TEXAS INSTRUMENTS

Understanding Graphs of Linear Inequalities

Name_____

Course_____

In this activity, you will explore:
- Graphs of linear inequalities
- Open or closed half-plane, boundary

Open the file *LinearInequalities.tns* on your handheld and follow along with your teacher to work through the activity.

Based on the type of inequality, use Problems 2, 3, 4, or 5 in the tns file for exploration.

- *Problem 2 - less than or equal to*
- *Problem 3 – less than*
- *Problem 4 - greater than or equal to*
- *Problem 5 - greater than*

Instructions for exploring the file:
- Press (ctrl) ▸ to advance to the next page in the tns Doc
- Move the cursor to the point labeled with coordinates then (ctrl)(🖰) to drag the point to a different location.
- On a calculator page, use the ▲ to highlight an entry and press(enter) to paste the entry on a new line for editing.

1. Read through the tns file beginning at page 1.1 and stop on page 2.2. Move the point. Describe something that changes.

   _____
   _____

2. For the inequality $y \leq x + 2$, complete a – f below:

	Identify the ordered pair	Is the statement in the lower right hand corner true or false?	Confirm the truth value on the calculator page $(\sqrt{})$	What observations can you make about the point in relation to the shaded area of the graph?
a. Move the point into **Quadrant II**				

	Identify the ordered pair	Is the statement in the lower right hand corner true or false?	Confirm the truth value on the calculator page $(\sqrt{})$	What observations can you make about the point in relation to the shaded region?
b.Move the point into **Quadrant III**				
c.Move the point into **Quadrant IV**				
d.Move the point onto the **boundary** of the half-plane				

e. What is the equation of the boundary line?_____

f. Would you describe the graph as an open or closed half-plane? Why?_____

3. Repeat the process above for the following inequalities:
$y < x + 2$, $y \geq x + 2$, $y > x + 2$

#4-6 Define the following in your own words:

4. open half-plane _____

5. closed half-plane_____

6. boundary of a half-plane_____

7. Sam missed his math class this week. Explain to Sam in your own words how you would graph the linear inequality $y > 3x - 1$ without technology. Be sure and identify the components of the graph using the correct vocabulary.