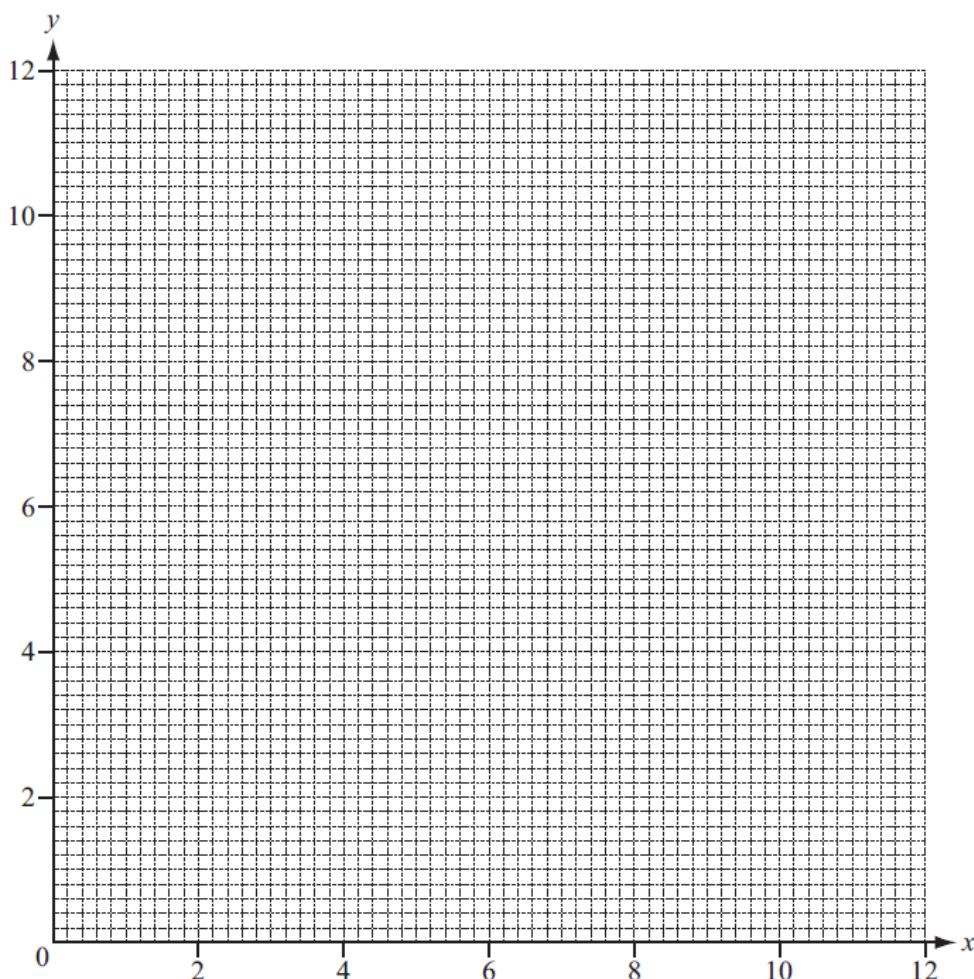




4.7 – Linear inequalities in the cartesian plane

Student name: _____ Score: _____

1.



(a) On the grid, draw the following lines.

$$\begin{aligned}x &= 1 \\ y &= 12 - 2x \quad \text{for } 0 \leq x \leq 6 \\ 4y + 3x &= 36 \quad \text{for } 0 \leq x \leq 12\end{aligned}$$

[5]

(b) On the grid, label the region R containing the points which satisfy these three inequalities.

$$x \geq 1 \qquad y \leq 12 - 2x \qquad 4y + 3x \geq 36$$

[1]

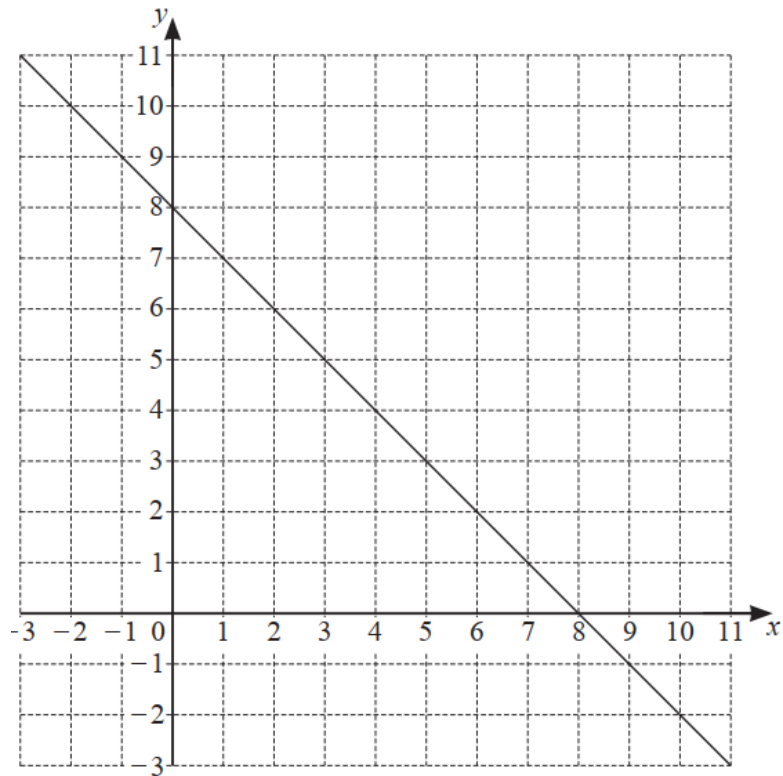
(c) (i) Find the minimum value of $x + y$ in the region R.

..... [1]

(ii) Find the co-ordinates of the point corresponding to this minimum value.

(..... ,) [1]

2.



The diagram shows the line $x + y = 8$.

On the diagram, show clearly the region defined by these inequalities.

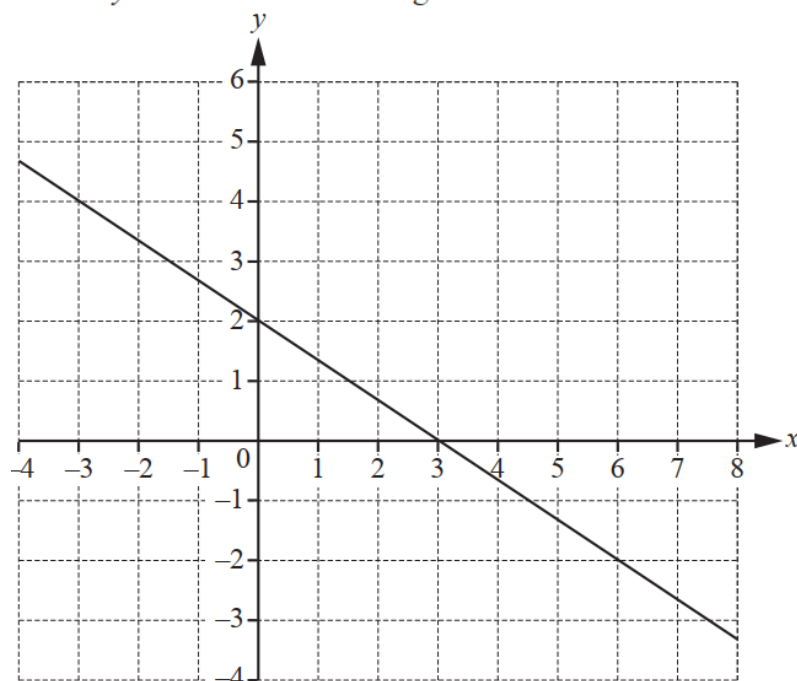
$$x + y \leq 8$$

$$x \geq 2$$

$$y \leq 3$$

[2]

3. The line with equation $2x + 3y = 6$ is drawn on the grid.



On the grid, show clearly the **single** region defined by these three inequalities.

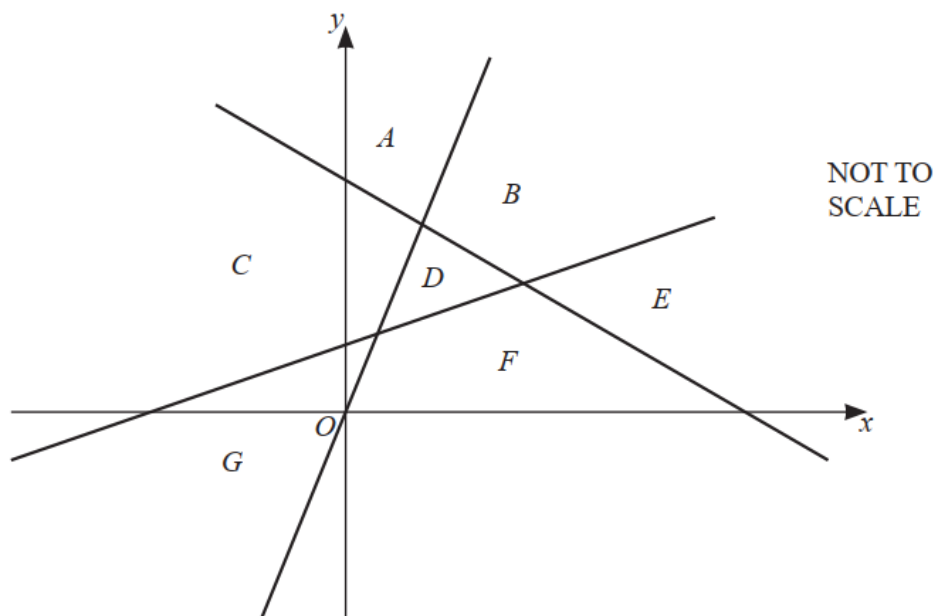
$$2x + 3y \leq 6$$

$$x \geq -3$$

$$y \leq -1$$

[3]

4.



The diagram shows the lines $y = \frac{1}{2}x + 1$, $y = 3x$ and $3x + 4y = 12$.

These lines divide the space into 7 regions, A , B , C , D , E , F , and G .

Write down the letter of the region which is defined by

(a) $y \leq \frac{1}{2}x + 1$, $y \leq 3x$ and $3x + 4y \leq 12$,

Region [1]

(b) $y \geq \frac{1}{2}x + 1$, $y \geq 3x$ and $3x + 4y \leq 12$.

Region [1]