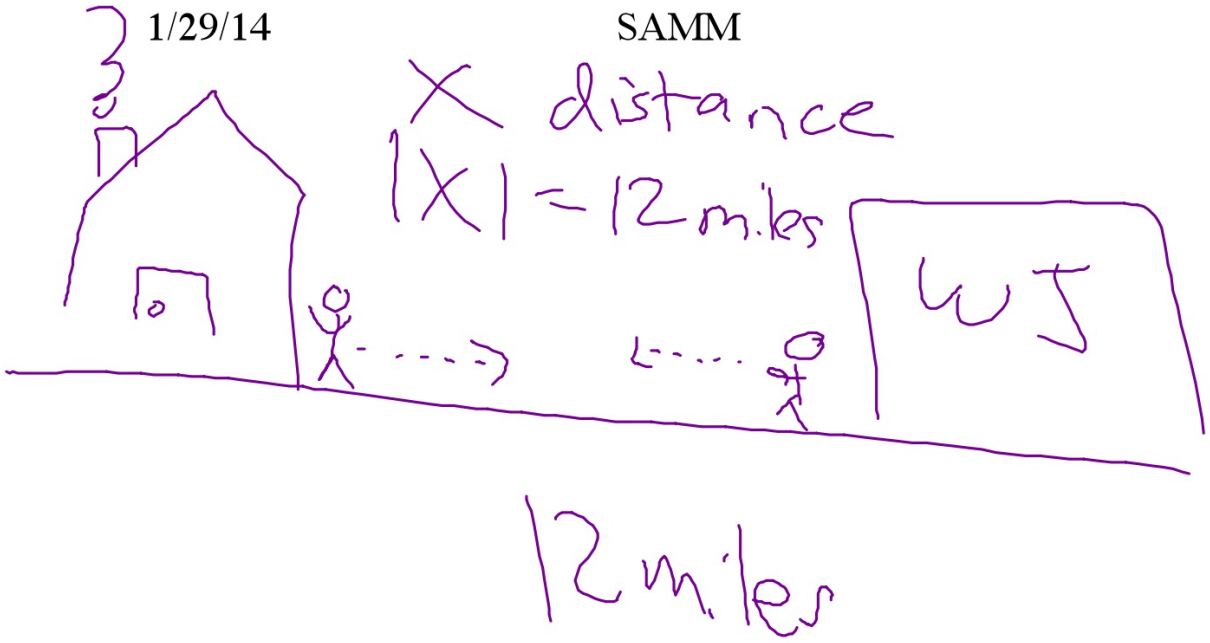
Solving Absolute Values

1/29/14 SAMM

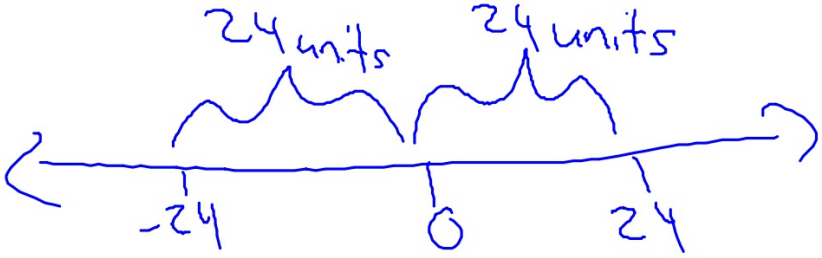


Example:

$|x| = 24$

What can x equal?

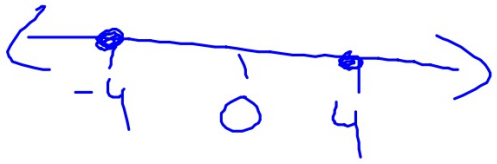
x= ±24



Example 2:

$$6 + |x| = 10$$

$-6 \qquad -6$



$$|x| = 4$$

$$x = \pm 4$$

What do we do first?

Example 3:

$x = 23, -15$

$|x-4| = 19$

$x - 4 = \pm 19$

$x - 4 = 19$

$+4 \quad +4$

$x - 4 = -19$

$+4 \quad +4$

??????

$x = 23$ ✓

$|23 - 4| = 19$

$|19| = 19$

$x = -15$ ✓

$|-15 - 4| = 19$

$|-19| = 19$

Example 4:

$-3 + |x+9| = 3$

$+3 \quad +3$

$|x+9| = 6$

$x+9 = 6$ $\quad$ $x+9 = -6$

$-9 \quad -9$ $\quad$ $-9 \quad -9$

$x = -3$ $\quad$ $x = -15$

$x = -3, -15$

What's the move?

$|-3+9| = 6$

$|6| = 6$

$|-15+9| = 6 \rightarrow |-6| = 6$

In your own words:

How does one solve an absolute value equation?

In Mr. Perone's Words:

1. Isolate the |*absolute value*|
2. Rewrite as two equations (w/o abs value signs):
    - One with a positive answer
    - One with a negative answer
3. Solve for your variable
4. Plug your answer into the original problem to check for correctness!!!!!

(20)

$5|9-5n|-7=36$

$+7 \quad +7$

$5|9-5n| = 45$

$\frac{5}{5} \quad \frac{5}{5}$

$|9-5n| = 9$

$9-18=|-9|$

$9-5\left(\frac{18}{5}\right)=9$

$5 \cdot \frac{18}{5} = 18$

$9-5n=9$

$-9 \quad -9$

$-5n=0$

$n=0$

$9-5n=-9$

$-9 \quad -9$

$-5n=-18$

$n=$

$n=\frac{18}{5}$

$n=0, \frac{18}{5}$