Name: _____ Date: _____

Scatter Plots and Line of Best Fit

**A little vocab…**

- The _____ is the line that lies as close as possible to all the data points.

- _____ is a method used to find the equation of the best fitting line or curve.

- _____ is the use of the regression curve to make predictions outside the domain of values of the independent variable.

- _____ is used to make predictions within the domain of values of the independent variable.

<u>**Line of Best Fit by Hand**</u>:

1. The environment club is interested in the relationship between the number of canned beverages sold in the cafeteria and the number of cans that are recycled. The data they collected are listed in this chart.

Beverage Can Recycling								
Number of Canned Beverages Sold	18	15	19	8	10	13	9	14
Number of Cans Recycled	8	6	10	6	3	7	5	4
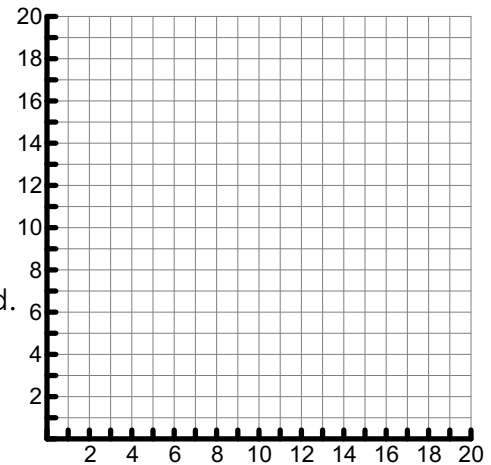
a) Plot the points to make a scatter plot.

b) Use a straightedge to approximate the line of best fit by hand.

c) Find an equation of the line of best fit for the data.

<u>**Line of Best Fit using the calculator:**</u>

1. DATA DATA 4 (this will clear all data already in the tables)
2. DATA (type in data)
3. 2nd DATA
4. LinReg ax + b (for linear regression)
   ExpReg ab^x (for exponential regression) (for TI-36 PRO only)
      L1   L2   ONE   YES   CALC
5. a =
   b =
   r =
6. The equation of the line is y = ax + b
7. Correlation Coefficient is r.

2. The table shows the total outstanding consumer debt (excluding home mortgages) in billions of dollars in selected years. (Data is from the Federal Reserve Bulletin.)

Let x = 0 correspond to 1985.

Year, t	1985	1990	1995	2000	2003
Consumer Debt	585	789	1096	1693	1987

a) Find the line of best fit. Round to two decimal places.

b) Find and interpret the slope of the line of best fit.

c) Find the approximate consumer debt in 1998.

d) Find the approximate consumer debt in 2008.

3. The table below shows the number of deaths per 100,000 people from heart disease in selected years. (Data is from the U.S. National Center for Health Statistics.)

Let x = 0 correspond to 1960.

Year	1960	1970	1980	1990	2000	2002
Deaths	559	483	412	322	258	240

a) Find the line of best fit. Round to two decimal places.

b) Find and interpret the slope of the line of best fit.

c) Find the approximate number of deaths due to heart disease in 1995.

d) Find the approximate number of deaths due to heart disease in 2008.