Name _____ Class _____ Date _____

Reteaching 6-7

OBJECTIVE: Solving linear programming problems

MATERIALS: Graph paper

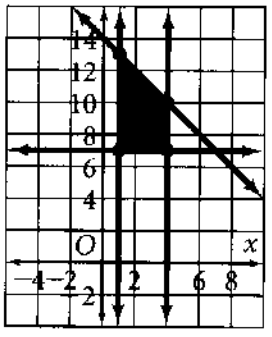
Example

Use linear programming to find the values that maximize the equation $B = 2x + y$.

$$\left.\begin{array}{l} x + y \leq 14 \\ y \geq 7 \\ x \geq 1 \\ x \leq 4 \end{array}\right\} \text{ Restrictions}$$

Step 1

Graph the restrictions.



Step 2

Find coordinates of each vertex.

VERTEX

$E(1, 13)$

$F(4, 7)$

$G(4, 10)$

$H(1, 7)$

Step 3

Evaluate B at each vertex.

$B = 2x + y$

$B = 2(1) + 13 = 14$

$B = 2(4) + 7 = 15$

$B = 2(4) + 10 = 18$

$B = 2(1) + 7 = 9$

The maximun value 18 occurs when $x = 4$ and $y = 10$.

Activity

Use linear programming to find the valucs that maximize each equation.

1. $y \geq 2$
$y \leq 2x$
$x \geq 4$
$x \leq 8$
$A = 4x + 5y$

2. $y \geq 4$
$y \leq x + 4$
$x \leq 8$
$x \geq 1$
$C = x - 3y$

3. $y \leq 7$
$y \leq -x + 8$
$x \leq 8$
$x \geq 2$
$Q = x - y$

4. $x + y \leq 24$
$y \geq 6$
$x \geq 10$
$x \leq 15$
$B = 2x + y$

5. $x \geq 2$
$x \leq 5$
$y \geq 3$
$y \leq 6$
$A = 5x + 4y$

6. $x + y \leq 6$
$2x + y \leq 10$
$x \geq 0$
$y \geq 0$
$P = 4x + y$