

Algebra 1
Day 15
5/4/20

Standards	<p>A1.AREI.5 Justify that the solution to a system of linear equations is not changed when one of the equations is replaced by a linear combination of the other equation.</p> <p>A1.AREI.6* Solve systems of linear equations algebraically and graphically focusing on pairs of linear equations in two variables. <i>(Note: A1.AREI.6a and 6b are not Graduation Standards.)</i></p> <p>a. Solve systems of linear equations using the substitution method.</p> <p>b. Solve systems of linear equations using linear combination.</p> <p>A1.AREI.10* Explain that the graph of an equation in two variables is the set of all its solutions plotted in the coordinate plane.</p>
Learning Targets/I Can Statements	<ol style="list-style-type: none">1. I can determine the solution to a system of linear equations:<ol style="list-style-type: none">a. Algebraicallyb. Graphicallyc. Using technology2. I can interpret the solution to a system of linear equations.
Essential Question(s)	<ol style="list-style-type: none">1. What does it mean for a system of equations to have:<ol style="list-style-type: none">a. One solution?b. No solution?c. Infinitely many solutions?2. Explain how to determine the solution to a system of equations:<ol style="list-style-type: none">a. Algebraicallyb. Graphicallyc. Using technology

Resources	<ol style="list-style-type: none"> 1. <i>Algebra Success in 20 Minutes a Day</i> (retrieved from the Richland County Public Library Discus site) notes. 2. USA TestPrep
Learning Activities or Experiences	<ol style="list-style-type: none"> 1. Review the attached notes on System of Equations from the <i>Algebra I Success in 20 Minutes a Day</i> (retrieved from the Richland County Public Library Discus Site). 2. Complete the USA TestPrep assignment titled: Algebra I eLearning Day 15

What Is a System of Linear Equations?

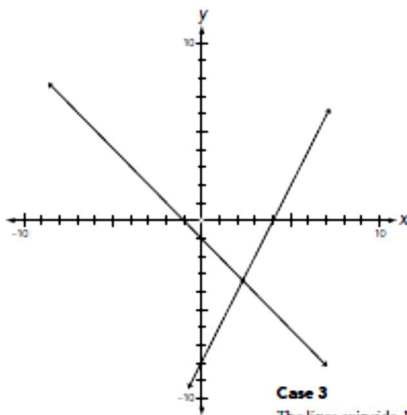
A **system** consists of two or more equations with the same variables. If you have two different variables, you need at least two equations. There are several methods of solving systems of linear equations. In this lesson, you will solve systems of equations graphically. When you graphed linear equations in Lesson 8, the graph, which was a straight line, was a picture of the answers; you had an infinite number of solutions. However, a system of linear equations has more than one equation, so its graph will consist of more than one line. You'll know that you've solved a system of linear equations when you determine the point(s) of intersection of the lines. Since two distinct lines can intersect in only one point, that means such a system of linear equations has one solution. What if the lines don't intersect? When the lines do not intersect, the system has no solutions.

Generally speaking, two distinct lines can intersect in only one point, or they do not intersect at all. However, there is a third possibility: The lines could **coincide**, which means they are the same line. If the lines coincide, there are an infinite number of solutions, since every point on the line is a point of intersection.

The graphs of a linear system would be one of three cases, as shown on pages 85 and 86.

Case 1

The lines intersect in one point. When the lines intersect in one point, you have one solution.



The lines coincide. When the lines coincide, you have an infinite number of solutions.

Case 2

The lines do not intersect. When the lines do not intersect, you have no solutions (\emptyset).

