3-5-> COMPOUND INEQUALITIES

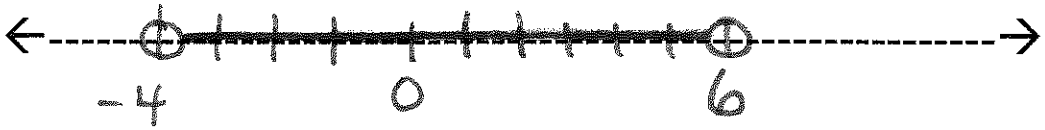
Compound Inequalities- More than one inequality, joined by "and" or "or," graphed on the same number line.

"AND"
Where BOTH graphs exist; where they overlap.
*They usually overlap in the middle.

"OR" Where EITHER graph touches.
*They usually point out, like boat oars.

Examples:

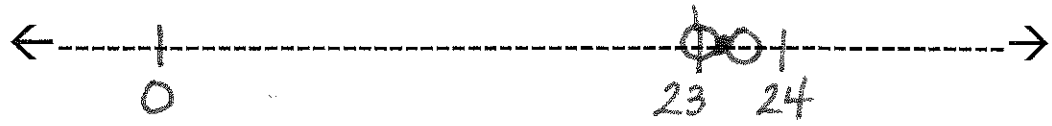
1) Between -4 and 6
*DOES NOT include those numbers



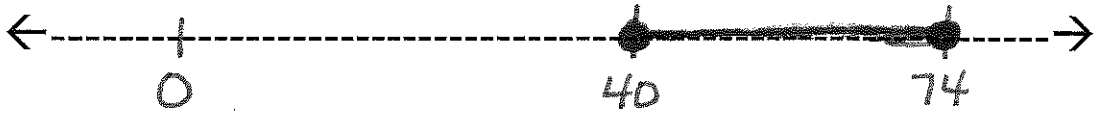
3.5 Notes

2) At least 2 and at most 9
*DOES include those numbers

3) Between 23 and 23.5



4) At least 40, but no more than 74



5) $-2 < X < 3$

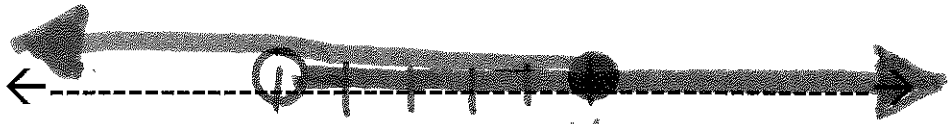
X is greater than; more than -2 but less than 3

"AND" EXAMPLES:

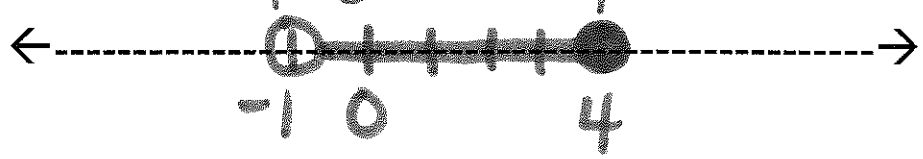
* Both overlap

1) $X > -1$ AND $X \leq 4$

Practice:



Answer:



3.5 Notes

2) $X > -2$ AND $X < 2$

Practice:

Answer:

3) $X \leq 5$ AND $X > 0$

Practice:

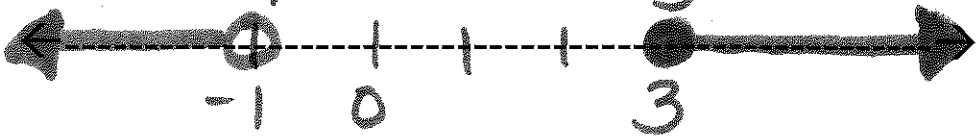
Answer:

"OR" EXAMPLES:

1) $X \geq 3$ OR $X < -1$

Practice:

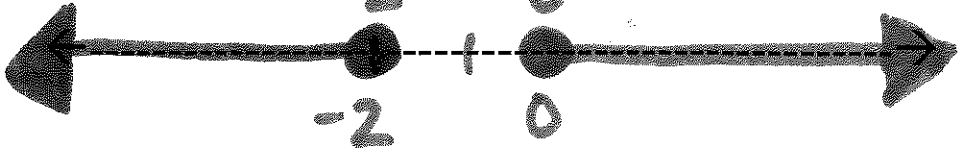
Answer:



2) $X \leq -2$ OR $X \geq 0$

Practice:

Answer:

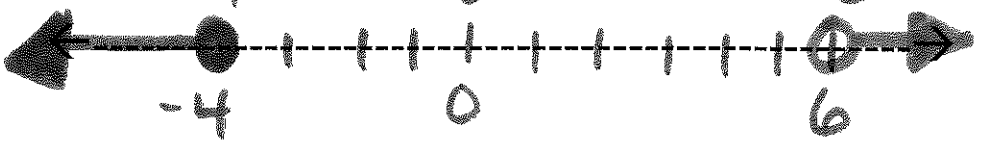


3.5 Notes

3) $X \leq -4$ OR $X > 6$

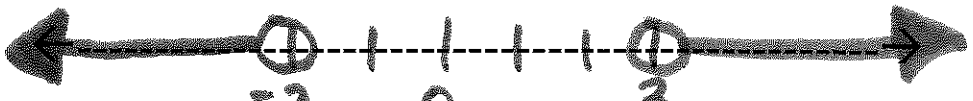
Practice:

Answer:



4) $X < -2$ OR $X > 3$

Practice:

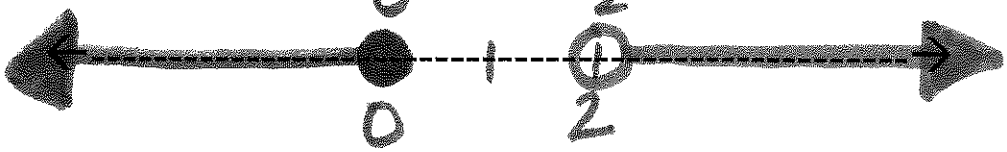


Answer:

5) $X \leq 0$ OR $X > 2$

Practice:

Answer:

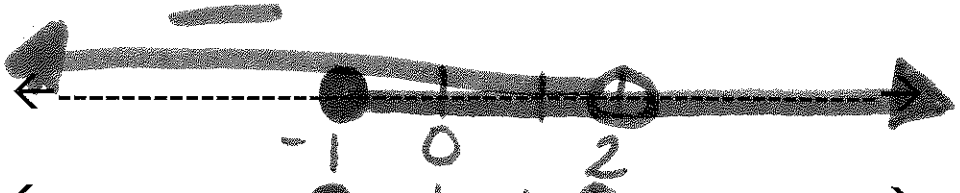


3.5 Notes

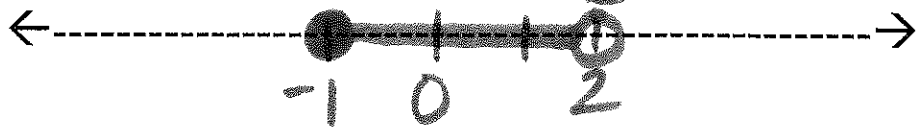
"AND" VS. "OR" EXAMPLES

1) $X \geq -1$ AND $X < 2$

Practice:

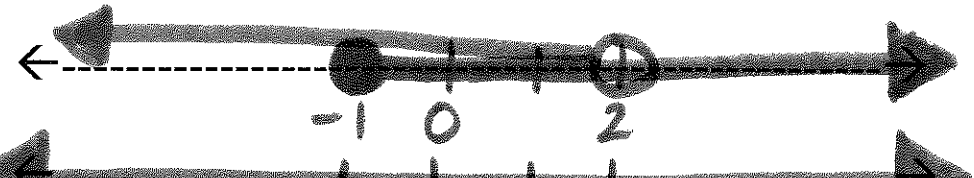


Answer:

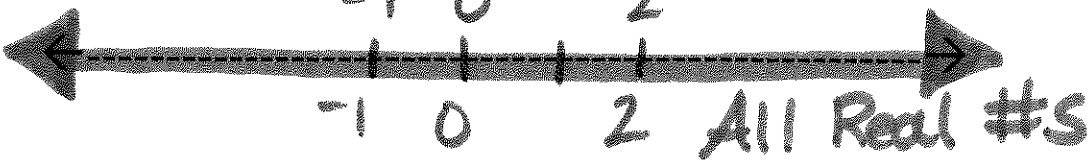


$X \geq -1$ OR $X < 2$

Practice:

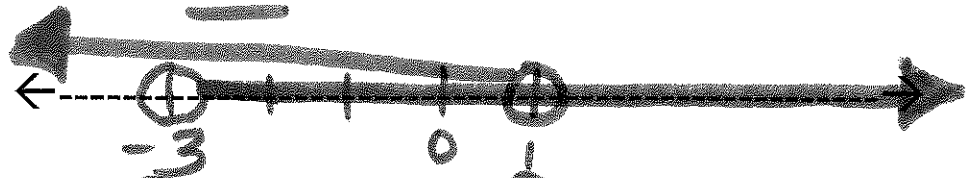


Answer:

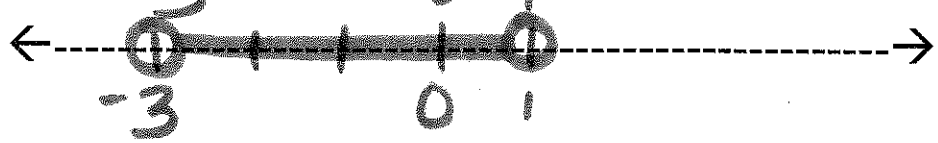


2) $X > -3$ AND $X < 1$

Practice:

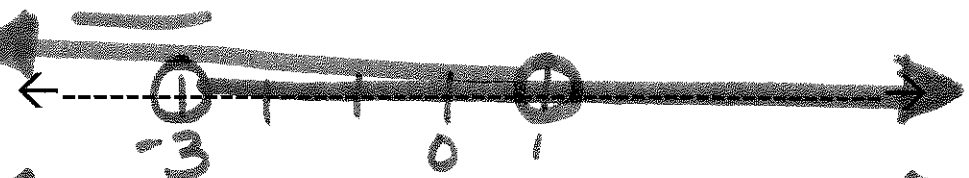


Answer:

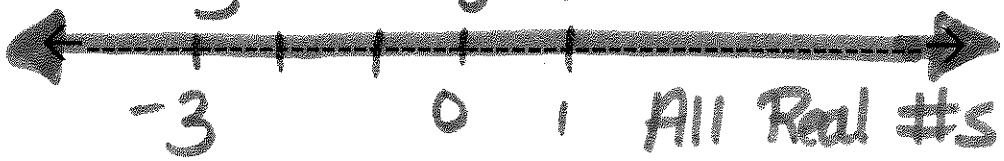


$X > -3$ OR $X < 1$

Practice:

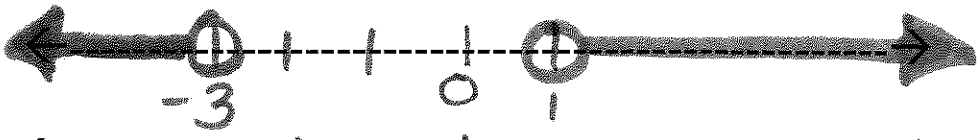


Answer:

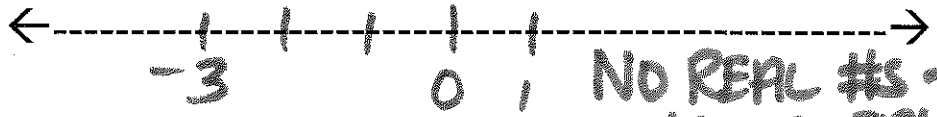


3) $X < -3$ AND $X > 1$

Practice:



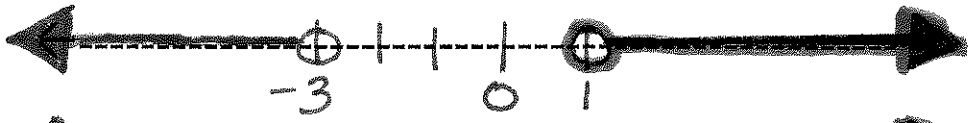
Answer:



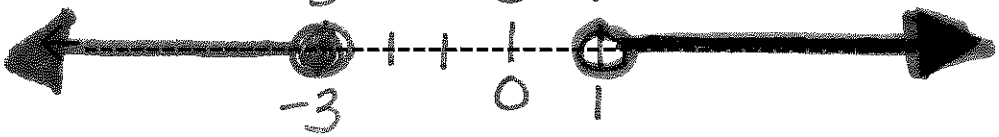
NO REAL #S - NO OVERLAP

$X < -3$ OR $X > 1$

Practice:



Answer:

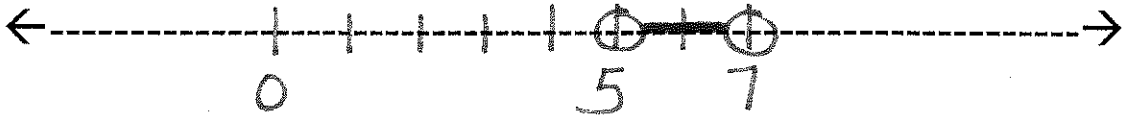


SOLVING COMPOUND INEQUALITIES:

1) $8 < W + 3 < 10$

$-3 \quad -3 \quad -3$

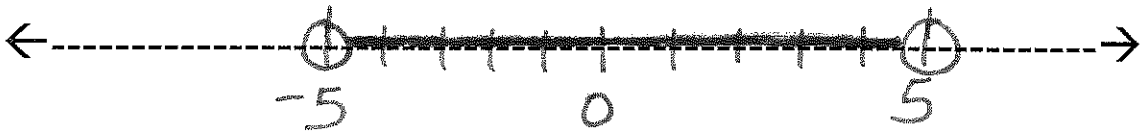
$5 < W < 7$



2) $-3 < j + 2 < 7$

$-2 \quad -2 \quad -2$

$-5 < j < 5$



3) $2 < 3n - 4 \leq 14$

$+4 \quad +4 \quad +4$

$\frac{6}{3} < \frac{3n}{3} \leq \frac{18}{3}$

$2 < n \leq 6$

4) $-1 < 4m + 7 \leq 11$

$-7 \quad -7 \quad -7$

$\frac{-8}{4} < \frac{4m}{4} \leq \frac{4}{4}$

$-2 < m \leq 2$