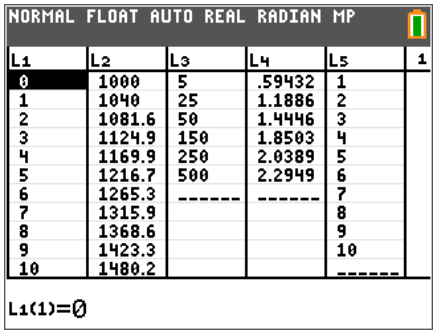
Problem 1 – Exponential Growth

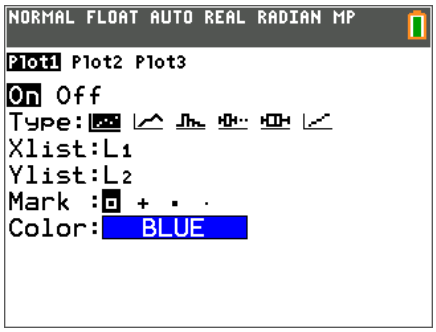
When Connor was born, his parents put $1000 into an account to give him as a present on his 21st birthday. However, his parents forgot the yearly interest rate on the account.

The data (years and investment worth) is stored in **L1** and **L2** of your graphing calculator.



L1	L2	L3	L4	L5	1
0	1000	5	.59432	1	
1	1040	25	1.1886	2	
2	1081.6	50	1.4446	3	
3	1124.9	150	1.8503	4	
4	1169.9	250	2.0389	5	
5	1216.7	500	2.2949	6	
6	1265.3	------	------	7	
7	1315.9			8	
8	1368.6			9	
9	1423.3			10	
10	1480.2			------	

Create a scatter plot of the data by pressing 2nd y= [stat plot] enter matching the screen to the right.



To view the scatter plot, press zoom and select **9:ZoomStat**.
It may be necessary to modify your viewing window if you wish to use the GridLine feature. Press window and change the value of **Yscl:** to 100.

Using your knowledge of compound interest, study the data and the graph to determine a function for the growth of Connor's money.

Enter your equation in **Y1** and press graph to check your result.

Note: The regressions can be found by pressing stat and scrolling over to the **CALC** menu.

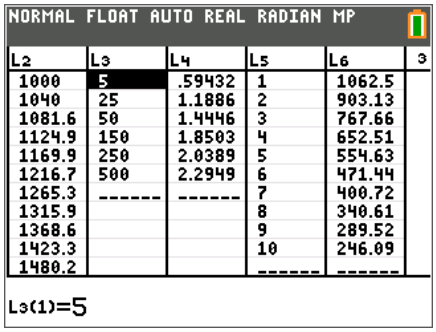
1. The equation for the data is: _____

2. What variable should be on the horizontal axis? Vertical axis?

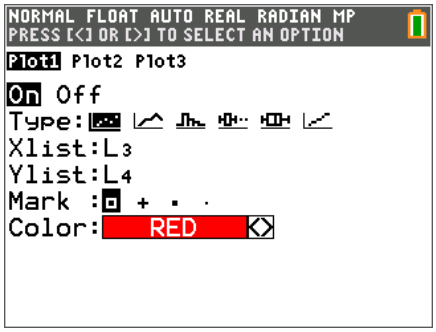
3. How can you determine the interest rate for this growth?

Problem 2 – Logarithmic Growth

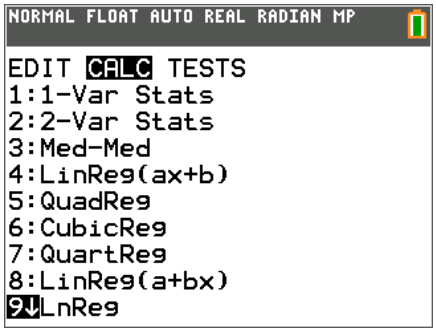
Scientists are testing the amount of greenhouse gases present at a research site near the north pole to determine the effect on polar ice melting. The results for a given area around the research site are stored in **L3** and **L4** of your graphing calculator.



Create a scatter plot of the data by pressing 2nd [y=] [stat plot], selecting **Plot 1** and pressing enter. Match the screen to the right.
To change the **Xlist:** and **Ylist:**, press 2nd 3 [**L3**] and 2nd 4 [**L4**] respectively.
To view the scatter plot, press zoom and select **9:ZoomStat**.
It may be necessary to modify your viewing window if you wish to use the GridLine feature. Press window and change the value of **Xscl:** to 50 and **Yscl:** to 0.25.

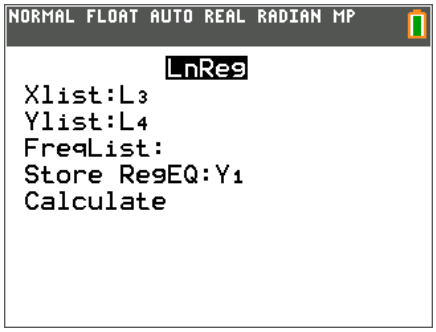


Determine a natural log equation to model the data by pressing stat, scrolling over to **CALC**, and selecting **9:LnReg**.



To finish the regression, enter **L3**, **L4**, and **Y1** as shown on the screen to the right.

To enter **Y1** on the Store **RegEQ:** line, press vars, arrow to the right to **Y-VARS**, choose **1: FUNCTION**, and choose **1: Y1**. Select **CALCULATE** and press enter.



4. The equation for the data is: _____

Press graph to view the scatter plot and regression equation both plotted.

5. What variable should be on the horizontal axis? Vertical axis?

Problem 3 – Exponential Decay

Due to an environmental chemical spill, a farmer is losing the amount of land on which he can plant crops. The data in **L5** and **L6** of your graphing calculator show the year and amount of useable land for each year. Determine an equation that models the amount of land the farmer can use each year.

After creating a scatter plot of the data, use your graphing calculator to perform an exponential regression that models the data and plot the function by pressing graph. Select appropriate **Xscl** and **Yscl** values.

6. The equation for the data is: _____

7. What is the number of acres the farmer started with in year zero?

8. By what percent does the amount of acres available decrease every year?