

Solving absolute value inequalities:

Less Than = AND

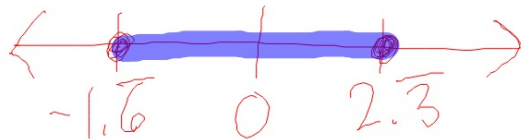
- 1) Isolate Absolute Value:
(if necessary)

- 2) Write 2 Inequalities
and Solve:

*one w/pos. answer
one w/opp answer, and
flip inequality*

- 3) Graph Solution:

"Less Than" absolute value inequalities have AND compound inequalities as solutions!



$$3|3x-1|-8 \leq 10$$

$$3|3x-1| - 8 \leq 10$$

$$+8 \quad +8$$

$$3|3x-1| \leq 18$$

$$\frac{3}{3} \quad \frac{18}{3}$$

$$|3x-1| \leq 6$$

$$3x-1 \leq 6$$

$$+1 \quad +1$$

$$3x \leq 7$$

$$\frac{3x}{3} \leq \frac{7}{3}$$

$$x \leq 2.\bar{3}$$

$$3x-1 \geq -6$$

$$+1 \quad +1$$

$$3x \geq -5$$

$$\frac{3x}{3} \geq \frac{-5}{3}$$

$$x \geq -1.\bar{6}$$

Greater Than = OR

1) Isolate Absolute Value:
(if necessary)

$$2 + |4g + 1| > 7$$

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

2) Write 2 Inequalities
and Solve:

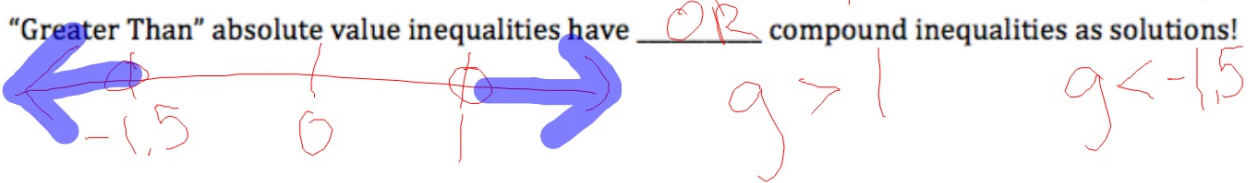
$$a > 5$$

$$|4g + 1| > 5$$

$$\begin{array}{r} 4g + 1 > 5 \\ -1 \quad -1 \\ \hline 4g > 4 \\ \frac{4g}{4} > \frac{4}{4} \\ g > 1 \end{array}$$

$$\begin{array}{r} 4g + 1 < -5 \\ -1 \quad -1 \\ \hline 4g < -6 \\ \frac{4g}{4} < \frac{-6}{4} \\ g < -1.5 \end{array}$$

3) Graph Solution:



Summary:

- 1) Proportions $\frac{1}{2} = \frac{x+2}{8}$ (Word problem)
- 2) Inequalities $x+3 < -1$
- 3) Compound Inequalities $0 \leq x \leq 7$
 $x \leq 0$ or $x \geq 7$
- 4) Absolute Value
Equations & INEQUALITIES