

**Objectives:**

Using the **DRILL CORE** applet, the student will explore relationships among the different data.

**Functionality:**

When the student selects **START**, the **DRILL CORE NOTE** will be displayed. The source of the data is from an integrated mathematics and science class at the Mississippi School for Mathematics and Science in Columbus, MS.

The data contained in each column is defined in the note as indicated. **C1 - Density (g/mL)** **C2 - % Fe**

There is a standard set of data established for verification purposes. It follows:

<b>Density (g/mL)</b>	2.60	3.25	3.91	4.55	5.20
<b>% Fe</b>	0	14	30	44	59

The **VIEWS** menu provides several options for the student. The first choice, **Load Data**, must be selected to input the data into the columns. Most of the remaining options deal with adjusting the **PLOT** window once the student decides which columns to analyze.

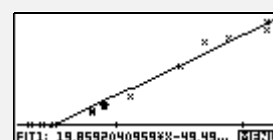
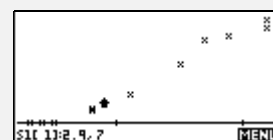
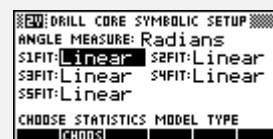
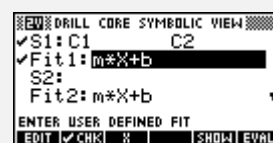
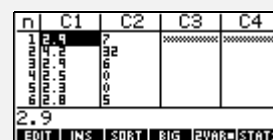
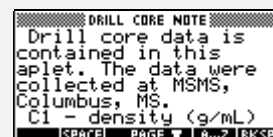
Once the student has chosen **Load Data**, the calculator returns to the **NUMERIC** View. The **NUM** key provides access to the columns of data any time the student wishes to return to this view.

The student should then press **SYMB** to define which columns of data will be analyzed. The student can press **PLOT** to look at a scatterplot, then return to **SYMB** to select the type of fit.

Select the type of fit in the **SYMBOLIC SETUP** view.

**VIEWS** allows for changes to be made in the **PLOT** window. When the data are first graphed, **Auto Scale** might be the best choice. It will usually give the best window for the scatter plot.

Press **FIT** on the menu bar to draw the regression curve that was selected in **SYMB SETUP**.

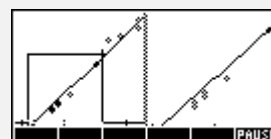


Return to the numeric view, **NUM**, and press **STATS** to find the statistical information. Use the down arrow to scroll to the correlation coefficient.

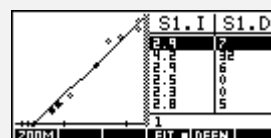
2-VAR	S1		
ΣX	150.5		
MEMRY	12.2		
ΣY	189		
ΣX <sup>2</sup>	4549		
ΣY <sup>2</sup>	682.3		
CORR	.987659244		
OK			

**Note:** The correlation coefficient is defined only for LINEAR fits. However, the value of RelErr gives an indication of fit for other models. The smaller the value of RelErr, the better the fit. On the HP38G the value of RelErr can be obtained by typing RELERR in the HOME view. On the HP39G/HP40G this value can also be found in the 2VAR STATS list.

**Plot-Detail** allows the student to see the entire plot on the left side of the screen while viewing a more detailed area on the right side of the screen.

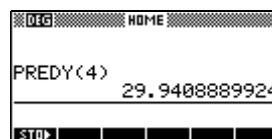
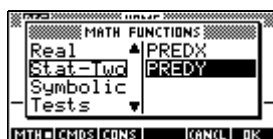


**Plot-Table** will display the data plot with the data table.



**Additional Exploration:**

Students can go to the HOME screen. They can use the **MATH** menu and choose Stat-Two to select PREDX or PREDY once the regression curve has been found. For this data set, suppose the student wanted to predict the percent of iron for a sample with a density of 4.0 g/mL.



Programs associated with this aplet: .DC.D, .DC.SV