Algebra 2 Unit 2 Review Name: _____

Solve each of the following using any method.

1) $-3x + 6y = -24$
$y = 7x + 22$

2) $-x - y - 3z = -9$
$z = -3x - 1$
$x = 5y - z + 23$

3) $x = -4z - 19$
$y = 5x + z - 4$
$-5y - z = 25$

Solve each equation or inequality. Check for extraneous solutions. Graph the solution if it is an inequality.

4) $2 - 5|5x - 5| = -73$

5) $3 - |8x - 6| = 3$

6) $\frac{|2x+3|}{5} = -11$

7) $4|6 - 2a| + 8 \leq 24$

8) $-4|x - 2| \geq -8$

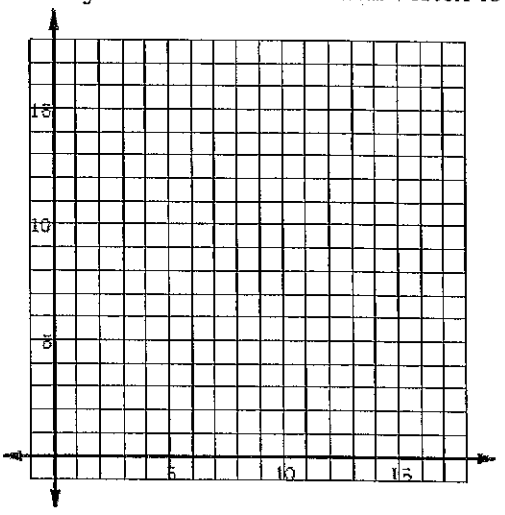
9) $|x - 1| - 4 > 14$

10) The ideal length of a bolt is 2 inches. The actual bolt can vary from the ideal length by at most $\frac{5}{16}$ in. Write and solve an absolute value inequality that describes the acceptable widths for this bolt.

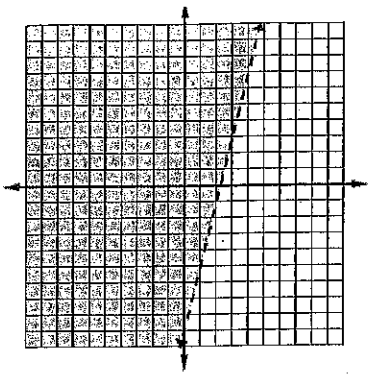
11) Graph the system of constraints. Find all vertices. Evaluate the objective function at each vertex to find the maximum value and the minimum value.

$$\begin{cases} x \leq 3 \\ y \leq 4 - x \\ x \geq 0 \\ y \geq 0 \end{cases}$$

Maximum for P = 2x + y



12. Tell whether the following points are a solution to the given inequality, graphed to the right. $y > 4x - 9$



a) (0, 0)

b) (0.25, -8)

c) (-1, -14)

d) (-2, -12)

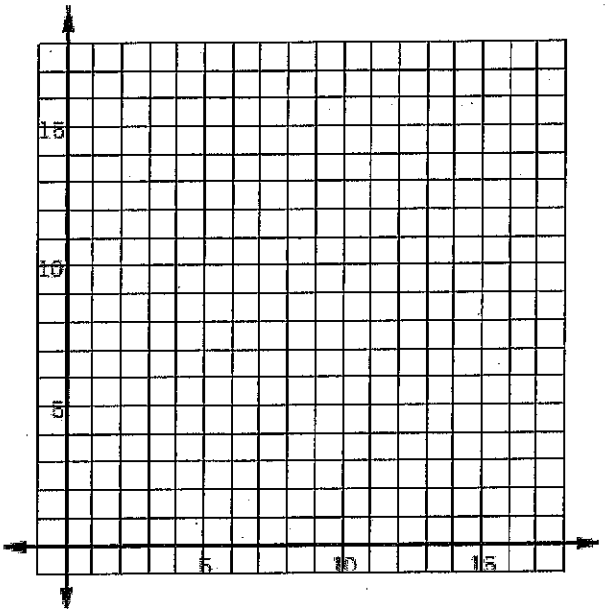
13.) Baking a tray of corn muffins takes 4 c milk and 3 c wheat flour. A tray of bran muffins takes 2 c milk and 3 c wheat flour. A baker has 16 c milk and 15 c wheat flour. He makes $3 profit per tray of corn muffins and $2 profit per tray of bran muffins.

Write the constraints for the problem.

Write the objective function.

Graph the constraints and find the vertices.

Find the maximum.



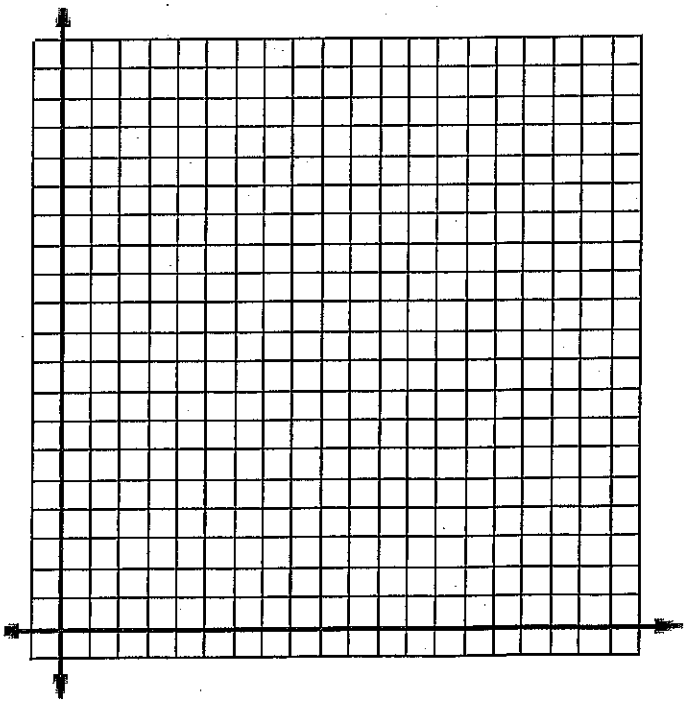
14. The area of a parking lot is 600 square yards. A car requires 6 square yards, and a bus needs 30 square yards. The attendant can oversee only 60 vehicles. If a car is charged $2.50 and a bus is charged $7.50, how many of each should be accepted to maximize income?

Write the constraints for the problem.

Write the profit equation.

Graph the constraints and find the vertices.

Find the maximum.



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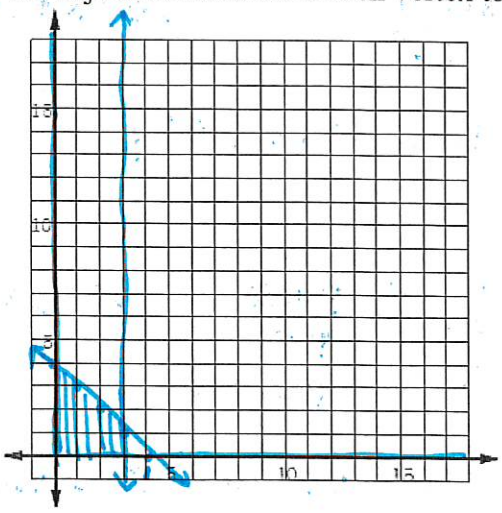

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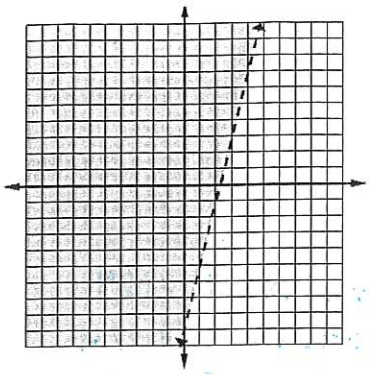


a) (0, 0) ✓ yes

b) (0.25, -8) ✗ No

c) (-1, -14) ✗ No

$-14 > -13$

d) (-2, -12) ✓ $-12 > -17$ yes

13.) Baking a tray of corn muffins takes 4 c milk and 3 c wheat flour. A tray of bran muffins takes 2 c milk and 3 c wheat flour. A baker has 16 c milk and 15 c wheat flour. He makes \$3 profit per tray of corn muffins and \$2 profit per tray of bran muffins.

Write the constraints for the problem.

$4x + 2y \leq 16$ $\quad y \leq -2x + 8$

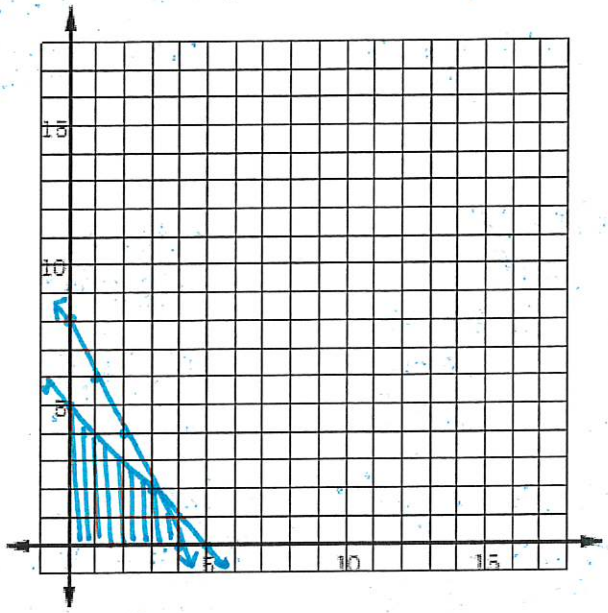
$3x + 3y \leq 15$ $\quad y \leq -x + 5$

$x \geq 0$

$y \geq 0$

Write the objective function.

$3x + 2y = P$



Graph the constraints and find the vertices.

(0,5) P=10 (4,0) P=12

(0,0) P=0 (3,2) P=13

Find the maximum.

3 corn muffins

2 bran muffins

14. The area of a parking lot is 600 square yards. A car requires 6 square yards, and a bus needs 30 square yards. The attendant can oversee only 60 vehicles. If a car is charged \$2.50 and a bus is charged \$7.50, how many of each should be accepted to maximize income?

Write the constraints for the problem.

$6x + 30y \leq 600$ $\quad y \leq \frac{-1}{5}x + 20$

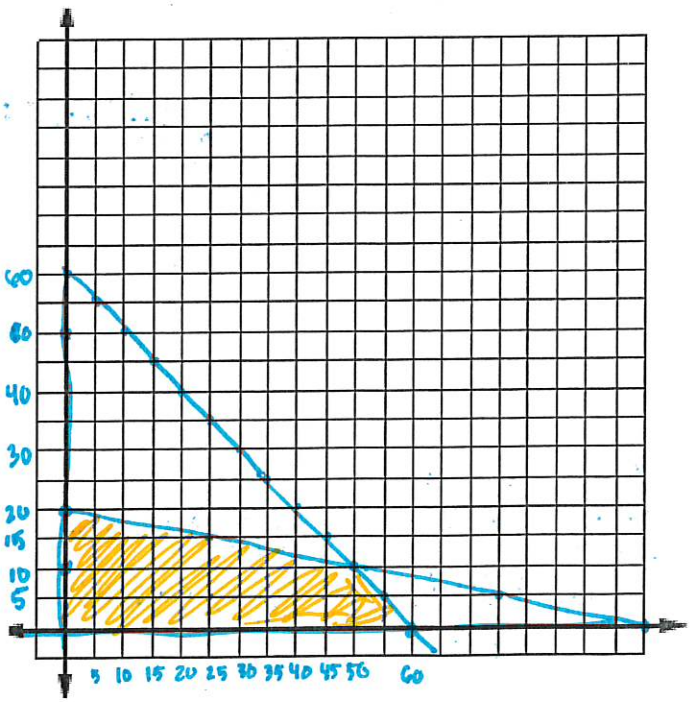
$x + y \leq 60$ $\quad y \leq -x + 60$

$x \geq 0$

$y \geq 0$

Write the profit equation.

$P = 2.50x + 7.50y$



Graph the constraints and find the vertices.

(0,20) P=150 (60,0) P=150

(0,0) P=0

(50,10) P=200

Find the maximum.

50 cars and 10 busses for a profit of \$200