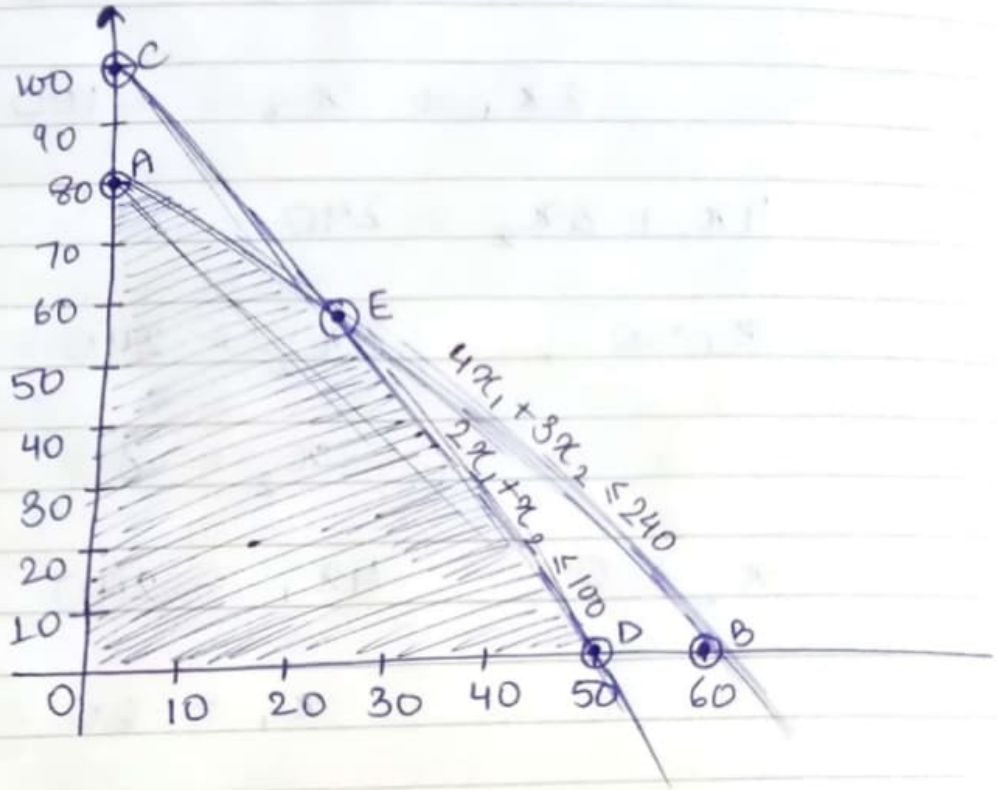
16/07/21



Coordinates of Point E :

$$4x_1 + 3x_2 = 240 \quad \text{——} (1)$$

$$2x_1 + x_2 = 100 \quad \text{——} (2)$$

~~Putting~~ Multiplying (2) with 3,

$$4x_1 + 3x_2 - 240 = 0$$
$$(-)\ 6x_1 + (-)\ 3x_2 + 300 = 0$$

$$-2x_1 - 60 = 0$$

$$\Rightarrow 2x_1 = 60 \Rightarrow x_1 = \frac{60}{2} = 30.$$

Putting $x_1 = 30$ in (1),

$$1280 + 3x_2 = 240$$

$$\Rightarrow 3x_2 = 120 \quad \rightarrow x_2 = 40.$$

Therefore, E (30, 40).

⇒ Corner Point Evaluation Method:

According to LP Methodology, optimal solution would be found ~~that~~ at any of the corner points only of the feasible region.

Here, corner points are -

(0,0), (0,80), (30,40), (50,0).

Finding optimal solution,

A (0,80) in $Z = 7x_1 + 5x_2$ = 7X0 + 5 X80
= ₹400.

E (30,40) in $Z = 7x_1 + 5x_2$ = 7X30 + 5X40
= ₹410 ✓

D (50,0) in $Z = 7x_1 + 5x_2$ = 7X50 + 5X0
= ₹350.

Putting (0,0) in Z, = 7X0 + 5X0 = 0

* cost minimisation problems and generally ingredient blending problems

Optimal solution will be (30, 40) i.e the company should produce 30 tables and 40 chairs to earn maximum profit of £410.