

Lesson 7

GCSE : Algebra of Inequalities

7.1 Multi-Graph Inequalities

GCSE questions often ask for an inequality multi-graph.

- This is two or three inequalities on one graph.

7.2 Example

The Question

Show, by shading on the grid, the region which satisfies these inequalities

$$y \leq -1 \quad \text{and} \quad y > -3 \quad \text{and} \quad y \leq x$$

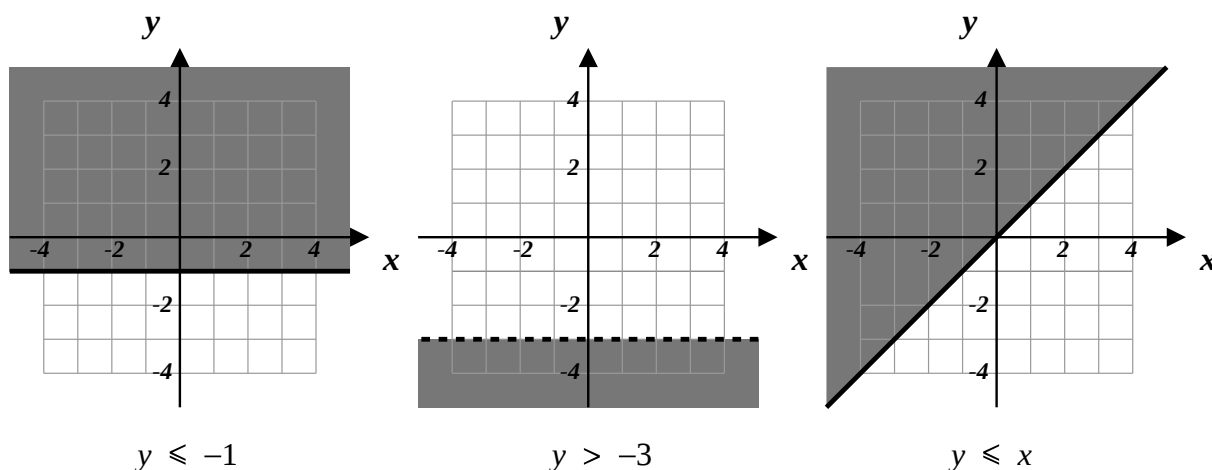
Label your region **R**.

The Answer

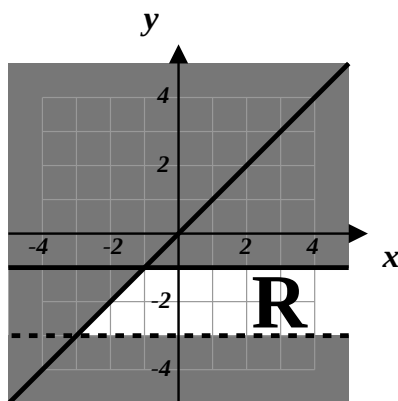
The question requests the three inequalities on one graph, but here they are first drawn separately to help you see what is going on.

Notice that the region **NOT** wanted is shaded.

Think of it as shading the bit to be thrown away.



Putting the three together gives the proper answer. The region wanted is the white bit. It's crucial you do as the question ask and mark the region wanted with an **R**.



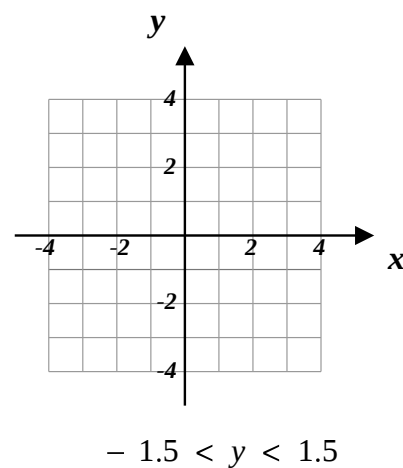
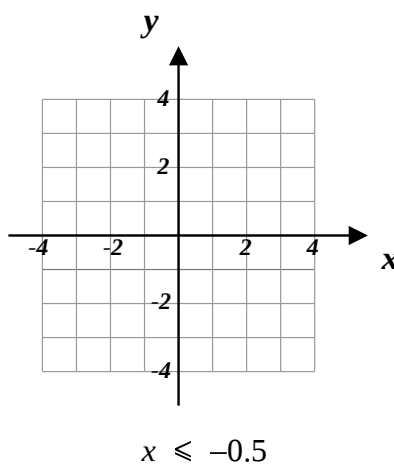
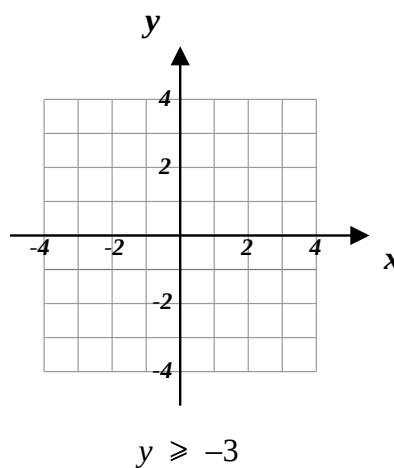
7.3 Exercise

Question 1

Show, by shading on the grid, the region which satisfies these inequalities.

Label your region **R**.

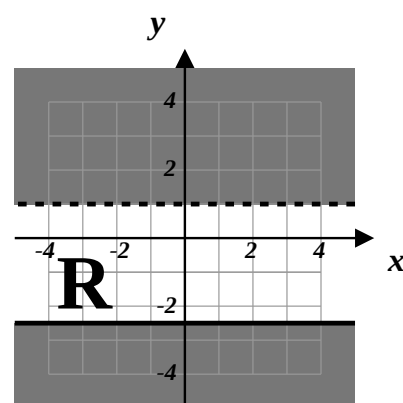
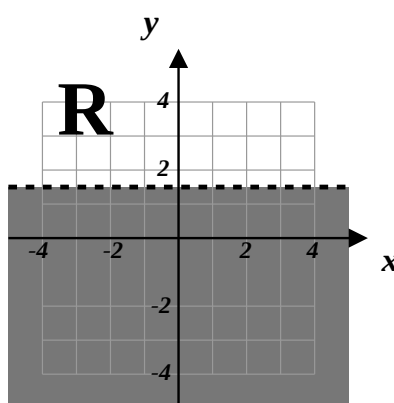
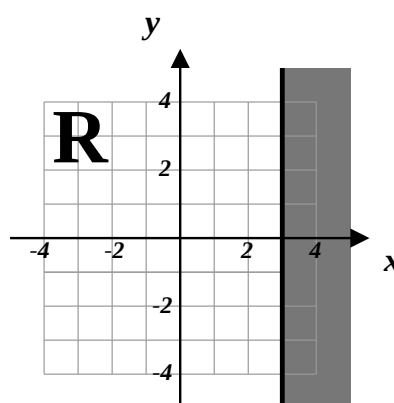
(Try doing this by shading the part to be *thrown away*)



Question 2

Describe the region that has NOT been shaded.

In each case, it is marked **R**.



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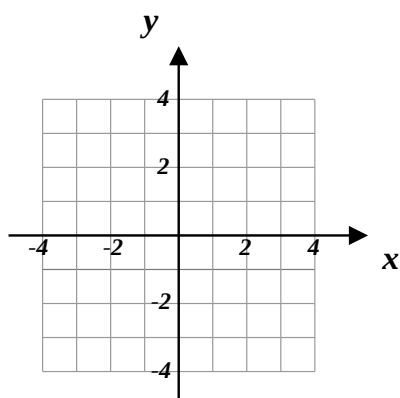
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Question 3

Show, by shading on the grid, the region which satisfies these two inequalities.

$$y \leq 2 \quad \text{and} \quad -1 < x \leq 3$$

Label your region **R**.

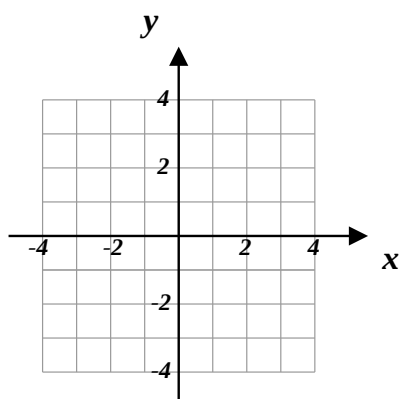


Question 4

Show, by shading on the grid, the region which satisfies these two inequalities.

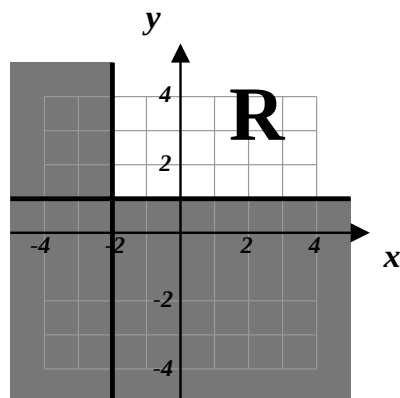
$$y \leq x \quad \text{and} \quad -1 < y \leq 3$$

Label your region **R**.



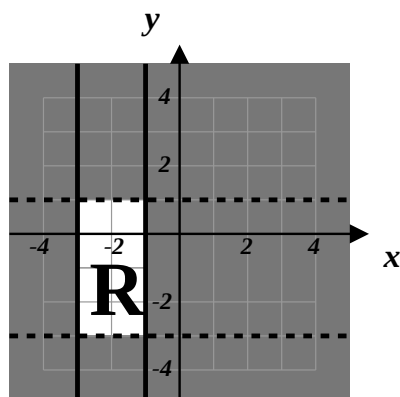
Question 5

Describe the region marked **R**.



Question 6

Describe the region marked **R**.



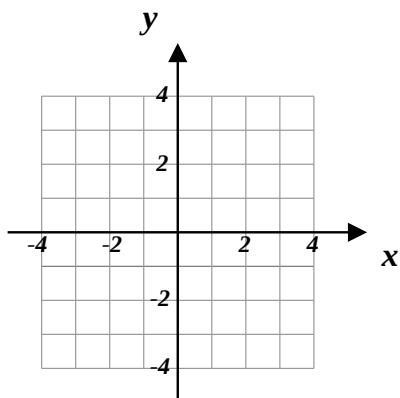
Question 7

GCSE Examination Question from May 2006, Paper 3H, Q9.

Show, by shading on the grid, the region which satisfies these two inequalities.

$$1 \leq x \leq 3 \quad \text{and} \quad -4 < y \leq -2$$

Label your region **R**.



[3 marks]

My Cat says "More is Less"

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