Name: _____ Date: _____ Row: _____ Period: _____

Assignment #: _____

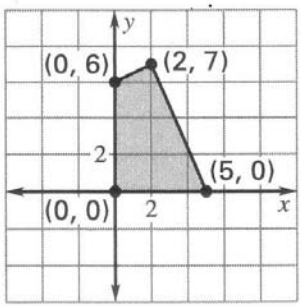
3.4B WORKSHEET

YOU MUST SHOW ALL WORK ON A SEPARATE SHEET OF PAPER

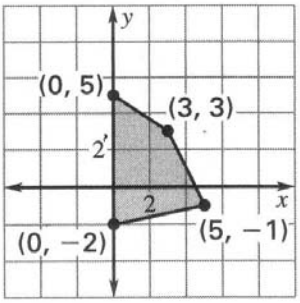
YOU MUST USE GRAPH PAPER

The feasible region determined by a system of constraints is given. Find the minimum and maximum values of the objective function for the given feasible region.

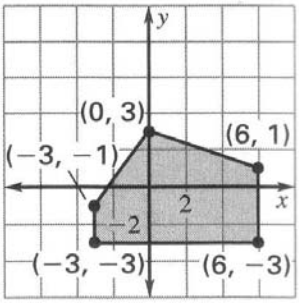
1. $C = x - y$



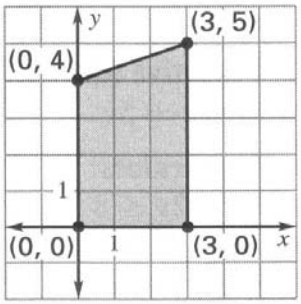
2. $C = x + 2y$



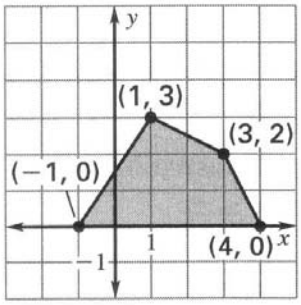
3. $C = -2x + y$



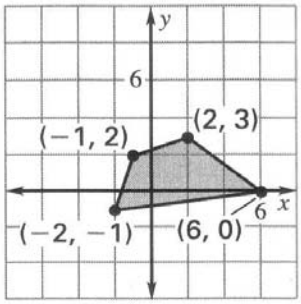
4. $C = x + 3y$



5. $C = 3x + 4y$



6. $C = 3x + 5y$



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

7. Objective function:
$C = 2x + y$

Constraints:
$x \geq 0$
$y \geq 0$
$x + y \leq 4$

8. Objective function:
$C = x + y$

Constraints:
$x \geq 0$
$x \leq 3$
$y \geq 0$
$y \leq 5$

9. Objective function:
$C = x - y$

Constraints:
$x \leq 0$
$y \leq 4$
$x + y \geq -1$

10) Your club plans to raise money by selling two sizes of fruit baskets. The plan is to buy small baskets for $10 and large baskets for $15. When selling the baskets the small baskets will produce a profit of $6 each and the large baskets will produce a profit of $10 each. 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.

11) You are stenciling wooden boxes to sell at a fair. It takes you 2 hours to stencil a small box and 3 hours to stencil a large box. You make a profit of $10 for a small box and $20 for a large box. If you have no more than 30 hours available to stencil and want at least 12 boxes to sell, how many of each size box should you stencil to maximize your profit?

12) An office manager is purchasing file cabinets and wants to maximize storage space. The office has 60 square feet of floor space for the cabinets and $600 in the budget to purchase them. Cabinet A requires 3 square feet of floor space, has a storage capacity of 12 cubic feet, and costs $75. Cabinet B requires 6 square feet of floor space, has a storage capacity of 18 cubic feet, and costs $50. How many of each cabinet should the office manager buy?

13) A community is trying to establish a public transportation system of large and small vans. It can spend no more than $100,000 for both sizes of vehicles and no more than $500 per month for maintenance. The community can purchase a small van for $10,000 and maintain it for $100 per month. The large vans cost $20,000 each and can be maintained for $75 per month. Each large van carries a maximum of 15 passengers, and each small van carries a maximum of 7 passengers. How many of each type of vehicle should be purchased to maximize the number of passengers?

14) A carpenter makes bookcases in two sizes, large and small. It takes 6 hours to make a large bookcase and 2 hours to make a small one. The profit on a large bookcase is $50, and the profit on a small bookcase is $20. The carpenter can spend only 24 hours per week making bookcases and must make at least 2 of each size per week. How many of each type of bookcase should be produced to maximize the profit?