

Farmer Fred sells small containers of his blueberries and raspberries at the farmers' market. He has gathered the following information about the number of each he sells per day:

- At most twice as many blueberries as raspberries.
- A minimum of 200, but not more than 500 raspberries.
- At least 300 blueberries.
- At most 1200 containers of berries.

$$x \leq 2y$$

$$y \geq 200 \quad y \leq 500$$

$$x \geq 300$$

$$x + y \leq 1200$$

His costs associated with producing are \$0.85 per container of blueberries and \$0.95 per container of raspberries. He sells the blueberries for \$3.00 each and the raspberries for \$3.50 each. How many of each does Fred need to sell in order to make the greatest profit?

$$\text{Profit} = \text{Revenue} - \text{Cost} \quad \text{objective}$$

$$\text{BB: } p = 3.00 - .85 = \underline{\underline{\$2.15}}$$

$$\underline{\underline{\text{maximise profit}}}$$

$$\text{RB: } p = \underline{\underline{\$3.50 - .95 = \$2.55}}$$

x : # of containers of blueberries
 y : # of containers of raspberries

$x \geq 0$ ① $y \geq 200$ ② $y \leq 500$
 $y \geq 0$ $x \geq 300$ vertical

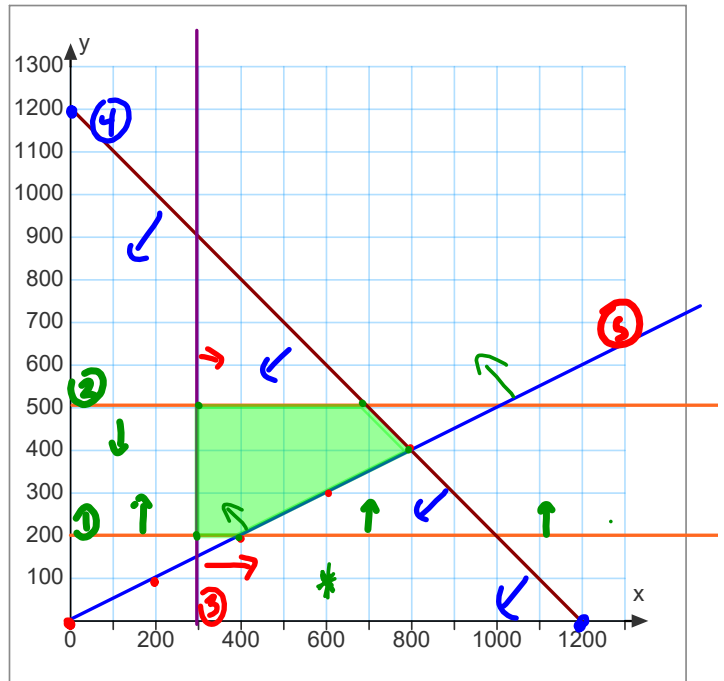
③ $x \geq 300$ vertical
 horizontal

④ $x + y \leq 1200$
 solid

⑤ $x \leq 2y$
 $x = 2y$ solid
 $\frac{1}{2}x = y$
 Test (600, 100) $600 \leq 200$ F
 Test (0, 0) $0 \leq 1200$ T

x	y
0	1200
1200	0
600	600

Vertices	$P = 2.15x + 2.55y$
(300, 200)	\$ 1155
(300, 500)	1950
(700, 500)	<u>2780</u> ←
(800, 400)	2740
(400, 200)	1370



Fred must sell 700 containers of Blueberries & 500 containers of Raspberries