

Linear Programming Application

1. Find the maximum value of $c = 3x + 4y$ subject to the following constraints:

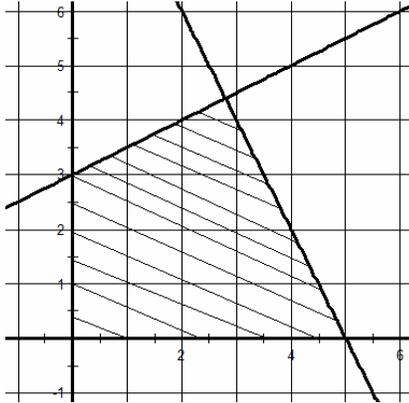
$$x \geq 0, y \geq 0, x + y \leq 8.$$

2. Find the minimum value of $c = 5x + 6y$ subject to the following constraints:

$$x \geq 0, y \geq 0, x + y \geq 5, 3x + 4y \geq 18.$$

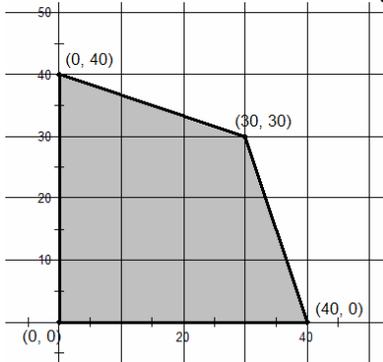
3. A furniture manufacturer makes chairs and sofas from prepackaged part. The table gives the number of packages of wood parts, stuffing, and material required for each chair or sofa. The packages are delivered weekly and the manufacturer has room to store 1300 packages of wood parts, 2000 packages of stuffing, and 800 packages of fabric. The manufacturer earns \$200 per chair and \$350 per sofa. How many chairs and sofas should they make each week to maximize profit?

4. What are the vertices of the feasible region shown in the diagram?

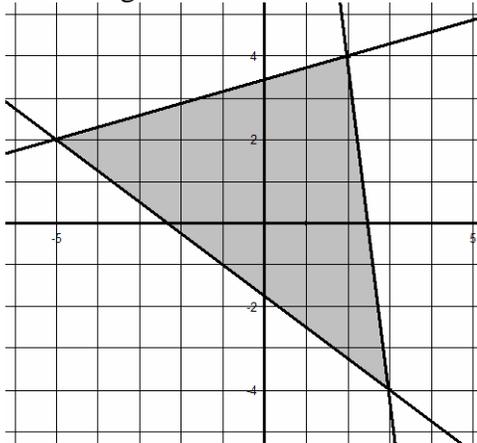


5. Your club plans to raise money by selling two sizes of fruit baskets. The is to buy small baskets for \$10 and sell them for \$16 and to buy large baskets for \$15 and sell them for \$25. The club president estimates that you will not sell more than 100 baskets. Your club can afford to spend up to \$1200 to buy the baskets. Find the number of small and large fruit baskets you should buy in order to maximize profit.

6. Find the maximum value of the objective function for the given feasible region.



7. Find the minimum value of the objective function $c = 12x + 20y$ on the feasible region shown in the diagram.



- A. -20 B. -44
 C. -72 D. -104

8. Suppose Mr. Desmond wants to plant x acres of cotton and y acres of beans according to the following constraints: at most 500 acres of cotton and soybeans, between 100 and 400 acres of cotton, at least 80 acres of soybeans.

Write a system of inequalities to represent the constraints.

9. Graph the feasible region for the set of given constraints.

$$-2x + y \leq -2, x \geq 0, x \leq 1, y \geq 3.$$

10. Find the minimum and maximum values of the objective function subject to the given constraints

Objective function: $c = 2x + 3y$

Constraints: $x \geq 0, y \geq 0, x + y \leq 9$

11. Find the minimum and maximum values of the objective function subject to the given constraints

Objective function: $c = 4x + 3y$

Constraints: $x \geq 0, 2x + 3y \geq 6, 3x - 2y \leq 9, x + 5y \leq 20$