

Using Linear Programming in Real – life.

Example for you...

You are making t-shirts (x) and sweatshirts (y) for your family reunion this year. It takes you 10 minutes to make each t-shirt, and 20 minutes to make each sweatshirt. You have at most 100 minutes. It costs you \$12 to make a t-shirt and \$12 to make a sweatshirt and you hope to spend no more than \$84.

If you make \$4 per t-shirt and \$8 per sweatshirt, what is the maximum amount of t-shirts and sweatshirt to maximize your profit?

$$4. \begin{cases} x \geq 0 & x=0 \\ y \geq 0 & y=0 \\ y \leq -\frac{1}{2}x + 5 \\ y \leq -x + 7 \end{cases}$$

Maximum for

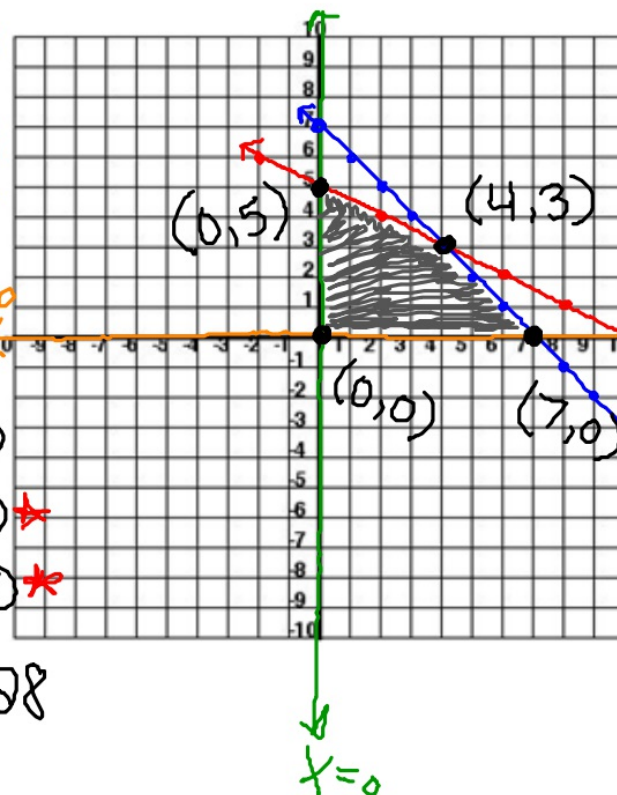
$$P = 4x + 8y$$

$$(0,0) P = 4(0) + 8(0) = 0$$

$$(0,5) P = 4(0) + 8(5) = 40 *$$

$$*(4,3) P = 4(4) + 8(3) = 40 *$$

$$(7,0) P = 4(7) + 8(0) = 28$$



$$\begin{aligned} 10x + 20y &\leq 100 \\ -10x & \quad -10x \\ \hline 20y &\leq -10x + 100 \\ \frac{20y}{20} &\leq \frac{-10x}{20} + \frac{100}{20} \\ y &\leq -\frac{1}{2}x + 5 \end{aligned}$$

$$\begin{aligned} 12x + 12y &\leq 84 \\ -12x & \quad -12x \\ \hline 12y &\leq -12x + 84 \\ \frac{12y}{12} &\leq \frac{-12x}{12} + \frac{84}{12} \\ y &\leq -x + 7 \end{aligned}$$