Notes: U1AL7 Compound Inequalities Name: _____ HR: _____

Ur notes and questions

Target Skill(s):

1. Determine if a value is a solution to a compound inequality
2. Solve compound inequalities with "AND" statements or "OR" statements
3. Represent solutions as an inequality, graph, interval, and set

The words "AND" and "OR" are critical to math, computer programming, and life.

"AND" Statements:	"OR" Statements:
BOTH conditions must be met to be in the final SOLUTION SET.	ONE or BOTH conditions must be met to be in the final SOLUTION SET.
If you play in a school sport AND you are in ALGEBRA 2....	**If you play in a school sport OR you are in ALGEBRA 2....**

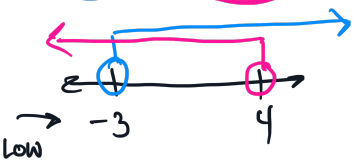
Write the solution set for the compound inequality and graph and write the simplest solution set.

"AND" Problems

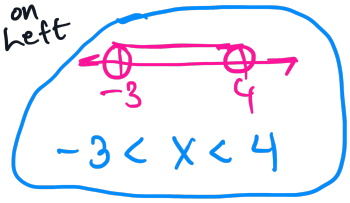
Must have 2 lines over them to be in the final set

AND : overlap

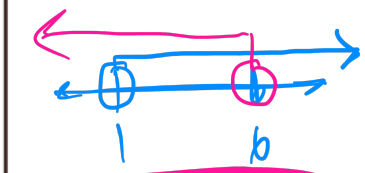
1. $x > -3$ and $x < 4$

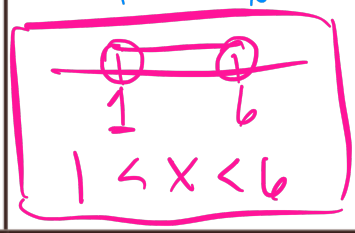


Low on Left



2. $x > 1$ and $x < 6$



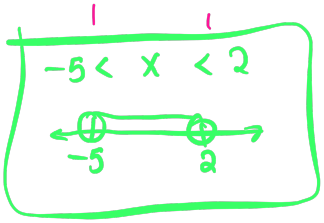


AND

3. $-4 < 2x + 6 < 10$

$-6 \quad -6 \quad -6$

$\frac{-10}{2} < \frac{2x}{2} < \frac{4}{2}$



4. $1 < 3x - 2 < 7$

$1 < 3x-2$ and $3x-2 < 7$

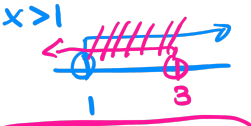
$+2 \quad +2 \quad +2 \quad +2$

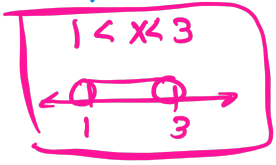
$3 < 3x \qquad 3x < 9$

$\frac{3}{3} < \frac{3x}{3} \qquad x < 3$

$1 < x$

$x > 1$

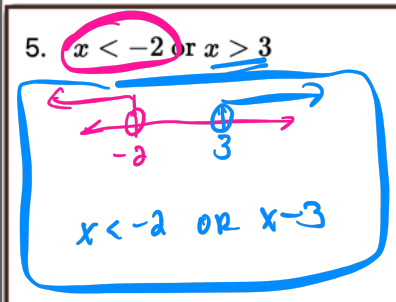




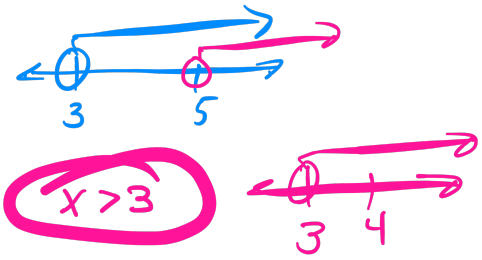
"OR" Problems

Must 1 or more lines over them to be in the final set

5. $x < -2$ or $x > 3$



6. $x > 3$ or $x \geq 5$

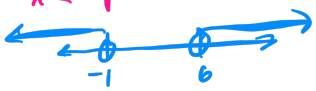


7. $2x - 3 < -5$ or $x + 4 > 10$

+3 +3 -4 -4

$\frac{2x}{2} < \frac{-2}{2}$ $x > 6$

$x < -1$

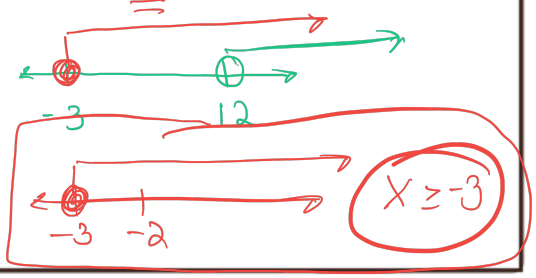


x < -1 OR x > 6

8. $\frac{x}{2} > 6$ or $-3x \leq 9$

$2 \cdot \frac{x}{2} > 6 \cdot 2$ OR $\frac{-3x}{-3} \leq \frac{9}{-3}$

$x > 12$ OR $x \geq -3$



Eliminating fractions to make problems easier.

9. $\frac{1}{2}x - 3 < 5$ and $\frac{3}{4}x + 2 \geq -1$

$\frac{1}{2}x - 3 < 5$

+3 +3

$2 \cdot \frac{1}{2}x < 8 \cdot 2$

$x < 16$

$\frac{3}{4}x + 2 \geq -1$

-2 -2

$4 \cdot \frac{3}{4}x \geq -3 \cdot 4$

$\frac{3x}{3} \geq \frac{-12}{3}$

$x \geq -4$





$-4 \leq x < 16$

$\leq$ $<$

10. $x - \frac{5}{2} > 4$ or $\frac{2}{3}x + 1 \leq -3$

+5/2 +5/2 -1 -1

$x > 6.5$ $6\frac{1}{2}$

$3 \cdot \frac{2}{3}x \leq -4 \cdot 3$

$\frac{2x}{2} \leq \frac{-12}{2}$

$x \leq -6$

$\frac{2}{2} \cdot \frac{4}{1} + \frac{5}{2}$

$\frac{8}{2} + \frac{5}{2} = \frac{13}{2}$

