Rules for Graphing Inequalities

1) When using $\leq$ or $\geq$ mark a **closed dot** on the number line.

2) When using $<$ or $>$ mark an **open dot** on the number line.

3) Shade in the direction the arrow is pointing.

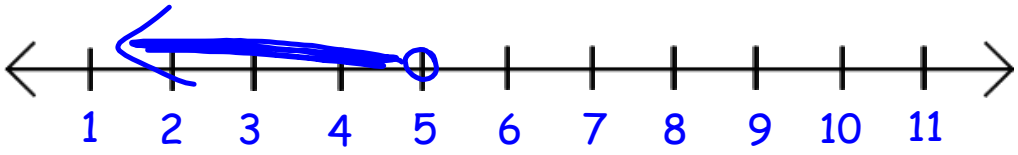
4) If you *divide* or *multiply* by a **negative number**, you must **flip the sign**.

Examples…

1. $3x + 7 < 22$ -7

$\frac{3x}{3} < \frac{15}{3}$

$x < 5$

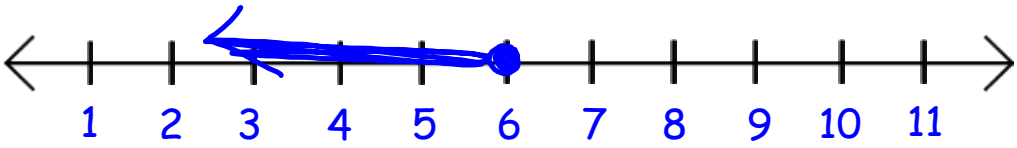


2. $4(x - 3) \leq 12$

$4x - 12 \leq 12 + 12$

$\frac{4x}{4} \leq \frac{24}{4}$

$x \leq 6$



3. $2(-3x - 8) > 4(-2x - 1)$

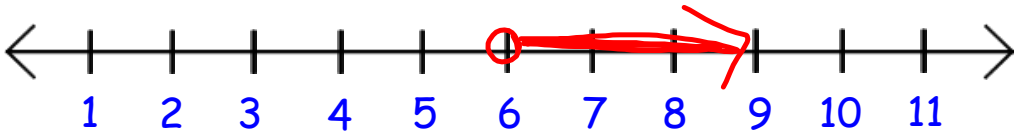
$-6x - 16 > -8x - 4$

$-6x + 8x > -4 + 16$

$\frac{2x}{2} > \frac{12}{2}$

$x > 6$

$x = \#$

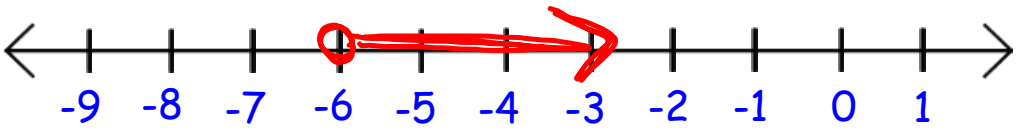


4. $-3(x - 2) < 24$

$-3x + 6 < 24 - 6$

$\frac{-3x}{-3} < \frac{18}{-3}$

$x > -6$

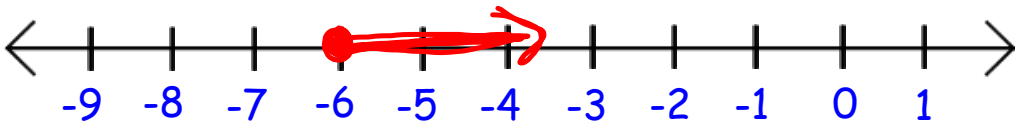


5. $x + 3 \leq 6$

$-2 \quad -2$

$x - 6 \geq -12 + 6$

$x \geq -6$



6. $7x - 6(x - 2) \leq 27 + 4x$

$7x - 6x + 12 \leq 27 + 4x$

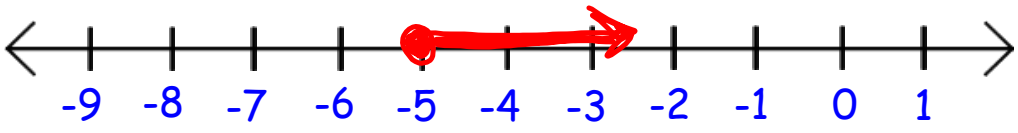
$1x + 12 \leq 27 + 4x$

$x = \#$

$1x - 4x \leq 27 - 12$

$\frac{-3x}{-3} \leq \frac{15}{-3}$

$x \geq -5$



7. $\frac{1}{4}(4x - 2) \leq \frac{3}{2}(x + 1)$

$\times 4 \quad \times 4$

$1(4x-2) \leq \frac{12}{2}(x+1)$

$4x - 2 \leq 6(x+1)$

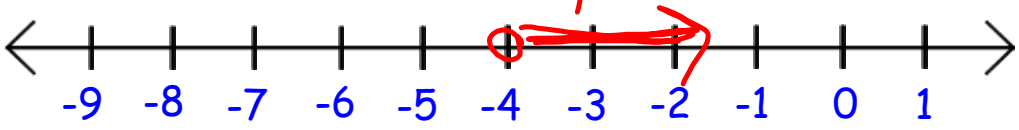
$4x - 2 \leq 6x + 6$

$4x - 6x \leq 6 + 2$

$-2x \leq 8$

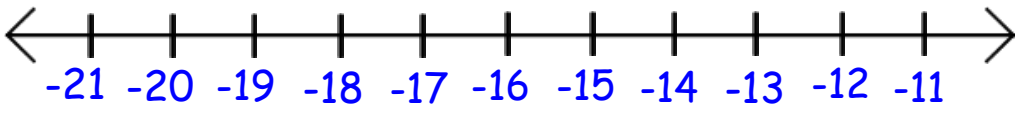
$\frac{-2x}{-2} \geq \frac{8}{-2}$

$x \geq -4$



The Ultimate !!

$$\frac{-2}{3}(x-5)+\frac{1}{2}(x+7)\geq 10$$



http://www.purplemath.com/modules/ineqsolv.htm