

Two-Step Linear Inequalities

Notes	Video Links & Practice Space
Vocabulary 1. Addition Property of Inequality: if _____, then $a + c > b + c$ 2. Asymmetric Property of Inequality: if $a > b$, then _____ 3. Division Property of Inequality: if $a > b$ and $c > 0$, then _____; if $a > b$ and $c < 0$, then _____ 4. Linear Expression: a polynomial expression that contains a term of degree _____, but no term of higher degree 5. Linear Inequality: _____ linear expressions compared using _____ symbols 6. Multiplication Property of Inequality: if _____ and $c > 0$, then $a \cdot c > b \cdot c$; if $a > b$ and _____, then $a \cdot c < b \cdot c$ 7. Subtraction Property of Inequality: if $a > b$, then $a - c > \underline{\hspace{2cm}}$	Vocab (1:57)

Steps to Solve Two-Step Inequalities

Inequality Symbol	Meaning
$>$	
$<$	
$\geq$	
$\leq$	

Step 1: Isolate the variable term using inverse operations of _____ or _____

Step 2: Solve for the variable using inverse operations of _____ or _____

*Note: If dividing or multiplying both sides of inequality by a _____ value, reverse the inequality _____

Step 3: Check the answer using _____

[Steps \(1:10\)](#)

Practice Problems

$$3x + 4 > 10$$

$$-2x - 5 < 15$$

[Practice \(2:23\)](#)

Solve with Fractions

Important: To convert to an improper fraction, you're going to multiply the _____ times the whole number and then _____ the numerator to get the number on top.

Remember: instead of dividing by a fraction, we are going to _____ by the reciprocal, which is a _____ fraction.

$$\frac{2}{3}x - 3 \leq \frac{2}{5}$$

$$\frac{-3}{4}x + 2 \geq \frac{2}{7}$$

[Fractions \(4:54\)](#)

Solve with Decimals

$$0.5x - 4 > 10.5$$

$$14.09 < -2.3x + 4.2$$

[Decimals](#)

Graphing Two-Step Linear Inequalities

The solutions can be graphed on a number line.
An _____ circle represents $<$ or $>$ while a _____ circle represents $\leq$ or $\geq$.

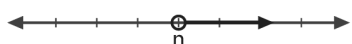
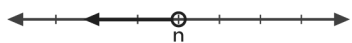
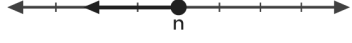
Step 1: Plot an open or closed circle at the _____ (Ex: $x > 5$, _____ would be the constant)

Step 2: From the point, draw an arrow that points in the _____ of the values that make the inequality true

Right: _____

Left: _____

[Graphing \(1:03\)](#)

Symbol	Meaning	Number Line
$x > n$	greater than	
$x < n$	less than	
$x \geq n$	greater than or equal to	
$x \leq n$	less than or equal to	

Practice Problems

$$x > 5$$

$$x \leq -2$$

[Practice \(1:34\)](#)

Practice Problem

Solve and graph the solution.

$$-3x + 5 \geq 23$$

[Practice 2 \(1:51\)](#)