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Rajapaksha R.A.N.T.D.

① Define Variables

x_1 = number of desks produre in a day

x_2 = number of tables produce in a day.

② Formulate objective function.

$$\max \quad 700x_1 + 900x_2$$

③ Formulate constraints.

$$3x_1 + 5x_2 \leq 3600 \quad \text{(wood)}$$
$$x_1 + 2x_2 \leq 1600 \quad \text{(labour)}$$
$$50x_1 + 20x_2 \leq 48000 \quad \text{(machine)}$$
$$x_1 \geq 0$$
$$x_2 \geq 0$$

$3x_1 + 5x_2 \leq 3600 \rightarrow x_1 = 1200 \quad x_2 = 720$

$x_1 + 2x_2 \leq 1600 \rightarrow x_1 = 1600 \quad x_2 = 800$

$50x_1 + 20x_2 \leq 48000 = 5x_1 + 2x \leq 48000$

$\therefore 5x_1 + 2x_2 \leq 4800 \rightarrow x_1 = 960 \quad x_2 = 2400$

Resources	Consuption		Total Supply.
	Desk	Table	
wood	3	5	360 units.
labour	60min	120 min	$200 \times 8 \times 1200 = 1600h$
Machine time	50min	20 min	$50 \times 16h \times 60 min = 48000$

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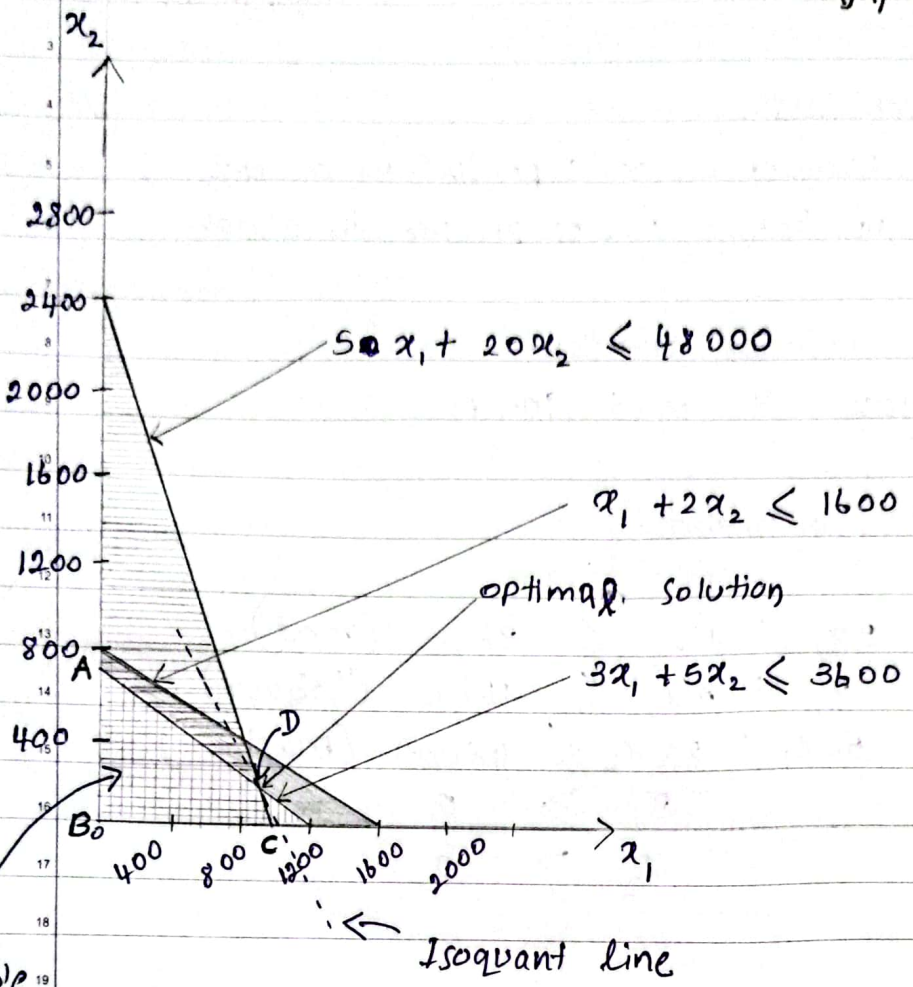

Find D point.

$3x_1 + 5x_2 \leq 3600$ ← (1)

$50x_1 + 20x_2 \leq 48000$

$5x_1 + 2x_2 \leq 4800$ ← (2)

(1) × 5 − (2) × 3

$15x_1 + 25x_2 - (15x_1 + 6x_2) = 18000 - 14400$

$15x_1 + 25x - 15x_1 + 6x_2 = 3600$

$19x_2 = 3600$

$x_2 = 189.47$

$3x_1 + 5 \times 189.47 = 3600$

$3x_1 + 947.35 = 3600$

$3x_1 = 3600 - 947.35$

$3x_1 = 2652.65$

$x_1 = 884.21$

Sammanee

No:

Date:

The optimal solution of this LP is 884.21 & 189.47.

So,

To get the maximum total sales revenue, it need to make 884.21 desks & 189.47 tables per a day averagely.

The type of LP that this fomulation falls in to is finitely LP, because it has ~~simpl~~ unique optimal solution.