

## 4-8 COMPOUND INEQUALITIES

2 inequalities joined by "or" or "and"

"and" both must be true

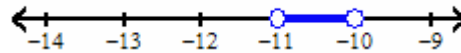
"or" one or the other may be true

Examples:

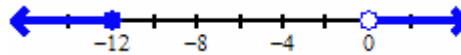
Inequality

Graph

1)  $-11 < x < -10$  read "and"



2)  $x \leq 0$  or  $x > 4$



Solve:

"and" - isolate the variable in the middle  
perform inverse on both ends  
graph the solution on one number line

"or" - solve each inequality separately  
graph each solution on one number line

Solve and graph:

1)  $-4 \leq 2t - 6 \leq 12$

2)  $4x + 3 < 7$  or  $3x - 8 > 7$

3)  $x - 5 \leq 0$  or  $x + 1 > -2$

4)  $3 \geq -4r - 5 \geq -1$

### **Absolute - Value Inequalities**

Absolute-value inequalities are expressed as compound inequalities before solving.

EX:  $|n| < 3$  is expressed as  $-3 < n < 3$

EX:  $|n| > 3$  is expressed as  $n > 3$  or  $n < -3$

### **Solve and Graph:**

1)  $|x - 3| \geq 4$

2)  $|x + 3| < 5$

$$3) \left| \frac{3}{4}x - 3 \right| < -5$$

$$4) |5t - 4| \leq 16$$

$$5) 0 \leq |3d - 1|$$

$$6) 4.5 + |3m - 2| > 2$$