Name: _____ Date: _____

Systems of Linear Equations and Inequalities Review!

Part I Questions:

1. Which of the following points is a solution to the system shown below?

$y = x + 7$

$y = 11 - x$

(1) $(5, 12)$ (3) $(1, 10)$

(2) $(2, 9)$ (4) $(-4, 7)$

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2. The system shown below has a solution when $x = 1$. What must be the value of b in the second equation?

(1) 10 (3) 5

(2) 2 (4) 6

① $y = 3x + 5$

② $y = -2x + b$

$y = 3x + 5$
$y = 3(1) + 5$
$y = 3 + 5$
$y = 8$

$y = -2x + b$
$8 = -2(1) + b$
$8 = -2 + b$
$+2 \quad +2$
$10 = b$

3. Which of the following is the x-coordinate of the solution to the system shown below?

$y = 4x + 7$

$x + y = -3$

(1) $x = -5$ (3) $x = 3$

(2) $x = 7$ (4) $x = -2$

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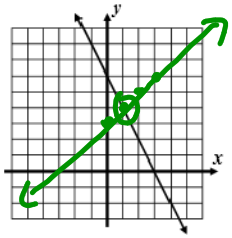
4. The linear equation $y = -2x + 6$ is shown graphed below. If it creates a system with the linear equation $y = x + 3$, which of the following would be the y-coordinate of the solution?

(1) $y = -3$ (3) $y = 8$

(2) $y = -1$ (4) $y = 4$



$y = x + 3$

(1, 4)

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5. The point $(2, 5)$ is a solution to the system of equations $x + 2y = 12$. Which of the following equations would it ***not*** be a solution to?

$3x - y = 1$

(1) $4x + y = 13$ (3) $6x - 2y = 2$

(2) $-2x + 3y = 11$ (4) $2x + 4y = 12$

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6. Which of the following values of x solves the system shown below?

$3x - 2y = -19$

$2x + 2y = -6$

(1) $x = -5$ (3) $x = -3$

(2) $x = 7$ (4) $x = -25$

7. Which value of y below is the solution to the system shown below?

$x + 2y = 27$

$2x + 3y = 46$

(1) $y = 6$ (3) $y = -4$

(2) $y = -1$ (4) $y = 8$

8. The sum of two integers is 23 and the positive difference of the same two integers is 13. What is the product of these two integers?

(1) 90 (3) 46

(2) 75 (4) 299

let x = 1st integer

let y = 2nd integer

$18 + 5 = 23$

$18 \cdot 5 = 90$

① $x + y = 23$ $-x \quad -x$

② $+\ x - y = 13$

$2x = 36$

$y = 23 - x$

$x - y = 13$

$x - (23 - x) = 13$

$x - 23 + x = 13$

$2x - 23 = 13$

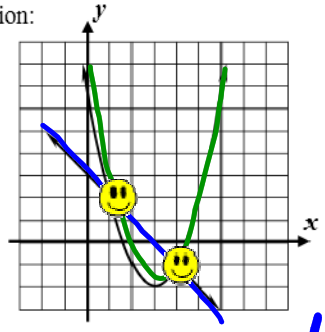
$2x = 36$

9. The line $y = -x + 3$ and parabola $y = x^2 - 6x + 7$ are graphed below. Which of the following represents the solution set (x values in the brackets below) to the equation:

$x^2 - 6x + 7 = -x + 3$

(1) $\{-1, 5\}$ (3) $\{1, 4\}$

(2) $\{-1, 2\}$ (4) $\{0, 4\}$



(1, 2) and (4, -1)

1 and 4

x-values

Free Response Questions:

10. Explain how you can tell that the point $(5, 13)$ is a solution to the system shown below.

$y = 4x - 7$

$2x + y = 23$

11. If the point $(2, 5)$ is a solution to the system of equations shown below, then determine the missing values of b and m. Show how you arrive at your answer.

$y = 3x + b$

$y = mx + 9$

12. Solve the following system of equation using the method of substitution. Show the work that leads to your answer.

$2x + 5y = 6$

$2(-7) + 5y = 6$

$-14 + 5y = 6$

$+14 \quad +14$

$\frac{5y}{5} = \frac{20}{5}$

$y = 4$ ✓

(-7, 4)

① $y = -2x - 10$

② $2x + 5y = 6$

ONE VARIABLE

$2x + 5(-2x - 10) = 6$

$2x - 10x - 50 = 6$

$-8x - 50 = 6$

$+50 \quad +50$

$\frac{-8x}{-8} = \frac{56}{-8}$

$x = -7$

$y = -2x - 10$

$y = -2(-7) - 10$

$y = 14 - 10$

$y = 4$ ✓

13. Would the point $(5, 10)$ lie in the solution set of the system of inequalities shown below? Justify your answer.

$x > 2$

$y \geq 3x - 7$

14. Danny used the method of elimination to solve the system below:

$$4x + 3y = 12$$

$$2x + y = 5$$

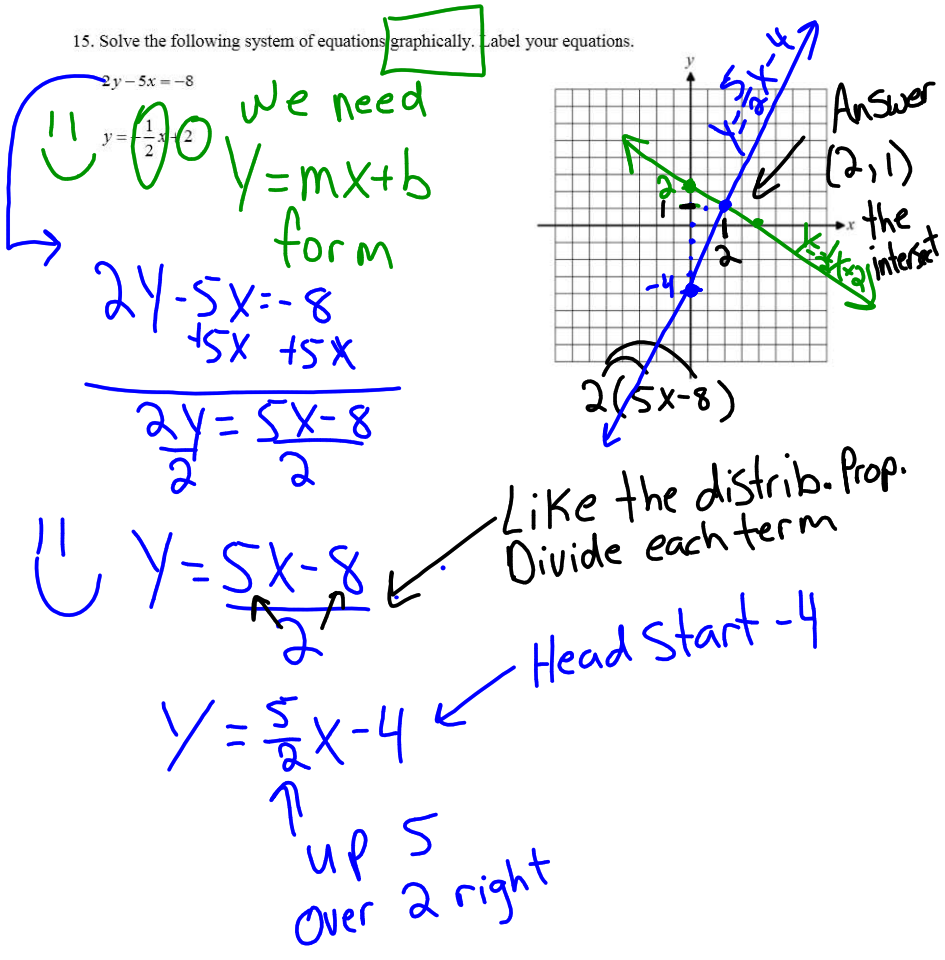
(a) Danny first rewrote the second equation as $-6x - 3y = -15$. Is he allowed to do this? If so, what did he do?

(b) What is the solution to the system?

15. Solve the following system of equations graphically. Label your equations.

$2y - 5x = -8$

$y = -\frac{1}{2}x + 2$



16. Solve the following system by the method of elimination. Make sure to check your answer using your calculator.

$2x + 5y = 5$

$3x + 2y = -9$

17. For a class picnic, two teachers went to the same store to purchase drinks. One teacher purchased 18 juice boxes and 32 bottles of water, and spent \$19.92. The other teacher purchased 14 juice boxes and 26 bottles of water, and spent \$15.76.

Write a system of equations to represent the costs of a juice box, j, and a bottle of water, w.

let x j = the cost of one juice box
let y w = the cost of a bottle of H_2O

① $18j + 32w = 19.92$ ✓
② $14j + 26w = 15.76$ ✗

Kara said that the juice boxes might have cost 52 cents each and that the bottles of water might have cost 33 cents each. Use your system of equations to justify that Kara's prices are *not* possible.