

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**.

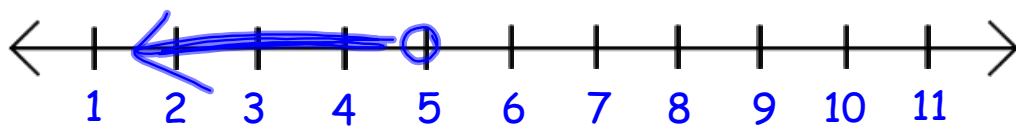
Examples...

$x \neq$



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

$$\frac{3x}{3} < \frac{15}{3}$$
$$x < 5$$



2.

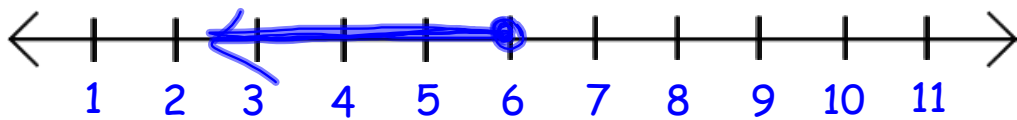
$$4(x - 3) \leq 12$$

$$4x - 12 \leq 12 + 12$$

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

$$x \leq 6$$

$x = \#$



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

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

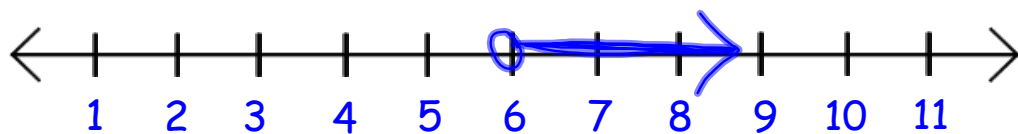
$$-6x > -8x + 12$$

$$-6x + 8x > 12$$

$$2x > 12$$

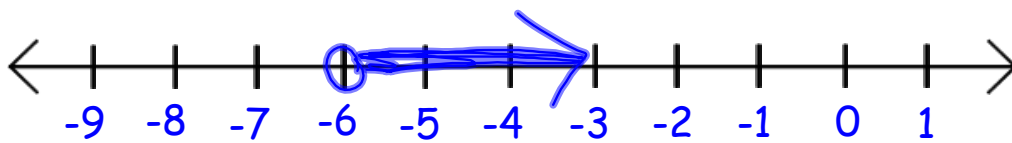
$$x > 6$$

$x = \#$



When multiplyin

$$\begin{aligned} -3x + 6 &< 24 - 6 \\ -3x &< 18 \\ \frac{-3x}{-3} &< \frac{18}{-3} \\ x &> -6 \end{aligned}$$

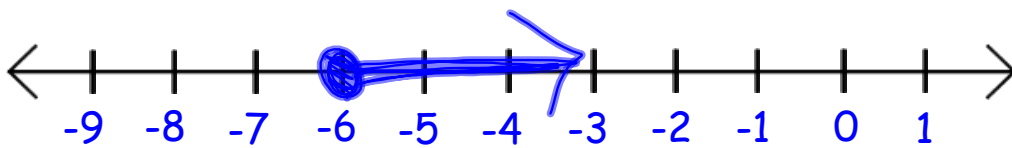


When multiplying or dividing by a negative you must reverse the

$$\cancel{x-8} \quad x-2 \quad x-2$$

$$x \textcircled{-6} \geq -12 + 6$$

$$x \geq -6$$



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

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

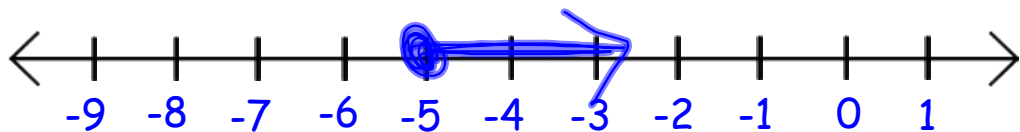
$$1x + 12 \leq 27 + 4x$$

$x = \#$

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

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

$$x \geq -5$$



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

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

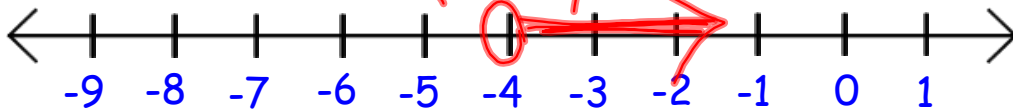
$$4x - 2 < 6(x + 1)$$

$$4x - 2 < 6x + 6$$

$$4x - 6x < 6 + 2$$

$$-2x < 8$$

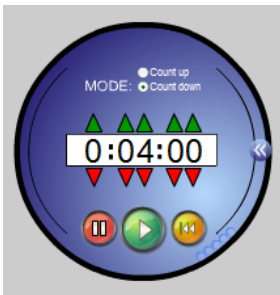
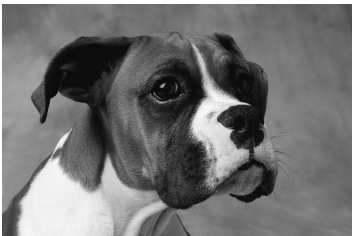
$$x > -4$$



Be Very Careful !!



The Ultimate !!



$$\frac{-2^{x6}}{3}(x-5) + \frac{1^{x6}}{2}(x+7) \geq 10^{x6}$$

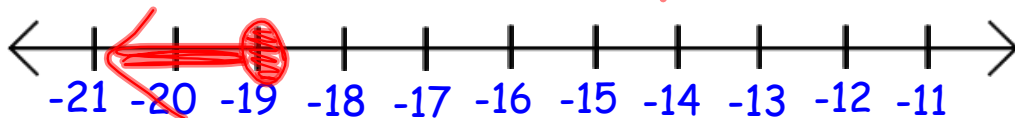
$$-\frac{12}{3}(x-5) + \frac{6}{2}(x+7) \geq 60$$


$$-4(x-5) + 3(x+7) \geq 60$$

$$\boxed{-4x} + \underline{20} + \boxed{3x} + \underline{21} \geq 60$$

$$-1x + 41 \geq 60 - 41$$

$$\Rightarrow -1x \geq 19 \quad x \leq 19$$



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

Homework

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#9 a, d, f

#11 a, b, c

#12