Name: _____
Algebra 2 & Trig - Worksheet on Regression Equations

STAT → CALC → 4: LinReg (ax + b)
9: LnReg
0: ExpReg
A: PwrReg

1. A real estate agent plans to compare the price of a cottage, y, in a town on the seashore to the number of blocks, x, the cottage is from the beach.

a) Write a linear regression equation that relates the price of a cottage to its distance from the beach *to the nearest tenth.*

b) Use the equation to predict the price of a cottage, to the *nearest dollar*, located three blocks from the beach.

Number of Blocks from the Beach (x)	Price of a Cottage (y)
5	$132,000
0	$310,000
4	$204,000
2	$238,000
1	$275,000
7	$60,800

2. The accompanying table shows the percent of the adult population that married before age 25 in several different years.

a) Find the linear regression equation and round the regression coefficients to the *nearest hundredth*.

b) Using the equation found above, estimate the percent of the adult population in the year 2009 that will marry before age 25, and round to the *nearest tenth of a percent*.

Year (x)	Percent (y)
1971	42.4
1976	37.4
1980	37.1
1984	34.1
1989	32.1
1993	28.8
1997	25.7
2000	25.5

3. A box containing 1,000 coins is shaken, and the coins are emptied onto a table. Only the coins that land heads up are returned to the box, and then the process is repeated. The accompanying table shows the number of trials and the number of coins returned to the box after each trial.

Trial	0	1	3	4	6
Coins Returned	1,000	610	220	132	45

a) Write an exponential regression equation, rounding the calculated values to the *nearest ten-thousandth*.
b) Use the equation to predict how many coins would be returned to the box after the eighth trial.

4. The accompanying table shows the number of bacteria present in a certain culture over a 5-hour period, where x is the time, in hours, and y is the number of bacteria.

x	y
0	1,000
1	1,049
2	1,100
3	1,157
4	1,212
5	1,271

a) Write an exponential regression equation for this set of data, rounding all values to *four decimal places*.
b) Using this equation, determine the number of whole bacteria present when x equals 6.5 hours.

5. The accompanying table shows wind speed and the corresponding wind chill factor when the air temperature is 10ºF.

Wind Speed (mi/h) x	**Wind Chill Factor** (°F) y
4	3
5	1
12	−5
16	−7
22	−10
31	−12

a) Write the logarithmic regression equation for this set of data, rounding coefficients to the *nearest ten thousandth*.
b) Using this equation, find the wind chill factor, to the *nearest degree*, when the wind speed is 50 miles per hour.

6. The table below shows the results of an experiment involving the growth of bacteria.

Time (x) (in minutes)	1	3	5	7	9	11
Number of Bacteria (y)	2	25	81	175	310	497

a) Write a power regression equation for this set of data, rounding all values to *three decimal places*.
b) Using this equation, predict the bacteria's growth, to the *nearest integer*, after 15 minutes.