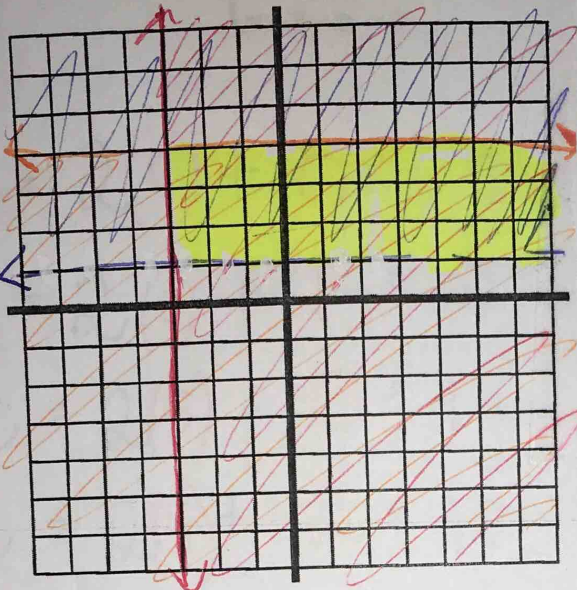
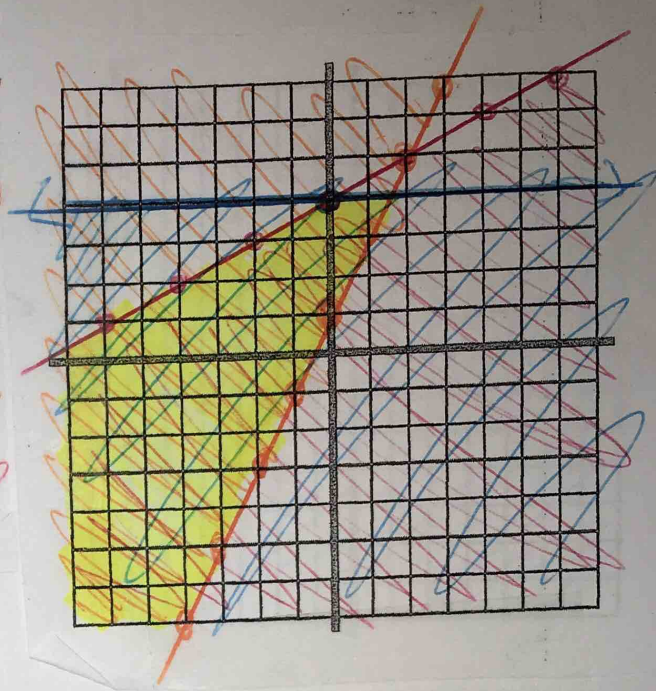


Sketch the graph of the system of linear inequalities:

1. 
$$\begin{cases} y \leq 4 \\ y > 1 \\ x \geq -3 \end{cases}$$



2. 
$$\begin{cases} 2x - y \leq -1 \\ x - 2y \geq -8 \\ y \leq 4 \end{cases}$$



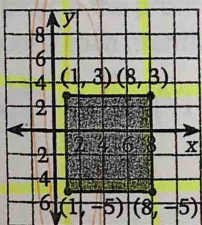
$y \leq -2x - 1$

$y \geq 2x + 1$

$-2y \geq -x - 8$

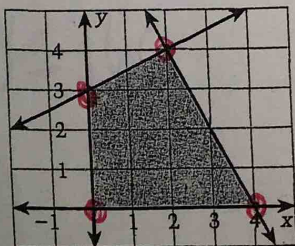
$y \leq \frac{1}{2}x + 4$

II. Write a system of linear inequalities for the region shown:



$$\begin{cases} x \leq 8 \\ x \geq 1 \\ y \leq 3 \\ y \geq -5 \end{cases}$$

III. Use the graph below for the following questions:



What are the vertices of the region?  $(0, 0)$   $(0, 3)$   $(2, 4)$   $(4, 0)$

What is the minimum and maximum value of the function,  $C = 5x + 7y$ ? Maximum =  $38$  at  $(2, 4)$

Minimum =  $0$  at  $(0, 0)$

Find the minimum and maximum values of the given function:

Function:  $C = 2x + y$

Constraints:  $\begin{cases} x \geq 0 \\ y \leq 2 \\ 2x + y \leq 10 \\ x - 3y \geq -3 \end{cases}$   
 $\rightarrow y \leq -2x + 10$   
 $\rightarrow y \leq \frac{1}{3}x + 1$

corner pts

$(0, 0) \rightarrow C = 2(0) + 0 = 0$

$(0, 1) \rightarrow C = 2(0) + 1 = 1$

$(5, 0) \rightarrow C = 2(5) + 0 = 10$

$(4, 2) \rightarrow C = 2(4) + 2 = 10$

$(3, 2) \rightarrow C = 2(3) + 2 = 8$

min: 0  
max: 10

V. Linear Programming Problem:

Crazy Wheels Inc. makes mopeds and bicycles. Experience shows that they must produce at least 10 mopeds each month. The factory can produce at most 60 mopeds and at most 120 bicycles per month. The profit on a moped is \$134, and on a bicycle the profit is \$20. The factory can make at most 160 vehicles combined. How many of each should be produced each month to maximize profit?

$x = \#$  of mopeds  $y = \#$  of bicycles

$P = 134x + 20y$

$\begin{cases} x \geq 10 \\ x \leq 60 \\ y \leq 120 \\ x + y \leq 160 \end{cases}$

corner pts

$(10, 0) : P = \$1,340$

$(10, 120) : P = \$3,740$

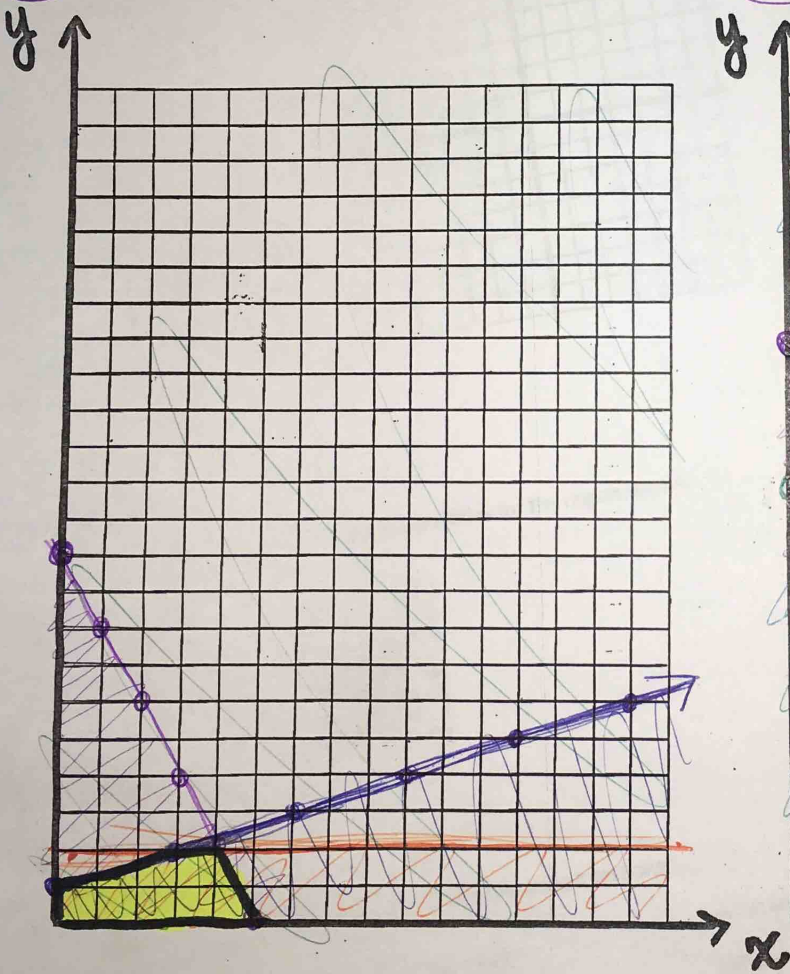
$(40, 120) : P = \$7,760$

$(60, 0) : P = \$8,040$

$(160, 100) : P = \$10,040$

60 mopeds  
100 bicycles

#2



#3

units = 10

