

Please have your homework on your desk. Calculator? Yes!

DATE:

TSW solve inequalities.

**QRQ:**

An equation is solve as shown. Explain each step.

$$4(x - 9) + 2 = 2(x - 3)$$

$$4x - 36 + 2 = 2x - 6$$

$$4x - 34 = 2x - 6$$

$$2x - 34 = -6$$

$$2x = 28$$

$$x = 14$$

*Distributive*  
*CLT on the same side*  
*Move variables together*  
*Move constants together*  
*substitution*

*Subs*  
*Subtraction*  
*Addition*  
*Division*

An equation is solve as shown. Explain each step.

$$3(x + 5) - 9 = 8(x - 1) + 2x$$

Given

$$3x + 15 - 9 = 8x - 8 + 2x$$

$$3x + 6 = 10x - 8$$

$$6 = 7x - 8$$

$$\frac{14}{7} = \frac{7x}{7}$$

$$2 = x$$

*Distributive*  
*CLT on same side*  
*Moved variables together*  
*Moved the constants together*  
*Substitution*

Four equations are solved as shown. Identify which equation is solve correctly. The ones that are not solved correctly, highlight where the mistake that was made.

$-2(x + 5) + 3 = 6(x - 2) - 3x$ $-2x + 10 + 3 = 6x - 12 - 3x$ $-2x + 13 = 3x - 12$ $13 = 5x - 12$ $25 = 5x$ $5 = x$ <p><i>should be Negative</i></p>	$-2(x + 5) + 3 = 6(x - 2) - 3x$ $-2x - 10 + 3 = 6x - 12 - 3x$ $-2x - 7 = 3x - 12$ $+2x \quad +2x$ $-7 = 5x - 12$ $5 = x$ <p><i>should be 5x</i></p>
$-2(x + 5) + 3 = 6(x - 2) - 3x$ $-2x - 10 + 3 = 6x - 12 - 3x$ $-2x - 7 = 3x - 12$ $+7 \quad +12$ $5 = 5x - 12$ $5 = 5x$ $1 = x$	$-2(x + 5) + 3 = 6(x - 2) - 3x$ $-2x - 10 + 3 = 6x - 12 - 3x$ $-2x - 7 = 3x - 12$ $-7 = 5x - 12$ $-5 = 5x$ $-1 = x$ <p><i>Should be -12</i></p>

9 An equation is solved as shown. Between which two steps is an error made? Explain the error.

$$-4(x + 7) = 2(x - 4)$$

$$-4x - 28 = 2x - 8$$

$$-28 = -2x - 8$$

$$-20 = -2x$$

$$10 = x$$

*should be 6x*

Notes:  $<, >$  open circle  $\leq, \geq$  closed circle

Solve & Graph each Inequality

Ex1  $x + 4 < 7$

$$\frac{-4 \quad -4}{x < 3}$$

Now You Try These!

Solve & Graph each Inequality

1  $m - 5 > 2$

$$\frac{+5 \quad +5}{m > 7}$$

Ex2  $2 > m - 3$

$$\frac{+3 \quad +3}{5 > m}$$

*IF*  $5 > m$

*when*  $m < 5$

$2 \quad 7 < b + 4$

$$\frac{-4 \quad -4}{3 < b}$$

*IF*  $3 < b$

*when*  $b > 3$

Ex3  $16 - 4b \leq 20$

$$\begin{array}{r} -16 \quad -16 \\ \hline -4b \leq 4 \\ \hline -4 \quad -4 \\ \hline b \geq -1 \end{array}$$

3  $20 - 3y \geq 14$

$$\begin{array}{r} -20 \quad -20 \\ \hline -3y \geq -6 \\ \hline -3 \quad -3 \\ \hline y \leq 2 \end{array}$$

Ex4  $10 \geq -2(x - 1)$

$$\begin{array}{r} 10 \geq -2x + 2 \\ \hline -2 \quad -2 \\ \hline 8 \geq -2x \\ \hline -2 \quad -2 \\ \hline 4 \leq x \end{array}$$

If  $-4 \leq x$   
then  $x \geq -4$

4  $18 \leq -3(x + 1)$

$$\begin{array}{r} 18 \leq -3x - 3 \\ \hline +3 \quad +3 \\ \hline 21 \leq -3x \\ \hline -3 \quad -3 \\ \hline -7 \geq x \end{array}$$

If  $-7 \geq x$   
then  $x \leq -7$

Ex5  $2(p + 4) < 4(p - 1)$

$$\begin{array}{r} 2p + 8 < 4p - 4 \\ \hline -2p \quad -2p \\ \hline 8 < 2p - 4 \\ \hline +4 \quad +4 \\ \hline 12 < 2p \\ \hline 2 \quad 2 \\ \hline 6 < p \end{array}$$

If  $6 < p$   
then  $p > 6$

5  $5(y + 2) > 3(y - 6)$

$$\begin{array}{r} 5y + 10 > 3y - 18 \\ \hline -3y \quad -3y \\ \hline 2y + 10 > -18 \\ \hline -10 \quad -10 \\ \hline 2y > -28 \\ \hline 2 \quad 2 \\ \hline y > -14 \end{array}$$

Ex6  $w - \frac{2}{3} > 1$

$$\begin{array}{r} w - \frac{2}{3} > 1 \\ \hline +\frac{2}{3} \quad +\frac{2}{3} \\ \hline w > \frac{5}{3} \end{array}$$

6  $r + \frac{1}{4} < 5$

$$\begin{array}{r} r + \frac{1}{4} < 5 \\ \hline -\frac{1}{4} \quad -\frac{1}{4} \\ \hline r < \frac{19}{4} \\ r < 4.75 \end{array}$$

Ex7  $14x + 6 \geq 16x - 4$

$$\begin{array}{r} -14x \quad -14x \\ \hline 6 \geq 2x - 4 \\ \hline +4 \quad +4 \\ \hline 10 \geq 2x \\ \hline 2 \quad 2 \\ \hline 5 \geq x \end{array}$$

If  $5 \geq x$   
then  $x \leq 5$

7  $13x + 7 \leq 11x - 3$

$$\begin{array}{r} -11x \quad -11x \\ \hline 2x + 7 \leq -3 \\ \hline -7 \quad -7 \\ \hline 2x \leq -10 \\ \hline 2 \quad 2 \\ \hline x \leq -5 \end{array}$$

Quiz on Multi-Step Equations?

After Quiz:

Complete circled problems on Solve Inequalities Handout