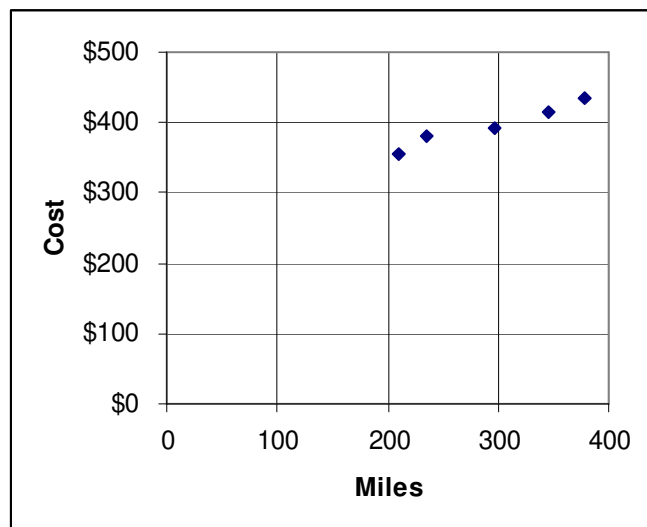


Linear Regression

Example: The number of dollars per month it costs you to own a car varies linearly with the number of miles per month you drive it. Use the data below to determine the linear equation that best fits the data.



Miles Driven	Monthly Cost
210	\$355
235	\$382
297	\$391
346	\$415
378	\$435

1. Clear all lists in your calculator's memory.
Press **2nd**, **MEM**, **4**.
2. Enter the miles driven into List 1.
Press **STAT**, **1**. Move the cursor over to L1 and type in the numbers.
3. Enter the monthly cost into List 2.
Move the cursor over to L2 and type in the numbers.
4. Calculate the linear equation.
Press **STAT**, **CALC**, **4**.
Press **ENTER** until the calculator solves the problem.
Write down the values for a and b that are displayed.
The slope of your line is "a" and the y-intercept is "b".
6. Enter the equation of the line in your calculator so you can see the graph.
7. Set the display window large enough to see your line. Look at the data in the table to determine your minimum and maximum values of x and y.
8. Display your data points along with your line.
Press **2nd**, **STAT PLOT**, **ENTER**.
Move the cursor so that ON is highlighted, then press **CLEAR**.
9. View the graph of your line and the data points.

To Change the Display on Your Graph:

Press WINDOW on the top row of your calculator.

Xmin = the lowest x value on the horizontal axis

Xmax = the highest x value on the horizontal axis

Xscl = the spacing between tick marks on the axis

Ymin = the lowest y value on the vertical axis

Ymax = the highest y value on the vertical axis

Yscl = the spacing between tick marks on the axis

To make your graph look like the one on the front of this page, you would enter:

Xmin = 0

Xmax = 400

Xscl = 100

Ymin = 0

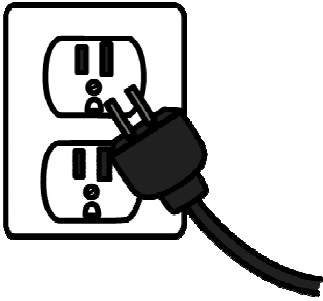
Ymax = 500

Yscl = 100

Linear Regression Homework

Round answers to 2 decimal places.

1. The higher the daily temperature, the higher your electricity consumption.



High Temp.	Kilowatt-Hours Used
85	32
72	26
76	29
81	30
88	35
93	38

- Write the equation that best fits this data.
- Use your equation to predict your electricity consumption on a day with a high temperature of 100° .
- If your consumption was 20 kilowatt-hours, what would be a reasonable value for the daily high temperature?

2. Joe, owner of Java Joe's Coffee House, has noticed a relation between the number of customers in the coffee house and the number of pots of coffee they serve per hour.

Counter Customers	Pots of Coffee Served
4	2
7	3
10	6
11	5
12	6
14	8
15	8



- Write the equation that best fits this data.
- Each pot of coffee costs Joe \$3.82 to brew. Predict his expenses if 18 people were in the coffee house. (How many pots of coffee does he need?)
- How many customers would be in the coffee house if they served 19 pots in one hour?

3. When the temperature of a gas increases, its volume increases. In Chemistry lab, you did an experiment and measured the volume of helium gas at different temperatures. Here's the data you recorded.

Temperature (°C)	Volume (Liters)
160°	16
200°	17.9
240°	20.1
300°	21.8

- Write the equation that best fits the data.
- What would the volume of gas be at 100 °degrees Celsius?
- At what temperature would the gas have a volume of 22 Liters?
- What is the volume of the gas when the temperature is 0°?