

Solving Systems by Graphing

You should submit this form in addition to any computer generated files/documents/models to your group folder on Angel. Please create a .zip file and upload the group of files as a single archive.

Name: Sarah Heigl
Grade level(s)/Subject taught: 9 th grade Algebra
Objectives: Students will be able to solve systems of equations by graphing Students will be able to navigate the TI-84 graphing calculator

1. Write the Mathematical Concept or “key idea” that modeling will be used to teach: (e.g. Students use mathematical modeling/ multiple representation to provide a means of presenting, interpreting, communicating, and connecting mathematical information and relationships)

Students will model real-world problems with systems of equations and inequalities Students will apply axiomatic structure to algebra
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and/or...

- 1b. Write the Science Concept or “key idea” that modeling will be used to teach: (e.g. Organisms maintain a dynamic equilibrium that sustains life).

Materials:

Ti-84 calculators

Paper/pencil

Overhead

“...a rich **one-page, single-spaced**, description or a *vision* of your best thinking...”

Prompts:

1. How will you assess the prior knowledge of the student?
2. How will you begin the lesson?
3. What are the teacher and students doing every 5-10 minutes? (Teacher Actions and Student Actions)
4. How will you assess the learning for the lesson?

Using _____ I plan on having my students...
(software / modeling package(s))

As a “Do Now” students will individually write down how we know when two lines are parallel or perpendicular just by looking at the equation. As a class we will go over this.

- Ask students “We’ve been using lots of these, $y=2x+3$, lately right?”
- What have we been solving them for? That’s just one solution?
- How do you suppose we show all the solutions at the same time?
 - o Hint: graphing calc
- Graph the equation that is given on page 269 #1.
 - o The on button is at the bottom left of the calc.
 - o Press the “y=” button on the top left, right under the screen.
 - o If there is anything in the window press the “clear” button for each equation
 - Clear button is under the arrow keys
 - o Type in the equation – only the stuff after y=
 - o Then press the “window” key that is under the window at the top.
 - o Change your settings to -10 and 10 for x and y min. and max.
 - o Then press “graph” in the top right hand corner under the window.
- Each point on this graph is a solution.
 - o Take 2 minutes to write down two solutions to this equation
 - o Is the solution going to be one whole number?
 - No, ordered pair
- When there are two or more linear equations together, they form a “**system of linear equations**”
- ANY POINT THAT ALL THE LINES SHARE IS A “**SOLUTION OF THE SYSTEM**”
- Go to the y= screen
 - o Press the down arrow to highlight Y2
 - o Add in the equation $y = x-1$
- What is the point of this intersection?
- So can 2 straight lines cross at more than one point?
 - o Why or why not?
- Plug in the following equations
 - o $Y = -x + 1$
 - o $Y = -x - 1$
 - o Change the window to min and max of -5 and 5
 - o What do you think about the solution for this graph?
- How do you know where’s no solution?
- What did we learn about parallel and perpendicular lines and their slopes the other day?
What is their relationship?

- What about for example 3 on page 371?
 - o What if you graph these 2 equations?
 - o What do you find?
 - o So how many solutions would we have?
- Do 7a as a group
- Do 7b as pairs (have to get equation in slope-intercept form
- You have time now to do # 1, 2, and 3 on page 272. Tell me one thing you learned (why do we use graphs for solving equations?) and one thing you liked/disliked about the lesson. Turn this in before you leave!

- Homework: page 272 #7 - 10
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Evaluation

- Students will do numbers 1, 2, and 3 on page 272 at the end of the period as an informal evaluation for the teacher to see if students grasp the content of the lesson.
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Closure

- Students will hand in their papers at the end of class.
- They will write on the bottom what they learned and what they liked/disliked from the lesson.

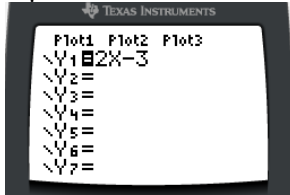
Homework

- Students will complete #7-10 on page 272 of their text book.

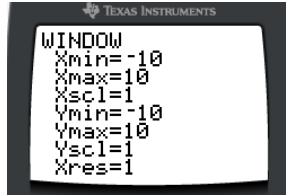
I will start class with a “Do Now” to get the students thinking about the lesson. We will then discuss what parallel and perpendicular lines are and how we know that. We will enter lines into our calculators and discuss how to do so. Entering the equations into the Y= button, and how we know what to put into it. We will also discuss windows and graphs. Students should have prior knowledge with the graphing calculator but this will give them a refresher. As you can see in my lesson plan I have everything written out step-by-step, what teacher is doing and what students are doing.

Notes - Follow Along Page

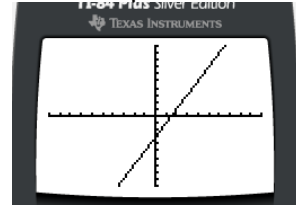
Equation 1



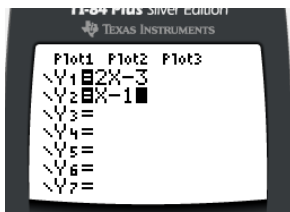
Window 1



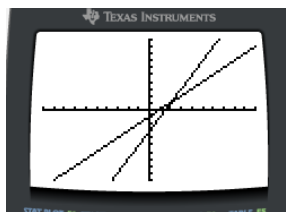
Graph 1



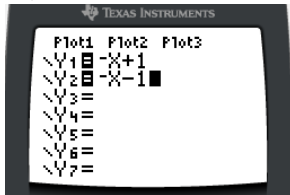
Equation 2



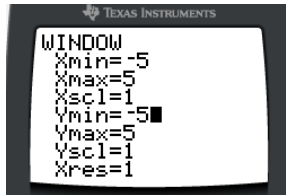
Graph 2



Equations 3 and 4



Window for 3 and 4



Graph for 3 and 4

