

# ARRANGED HOUR FOR MATH 50

**Math 50 – Section 12.1**  
**Solving Systems of Equations by Graphing and**  
**Substitution**

Name \_\_\_\_\_

Instructor \_\_\_\_\_

Date \_\_\_\_\_

1. Given the equation  $3x + 2y = 24$ , determine if the following ordered pairs make the equation true (**show how** you determine your answer for each ordered pair):

Ordered Pair	DOES Make the equation true	Does NOT make the equation true
a. (8, 12)		
b. (0, 8)		
c. (8, 0)		
d. (2, 3)		
e. (4, 6)		

2. Using the equation  $5x + 3 = y$ , determine:

a. The value of “y” when  $x = 3$

b. The value of “x” when  $y = 7$

c. The value of “x” when  $y = (x + 3)$

d. The value of “y” when  $x = (y + 1)$

e. Based on your answer in 2.d, show how you would find the numerical value of “x” when  $x = (y + 1)$

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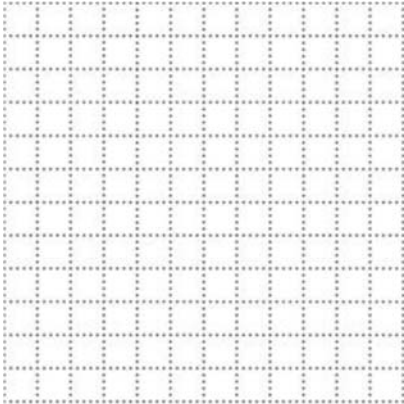
3. The ordered pair you found in problem 4 is called the **solution of the system**. Solve each system of equations given below, by graphing the system of equations on the coordinate plane provided on the left; and by substituting one equation into the other equation on the right.

$$x + 2y = 3$$

$$x = y$$

Graph the system of equations

Use substitution to solve the system



4. A craftswoman sells picture frames for \$60 each. This represents her monthly **revenue** (in dollars). Each month she has \$3500 in **fixed costs**. In addition, the materials for each frame costs \$35. Since these material costs depend on the number of frames made, they are called **variable costs**. **Total monthly costs** equal monthly **fixed costs** plus monthly **variable costs**.
- a. Write two equations (one for monthly **revenue** and one for total monthly **costs**). (Hint let “f” represent the number of frames and “d” represent dollars in each equation.)
- b. Graph **each** of your equations on the coordinate plane below and find the break-even point (i.e., the number of frames where revenue (dollars) equals cost (dollars)).

