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IE3235 QUIZ 1!

Q1! Will West produces two types of cowboy hats. A type 1 hat requires 3 times as much labor time as a type 2. If the all available labor time is dedicated to Type 2 alone, the company can produce a total of 450 Type 2 hats a day. The market limits for the two types are 100 and 300 hats per day for Type 1 and Type 2, respectively. The profit is \$8 per Type 1 hat and \$5 per Type 2 hat. Determine the number of hats of each type that would maximize profit.

- ① Build the mathematical model of the problem.
- ② Solve the problem graphically.

$x_1 \rightarrow$ Type 1 hat count
 $x_2 \rightarrow$ Type 2 hat count

$$Z = 8x_1 + 5x_2$$

Objective function, maximize
Constraints $8x_1 + x_2 \leq 450$

$$\begin{aligned} x_1 &\leq 100 \\ x_2 &\leq 300 \\ x_1, x_2 &\geq 0 \end{aligned}$$

