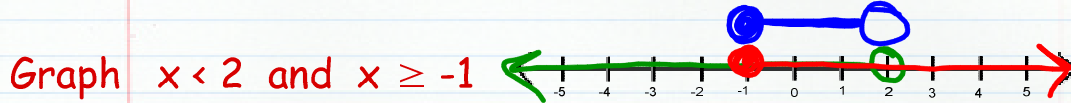


Compound Inequalities

Compound Inequality - two simple inequalities joined by "and" or "or".

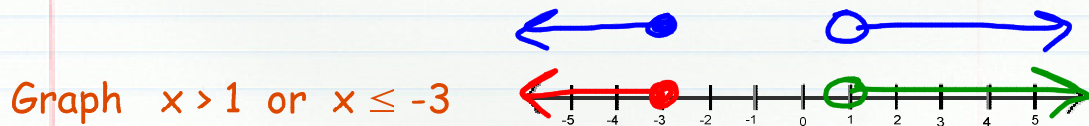
AND: the solutions are all real numbers that "work" in both inequalities.



No real solution.

Compound Inequality - two simple inequalities joined by "and" or "or".

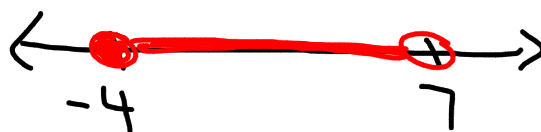
OR: the solutions are all real numbers that "work" in either inequality.



All real numbers
are solutions.

Solve:
$$\underset{-3}{-1} \leq x + \underset{-3}{3} < \underset{-3}{10}$$

$$-4 \leq x < 7$$

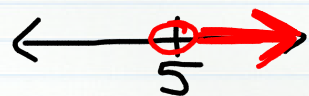


"x is greater than or
equal to -4 and less
than 7."

Linear Inequalities

Symbol	Meaning	Shading	Boundary Point
$>$	greater than	right	open
\geq	greater than or equal to	right	closed
$<$	less than	left	open
\leq	less than or equal to	left	closed

Examples: $x > 5$



$x \leq -2$



$3 \leq x$

Read backwards, this is $x \geq 3$.

$x \geq 3$

$-2 < x$ $x > -2$

Read backwards, this is $x > -2$.

Solving: Just like solving an equation, except...
if you divide or multiply by a negative number, reverse the inequality symbol.

$$\begin{aligned}
 11 + 8x &\geq 7 \\
 -11 &\quad -11 \\
 \hline
 8x &\geq -4 \\
 \frac{8x}{8} &\geq \frac{-4}{8} \\
 x &\geq -\frac{1}{2}
 \end{aligned}$$

$$\begin{aligned}
 15 - 3x &< 3 \\
 -15 &\quad -15 \\
 \hline
 -3x &< -12 \\
 \frac{-3x}{-3} &< \frac{-12}{-3} \\
 x &> 4
 \end{aligned}$$