

Notes 5.3 + 5.4

Algebra 1
1-14-14

Review 5.3

$$8x+5 \leq 6x+3(x+4)-(x+7)$$

$$8x+5 \leq 6x+3x+12-x-7$$

$$8x+5 \leq 8x+5$$

$$\begin{matrix} -8x & -8x \end{matrix}$$

$$5 \leq 5 \quad \text{all numbers}$$



Everything works

check: $8(2)+5 \leq 6(2)+3(2+4)-(2+7)$

$$21 \leq 12+18-9$$

$$21 \leq 21 \checkmark$$

Distribute
combine like terms
subtraction prop. =

graph

* to verify, you can check a false answer. If it comes out not true, you know you're right.

Preview 5.4-Part 1

Compound Inequalities

AND

both true

$$2 < x+3 < 7$$



OR

one or the other true

$$x-2 < 1 \quad \text{or} \quad 3x > 21$$



Solve the compound inequality.

1. $7 < x+2 \leq 11$

$$7 < x+2 \quad \text{and} \quad x+2 \leq 11$$

$$\begin{matrix} -2 & -2 \end{matrix}$$

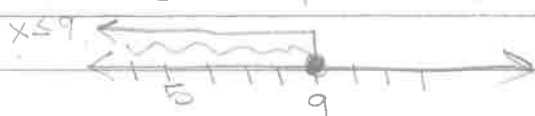
$$5 < x$$

$$\begin{matrix} -2 & -2 \end{matrix}$$

$$x \leq 9$$

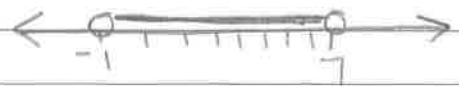
$$\boxed{5 < x \leq 9}$$

AND



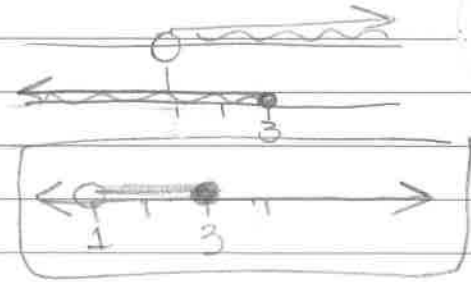
Short way

$$\begin{array}{r} 2. \quad -3 < x - 2 < 5 \\ +2 \quad +2 \quad +2 \\ \hline -1 < x < 7 \\ -1 < x < 7 \end{array}$$



check: $-1 < +1 < 7$

$$\begin{array}{r} 3. \quad 5 < 3h + 2 \leq 11 \\ 5 < 3h + 2 \quad 3h + 2 \leq 11 \\ -2 \quad -2 \quad -2 \quad -2 \\ \hline \frac{3}{3} < \frac{3h}{3} \quad \frac{3h}{3} \leq \frac{9}{3} \\ 1 < h \quad h \leq 3 \end{array}$$



$$\boxed{1 < h \leq 3}$$

OR

$$\begin{array}{r} 4. \quad 5 < 3h + 2 \leq 11 \\ -2 \quad -2 \quad -2 \\ \hline \frac{3}{3} < \frac{3h}{3} \leq \frac{9}{3} \\ 1 < h \leq 3 \end{array}$$

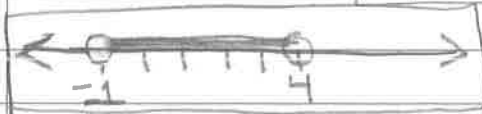
$$\boxed{1 < h \leq 3}$$

$$4. \quad 2c - 4 > -6 \text{ and } 3c + 1 < 13$$

$$\begin{array}{r} +4 \quad +4 \quad -1 \quad -1 \\ \hline \frac{2c}{2} > \frac{-2}{2} \quad \frac{3c}{3} < \frac{12}{3} \end{array}$$

$$c > -1 \quad c < 4$$

$$\boxed{-1 < c < 4}$$



Hw: p308 # 1-12 all


different than your stamp sheet

Notes: 5.3 + 5.4

1-14-14

Possible Inequality Solutions

① Eq: $x = 3$
Ineq: $x < 3$



A number line with a tick mark at 3. An arrow points to the left from 3, and the region to the left of 3 is shaded with wavy lines, representing the inequality $x < 3$.

② $2x + 1 = 2x + 3$
 $-2x \quad -2x$
 $1 = 3$ false
 $1 > 3$ false
 \emptyset
no solutions

③ $7x + 2 = 7x + 2$
 $-7x \quad -7x$



$2 = 2$ true

$2 \leq 2$ or $1 \leq 2$ true

All solutions



Compound Inequality:

"OR" Example

$k - 3 < -7$
 $+3 \quad +3$

$k + 5 \geq 8$
 $-5 \quad -5$

$k < -4$

$k \geq 3$



