We will do this page together!

You will need a straight edge

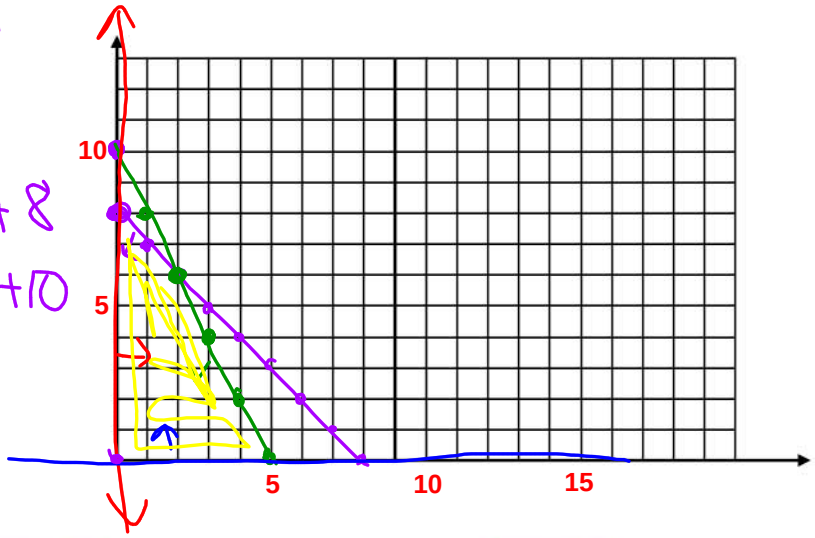
W-up Week 4 Friday Linear Programming Name_____

Graph ALL of the following on the same grid. Shade only the solution for the system of inequalities. (The portion where the shading overlaps for all four conditions.) Do the rest of your w-up in your notebook. (p160/10)

$$\begin{cases} x + y \le 8 \\ 2x + y \le 10 \\ x \ge 0 \\ y \ge 0 \end{cases}$$

$y \le -x + 8$

$y \le -2x + 10$



Notes:

Finding corner points:

(x, y) substitute into OBJECTIVE FUNTION

Corner point	Objective function: 100x+40y=N	Objective function value
(0,8)	100(0)+40(8)	320
(2,6)	100(2) + 40(6) = 200+240	440
(5,0)	100(5) + 40(0) = 500	500
(0,0)	100(0) + 40(0) = 0	0

The maximum value is: 500 at (5,0)

Work on this while I stamp homework

Using Linear Programming to Maximize Profit

Adv Algebra 2, p.159 problem 2 Name_____

Business: You are screen-printing T-shirts and sweatshirts to sell at the Polk County Blues Festival and are working with the following constraints.

- You have at most 20 hours to make shirts.
- You want to spend no more than $600 on supplies.
- You want to have at least 50 items to sell.

Color T-Shirt	Sweatshirt
• Takes 10 minutes to make • Supplies cost $4 • Profit $6	• Takes 30 minutes to make • Supplies cost $20 • Profit $20

How many T-shirts and how many sweatshirts should you make to maximize your profit?
How much is the maximum profit?

1. Organize the information in a table.

	T-Shirts, x	Sweatshirts, y	Total
Minutes	10x	30y	1200
Number	x	y	50
Cost	4x	20y	600
Profit	6x	20y	maximize

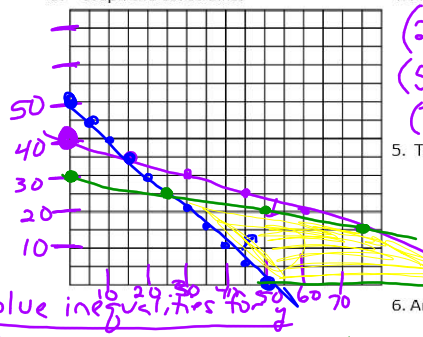
2. Write the constraints and objective function.

- $10x + 30y \leq 1200$
- $x + y \geq 50$
- $4x + 20y \leq 600$
- $x \geq 0$
- $y \geq 0$

Common sense constraints

Objective Function: $P = 6x + 20y$

3. Graph the constraints



4. Find the coordinates of each vertex.

(25, 25) (120, 0)
(50, 0)
(75, 15)

5. Test the coordinates of each vertex in the objective function.

x	y	$6x + 20y = P$
25	25	$6(25)+20(25)$
50	0	$6(50)+20(0)$
75	15	$6(75)+20(15)$
120	0	$6(120)+20(0)$

(120, 0)

6. Answer the questions:

Solve inequalities for y

$10x + 30y \leq 1200$

$\frac{30y}{30} \leq \frac{-10x}{30} + \frac{1200}{30}$

$y \leq -\frac{1}{3}x + 40$

$x + y \geq 50$

$y \geq -x + 50$

$4x + 20y \leq 600$

$\frac{20y}{20} \leq \frac{-4x}{20} + \frac{600}{20}$

$y \leq -\frac{1}{5}x + 30$

$10x + 30(0) = 1200$

$10x = 1200$

$x = 120$

$x = 150$