Example 2: Choose values for the variables:

X = number of pills of brand A

Y = number of pills of brand B

subject to the constraints:

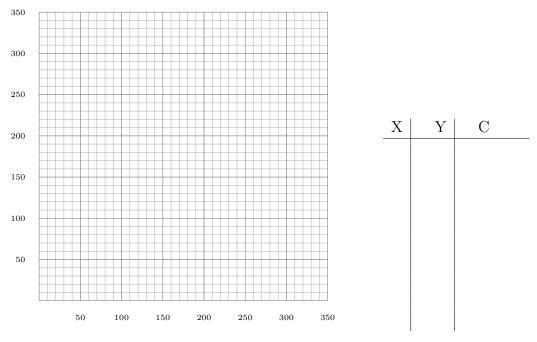
$$40X + 10Y \ge 2400$$
 (Iron)
 $10X + 15Y \ge 2100$ (B1)
 $5X + 15Y \ge 1500$ (B2)

$$5X + 15Y \ge 1500$$
 (B2)

and $X \ge 0, Y \ge 0$

in order to meet our objective to minimize cost C = 0.06X + 0.08Y.

Solve the problem by completing the following steps.



- (a) Graph the equations. (Pick two points on the line, then draw it, then label it clearly.)
- (b) Shade the correct region. (Choose a point in each region, and check if it works in all of the constraints.)
- (c) Find the corners. (In this case, all the corners are even, so just eyeball it.)
- (d) Check the corners. (Plugin the corners into the cost function.)
- (e) Check the corner that isn't there. (Big X and/or Big Y just means big cost.)
- (f) Choose the cheapest corner, and describe what the client should go do.

Example 3: Last time we setup the jet engine delivery problem. Today we solve it.

Choose numbers for the following variables:

X =Number of engines from P1 to A1

Y = Number of engines from P1 to A2

80 - X = Number of engines from P2 to A1 (the rest of A1's demand)

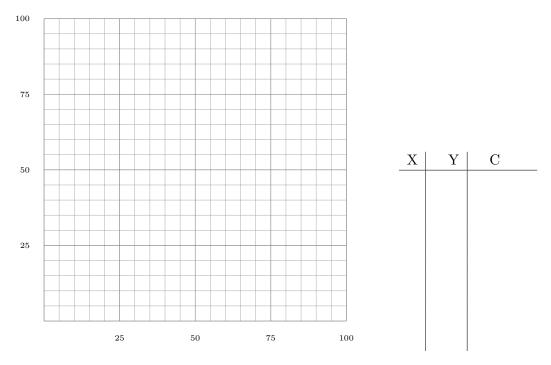
70 - Y = Number of engines from P2 to A2 (the rest of A2's demand)

subject to the following constraints:

$$\begin{array}{lll} X+Y\leq 100 & & \text{(P1 max production; P1 can only supply 100)} \\ X+Y\geq 40 & & \text{(P2 max production; 150 needed, P2 can only supply 110, so P1 needs to supply at least 40)} \\ X&\leq 80 & & \text{(sanity, A1 max demand)} \\ Y\leq 70 & & \text{(sanity, A2 max demand)} \end{array}$$

and $X \ge 0, Y \ge 0$.

in order to minimize shipping cost C = 14500 - 20X - 10Y



- (a) Graph the equations. (Pick two points on the line, then draw it, then label it clearly.)
- (b) Shade the correct region. (Choose a point in each region, and check if it works in all of the constraints.)
- (c) Find the corners. (In this case, all the corners are even, so just eyeball it.)
- (d) Check the corners. (Plugin the corners into the cost function.)
- (e) Check the corner that isn't there. (Big X and/or Big Y just means big cost.)
- (f) Choose the cheapest corner, and describe what the client should go do.