

Solving Inequalities

Vocabulary:

Inequality is a mathematical sentence that compares two unequal expressions.

Here is a chart of words or phrases associated with the inequality symbols:

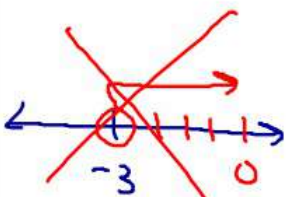
<p>Interval Notation →</p> <p>$x > 2$</p>	$(-\infty, 2)$ graph left	$(-\infty, 2]$ graph left	$[2, \infty)$ graph right	$(2, \infty)$ graph right
	$x < 2$	$x \leq 2$	$x \geq 2$	$x > 2$
	x less than	x less than or equal to	x greater than or equal to	x greater than
	open dot	closed dot	closed dot	open dot
	$> x$	$\geq x$	$\leq x$	$< x$

↳ Open dot means the number is not in the solution set, thus it is not shaded.

↳ Closed dot means the number is in the solution set, thus it is shaded.

$$\frac{5x}{5} = \frac{25}{5}$$

$$x = 5$$

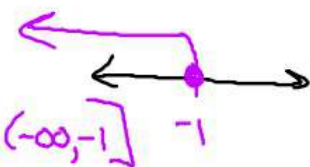


$$-2x > 6$$

$$-2(0) > 6$$

$$0 > 6$$

$x=0$



Solving Inequalities

Solve and graph the solution set for the following problems.

Find (Interval Notation)

A. $\frac{5x}{5} > \frac{25}{5}$
 $x > 5$

B. $x + 5 \leq 4$
 $\frac{x + 5}{-5} \leq \frac{4}{-5}$
 $x \leq -1$

$$5 \leq 4$$

$$0 + 5 \leq 4$$

B. $\frac{-2x}{-2} > \frac{6}{-2}$
 $x < -3$

C. $\frac{1}{-2}n \leq 5(2)$
 $\frac{-1n}{-1} \leq \frac{10}{-1}$
 $n \geq -10$

D. $\frac{3 \geq 4d + 7}{-7} \geq \frac{-7}{-7}$
 $\frac{-4 \geq 4d}{4} \geq \frac{-4}{4}$
 $-1 \geq d$

E. $\frac{-4p + 28 \geq 8}{-4} \geq \frac{-20}{-4}$
 $p \leq 5$

F. $2h - 13 < -23$

Practice: Solve and graph the following inequalities, make your own number line.

1. $-5m < 20$

2. $\frac{j}{6} \leq 0$

3. $\frac{5a}{5} > \frac{-10}{5}$
 $a > -2$

4. ~~$\frac{c}{3} \geq 6$~~ (-3)
 $c \leq -18$

5. $m+6 > 2$
 $-6-6$

6. $y-3 < -4$

7. $4x+11 \geq 19$

8. $6 < \frac{x}{-2}$

9. $27 \geq -0.9r$

10. $5m-3 > -18$