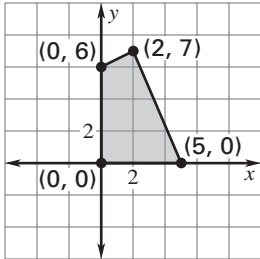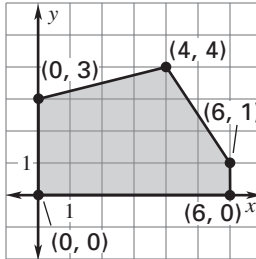NAME _____ DATE _____

Practice B

For use with pages 163–169

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.
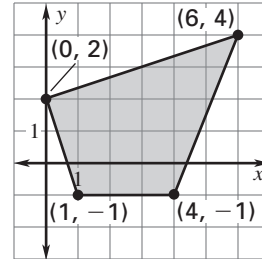
1. $C = x - y$

2. $C = 2x + 4y$

3. $C = x + 5y$

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

4. Objective function:
$C = 3x - y$

Constraints:
$x \geq 0$
$y \geq 0$
$2x + y \leq 6$

5. Objective function:
$C = 2x + 4y$

Constraints:
$x \leq 3$
$x + y \geq 3$
$2x - 3y \geq -9$

6. Objective function:
$C = x + 5y$

Constraints:
$3x + 2y \leq 8$
$2x - y \geq -4$
$x - 4y \leq -2$

7. Objective function:
$C = 4x - 3y$

Constraints:
$x \geq 0$
$x \leq 5$
$y \geq 0$
$2x - 5y \geq -15$

8. Objective function:
$C = 2x + 3y$

Constraints:
$x \geq 0$
$y \geq 1$
$4x + y \geq 6$
$x + 2y \geq 5$

9. Objective function:
$C = 5x + 2y$

Constraints:
$x \leq 4$
$2x + y \geq 3$
$x - 3y \leq -2$
$-x + 2y \leq 6$

10. *Bakery* A bakery is making whole-wheat bread and apple bran muffins. For each batch of bread they make $35 profit. For each batch of muffins they make $10 profit. The bread takes 4 hours to prepare and 1 hour to bake. The muffins take 0.5 hour to prepare and 0.5 hour to bake. The maximum preparation time available is 16 hours. The maximum baking time available is 10 hours. How many batches of bread and muffins should be made to maximize profits?

11. *Phone Bill* On a typical long distance call you talk for 30 minutes. On a typical local call you talk for 10 minutes. Your phone company offers a special low rate of $0.08 per minute for long distance calls and $0.03 per minute for local calls, for customers who spend at least 240 minutes on the phone per month. Your parents have set a limit of no more than 15 long distance calls per month and 30 local calls per month. How many minutes of long distance and local calls should you make to qualify for the special rate plan and minimize your phone bill?