

Warm-up

2/16/2012

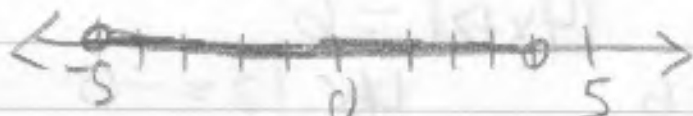
Solve + graph

$$-6 < 3n + 9 < 21$$

$$\begin{array}{ccc} -9 & -9 & -9 \end{array}$$

$$\frac{-15}{3} < \frac{3n}{3} < \frac{12}{3}$$

$$-5 < n < 4$$



Solving  
6.5 Absolute Value EQUATIONS

What goes in  
could be  
(+) or (-)

what comes  
out is (+)

• That means you need to account for both possibilities when you solve for  $x$

Check for  
Extraneous Solutions

Example 1:  $|x+4| = 3$

(+) / \

$$\begin{array}{r} x+4 = 3 \\ -4 \quad -4 \\ \hline x = -1 \end{array}$$

\ (-)

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

OR

$$x = -1 \quad |-1+4| = 3$$

$$|3| = 3$$

$$3 = 3 \checkmark$$

$$x = -7 \quad |-7+4| = 3$$

$$|-3| = 3$$

$$3 = 3 \checkmark$$

You may have stuff outside of the absolute value.  
Put this stuff on other side & splitting up the equations

$$3|4x+2|-7=11$$

$$\begin{array}{r} +7 \quad +7 \\ 3|4x+2| = 18 \end{array}$$

$$\begin{array}{r} 3 \qquad 3 \\ |4x+2| = 6 \end{array}$$

$$4x+2=6$$

$$\begin{array}{r} -2 \quad -2 \\ 4x = 4 \end{array}$$

$$\frac{4x}{4} = \frac{4}{4}$$

$$x=1$$

$$4x+2=-6$$

$$\begin{array}{r} -2 \quad -2 \\ 4x = -8 \end{array}$$

$$\frac{4x}{4} = \frac{-8}{4}$$

$$x=-2$$

Check (into orig. inequality)

$$x=1 \quad 3|4(1)+2|-7=11$$

$$3|4+2|-7=11$$

$$3|6|-7=11$$

$$18-7=11$$

$$11=11 \checkmark$$

$$x=-2 \quad 3|4(-2)+2|-7=11$$

$$3|-8+2|-7=11$$

$$3|-6|-7=11$$

$$18-7=11$$

$$11=11 \checkmark$$

Now You Do it!

$$4|b-1|-7=17$$

$$\begin{array}{r} +7 \quad +7 \\ 4|b-1| = 24 \\ \hline 4 \quad 4 \end{array}$$

$$|b-1|=6$$

$$b-1=6$$


$$+1 \quad +1$$

$$b=7$$

$$b-1=-6$$

$$+1 \quad +1$$

$$b=-5$$

Steps to 

1. Isolate the "abs"

\* if you isolated abs = 0,  $\emptyset$

2. Split into two eqns  
(one  $\ominus$ , one  $\oplus$ )

3. Solve for x for both eqns

4. Check both solutions

2/16/12  
cont.

HW 6.5 393

3-19  
42, 43, 47

Apply it:

air pressure of 8 lbs/m<sup>2</sup>  
error allowed .5

$$|p - 8| = .5$$

$$p - 8 = .5$$
$$+8 \quad +8$$

$$p = 8.5$$

$$p - 8 = -.5$$
$$+8 \quad +8$$

$$p = 7.5$$

$$7.5 \leq p < 8.5$$

An absolute value (by itself)  
can never = a negative #.

1.  $|x - 2| = -4$   
~~0~~ No solution!

2.  $3|2x - 8| + 3 = 2$   
 $\quad \quad \quad -3 \quad -3$

$$\underline{3|2x - 8|} = \underline{-1}$$

$$\frac{3}{3}|2x - 8| = \frac{-1}{3}$$

No solution!

↑  
Neg #.