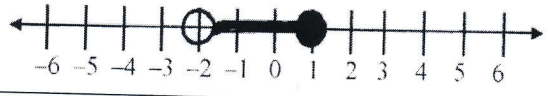



HW: Compound Inequalities

use pages 49 - 51

Feb. 26

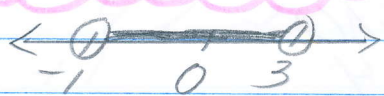
Write a compound inequality for each solution set for # 1 & 2. Then write it in interval notation.

<p>1. $-2 < x \leq 1$ $(-2, 1]$</p> 	<p>2. $x < -2$ or $x > 0$ $(-\infty, -2)$ or $(0, \infty)$</p> 
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Solve and graph the solution set of each compounded inequality. Then write the solution in interval notation.

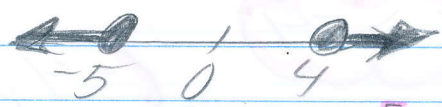
3. $-2 < 3x + 1 < 10$	4. $-10b + 3 \leq -37$ or $3b - 10 \leq -25$
5. $3 < 3 - 5(x - 3) \leq 8$	6. $9(x - 3) + 4 \geq 40$ or $2(x + 6) < 8$
7. $2 \leq 4 - \frac{1}{2}(x - 8) < 10$	8. $-36 < 3x - 6 \leq -15$
9. $7x + 6 \leq -8$ or $2(x + 3) < 6x - 38$ fx	10. $-3 < \frac{2x - 1}{3} \leq 7$

3.) $-2 < 3x + 1 < 10$

$$\begin{array}{r} -1 \quad -1 \quad -1 \\ \hline -3 < 3x < 9 \\ \hline -1 < x < 3 \end{array}$$


$(-1, 3)$

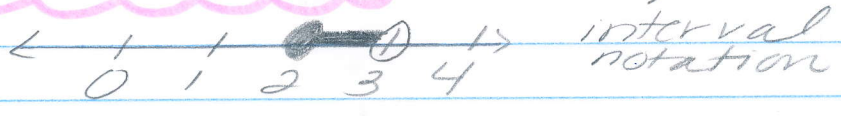
4.) $-10b + 3 \leq -37$ or $3b - 10 \leq -25$

$$\begin{array}{r} -3 \quad -3 \\ \hline -10b \leq -40 \\ \hline b \geq 4 \end{array} \quad \text{or} \quad \begin{array}{r} +10 \quad +10 \\ \hline 3b \leq -15 \\ \hline b \leq -5 \end{array}$$


$(-\infty, -5]$ or $[4, \infty)$

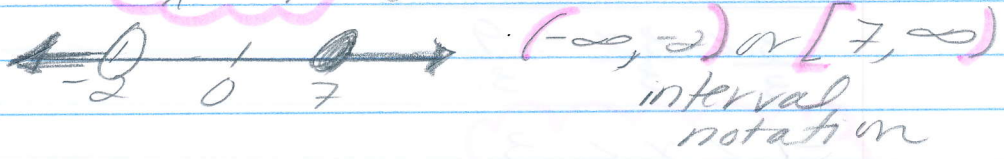
$$\begin{aligned}
 5.) \quad & 3 < 3 - 5(x-3) \leq 8 \\
 & 3 < 3 - 5x + 15 \leq 8 \\
 & 3 < -5x + 18 \leq 8 \\
 & \begin{array}{r} -18 \qquad \qquad -18 \quad -18 \\ \hline -15 < -5x \leq -10 \\ -5 \qquad \quad -5 \qquad \quad -5 \end{array}
 \end{aligned}$$

$$3 > x \geq 2 \rightarrow [2, 3)$$



$$\begin{aligned}
 6.) \quad & 9(x-3) + 4 \geq 40 \text{ or } 2(x+6) < 8 \\
 & 9x - 27 + 4 \geq 40 \qquad 2x + 12 < 8 \\
 & 9x - 23 \geq 40 \qquad \qquad \qquad 2x < -4 \\
 & \begin{array}{r} +23 \quad +23 \\ \hline 9x \geq 63 \\ 9 \qquad 9 \end{array} \qquad \begin{array}{r} -12 \quad -12 \\ \hline 2x < -4 \\ 2 \qquad 2 \end{array}
 \end{aligned}$$

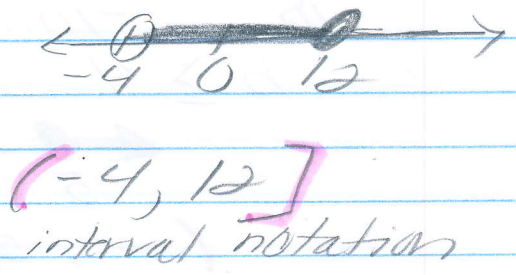
$$x \geq 7 \text{ or } x < -2$$



$$\begin{aligned}
 7.) \quad & 2 \leq 4 - \frac{1}{2}(x-8) < 10 \\
 & -4 \leq -\frac{1}{2}(x-8) < 6 \\
 & 2 \left[-2 \leq -\frac{1}{2}(x-8) < 6 \right]
 \end{aligned}$$

$$\begin{aligned}
 & -4 \leq -1(x-8) < 12 \\
 & -4 \leq -x + 8 < 12 \\
 & \begin{array}{r} -8 \qquad \qquad -8 \quad -8 \\ \hline -12 \leq -x < 4 \\ -1 \qquad \quad -1 \qquad \quad -1 \end{array}
 \end{aligned}$$

$$12 \geq x > -4$$



$$8.) \quad -36 < 3x - 6 \leq -15$$

$$\begin{array}{r} +6 \quad \quad +6 \quad +6 \\ \hline -30 < 3x \leq -9 \end{array}$$

$$\begin{array}{r} -10 < x \leq -3 \end{array}$$

$$(-10, -3]$$

$$(-10, -3]$$

interval notation

$$9.) \quad 7x + 6 < -8 \quad \text{or} \quad 2(x+3) < 6x - 38$$

$$\begin{array}{r} -6 \quad -6 \\ \hline 7x < -14 \\ 7 \quad 7 \end{array}$$

$$x < -2$$

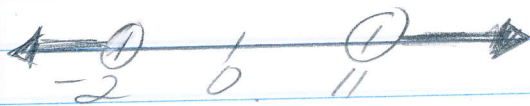
or

$$2x + 6 < 6x - 38$$

$$\begin{array}{r} -6x \quad -6x \\ \hline -4x + 6 < -38 \end{array}$$

$$\begin{array}{r} -6 \quad -6 \\ \hline -4x < -44 \\ -4 \quad -4 \end{array}$$

$$x > 11$$



$$(-\infty, 2) \text{ or } (11, \infty)$$

$$10.) \quad \text{LCD } 3 \left[-3 < \frac{2x-1}{3} \leq 7 \right]$$

$$\begin{array}{r} -9 < 2x - 1 \leq 7 \\ +1 \quad \quad +1 \quad +1 \end{array}$$

$$\begin{array}{r} -8 < 2x \leq 8 \\ 2 \quad \quad 2 \quad -2 \end{array}$$

$$-4 < x \leq 4$$



$$(-4, 4]$$

* multiply by 3 to get rid of denominator