

* 8th grade standard

Algebra 1 5.1

Solve linear inequalities by using addition*

Solve linear inequalities by using subtraction*

inequality	$<$	$>$	open
set builder notation	$\leq$	$\geq$	closed
addition property	+	+	(fill in)
subtraction property			
whiteboards			
triangle puzzles			

set-builder notation.

ReadingMath

set-builder notation

$\{x \mid x \geq 20\}$ is read *the set of all numbers x such that x is greater than or equal to 20.*

$x \geq 20$
 $\{x \mid x \geq 20\}$

$x =$
 $x >$

The dot at 20 shows that 20 is included in the graph.

The heavy arrow pointing to the right shows that the graph includes all numbers greater than 20.



Whiteboards

Guided Practice

2. Solve $p + 8 \leq 18$.

$$\begin{array}{r} -8 \quad -8 \\ p + 8 \leq 18 \\ \hline p \leq 10 \end{array}$$

11

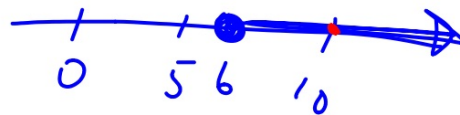
$$\begin{array}{l} 0 + 8 \leq 18 \\ 8 \leq 18 \end{array}$$



Example 3 Variables on Each Side

Solve $\underline{3a} + 6 \leq \underline{4a}$. Then graph the solution set on a number line.

$$\begin{array}{r} -3a \quad -3a \\ \hline 6 \leq a \\ a \geq 6 \end{array}$$



$$\begin{array}{l} 3 \cdot 10 + 6 \leq 4 \cdot 10 \\ \text{" } 30 + 6 \leq 40 \\ 36 \leq 40 \end{array}$$

Whiteboards

Guided Practice

Solve each inequality. Then graph it.

3A. $9n - 1 < 10n$
 $-9n \quad -9n$

$$-1 < n$$

$$n > -1$$

$$9 \cdot 9 - 1 < 10 \cdot 9$$

$$\text{" } 81 - 1 < 90$$

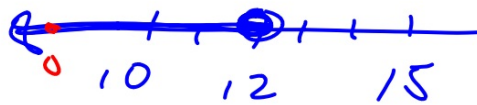
$$80 < 90$$

$$\begin{array}{r} 9n - 1 < 10n \\ -10n \quad -10n \\ \hline -n - 1 < \end{array}$$



$$3B. \begin{array}{r} 5h \leq 12 + 4h \\ -4h \quad -4h \end{array}$$

$$h \leq 12$$



$$5 \cdot 0 \leq 12 + 4 \cdot 0$$

∴ $0 \leq 12 + 0$
 $0 \leq 12$

triangle puzzle (if time)

What are the 3 options?

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ConceptSummary Phrases for Inequalities			
<	>	≤	≥
less than fewer than	greater than more than	at most, no more than, less than or equal to	at least, no less than, greater than or equal to

Real-World Example 4 Use an Inequality to Solve a Problem

PETS Felipe needs for the temperature of his leopard gecko's basking spot to be at least 82°F . Currently the basking spot is 62.5°F . How much warmer does the basking spot need to be?



Real-WorldLink

Leopard geckos are commonly yellow and white with black spots. They are nocturnal and easy to tame. They do not have toe pads like other geckos, so they do not climb.

Source: Exotic Pets