Example 2: Choose values for the variables:
X = number of pills of brand A
Y = number of pills of brand B

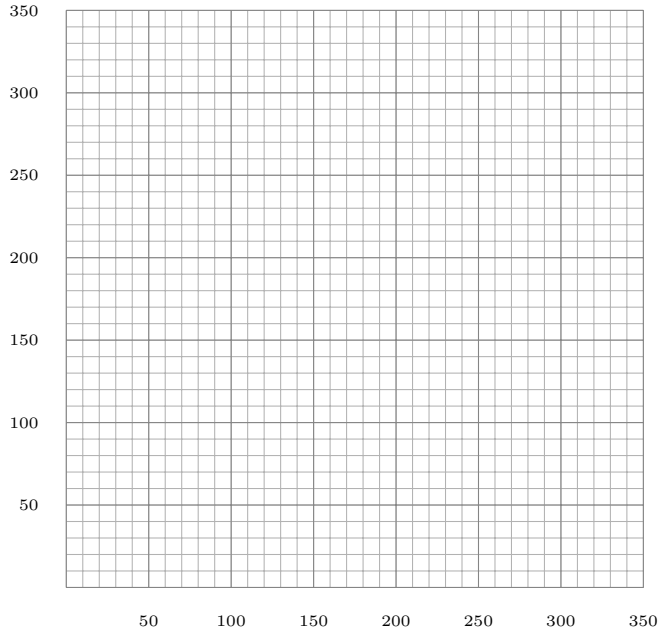
subject to the constraints:

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

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

(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.

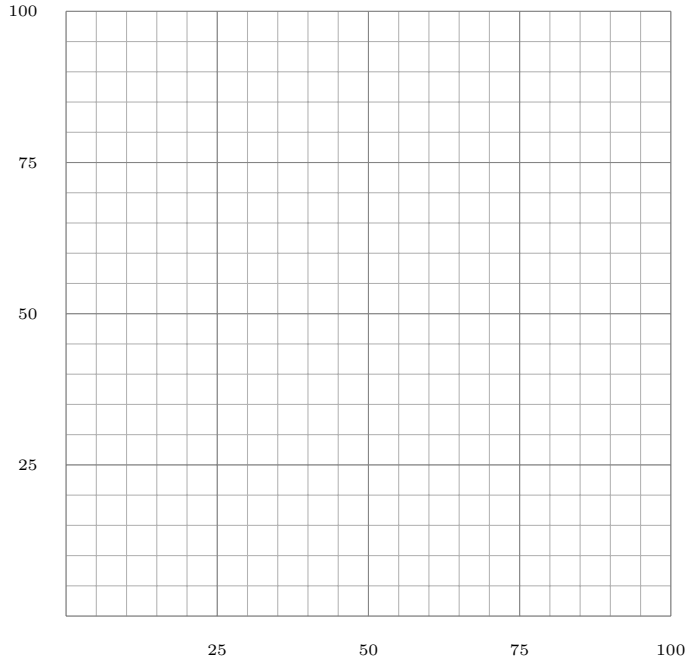
Choose numbers for the following variables:
X = Number of engines from P1 to A1
Y = Number of engines from P1 to A2
$80 - X$ = Number of engines from P2 to A1 (the rest of A1's demand)
$70 - Y$ = Number of engines from P2 to A2 (the rest of A2's demand)

subject to the following constraints:

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

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

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



X	Y	C

(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.