CP Algebra 2 Name: _____

Unit 5: Practice Regression Date: _____ Block: _____

1. The success of a shopping center can be represented as a function of the distance (in miles) from the center of the population and the number of clients (in hundreds of people) who will visit. The data is given in the table below:

Distance	5	19	25	23	34	40
# of customers	8	7	6	4	2	1

   a. State the type of correlation
   b. Find the equation of the line of best fit.
   c. Find the correlation coefficient.
   d. If the mall is located 2 miles from the center of the population, how many customers should the shopping center expect?

2. The heights (in centimeters) and weight (in kilograms) of 10 basketball players on a team are:

Height (cm)	186	189	190	192	193	193	198	201	203	205
Weight (kg)	85	85	86	90	87	91	93	103	100	101

   a. State the type of correlation
   b. Find the equation of the line of best fit.
   c. Find the correlation coefficient.
   d. The estimated weight of a player who measures 208 cm.

3. The table shows the prices of an ice cream cake, depending on its size. Find a quadratic model for the cost of an ice cream cake, given the diameter. Then use the model to predict the cost of an ice cream cake with a diameter of 18 in.

Diameter (in)	6	10	12
Cost	$7.50	$12.50	$18.25

4. Tessa is running a chemical reaction that can be models by a quadratic function. When she begins the reaction there are 20 grams of sodium chloride present. At 2 minutes there are 48 grams of sodium chloride. At 5 minutes there are 60 grams of sodium chloride. Write a quadratic model for her data. At what time will the sodium chloride be used up in the reaction?

(HINT: Make your own table!)

5. As a science experiment, Chad recorded the percent humidity and the number of stars he could see at 10:00 pm each evening. Use the data to determine the best function that represents it and describe the relationship Chad found between the percent humidity and the number of stars visible.

Star Counting

Humidity %	84	76	79	88	95	82	87	88	75	82
# of visible stars	12	22	25	15	8	19	13	11	29	22

6. As Earth's population continues to grow, the solid waste generated by the population grows with it. Governments must plan for disposal and recycling of ever growing amounts of solid waste. Planners can use data from the past to predict future waste generation and plan for enough facilities for disposing of and recycling the waste. Given the following data on the waste generated in Florida from 1990-1994, how can we construct a function to predict the waste that was generated in the years 1995-1999? Predict the average tons of waste in 2000 and 2005 and determine which function gives the most realistic predictions.

Year	Tons of Solid Waste Generated (in thousands)
1990	19,358
1991	19,484
1992	20,293
1993	21,499
1994	23,561

7. The estimated number of children that were home-schooled in the years from 1992 to 1997 are shown in the chart below. Find the linear and quadratic regression for the given data. Use both curves to predict the number of children home-schooled in the year 2005. Which solution is the best for the data? Use math to back up your claim.

Year	Number
1992	703,000
1993	808,000
1994	929,000
1995	1,060,000
1996	1,220,000
1997	1,347,000

8. With the explosion of increased internet use, more and more travelers are booking their travel reservations on-line. The following table lists the on-line revenue for recent years. More of the revenue is from airline tickets. After finding the linear and quadratic model that fits the data, predict the travel revenue in 2010. Back up your answer!

Year	On-Line Travel Revenue (In Millions)
1996	276
1997	827
1998	1900
1999	3200
2000	4700
2001	6500
2002	8900