Algebra 1 5.3 *7th grade standard

Solve multi-step linear inequalities* ✓ 2+

Use the distributive property to solve linear inequalities*

order of operations
distributive property
inequality
empty set
all real numbers
Whiteboards
Triangle puzzle

GuidedPractice

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

$$2 + \frac{1}{2}n > 27$$
$$-2 \qquad -2$$
$$\frac{1}{2}n > 25$$
$$\frac{\frac{1}{2}n}{\frac{1}{2}} > \frac{25}{\frac{1}{2}}$$
$$n > 50$$

Example 4 Distributive Property

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

$12t - 20 + 7 \geq 8t + 3$

$12t - 13 \geq 8t + 3$

$-8t \quad +13 \quad -8t + 13$

$\frac{4t}{4} \geq \frac{16}{4} \quad t \geq 4$



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

$$30z - 18 \leq 36z$$
$$-30z \qquad -30z$$
$$-18 \leq 6z$$
$$\frac{-18}{6} \leq \frac{6z}{6}$$
$$-3 \leq z$$
$$z \geq -3$$

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

$2h + 12 > -24 + 3h$

$-2h \qquad\qquad -2h$

$12 > -24 + h$

$+24 \quad +24$

$36 > h$

$h < 36$

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?

$$n + 3 = n$$
$$-n \qquad -n$$
$$3 = 0$$

NS

$$3n + 1 > 3n + 5$$
$$3n \qquad -3n$$
$$1 > 5$$

NS

$$2x + 4 = 2(x + 2)$$
$$2x + 4 = 2x + 4$$
$$-2x \qquad -2x$$
$$4 = 4$$

all numbers

$$3(x + 1) < 3x + 5$$
$$3x + 3 < 3x + 5$$
$$-3x \qquad -3x$$
$$3 < 5$$

all numbers

Example 5 Empty Set and All Reals

Solve each inequality. Check your solution.

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

$9t - 5t + 25 \leq 4t - 12$

$4t + 25 \leq 4t - 12$

$-4t \qquad -4t$

$25 \leq -12$

NS

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

$12m + 18 \leq 42 + 12m - 24$

$-12m \qquad\qquad -12m$

$18 \leq 42 - 24$

$24 \qquad\qquad +24$

$42 \leq 42$

T: all numbers

Solve each inequality. Check your solution.

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

$18 - 24c + 12 \geq -24c + 6$

$+24c \qquad +24c$

$18 + 12 \geq 6$

$-18 \qquad -18$

$-12 \geq -12$

T: all

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

$46 \leq 8m - 8m + -20$

$+20 \qquad +20$

$66 \leq 0$

F = NS