Name _____ Date: _____ Pd: _____

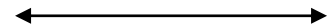Algebra U6L2 – Writing Inequalities from a problem situation

Warm Up…
Choose three problems in a row to form a tic-tac-toe. Solve and graph. Show all work.

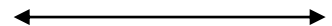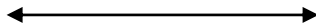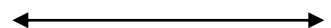|		
$6x - 18 - 4x < 22$	$4(5 + 2x) > 44$	$-2(3x - 2) > -4x + 12$
$2(3 + 3x) \geq 2x + 14$	$-4x + 28 > 8$	$\dfrac{1}{2}(2x + 8) \geq 4 + 6x$
$8x - 13x > -45$	$x + 4 > 13 - 2x$	$4(x - 1) > 4$

Today's Goal:
- KWBAT write a linear inequality given a story or problem situation
- WHY? There will be many times in our lives when understanding inequalities will help us. In most cases, we must be able to "translate" the problem into mathematical inequalities. Also, this is Algebra standard A.2H which we will encounter on our STAAR End of Course Test.

Example 1: Write an inequality that can be used to represent each situation. Solve the inequality

Tonka weighs 150 lb. He is loading a freight elevator with identical 72-pound boxes. The elevator can carry no more than 2000 lb. If Tonka rides up with the boxes, how many boxes can be loaded on the elevator?

Example 2:

Ted needs an average of at least 70 on his three history tests. He has already scored 85 and 60 on two tests. What is the minimum grade Ted needs on his third test?

Example 3:

For what values of x is the area of the rectangle greater than the area of the triangle?

x cm, 6 cm

4 cm, $(x + 6)$ cm

Independent Practice… (1) READ. (2) Write an Inequality. (3) Solve the Inequality. (4) Check the answer key

7 Canyu Canoe Co. rents canoes for $8 plus $3 per hour or any part of an hour. For how many hours can you rent a canoe if you want to spend no more than $25?
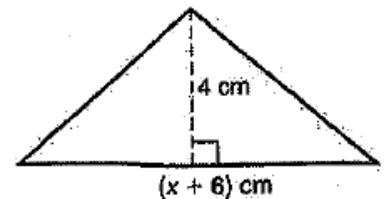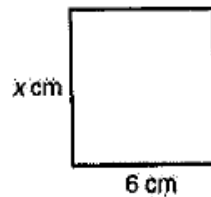
8 Klogg weighs 170 lb. He is loading a freight elevator with identical 69-pound boxes. The elevator can carry no more than 2000 lb. If Klogg rides up with the boxes, how many boxes can be loaded on the elevator?

9 Karina needs a total score of at least 627 on three games of bowling to break the league record. Suppose she bowls 222 on her first game and 194 on her second game. What score does she need on her third game to break the record?

10 Suppose you have a mailing that you want to weigh no more than 3 oz (to reduce costs). The manila envelope you are using weighs 0.52 oz, and each sheet of paper weighs 0.18 oz. How many sheets can you put in the envelope?

11 For lunch Tonka has a hamburger and potato chips. The hamburger has 380 calories and each chip has 12 calories. How many chips can Tonka eat if he wants the total calories to be less than 600?

12 Suppose you are a salesperson for Glitz 'n Glitter. Each month you earn $450 plus one eighth of your sales. What amount must you sell this month to earn more than $2000?

13 The Mega Middle School Carnival charges $4 for admission plus $0.75 for each ride ticket. How many ride tickets can you buy if you want to spend at most $20?

Answers for 7-13

L 215 or more

I 13 or less

F > $13,200

U 5 or less

N 21 or less

Y 211 or more

D 7 or less

C 18 or less

S 26 or less

M 16 or less

B > $12,400

What Did the Beaver Say to the Tree?

10	3	8	12	2	2	13	13	10	11	2	4	13	6	1	10	13	4	9	5	7

Review (use these answers and the answers to the previous page to complete the riddle)

1 $-7x + 4 \geq 18$

2 $-10 + \frac{x}{3} > -12$

Answers for Exercises 1–6

E $\quad$ number line with open circle at -6, shaded left; marks $-6\ -4\ -2\ 0\ 2\ 4\ 6$

G $\quad$ number line with closed circle at 2, shaded right; marks $-6\ -4\ -2\ 0\ 2\ 4\ 6$

A $\quad$ number line with closed circle at 6, shaded left; marks $-6\ -4\ -2\ 0\ 2\ 4\ 6$

3 $5 - 16x < 69$

4 $-\frac{1}{2}x - 98 \leq -99$

T $\quad$ number line with open circle at -4, shaded right; marks $-6\ -4\ -2\ 0\ 2\ 4\ 6$

K $\quad$ number line with open circle at 2, shaded left; marks $-6\ -4\ -2\ 0\ 2\ 4\ 6$

W $\quad$ number line with closed circle at -4, shaded left; marks $-6\ -4\ -2\ 0\ 2\ 4\ 6$

O $\quad$ number line with open circle at 4, shaded left; marks $-6\ -4\ -2\ 0\ 2\ 4\ 6$

5 $15x - 2 < 58$

6 $4 - \frac{5}{3}x \geq -6$