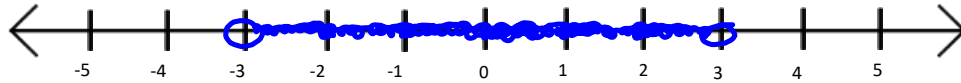


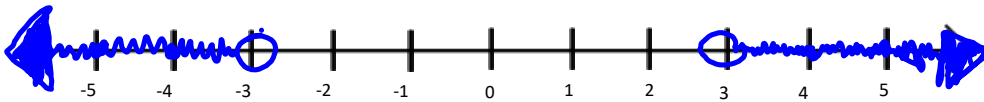
## 5.6 Solving Absolute Value Inequalities

What does it mean if you see...

$$|x| < 3 \quad \begin{matrix} < & \leq \\ \text{and} \end{matrix}$$



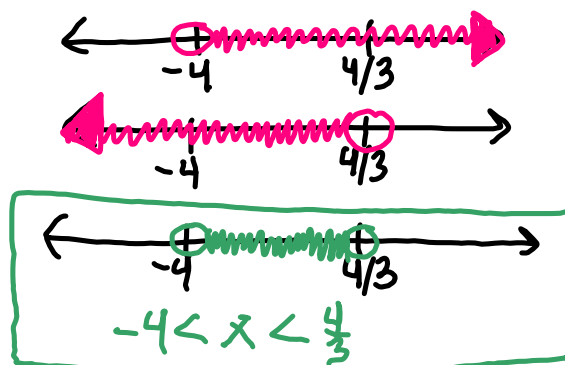
$$|x| > 3 \quad \begin{matrix} > & \geq \\ \text{or} \end{matrix}$$



### Example 1

Solve and graph the solution set of  $|3x + 4| < 8$ .   
the dist. of 8  
and

$$\begin{array}{r} 3x+4 > -8 \\ \underline{-4 \quad -4} \\ 3x > -12 \\ \underline{3 \quad 3} \\ x > -4 \end{array} \quad \text{and} \quad \begin{array}{r} 3x+4 < 8 \\ \underline{-4 \quad -4} \\ 3x < 4 \\ \underline{3 \quad 3} \\ x < \frac{4}{3} \end{array}$$



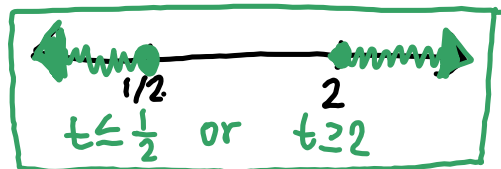
## Example 2

Solve and graph the solution set of  $|4t - 5| \geq 3$ . <sup>or</sup> <sup>dist of 3</sup>

$$\begin{array}{r} 4t - 5 \leq -3 \\ +5 \quad +5 \\ \hline 4t \leq 2 \\ \frac{4t}{4} \leq \frac{2}{4} \\ t \leq \frac{1}{2} \end{array}$$

or

$$\begin{array}{r} 4t - 5 \geq 3 \\ +5 \quad +5 \\ \hline 4t \geq 8 \\ \frac{4t}{4} \geq \frac{8}{4} \\ t \geq 2 \end{array}$$



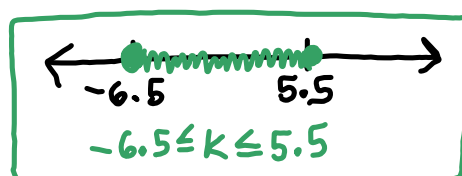
## Example 3

Solve and graph the solution set of  $|2k + 1| \leq 12$ . <sup>and</sup>

$$\begin{array}{r} 2k + 1 \geq -12 \\ -1 \quad -1 \\ \hline 2k \geq -13 \\ \frac{2k}{2} \geq \frac{-13}{2} \\ k \geq -6.5 \end{array}$$

and

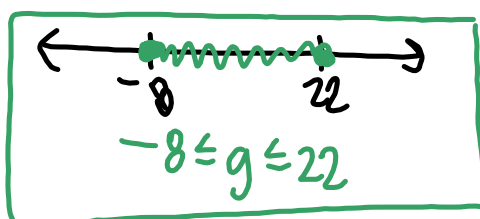
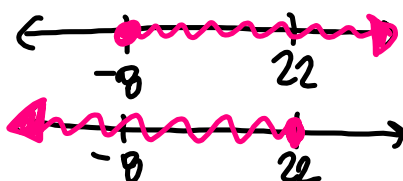
$$\begin{array}{r} 2k + 1 \leq 12 \\ -1 \quad -1 \\ \hline 2k \leq 11 \\ \frac{2k}{2} \leq \frac{11}{2} \\ k \leq 5.5 \end{array}$$

 $k \geq -6.5$  and $k \leq 5.5$ 

## Example 4

Solve and graph the solution set of  $|g - 7| \leq 15$ .

$$\begin{array}{r} g - 7 \geq -15 \\ +7 \quad +7 \\ \hline g \geq -8 \end{array} \quad \text{and} \quad \begin{array}{r} g - 7 \leq 15 \\ +7 \quad +7 \\ \hline g \leq 22 \end{array}$$



## Example 5

If the price of a stock varies more than 3.4 points from its opening price, Mr. Winters buys ten more shares of the stock. If the opening price is 15.8, for what range of values will he buy stock?

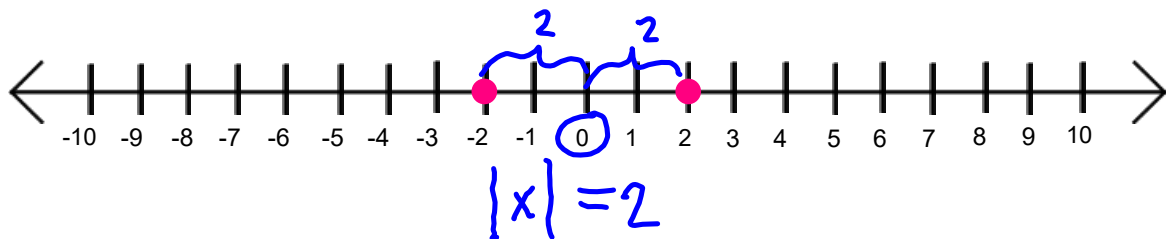
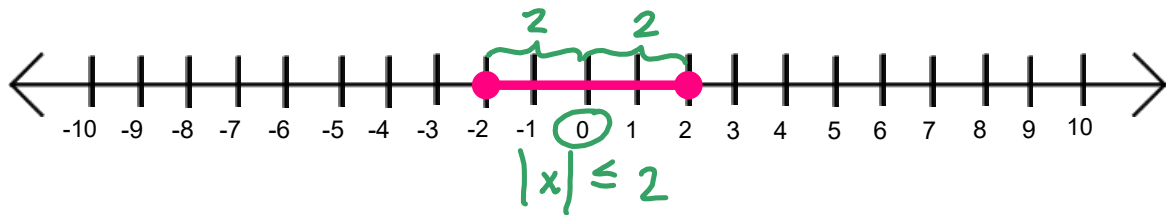
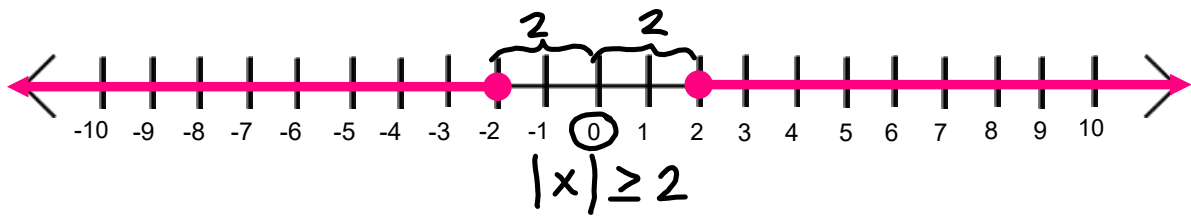
$$\begin{array}{r} 15.8 \\ -3.4 \\ \hline 12.4 \end{array} \quad \begin{array}{c} \text{starting} \\ 15.8 \end{array} \quad \begin{array}{r} 15.8 \\ +3.4 \\ \hline 19.2 \end{array}$$

$$p < 12.4 \quad \text{or} \quad p > 19.2$$

### Example 6

Write an open sentence involving absolute value.

(This means it could be an equation or an inequality.)



### Example 7

$$|x - \#|$$

Write an open sentence involving absolute value.

