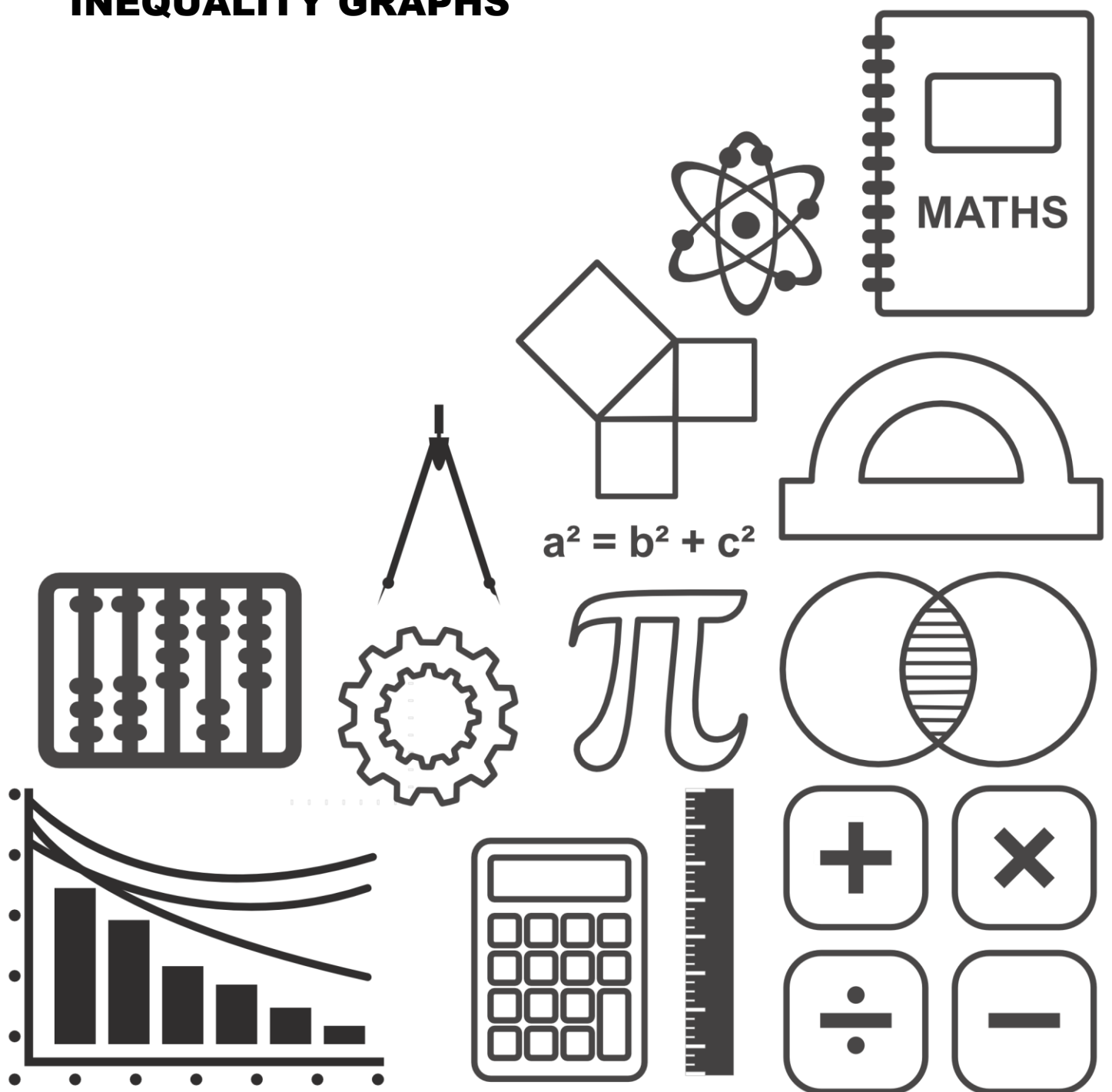
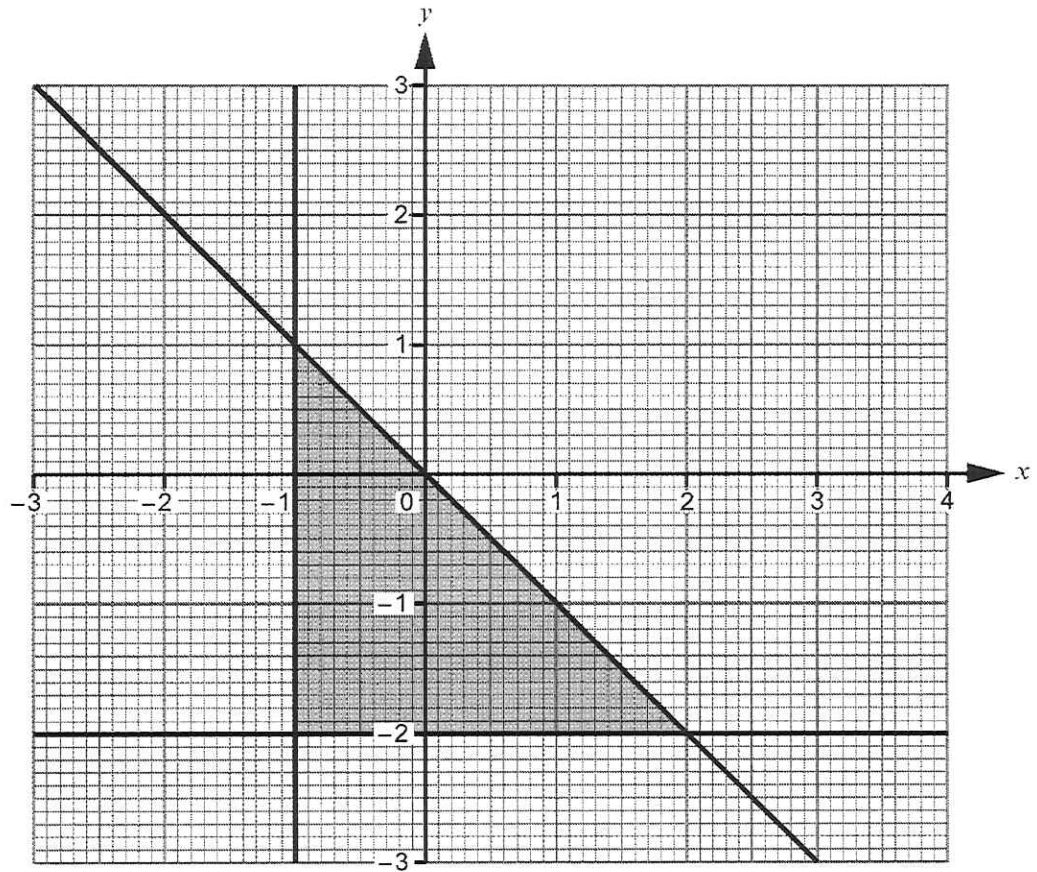


GCSE TOPIC BOOKLET INEQUALITY GRAPHS



1.



Complete the following table to give the set of inequalities that describes the shaded region above. [3]

$y \geq -2$

2.

Using the axes below, find the region which satisfies the following inequalities.

$$x \leq 2$$

$$y \leq 1$$

$$y \geq -x - 1$$

Make sure that you clearly indicate the region that represents your answer.

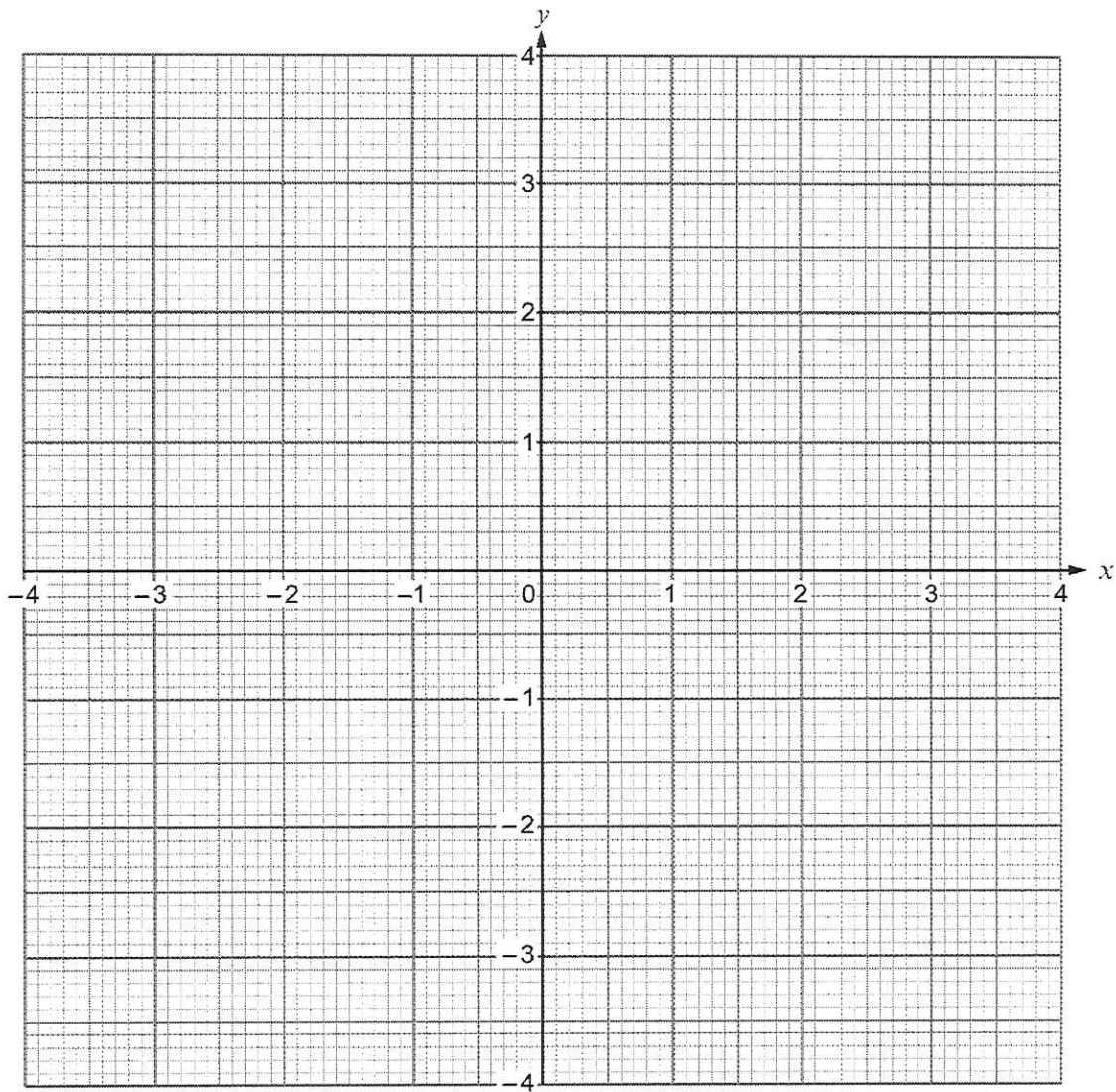
[3]

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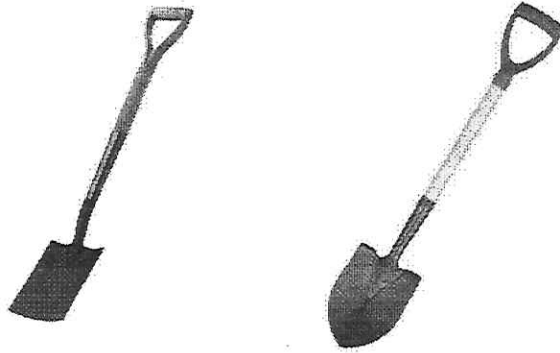
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3.

A garden centre sells two types of spades.



Rounded-end spades cost £40 each and pointed-end spades cost £65 each.

The garden centre manager says that last weekend fewer than 45 spades were sold and more than £1560 was taken from sales of spades.

Let R represent the number of rounded-end spades sold and let P represent the number of pointed-end spades sold.

- (a) Write down two inequalities, in terms of R and P that satisfy the information given by the garden centre manager.

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[2]

- (b) Use the graph paper opposite to find a region that is satisfied by your inequalities. You must clearly indicate your region.

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.....

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.....

[3]

4.

On the squared paper below, draw the region which satisfies all of the following inequalities.

$$x \leq 7$$

$$x + y \geq 6$$

$$y \leq \frac{x}{2}$$

Make sure that you clearly indicate the region that represents your answer.

[3]

.....

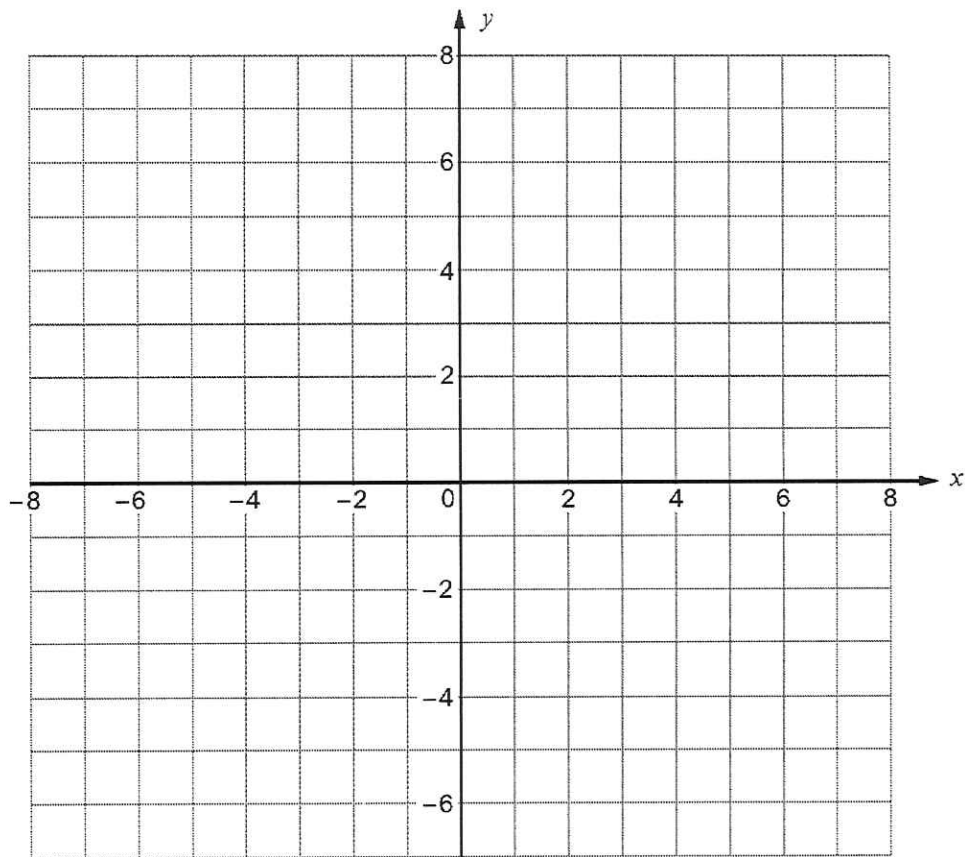
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5.

Using the axes below, find the region defined by the following inequalities.

[4]

$$\begin{aligned} x &\geq -2 \\ y &\geq 1 \\ x + 2y &\leq 4 \end{aligned}$$

Make sure that you clearly indicate the region that represents your answer.

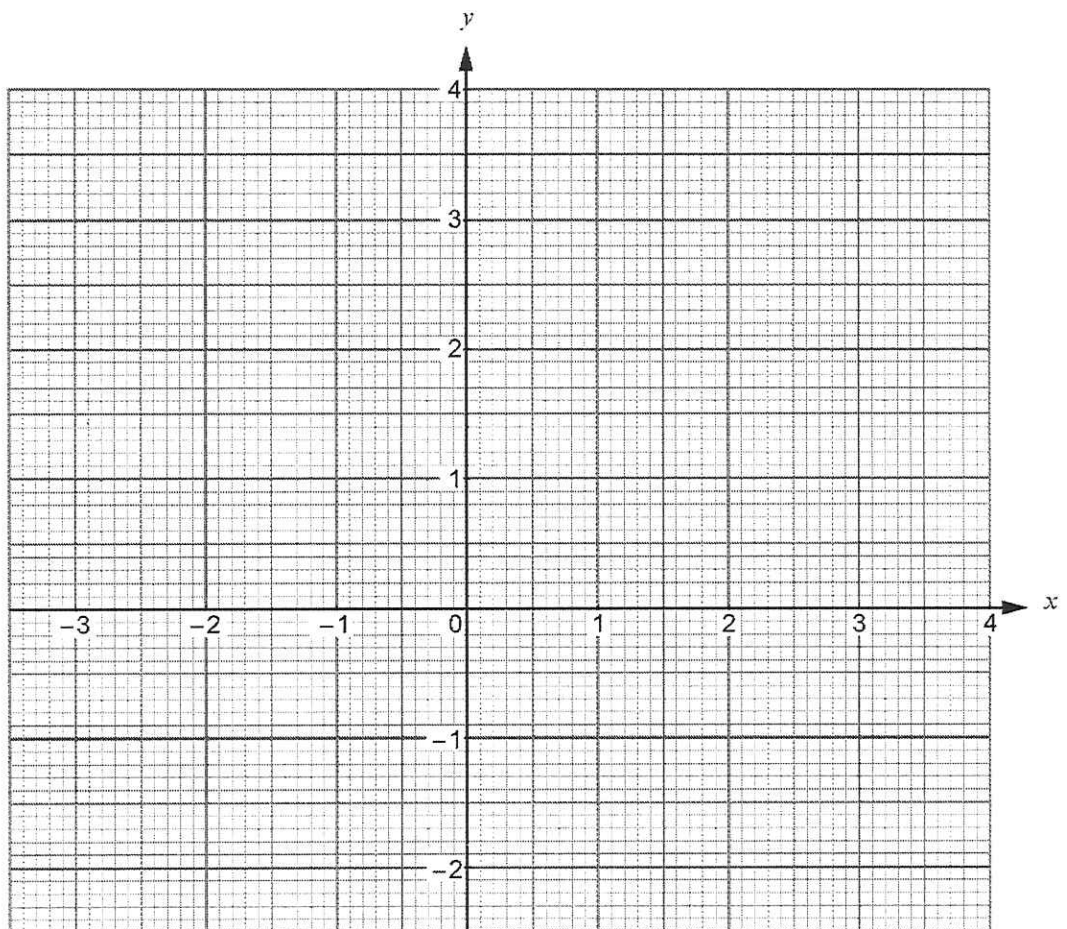
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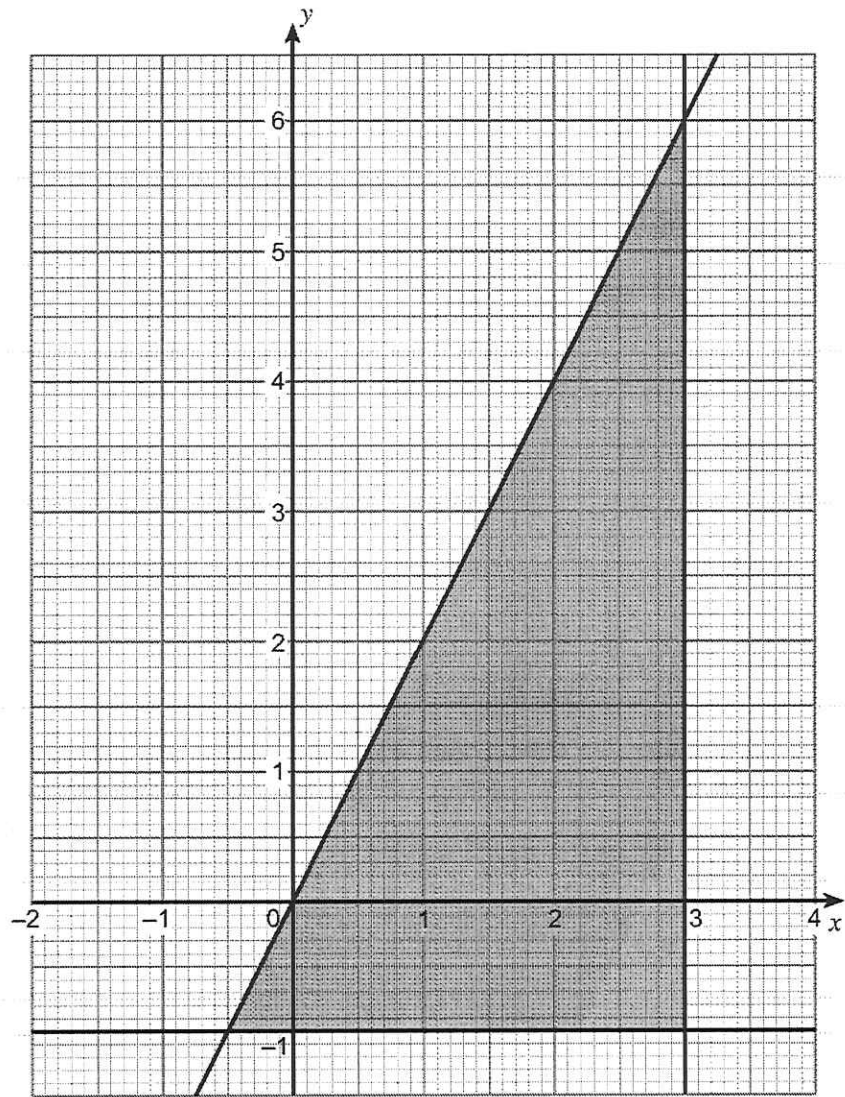
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6.

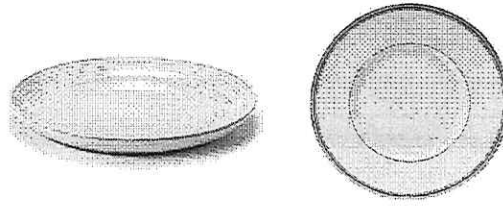


Complete the following table to give the set of inequalities that describes the shaded region drawn above. [3]

$x \leq 3$

7.

A restaurant needs some new pieces of crockery.
The crockery the restaurant needs are dishes and plates.



The dishes and plates are available to buy in packs.
There are 3 dishes or 2 plates in each pack.
The restaurant cannot afford to buy more than 25 packs altogether.
The restaurant wants to buy at least 60 new pieces of crockery.

The information given can be represented by the inequalities,

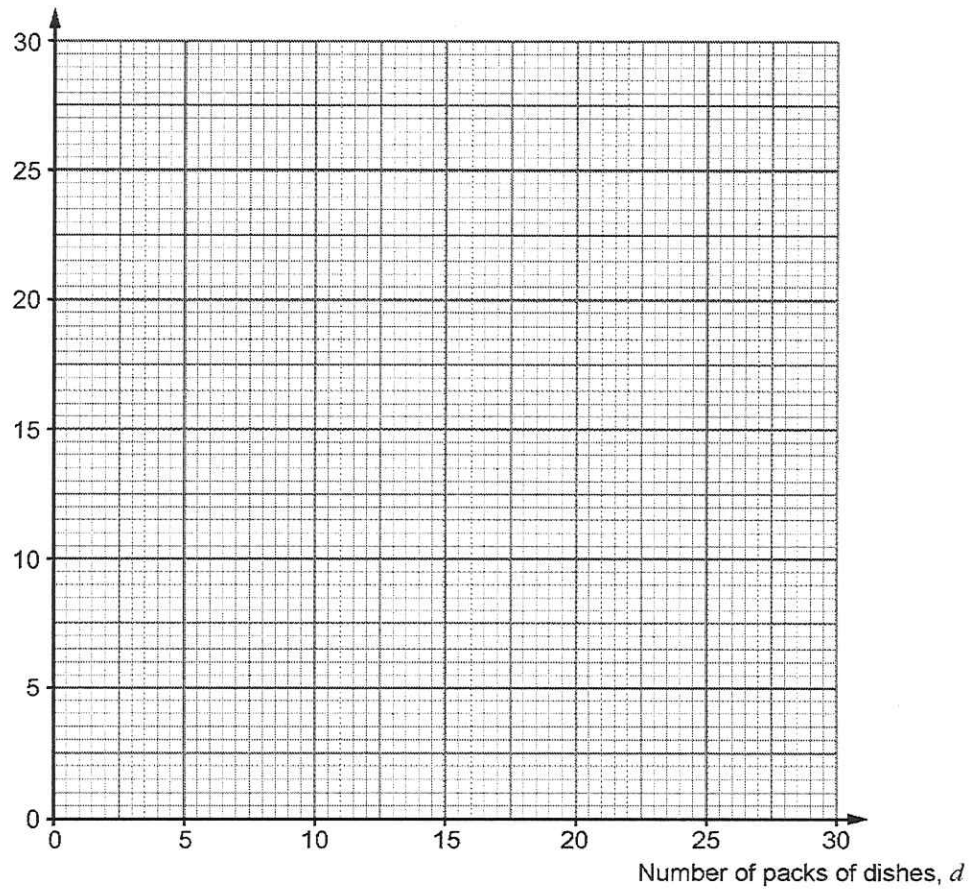
$$\begin{aligned} d + p &\leq 25 \\ 3d + 2p &\geq 60 \end{aligned}$$

where,

- d represents the number of packs of new dishes bought, and
- p represents the number of packs of new plates bought.

(a) Use the graph paper opposite to find the region that is satisfied by the inequalities. [3]

Number of packs of plates, p



- (b) The restaurant decides to order some dishes **and** some plates.
Complete the order form below by selecting a suitable number of packs of dishes and packs of plates for the restaurant to buy. [1]

Crockery	Number of packs to buy
Dishes	
Plates	

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.....

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8.

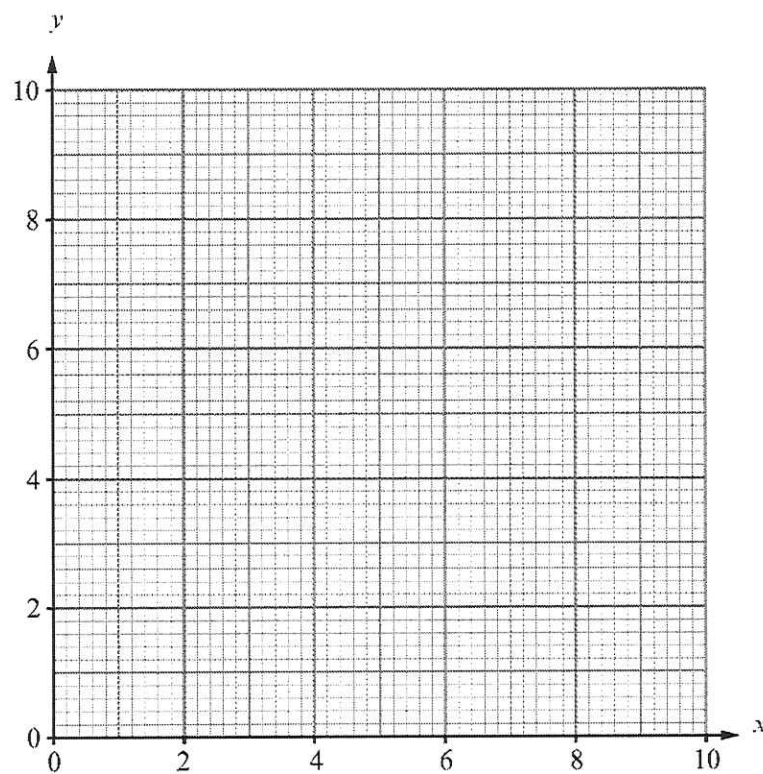
A cutting machine has two settings, x and y .
For safety in operating the cutting machine, the settings x and y must be selected so that all the inequalities below are satisfied.

$$x + y < 8$$

$$5x + y > 10$$

$$2y - x > 4$$

- (a) Use the graph paper below to identify the region that shows the safe settings of x and y for the cutting machine.



[3]

- (b) Write down a set of possible safe settings for the cutting machine.

$x = \dots\dots\dots$ and $y = \dots\dots\dots$

[1]

9.

On the grid below, draw the region which satisfies all of the following inequalities.

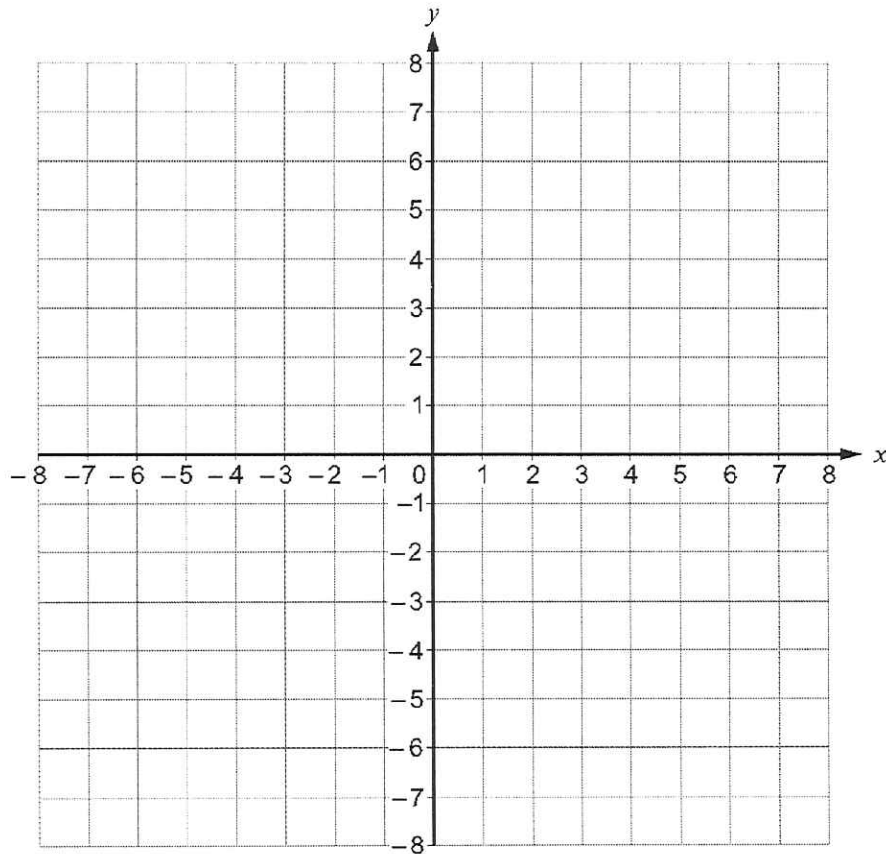
$$x \geq -5$$

$$y \leq 3$$

$$y - x + 2 \geq 0$$

You must clearly indicate the region that represents your answer.

[4]



10.

Thelma owns a Guest House.
She wants to buy a number of rugs and cushions.



Each rug costs £30 and each cushion costs £4.

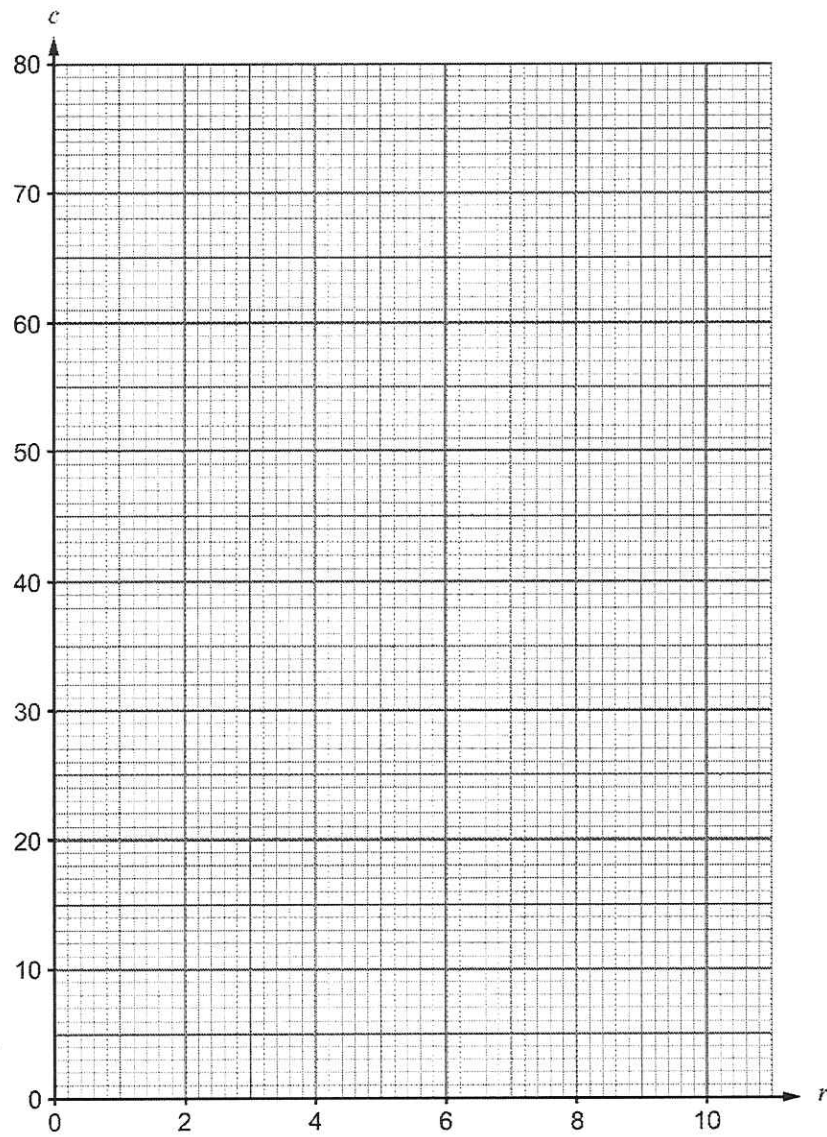
Thelma has decided on some conditions.

- She wants to buy at least 5 rugs.
- The number of cushions she buys must be less than twice the number of rugs she buys.
- She has a budget of £300.

Let r represent the number of rugs and let c represent the number of cushions.

- (a) Write down three inequalities that satisfy Thelma's conditions. [4]

- (b) Use the graph paper opposite to find the region that is satisfied by all three inequalities. [4]



- (c) Thelma buys the maximum possible number of cushions, keeping to her conditions. Find the number of rugs and cushions she buys and the total cost. [2]

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Number of rugs =

Number of cushions =

Total cost = £