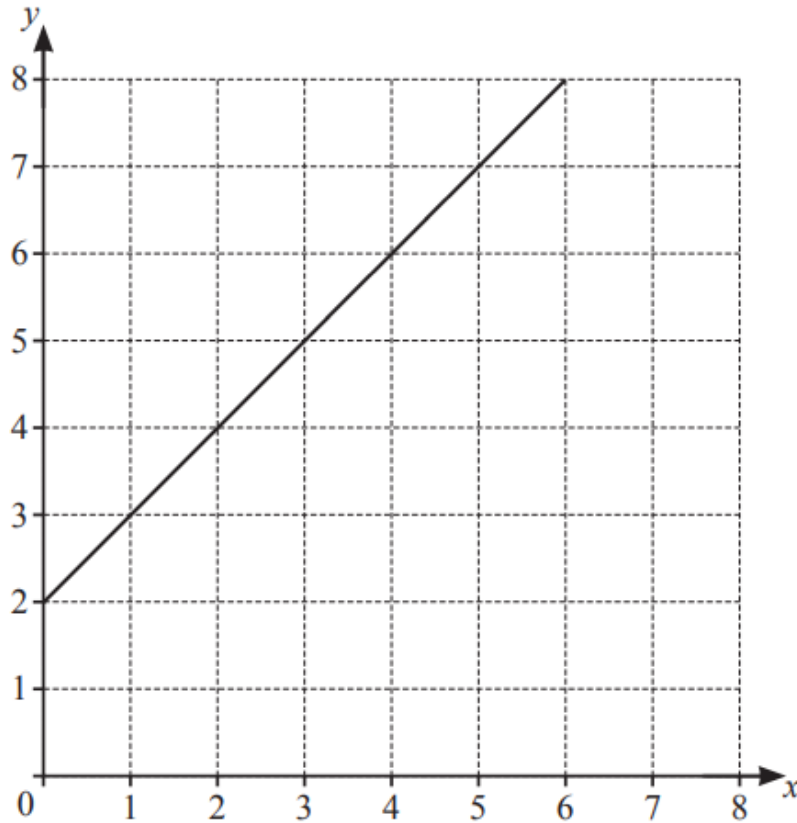


1. 4024/22/M/J/22 Q 6



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

- (a) On the grid, draw the line $x + 2y = 7$.
- (b) Use your graph to find the solution of these simultaneous equations.

$$\begin{aligned} y &= x + 2 \\ x + 2y &= 7 \end{aligned}$$

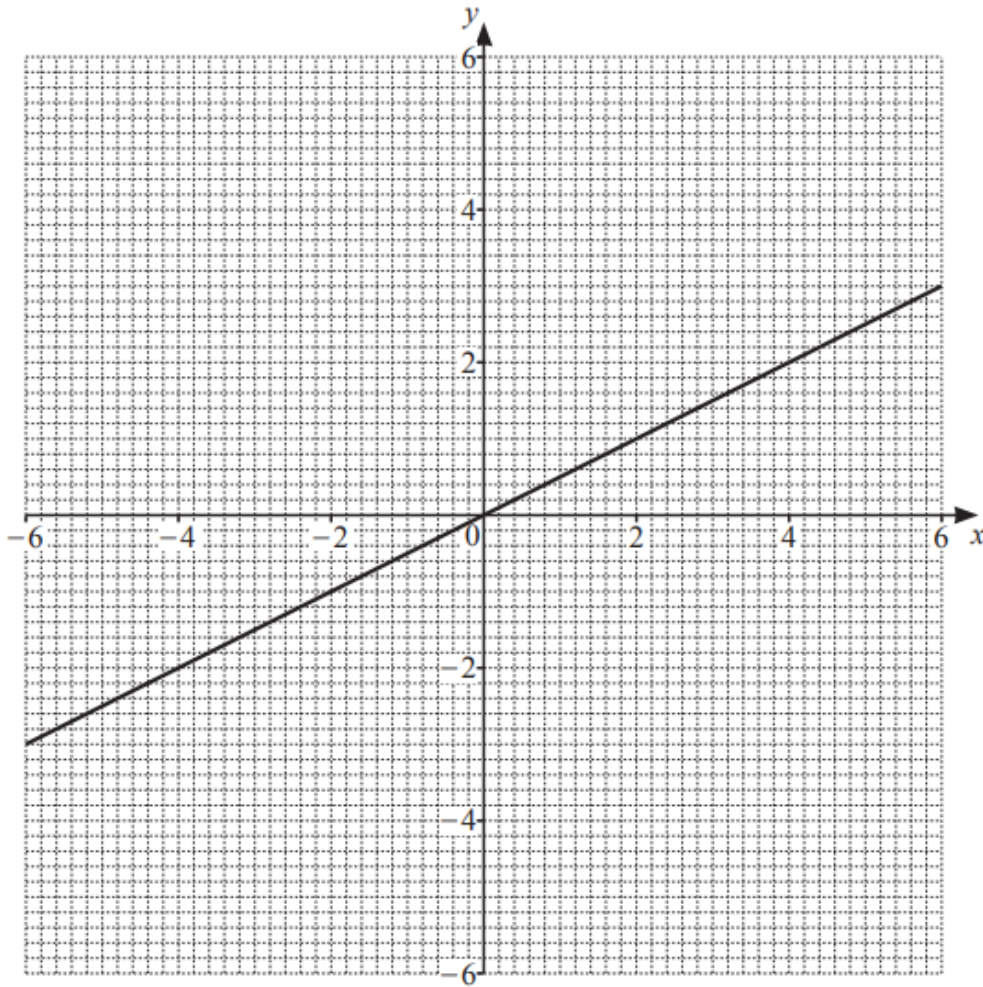
- (c) The region R is defined by these three inequalities.

$$y \leq x + 2 \quad x + 2y \geq 7 \quad x \leq 5$$

- (i) Shade and label region R.
- (ii) The point Z is in region R.
The x -coordinate and the y -coordinate of point Z are both integers.
Point Z does **not** lie on the boundary of region R.
 - (a) Find the number of possible positions of point Z.
 - (b) The y -coordinate of point Z is one more than its x -coordinate.

Write down all the possible coordinates for point Z.

2. 4024/11/M/J/21 Q20



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

(a) On the grid, draw the graph of

(i) $y = 2$,

(ii) $y + x = 4$.

(b) On the grid, shade and label the region **R**, defined by the following inequalities.

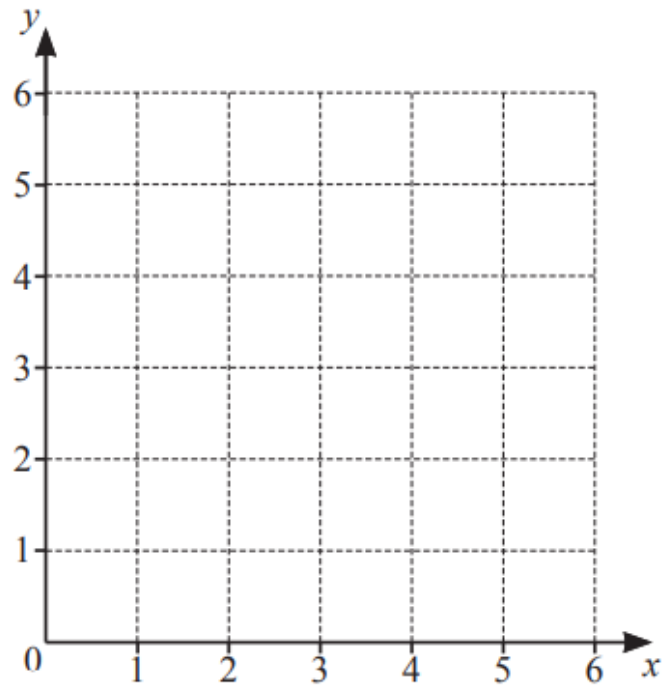
$$x + y \leq 4$$

$$2y \geq x$$

$$y \leq 2$$

$$x \geq 0$$

3. 4024/11/0/N/21 Q18



The region R is defined by these inequalities.

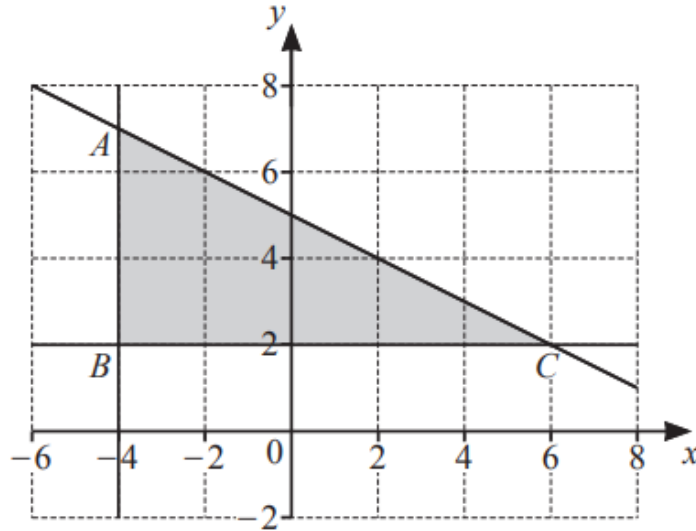
$$1 \leq x \leq 5$$

$$0 \leq y \leq 4$$

$$y \geq 3 - x$$

Find and label region R .

4. 4024/12/0/N/21 Q18



The diagram shows a shaded region ABC .

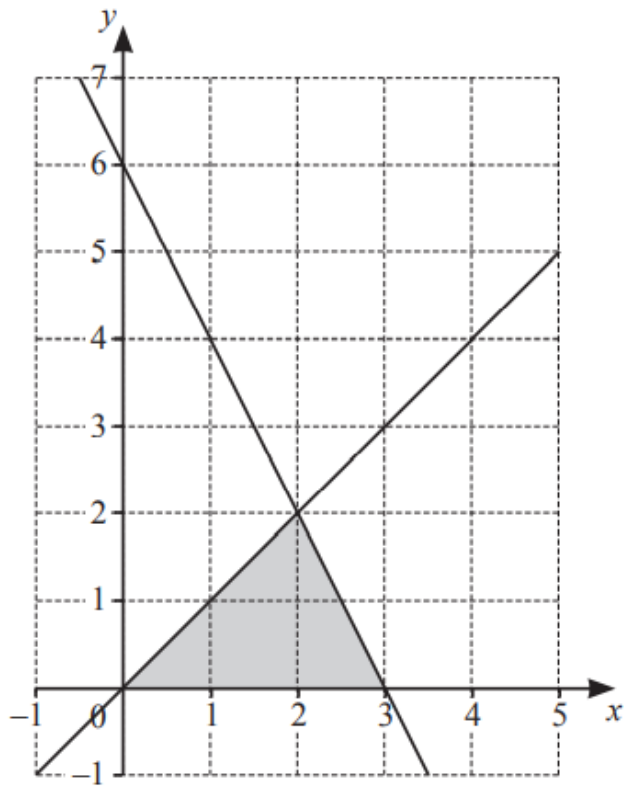
The equation of the line AC is $y = -\frac{1}{2}x + 5$.

Write down the three inequalities that define the shaded region.

5. 4024/21/M/J/19 Q6

- (a) (i) Solve the inequality $10 < 3(x+1) \leq 24$.
- (ii) State the number of integers, x , satisfying $10 < 3(x+1) \leq 24$.

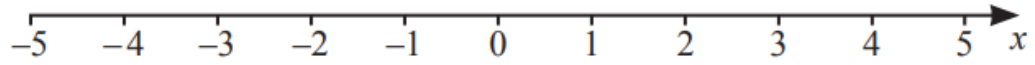
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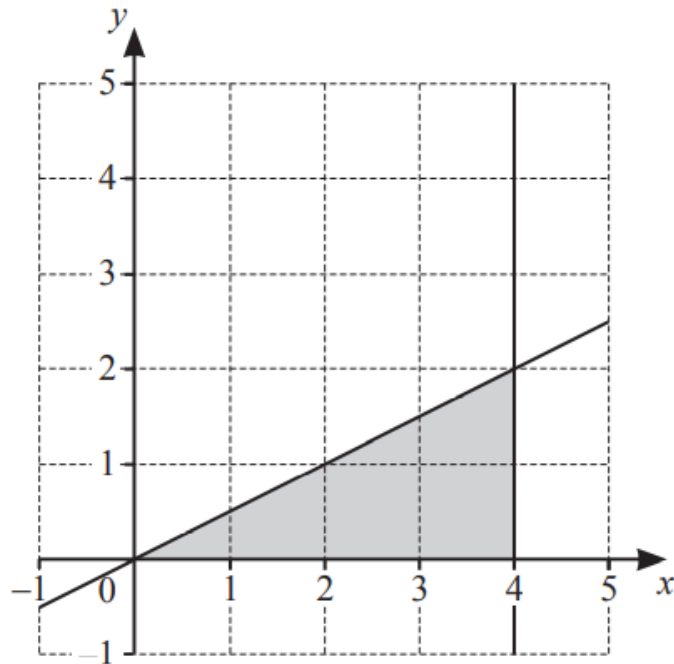
b) Find the 3 inequalities which define the region shaded in the diagram.

6. 4024/22/M/J/19 Q3

(a) Represent the inequality $-3 < x \leq 2$ on the number line below.



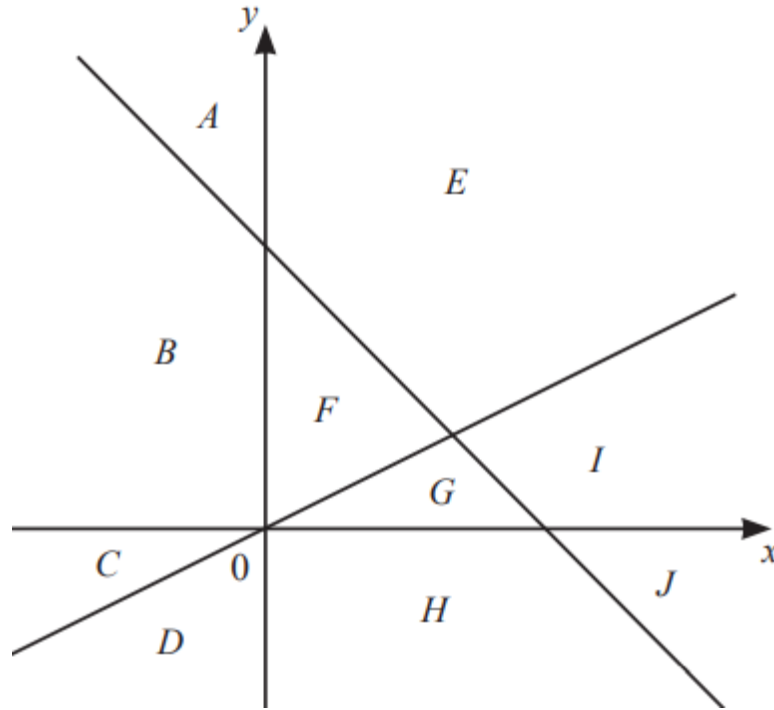
(b)



Find the 3 inequalities which define the region **shaded** in the diagram.

(c) Solve $-12 \leq 4(m-2) < 10$.

7. 4024/11/O/N/19 Q 17



The diagram shows the lines $x + y = 8$, $y = \frac{1}{2}x$, $x = 0$ and $y = 0$.

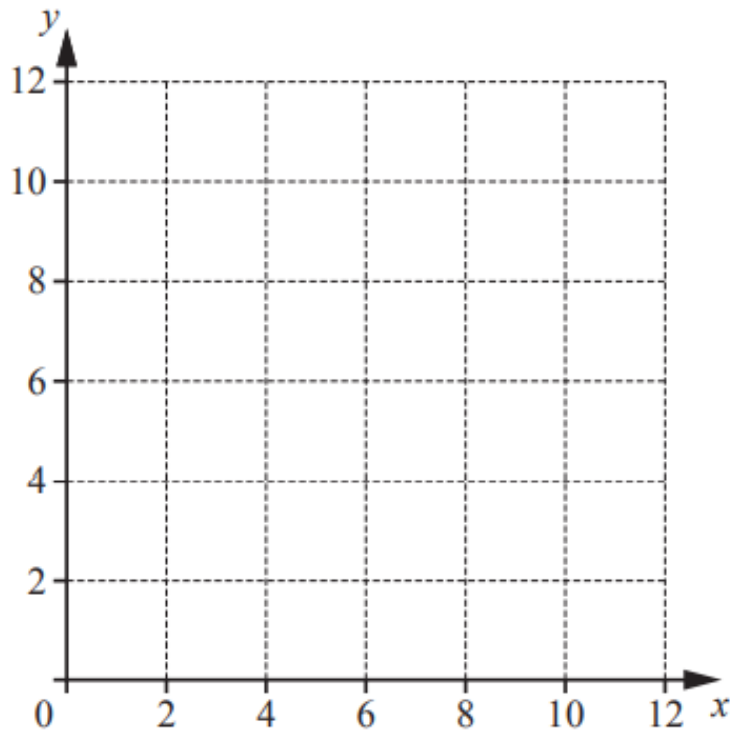
The regions **between** the lines are labelled with letters.

(a) Write down the label of the region which is defined by these three inequalities

$$\begin{aligned}x + y &< 8 \\ y &< \frac{1}{2}x \\ y &> 0\end{aligned}$$

(b) Write down **all** the inequalities which define region *E*.

8. 4024/12/M/J/18 Q18



The region R is defined by the inequalities

$$2 \leq x \leq 8$$

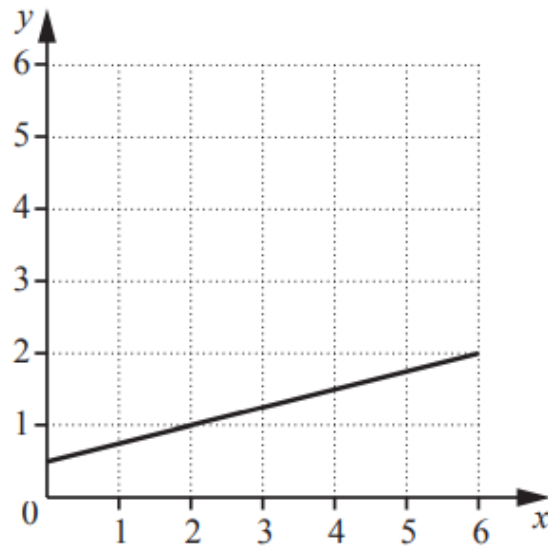
$$5 \leq y \leq 10$$

$$x + y \geq 10.$$

On the diagram, shade and label the region R .

9. 4024/21/M/J/18 Q11a

(a)



The grid shows the line $4y = x + 2$.

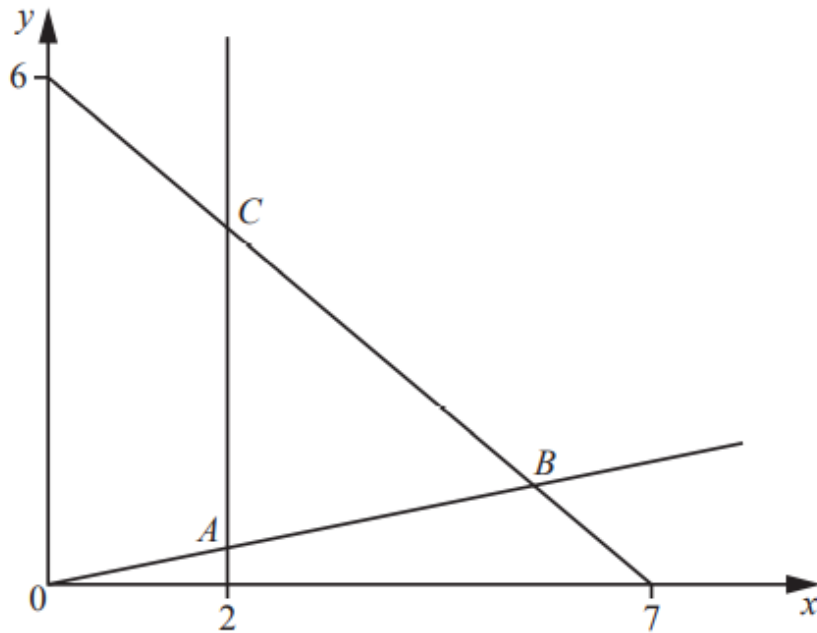
By drawing appropriate lines, indicate the region R defined by all these inequalities.

$$x \geq 1$$

$$x + y \leq 5$$

$$4y \geq x + 2$$

10. 4024/11/O/N/18 Q21



In the diagram, the equation of the line

- through B and C is $6x + 7y = 42$
- through A and B is $y = \frac{x}{5}$.

(a) The region **inside** triangle ABC is defined by three inequalities. One of these is $y > \frac{x}{5}$.

Write down the other two inequalities.

Answer

..... [2]

(b) The line $y = kx$ passes through triangle ABC .

Find all the possible **integer** values of k .

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11. 4024/12/M/J/22 Q 13 b

Write down an irrational value of n that satisfies this inequality.

$$4.5 \leq n \leq 5.5$$

12. 4024/21/M/J/22 Q 8b

Solve $-8 < 4(x-3) < 7$.

13. 4024/11/M/J/21 Q9

Insert the correct symbol $=$, $>$ or $<$ to make each statement correct.

(a) $0.6 \text{ kg} \dots\dots\dots 60 \text{ g}$

(b) $15 \text{ km} \dots\dots\dots 15\,000 \text{ m}$

(c) $4 \text{ m}^2 \dots\dots\dots 400 \text{ cm}^2$

14. 4024/12/O/N/21 Q16

Solve the inequality.

$$23 + 2n > 5 - 6n$$

15. 4024/11/M/J/20 16b

Find the integers that satisfy $-5 \leq 3x \leq 6$.

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16. 4024/11/M/J/18 Q9

Find the integers that satisfy $1 < 3x + 5 \leq 11$.

17. 4024/12/O/N/18 Q16

Find the possible values of x , given that x is an integer and $15 < 2x - 3 < 22$.