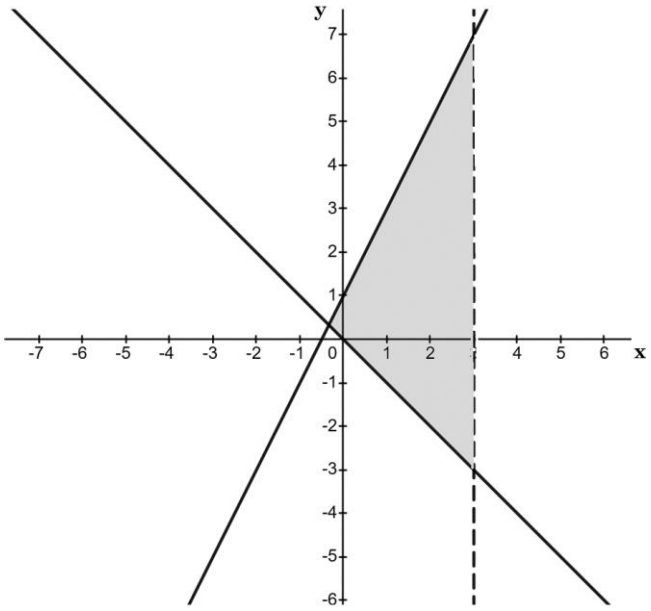
Inequalities on Graphs Exam Practice

Q1. Write down a set of inequalities which define the shaded region:



(3 marks)

Q2. Shade the region satisfied by the set of inequalities:

$2y + 3x < 11,\ y > \frac{1}{2},\ y < 5,\ x < 1$

[4]

Q3. Ron sells apples and bananas in his shop. From his experience he knows that in a day:

-that he will sell at most 100 pieces of fruit in a day
-he will sell at least twice as many apples as bananas

a) Let x and y be the no. of apples & bananas he sells respectively. Write the above information in terms of two inequalities. [2]

b) Shade the region described by the above inequalities on the graph together with the inequalities $x \geq 0, y \geq 0$. [3]

c) Find the coordinates of all the vertices of the region in (b) [2]

c) Ron's profit on each apple is 20p, & the profit on each banana is 15p. By considering the vertices on the shaded region in part (b), work out the number of each kind of fruit which maximises his profit.

[2]

Q4. Find least value of a such that the area of the shaded region satisfied by the set of inequalities below has an area at least 34 units^2 .

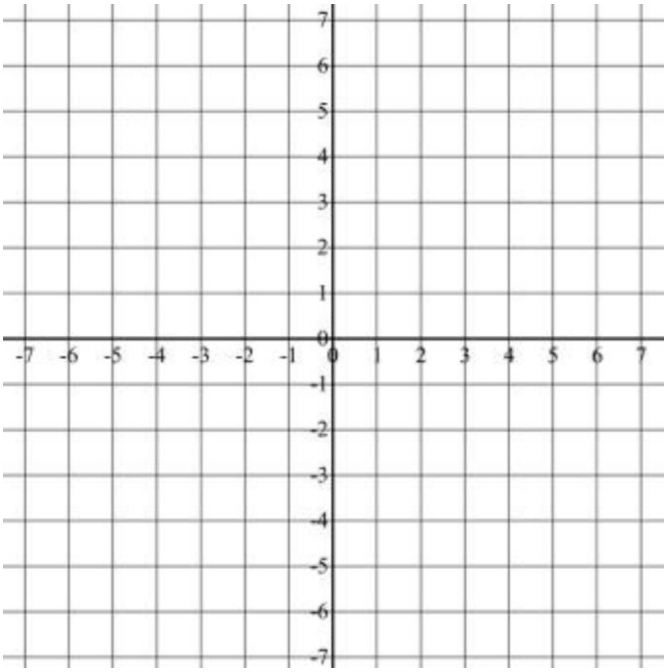
$$y \geq x - 5$$

$$y \leq a$$

$$x \leq 5$$

$$x \geq 1$$

Show your solution using the grid below.



[5]