Solving Systems of Equations

1. Make sure both equations are written in AX + BY = C form
2. Line the equations up.
3. See if you can add or subtract the equations to eliminate one variable.
   - If you subtract, make sure you change all the signs in the equation, not just the first one.
   - If you can't eliminate a variable, you need to multiply one or both of the equations so that you can get coefficients that you can add or subtract to eliminate a variable.
4. Solve the system of equations by adding or subtracting. Find X or Y.
5. Substitute the X or Y you found into the easiest equation to solve for the other variable.
6. Check your answers by substituting both X and Y into one or both of the original equations.
7. If it works, you are correct!

When you add or subtract your equations:

- If your answer seems like the normal ones you have been solving, that is you find an ***ordered pair that works***, the graphs of the equations are ***two intersecting lines***. This type of system of equations is said to be ***consistent and independent***.
- If ***both variables disappear and you get 0=another number,*** this means there is ***no solution***. The ***lines are parallel and they do not intersect***. This type of system is said to be ***inconsistent***.
- If ***both variables disappear and you get 0=0***, this means that the two equations are actually ***the same line*** and there is no specific solution set. There are an ***infinite number of solutions***; any set of values that works in one equation will work in the second equation. This type of system is said to be ***dependent.***