Name: _____

3.1.D3 – LINEAR REGRESSION

Past due on: _____ Period: _____

Use a graphing calculator to determine the linear regression equation and the correlation coefficient (rounded to 4 decimal places) for each given set of data. Then use the equation to make the prediction. *Refer to the 3.1 example "Using Linear Regression to Model Data and Make Predictions" in the Chapter 3 Summary.*

1. The table shows the attendance for the varsity football games at Pedro's high school.
   a. Linear regression equation:
   b. Correlation coefficient:
   c. Predict the attendance for Game 9.

GAME	ATTENDANCE
1	2000
2	2132
3	2198
4	2301
5	2285
6	2401

2. The table shows the average price for a gallon of gas for 6 months. *January is represented by* $x = 1$.
   a. Linear regression equation:
   b. Correlation coefficient:
   c. Predict the average price for a gallon of gas in August.

MONTH	PRICE OF GAS
January	3.15
February	3.22
March	3.19
April	3.28
May	3.35
June	3.32

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.*

3. Manuel has already sold $20 worth of tickets to the school play. He still has tickets left to sell at $2.50 per ticket. Write a function to describe how much money Manuel can collect from selling tickets.

   Independent quantity: _____ *Variable:* _____

   Dependent quantity: _____ *Variable:* _____

   Function: _____

4. A mail-order company charges $5 for an order plus $2 per item in the order. Write a function to describe the total amount charged for a mail-order.

   Independent quantity: _____ *Variable:* _____

   Dependent quantity: _____ *Variable:* _____

   Function: _____

5. A pool containing 10,000 gallons of water is being drained. Every hour, the volume of the water in the pool decreases by 1500 gallons. Write a function to describe the volume of water in the pool.

   Independent quantity: _____ *Variable:* _____

   Dependent quantity: _____ *Variable:* _____

   Function: _____

6. A photographer charges a sitting fee of \$15 plus \$3 for each pose. Write a function to describe the total amount the photographer charges.

Independent quantity: _____ *Variable:* _____

Dependent quantity: _____ *Variable:* _____

Function: _____

Complete the table to represent each problem situation. *Refer to the 2.2 example "Comparing Tables, Equations, and Graphs to Model and Solve Linear Situations" in the Chapter 2 Summary.*

7. Cassidy went to the movies with some of her friends. The tickets cost \$6.50 each and they spent \$17.50 on snacks.

	INDEPENDENT QUANTITY	DEPENDENT QUANTITY
QUANTITY		TOTAL COST
UNITS		
	1	
	5	
		63
EXPRESSION		

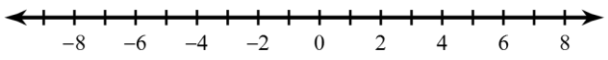
8. Three friends go bowling. The cost per person per game is \$5.30. The cost to rent shoes is \$2.50 per person.

	INDEPENDENT QUANTITY	DEPENDENT QUANTITY
QUANTITY		TOTAL COST
UNITS		
	1	
	3	
		102.90
EXPRESSION		

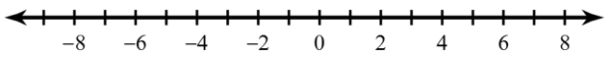
Solve each compound inequality and graph its solution set. *Refer to the 2.4 example "Solving Compound Inequalities" in the Chapter 2 Summary.*

9. $-15 \leq 4x - 3 < 9$

10. $5x - 3 > 7 \ \ or \ \ 4x - 6 < -10$



11. $3 < 4x - 5 \leq 15$



12. $12x - 3 \geq 15x \ \ or \ \ -0.2x + 6 < 5$