HW 61

#1 & #3 are the example problems but try them on your own again.

2. $x \leq 25$ $\quad x \to$ roses
$y \leq 40$ $\quad y \to$ carnations

$x + y \leq 50 \quad x \geq 0$
$y \leq 50 - x \quad y \geq 0$

$P = 1000x + 800y$

see graph on next page

$(0,40) \to 1000(0) + 800(40) = 32{,}000$

$(10,40) \to 1000(10) + 800(40) = 42{,}000$

$(25,25) \to 1000(25) + 800(25) = 45{,}000$ ✓

$(25,0) \to 1000(25) + 800(0) = 25{,}000$

25 acres of roses & 25 acres of carnations

4. $x \to$ alfalfa
$y \to$ soybeans

$x + y \leq 50 \to y \leq 50 - x$

$20x + 30y \leq 1200 \to y \leq -\frac{2}{3}x + 40$

$x \geq 0$
$y \geq 0$

$P = 250x + 300y$

see graph on next page

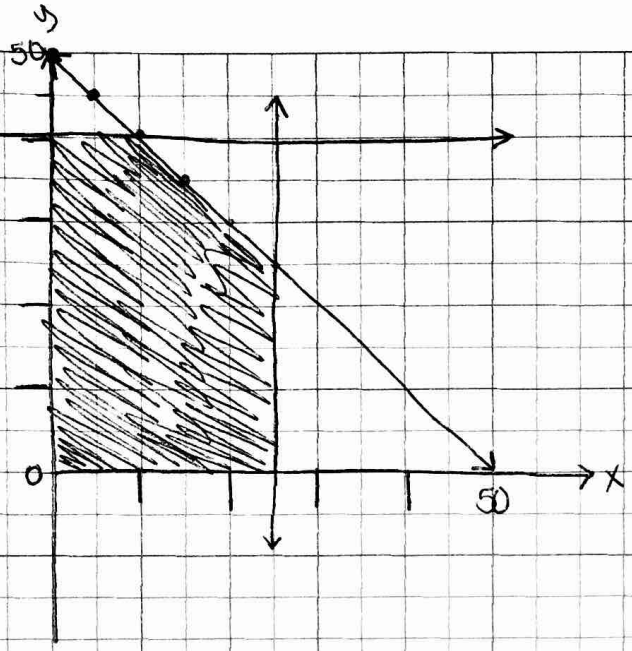
$(0,40) \to 250(0) + 300(40) = 12000$

$(30,20) \to 250(30) + 300(20) = 13{,}500$ ✓

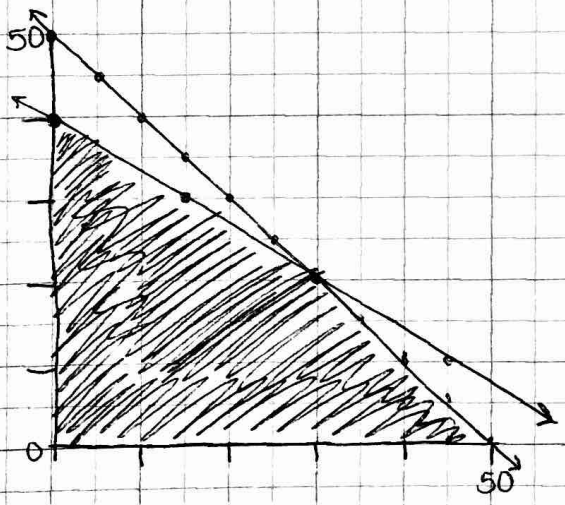
$(50,0) \to 250(50) + 300(0) = 12{,}500$

30 acres of alfalfa & 20 acres of soybeans

2.



4.



Answers

1. x = # t-shirts, y = # polos

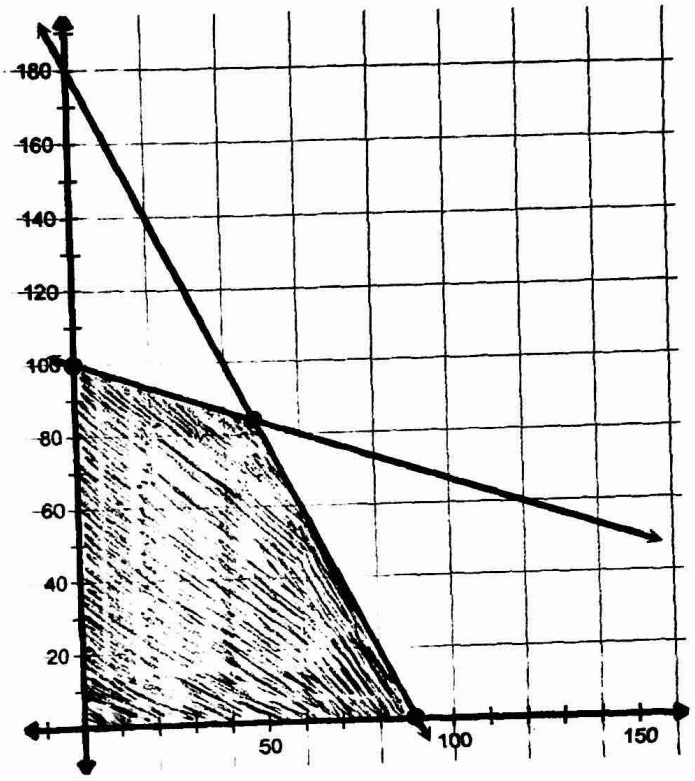
Profit $= 3.00x + 3.60y$

$x \geq 0$

$y \geq 0$

$2x + y \leq 180$

$x + 3y \leq 300$



$$(0,100) \rightarrow P = 3.00(0) + 3.60(100)$$
$$= \$360$$
$$(48,84) \rightarrow P = 3.00(48) + 3.60(84)$$
$$= \$446.40$$
$$(90,0) \rightarrow P = 3.00(90) + 3.60(0)$$
$$= \$270$$

The company should produce 48 t-shirts and 84 polos for a maximum profit of $446.40.

3.

2. x = # necklaces, y = # bracelets

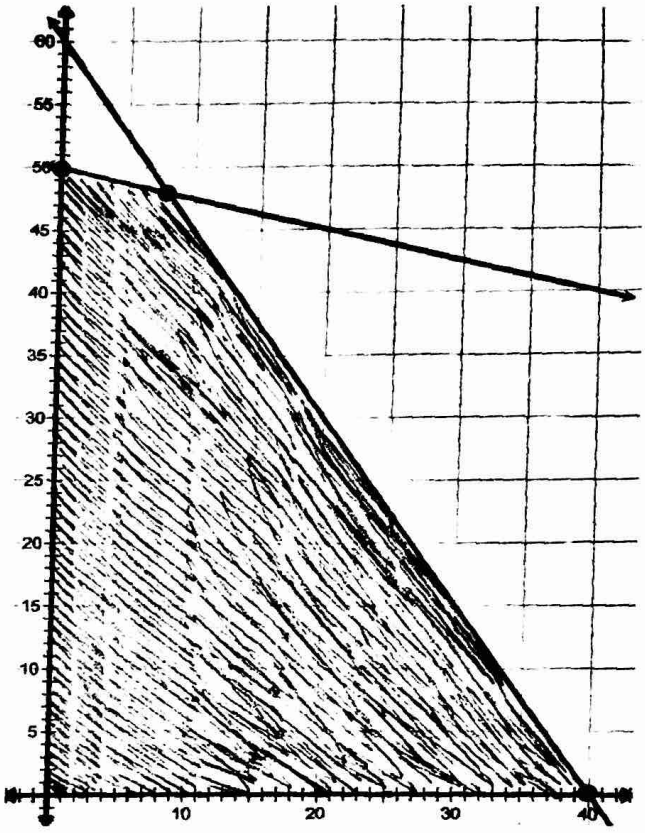
$\text{Profit} = 3.50x + 2.50y$

$x \geq 0$

$y \geq 0$

$50x + 200y \leq 10{,}000$

$30x + 20y \leq 1200$ or $\frac{1}{2}x + \frac{1}{3}y \leq 20$



$(0,50) \rightarrow P = 3.50(0) + 2.50(50)$

$= \$125$

$(8,48) \rightarrow P = 3.50(8) + 2.50(48)$

$= \$148$

$(40,0) \rightarrow P = 3.50(40) + 2.50(0)$

$= \$140$

The company should produce 8 necklaces and 48 bracelets for a maximum profit of \$148.