Systems of Equations Word Problems Part 1   Date:_____

Subject: Pre-Algebra, Algebra I, or Algebra II	**Topic:** Systems of Equations
Grade: 7, 8, or 10	**Designer:** Jessica Ulcickas

Stage 1 – Desired Results

Lesson Overview: This activity explores two different real life scenarios that involve solving systems of equations. The first situation explored involves mixing chemicals to create a new solution while the second situation explored involves cost and revenue for a school bake sale. Exploring these situations allow students to see a real world connection with mathematics. By the end of this lesson, students will have a greater understanding of how modeling a real life situation with two variables can help them to better analyze the circumstances.

Standards Addressed:

CCSS.Math.Content.HSA-CED.A.2 Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.

CCSS.Math.Content.HSA-REI.C.6 Solve systems of linear equations exactly and approximately (e.g., with graphs), focusing on pairs of linear equations in two variables.

Enduring Understanding:	**Essential Questions**:
A system of equations is a set of two or more equations in two or more variables. A linear system of equations is a set of two or more linear equations. Using a linear system of equations, we can model a variety of real life situations. Even though all of the situations appear to be very different, a situation with two unknown variables and one distinct solution can often be modeled using a linear system of equations.	What does the solution of a system of equations represent? How can we relate systems of equations to a real world situation? How can a graph of a system of equations reveal the solution to the system?

Students will need to know:	**Students will be able to**:
At this point, students are expected to understand how to graph a line given in slope-intercept form, how to graph a line using x- and y-intercepts, how to re-arrange a linear equation so it is in slope-intercept form, and how to solve equations containing a single variable. They are also expected to know how to solve a system of equations by graphing.	• Graph two linear equations on the same x-y axes. • Identify the solution of a system of equations after graphing. • Write linear equations to model a real world situation.

Stage 2 – Assessment Evidence

Performance Tasks:	**Other Evidence**:
In this activity: - Asking students to graph two lines on the same x-y axes. - Asking students to identify the solution to a system of equations from a graph. - Asking students to identify or write linear equations from a given situation.	To be decided by the teacher.

Stage 3 – Learning Plan

Lesson Procedure:	Required Materials:
<u>Many Days Before</u>: Students have previously completed a unit on systems of equations. This activity can be used as an end to linear systems of equations in order to help students relate to the topic. <u>Day Of</u>: Students will go to the computer lab in order to complete this activity. For the duration of the activity, the teacher will monitor student progress to ensure that students complete the activity properly and do not simply click to complete. The activity will not take all class period, so the remainder of the class period will be at the discretion of the classroom teacher. This activity may be used in conjunction with Systems of Equations Word Problems Part 2.	- Computers for each student. - Pencil and paper for calculations if necessary.

Possible Discussion Questions for Students:	**Sample Answers to Discussion Questions**:
What do you believe may be another example of a real life situation that would use systems of equations?	Answers will vary here as this will be a difficult question for students to answer immediately. Students may gravitate towards monetary problems such as looking at where profit and cost lines intersect.
Have you ever experienced a situation in your life where you have unknowingly used systems of equations?	Answers may vary based on student experiences.