



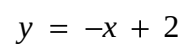
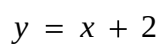
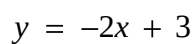
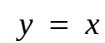
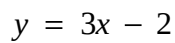
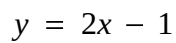
GCSE : Algebra of Inequalities

- Revise equations of sloping lines.
- Tackle inequality question involving sloping lines.

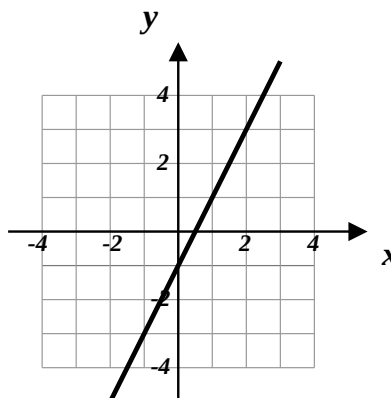
Sloping lines almost all have equations of the form $y = mx + c$, where c is the y -axis intercept and m is the gradient of the line;

$$m = \frac{\Delta y}{\Delta x}$$

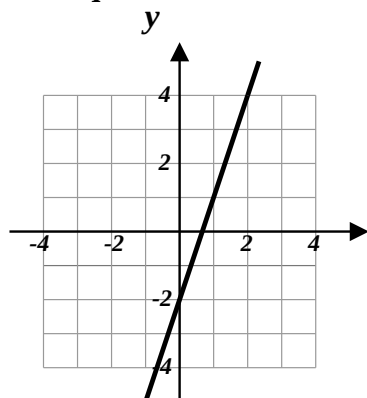
Plot the given lines. Then check your answers with mine, over the page.



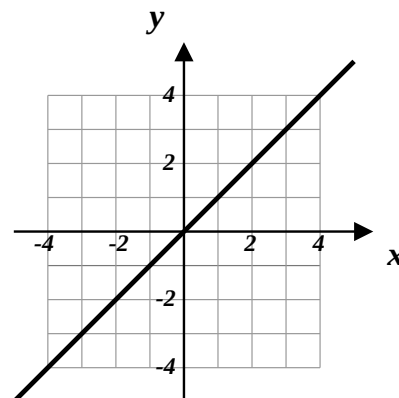
8.4 Answers to the revision questions



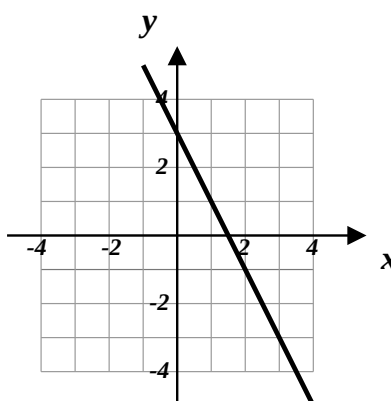
$$y = 2x - 1$$



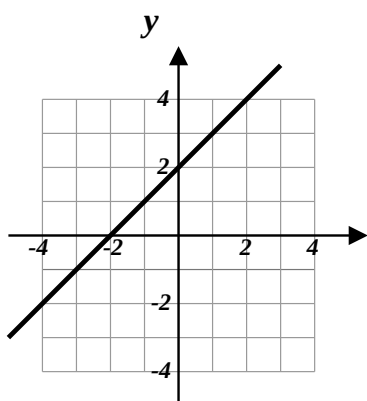
$$y = 3x - 2$$



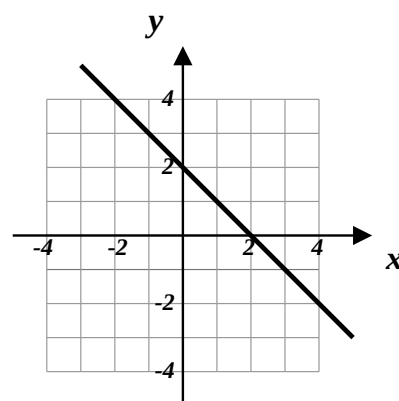
$$y = x$$



$$y = -2x + 3$$



$$y = x + 2$$



$$y = -x + 2$$

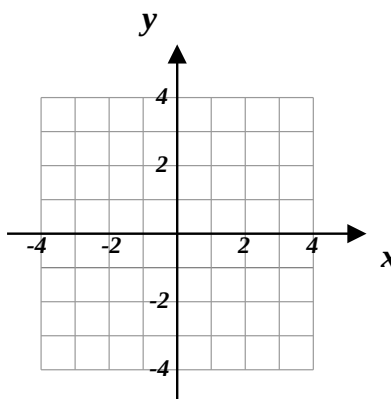
8.5 Tri to try

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

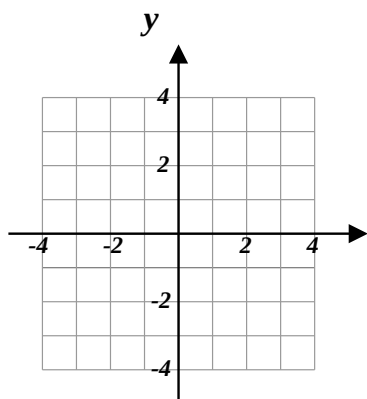
Keep in mind that $<$ and $>$ require broken lines, $\leq$ and $\geq$ solid.

Also, y is *height* so ask yourself if you want *heights* above or below the line.

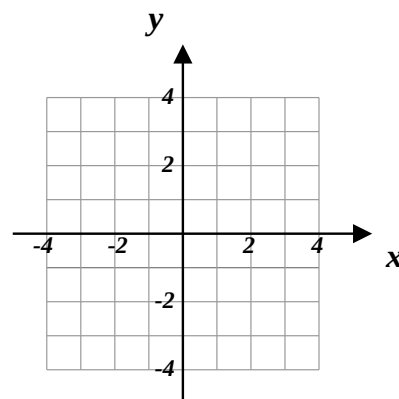
Label the region specified by the inequality with an **R**.



$$y < 2x - 3$$



$$y \geq x - 1$$

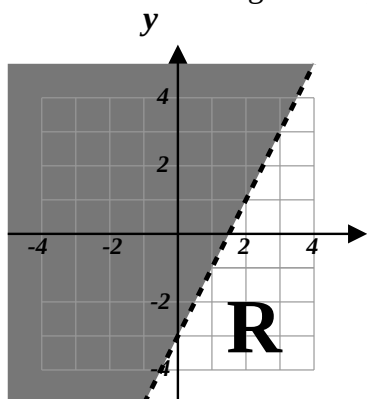


$$y \leq 0.5x + 1$$

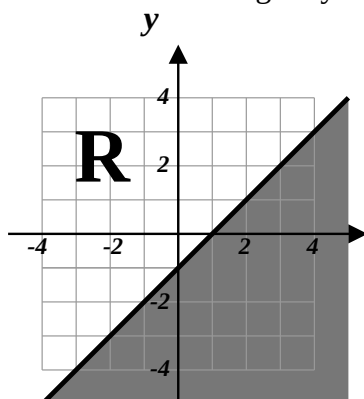
8.6 Answers to "Tri to try"

I've shaded the region **NOT** wanted and to be *thrown away*.

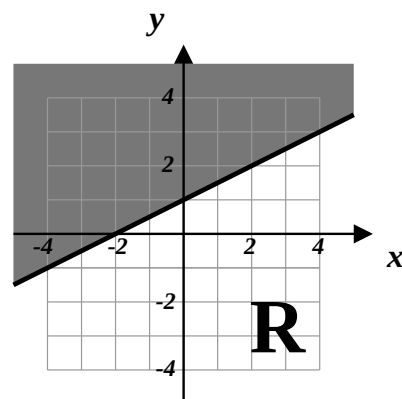
The shading is unimportant. It's in which region you place the letter **R** that is crucial.



$$y < 2x - 3$$



$$y \geq x - 1$$

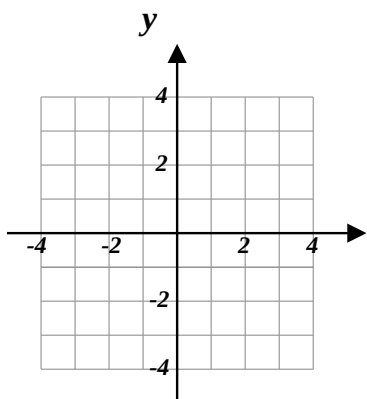


$$y \leq 0.5x + 1$$

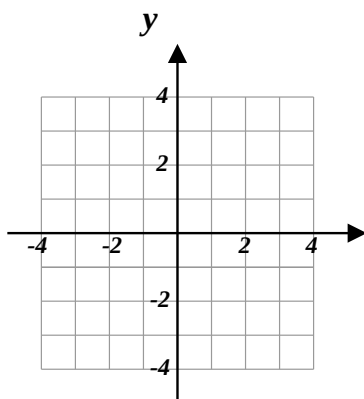
8.7 Exercise

Question 1

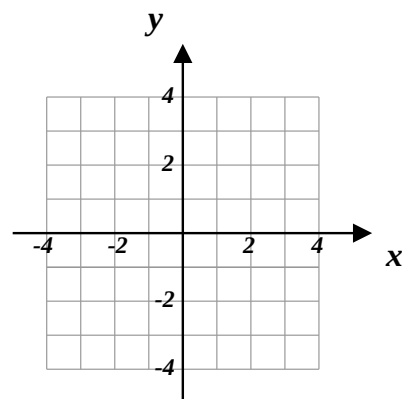
Plot the given lines.



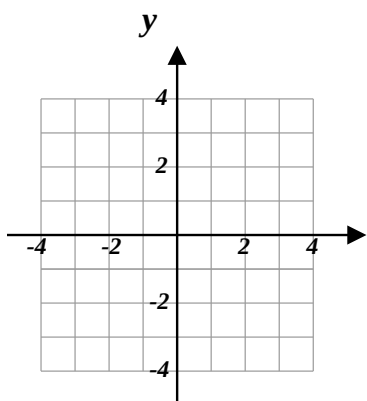
$$y = 2x - 4$$



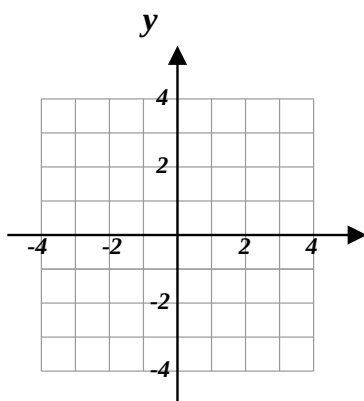
$$y = 4x + 1$$



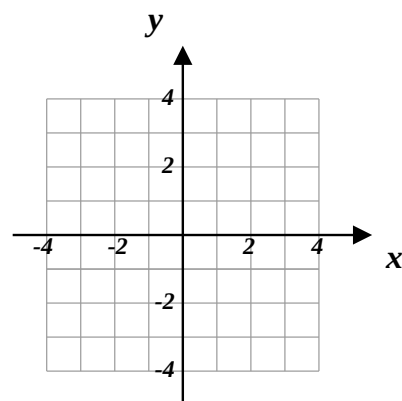
$$y = -2x - 1$$



$$y = -x + 3$$



$$y = 0.5x + 3$$

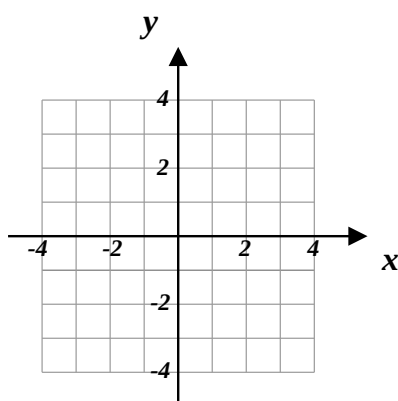


$$y = -0.5x + 3$$

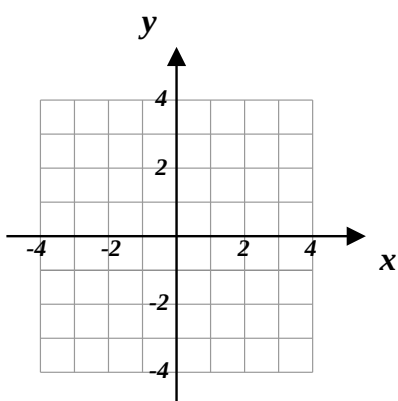
Question 2

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

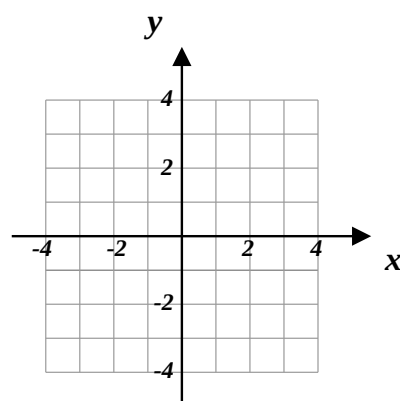
Label the region specified by the inequality with an **R**.



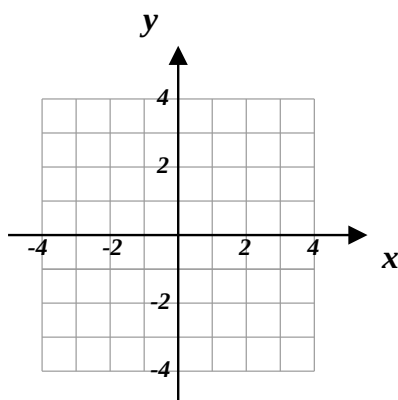
$$y < 2x + 1.5$$



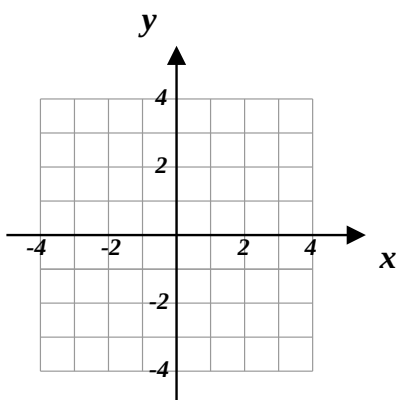
$$y \geq 0.5x - 3$$



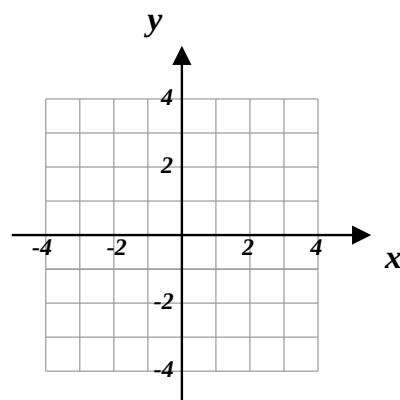
$$y \leq -x + 1$$



$$y > 2x$$



$$y \geq 1.5x - 1.5$$



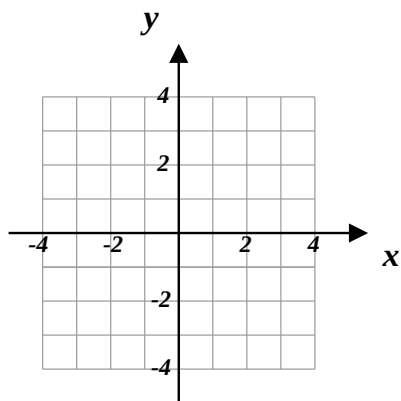
$$y \leq -3x + 4$$

Question 3

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

$x \geq -2$ **and** $y > x$ **and** $y < 3$

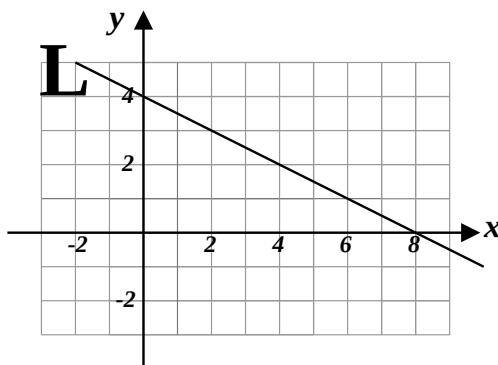
Label your region **R**.



Question 4

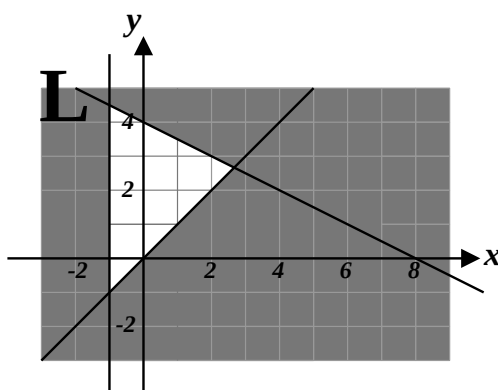
GCSE Examination Question from June 2010, Paper 4H, Q12.

- (a) Find the equation of the line **L**.



[3 marks]

- (b) Find the three inequalities the define the **unshaded** region shown in the diagram below.



[3 marks]

Question 5

GCSE Examination Question from May 2007, Paper 3H, Q13.

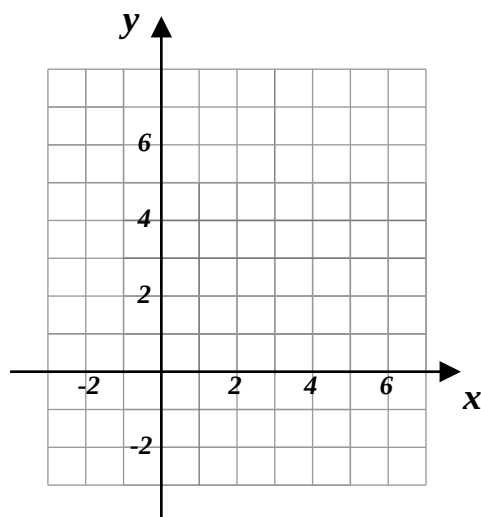
Show, by shading on the grid, the region which satisfies all three inequalities.

$$y \leq 5$$

$$y \leq 2x$$

$$y \geq x + 1$$

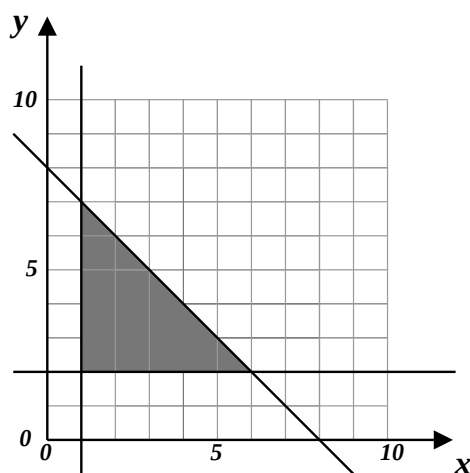
Label your region **R**.



[4 marks]

Question 6

GCSE Examination Question from November 2010, Paper 4H, Q9.



Write down the 3 inequalities that define the shaded region.

[3 marks]