Name: _____

3.1.D1 – LINEAR REGRESSION

Past due on: _____ Period: _____

Identify the independent and dependent quantities (including units) in each problem situation. Assign a variable to each quantity. Then write a function to represent the problem situation. *Refer to the 2.1 example "Identifying Dependent & Independent Quantities and Writing an Expression" in the Chapter 2 Summary.*

1. The basketball booster club sells t-shirts at the varsity basketball games. Each t-shirt costs $12.

   Independent quantity: _____ *Variable:* _____

   Dependent quantity: _____ *Variable:* _____

   Function: _____

Use each scenario to complete the table of values and calculate the unit rate of change. *Refer to the 2.1 examples "Identifying Dependent & Independent Quantities and Writing an Expression" and "Determining the Unit Rate of Change" in the Chapter 2 Summary.*

2. Miguel is riding his bike to lacrosse practice at a rate of 7 miles per hour.

   UNIT RATE OF CHANGE:

	INDEPENDENT QUANTITY	DEPENDENT QUANTITY
QUANTITY		
UNITS		
	0	
	0.5	
	1	
	1.5	
	2	
EXPRESSION		

Identify the expression representing the input value, the output value, and the rate of change for each function. *Refer to "Problem 2.1: Analyzing Equations & Graphs" in your text.*

3. Rochelle is shopping for earrings. Each pair of earrings costs $15 dollars. The function $C(e) = 15e$ represents the total cost of the earrings as a function of the number of pairs of earrings Rochelle buys.

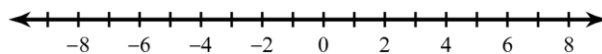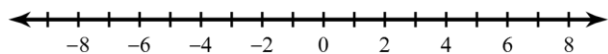   *Input value:* _____   *Output value:* _____   *Rate of change:* _____

Write and solve an inequality to answer the question. *Refer to the 2.3 example "Writing & Solving Inequalities" in the Chapter 2 Summary.*

4. Leon plays on the varsity basketball team. So far this season he has scored a total of 52 points. He scores an average of 13 points per game. The function $f(x) = 13x + 52$ represents the total number of points Leon will score this season. How many more games must Leon play in order to score more than 200 points?

Solve each inequality and graph the solution set. *Refer to the 2.3 example "Solving an Inequality with a Negative Rate of Change" in the Chapter 2 Summary.*
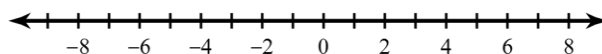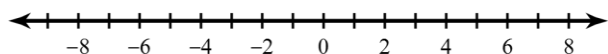
5. $-3(x + 4) \geq 9$

6. $-2(x - 1) - 8 \leq 10$

<--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+-->
‑8   ‑6   ‑4   ‑2   0   2   4   6   8

<--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+-->
‑8   ‑6   ‑4   ‑2   0   2   4   6   8

Solve each compound inequality and graph its solution set. *Refer to the 2.4 example "Solving Compound Inequalities" in the Chapter 2 Summary.*
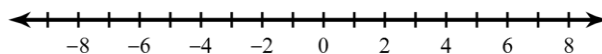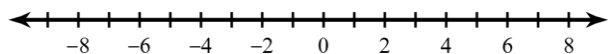
7. $4 \leq 2x + 2 < 12$

8. $x + 5 > 14 \ or \ 3x < 9$

<--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+-->
‑8   ‑6   ‑4   ‑2   0   2   4   6   8

<--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+-->
‑8   ‑6   ‑4   ‑2   0   2   4   6   8

9. $-5x + 1 \geq 16 \ or \ x - 6 \leq -8$

10. $-5 < 7x - 5 \leq 16$

<--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+-->
‑8   ‑6   ‑4   ‑2   0   2   4   6   8

<--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+-->
‑8   ‑6   ‑4   ‑2   0   2   4   6   8

11. $-11 \leq -2x + 1 \leq -3$

12. $3x - 8 < 13 \ or \ -3x + 10 > 25$

<--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+-->
‑8   ‑6   ‑4   ‑2   0   2   4   6   8

<--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+-->
‑8   ‑6   ‑4   ‑2   0   2   4   6   8