HOMEWORK???

p. 252: #1 - 3

p. 248: #4, 6

3. Meg is building a bookshelf to display her cookbooks and novels.
   - She has no more than 50 cookbooks and no more than 200 novels.
   - She wants to display at least 2 novels for every cookbook.
   - The cookbook spines are about half an inch wide, and the novel spines are about a quarter of an inch wide.

   Meg wants to know how long to make the bookshelf.

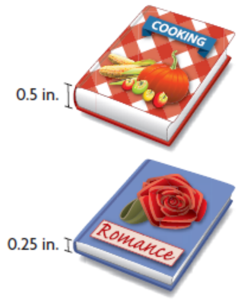
   The following model represents this situation.

   Let c represent the number of cookbooks.
   Let n represent the number of novels.
   Let W represent the width of the bookshelf.

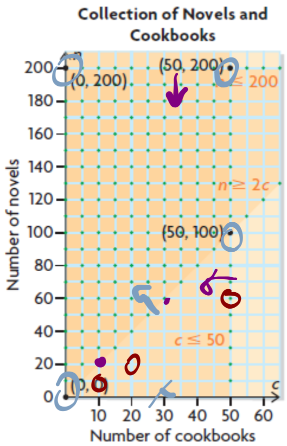
   Restrictions:
   $c \in W, n \in W$

   Constraints:
   $c \geq 0$
   $n \geq 0$
   $c \leq 50$
   $n \leq 200$
   $n \geq 2c$

   Objective function:
   $W = 0.5c + 0.25n$



Quad I Graph



$n = 2c$

c	n
10	20
30	60

Test (30, 0)

$n \geq 2c$
$LS \geq RS$

0	2(30)
	60
	NO

   a) Which point in the feasible region represents the greatest number of books (both cookbooks and novels) that Meg could have? Explain how you know.
   b) Can she display the same number of cookbooks as novels? Explain.
   c) What point represents the most cookbooks and the fewest novels?
   d) What point represents the number of cookbooks that would require the longest shelf? How long would the shelf have to be?
   e) What point represents the number of cookbooks that would require the shortest shelf?

a) (50, 200)
b) NO
c) (50, 100)
d) (50, 200)
$W = 0.5(50) + 0.25(200)$
$W = 25 + 50$
$W = 75$ inches

e)
```
0.5(0)+.25(200)
                50
0.5(50)+0.25(100
)
                50
```

EXAMPLE #1...

The vertices of the feasible region of a graph of a system of linear inequalities are (-4, -8); (5, 0) and (1, -6). Which point would result in the minimum value of the objective function C = 0.50x - 0.60y?

	$C = 0.50x - 0.60y$
$(-4, -8)$	$0.5(-4) - 0.6(-8) = 2.8$
$(5, 0)$	$0.5(5) - \cancel{0.6(0)} = 2.5$
$(1, -6)$	$0.5(1) - 0.6(-6) = 4.1$

EXAMPLE #2...

The following model represents an optimization problem. Determine the maximum solution.

Restrictions: $x \varepsilon R$ *and* $y \varepsilon R$

Constraints: $y \le 1;\ 2y \ge -3x + 2;\ y \ge 3x - 8$

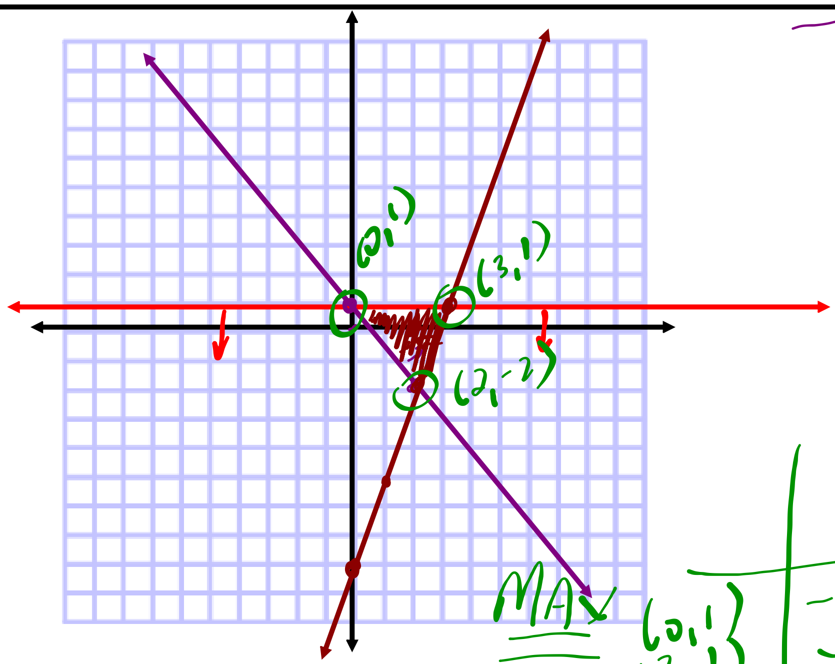
Objective Function: $D = -4x + 3y$

$y = 1$

$\cancel{2}y = -\frac{3}{2}x + \frac{2}{2}$

$y = -\frac{3}{2}x + 1$

$y = 3x - 8$



$2y \ge -3x + 2$

$LS \ge RS$

$2(0)$	$-3(0) + 2$
0	2

NO

$y \ge 3x - 8$

$LS \ge RS$

0	-8

yes

	$D = -4x + 3y$
$(0,1)$	$-4(0) + 3(1) = 3$
$(3,1)$	$-4(3) + 3(1) = -9$
$(2,-2)$	$-4(2) + 3(-2) = -14$

Practice Questions...

p. 259: #1, 2, 4, 6, 11, 12, 13