

Put all of your work on a separate sheet of paper. Make sure that it is neat and your answers are easy to find!!!!

1. The following table gives the average temps for North Carolina on a fall day beginning at 6 a.m.

Hour	1	2	3	5	7	9	12	15	18	20	24
Temperature	46	55	61	71	75	75	68	62	52	48	49

- Find an equation to model this data.
- At what hour was the temperature at its highest?
- What was the temperature the hour before this data was collected (Hint: time = 0)?

2. The following table is the number of tornados from 1992 to 2001.

Year	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Tornados	31	11	6	18	20	15	9	3	7	17

- Describe the scatter plot.
- Make a conjecture about which regression will be the best fit for this data. Explain.
- Find a regression model.
- According to your model how many tornados were there in 2002?

3. The table shows the number of diamonds (in millions) sold around the world over a 20 year period.

Years	1	2	5	7	10	12	15	18	20
Diamonds	175	300	500	540	498	450	425	512	663

- Find an equation to model the given data.
- According to the model how many diamonds were sold the year before this table began?
- Use your model to predict how many millions of diamonds will be sold in year 21.

4. The cost to rent a U-Haul increases with each mile the U-Haul is driven. Below is a table showing the cost and the miles driven.

Miles	5	10	15	25	35	50	75	100	115	150
Cost	252.00	253.25	254.15	257.00	260.10	263.45	267.90	272.00	275.25	279.95

- Find a linear regression to model the data.
- Explain the slope and the y intercept for this problem.
- Use your model to predict the total cost of renting a U-Haul if you are going to take it 275 miles.

5. A \$20,000 car depreciates at a rate of 8% per year.

- Find an exponential equation to model this situation.
- Use your model to find the value of the car after each of the following years:
 - 1 yr
 - 3 yr
 - 5 yr
 - 10 yr

6. A ball is thrown straight up with an initial velocity of 56 ft/s. The height of the ball t seconds after it is thrown is given by the formula $h(t) = 56t - 16t^2$.

- What is the height of the ball after 1 second?
- After how many seconds will it return to the ground?
- What is the maximum height of the ball?