

I. Tell whether the ordered pair is a solution of the system of linear equations. (4 pts each)

1.  $(8, 2)$ ;  $x - y = 6$   
 $2x - 10y = 4$

$8 - 2 = 6$        $2(8) - 10(2) = 4$   
 $6 = 6$        $16 - 20 = 4$   
                     $-4 \neq 4$

Not a  
Solution

2.  $(1, -2)$ ;  $2x + y = 0$   
 $-x + 2y = 5$

$2(1) + (-2) = 0$   
 $0 = 0 \checkmark$

Not a  
Solution

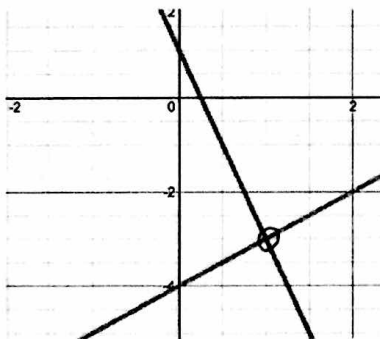
$-1 + 2(-2) = 5$   
 $-1 - 4 = 5$   
 $-5 \neq 5 \times$

II. Use the graph to solve the system of equations. Check your answers. SHOW YOUR WORK!  
(6 pts total for each problem; 4 for problem, 2 for check)

3.  $x - y = 4$   
 $4x + y = 1$

$(1, -3)$

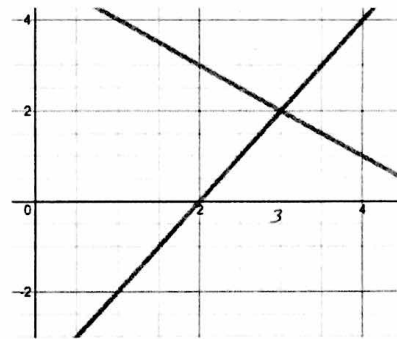
$1 - (-3) = 4 \checkmark$   
 $4(1) + (-3) = 1$   
 $4 - 3 = 1$   
 $1 = 1 \checkmark$



4.  $x + y = 5$   
 $y - 2x = -4$

$(3, 2)$

$3 + 2 = 5$   
 $5 = 5 \checkmark$   
 $2 - 2(3) = -4$   
 $-4 = -4 \checkmark$



III. Solve the system of linear equations by graphing. Check your answer. SHOW YOUR WORK!  
(8 pts total for each problem; 6 for problem, 2 for check)

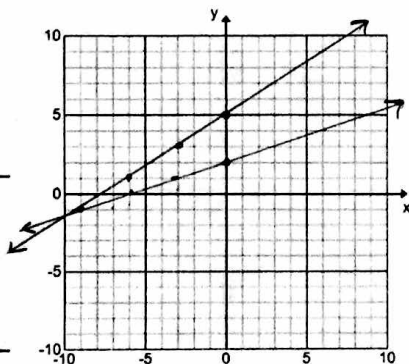
5.  $y = \frac{1}{3}x + 2$

$m = \frac{1}{3}; b = 2$

$y = \frac{2}{3}x + 5$

$m = \frac{2}{3}; b = 5$

$(-9, -1)$



Check your work:

$-1 = \frac{1}{3}(-9) + 2$

$-1 = -3 + 2$

$-1 = -1 \checkmark$

$-1 = \frac{2}{3}(-9) + 5$

$-1 = -6 + 5$

$-1 = -1 \checkmark$

6.  $3y + 4x = 3$

$3y + 4x = 3$

$\frac{3y}{3} = \frac{-4x + 3}{3}$

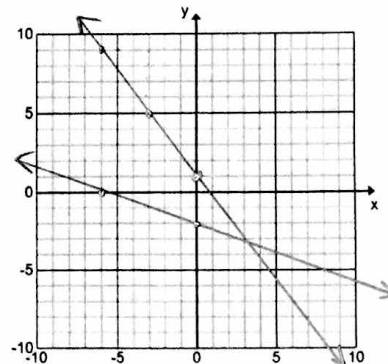
$y = -\frac{4}{3}x + 1$

$x + 3y = -6$

$(0, -2)$

$(-6, 0)$

$(3, -3)$



Check your work:

$3(-3) + 4(3) = 3$

$12 - 9 = 3$

$3 = 3 \checkmark$

$3 + 3(-3) = -6$

$-6 = -6 \checkmark$

## IV. Solve the system of linear equations by substitution. (6 pts each)

7.

$$y = 3x + 14$$

$$y = -4x$$

$$-4x = 3x + 14$$

$$-3x \quad -3x$$

$$-7x = 14$$

$$x = -2$$

$$y = -4(-2)$$

$$y = 8$$

$$\boxed{(-2, 8)}$$

8.

$$x = 6y - 7$$

$$4x + y = -3$$

$$4(6y - 7) + y = -3$$

$$24y - 28 + y = -3$$

$$25y - 28 = -3$$

$$+28 \quad +28$$

$$25y = 25$$

$$y = 1$$

$$x = 6(1) - 7$$

$$x = -1$$

$$\boxed{(-1, 1)}$$

## V. Write a system of linear equations that has the ordered pair as its solution. (13 pts each)

9. A math test is worth 100 points and has 38 problems. Each problem is worth either 5 points or 2 points. How many problems of each point value are on the test?

(1 pt.) Let  $x =$  # of 5 pt. problems (1 pt.) Let  $y =$  # of 2 pt problems

(3 pts) Equation 1:  $x + y = 38$  (3 pts) Equation 2:  $5x + 2y = 100$

(3 pts) Solve:  $x = 38 - y$   $5(38 - y) + 2y = 100$   $x = 38 - 30$   $x = 8$   $(8, 30)$  check  
 $5(8) + 2(30) = 100$   
 $100 = 100$

$$190 - 5y + 2y = 100$$

$$190 - 3y = 100$$

$$-190 \quad -190$$

$$-3y = -90 \quad y = 30$$

(2 pts) Answer: The math test will have eight 5-pt problems and 30 2-pt problems.

10. A company that offers tubing trips down a river rents tubes for a person to use and "cooler" tubes to carry food and water. A one person tube is \$20 and a "cooler" tube is \$12.50. A group spends \$270 to rent a total of 15 tubes. Write a system of linear equations that represents this situation. How many of each type of tube does the group rent?

(1 pt.) Let  $x =$  # of 1 person tubes (1 pt.) Let  $y =$  # of "cooler tubes"

(3 pts) Equation 1:  $20x + 12.50y = 270$  (3 pts) Equation 2:  $x + y = 15$

(3 pts) Solve:  $x = 15 - y$   $20(15 - y) + 12.50y = 270$   $x = 15 - 4 = 11$  check  
 $20(11) + 12.5y = 270$   
 $220 + 50 = 270$   
 $270 = 270$

$$(11, 4)$$

$$300 - 20y + 12.50y = 270$$

$$-300 \quad -300$$

$$-7.5y = -30$$

$$y = 4$$

(2 pts) Answer: The group rented eleven one person tubes and four "cooler" tubes.