

Lesson 1.5 Warm Up (Clickers)

1. What number system does 0.35 belong to?
2. Solve for x: $3(2x - 4) = 6x + 12$
3. Evaluate: $5x - 2y$ for $x = -1$ and $y = -2$

Lesson 1.5 Solving Inequalities

Essential Understanding: Just as you use properties of equality to solve equations, you can use properties of inequality to solve inequalities.

Key Concept Writing and Graphing Inequalities		
Inequality	Word Sentence	Graph
$x > 4$	x is greater than 4.	
$x \geq 4$	x is greater than or equal to 4.	
$x < 4$	x is less than 4.	
$x \leq 4$	x is less than or equal to 4.	

Remember from algebra 1, an open circle means the data point is NOT included as a solution while a closed circle means that it IS included as a solution.

Also, remember that when you multiply or divide by a negative while solving, you need to switch the inequality sign.

Ex. What inequality represents the sentence, "5 fewer than a number is at least 12"?

- 1 What inequality represents the sentence, "The quotient of a number and 3 is no more than 15."?

Ex. What is the solution of $-3(2x - 5) + 1 \geq 4$?

Graph the solution

2 What is the solution of $-2(x + 9) + 5 \geq 3$?

Ex. A movie rental company offers two subscription plans. You can pay \$36 a month and rent as many movies as desired, or you can pay \$15 a month and \$1.50 to rent each movie. How many movies must you rent in a month for the first plan to cost less than the second plan?

Ex. A digital music service offers two subscription plans. The first has a \$9 membership fee and charges \$1 per download. The second has a \$25 membership fee and charges \$.50 per download. How many songs must you download for the second plan to cost less than the first plan?

Ex. Is the inequality always, sometimes, or never true?

a. $-2(3x + 1) > -6x + 7$

b. $5(2x - 3) - 7x \leq 3x + 8$

3 Is $4(2x - 3) < 8(x + 1)$ always, sometimes, or never true.

A always

B sometimes

C never

You can join two inequalities with the word and or the word or to form a compound inequality. To solve a compound inequality containing and, find all values of the variable that make both inequalities true.

Ex. What is the solution of $7 < 2x + 1$ and $3x \leq 18$
Graph the solution.

Ex. What is the solution of $5 \leq 3x - 1$ and $2x < 12$? Graph the solution.

To solve a compound inequality containing or, find all values of the variable that make at least one of the inequalities true.

Ex. What is the solution of $7 + k \geq 6$ or $8 + k < 3$?
Graph the solution.

Ex. Solve $7w + 3 > 11$ or $4w - 1 < -13$. Graph the solution.

4 Solve: $16 < 5x + 1$ or $3x + 9 < 6$