

Interval
Notation →

$x > 2$

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:

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

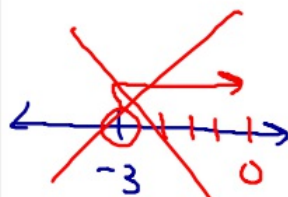
Open dot means the number is not in the solution set, thus it is not shaded.

A horizontal number line with an open circle at the number 5. Arrows point outwards from the circle to the left and right, indicating that all numbers less than 5 are part of the solution set.

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. $x + 5 \leq 4$

$$\frac{-5}{-5} \quad \frac{-5}{-5}$$

$$x \leq -1$$

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

$$x < -3$$

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

$$\frac{-1n}{-1} \leq \frac{10}{-1}$$

$$n \geq -10$$

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

$$\frac{-4}{4} \geq \frac{4d}{4}$$

$$-1 \geq d$$

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

$$-4p \geq -20$$

$$p \leq 5$$

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. $m + 6 > 2$
 $\underline{-6 - 6}$

6. $y - 3 < -4$

7. $4x + 11 \geq 19$

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

9. $27 \geq -0.9r$

10. $5m - 3 > -18$