

Name _____ Per _____

LO: I can solve one-variable linear inequalities and graph their solution on a number line.


 DO NOW On the back of this packet

TRUTH VALUES FOR AND AND OR

1. A compound AND statement will be **true** only if **all of the individual statements are true**.
2. A compound OR statement will be **true** if **at least one of its individual statements is true**.

SOLUTIONS SETS OF EQUATIONS AND INEQUALITIES

A value of a variable is **in the solution set** of an **equation** or **inequality** if it makes it **true** and is **not** in the solution set if it makes the value **false**.

 (1) **Need to know: Inequalities and when they are true**

pencil/pen

Linear inequalities tend to have an **infinite** amount of values for the replacement variable (typically x) that solve the inequality. Sometimes, we put two (or more) inequalities together and ask what x values make both true (AND) and which make either one or the other true (OR). You will deal with AND and OR along with **truth** values for the remainder of Algebra, so let's discuss them in an exercise.

Exercise #1: Consider each of the following compound (meaning more than one) inequality statements. Determine the truth value of both inequalities and then determine the overall truth value (or at least what you think it is).

(a) $7 > 3$ and $2 < 10$

(b) $5 < 10$ and $11 > 20$

(c) $-4 < 7$ or $8 < 2$

(d) $3 > 6$ or $8 < 5$

 (2) **Inequalities: Intuition and Mathematical Truth**

pencil/pen

Exercise #2: Consider the compound inequality: $8 > 2$ or $3 < 10$.

(a) Determine the truth value of each of the inequalities in this compound inequality.

(b) What does your intuition tell you the truth value of the compound statement is? What is the mathematical truth value? This is because in mathematics we use the **inclusive or**.

English Intuition Truth Value:

Mathematical Truth Value:

(3) **Inequalities: Truth Values**

pencil/pen

Exercise #3: Which of the following compound inequalities is false? Explain your reasoning by showing the truth values of each of the individual inequalities.

(1) $5 > 2$ or $4 < 1$

(3) $10 > 0$ or $-3 < 9$

(2) $-6 < 5$ and $7 \geq 7$

(4) $-2 \leq 4$ and $5 > 7$

(3) **Inequalities: Evaluating inequalities with variables**

pencil/pen

Exercise #4: Determine if each of the following values of x is in the solution set to the compound inequalities given below?

(a) Is $x = 2$ part of the solution set of $x > -3$ and $x < 5$? Justify your answer.

(b) Is $x = -4$ part of the solution set of $x \leq -4$ or $x > 0$? Justify your answer.

(c) Determine if $x = 1$ part of the solution set of:

$$3x + 8 > 9 \text{ and } -2x + 10 < 7$$

Justify.

(d) Determine if $x = 5$ part of the solution set of:

$$2x - 1 < 3 \text{ or } \frac{x + 7}{2} = 6$$

Justify.

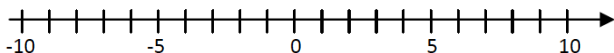
(4) **Inequalities: Number Line Graphs**

pencil/pen

Exercise #5: On the number lines below, shade in all values of x that solve the compound inequality. In other words, shade in the compound inequalities **solution set**. If you need a good place to start, try listing some x values that make the compound inequalities true.

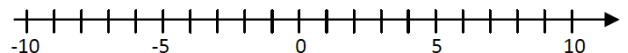
(a) $x < 7$ and $x \geq -2$

List some values:



(b) $x \geq 5$ or $x < -1$

List some values:



(5) **Exit Ticket**

ON THE LAST PAGE

 (6) **Homework**
 pen or
 pencil

FLUENCY

1. Determine if each of the following statements is true or false. Justify your answer.

(a) Albany is the capital of New York and New York City is the capital of New York. _____

(b) Albany is the capital of New York or New York City is the capital of New York. _____

(c) Poughkeepsie is the capital of New York or New York City is the capital of New York. _____

2. Determine the truth value of each of the following compound inequalities by first determining the truth value of each of the individual inequalities.

(a) $5 \leq 10$ and $3 < -4$

(b) $2 < 7$ or $-20 > -18$

(c) $-6 < -7$ or $-2 \leq -2$

(d) $-5 > -8$ and $5 < 8$

3. Which of the following compound inequalities is true? Explain your reasoning by showing the truth values of each of the individual inequalities.

(1) $5 > 2$ and $4 < 1$

(3) $-2 > 0$ or $-6 \geq 6$

(2) $5 \leq 5$ and $-6 \geq -5$

(4) $-2 \geq -4$ and $3 > 0$

(1) The LO (Learning Outcomes) are written below your name on the front of this packet. Demonstrate your achievement of these outcomes by doing the following:

(a) Write “yes” or “no” in each box.

When at a carnival there are height restrictions to go on each ride. Determine which rides each member of this family can go on by filling out the table below:

	The Swings: $h > 24$ and $h < 70$	The Twister: $h > 48$ or $h \leq 60$	Wooden Rollercoaster: $h > 42$ and $h < 72$	Tea cups: $h \leq 35$ or $h \geq 60$
Tracey: $h = 47$ inches				
Mark: $h = 70$ inches				
Marissa: $h = 28$ inches				

Which ride can every member go on?

(b) Do **ONE** of the problems below:

Determine if each of the following values of x is in the solution set to the compound inequalities given below? Justify each of your choices by showing your calculations.

(a) $x = 0$ for:

$$3x + 2 \leq 12 \text{ or } 3(x + 1) < -4(3x + 1)$$

(b) $x = 2$ for:

$$\frac{2(x + 1)}{3} \leq 6 \text{ and } -2(3 - 2x) < 2$$

(c) $x = -1$ for:

$$3x + 7 < -11 \text{ or } 4 - 2x \leq 18$$

(d) $x = 5$ for:

$$\frac{2x - 4}{2} \geq 3 \text{ and } \frac{x - 3}{4} = 2$$

DO NOW **Name** _____ **Date** _____ **Per** _____

1.8L

(1) Solving progress: Solve one of the two problems below.

(a) $-3(3q - 2) = 16 - 7q$

(b) $6r - 3(r - 4) = 27$

(2) Translation to algebra progress. A company made two orders. Each order had the same number of widgets. One order contained 6 more than twice the standard number of widgets. The second order contained 9 fewer than 5 times the standard number of widgets. Write an expression or equation to represent this situation. Be sure to write a "Let" statement.