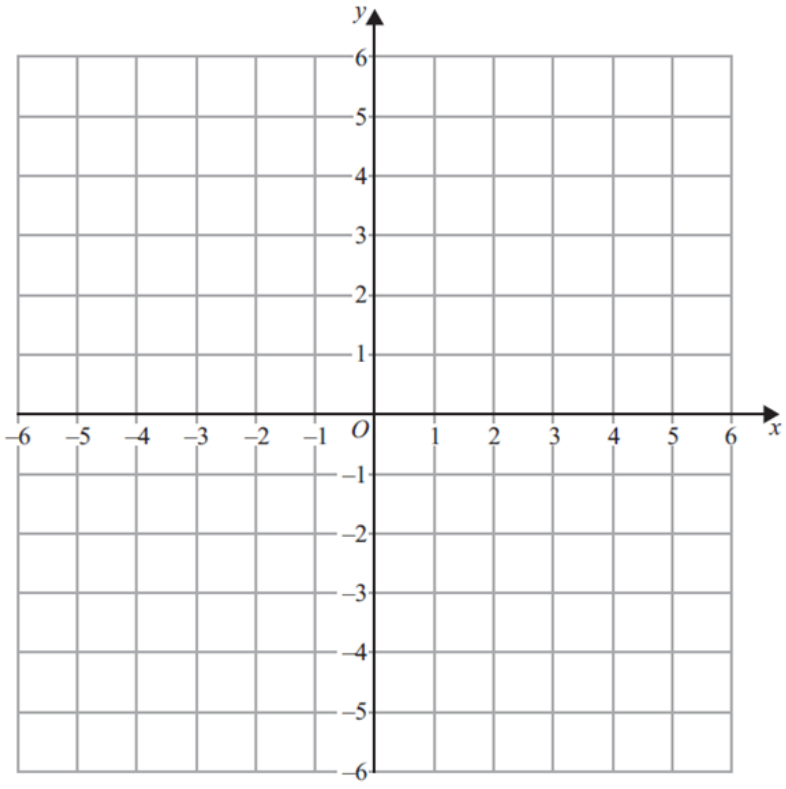
INEQUALITIES: LINEAR, QUADRATIC AND GRAPHS

QUESTION 1



On the grid, shade the region **R** that satisfies all the following inequalities.

$x \leq 3$ $y \geq -2$ $y \leq 2x + 2$ $2x + 3y \leq 6$

Label the region **R**.

[3]

QUESTION 2

Solve $(5x - 3)(x + 6) < 0$

[2]

Question 3

(a) Factorise $9x^2 + 9x - 10$

.....

(2)

(b) Hence, or otherwise, solve $9x^2 + 9x - 10 > 0$

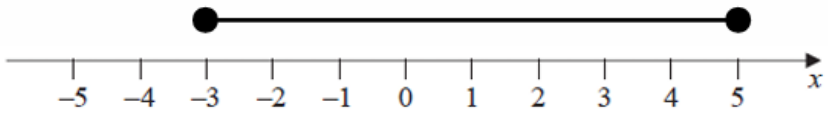
.....

(2)

Question 4

Jervis is asked to show the inequality $-3 < x \leq 4$ on a number line.

Here is his answer.



(a) Write down two mistakes Jervis has made.

1.....

.....

2.....

.....

(2)

(b) Work out the greatest integer that satisfies the inequality

$$7y - 19 < 25$$

.....

(2)

Question 5

Find the set of possible values of x for which

$$9x^2 - 36 < 0 \quad \textbf{and} \quad 20 - 7x - 3x^2 > 0$$

You must show all your working.

.....(5)

Question 6

$-3 < n \leq 7$

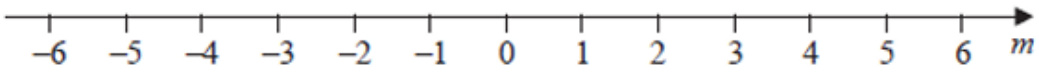
n is an integer.

(*a*) Write down the greatest possible value of n.

.....

(1)

(*b*) On the number line below, show the inequality $-5 < m \leq 2$



(2)

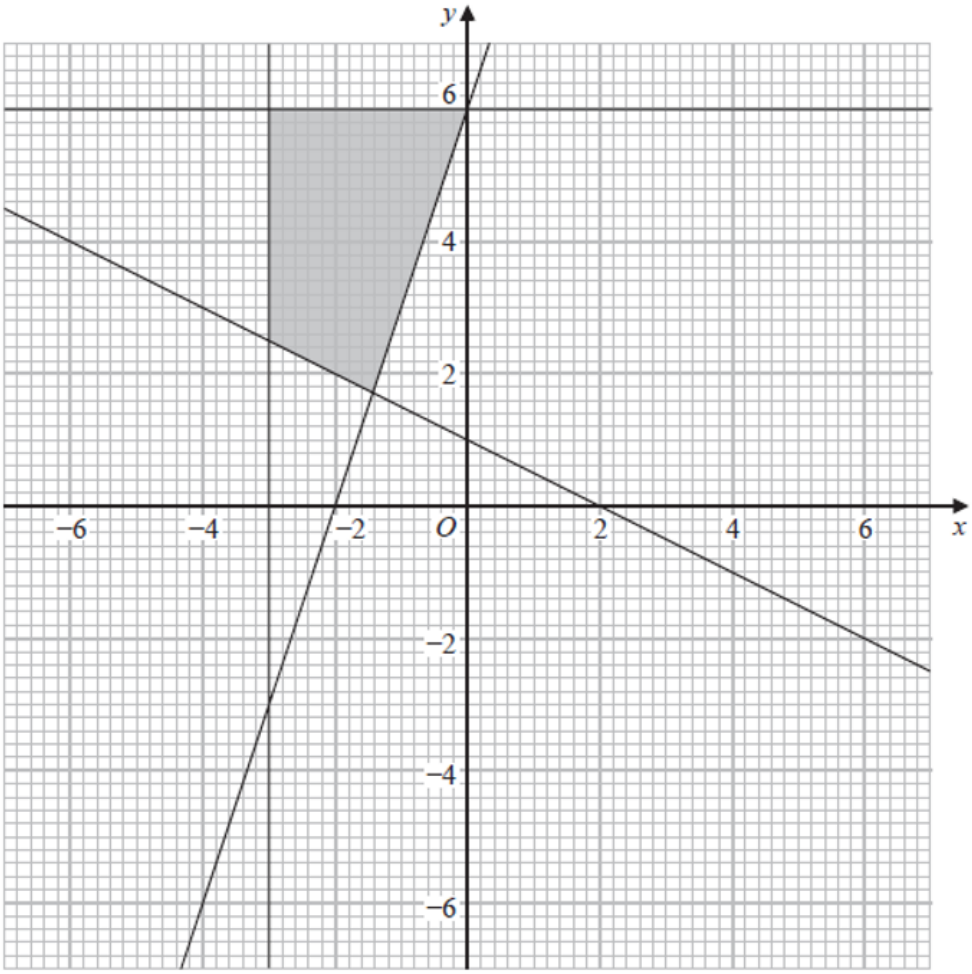
(*c*) Solve $\frac{4}{5}h - 6 < 10$

.....

(3)

Question 7

The shaded region shown on the grid is bounded by four straight lines.



Find the four inequalities that define the shaded region.

.....

.....

.....

.....

(4)

Question 8

x and y are integers such that

$$-9 < x < -4$$

$$-11 < y < -7$$

and $x = y + 1$

Find all the possible values of x.

.....

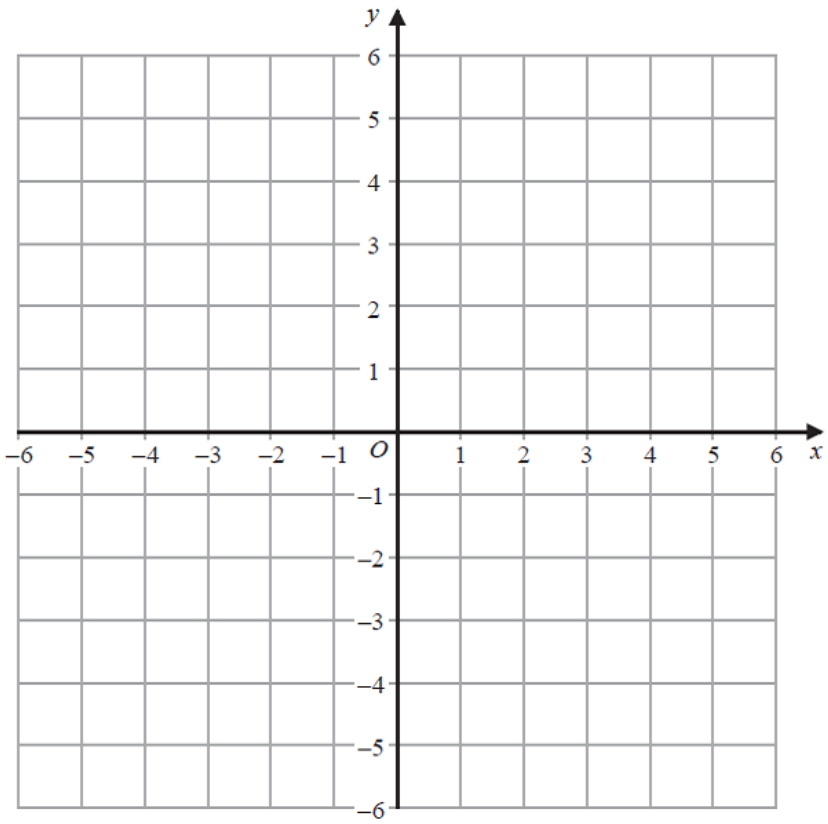
(2 marks)

Question 9

On the grid show, by shading, the region that satisfies all of these inequalities.

$$3y + 3 < x \qquad x < 4 \qquad y < 6 - 2x$$

Label the region **R**.

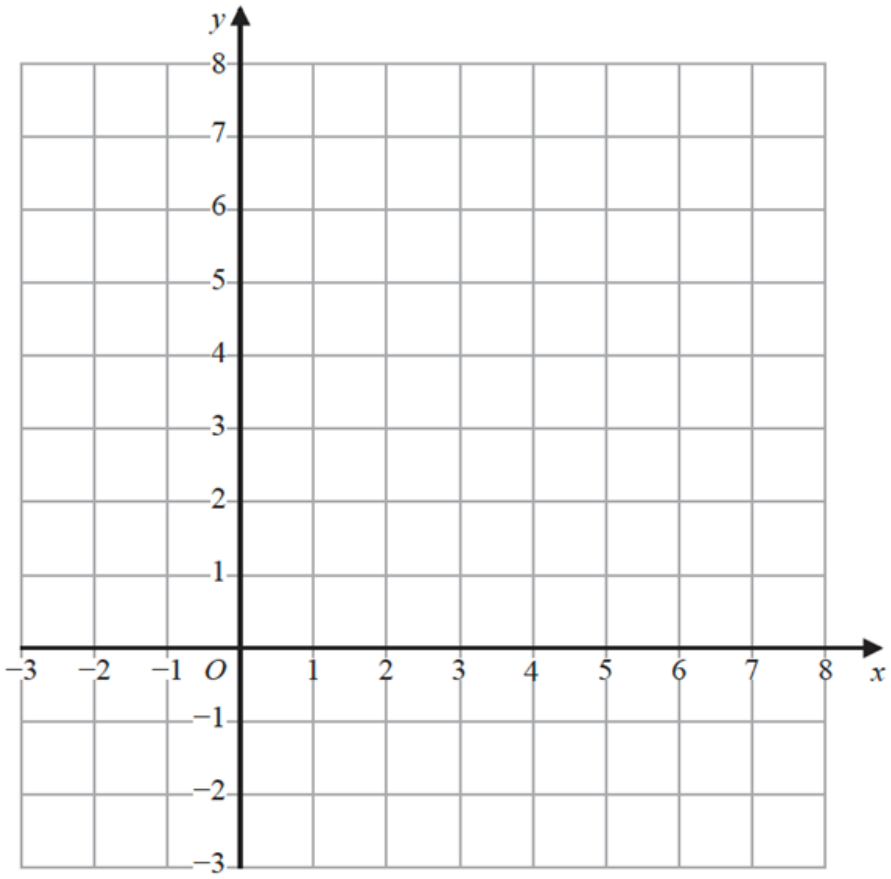


Question 10

–(*a*) On the grid show, by shading, the region that satisfies all these inequalities.

$$x \geq 0 \qquad x \leq 3 \qquad y \leq x + 2 \qquad 3x + 2y \geq 6$$

Label the region **R**.



(4)