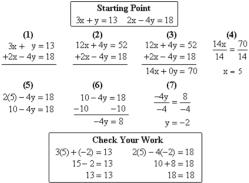
Study Guide

Equations Systems 03/01/2012

Equations: Systems

A <u>system of equations</u> contains at least two equations that may be linear, non-linear, or a combination of the two types. A graphical interpretation of the solution of a system of equations is that point (or points) where the graphs of the equations intersect. One method of finding the solution(s) of a system of equations involves adding the two equations together.

Example 1:



<u>Step 1:</u> Write the equations in a vertical format, aligning the x-terms, y-terms, equal signs, and constant terms.

<u>Step 2:</u> The objective is to add the corresponding parts of the two equations together and eliminate either the x- or y-term. Multiplying each term in the top equation by 4 will create the necessary conditions for eliminating the y-term.

<u>Step 3:</u> Add like terms in the two equations, and notice the resulting y-term will have a coefficient of zero and be eliminated.

<u>Step 4:</u> Solve the resulting equation for x. In this case, that means divide both sides of the equation by 14. This results with x = 5.

<u>Step 5:</u> To solve for y, substitute the value of x (5) in either of the original equations. The second equation was chosen for this example.

Step 6: Subtract 10 from both sides of the equation.

<u>Step 7:</u> Solve the resulting equation for y. In this case, that means divide both sides of the equation by -4. This results with y = -2.

As with all other equations, substitute the values of x and y into the original equations to ensure they are correct solutions.

Both values check out. Therefore, the solution to the system of equations are x = 5 and y = -2. This can be interpreted as the ordered pair (5, -2) of the point of intersection of the graphs of these two equations.