



TEACHER PAGE

Lesson: Graphing System of Equations-Zeno

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New AZ Math Standard 4 Geometry and Measurement

Grades 9-12

Articulated 4MH3-04 Determine the solution to a system of equations in two variables from a given graph.

Learning Objectives: The student will be able to:

- graph lines to determine the solution to a system of equations in two variables and demonstrate the method.
- determine the number of solutions (None, One and Infinitely many) from a graph of a system of equations and explain the reasons.
- determine and explain the coordinates (if they exist) for the solution of a system of equalities.

Overview and Content:

Students will be given a system of linear equalities in two variables. They will draw the graph for each line on the same coordinate graph by a method of their choice. The students will determine the number of solutions and coordinates for the solution(s) of the system. The students will review the concept of graphing lines by the X and y intercepts. Students will review the behavior of parallel lines on the coordinate graphing system in regards to slope and y-intercept.

Engage Students:

Although not the most precise method for finding the solution of a system of equalities in two variables, this process gives the student a visual interpretation of a solution. The emphasis is placed on the number of solutions and that the solution (if it exists) is a unique solution. The students are lead to complete a table of values to develop the linear graphs. The method of graphing by intercepts is also incorporated to aid in the graphing. Extension topics include the concept of the non-linear equations.

Follow-up and Extensions:

The concept of systems of equations is extended to include the solution for systems of lines, quadratics, and circles on a single graph. The students are challenged to draw sample systems to determine the number of solutions. If available, the graphing calculator could supplement this lesson and provide answers to systems with non-integer solutions. SO WHAT! investigates the “neighborhood” for solutions. DIG DEEPER asks for the number of solutions for a given system: line, quadratic or circle. TALK ABOUT IT! suggests checking out solutions with a graphing calculator.

Assessment:

Students must be able to interpret the number of solutions and the coordinates (if they exist) from a graph. They may choose to draw the graphs by completing a table of values, the x-y intercept method, or slope and y-intercept method.

