

Name: _____

Lesson SE4: Supplement



Class: _____

☠ *Note: Give this supplement when the exercise below is about to begin.* ☠

Solving Inequalities

- Follow steps to solve an equation.
- Equations have 1 or a few solutions, inequalities have a range of solutions.
- The solutions are always in simplest form.

Example: We will look at the equation $3x - 2 = 10$ and inequality $3x - 2 > 10$.

$3x - 2 = 10$ +2 +2	Step 1: Add 2 to <u>all</u> sides	$3x - 2 > 10$ +2 +2
$\frac{3x}{3} = \frac{12}{3}$	Step 2: Divide <u>all</u> sides by 3	$\frac{3x}{3} > \frac{12}{3}$
$x = 4$	Result: 1 Solution vs. Infinite Solutions	$x > 4$

Sign Change Ex.	
$-2x + 5 \leq 21$	
-5 -5	
$\frac{-2x}{-2} \leq \frac{16}{-2}$	
Sign → -2 -2	
Change → x ≥ -8	

★**Special Condition:** When solving an inequality, if you **MULTIPLY** or **DIVIDE** by a **NEGATIVE** value then you must **REVERSE** the inequality symbol.

1. $2(4 - 3x) > 38$

2. $2x + 8 \leq 5x - 10$

Practice

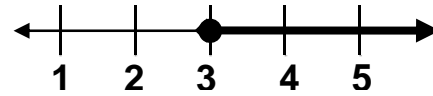
1. $3s > 12$	2. $56 - p \geq 0$	3. $-60 < -15y$	4. $2(-x + 1) \leq 19$
5. $-3x - 7 > 4x$	6. $\frac{m}{8} + 3 \geq 9$	7. $10 < 4 - 2x$	8. $6(x + 10) \leq 10x$



Solution sets can be shown in two ways.

Set Notation: $\{3, 4, 5, 6, \dots\}$ or $\{x \mid x \geq 3\}$

Graphical Notation:

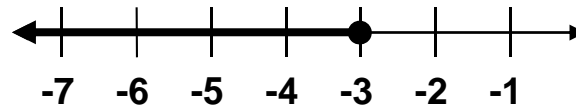


- Use curly brackets $\{ \}$ to denote a set.
- Roster form is a list in curly brackets. $x = \{2, 3, 4, \dots\}$
- Set-builder form describes a set. $\{x \mid x \text{ is a factor of } 12\}$

Graphing Solution Sets

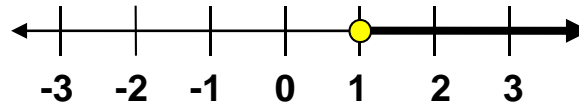
$$n \leq -3 \text{ or } -3 \geq n$$

- Filled circle means that -3 is included in the solution.



$$x > 1 \text{ or } 1 < x$$

- Open circle means that 1 is not included.



Dark line shows numbers included and dark arrow shows that the solution set extends to infinity, ∞ (or sometimes $-\infty$).
 ☠ Values in the solutions always have bubbles, like 3 and 1 above! ☠

Graphing Solution Sets – Using Solutions from Above

1. $3s > 12$	$s > 4$	
2. $56 - p \geq 0$	$56 \geq p$	
3. $-60 < -15y$	$4 > y$	
4. $2(-x + 1) \leq 19$	$x \geq 8.5$	
5. $-3x - 7 > 4x$	$-1 > x$	
6. $\frac{m}{8} + 3 \geq 9$	$m \geq 48$	
7. $10 < 4 - 2x$	$x < -3$	
8. $6(x + 10) \leq 10x$	$15 \leq x$	