

# Solving Simple Inequalities

March-27-17  
11:00 AM

## Mathematics 9 Solving Equations Solving Simple Inequalities

### A. Definition

1. Inequality: a mathematical statement comparing expressions that may not be equal.

<u>Inequality Symbols</u>	<u>What They Mean</u>
>	Greater Than
<	Less Than
≥	Greater Than or Equal To
≤	Less Than or Equal To
≠	Not Equal To

Remember that the inequality symbol is always read from where the variable is located.

When we graph an inequality we use different types of dots to represent the different inequality symbols. When we use either > or < symbols we use an “**open dot**”. When we use ≥ or ≤ symbols we use a “**closed dot**”.

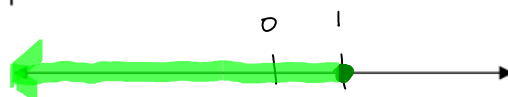
When we learned to solve equations in the last unit, we learned to solve simple and complex equations. We will now apply a similar process to inequalities. **If you divide by a negative number, however, you must remember to reverse the inequality symbol.**

### A. Examples

- 1) Solve and graph each of the following inequalities.

a)  $x - 3 \leq -2$   
*(Handwritten: +3 +3)*

$x \leq 1$

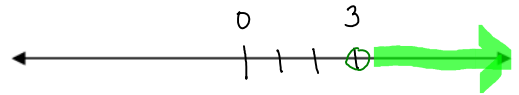


When graphing an inequality.

- ① Show where zero is located
- ② Show where the answer is located in relation to zero.
- ③ Use the correct type of dot.
- ④ Shade the number line to represent the answers.

$$b) \frac{4x}{4} > \frac{12}{4}$$

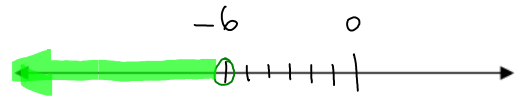
$$x > 3$$



$$c) \begin{bmatrix} -2 > \frac{x}{3} \end{bmatrix}$$

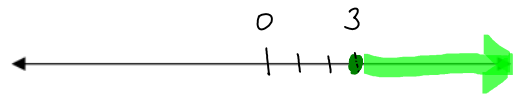
$$-6 > x$$

$$x < -6$$



$$d) \frac{-3x}{-3} \leq \frac{-9}{-3}$$

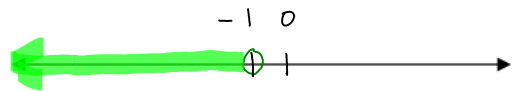
$$x \geq 3$$



$$e) 3x - 5 < -8$$

$$3x < -\frac{3}{3}$$

$$x < -1$$

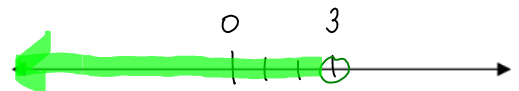


$$f) -2 < 4 - 2x$$

$$\frac{-6}{-2} < \frac{-2x}{-2}$$

$$3 > x$$

$$x < 3$$



Assignment: Solving Simple Inequalities Assignment

Name: \_\_\_\_\_

Solving Simple Inequalities Assignment

Solve and graph the following inequalities.

1.  $x + 3 > -1$



2.  $7x \leq 21$



3.  $10 \geq x + 5$



4.  $4x - 1 > 7$



5.  $-15 < 3x$



6.  $3 - x > 4$



$$7. \frac{x}{3} - 4 \leq -2$$



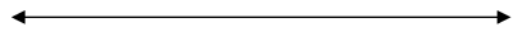
$$8. 5 - 4x < -7$$



$$9. -10 \geq -6 - x$$



$$10. \frac{2x}{3} + 1 > 5$$



$$11. -6x + 2 \leq -22$$



$$12. 3 \geq \frac{x}{5} + 4$$



$$13. -11 < -3x + 7$$



14.  $-x - 8 \leq -6$



15.  $-18 > 3x$



16.  $5x - 12 \geq -27$



17.  $-16 < 8x - 8$



18.  $3 - 4x \leq 19$



19.  $-9 > -4 + 5x$



20.  $\frac{3x}{2} + 1 \geq -5$



Answers

1)  $x > -4$

2)  $x \leq 3$

3)  $x \leq 5$

4)  $x > 2$

5)  $x > -5$

6)  $x < -1$

7)  $x \leq 6$

8)  $x > 3$

9)  $x \geq 4$

10)  $x > 6$

11)  $x \geq 4$

12)  $x \leq -5$

13)  $x < 6$

14)  $x \geq -2$

15)  $x < -6$

16)  $x \geq -3$

17)  $x > -1$

18)  $x \geq -4$

19)  $x < -1$

20)  $x \geq -4$