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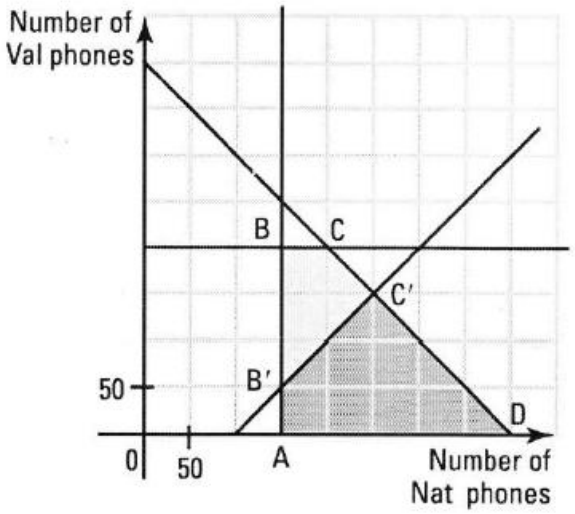
4.



g) $x \geq y + 100$

h)

Vertices	R = 40x + 60y
A′(150, 0)	6000
B′(150, 50)	9000
C′(250, 150)	19 000
D(400, 0)	16 000

i) It decreased by $1000

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6. 4

$(3,6)$, $(5,5)$, $(7,4)$ & $(9,3)$

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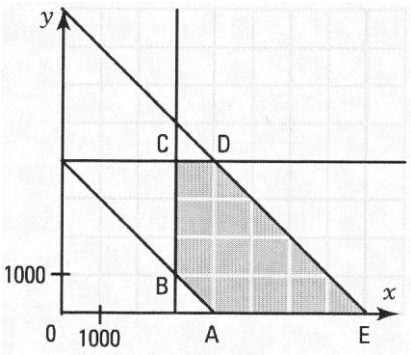
6.



x: number of youths under 18

y: number of adults

$x \geqslant 0$

$y \geqslant 0$

$x + y \leqslant 8000$

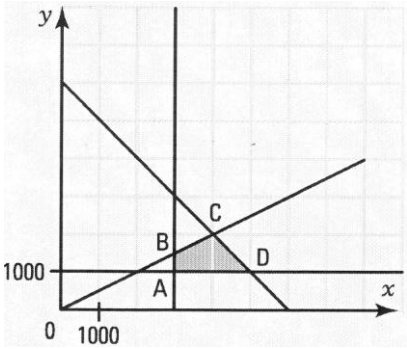
$x \geqslant 3000$

$y \leqslant 4000$

Vertices	$R = 15x + 25y - 20\,000$
A(4000, 0)	40 000
B(3000, 1000)	50 000
C(3000, 4000)	125 000
D(4000, 4000)	140 000
E(8000, 0)	100 000

The organizers can obtain a maximal net revenue of $140 000.

7.



x: number of flags sold

y: number of caps sold

$x \geqslant 0$

$y \geqslant 0$

$x + y \leqslant 6000$

$x \geqslant 3000$

$y \geqslant 1000$

$x \geqslant 2y$

Vertices	$R = 15x + 12y$
A(3000, 1000)	57 000
B(3000, 1500)	63 000
C(4000, 2000)	84 000
D(5000, 1000)	87 000

The shop owner must sell 5000 flags and 1000 caps.

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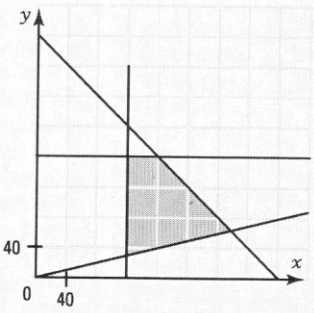
8. *Laura*

Vertices	$R = 2x + 3y$
(120, 0)	240
(40, 80)	320
(80, 160)	640
(200, 120)	760
(200, 0)	400

Russ:

$x \geq 0$
$y \geq 0$
$x + y \leq 320$
$x \geq 120$
$y \leq 160$
$x \leq 4y$



Vertices	$R = 2.50x + 2.50y$
(120, 30)	375
(120,160)	700
(160, 160)	800
(256, 64)	800

Russ' proposition achieves a better profit.