

Algebra 1            5.5

Solve and graph absolute value inequalities

Write an absolute value inequality from a graph  
inequality

absolute value

less than

greater than

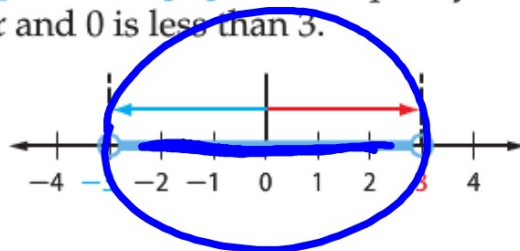
floor graphs

whiteboards

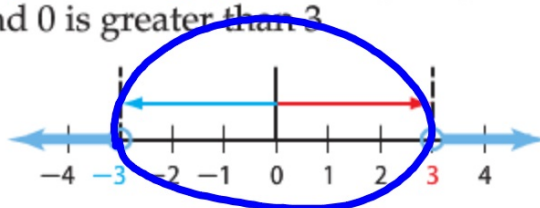
speed dating

- $>$   $<$     1. Find the bubble =  
 $\geq$   $\leq$     2. { Less than = Closer  $<$   
               Greater than = Farther  $>$   
               3. open or closed?

**1 Absolute Value Inequalities ( $<$ )** The inequality  $|x| < 3$  means that the distance between  $x$  and 0 is less than 3.



**2 Absolute Value Inequalities (>)** The inequality  $|x| > 3$  means that the distance between  $x$  and 0 is greater than 3.



whiteboards

Solve the inequality. Then graph the solution set.

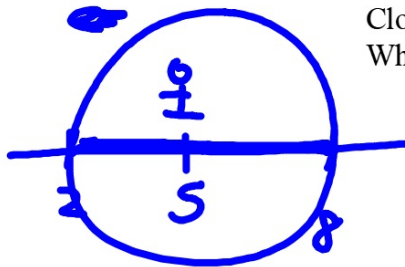
1.  $|a - 5| < 3$



$$\begin{array}{r} a - 5 = -3 \\ +5 \quad +5 \\ \hline a = 2 \end{array}$$

$$\begin{array}{r} a + 3 = 7 \\ -3 \quad -3 \\ \hline a = 4 \end{array}$$

2.  $|u + 3| < 7$



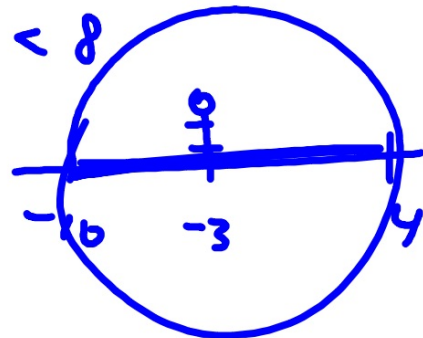
$$2 < x < 8$$

$$\begin{array}{r} a - 5 = 2 \\ +5 \quad +5 \\ \hline a = 7 \end{array}$$

$$\begin{array}{r} a + 3 = 7 \\ -3 \quad -3 \\ \hline a = 4 \end{array}$$

Bubble  
Closer or farther?  
What's in the middle?

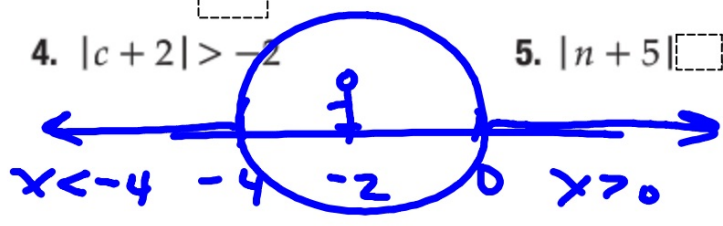
$$\frac{-10 + 4}{2}$$



$$-10 < x < 4$$

4.  $|c+2| > -2$

5.  $|n+5| \leq 3$



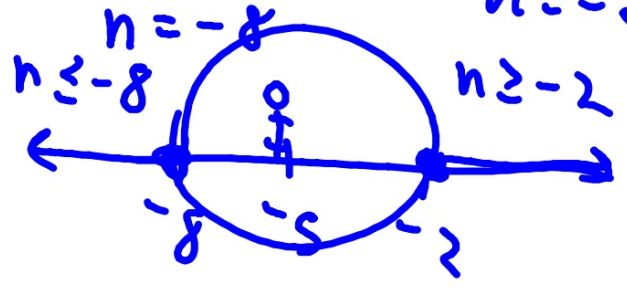
$|n+5| \geq 3$

$$\begin{array}{r} c+2 = -2 \\ -2 \quad -2 \\ \hline c = -4 \end{array}$$

$$\begin{array}{r} c+2 = 2 \\ -2 \quad -2 \\ \hline c = 0 \end{array}$$

$$\begin{array}{r} n+5 = -3 \\ -5 \quad -5 \\ \hline n = -8 \end{array}$$

$$\begin{array}{r} n+5 = 3 \\ -5 \quad -5 \\ \hline n = -2 \end{array}$$

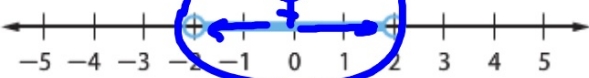




REGULARITY

Write an open sentence involving absolute value for each graph.

32.



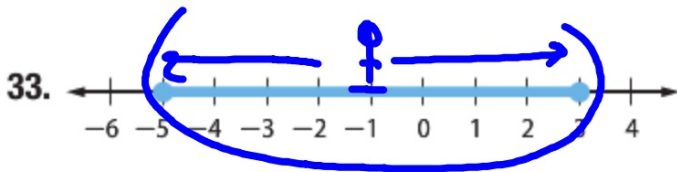
$$|x-0| < 2$$

$$-2 < x < 2$$

What's in the middle?

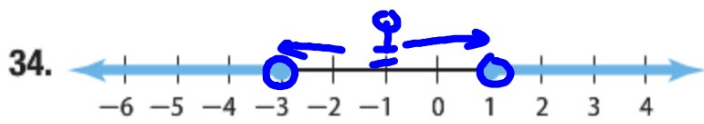
Bubble?

Closer or farther?



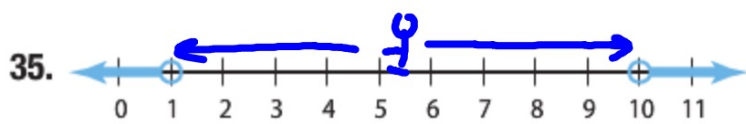
$$|x+1| \leq 4$$

$$-5 \leq x \leq 3$$



$$|x+1| \geq 2$$



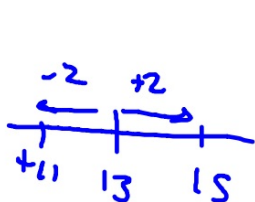


$$|x - 5.5| > 4.5$$

$x > =$   
at least  $\geq$

$x < =$

not more than...  $\leq$



$$|x - 13| < 2$$