R**.

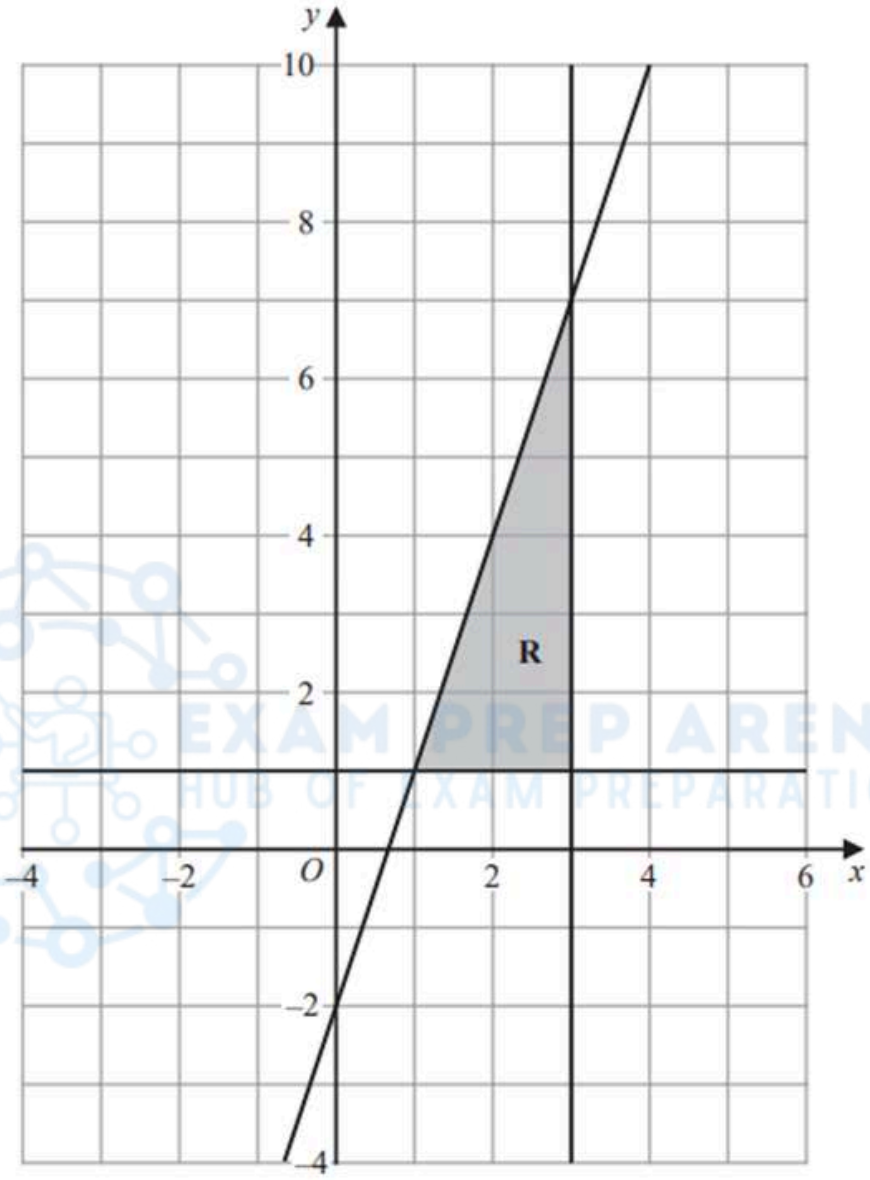
(1)

(Total for Question 4 is 4 marks)

11. Jan 2021 2HR/Q7

The shaded region **R**, shown in the diagram below, is bounded by the straight line with equation $y = 3x - 2$ and by two other straight lines.

Write down the three inequalities that define region **R**.



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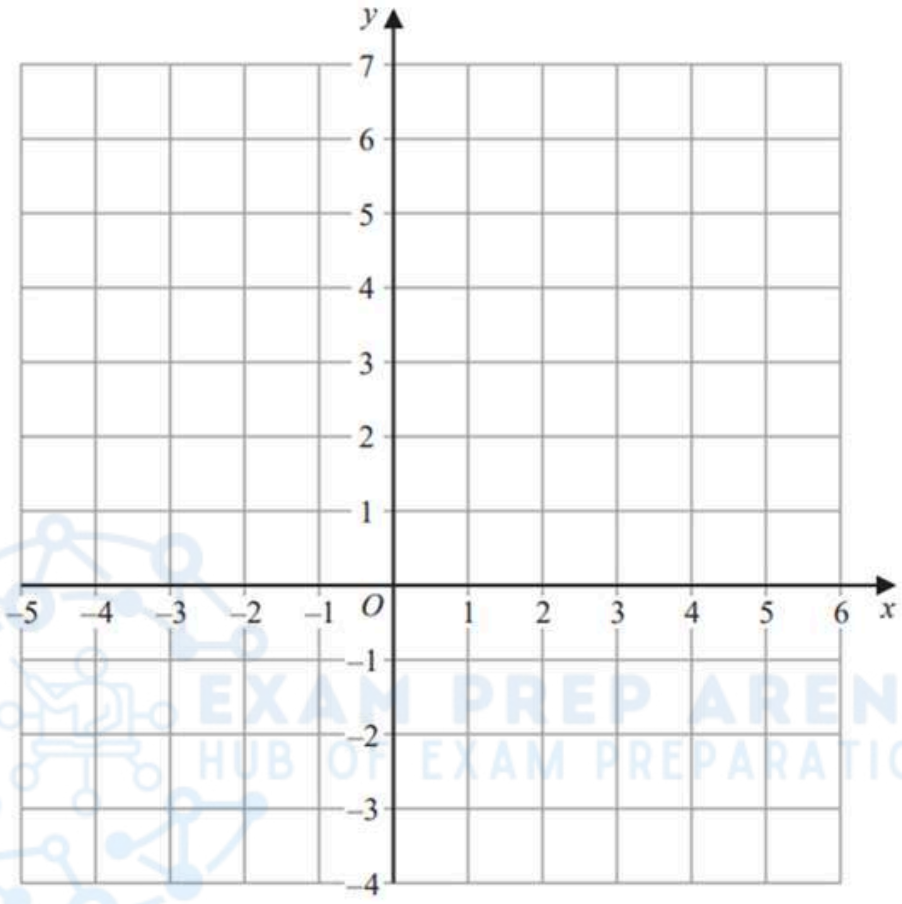
(Total for Question 7 is 3 marks)

12. Nov 2020 2HR/Q11

Show, by shading on the grid, the region that satisfies all three of the inequalities

$x \leqslant 4$ and $y \geqslant -2$ and $y \leqslant x$

Label the region **R**.



(Total for Question 11 is 3 marks)

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(Total for Question 7 is 3 marks)

13. Jan 2020 2HR/Q11b

The region **R**, shown shaded in the diagram, is bounded by three straight lines.

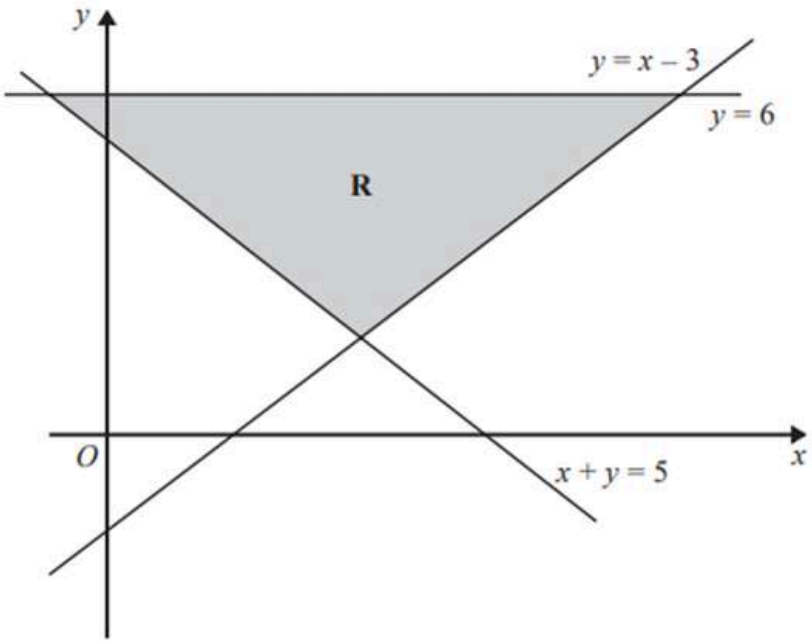

Diagram **NOT** accurately drawn

(b) Write down the three inequalities that define the region **R**.

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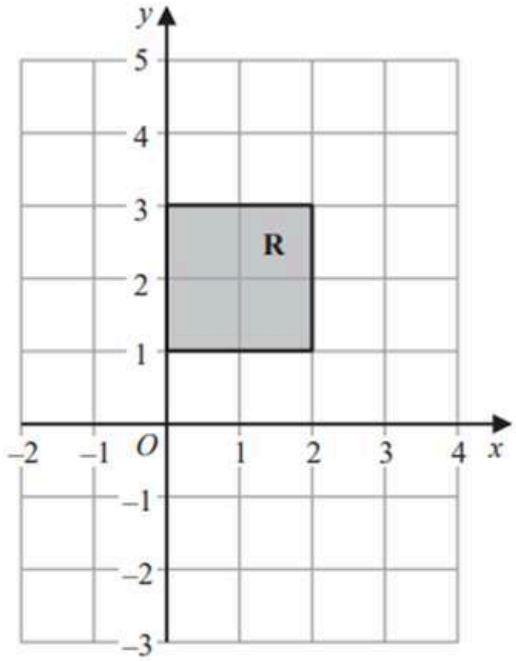
(2)

14. June 2019 2H/Q10b

(b)



The region **R**, shown shaded in the diagram, is bounded by four straight lines.

Write down the inequalities that define **R**.

.....

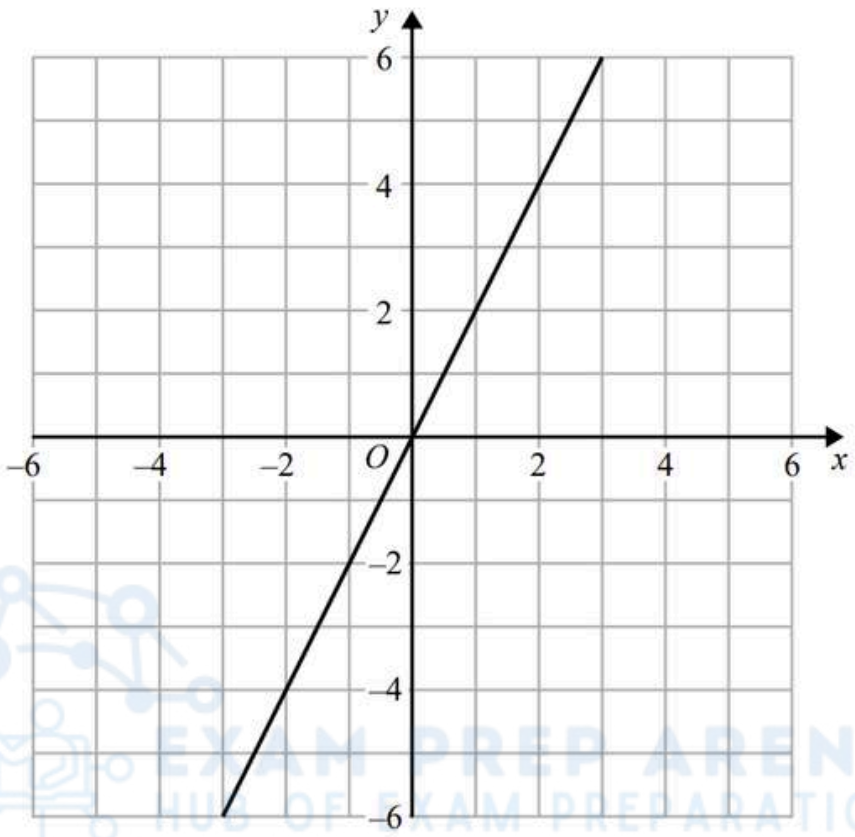
(2)

15. Sample 2018 2H/Q14b

The line with equation $y = 2x$ is drawn on the grid.

(a) On the same grid, draw the line with equation $4x + 3y = 12$

(2)



(b) Show, by shading on the grid, the region defined by all four inequalities

$$y \leqslant 2x$$

$$4x + 3y \leqslant 12$$

$$y \geqslant -3$$

$$x \leqslant 4$$

(3)

(Total for Question 14 is 5 marks)

MARKING SCHEME

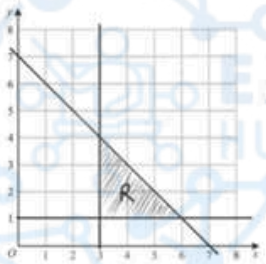
1. Nov 2025 2H/Q10b

(b)		$y \geq x$	3	B1 oe allow > in place of ≥
		$y \leq 4$		B1 oe allow < in place of ≤
		$x \geq -3$		B1 oe allow > in place of ≥
				If no marks have been awarded then SCB2 for identifying the outside region eg $y \leq x$, $y \geq 4$ and $x \leq -3$ oe SCB1 for identifying ALL 3 lines eg $y = x$, $y = 4$ and $x \leq -3$ oe Allow < in place of ≤ or vice versa
				Total 4 marks

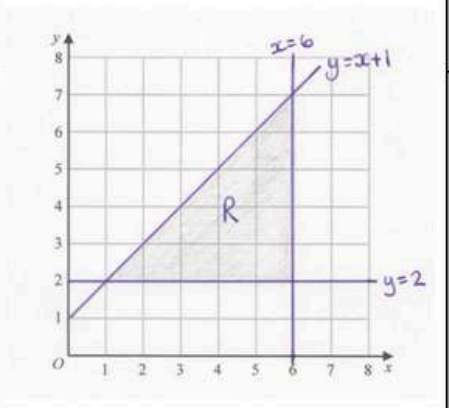
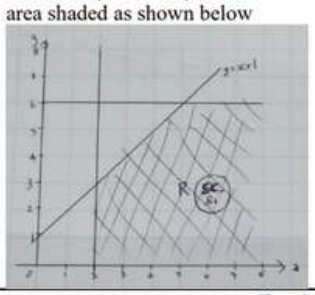
2. June 2025 2H/Q9b

(b)		$x \geq 2$	3	B1	oe allow $x > 2$ or $2 < x$
		$y \geq 3$		B1	oe allow $y > 3$ or $3 < y$
		$x + y \leq 9$		B1	oe allow $x + y < 9$ or $y < 9 - x$ or $9 > x + y$ SC B2 for all of $x \leq 2$, $y \leq 3$, $x + y \geq 9$ oe or $x < 2$, $y < 3$, $x + y > 9$ SC B1 for all of $x = 2$, $y = 3$, $x + y = 9$ oe
					Total 5 marks

3. Nov 2024 2H/Q7

7	(a)(i) (ii) (iii)	 Line length 2 cm + but shaded area must be enclosed for the mark in (b)		3	B1 $x = 3$ drawn B1 $y = 1$ drawn B1 $x + y = 7$ drawn Allow dashed lines or solid lines for graphs of minimum length 2 squares condone lack of labels if unambiguous
	(b)	**If unlabelled, award:** $x = 3$ and $y = 3$ B1 B0 $y = 1$ and $x = 1$ B0 B1 $x = 3$ and $x = 1$ and $y = 1$ B0 B1 $x = 3$ and $y = 1$ and $y = 3$ B1 B0 $x = 3$ and $x = 1$, $y = 1$ and $y = 3$ B0 B0		1	B1 correct region shaded – shaded in or out – labelled **R** or clear intention to be the required region (ft only for one vertical line (not $x = 0$), one horizontal line (not $y = 0$) and one line with a negative gradient eg $x = 1$, $y = 3$ and $x + y = 7$)
					Total 4 marks

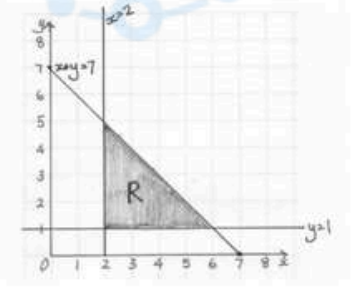
4. June 2024 2H/Q2

2 (a)(i)		$y = 2$ drawn	3	B1	Lines (can be solid, dotted or dashed) must be at least 2 cm long and need not be labelled
(ii)		$x = 6$ drawn		B1	
(iii)		$y = x + 1$ drawn		B1	
(b)			1	B1ft	Correct region indicated ft dep on at least B2 scored in (a) and a vertical line, a horizontal line and a diagonal line with a positive gradient SCB1 for $y = x + 1$, $y = 6$ and $x = 2$ and area shaded as shown below 
					Total 4 marks

5. June 2023 2HR/Q8b

(b)		$y \geq 2$ $x \leq 6$ $y \leq x$	3	B3 for all 3 correct Allow $2 \leq y, 6 \geq x$ and $x \geq y$ B2 for 2 correct B1 for 1 correct Allow < and > signs SCB2: $y \leq 2$, $y \geq x$ and $x \geq 6$ (for all 3) Allow < and > signs
	Correct answer scores full marks (unless from obvious incorrect working)			**Total 5 marks**

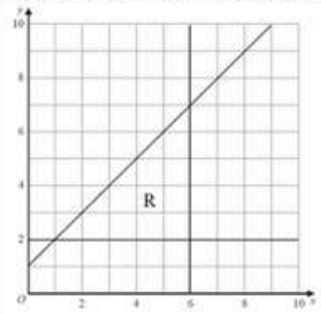
6. June 2022 2H/Q2

2 (a)(i)			3	B1	$y = 1$ drawn
(ii)				B1	$x = 2$ drawn
(iii)				B1	$x + y = 7$ drawn Allow dashed lines or solid lines for graphs **condone lack of labels if unambiguous**
	Line length 2cm + but shaded area must be enclosed for the mark in (b)				
(b)			1	B1	correct region indicated – shaded in or out – labelled **R** or clear intention to be the required region (ft only for one vertical line, one horizontal line and one line with a negative gradient)
					Total 4 marks

7. Jan 2022 2H/Q13

13		$x \geq -1$	1	B1	oe condone > in place of ≥
		$y \geq x$	1	B1	oe condone > in place of ≥
		$x + 2y \leq 8$	1	B1	oe condone < in place of ≤
				SCB1	if all inequalities reversed
					Total 3 marks

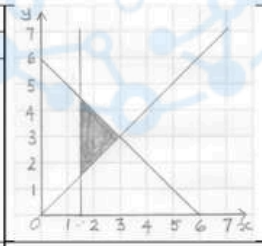
8. Jan 2022 2HR/Q7b

(b)	Lines (solid or dashed) $x = 6$ **and** $y = 2$ drawn		3	B1 The lines $x = 6$ and $y = 2$ should extend far enough to intersect with each other.
	Line (solid or dashed) $y = x + 1$ drawn			B1 The line should extend from at least $x = 1$ to $x = 6$ **or** far enough to intersect with their horizontal and vertical lines.
	Region R shown (shaded or not shaded) 	Correct region identified		B1 dep on B2
				Total 5 marks

9. Oct 2021 2H/Q13

13		$y \geq -3$ oe $x + y \leq 1$ oe $y \leq 2x + 2$ oe	3	B3 for all 3 correct inequalities (B2 for 2 correct inequalities B1 for 1 correct inequality) Allow < instead of ≤ and > instead of ≥
				Total 3 marks

10. Jan 2021 2H/Q4

4	(a)(i)		Correct line	1	B1 For $x = 1.5$ drawn
	(ii)		Correct line	1	B1 For $y = x$ drawn
	(iii)		Correct line	1	B1 For $x + y = 6$ drawn
	(b)		Correct region	1	B1 dep on B3 for correctly indicating the region **R** accept unlabelled or unshaded if clear. Shading can be 'in' or 'out'.
					Total 4 marks

12. Nov 2020 2HR/Q11

11	See appendix 1		3	M1	for $y = x$ correctly drawn solid or dashed line accepted
				M1	indep for $x = 4$ **and** $y = -2$ correctly drawn solid or dashed line accepted
		Correct region identified		A1	for correct region identified region may be shaded or left unshaded Condone missing label if region is clear and no contradictory labels
					Total 3 marks

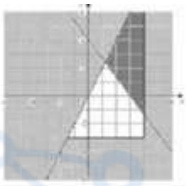
13. Jan 2020 2HR/Q11b

(b)		$y \leq 6$ oe $x + y \geq 5$ oe $y \geq x - 3$ oe	2	B2 for 3 correct inequalities B1 for 2 correct inequalities SC B2 for $y \geq 6$ oe and $x + y \leq 5$ oe and $y \leq x - 3$ oe (In all cases allow < in place of ≤, and > in place of ≥)
				Total 4 marks

14. June 2019 2H/Q10b

	(b)	$x \geq 0, x \leq 2, y \geq 1, y \leq 3$ or	$0 \leq x \leq 2$ $1 \leq y \leq 3$	2	B2 fully correct oe (B1 for 2 or 3 out of 4 inequalities correct) (Treat double-ended inequalities as two separate inequalities) (SC B2 $y > 3, y < 1, x < 0, x > 2$) Accept <, ≤, > and ≥ throughout
					Total 4 marks

15. Sample 2018 2H/Q14b

b	Correct region 	3	AO1	B3	Correct region B2 for $x = 4$ and $y = -3$ drawn **and** consistent shading correct for at least two inequalities B1 for $x = 4$ and $y = -3$ drawn