Exploration: Graphing Inequalities 2

Part I. Introduction

In this exploration you will solve inequalities by addition and subtraction. If any number is added or subtracted from a true inequality, the resulting inequality is also true. Solve each inequality by using addition or subtraction then graph.

Step 1: Launch the Inequalities on the Number Line - 0 applet using Firefox.

Incomplished an the Number Line O	Next Activity Menu	
Inequalities on the Number Line - 0	Back to GeoGebra at Math247	
Type or paste an inequality in x in the box. Hit Enter. You can type <= for ≤ and >= for ≥. Values on the red ray make the inequality "true".		6
Inequality: x>2		8
Other examples: x+3s5, 2x+1>4, 3>=4x/5-11/5	x > 2	
 To change the view, click on the Move tool and then click and drag the number line as desired. 	-9 -8 -7 -6 -3 -4 -3 -2 -1 0 1 2 3 4 5 6 7 8 9	10
An open endpoint means NO "=" in the inequality.		
 Find the value of any point on the red ray. On a piece of paper, substitute this value for x into the inequality. The inequality should be "true". 	Many thanks to math magic and piman and to e.b. LFB, Created with <u>GeoGabra</u> Still testing - please write. <u>Jitternoiss</u>	44
Find the value of any point NOT on the red ray. On a piece of paper, substitute this value for x into the inequality. The inequality should be "false".		
To start over, enter a new inequality and hit Enter.		

Inequality:	x>2

- Notice the inequality input box.
- Enter an inequality and hit the enter/return key
- The equation will be graphed

Step 2: Solve the given inequality then graph.

Step 3: Check your solution and graph using the applet

Example 1:

Subtract 18 from both sides

Solve
$$18 + x \ge 16$$

 -18 -18
 $x \ge -2$

a) Enter the expression into the applet to check

b) The result looks like the graph below:



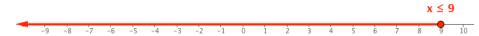
Example 2:

Add 5 to both sides

Solve
$$x-5 \le 4$$

 $+5 +5$
 $x \le 9$

Graph then check in the applet



Example 3:

Subtract 3x from both sides

Solve
$$4x \le 3x - 2$$

 $-3x - 3x$
 $x \le -2$

Graph then check in the applet





Name:		
Class/Block:	Date:	

Part II. Problems

Solve the inequality provided.

Predict the graph. Draw the graph of your prediction on the number line provided.

Check your answer by entering the inequality in the entry box and hitting return. Compare the result to your prediction.

Remember – You can enter the \leq or \geq signs by holding down the option key and the < or > symbol key.

Solv	e the Inequality	Graph the Solution
1)	x - 3 > -2	-9 -8 -7 -6 -5 -4 -3 -2 -1 0 1 2 3 4 5 6 7 8 9 10
2)	$x+5 \leq 8$	-9 -8 -7 -6 -5 -4 -3 -2 -1 0 1 2 3 4 5 6 7 8 9 10
3)	$x-4 \ge 0$	-9 -8 -7 -6 -5 -4 -3 -2 -1 0 1 2 3 4 5 6 7 8 9 10
4)	8 + x < 12	-9 -8 -7 -6 -5 -4 -3 -2 -1 0 1 2 3 4 5 6 7 8 9 10
5)	4x < 3x - 3	-9 -8 -7 -6 -5 -4 -3 -2 -1 0 1 2 3 4 5 6 7 8 9 10
6)	$5x - 2 \ge 4x + 1$	-9 -8 -7 -6 -5 -4 -3 -2 -1 0 1 2 3 4 5 6 7 8 9 10
7)	$2x - 2 \le 3x$	

