Geometry Lomac 2015-2016 **Date** 9/24 **due** 9/25 **More Solving Linear Inequalities 1.7L**

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

☐ (1) pencil/pen **Need to know: Inequalities and when they are true**

PROPERTIES OF INEQUALITIES

1. **THE ADDITION (AND SUBTRACTION) PROPERTY:** If $a > b$ is true then $a + c > b + c$ is true.
2. **THE MULTIPLICATION (AND DIVISION) PROPERTY:** If $a > b$ is true then $c \cdot a > c \cdot b$ will be true if c is a positive number and $c \cdot a < c \cdot b$ will be true if c is a negative number.

☐ (2) pencil/pen **Inequalities: Solving**

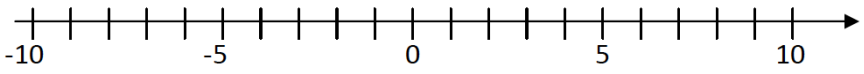
JUSTIFY YOUR ANSWER BY SHOWING YOUR PROCESS

***Exercise* #4:** Given the linear inequality $4x - 3 \geq 5$ do the following:

(a) Solve the inequality by applying the properties of inequalities that we found earlier.

(b) Write 5 numbers that make the final solution true and plot them on the number line below (c).

(c) Now, graph all of the solutions on the number line below (this is called the **solution set**).



☐ (2) pencil/pen **Inequalities: Solving**

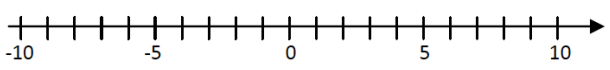
***Exercise* #5:** Given the linear inequality $8 - 2x > 16$ do the following:

(a) Rewrite the left hand expression as an equivalent expression using addition.

(b) Solve the inequality by applying the properties on inequality.

(c) Pick a number that is true based on your solution to (b) and show that it makes the original inequality true.

(d) Graph the solution to the inequality on the number line below.



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Inequalities differ from equations

JUSTIFY YOUR ANSWER BY SHOWING YOUR PROCESS

When we solve inequalities, we will also use the **commutative**, **associative**, and **distributive properties** of **numbers** (not equations) to write **simpler equivalent expressions** on both sides of the inequality.

***Exercise* #6:** Consider the inequality $8(x-2)-3(2x+1) \le 7x+4-3(x+1)$.

(a) Use the distributive, commutative, and associative properties of numbers to simply the left and right hand expressions of this inequality.

(b) Solve the inequality using the properties of inequality and graph the final solution set on a number line that you draw by hand.

☐ (4) pencil/pen

Inequalities: Application

Two siblings Edwin and Rhea are both going skiing but choose different payment plans. Edwin's plan charges \$45 for rentals and \$5.25 per lift up the mountain. Rhea's plan was a bundle where her entire day cost \$108.

(a) Set up an inequality that models the number of trips, n, up the mountain for which Edwin will pay more than Rhea. Solve the inequality.

(b) What is the greatest amount of trips that Edwin can take up the mountain and still pay less than Rhea? Explain how you arrived at your answer.

☐ (5) **Exit Ticket**

ON THE LAST PAGE

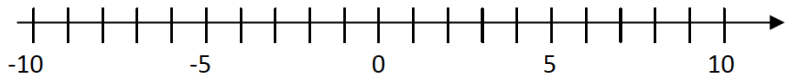
☐ (6) **Homework** BRING BACK SIGNATURE SHEET SIGNED AND . . .

pen or pencil

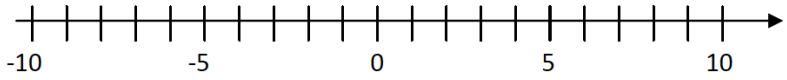
FLUENCY

1. Solve the inequality using the properties of inequality and graph the final solution set on the number line provided.

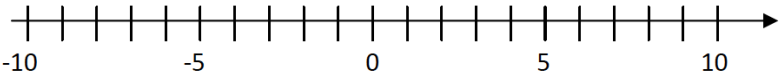
(c) $6-4x>18$



(d) $8x-6(x-2)>20-2x$



(e) $\frac{3(2x+2)}{6}>\frac{1}{3}x+2$



3. Given a, b, c, d are all positive, solve the following inequalities for x.

(a) $ax+b\geq cd$

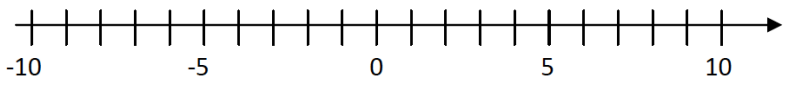
(b) $\frac{a(x+2)}{b}>c$

Exit Ticket **Name**_____ **Date** _____ _____ **Per**_ _____ **1.7L**

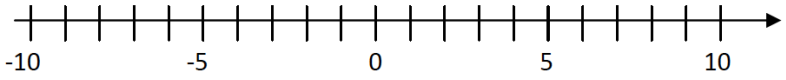
(1) The LO (Learning Outcomes) are written below your name on the front of this packet. Demonstrate your achievement of these outcomes by doing the following:

1. Solve the inequality using the properties of inequality and graph the final solution set on the number line provided.

(a) $5x-6\le 24$



(b) $2(5-x)\le 12$



DO NOW **Name**_____ **Date** _____ **Per**_____ **1.7L**

(1) Solve ONE of the equations below. List the "operations" and the "inverse operations" if you have trouble getting started or get stuck.

(a) $6x - 17 + x = 4x - 2$

(b) $5(x - 6) - 2x = 4(x + 3) - 7$

(2) Complete Exercise #1 and #2 below

***Exercise* #1:** Consider the **true** inequality $4 < 8$.

(a) If we add 3 to both sides of the inequality, what is the resulting inequality? Is it true?

(b) If we subtract 4 from both sides of the inequality, what is the resulting inequality? Is it true?

(c) If we multiply both sides of the inequality by 2, what is the resulting inequality? Is it true?

(d) If we divide both sides of the inequality by 2, what is the resulting inequality? Is it true?

***Exercise* #2:** Returning to our **true** inequality $4 < 8$.

(a) If we multiply both sides of the inequality by -2, what is the resulting inequality? Is it true?

(b) If we divide both sides of the inequality by -2, what is the resulting inequality? Is it true?