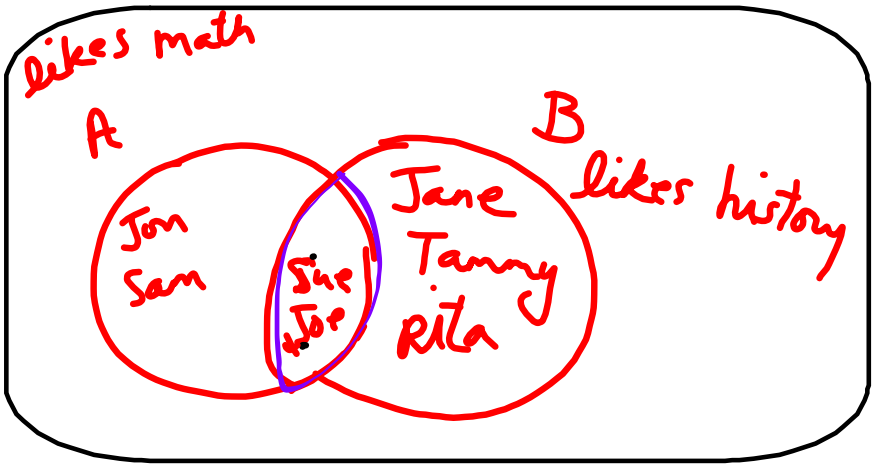
2.5 Solving Compound Inequalities

WARM-UP:



Who likes math **OR** history?

everyone

Who likes math **AND** history?

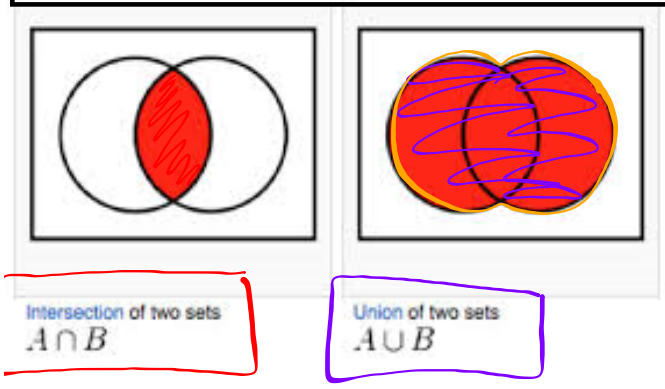
Sue, Joe

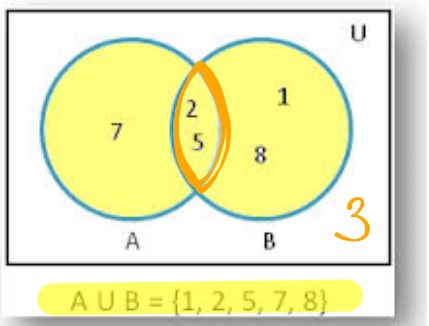
Oct 20-11:32 AM

Conjunction Words

OR "Union" (solution must work for one **or** the other inequality) ∪

AND "Intersection" (solution must work for **both** inequalities at the same time) ∩





How would you write the intersection of the 2 sets:

$A \cap B = \{2, 5\}$

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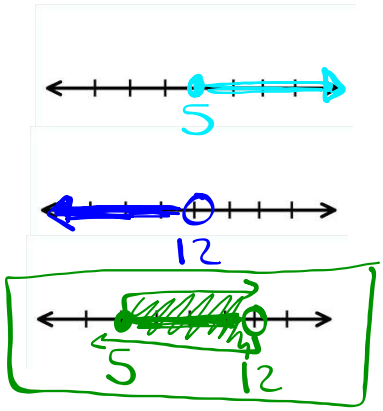
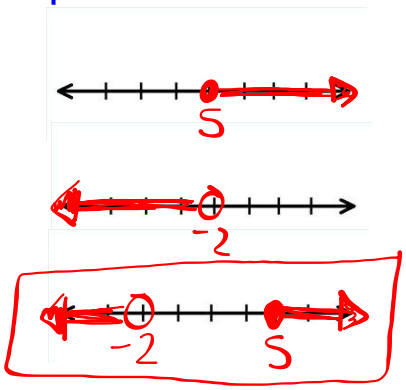
Ex.1: Graph the solution set of $y \geq 5$ and $y < 12$.



LOL → ∩ ← LOL

$5 \leq y < 12$

Graph the solution set of $y \geq 5$ or $y < -2$.



LOL → ∪ ← LOL

$y < -2 \cup y \geq 5$

Sep 20-10:19 AM

Ex. 2 Solve: $7 < z + 2 \leq 11$.

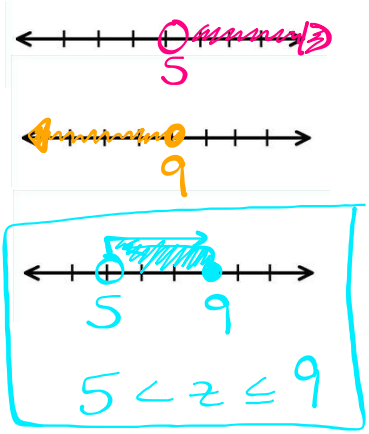
$7 < z + 2$ ∩ $z + 2 \leq 11$

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

$5 < z$ $\qquad z \leq 9$

$z > 5$ $\qquad$ LOL ← ●

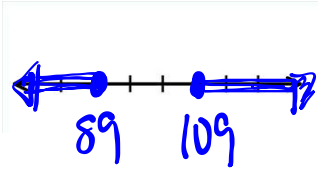
LOL → ○



$5 < z \leq 9$

Ex. 3: A ski resort has several types of hotel rooms and several types of cabins. The hotel rooms cost at most ($\leq$) $89 per night, and the cabins cost at least ($\geq$) $109 per night. Write and graph a compound inequality that describes the amount a guest would pay per night at the resort.

$r \leq 89 \cup r \geq 109$



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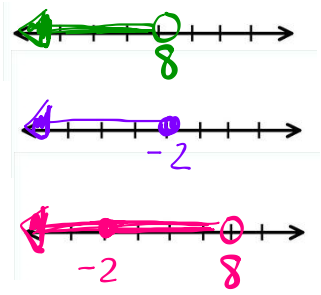
Ex.4 $4k - 7 < 25$ Or $12 - 9k \geq 30$

$+7 \quad +7$ $\cup$ $-12 \quad -12$

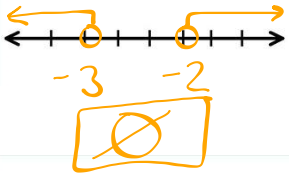
$\frac{4k}{4} < \frac{32}{4}$ $\frac{-9k}{-9} \geq \frac{18}{-9}$

$k < 8$ $k \leq -2$

LOL ○ LOL ●

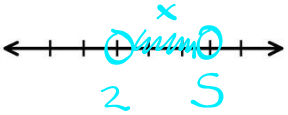


Ex. 5 graph x > -2 and x < -3 ∩



Ex. 6 graph x > -3 or x < -2 ∪

Ex. 7 graph 2 < x < 5



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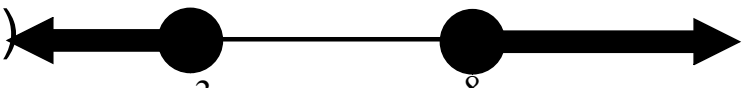
Write the compound inequality for each.

1)

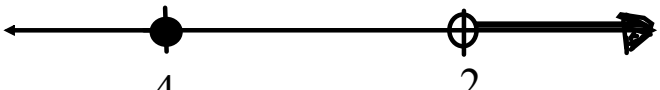
$-4 < x < -2$ ∩

2)



$x < -3 \quad \cup x > 8$

3)



$x = -4 \cup x > 2$

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