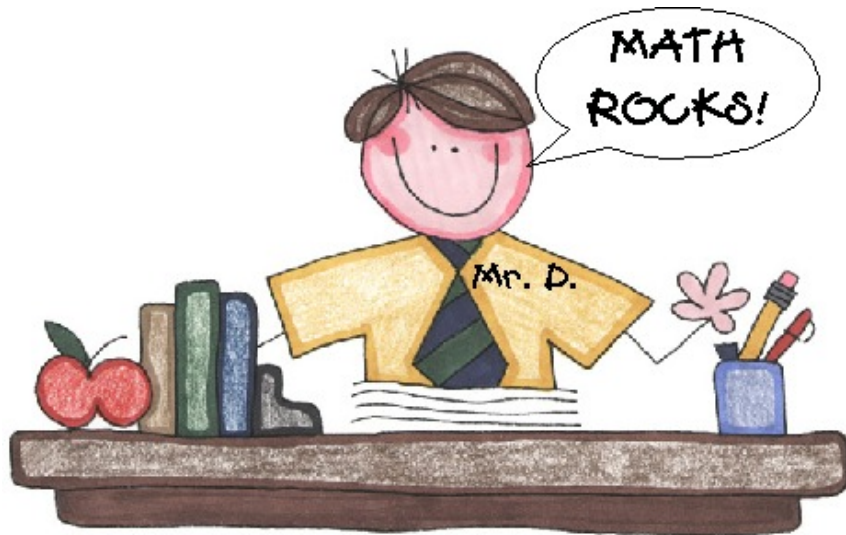


**Unit 5 Notes**  
**Systems of Equations**



**Name:** \_\_\_\_\_

## **Tentative Schedule**

<i>Day</i>	<i>Date</i>	<i>Classwork</i>	<i>Assignment</i>
	Thurs. 12/11	Test #4	Watch Video #5.1 with Notes – Solving Systems of Equations Graphically
1	Fri. 12/12 Mon. 12/15	Introduction to Solving Systems by Substitution	P.S. #5.1
2	Tues. 12/16	Continue Solving Systems by Substitution	Watch Video #5.3 with Notes – Solving Systems of Equations by Substitution
3	Wed. 12/17 Thurs. 12/18	Introduction to Solving Systems by Elimination	Finish P.S. #5.3
4	Fri. 12/19	Continue Solving Systems by Elimination	Finish P.S. #5.4 Watch Video #5.5 – Solving Systems of Equations by Elimination
5	Mon. 1/5 Tues. 1/6	Activity	Finish P.S. #5.5
6	Wed. 1/7	<b>Quiz #5</b>	Video #5.6 – Applications of Systems of Equations
7	Thurs. 1/8 Fri. 1/9	Practice Applications of Systems of Equations	Finish P.S. #5.6
8	Mon. 1/12	Activity Catch-up Day	Catch-up
9	Tues. 1/13 Wed. 1/14	Special Cases of Systems of Equations	P.S. #5.7
10	Thurs. 1/15	Review for Test #5	Review for Test #5
11	Fri. 1/16 Tues. 1/20	Review for Test #5	Review for Test #5
12	Wed. 1/21	<b>Test #5</b>	

### Notes 5.1 - 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  $4x - y = 10$ .

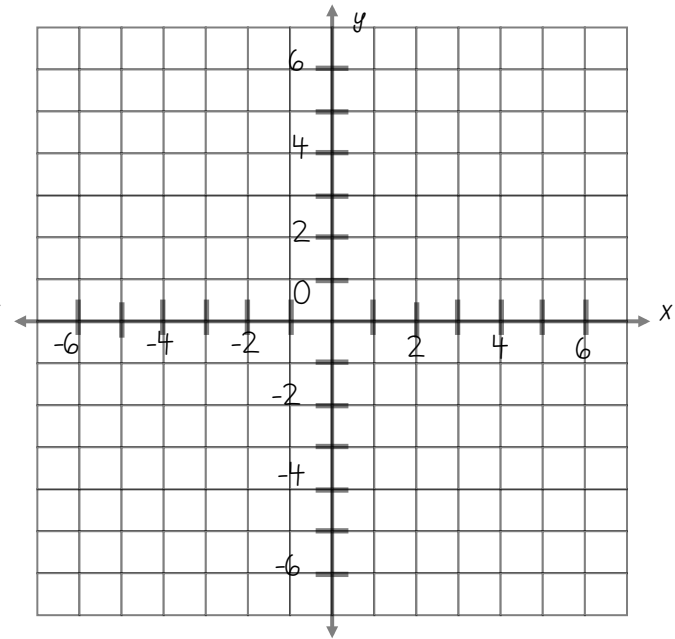
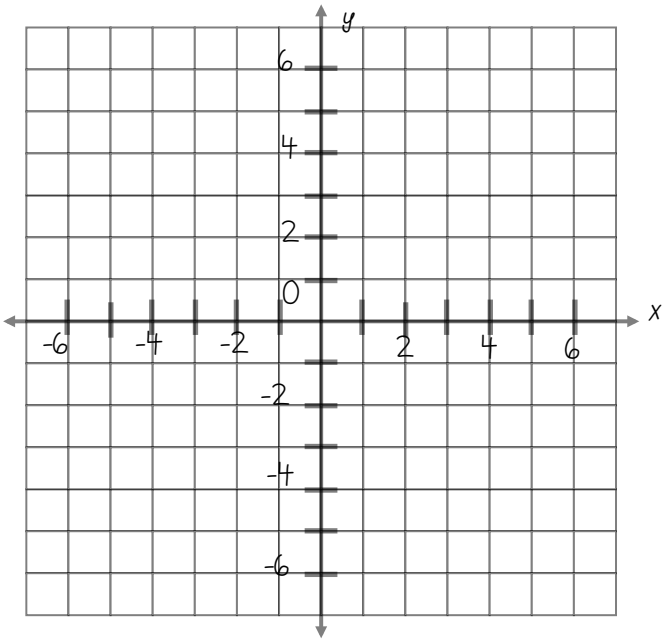
3.) How many solutions are there to  $4x - y = 10$ ?

System of Equations: \_\_\_\_\_

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

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



## Notes 5.2 - Solving Systems Using Substitution Day 1

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

$$3x - 2y = 4$$

$$x = 2$$

Solve the following system of equations.

$$y = 3x$$

$$2x + 5y = 34$$



Solve the following system of equations.

$$x = 2y + 2$$

$$4x + 3y = 41$$

**Notes 5.3 - Solving Systems Using Substitution Day 2**

Solve the following system of equations:

$$-4x + y = 6$$

$$-5x - y = 21$$

List of Steps to Solve a System of Equations by Substitution:

$$3x - 2y = 11$$

$$x + 2y = 9$$

<i>Steps</i>	<i>Solution</i>
1.) Isolate a variable in one equation. Look for the easiest variable to isolate!	
2.) <b>Substitute</b> 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 <i>both</i> equations.	

**Notes 5.4 - Solving Systems Using Elimination Day 1**

- 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.**



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

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

**Notes 5.5 - Solving Systems by Elimination Day 2**

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

$$5x + 4y = 1$$

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

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

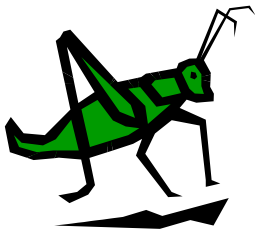
## Notes 5.6 - Applications of Systems of Equations

Do not forget to write \_\_\_\_\_!

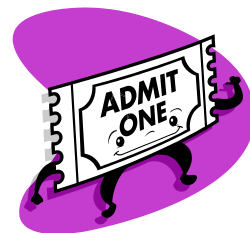
- 1.) Alexa purchased 12 pens and 14 notebooks for \$20. Hannah bought 7 pens and 4 notebooks for \$7.50. Find the price of one pen and the price of one notebook, algebraically.



- 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 5.7 - 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.

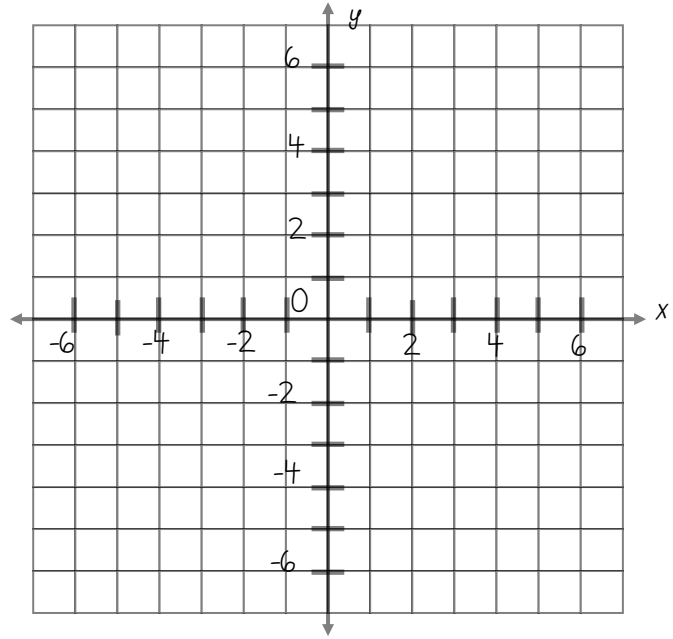
$$2x + y = 1$$

$$4x + 2y = 4$$

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.

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

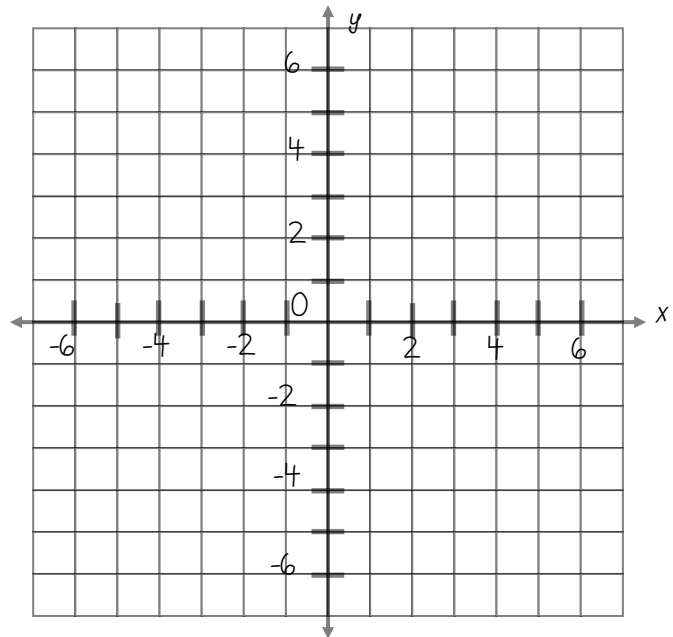
$$x + 2y = 2$$

$$2x + 4y = 4$$

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.

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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: