**Math 2 Systems Test Review**

1) If a system of equations has no solution, then the graph of the system will be two \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ lines.

2) If a system of equations has one solution, then the graph of the system will have two \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_lines.

3) If a system of equations has infinitely many solutions, the graph of the system will be the \_\_\_\_\_\_\_\_\_\_\_\_\_ line.

4) When solving a system by graphing, the solution is where the two lines \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

5) When solving a system by substitution, one of the variables must be \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

6) To solve the system 2x + 3y = 12 and x + 2y = 4 by elimination, what needs to be done to the the 2nd equation?

7) Is (6, 7) the solution to the system 3x + 2y = 32 and 2x + y = 22? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Solve the following systems of equations using any method.**

8) y = 2x – 4 9) 2y = x 10) 6x – 2y = 6 11) x + 2y = 5 12) 2x + 4y = 6 13) 4x – 5y = 17

 y = -3x + 1 3y = 2x + 1 6x – y = 9 3x + 6y = 7 x = -2y + 3 3x + 4y = 5

14) Marley has purchased some large and small containers to organizing his garage. The number of large containers is three times the number of small containers. The large containers cost $8 each and the small containers cost $4 each. He spent a total of $196 on the containers. Find the number of large containers and small containers he purchased.

**Graph the following system of inequalities.**

15) y < -2x + 3 16) y – 2x < 7 17) x < 4

 y ≥ 4 y + 2x > -1 y < 1

 y ≥ -x + 1

**For a workout, you want to spend at least 20 minutes running and at least 10 minutes weightlifting. You also want the workout to last no more than 40 minutes. Let x be the time spent running and y be the time spent weightlifting.**

 19) Write a system of 3 inequalities to represent the situation.

 20) Graph

 21) What are two possible combinations for the time spent running and weightlifting?



**For Questions 22 -23 use the following graph**

22) What the vertices of the feasible region?

23)What are the minimum and maximum values given the objective

 function **C = 5x + 7y**

**A gardener’s profits depend upon the number of shrubs and the number of trees that are planted. Because space is limited there can be no more than 10 total plants. Finally the gardener can spend no more that $700 on the plants, where each shrub costs $50, and each tree costs $100.**

24) Write the 4 constraints

-Number of plants constraint: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

-Cost constraint: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

-2 natural constraints (will you have a negative number of plants?) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ & \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

25) Graph the constraints using the x and y intercepts. Use a straight edge when drawing your lines. Then list the four vertices.

26) If the gardener makes a $10 profit from each shrub, and an $18 profit from each tree, how many trees and how many shrubs should she plant in order to maximize her profits?

P = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

27) How many of each plant should be planted in order to *maximize* the profit?