Name _____ Pd 5/6 Date October 30, 2017 **Section 1.D.4**

Two-Step Inequalities

- We are still using inverse operations to isolate the variable.
- We have to UNDO what is being done to the variable.

Ex. 1

$-2x - 5 < 3$

$+5 \quad +5$

$\frac{-2x}{-2} < \frac{8}{-2}$

$x > -4$

Words

The variable is being MULTIPLIED by −2, and then SUBTRACT 5 from that product.

We need to UNDO so we work **backwards**. FIRST we ADD 5 (to undo subtraction −5).

THEN we DIVDE by −2 (to undo 2 times x).

Since we divide by a negative #, we reverse the symbol!

Ex. 2

$-5n + 3 > -7$

$-3 \quad -3$

$\frac{-5n}{-5} > \frac{-10}{-5}$

$n < 2$

Ex. 3

$\frac{y}{3} - 6 \leq -4$

$+6 \quad +6$

$\frac{y}{3} \leq 2$

$y \leq 6$

You Try 4

$6h - 1 < 11$

$+1 \quad +1$

$\frac{6h}{6} < \frac{12}{6}$

$h < 2$

You Try 5

$-\frac{k}{5} + 7 \geq 6$

$-7 \quad -7$

$\frac{-k}{-5} \geq -1$

$k \leq 5$

Key Ideas

- First, add or subtract to get rid of constant terms.
- Then, multiply or divide to make the coefficient be 1.
- REVERSE THE SYMBOL if you multiply or divide by a negative number!

2-Step Inequality Word Problems

Read the problem. Identify:	Write the inequality. Solve:	Answer the question.
• inequality symbol words/phrases • math operation words	• Add or subtract. • Divide or multiply. • Reverse/keep symbol!	• Round up or down BASED ON SYMBOL. • Use units.

Ex. 6

An airplane is at 10,000 feet when it starts to descend. It descends at a rate of 600 feet per minute. The wheels drop when the plane is at most 1,200 feet. After how many minutes would you expect the wheels to drop?

$-600m + 10{,}000 \leq 1200$

$-10{,}000 \quad -10{,}000$

$\frac{-600m}{-600} \leq \frac{-8800}{-600}$

$m \geq 14.6$

15

m: minutes

$10{,}000 - 600m \leq 1200$

After at least 15 min wheels drop.

Ex. 7

Triniti had $500 in her bank account at the beginning of the summer. She wants to have no less than $200 in the account by the end of the summer. She withdraws $18 each week for expenses. How many weeks, *w*, can Trinity withdraw this much from her account?

$200 \leq 500 - 18w$

$-500 \quad -500$

$\frac{-300}{-18} \leq \frac{-18w}{-18}$

$16.\overline{6} \geq w$

round down

Trinity can withdraw for no more than 16 weeks.

You Try 8

StuCo is considering planning a fundraising event at a banquet hall, which costs $700 to rent. If they charge $15 per ticket, how many tickets, *t*, do they need to sell in order to raise a minimum of $1000?

Round

$-700 + 15t \geq 1000$

$+700 \quad +700$

$\frac{15t}{15} \geq \frac{1700}{15}$

$t \geq 113.\overline{3}$

StuCo must sell a minimum of 114 tickets