FORM	SET BUILDER	INTERVAL	GRAPH
$x < 1$	$\{x \mid x < 1\}$	$(-\infty, 1)$	
$x > 5$	$\{x \mid x > 5\}$	$(5, \infty)$	
→ $x \leq 7$	$\{x \mid x \leq 7\}$	$(-\infty, 7]$	
$x \geq 8$	$\{x \mid x \geq 8\}$	$[8, \infty)$	
$2 < x < 3$	$\{x \mid 2 < x < 3\}$	$(2, 3)$	
• $5 < x \leq 7$	$\{x \mid 5 < x \leq 7\}$	$(5, 7]$	
$9 \leq x < 10$	$\{x \mid 9 \leq x < 10\}$	$[9, 10)$	
$11 \leq x \leq 13$	$\{x \mid 11 \leq x \leq 13\}$	$[11, 13]$	

#1 $-2 < x \leq 4$
$(-2, 4]$

#2 $x < 3$
$(-\infty, 3)$

#3 $[5, 9)$
$5 \leq x < 9$

#4 $(-3, \infty)$
$x > -3$

SOLVING LINEAR INEQUALITIES

NOTE: AT ANY STEP COMBINE LIKE TERMS AND COMBINE NUMBERS

1. GET RID OF PARENTHESIS
2. GET RID OF FRACTIONS
3. GET EVERYTHING WITH AN X ON LEFT SIDE, NUMBERS ON RIGHT SIDE
4. DIVIDE BOTH SIDES BY THE NUMBER IN FRONT OF THE X

NOTE: IF YOU MULTIPLY OR DIVIDE BOTH SIDES BY A NEGATIVE NUMBER, FLIP THE INEQUALITY SYMBOL

#5
$$7x - 2 \leq 19$$
$$7x \leq 19 + 2$$
$$7x \leq 21$$
$$\frac{7x}{7} \leq \frac{21}{7}$$
$$x \leq 3$$
$$\{x \mid x \leq 3\}$$
$$(-\infty, 3]$$

#6
$$-3x - 2 < 13$$
$$-3x < 13 + 2$$
$$-3x < 15$$
$$\frac{-3x}{-3} > \frac{15}{-3}$$
$$\boxed{x > -5}$$

#7
$$4x + 6 \geq 2x - 10$$
$$4x - 2x \geq -10 - 6$$
$$2x \geq -16$$
$$\frac{2x}{2} \geq \frac{-16}{2}$$
$$\boxed{x \geq -8}$$

#8
$$-2(x-7) + 5x < 8(x+1) - 5$$
$$-2x + 14 + 5x < 8x + 8 - 5$$
$$3x + 14 < 8x + 3$$
$$3x - 8x < 3 - 14$$
$$-5x < -11$$
$$\frac{-5x}{-5} > \frac{-11}{-5}$$
$$\boxed{x > \frac{11}{5}}$$

#9
$$\frac{1}{4}(2x - 3) < \frac{1}{3}(x + 1)$$
$$\frac{1}{4}(2x) + \frac{1}{4}(-3) < \frac{1}{3}(x) + \frac{1}{3}(1)$$
$$\frac{2}{4}x - \frac{3}{4} < \frac{1}{3}x + \frac{1}{3}$$
$$\frac{3}{1}12\left(\frac{2}{4}x\right) + \frac{3}{1}12\left(\frac{-3}{4}\right) < \frac{4}{1}12\left(\frac{1}{3}x\right) + \frac{4}{1}12\left(\frac{1}{3}\right)$$
$$6x - 9 < 4x + 4$$
$$6x - 4x < 4 + 9$$
$$2x < 13$$
$$\frac{2x}{2} < \frac{13}{2}$$
$$\boxed{x < \frac{13}{2}}$$