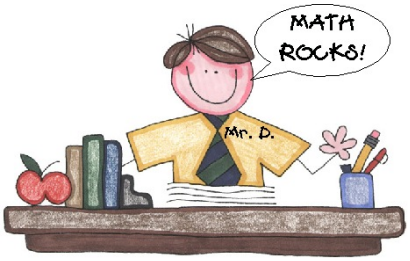
Unit 4 Notes

Systems of Equations



Tentative Schedule

Day	*Date*	*Classwork*	*Assignment*
	Thurs. 10/16 (S) Fri. 10/17 (R)	Test #3	Video #4.1 with Notes – Solving Systems of Equations by Graphing
1	Mon. 10/20 (all)	Problem Set: 1 – 9	Video #4.2/4.3 with Notes – Solving Systems of by Substitution and Elimination
2	Tues. 10/21 (S) Wed. 10/22 (R)	Problem Set: 10 – 29	Video #4.3 with Notes – Applications of Systems of Equations
3	Thurs. 10/23 (all)	**Quiz #4** Problem Set: 30 – 49	Finish Problem Set 30 – 49
4	Tues. 10/28 (all)	Special Cases of Systems of Equations	Complete Unit 4 Problem Sets
5	Wed. 10/29 (S) Thurs. 10/30 (R)	Review for Test #4	Review for Test #4
6	Fri. 10/31 (all)	**Test #4**	

Name: _____

Notes 4.1 – Solving Systems Graphically

1.) Circle all ordered pairs (x,y) that are solutions to the equation $4x - y = 10$.

(3,2) (2,3) (-1,-14) (0,-10) (3,4)

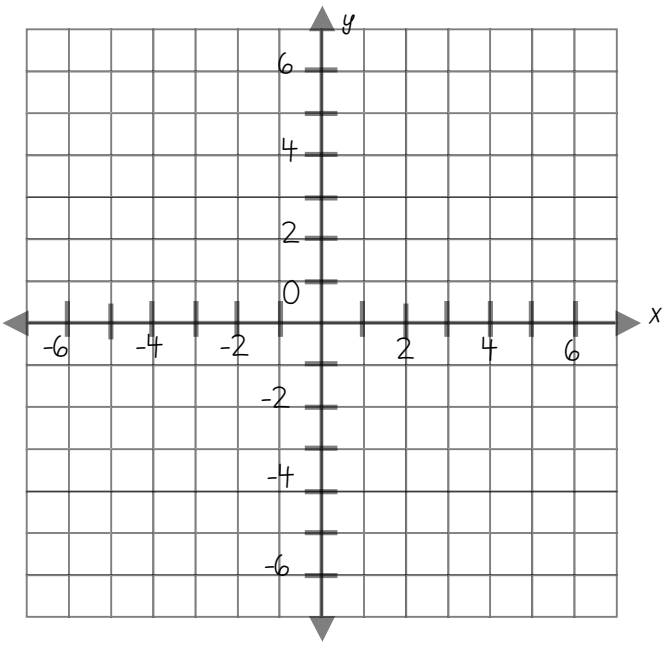
2.) Find another solution to $4x - y = 10$.

3.) How many solutions are there to $4x - y = 10$?

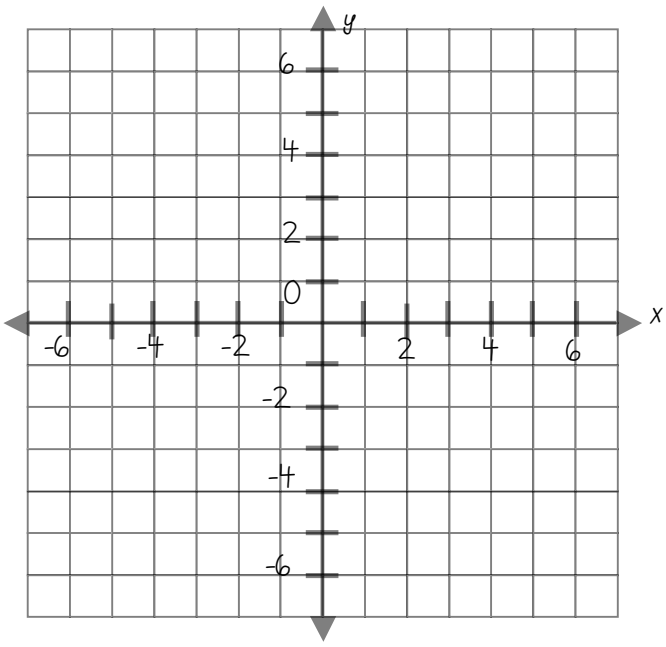
System of Equations: _____

_____

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



5.) $3y + 18 = 6x$
$x - y = 4$



6.) Two cyclists are traveling along a track in the same direction. Their motions are described by the linear equations $d = 10t$ and $d - 8t = 2$, where t hours is the time and d miles is the distance from point A on the track.

a.) Solve the system of linear equations using the graphing calculator.

b.) When will the cyclists meet?

7.) All the employees of a garden center are given a \$0.40 per hour raise each year. You make \$7.15 per hour after three years as an employee. Write a linear equation that models your salary per hour, S, in terms of the number of years, N, you have worked at the garden center. Then find your hourly salary after 6 years.

Notes 4.2 – Solving Systems Using Substitution

Given the following system of equations, solve for x and solve for y.

$3x - 2y = 4$

$x = 2$

Solve the following system of equations.

$y = 3x$

$2x + 5y = 38$

Solve the following system of equations.

$x = 2y + 2$

$4x + 3y = 41$

List of Steps to Solve a System of Equations:

$$3x - 2y = 11$$
$$x + 2y = 9$$

Steps	*Solution*
1.) Isolate a variable in one equation. Look for the easiest variable to isolate!	
2.) ***Substitute*** that into the other equation.	
3.) Now that you only have one variable in the equation, solve it.	
4.) Plug the answer into any equation to find the other variable.	
5.) Write your answer as a coordinate.	
6.) Check the solution in *both* equations.	

Notes 4.3 – Solving Systems Using Elimination

- Just like substitution, we want to end up with an equation with only _____ variable. Using this method, we _____ a variable by _____ the equations.
- Make sure the signs are _____.
- Make sure your variables _____ _____ before you add!

$x + 2y = 8$
$x - 2y = 4$

You are going to work with your partners to determine a possible solution to solving the system of equations above. It does not matter if your answer is right or wrong. What matters it that you **persevere and you take risks**.

$4x + 3y = -1$
$5x + 4y = 1$

You are going to work with your partners to determine a possible solution to solving the system of equations above. It does not matter if your answer is right or wrong. What matters it that you **persevere and you take risks**.

1.) $x + y = 18$
$x + 2y = 25$

2.) $3x - 5y = 3$
$4x + 5y = 4$

3.) $x + y = 14$
$9x - 9y = 36$

4.) $3y = -2x + 5$
$5x + 4y = 16$

5.) At a baseball game, the players consume 193 gallons of water when the temperature is 50°. When the temperature is 60°, they consume 233 gallons of water.

a. Write a linear function to model the relationship between gallons of water consumed and the temperature.

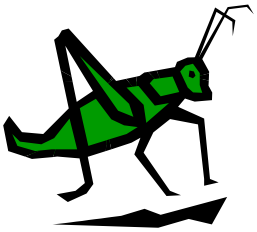
b. Explain the meaning of the slope in the context of the problem

Notes 4.4 – Systems of Equations with Word Problems

Do not forget to write _____ _____!

1.) Alexa purchased 12 pens and 14 notebooks for $20. Hannah bought 7 pens and 4 notebooks for $7.50. Find the price of one pen and the price of one notebook, algebraically.

2.) Tyler has a collection of grasshoppers and crickets. He has 561 insects in all. The number of grasshoppers is twice the number of crickets. Find the number of *each* type of insect that he has.



3.) A total of 600 tickets were sold for a concert. If the tickets sold in advance cost $25 each and the tickets sold at the door cost $32 each, and $16,309 worth of tickets was sold, how many of each type of ticket was sold?

Notes 4.5 – Special Cases of Systems of Equations

Warm-up: Please solve the following equations.

You have learned to find the unique solution to a system of linear equations, when it exists. However, not every system of linear equations has a unique solution.

1.) $3(x+4) = 2x + 17 + x - 5$

2.) $2(x+5) + 3x = 5x + 14$

3.) With your partners, please solve the following system of equations using *substitution*.

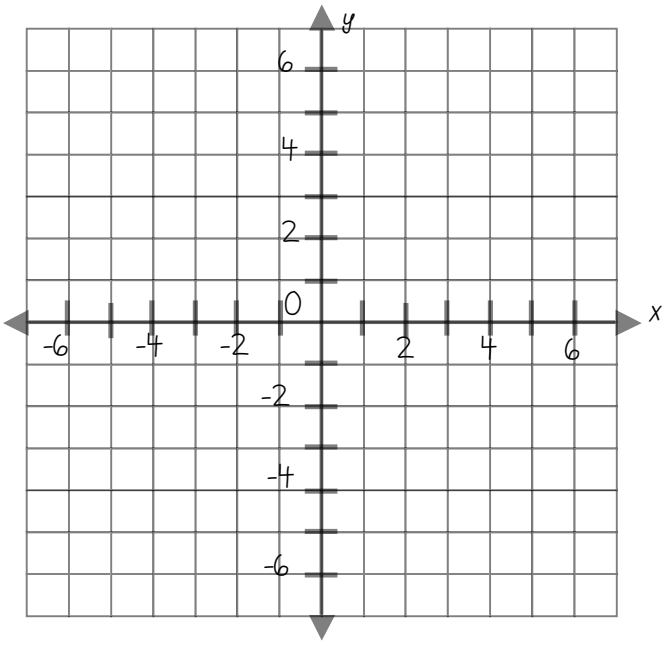
$2x + y = 1$
$4x + 2y = 4$

4.) With your partners, please solve the following system of equations using *elimination.*

$2x + y = 1$
$4x + 2y = 4$

5.) With your partners, please solve the following system of equations by *graphing*.

$2x + y = 1$
$4x + 2y = 4$



6.) What happened when you tried to solve the equation with all three methods?!

7.) With your partners write a **thorough explanation** why this happened algebraically.

_____

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_____

8.) With your partners write a **thorough explanation** why this happened graphically.

_____

_____

_____

_____

9.) With your partners, please solve the following system of equations using *substitution*.

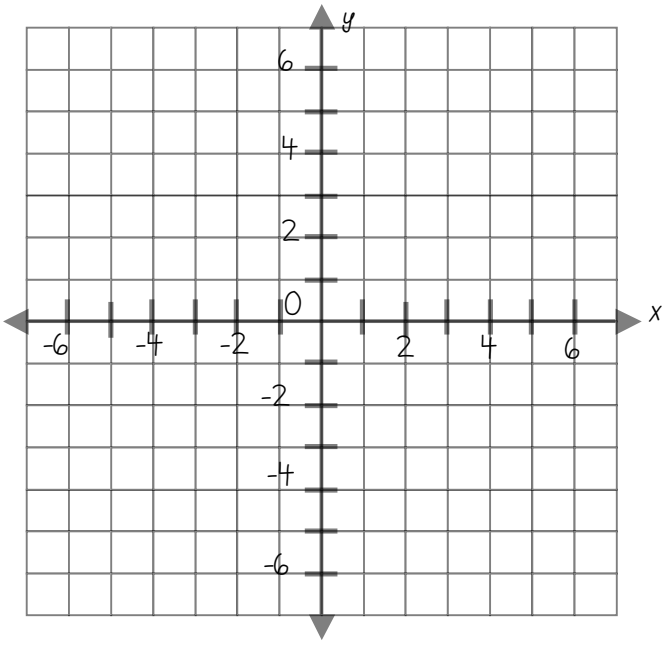
$x + 2y = 2$

$2x + 4y = 4$

10.) With your partners, please solve the following system of equations by *graphing*.

$x + 2y = 2$

$2x + 4y = 4$



11.) With your partners, please solve the following system of equations using *elimination.*

$x + 2y = 2$

$2x + 4y = 4$

12.) What happened when you tried to solve the equation with all three methods?!

13.) With your partners write a **thorough explanation** why this happened with algebraically.

_____

_____

_____

_____

14.) With your partners write a **thorough explanation** why this happened graphically.

_____

_____

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_____

Summary:

- There is no solution when _____

  _____.

  Example:

- There is one unique solution when _____

  _____

  Example:

- There are infinite solutions when _____

  _____.

  Example: