MFM2PI – *Unit 3: Linear Systems – Lesson 5*  Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Solving Linear Systems by Elimination – Day 1**

1. **What Does “Elimination” Mean?**

In the context of solving linear systems, “elimination” means removing one of the two variables found in the linear equations. That way, we can focus our energy on identifying one variable at a time!

In fact, whether you’re using substitution or elimination, *you can’t solve for both variables at once*! We must always choose one variable to identify first, before solving for the second.

Over the last two days, we’ve been solving using ***substitution***,    
where we ***substitute*** one of the variables in the first equation   
for an equivalent expression from the second equation. 

In that way, we focus on only variable!

Today, we will learn a final way to solve a linear system,  
where we focus on only one variable by eliminating the other   
variable altogether!

1. **Solving a Linear System by Elimination**

Solving a linear system by ***elimination*** is also an ***algebraic method***.  
Like substitution, we will be *manipulating the equations* to find the solution rather than graphing the linear relations.

Let’s learn the process during a worked example.

1. ***Rearrange*** both linear equations so that the terms appear **  
   in the following order: **  
    *Ax + By = C*
2. ***Examine*** the two linear relations.   
   *Question! Is there one variable in both equations  
   that has the same coefficient, but with different signs?   
   If “No!” – go to Step 3!  
   If “Yes!” – go to Step 4!*
3. ***Multiply*** one (or both!) of the linear equations by an integer  
   (either positive **or** negative!) so that there is a variable in  
   both equations that has the same coefficient,  
   but with different signs!  
   *Remember: you must multiply every term in the equation!  
   Once complete, go to Step 4!*
4. ***Add*** the first linear relation to the second linear relation –   
   this will result in the *elimination* of one variable.
5. ***Solve*** for the remaining variable.
6. ***Substitute*** the solved variable back into either equation  
   and ***solve*** for the second variable.
7. ***Write*** a concluding statement.
8. **Practice Makes Perfect!**

*Solve the following linear systems by elimination. Be sure to state your solution.*

1. **  
   **
2. **  
   **
3. *  
   *
4. **

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**HW: *Worksheet – “Unit 3 Lesson 5”***