

# Inequalities

## Chapter Review

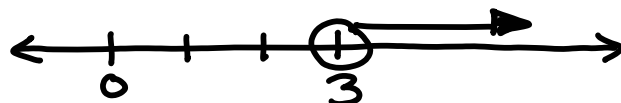


 Sketch the graph of the inequalities

$<$  or  $>$  use open circle  
 $\leq$  or  $\geq$  use closed circle

Examples

$$x > 3$$



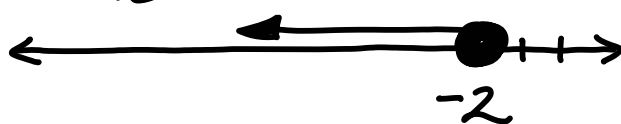
$$x < -7$$



$$x \geq 10$$



$$x \leq -2$$



 Determine if the number is a solution to the inequality

Replace the variable(s) with values - determine if the resulting statement is true or false.

True = value is solution

False = value is NOT solution

Example, Is  $x = -6$  a solution to  $2x - 1 \leq 9$ ?

$$2(-6) - 1 \leq 9$$

$$-8 - 1$$

$$-9 \leq -9$$

True,  $x = -6$   
is a solution



## Solve the inequality and graph the solution

- Use same steps as if you were solving an equation
- If you divide both sides of the inequality by a negative number - reverse the inequality sign
- Graph the simplified inequality

### Example

Solve and graph the solution  $-2(4x+1) < 10$

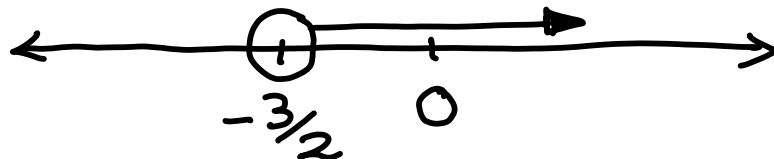
$$\begin{array}{r} -2(4x+1) < 10 \\ -8x - 2 < 10 \\ \hline \phantom{-8x} + 2 \phantom{<} + 2 \end{array}$$

$$\frac{-8x}{-8} < \frac{12}{-8}$$

$$x > -\frac{12}{8}$$

Graph  $\rightarrow x > -\frac{3}{2}$

(inequality sign reversed - divided both sides by negative number)



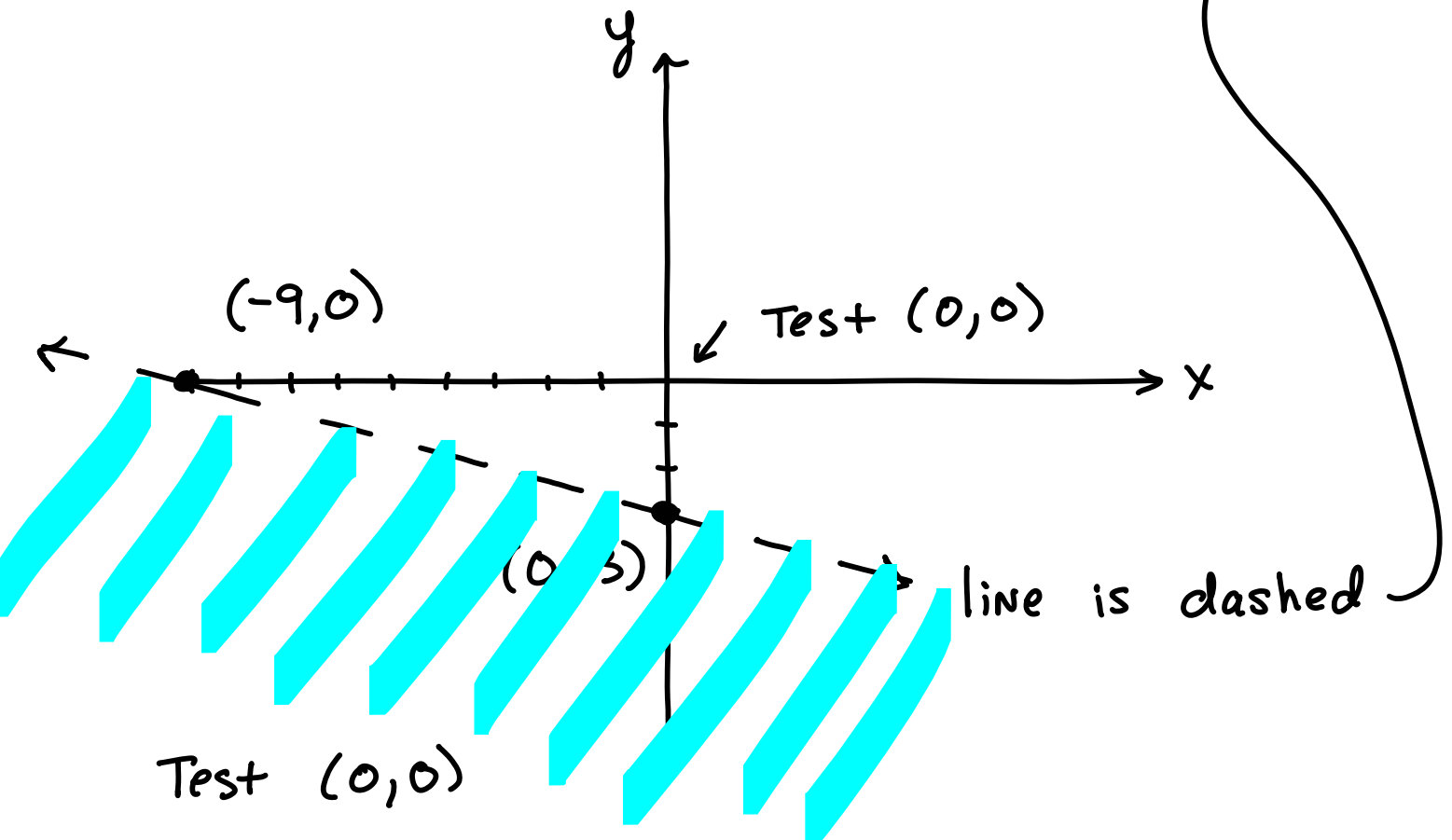


## Solve and graph a two variable inequality

### Steps

1. Graph line
2. Draw a solid line for  $\geq$  or  $\leq$  inequalities
3. Draw a dashed line for  $>$  or  $<$  inequalities
4. Test a  $(x, y)$  point - shade true region

Example, solve and graph  $2x + 6y < -18$



Test  $(0, 0)$

$$2x + 6y < -18$$

$$2(0) + 6(0) < -18$$

$$0 < -18$$

False - shade the region below the line