

Inequalities

A-CED.3

Agenda

Homework:

- Inequalities:
Algebraic WS
- AM

Materials:

- Notebook
- Calculator (if needed)

DO NOW

- 1) Take out homework
- 2) Inequalities
Graphing Do Now
Worksheet

Homework Review



Set up CN

- **Topic:** Solving Inequalities Algebraically
- **EQ:** How do you algebraically solve an inequality given a system of equations?

How do you solve an inequality algebraically?



- Use inverse operations the SAME as you would when solving equations

EXCEPT

- If MULTIPLYING/ DIVIDING both sides by a NEGATIVE number, then you need to REVERSE the inequality sign

$$\begin{array}{r} 3x - 7 < 5x + 13 \\ -5x \quad -5x \\ \hline -2x - 7 < 13 \\ + 7 \quad + 7 \\ \hline -2x < 20 \\ -2 \quad -2 \\ \hline x > -10 \end{array}$$





Find all values of x where $f(x) < g(x)$

$$f(x) = 2x - 5$$

$$g(x) = -\frac{3}{4}x + 6$$

$$\begin{array}{rcl} x^4 & & x^4 \\ 2x - 5 & < & -\frac{3}{4}x + 6 \\ 8x - 20 & < & \textcircled{-3x} + 24 \\ +3x & & +3x \end{array}$$

$$\begin{array}{rcl} 11x - 20 & < & 24 \\ + 20 & & + 20 \end{array}$$

$$\frac{11x}{11} < \frac{44}{11}$$

$$\{ x : x < 4 \}$$

1. Get rid of fractions by multiplying by the least common denominator
2. Move all variable terms to one side (preferably the left) by getting rid of it on one side
3. Solve the 2-step equation
4. Write your answer in Set Notation

Group Work

- [Worksheet](#)

Discussion Questions

- What did you learn today? OR What are some important things to remember about solving algebraically?
- What do you still need to work on (solving inequalities)?
- Which method do you prefer? Graphing or Algebraic? *Explain*.

MINI QUIZ

- For what values of x is $f(x) < g(x)$? Write your answer in set notation.

$$f(x) = \frac{1}{2}x + 4$$

$$g(x) = -\frac{3}{2}x - 8$$