

A shop owner is selling Canadiens flags + hats.
He ordered 6000 items and expects to sell at least
3000 flags and at least 1000 hats. From experience,
he expects to sell at least twice as many flags as hats.
He makes \$10 on each flag and \$12 on each hat.
How many of each should he sell to maximize
his profits?

x : # of flags sold

y : # of hats sold

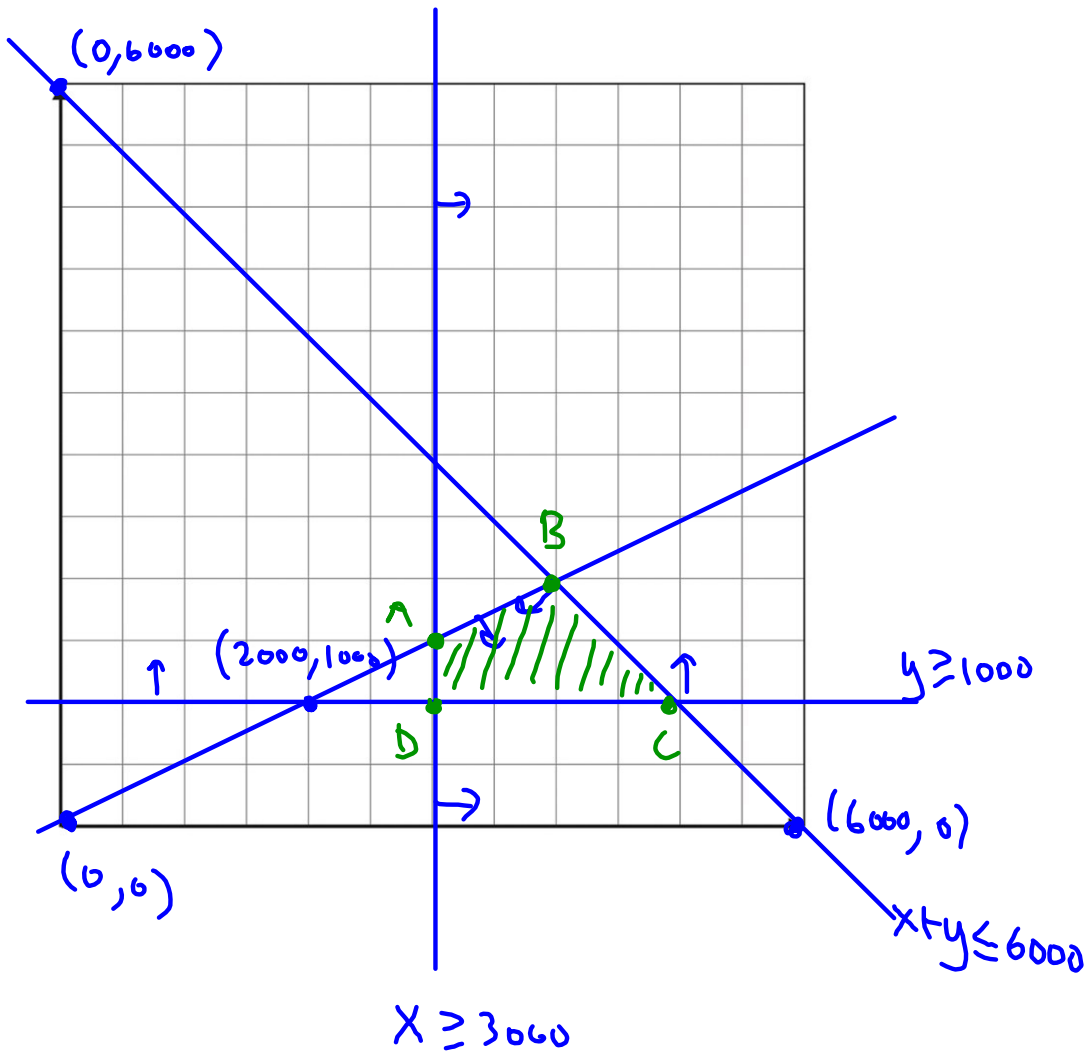
$$x \geq 3000$$

$$y \geq 1000$$

$$x + y \leq 6000$$

$$x \geq 2y$$

$$P = 10x + 12y$$



$$x + y = 6000$$

x	y
0	6000
6000	0

$$x = 2y$$

x	y
0	0
2000	1000

Pt B: $x = 2y$ $x + y = 6000$

using substitution:

$$(2y) + y = 6000$$

$$3y = 6000$$

$$y = 2000$$

$$x = 2(2000) \\ = 4000$$

$$B(4000, 2000)$$

Pt C: $y = 1000$ $x + y = 6000$

$$x + 1000 = 6000$$

$$C(5000, 1000)$$

$$x = 5000$$

$$P = 10x + 12y$$

$$\text{Point B: } P = 10(4000) + 12(2000) = 64\,000$$

$$\text{Point C: } P = 10(5000) + 12(1000) = 62\,000$$

The max. profit is \$ 64 000, in which he

Sells 4000 flags and 2000 hats.