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# How to Graph Systems of Linear Inequalities using Graphing Calculator

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# Generic Lesson Plan Template

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: ljeoma B. Okafor
Grade level(s)/Subject taught: 11 <sup>th</sup> Grade Mathematics
Objectives: How do we graph Systems of Linear Inequalities using Graphing Calculator.

Please provide a rich **one-page, single-spaced**, description or a *vision* of your best thinking on a way or ways you might teach the planned lesson. (approximately ½ page for the teacher role, ½ page for the student role). Also, construct a tentative rubric that you might use with your students (see example)

Items to include in your lesson plan: (Choose your discipline/concepts from your own area).

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)*

Key Idea 7: **Pattern and Functions.**

Students use patterns and functions to develop mathematical power, appreciate the true beauty of mathematics, and construct generalizations that describe patterns simply and efficiently.

**Module 9:**Solving Linear Inequalities

- Solving Inequalities in one variable
- Solving Inequalities using tables and graphs.
- Using Relational Operators to Graph Linear Inequalities.

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).*

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Materials:TI-83 or 84 graphing calculator, graph paper, pencil, ruler, and overhead projector or power point presentation.

“...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))

**\*\*Example:** "I was thinking about beginning the class on [modeling X] by using the overhea

**Lesson Plan:**  
**Ijeoma B. Okafor.**

Objective: How do we solve System of Linear Inequalities using Graphing Calculator.

**Prior Knowledge:** Using the Coordinate Plane, graph

$$Y = 3x + 4$$

$Y < 3x + 4$  ( don't forget to use dash lines, since it is less than)

**New Lesson:**

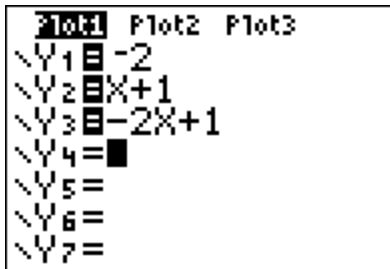
Here are three new Linear Inequalities, and both of the will appear on the same plane, but this time we will use the graphing calculator

$$Y \leq -2x + 1$$

$$Y \leq x + 1$$

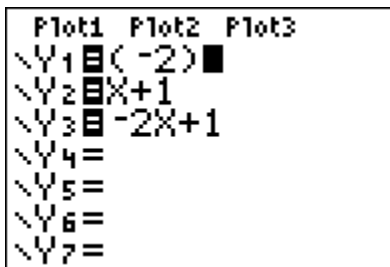
$$Y > -2$$

Step 1: With your calculator on, press  $y =$  on your calculator. If there ia any equation on the screen, clear it.



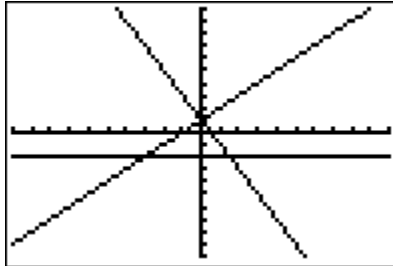
```
Plot1 Plot2 Plot3
\Y1 = -2
\Y2 = X+1
\Y3 = -2X+1
\Y4 =
\Y5 =
\Y6 =
\Y7 =
```

Step 2: Press the Graph button to view the graph. Students should notice that we needed to include ( ) around  $y = -2$ , since it refuse to graph without the parenthesis.



```
Plot1 Plot2 Plot3
\Y1 = (-2)
\Y2 = X+1
\Y3 = -2X+1
\Y4 =
\Y5 =
\Y6 =
\Y7 =
```

Now view the graph without the inequality sign.

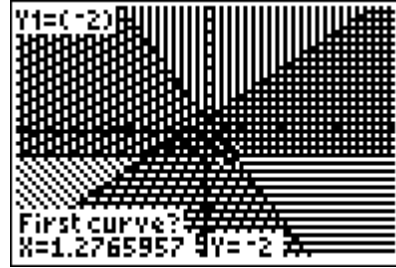
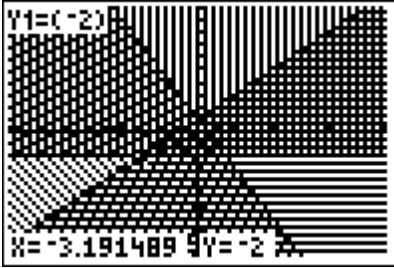


Step three. Go back to the calculator and press the  $y =$  once more. Push the cursor all the way to the left. As soon as it starts to blink, keep pressing until you get to desired inequality sign.



We can also view the table of values by pressing  $2^{nd}$  and then graph.

X	Y <sub>1</sub>	Y <sub>2</sub>
-1	2	0
0	1	0
1	0	0
2	-1	0
3	-2	0
4	-3	0
5	-4	0
6	-5	0
7	-6	0
8	-7	0
9	-8	0
10	-9	0
11	-10	0
12	-11	0
13	-12	0
14	-13	0
15	-14	0
16	-15	0
17	-16	0
18	-17	0
19	-18	0
20	-19	0
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22	-21	0
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42	-41	0
43	-42	0
44	-43	0
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47	-46	0
48	-47	0
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379	-37	



**For Class and Homework Exercises**

1.  $y > -x + 1$   
 $Y \geq 1$

2.  $y \leq 3x + 1$   
 $y < x - 1$

3.  $y \leq 4x + 3$   
 $Y < -x - 3$

4.  $y \geq -2x + 4$   
 $y \leq x + 1$

**RUBRIC**

<b>4</b>	<b>3</b>	<b>2</b>	<b>1</b>
Able to master the Concept fully. Drawing the graph with the calculator and being able to find the solution set. All work is done with the calculator.	Master most of the concept, drawing the graph, but having problem with the solution set.	Can graph, but having problem with the inequality signs, therefore cannot find the shade the solution area with the calculator.	Did not understand the concept at all, cannot graph at all with the calculator.

