Algebra 2 Review Chapter 3 Test Fall 2015

Solve each system of equations using any method you wish. You must be able to use each method at least once. Give your answer as an ordered pair. When using matrices state the coefficient matrix (A) and constant matrix (B).

1.
$4.25Q + 6R = 38$
$-8Q + 7.5R = 154$

2.
$D = 3C - 1$
$2C + 5D = -22$

3.
$8M + 12N = 60$
$12M + 18N = 36$

4.
$x + y = 14$
$2x - 6y = 4$

5.
$3x + 4y = 30$
$7x + 2y = 26$

6.
$4a + b - 2c = -30$
$a + 8c = 43$
$7b - c = 8$

7.
$y = 4x + 13$
$y = 2x - 9$

8.
$7G - 5H = 25$
$21G - 15H = 75$

9. Graph each system of inequalities. Shade the solution region with a colored pencil.

a) $y < -2x + 4$ $4x - 6y \leq 12$

b) $y \geq -2|x + 1| + 3$ $y < \frac{1}{3}x$

10. A company makes and sells two kinds of containers: Steel and Aluminum.
>Materials costs are $12 for each steel container and $20 for each aluminum container
>The weekly budget for materials is at most $3600
>Due to the size of their plant they are limited to making up to 240 containers a week

a) Write a system of inequalities that models these constraints
b) Graph this system of inequalities to find the feasible region.
c) State the coordinates of the corners of the feasible region.
d) Steel containers can be sold for $250 each and Aluminum containers can be sold for $300. Write the Objective Function and find the number of each type of container that should be made each week in order to maximize the company's income.

11. Without actually solving the system of equations state the number of solutions: One, None, or Many

a.
$y = 4x - 3$
$12x - 3y = 9$

b.
$y = -2x + 5$
$4x - 8y = 24$

c.
$y = 3x - 10$
$6x - 2y = 12$

12. This morning you bought 6 bolts and 8 nuts for $1.22. You had to go back and get some more in the afternoon and bought 9 bolts and 5 nuts for $1.55. Write and solve a system of equations to find the cost of each bolt and each nut.

13. You need to buy some material at the hardware store to remodel your bathroom. You need some pieces of pipe and wood. Pipe cost $5.75 each and the wood costs $2.56 each. You walked out carrying 10 items and spent a total of $35.17. Write and solve a system of equations to find out how many of each you purchased.

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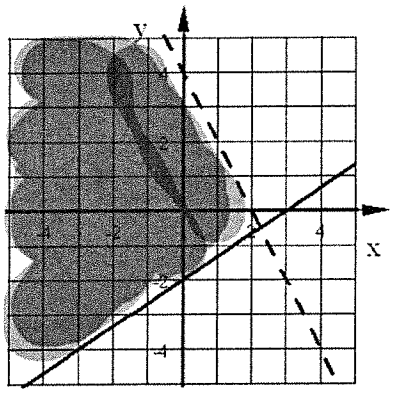
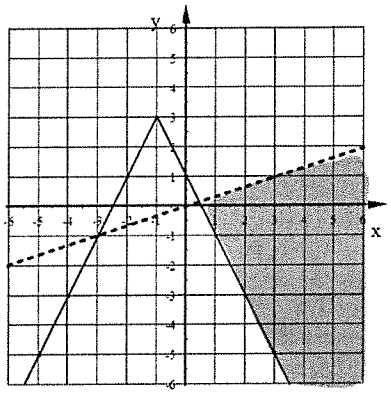
1. $(-8,12)$ 2. $(-1,-4)$ 3. No Solution 4. $(11,3)$

5. $(2,6)$ 6. $(-5,2,6)$

7. $(-11,-31)$ 8. Many Solutions

9. a) b)





10. S =# of steel containers A = # aluminum containers

a) $S \geq 0,\ A \geq 0,\ 20A + 12S \leq 3600,\ A + S \leq 240$

b) graph

c) Corner points of feasible region: (A,S) : $(0,0),(0,240),(180,0),(90,150)$

d) Objective Function: $Income = 300A + 250S$ Max income when the company makes: 90 Aluminum containers and 150 Steel containers.

11. a. Many b. One c. None

12. B=# bolts N=# nuts

Equations: $6B + 8N = 1.22$ & $9B + 5N = 1.55$

Bolts are \$0.15 each and Nuts are \$0.04 each

13. P=# pieces of pipe W=# pieces of wood

Equations: $P + W = 10$ $5.75P + 2.56W = 35.17$

You bought three pieces of pipe and seven pieces of wood.