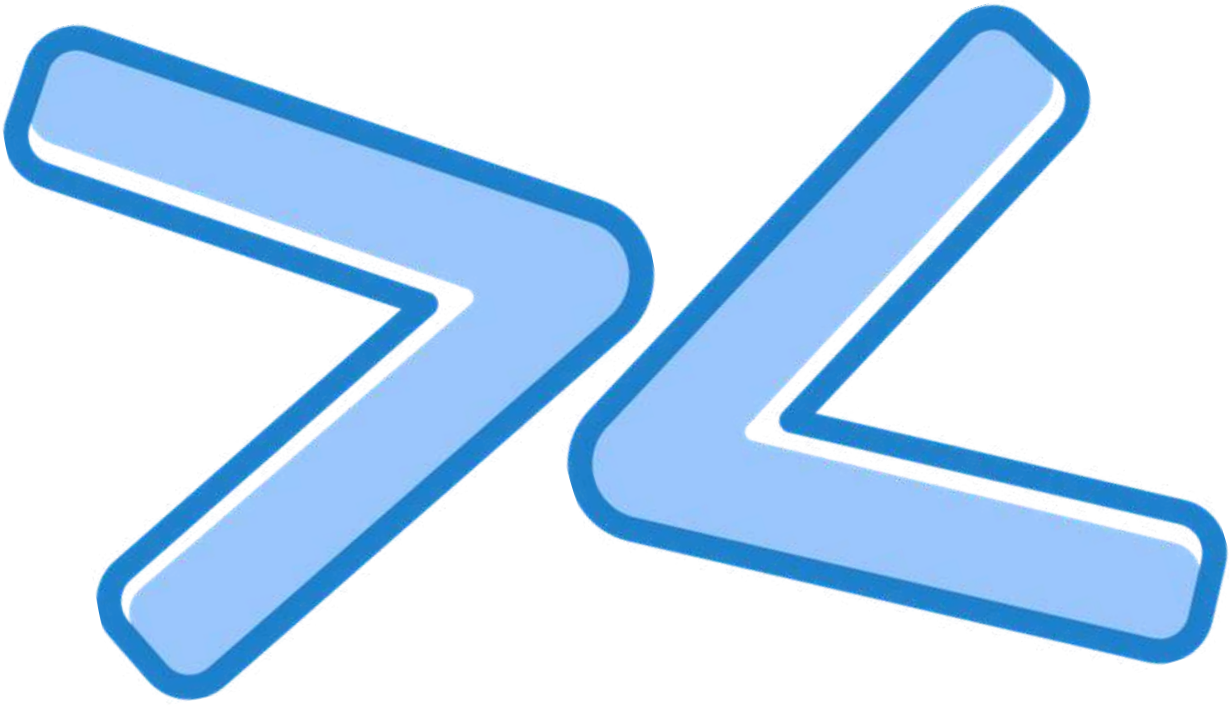
EDEXCEL IGCSE MATHEMATICS

UNIT 2 (MODULAR)

ALGEBRA – INEQUALITIES

QP & MS (2018 – 2025)



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by Sir Muhammad Abdullah Shah

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1. Nov 2025 1H/Q10b

(b) Solve $5y + 20 < 7y + 1$

.....

(2)

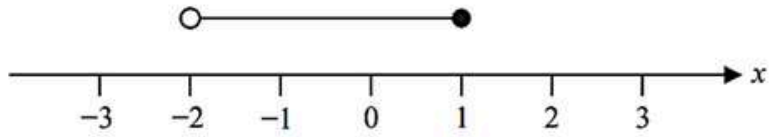
2. Nov 2025 1H/Q25

Solve the inequality $2x^2 + x - 28 > 0$
Show clear algebraic working.

.....

(Total for Question 25 is 3 marks)

3. June 2025 1HR/Q6



(a) Write down the inequality shown on the number line.

.....

(2)

(b) Solve the inequality $7a - 5 \leqslant 3a + 28$
Show clear algebraic working.

.....

(2)

(Total for Question 6 is 4 marks)

4. Nov 2024 1H/Q8b

(b) Solve the inequality $3y + 5 > 7y - 10$

Show clear algebraic working.

.....

(3)

5. June 2024 1HR/Q7d

(d) Solve the inequality $7 - 2y < 3y - 12$

.....

(3)

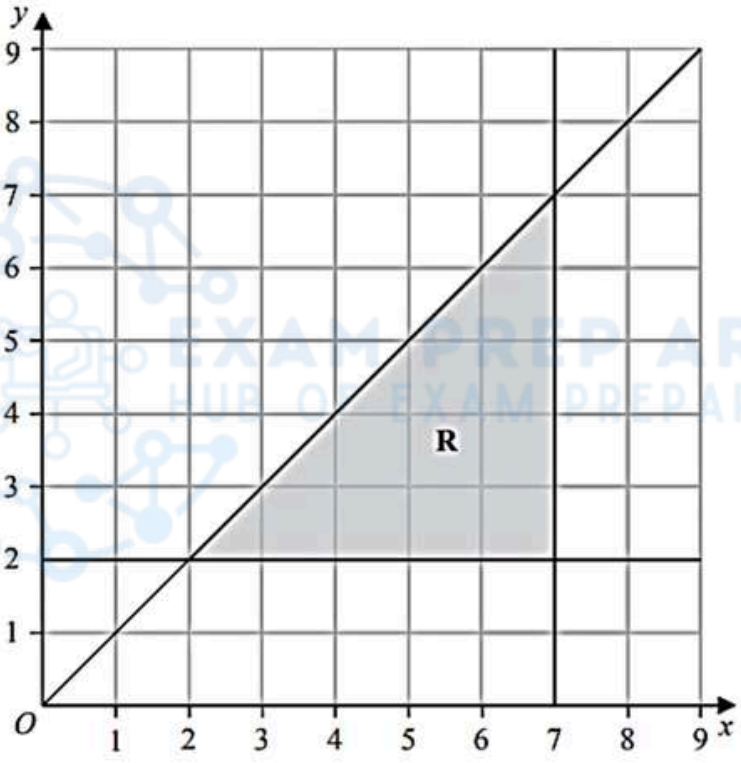
6. Nov 2023 1H/Q8

(a) Solve the inequality $8x - 4 \geqslant 3x - 10$

.....

(2)

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**

.....

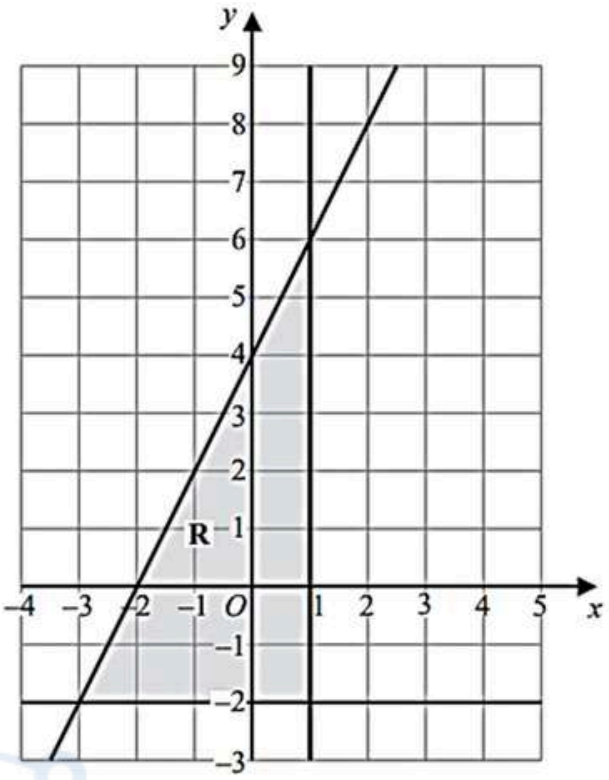
.....

.....

(3)

(Total for Question 8 is 5 marks)

7. June 2023 1H/Q7



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

Find the inequalities that define **R**

.....

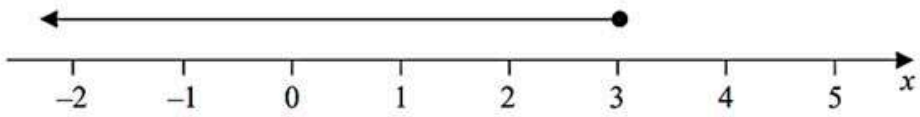
.....

.....

(Total for Question 7 is 4 marks)

8. Jan 2023 1H/Q10b,c

(b) Write down the inequality shown on the number line



.....

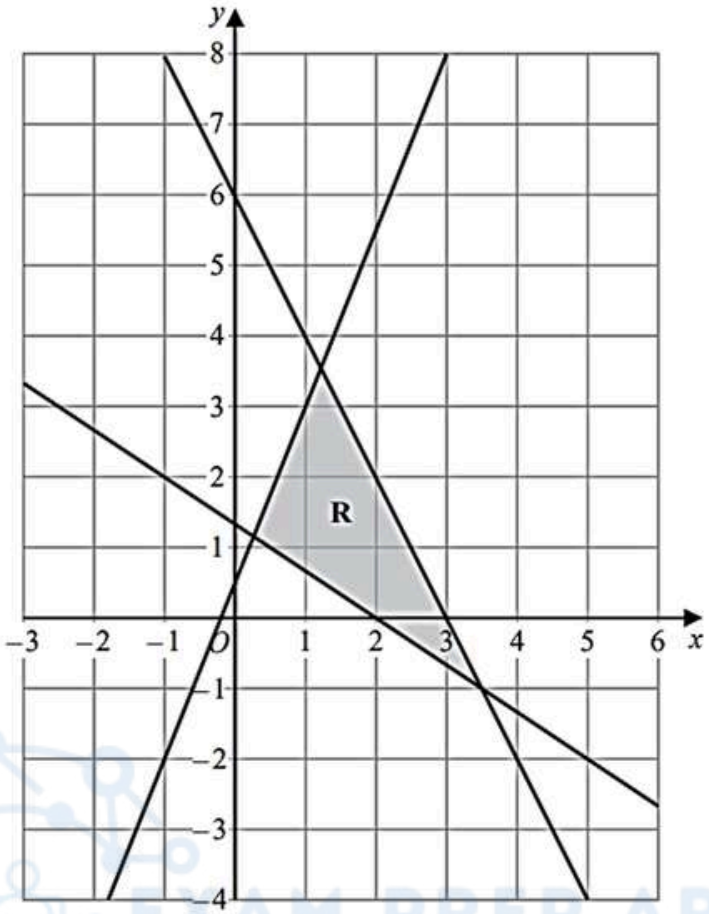
(1)

(c) Solve the inequality $7w + 6 > 12w + 14$

.....

(3)

9. Jan 2023 1H/Q11



The region **R**, shown shaded in the diagram, is bounded by the straight lines with equations

$2x + y = 6$

$2y = 5x + 1$

$3y + 2x = 4$

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

.....

.....

.....

(Total for Question 11 is 3 marks)

10. Jan 2022 1H/Q6a

(a) Solve the inequality $5x - 7 \leqslant 2$

.....

(2)

11. Jan 2022 1HR/Q1

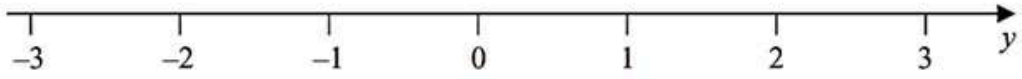
n is an integer.

(a) Write down all the values of n such that $-2 \leqslant n < 3$

.....

(2)

(b) On the number line, represent the inequality $y \leqslant 1$



(1)

(Total for Question 1 is 3 marks)

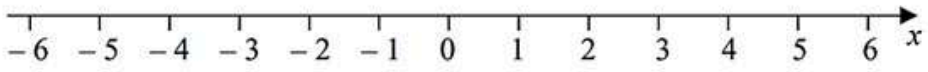
12. Nov 2021 1H/Q9

(i) Solve the inequalities $-7 \leqslant 2x - 3 < 5$

.....

(3)

(ii) On the number line, represent the solution set to part (i)



(2)

(Total for Question 9 is 5 marks)

13. May 2021 1H/Q7

$-4 \leqslant 2y < 6$

y is an integer.

(a) Write down all the possible values of y.

.....

(2)

(b) Solve the inequality $7t - 3 \leqslant 2t + 31$

Show your working clearly.

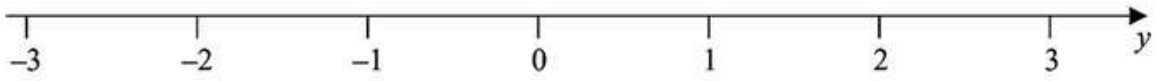
.....

(2)

(Total for Question 7 is 4 marks)

14. Jan 2021 1HR/Q3

(a) On the number line, show the inequality $-2 \leqslant y < 1$



(2)

n is an integer.

(b) Write down all the values of n that satisfy $-3.4 < n \leqslant 2$

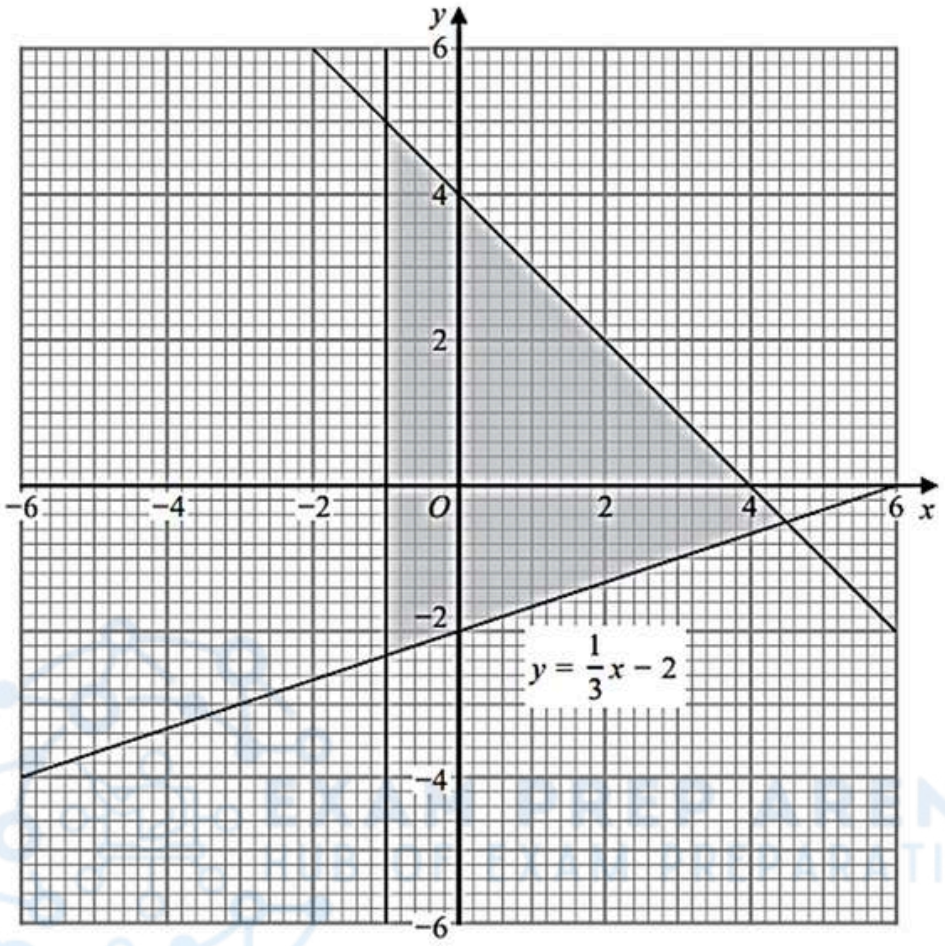
.....

(2)

(Total for Question 3 is 4 marks)

15. Jan 2020 1H/Q10

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



Write down the three inequalities that define the shaded region.

.....

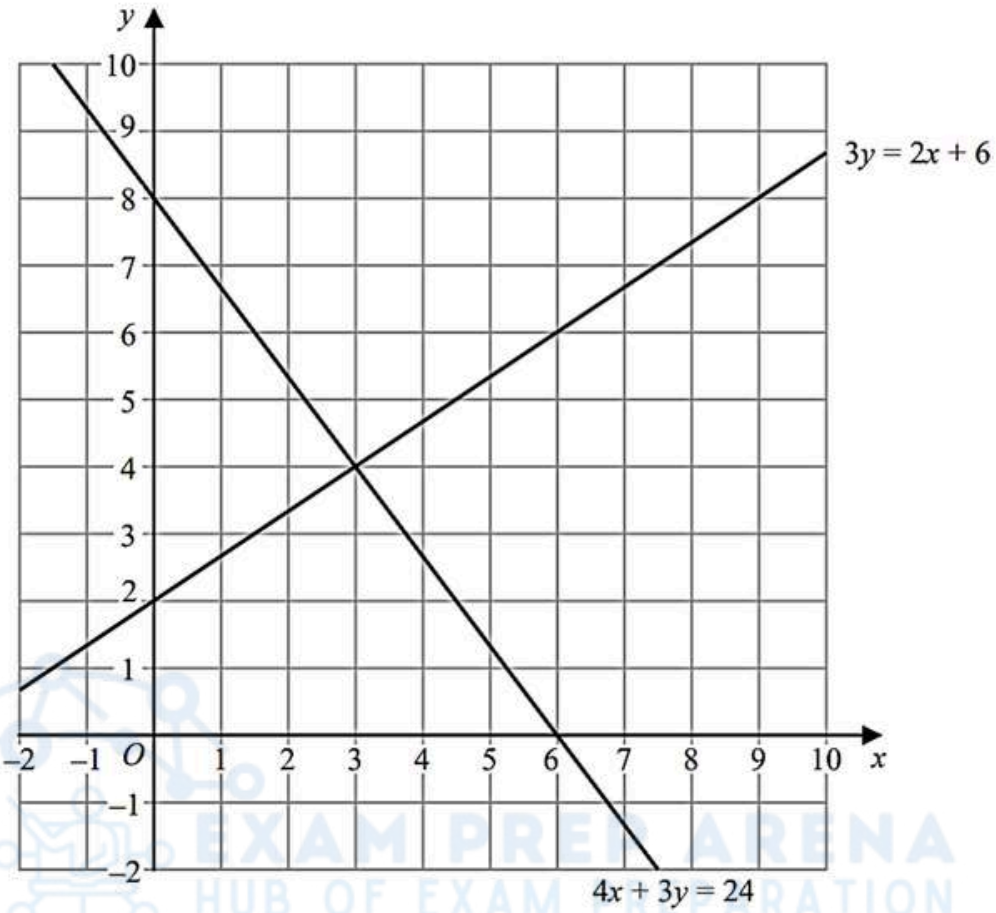
.....

.....

(Total for Question 10 is 3 marks)

16. June 2018 1H/Q12b

The diagram shows two straight lines drawn on a grid.



(a) Write down the solution of the simultaneous equations

$$3y = 2x + 6$$
$$4x + 3y = 24$$

$x =$ .....

$y =$ .....

(1)

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

$x \geqslant 0$ $y \geqslant 0$ $x + y \geqslant 4$ $3y \leqslant 2x + 6$ $4x + 3y \leqslant 24$

Label the region **R**.

(3)

(Total for Question 12 is 4 marks)

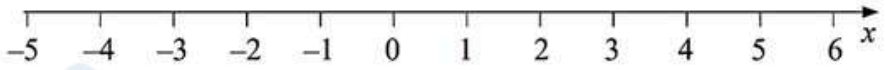
17. Specimen 2018 1H/Q17

(a) Solve $x^2 + 2x > 6x + 5$

.....

(3)

(b) Represent your solution set to part (a) on the number line below.



(1)

(Total for Question 17 is 4 marks)

MARKING SCHEME

1. Nov 2025 1H/Q10b

10	(a)		1	1	B1	
	(b)	eg $5y-7y<1-20$ **or** $-2y<-19$ oe **or** $20-1<7y-5y$ **or** $19<2y$ oe **or** $y=9.5$ or $y<9.5$		2	M1	for correctly isolating terms in y on one side and number terms on the other side of an inequality or an equation. Ignore incorrect inequality signs for this mark
		Correct answer scores full marks (unless from obvious incorrect working)	$y>9.5$		A1	oe eg $\frac{19}{2}<y$ Must have correct inequality symbol on answer line NB sight of correct answer in working space and just ($y=$) 9.5 on answer line gains M1 only
	(c)		$5w^2x^2(3x^3+5w)$	2	B2	for the correct factorisation (B1 for a correct partial factorisation of at least 2 different terms outside the bracket eg $5wx(3wx^4+5w^2x)$ or $5w^2(3x^5+5wx^2)$ **or** for the correct highest common factor on the outside and one term inside the bracket correct eg $5w^2x^2(3x^3+...)$ or $5w^2x^2(...+5w)$ **or** for $(3x^3+5w)$ as a factor)
	(d)		$3a^3c^4$	2	B2	oe eg $\frac{3a^3}{c^{-4}}$ (B1 a single product with 2 of 3, a^3, c^4 correct eg $3a^3c^n$ where $n\neq 4$ **or** $3a^mc^4$ where $m\neq 3$ **or** pa^3c^4 where $p\neq 3$. One term can be missing with 2 correct for B1)
						Total 7 marks

2. Nov 2025 1H/Q25

25	$(2x-7)(x+4)$ **or** $2x(x+4)-7(x+4)$ **or** $x(2x-7)+4(2x-7)$ **or** $\frac{-1\pm\sqrt{1^2-4\times2\times-28}}{2\times2}$ **or** $2\left[\left(x+\frac{1}{4}\right)^2-\left(\frac{1}{4}\right)^2\right]-28(=0)$		3	M1	a correct method to solve the quadratic equation $2x^2+x-28=0$ Allow $(2x+8)(x-3.5)$ **or** $(2x+8)(2x-7)$ leading to $(x+4)(x-3.5)$ **or** $(2x+8)(2x-7)$ leading to correct values of x Do not allow $(x+4)(x-3.5)$ without previous working (If using formula allow some simplification – as far as $\frac{-1\pm\sqrt{1+224}}{4}$)
	3.5, −4			A1	oe dep on M1
	Working required	$x>3.5$, $x<-4$		A1	oe dep on M1
					Total 3 marks

3. June 2025 1HR/Q6

6	(a)		$-2<x\leq 1$	2	B2	accept $1\geq x>-2$ **or** $x>-2$, $x\leq 1$ if not B2 then B1 for $-2<x$ **or** $x\leq 1$ **or** $-2\leq x<1$ **or** $-2\leq x\leq 1$ **or** $-2<x<1$ Condone use of a variable other than x but not 0
	(b)	$7a-3a\leq 28+5$ **or** $4a\leq 33$ **or** $-5-28\leq 3a-7a$ **or** $-33\leq -4a$		2	M1	for a terms on one side and numbers on the other. Condone = rather than $\leq$ or any other sign for this mark.
		Working required	$a\leq 8.25$		A1	(dep on M1) oe eg $a\leq\frac{33}{4}$ **or** $a\leq 8\frac{1}{4}$ **or** $8.25\geq a$ must have correct sign on answer line (sight of correct answer in working space and just 8.25 on answer line gains M1 only).
						Total 4 marks

4. Nov 2024 1H/Q8b

(b)	$3y-7y>-10-5$ or $5+10>7y-3y$		3	M1 allow use of = or condone incorrect inequality sign
	$-4y>-15$ or $15>4y$ or $y=\frac{15}{4}$ oe or			M1 allow use of = or condone incorrect inequality sign
	Working required	$y<\frac{15}{4}$		A1 dep on M1 oe eg $y<3.75$ or $\frac{15}{4}>y$ or $3.75>y$ Must have correct sign on answer line NB Sight of correct answer in working space and just $(y=)\frac{15}{4}$ oe on answer line gains M2 only
				Total 6 marks

5. June 2024 1HR/Q7d

(d)	$-2y-3y<-12-7$ **or** $7+12<3y+2y$ **or** $7<5y-12$ **or** $7-5y<-12$ **or** $-2y<3y-19$ **or** $19-2y<3y$		3	M1 for rearrangement with y terms on one side and numerical terms on the other in a correct inequality **or** the correct simplification of y terms or numbers on one side in a correct inequality sign can be = or the incorrect inequality sign
	$-5y<-19$ **or** $19<5y$ **or** $-y<\frac{-19}{5}$ **or** $y<\frac{19}{5}$ **or** $y=\frac{19}{5}$ oe			M1 for the correct simplification of y terms on one side and numbers on the other side in a correct inequality **or** a correct inequality with the wrong sign sign can be = or the incorrect inequality sign
	Correct answer scores full marks (unless from obvious incorrect working)	$y>\frac{19}{5}$		A1 oe eg $y>3.8$ or $3.8<y$ Must be given as the correct inequality on the answer line
				Total 9 marks

6. Nov 2023 1H/Q8

8 (a)	$8x-3x\geq-10+4$ or $5x\geq-6$ or $10-4\geq-8x+3x$ or $6\geq-5x$		2	M1 for x terms on one side and numbers on the other. Condone = rather than ≤ or any other sign for this mark.
	Working not required, so correct answer scores full marks (unless from obvious incorrect working)	$x^3 - \frac{6}{5}$		A1 oe eg $-\frac{6}{5}£ x$ Must have correct sign on answer line (sight of correct answer in working space and just −1.2 on answer line gains M1 only)
(b)		$y\geq 2$	3	B1 oe eg $y-2\geq 0$ allow > in place of ≥
		$x\leq 7$		B1 oe eg $x-7\leq 0$ allow < in place of ≤
		$y\leq x$		B1 oe eg $y-x\leq 0$ allow < in place of ≤
				SCB1 for $y=2$, $x=7$ and $y=x$ SCB2 for $y\leq 2$, $x\geq 7$ and $y\geq x$ or $y<2, x>7$ and $y>x$ Allow < in place of ≤ or vice versa
				Total 5 marks

7. June 2023 1H/Q7

7		$x\leq 1$	4	B1 accept $x<1$
		$y\geq -2$		B1 accept $y>-2$
	$y=2x+c$ or $y=mx+4$			M1 allow = or < or ≤ or > or ≥
	Correct answer scores full marks (unless from obvious incorrect working)	$y\leq 2x+4$		A1 oe, allow $y<2x+4$ oe SCB2 for the correct inequalities with all inequality signs the wrong way round
				Total 4 marks

8. Jan 2023 1H/Q10b,c

7		$x \leq 1$	4	B1	accept $x < 1$
		$y \geq -2$		B1	accept $y > -2$
	$y = 2x + c$ or $y = mx + 4$			M1	allow = or < or ≤ or > or ≥
	Correct answer scores full marks (unless from obvious incorrect working)	$y \leq 2x + 4$		A1	oe, allow $y < 2x + 4$ oe SCB2 for the correct inequalities with all inequality signs the wrong way round
					Total 4 marks

9. Jan 2023 1H/Q11

11		$2x + y \leq 6$ $2y \leq 5x + 1$ $3y + 2x \geq 4$	3	B3 oe for all three correct (B2 oe for any two correct) (B1 oe for any one correct) $2x + y \leq 6$ equivalent to $y \leq -2x + 6$ oe $2y \leq 5x + 1$ equivalent to $y \leq 2.5x + 0.5$ oe $3y + 2x \geq 4$ equivalent to $y \geq -\frac{2}{3}x + \frac{4}{3}$ oe Allow the following inequalities $2x + y < 6$ oe $2y < 5x + 1$ oe $3y + 2x > 4$ oe
				Total 3 marks

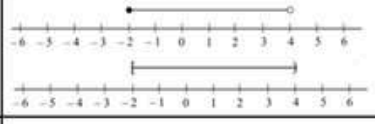
10. Jan 2022 1H/Q6a

6 (a)	$5x \leq 2 + 7$ **or** $5x \leq 9$ **or** $\frac{5x}{5} - \frac{7}{5} \leq \frac{2}{5}$ oe		2	M1	allow any sign instead of ≤ **or** for an answer of 1.8 oe **or** x and 1.8 oe with the incorrect sign
		$x \leq 1.8$		A1	oe

11. Jan 2022 1HR/Q1

1 (a)			−2, −1, 0, 1, 2	2	B2 for −2, −1, 0, 1, 2 with no additions or repeats (B1 for 4 of −2, −1, 0, 1, 2 with no additions or repeats **or** for 6 values with no more than one incorrect value e.g. all of −2, −1, 0, 1, 2, 3 **or** for 5 values with one error)
(b)			Closed circle at $x = 1$ and a line with an arrow to the left	1	B1 for a closed circle at $x = 1$ and a line with an arrow of any length to the left Allow] for a closed circle Allow a line without an arrow if it reaches to at least −3
					Total 3 marks

12. Nov 2021 1H/Q9

9	(i)	$-7+3 \leq 2x < 5+3$ oe or $\frac{-7}{2} \leq x - \frac{3}{2} < \frac{5}{2}$ oe or $-7+3 \leq 2x$ oe **and** $2x < 5+3$ oe or $(x =) -2$ or $(x =) 4$		3	M1 or one side of the inequality correct, i.e.. $x \geq -2$ oe or $x < 4$ Condone = rather than ≤ or < or any other sign for the M marks.
		$\frac{-7+3}{2} \leq x < \frac{5+3}{2}$ or $\frac{-7}{2} + \frac{3}{2} \leq x < \frac{5}{2} + \frac{3}{2}$ or $\frac{-7+3}{2} \leq x$ oe **and** $x < \frac{5+3}{2}$ or $(x =) -2$ and $(x =) 4$			M1
		Correct answer scores full marks (unless from obvious incorrect working)	$-2 \leq x < 4$		A1 allow $x \geq -2$ and $x < 4$ Allow $[-2, 4)$
	(ii)			2	M1 ft for drawing a line from −2 to 4 or (indep) for a closed circle or [at −2 or (indep) for an open circle or) or [at 4 Only allow a follow through for a double ended inequality in (i)
			Correct diagram		A1 ft for correct diagram Only allow a follow through for a double ended inequality in (i)
					Total 5 marks

13. May 2021 1H/Q7

7	(a)		$-2, -1, 0, 1, 2$	2	B2 (B1 for 4 correct values and no incorrect values (eg –1, 0, 1, 2) **or** for 6 values with no more than one incorrect value (eg –2, –1, 0, 1, 2, 3))
	(b)	$7t - 2t \leq 31 + 3$ **or** $5t \leq 34$ **or** $-3 - 31 \leq 2t - 7t$ **or** $-34 \leq -5t$ oe		2	M1 t terms on one side and numbers on the other. Condone = rather than ≤ or any other sign for this mark.
		Working required	$t \leq 6.8$		A1 oe (dep on M1) eg $t \leq \frac{34}{5}$ **or** $t \leq 6\frac{4}{5}$ **or** $6.8 \geq t$ Must have correct sign on answer line (sight of correct answer in working space and just 6.8 oe on answer line gains M1 only)
					Total 4 marks

14. Jan 2021 1HR/Q3

3	a		Correct number line	2	B2 for a fully correct number line e.g. shaded circle at −2, unshaded circle at 1 and a line drawn between them B1 for a shaded circle at −2 **or** an unshaded circle at 1 **or** circles at −2 and 1 with line in between but shading incorrect
	b		$-3, -2, -1, 0, 1, 2$	2	B2 fully correct values with no extras B1 for 5 correct values and none incorrect **or** all 6 correct values with no more than one additional incorrect value
					Total 4 marks

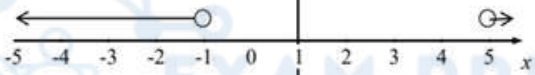
15. Jan 2020 1H/Q10

10			$x \geq -1$ oe $x + y \leq 4$ oe $y \geq \frac{1}{3}x - 2$ oe	3	B3 for all 3 correct inequalities (B2 for two correct inequalities B1 for one correct inequality) (SC B3 for $x \leq -1, x + y \geq 4$ and $y \leq \frac{1}{3}x - 2$ oe) (If no marks gained B1 for understanding of equation $x + y = 4$ e.g. $y > 4 - x$) Accept < for ≤ and > for ≥ throughout
					Total 3 marks

16. June 2018 1H/Q12b

(b)		see graph at end of mark scheme	3	B3	for correct region identified If not B3 then award B2 for $x + y = 4$ drawn (with no additional lines drawn) **and** a region identified that satisfies at least 3 of the 5 given inequalities If not B2 then award B1 for line $x + y = 4$ drawn NB. May shade wanted or unwanted regions; lines may be solid or dashed

17. Specimen 2018 1H/Q17

17	a	$x^2 + 2x - 6x - 5 > 0$ **or** $x^2 - 4x - 5 > 0$			M1
		$(x - 5)(x + 1)$			M1
			$x < -1,\ x > 5$	3	A1
	b			1	B1 ft from (a)
					Total 4 marks