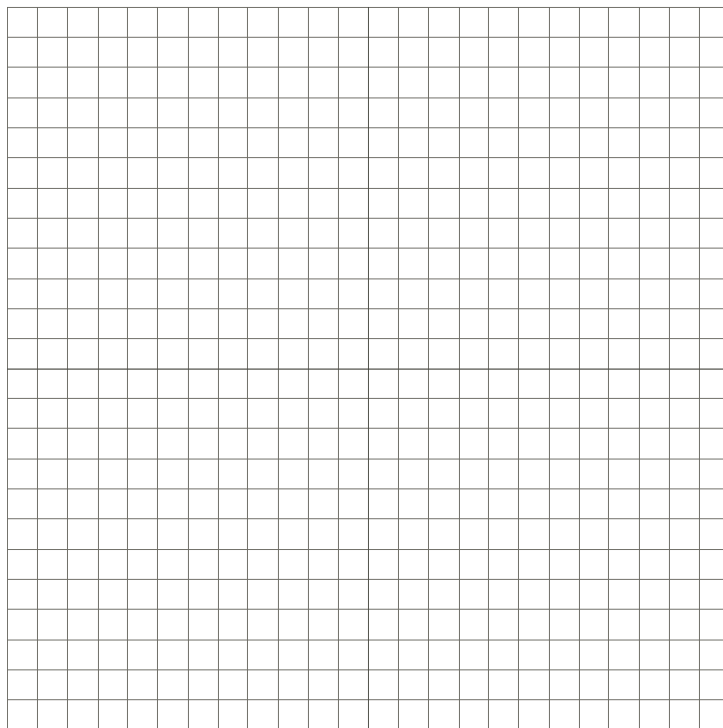




**Intermediate Math Circles**  
**Wednesday November 29 2012**  
**Problem Set 8**

1. Maximize:  $P = 3x + 4y$
- Subject to:
- $$2x + y \leq 6$$
- $$x + y \leq 4$$
- $$x \geq 0$$
- $$y \geq 0$$



2. Minimize:  $C = 2x - 3y$

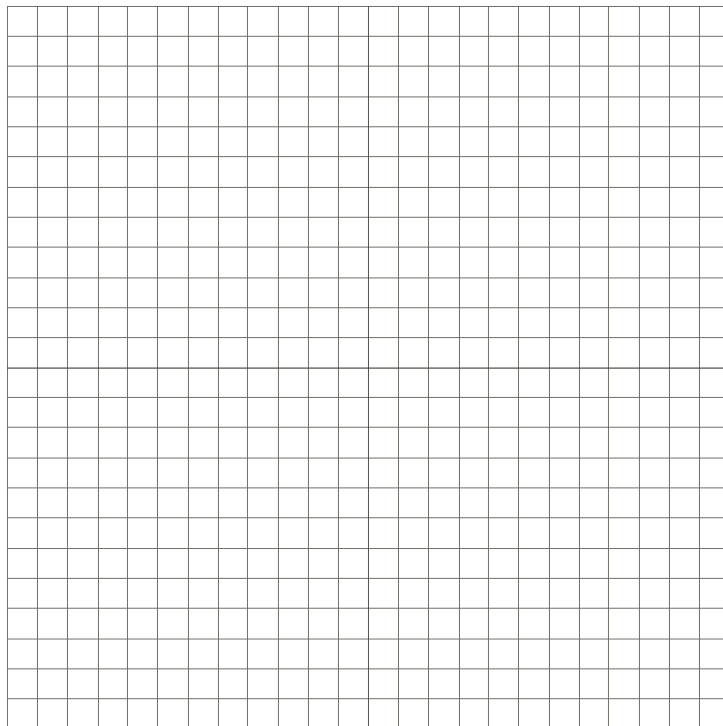
Subject to:  $4x + 5y \leq 40$

$2x - y \geq 0$

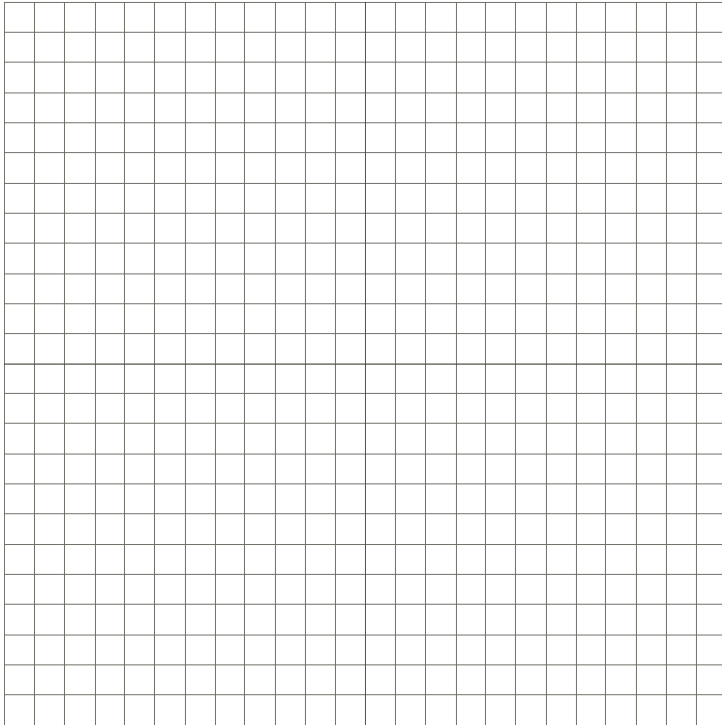
$x \leq 6$

$x \geq 0$

$y \geq 0$



3. A tailor has 80 square metres of cotton material and 120 square metres of wool. A suit requires 1 square metre of cotton and 3 square metres of wool. A dress requires 2 square metre of cotton and 1 square metre of wool. How many of each should the tailor make to maximize revenue, if a suit sells for \$110 and a dress sells for \$80?



4. A company makes two types of calculators, Calculator A and Calculator B. Each calculator must be tested after it is assembled. The amount of time required for assembling Calculator A is 4 hours and the amount of time required for assembling Calculator B is also 4 hours. The amount of time for testing Calculator A is 2.5 hours, and the amount of time for testing Calculator B is 1.5 hours. Each week there are 104 working hours for assembling and 60 working hours for testing. If the company makes a profit of \$4 on each Calculator A and \$2.50 on each Calculator B, how many of each should it produce to maximize its weekly profits?

