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[Signature]

① A type 1 three times as much labor type 2

Total 450 → type 2

market limit type 1 → 100 type 2 → 300

Profit type 1 → \$8 type 2 → \$5

maximize profit

a) Build mathematical model.

Decision variables

x_1 : type 1 hot

x_2 : type 2 hot

objective Function

$$\max z = 8x_1 + 5x_2$$

Constraints

$$3x_1 + x_2 \leq 450$$

$$x_1 \leq 100$$

$$x_2 \leq 300$$

$$x_1, x_2 \geq 0$$

$$3x_1 + x_2 = 450$$

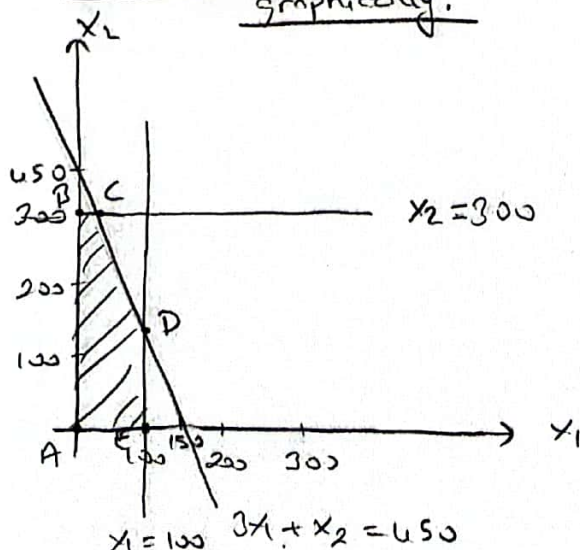
$$x_1 = 0$$

$$x_2 = 450$$

$$x_2 = 0$$

$$x_1 = 150$$

b) Solve the problem graphically.



	x_1	x_2	$z = 8x_1 + 5x_2$
A	0	0	0
B	0	300	1500
C	50	300	1900 (max)
D	100	150	1550
E	100	0	800

to maximize profit $x_1 = 50$
and $x_2 = 300$

$$z = 8x_1 + 5x_2 = 1900$$