Linear Inequalities:

Inequality Symbols & What they mean	
$<$ less than	$\leq$ less than / equal to
$>$ greater than	$\geq$ greater than / equal to

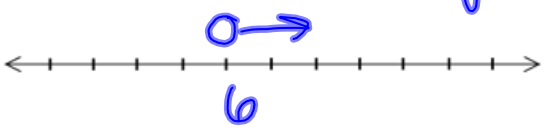
1) $5w + 3 > 4w + 9$

$-4w \quad -4w$

$w + 3 > 9$

$-3 \quad -3$

$w > 6$



$(6, \infty)$

2) $-3(5 - 4r) \leq -9$

$-15 + 12r \leq -9$

$+15 \quad +15$

$\frac{12r}{12} \leq \frac{6}{12}$

$r \leq 1/2$

$(-\infty, 1/2]$

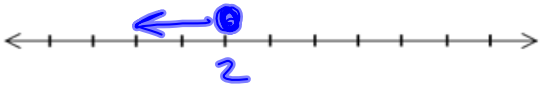
3) $-5(y - 7) \geq 25$

$\frac{}{-5}$

$y - 7 \leq -5$

$+7 \quad +7$

$y \leq 2$



$(-\infty, 2]$

4) $-7x - 8 \leq 2 - 2x$

$-2 \quad -2$

$-7x - 10 \leq -2x$

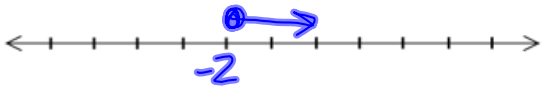
$+7x \qquad +7x$

$\frac{-10}{5} \leq \frac{5x}{5}$

$-2 \leq x$

$x \geq -2$

* rewrite w/ x on the left
- inequality flips



$[-2, \infty)$

Solve the Inequalities, graph the solution set, and write it in interval notation

1) $8 < 3y - 7 \leq 23$

$+7 \quad +7 \quad +7$

AND

$15 < 3y \leq 30$

$\frac{15}{3} < \frac{3y}{3} \leq \frac{30}{3}$

$5 < y \leq 10$

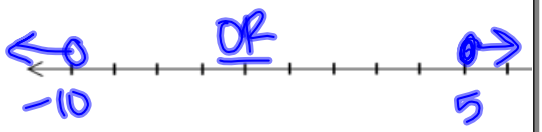
$(5, 10]$

2) $k + 6 < -4 \text{ or } 3k \geq 15$

$-6 \quad -6 \qquad \frac{3k}{3} \geq \frac{15}{3}$

$k < -10 \text{ or } k \geq 5$

OR



$(-\infty, -10) \cup [5, \infty)$

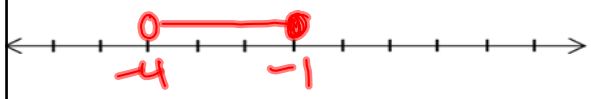
3) $-5 \geq 3z - 2 > -14$

$+2 \quad +2 \quad +2$

$-3 \geq 3z > -12$

$\frac{-3 \geq 3z > -12}{3}$

$-1 \geq z > -4$



$(-4, -1]$

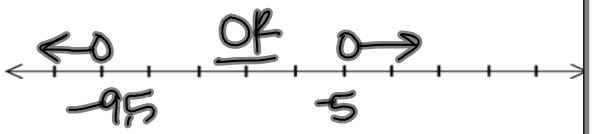
4) $g - 6 > -11 \text{ or } 2g + 4 < -15$

$+6 \quad +6 \qquad -4 \quad -4$

$g > -5 \qquad 2g < -19$

$\text{or} \qquad \frac{2g < -19}{2}$

$g < -9.5$



$(-\infty, -9.5) \cup (-5, \infty)$