Unit E - *Linear Systems: Points In Common*

Overview

In this unit students will use previously learned skills in graphing equations and apply them in order to graph systems of equations. Students will also be encouraged to determine the systems of equations that can be determined from different application problems. Interpretation of solutions found, number of solutions found and their meaning in the context of the applied problem.

Students will also solve systems of equations using substitution or elimination. Students should be encouraged to analyze a system before solving it to determine the most efficient method to use to solve the system.

21st Century Capacities: Synthesizing, Product Creation

Stage 1 - Desired Results

ESTABLISHED GOALS/ STANDARDS	
MP4 Model with Mathematics **MP5** Use appropriate tools strategically **MP6** Attend to precision **MP7** Look for and make use of structure A.CED.2 Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales. A.CED.3 Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions as viable or non-viable options in a modeling context.	*Transfer:*
	Students will be able to independently use their learning in new situations to... 1. Demonstrate fluency with math facts, computation and concepts. (synthesizing) 2. Use appropriate strategies to make reaching solutions more efficient, accessible and accurate. 3. Justify reasoning using clear and appropriate mathematical language. (product creation)
	Meaning:
	UNDERSTANDINGS: *Students will understand that:* 1. Effective problem solvers work to make sense of the problem before trying to solve it 2. Linear relationships can have more or less than one solution	ESSENTIAL QUESTIONS: *Students will explore & address these recurring questions:* A. How do we make decisions based on multiple constraints? B. What are the advantages and disadvantages of each method of solving a system of linear equations? C. What does the solution(s) tell me? D. What does the solution(s) mean in the context of

8.EE.8 Analyze and solve pairs of simultaneous linear equations. a. Understand that solutions to a system of two linear equations in two variables correspond to points of intersection of their graphs, because points of intersection satisfy both equations simultaneously. b. Solve systems of two linear equations in two variables algebraically, and estimate solutions by graphing the equations. Solve simple cases by inspection. A.REI.5 Prove that, given a system of two equations in two variables, replacing one equation by the sum of that equation and a multiple of the other produces a system with the same solutions. A.REI.6 Solve systems of linear equations exactly and approximately (e.g., with graphs), focusing on pairs of linear equations in two variables A.REI.11 Explain why the x-coordinates of the points where the graphs of the equations y = f(x) and y = g(x) intersect are the solutions of the equation f(x) = g(x); find the solutions approximately, e.g., using technology to graph the functions, make tables of values, or find successive approximations.		the problem?
	Acquisition:	
	Students will know… 1. How to apply systems of equations to solve problems 2. That a graph represents all the solutions to a system 3. A system of equations may have one, zero or an infinite number of solutions 4. What the solution to a system of linear equations means in the context of the problem 5. How to solve a system of linear equations that represents a real world situation graphically and numerically 6. Vocabulary: system, consistent (independent, dependent), inconsistent,	*Students will be skilled at…* 1. Solving systems of equations by graphing 2. Solving systems of equations by substitution 3. Solving systems of equations by elimination 4. Using a system of equations to model 5. Interpreting a graph