

{INCLUDES NOTES!}

5.  $6x + 7$

6.  $2x - 3$

7.  $3 - (2x - 1)$

8.  $-3(x + 2)$

9.  $5x - 2$

10.  $-(3x - 1)$

Name: \_\_\_\_\_ Date: \_\_\_\_\_  
Class: \_\_\_\_\_

Topic: \_\_\_\_\_

Main Ideas/Questions	Notes/Examples
<b>Interval Notation</b>	Interval Notation is another way of expressing an inequality. It uses parentheses and brackets to indicate where the graph starts or ends.
<b>Symbols</b>	$($ Parentheses mean "not included". Use when a graph starts or ends at a point that is not included. $[$ Brackets mean "included". Use when a graph starts or ends at a point that is included. Always use $>$ or $<$ with parentheses and $\geq$ or $\leq$ with brackets.

Directions: Solve, graph, and write the solution to each inequality. SOLVE

1.  $4(x + 3) > -24$

2.  $x - 3(x + 2) > 4$

3.  $7x - 2(x - 4) \leq -2$

4.  $-8(x - 1) - x \leq -28$

### MULTI-STEP INEQUALITY TIC TAC TOE!

$5x + 2 > 3x + 10$ $2x - (5x + 11) \geq 4x + 17$ $2(7x - 1) \geq 3(5 - x)$ $3x - 6 > 4(x - 3)$	$-3(2x + 7) \geq 2x + 19$ $3x - 10 \leq 7(2 + x)$ $3(x - 4) > 15$ $4 - 7(x - 1) \leq 2(x - 8)$	$4x + 49 < 9 - x$ $8 + 2x \leq 6x - 20$ $-4(2x - 6) < x + 6$ $7x - 2(x + 5) < 3x - 16$	$4(1 - 3x) - 14 \geq 4(2x + 3) - 9x$ $-5(x + 4) \geq 3(x - 4)$ $9(3x + 2) + 4 \geq -32$ $9x - 99 \geq 18x$
$x > 4$ Interval Notation: _____	$x < -8$ Interval Notation: _____	$x \leq -1$ Interval Notation: _____	$x > 9$ Interval Notation: _____
$x \leq -4$ Interval Notation: _____	$x \leq -5$ Interval Notation: _____	$x > 2$ Interval Notation: _____	$x \geq 1$ Interval Notation: _____
$x < -3$ Interval Notation: _____	$x \leq -2$ Interval Notation: _____	$x \geq 3$ Interval Notation: _____	$x < 6$ Interval Notation: _____
$x \leq -11$ Interval Notation: _____	$x \geq -2$ Interval Notation: _____	$x \geq 7$ Interval Notation: _____	$x \geq -6$ Interval Notation: _____

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# Multi-Step INEQUALITIES

## TIC-TAC-TOE ACTIVITY



# MULTI-STEP INEQUALITIES

## Notes & Tic-Tac-Toe Activity

**1) Notes on Multi-Step Inequalities** – Notes with directions on interval notation, along with 10 practice problems are provided on how to solve multi-step inequalities. Students also graph their solutions and write their answer in interval notation.

Name: _____		Date: _____	
Topic: _____		Class: _____	
<b>Main Ideas/Questions</b>		<b>Notes/Examples</b>	
<b>Interval Notation</b>		Interval Notation is another way of expressing the answer to an inequality. It uses parentheses and brackets to show where the graph starts and ends.	
<b>Symbols</b>		Parentheses mean "not included", or "open". Use when a graph starts or ends on an <b>OPEN CIRCLE</b> . ○ Brackets mean "included", or "closed". Use when a graph starts or ends on a <b>CLOSED CIRCLE</b> . ●	
Always use _____ with infinity or negative infinity!			
Directions: Solve, graph, and write the solution to each inequality in interval notation.			
<b>SOLVE</b>		<b>GRAPH &amp; INTERVAL NOTATION</b>	
1. $4(x+3) > -24$			Interval Notation: _____
2. $x - 3(x+2) > 4$			Interval Notation: _____
3. $7x - 2(x-4) \leq -2$			Interval Notation: _____
4. $-8(x-1) - x \leq -28$			Interval Notation: _____

5. $6x + 1 < 9 - 2x$		Interval Notation: _____
6. $2x - 1 \leq 5x + 20$		Interval Notation: _____
7. $3 - (2x-7) \geq 34 - 6x$		Interval Notation: _____
8. $-3(x+2) - 3x < 2x + 18$		Interval Notation: _____
9. $5x - 3(x-6) \geq 8 - (x-7)$		Interval Notation: _____
10. $-(3x+3) - 2x > -4(x-2) - 2$		Interval Notation: _____

**2) Tic-Tac-Toe Activity** – Students are given the board below and asked to take out of sheet of paper to show work. They are paired up with another student. They must decide who will be X and who will be O. Each partner picks a problem, writes it down on their paper, and solves it. Then, they look for their solution on the board. They must graph and write the answer in interval notation, then place their X or O in the box. They win if they get 4 in a row, column, or diagonal.

<b>MULTI-STEP INEQUALITY TIC TAC TOE!</b>			
$5x + 2 > 3x + 10$	$-3(2x + 7) \geq 2x + 19$	$4x + 49 < 9 - x$	$4(1 - 3x) - 14 \geq 4(2x + 3) - 9x$
$2x - (5x + 11) \geq 4x + 17$	$3x - 10 \leq 7(2 + x)$	$8 + 2x \leq 6x - 20$	$-5(x + 4) \geq 3(x - 4)$
$2(7x - 1) \geq 3(5 - x)$	$3(x - 4) > 15$	$-4(2x - 6) < x + 6$	$9(3x + 2) + 4 \geq -32$
$3x - 6 > 4(x - 3)$	$4 - 7(x - 1) \leq 2(x - 8)$	$7x - 2(x + 5) < 3x - 16$	$9x - 99 \geq 18x$
$x > 4$	$x < -8$	$x \leq -1$	$x > 9$
Interval Notation: _____	Interval Notation: _____	Interval Notation: _____	Interval Notation: _____
$x \leq -4$	$x \leq -5$	$x > 2$	$x \geq 1$
Interval Notation: _____	Interval Notation: _____	Interval Notation: _____	Interval Notation: _____
$x < -3$	$x \leq -2$	$x \geq 3$	$x < 6$
Interval Notation: _____	Interval Notation: _____	Interval Notation: _____	Interval Notation: _____
$x \leq -11$	$x \geq -2$	$x \geq 7$	$x \geq -6$
Interval Notation: _____	Interval Notation: _____	Interval Notation: _____	Interval Notation: _____