

Example 2: Choose values for the variables:

X = number of pills of brand A

Y = number of pills of brand B

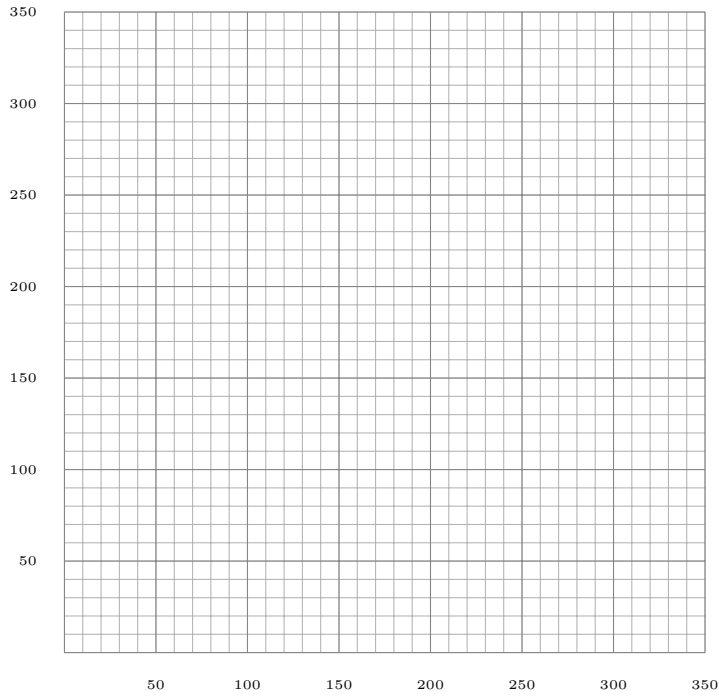
subject to the constraints:

$$\begin{aligned} 40X + 10Y &\geq 2400 && \text{(Iron)} \\ 10X + 15Y &\geq 2100 && \text{(B1)} \\ 5X + 15Y &\geq 1500 && \text{(B2)} \end{aligned}$$

and $X \geq 0, Y \geq 0$

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

Solve the problem by completing the following steps.



X	Y	C

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

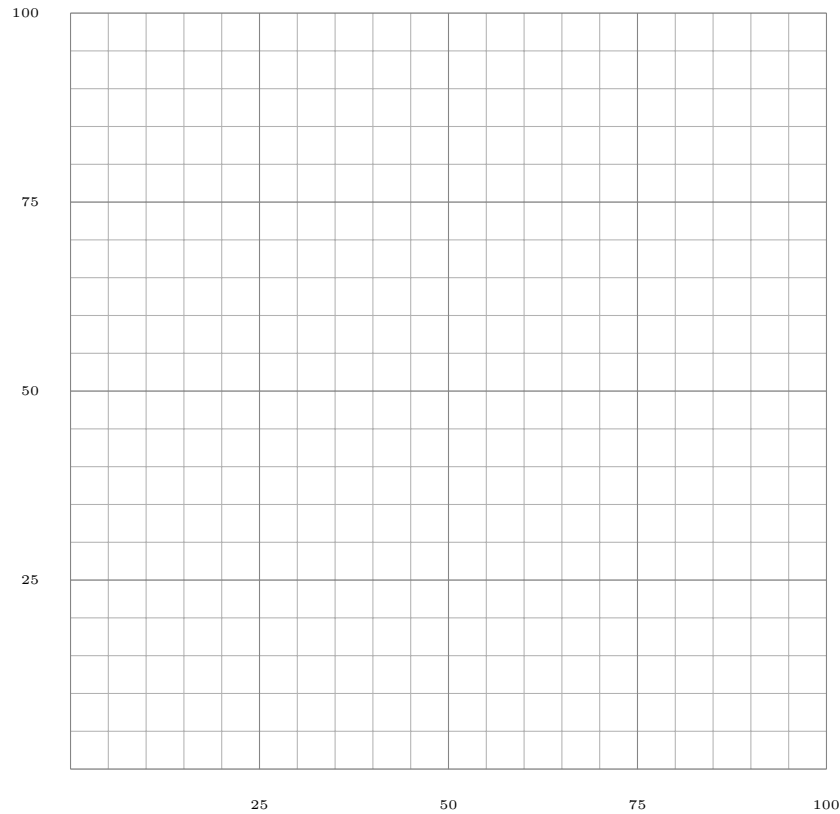
$70 - Y$ = Number of engines from P2 to A2 (the rest of A2's demand)

subject to the following constraints:

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

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

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



X	Y	C

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