Notes: U1AL8 Compound Inequalities and Word Problems

Name: _____

Hr: _____

Target Skills:

- Identify and simplify special case compound inequalities
- Translate real-world sentences into compound inequalities with appropriate units.
- Write "inside" (AND) and "outside" (OR) inequalities from descriptions

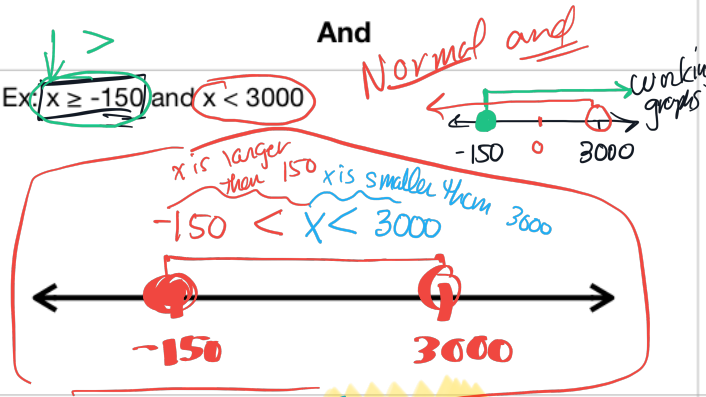
Part 1: Special Cases and Simplifying Same-Direction Inequalities

Sometimes, solving a compound inequality leads to a unique situation. Graphing the solutions will help you simplify the final answer!

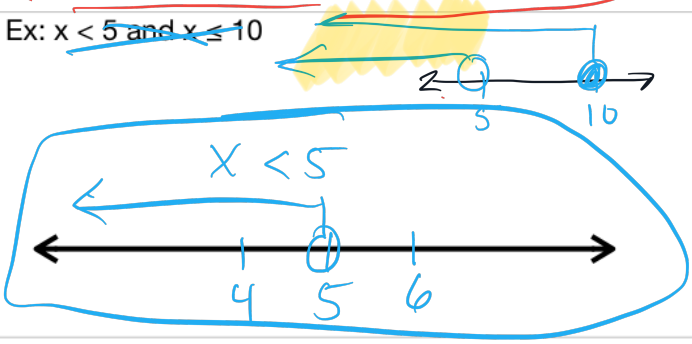
Directions: Graph each inequality and write the simplified final solution.

And

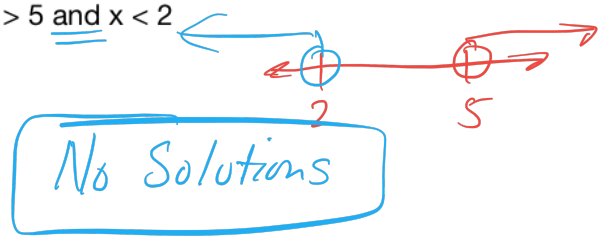
Ex: x ≥ -150 and x < 3000



Ex: x < 5 and x ≤ 10



Ex: x > 5 and x < 2



Ex: Write the inequality.

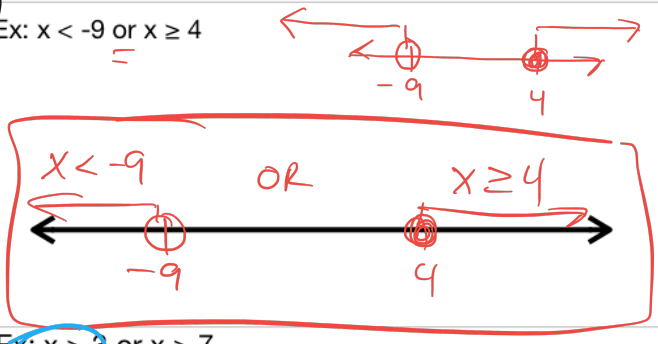


x < 4

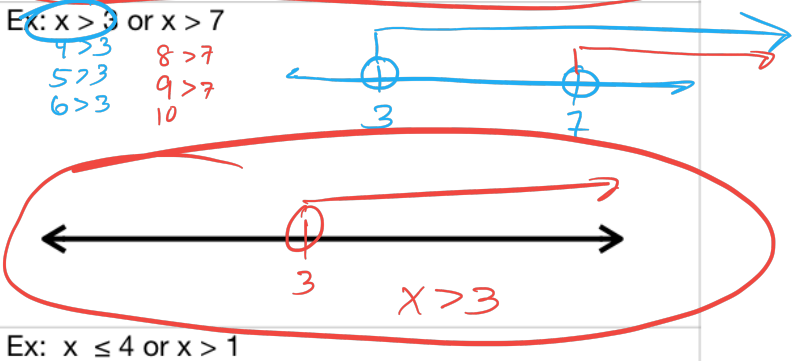
Or

Normal "Or"

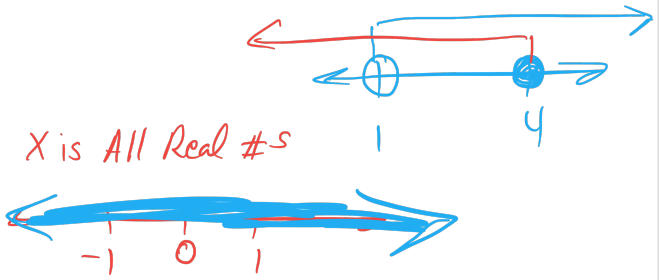
Ex: x < -9 or x ≥ 4



Ex: x > 3 or x > 7



Ex: x ≤ 4 or x > 1



Ex: Write the inequality



-8 ≤ x ≤ 2

Name: _____

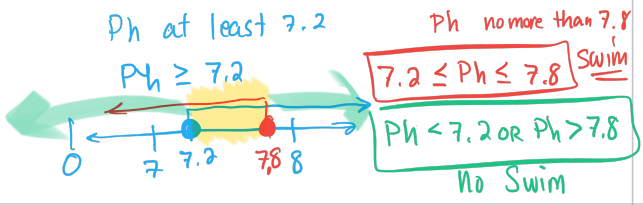
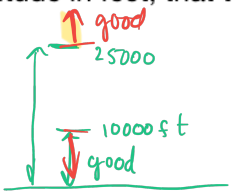
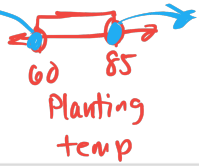
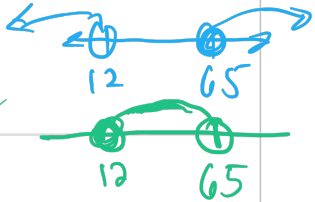
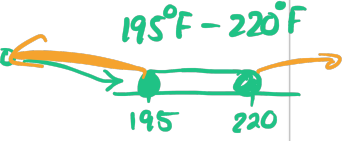
Hr: _____

Ex: Write the inequality.	Ex: Write the inequality
 $x < -4$ OR $x > 6$	 $x \leq -6$ OR $2 < x \leq 9$

Part 2: Writing Compound Inequalities from Text (Word Problems)

Identify the variable and its units.
Use AND for "between" (ranges where BOTH conditions must be met).
Use OR for "outside" (when ONLY ONE condition has to be true).

Read the description, define your variable, and write the compound inequality with units.

Column A	Column B
Ex: **Swimming Pool pH**: A public swimming pool's pH level must be at least 7.2 and no more than 7.8 to be safe for swimmers. Write a compound inequality for p, the pH level, that is SAFE. Write a compound inequality for when the water is UNSAFE. 	Ex: **Pilot Altitude:** A pilot is instructed to fly at an altitude below 10,000 feet or above 25,000 feet to avoid turbulent weather. Write an inequality for A, the altitude in feet, that the pilot CAN fly in.  $A < 10000$ ft OR $A > 25000$ ft
Ex: **Tomato Seeds:** Soil temperatures for planting tomato seeds should be strictly greater than 60°F and less than 85°F. Write an inequality for t, the temperature in °F, for IDEAL planting. Write an inequality for temperatures that are NOT IDEAL for planting. T = temp $t > 60°F$ $t < 85°F$ $T \leq 60°F$ OR $T \geq 85°F$ 	**8. Theme Park Discount:** A local theme park gives a ticket discount to children under 12 years old or seniors who are 65 years and older. Write an inequality for A, the age in years, to receive the discount. Write an inequality for the ages that pay REGULAR PRICE. Discount: $A < 12$ OR $A \geq 65$ $12 \leq A < 65$ yrs old Regular 
9. Vehicle Coolant: The normal operating range for a vehicle's coolant system is between 195°F and 220°F (inclusively). Write an inequality for c, the coolant temperature in °F, that is NORMAL. Write an inequality for the temperatures that would cause a WARNING LIGHT to turn on. Good Temp: $195 \leq T \leq 220$ 195°F – 220°F  Bad Temp: $T < 195°F$ OR $T > 220°F$	