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2.5 Notetaking with Vocabulary

***Learning target*: Understand solving linear inequalities.**

Success criteria: I can solve compound linear inequalities. – write and graph compound inequalities

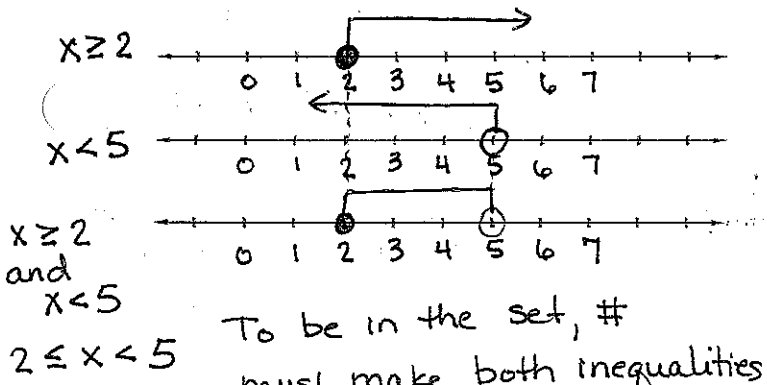
Write the meaning of each vocabulary term.

compound inequality - an inequality formed by joining 2 inequalities with the word "and" or the word "or".

Notes:

And : The intersection (overlap) of 2 inequalities.

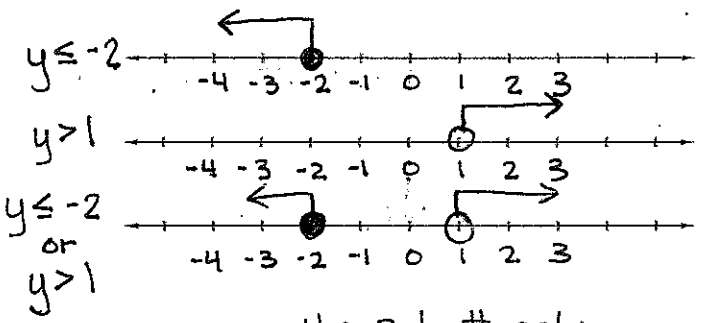
The graph shows #'s that are solutions of both inequalities. (exclusive)



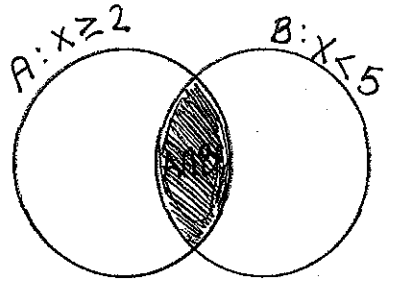
To be in the set, # must make both inequalities true.

Or : The union of 2 inequalities.

The graph shows #'s that are solutions to either inequality. (inclusive)

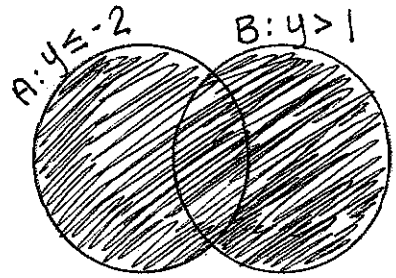


To be in the set, # only needs to make 1 inequality true.



And → Intersection → ∩

A∩B: 2 ≤ x < 5



Or → Union → ∪

A∪B: y ≤ -2 or y > 1

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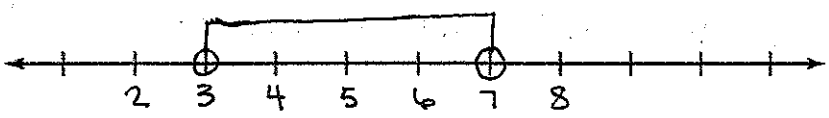
2.5 Notetaking with Vocabulary (continued)

Practice

In Exercises 1–5, write the sentence as an inequality. Graph the inequality.

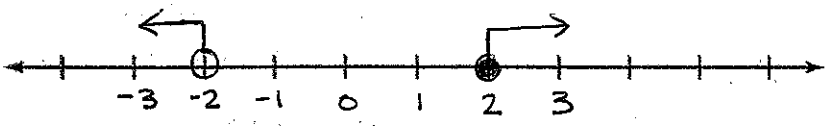
1. A number u is less than 7 and greater than 3.

$u < 7$ and $u > 3$



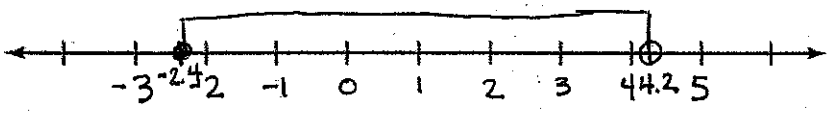
2. A number d is less than -2 or greater than or equal to 2.

$d < -2$ or $d \geq 2$



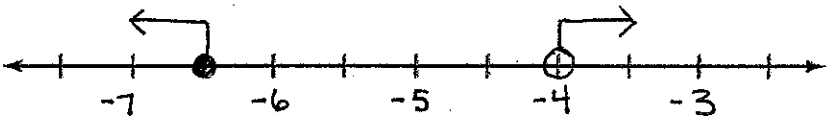
3. A number s is no less than -2.4 and fewer than 4.2.

$s \geq -2.4$ and $s < 4.2$



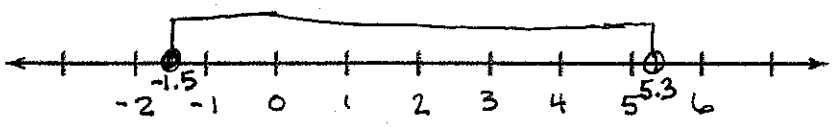
4. A number c is more than -4 or at most $-6\frac{1}{2}$.

$c > -4$ or $c \leq -6\frac{1}{2}$



5. A number c is no less than -1.5 and less than 5.3.

$c \geq -1.5$ and $c < 5.3$

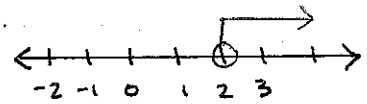


Most of the time "ands" look like islands

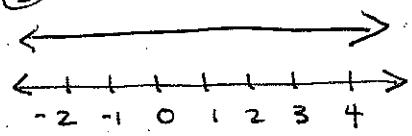
"ors" look like boat oars

Exceptions

① $x > 2$ and $x > -1$



② $x > -1$ or $x < 3$



all real #'s

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2.5 Notetaking with Vocabulary (continued)

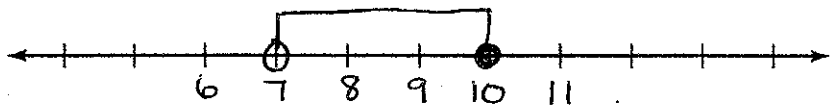
In Exercises 6–10, solve the inequality. Graph the solution.

6. $4 < x - 3 \leq 7$

$x - 3 > 4$ and $x - 3 \leq 7$

$+3 \quad +3 \qquad +3 \quad +3$

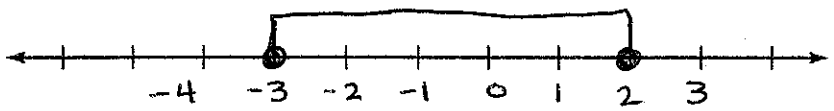
$x > 7$ and $x \leq 10$



7. $15 \geq -5g \geq -10$

$\frac{15}{-5} \geq \frac{-5g}{-5} \geq \frac{-10}{-5}$

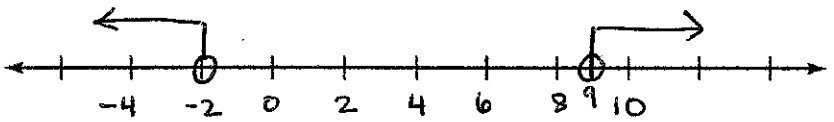
$-3 \leq g \leq 2$



8. $z + 4 < 2$ *or* $-3z < -27$

$-4 \quad -4 \qquad \frac{-3z}{-3} < \frac{-27}{-3}$

$z < -2$ or $z > 9$

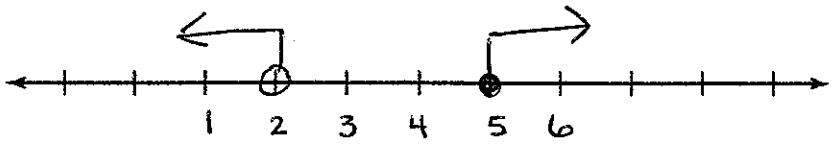


9. $2t + 6 < 10$ *or* $-t + 7 \leq 2$

$-6 \quad -6 \qquad -7 \quad -7$

$\frac{2t}{2} < \frac{4}{2} \qquad \frac{-t}{-1} \leq \frac{-5}{-1}$

$t < 2$ or $t \geq 5$

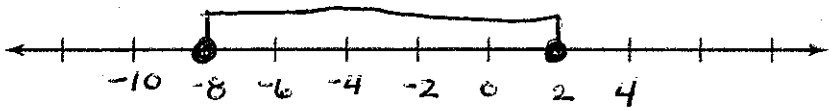


10. $-8 \le \frac{1}{3}(6x + 24) \le 12$

$-8 \le 2x + 8 \le 12$
$-8 \quad -8 \quad -8$

$\frac{-16}{2} \le \frac{2x}{2} \le \frac{4}{2}$

$-8 \le x \le 2$



11. A certain machine operates properly when the relative humidity h satisfies the inequality $-60 \le 2(h - 50) \le 60$. Solve for h to find the range of values for which the machine operates properly.

↳ get h alone

$-60 \le 2(h - 50) \le 60$

$-60 \le 2h - 100 \le 60$
$+100 \quad +100 \quad +100$

$\frac{40}{2} \le \frac{2h}{2} \le \frac{160}{2}$

$20 \le h \le 80$

For the machine to operate properly, the relative humidity must be greater than or equal to 20 and less than or equal to 80.