Algebra 1 5.3 ≤ ≥ *MS grade standard

Solve multi-step linear inequalities*

Use the distributive property to solve linear inequalities*

Do → GeMA

order of operations

distributive property ← undo

inequality

empty set

all real numbers

Whiteboards

Triangle puzzle

X >

Quiz 5.1-5.2

What are steps to solve a multi-step EQUATION?

$$2x + 5 = 11$$
$$-5 \quad -5$$
$$\frac{2x}{2} = \frac{6}{2}$$
$$x = 3$$

$$-2x + 5 > 11$$
$$-5 \quad -5$$
$$\frac{-2x}{-2} > \frac{6}{-2}$$
$$x < -3$$

What would you do to solve an equation?

Example 2 Inequality Involving a Negative Coefficient

Solve $-11y - 13 > 42$. Graph the solution on a number line.

$+13 \quad +13$

$\frac{-11y}{-11} > \frac{55}{-11}$

$y < -5$



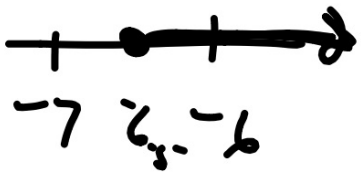
2A. $23 \geq 10 - 2w$

$-10 \quad -10$

$\frac{13}{-2} \geq \frac{-2w}{-2}$

$-6.5 \leq w$

$w \geq -6.5$



2B. $43 > -4y + 11$

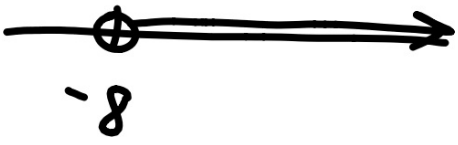
$-11 \quad -11$

$32 > -4y$

$\frac{}{-4} \quad \frac{}{-4}$

$-8 < y$

$y > -8$



Triangle puzzle

Example 3 Write and Solve an Inequality

Define a variable, write an inequality, and solve the problem.

Five minus 6 times a number is more than four times the number plus 45.

GuidedPractice

3. *Two more than half of a number is greater than twenty-seven.*

Example 4 Distributive Property

Solve $4(3t - 5) + 7 \geq 8t + 3$. Graph the solution on a number line.

4A. $6(5z - 3) \leq 36z$

4B. $2(h + 6) > -3(8 - h)$

What does it look like when there is no solution to an equation?

What does it look like when the solution is all real numbers?

Example 5 Empty Set and All Reals

Solve each inequality. Check your solution.

a. $9t - 5(t - 5) \leq 4(t - 3)$

b. $3(4m + 6) \leq 42 + 6(2m - 4)$

Solve each inequality. Check your solution.

5A. $18 - 3(8c + 4) \geq -6(4c - 1)$

5B. $46 \leq 8m - 4(2m + 5)$