

BizgraphTM

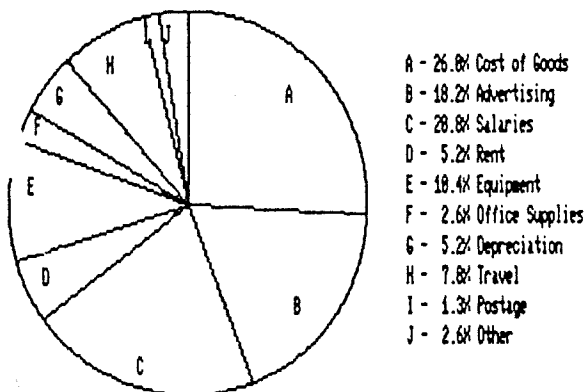
Hi-Resolution Business Graphing Program

USER'S REFERENCE MANUAL V1.2

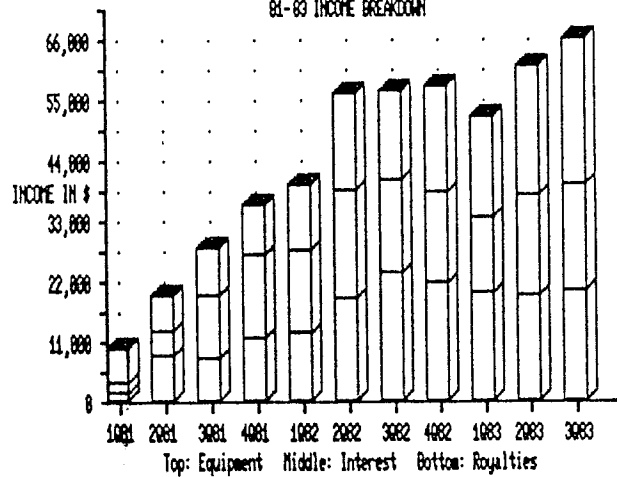
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Minimum System: 48K, 1 Disk Drive

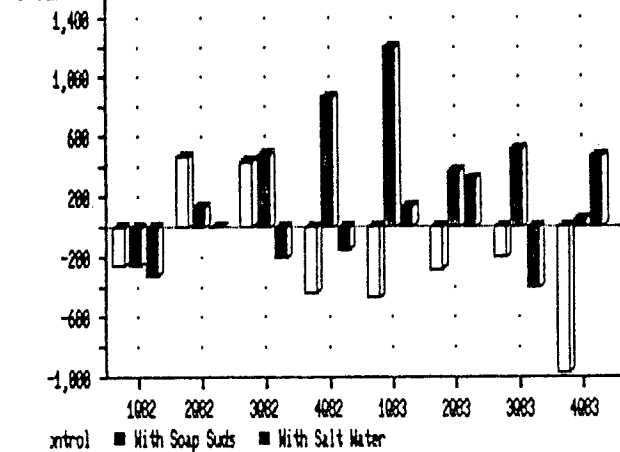
1982 Expenses for FUMARE



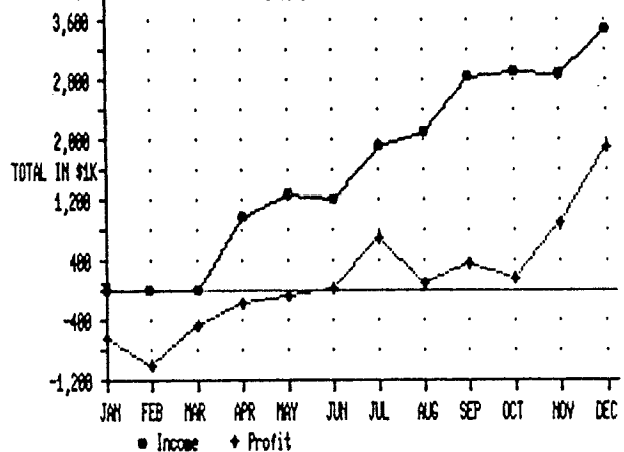
81-83 INCOME BREAKDOWN



FLY DELTA FRUIT FLIES VS HABITAT



INCOME/PROFIT FOR 1982



BIZGRAPH

Developed by:
Ted Carter

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- FORWARD -

BIZGRAPH is a self-prompting business graphing program designed to work exclusively with a TRS-80 enhanced with a hi-resolution graphics board.

You can improve your business with clear, accurate graphs. Perfect for managers, small businessmen and analysts. The BIZGRAPH package can display Line Graph, Bar Chart, Pie Chart, Area Plot, Histogram Plot, and Scatter Plot. Data can be entered from the keyboard or disk files - including VisiCalc.

To create a graph, simply select a graph type, enter the data or file name, select options, and the results are quickly displayed in amazingly fine detail. Multiple data sets can be combined on one graph. BIZGRAPH provides for automatic or manual scaling and labeling of X and Y axis points using 80 characters/line.

Forecasting future trends is possible using line fitting, quadratic, and third order linear regression analysis. Data smoothing using moving averages is also possible. The finished graph and/or data can be saved on disk or printed on any of 20 popular printers.

After explaining how to execute BIZGRAPH, this manual describes the kinds of graphs that can be generated and the advantages of each type. It then discusses preparing your data for graphing. Following that is a detailed explanation of the prompts and options available with each type of graph. Options which apply to all types of graphs, such as saving or printing a plot, are then explained. Finally, sample sessions for each type of graph are discussed.

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A/ EXECUTING BIZGRAPH

BIZGRAPH, several sample data files, and several hi-res graphs are supplied on a TRSDOS data disk. If you have a model 4 then you will have both the model 3 and 4 mode versions of the BIZGRAPH program contained on opposite sides of a floppy disk or on two separate disks.

To run the BIZGRAPH program, place a TRSDOS system disk in the main drive and the matching BIZGRAPH disk in drive one. In response to the TRSDOS Ready prompt, type 'DO BG' followed by pressing the ENTER key. After several seconds, the BIZGRAPH menu will appear and you may select the desired function.

The /DIF data files and hi-resolution graphs can be loaded and displayed using BIZGRAPH. The data files may also be loaded and edited with VisiCalc.

The model 4 mode version of BIZGRAPH is split into different modules because they do not all fit in memory at the same time and it takes time to chain from one module to another. However, if you have the extra 64K of memory added for a total of 128K, it is possible to speed up the time required to chain from one module to another although it does require a little longer to initialize. To run this modified version, simply type 'DO XBG'

The files on the TRSDOS 1.3 BIZGRAPH diskette can be transferred to LDOS, DOSPLUS, or NEWDOS using the corresponding DOSes convert command. For LDOS, the command is 'CONV :1 :0', for DOSPLUS it is 'CONVERT :1 :0 (Q)' The corresponding DO files are as follows: LDOS type 'DO LBG', DOSPLUS 3.4 type 'DO D4BG', DOSPLUS 3.5 type 'DO D5BG', NEWDOS type 'DO NBG'

Once the BIZGRAPH program has been executed, the following main menu will appear:

- A - Create Line Graph
- B - Create Bar Chart
- C - Create Pie Chart
- D - Create Area Plot
- E - Create Histogram Plot
- F - Create Scatter Plot
- G - Create a New Data File
- H - Edit/Print Existing Data
- I - View/Print Previous Plot
- J - Go to VisiCalc
- K - Go to Draw program
- L - Return to DOS Ready

Most of the menu options are self explanatory and are covered elsewhere in this manual. However, some comments are in order.

Option G allows you to create a new data set by entering the data values from the keyboard. Option H allows you to edit or print data currently in memory from a previous graph or from an existing disk file.

Option I allows you to recall a hi-resolution graph stored on disk and gives you the option of printing it. This option does not load any data values into memory. You will be prompted for the name of the hi-res file. You may omit the extension since /HR is automatically added to the file name you enter. The graph will be displayed until you press a key. You are then given the option of printing the graph, viewing another graph, or returning to the main menu.

Option J will end the BIZGRAPH program, go to DOS, and attempt to execute a file named VC/CMD. If you do not have your VisiCalc program available or it is not named VC/CMD, then a program not found error will result.

Option K will end the BIZGRAPH program, go to DOS, and attempt to execute Micro-Labs' DRAW program (not included, available for \$39.95). The DRAW/BLD file and DRAW/LOD files must be available. This option was included since the DRAW program can be used to edit a business graph picture generated by BIZGRAPH. With DRAW you could delete labels or undesirable points, shade in sections on a bar or pie chart or beneath a line in a line or histogram plot, reverse the screen, or even add additional comments or labels. You could then save or print the final, polished graph.

B/ CHOOSING A GRAPH TYPE

In today's modern business world, there is no lack of information and numbers. However, by using graphs it is possible to easily see trends, comparisons, and distribution patterns that are difficult to see in columns of numbers. A few graphs can easily condense and present the important information contained in dozens of pages of computer reports. This package makes it easy to display data pictorially in any one of a number of formats: Line Graph, Bar Graph, Pie Chart, Area Graph, Histogram Plot, and Scatter Chart. The type of graph which you use depends on the type of data you are plotting and what you wish to emphasize.

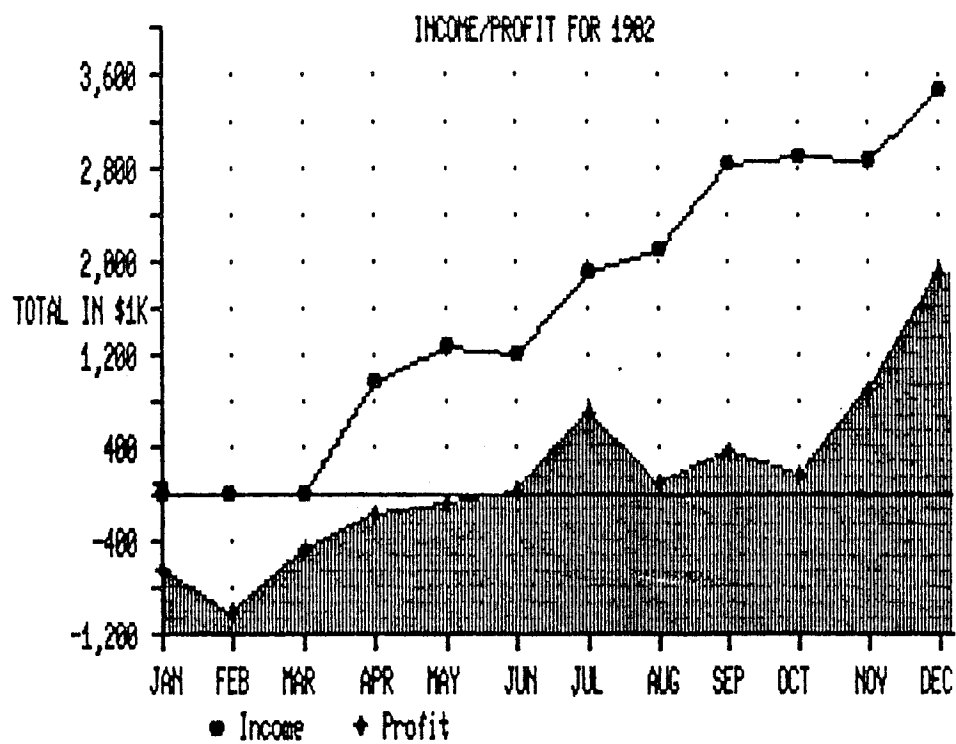
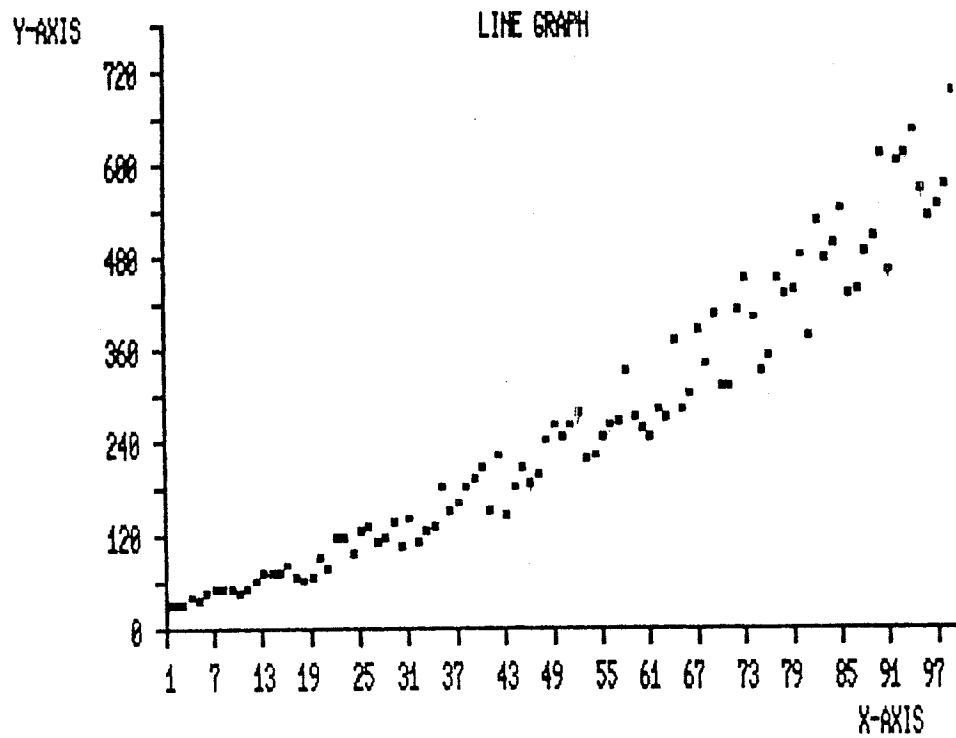
LINE AND AREA GRAPHS

Line and Area Graphs are best used to show how data changes over a period of time and thereby spot trends or patterns. Each data point on the horizontal axis has a value whose magnitude is shown by the placement of the point on the vertical scale. In many cases, the distance between each point represents a time period so that there might for example be a point for each day in the month, each month in a year, or sequential years. An area graph is simply a line graph with the area below a particular curve shaded in for emphasis.

When there are a large number of points to plot this is the best type of graph since it shows the overall trends or patterns and places less emphasis on the values of each particular point.

Line and Area Graphs can contain up to 216 data points on the horizontal axis. Up to three curves can be plotted on the same graph so that comparisons can be made between the data associated with each curve. So, for example, you might have a graph with two curves showing the weekly income and profit over a period of time.

A sample Line and a sample Area Graph are shown on the next page.

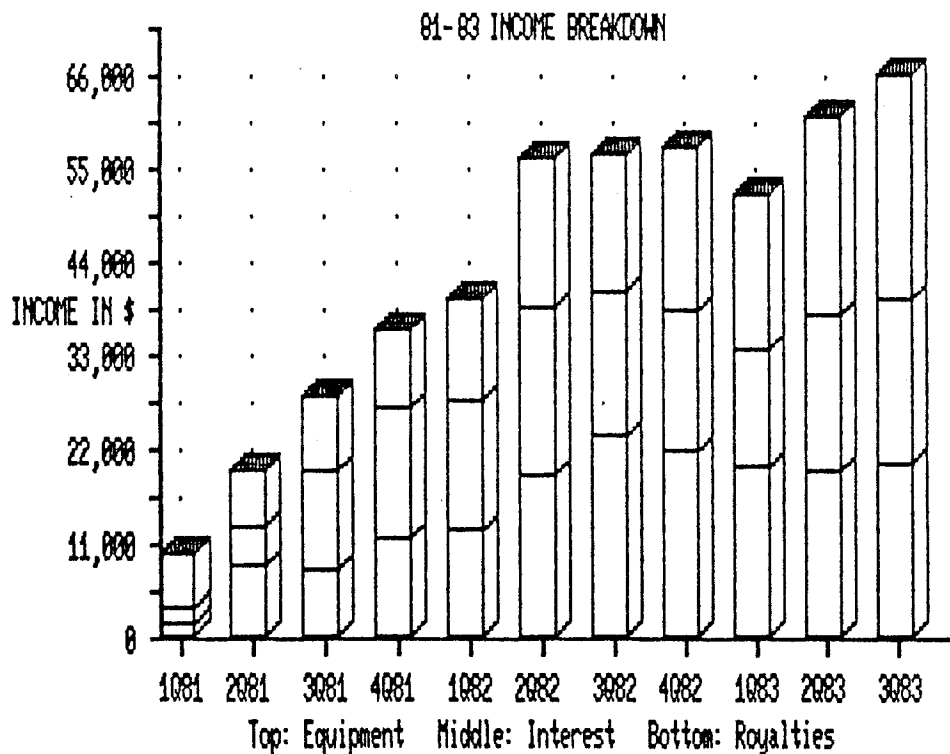


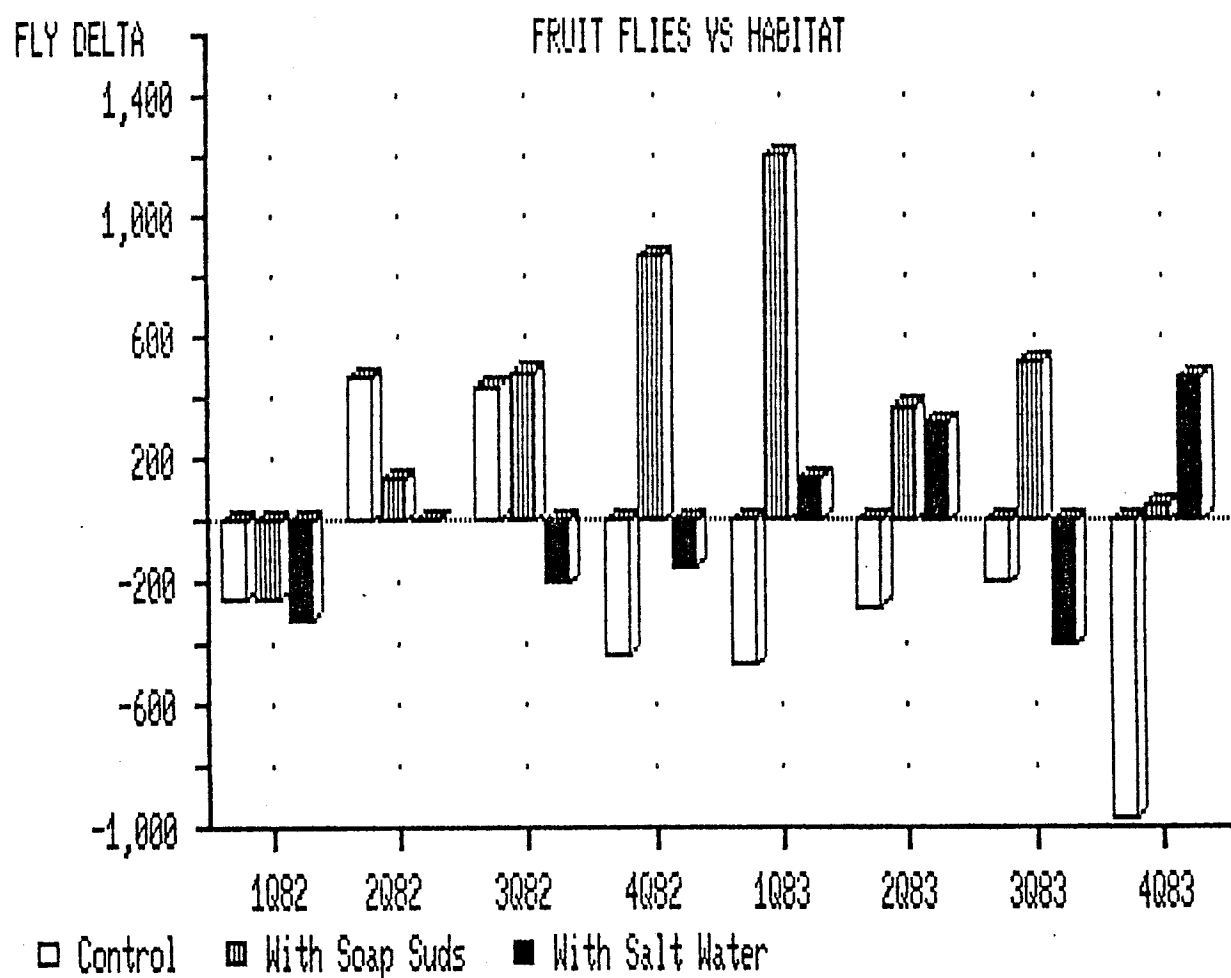
BAR GRAPH

Bar Graphs are used when you want to highlight the exact values of individual points. The height of each bar represents the size of the associated data value measured on the vertical scale. Bar Graphs are very effective in comparing values of data from different time periods or different data sets.

When more than one set of data is involved, you can choose to have the bars stacked on top of each other in a cumulative fashion, or you can have the different sets of data shown side by side in groups. The Stacked Bar Graph is best used when there are no negative data values and the data sets are closely related and dependent on the same factors. A stacked chart might be used to show the total sales per month over the year with each bar being comprised of sales from three different groups or product lines.

Bar Charts may contain up to 72 data values on the horizontal axis and up to three different sets of data.

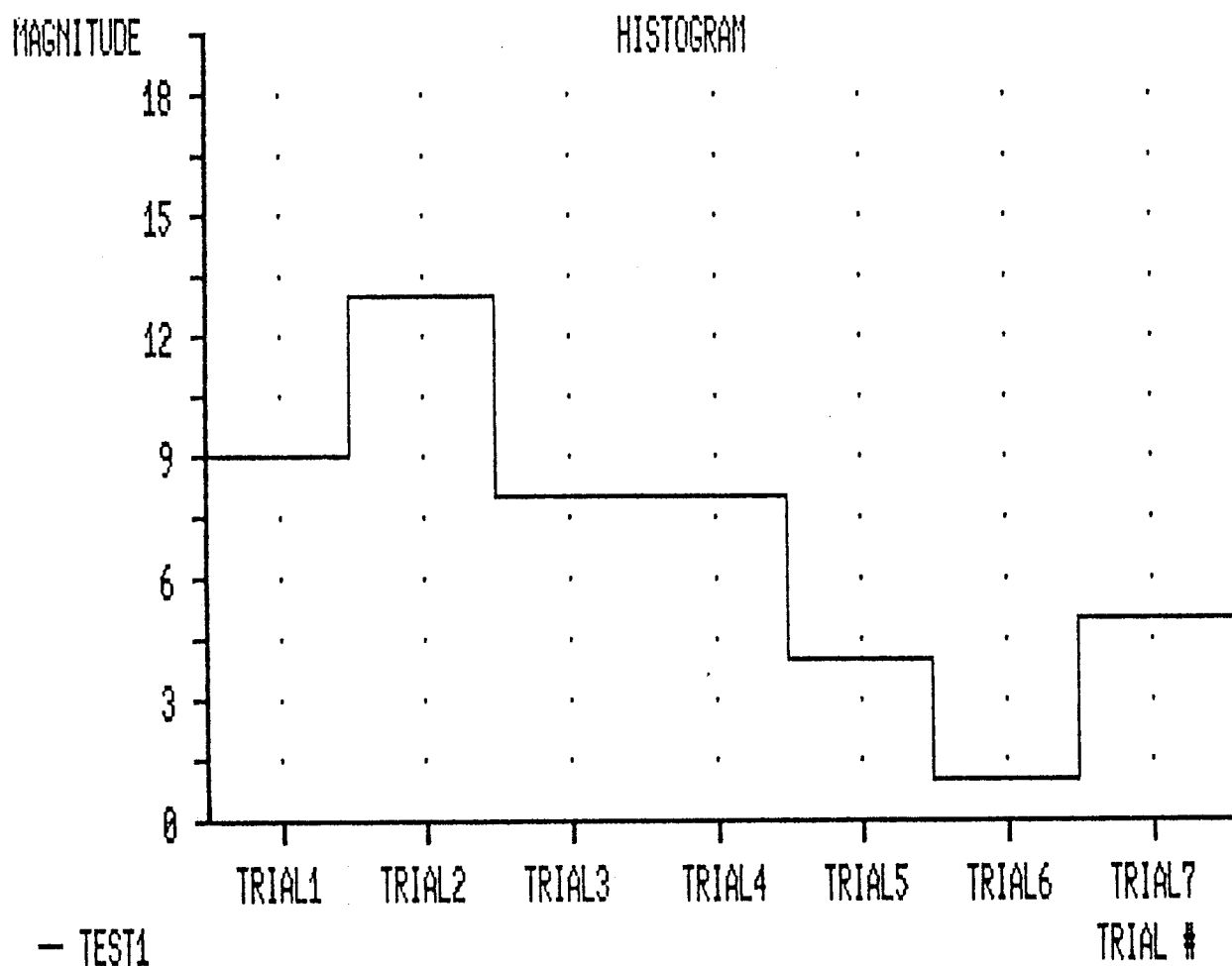




HISTOGRAM PLOT

A Histogram Plot could be described as a compromise between the Line and Bar Graph which has some of the advantages of both. In the Histogram Plot, each data set is shown as a continuous, stepped line. It helps in spotting trends in the data but at the same time highlights the individual data values associated with each point.

A Histogram Plot may contain up to 216 data values per data set and up to three sets of data.

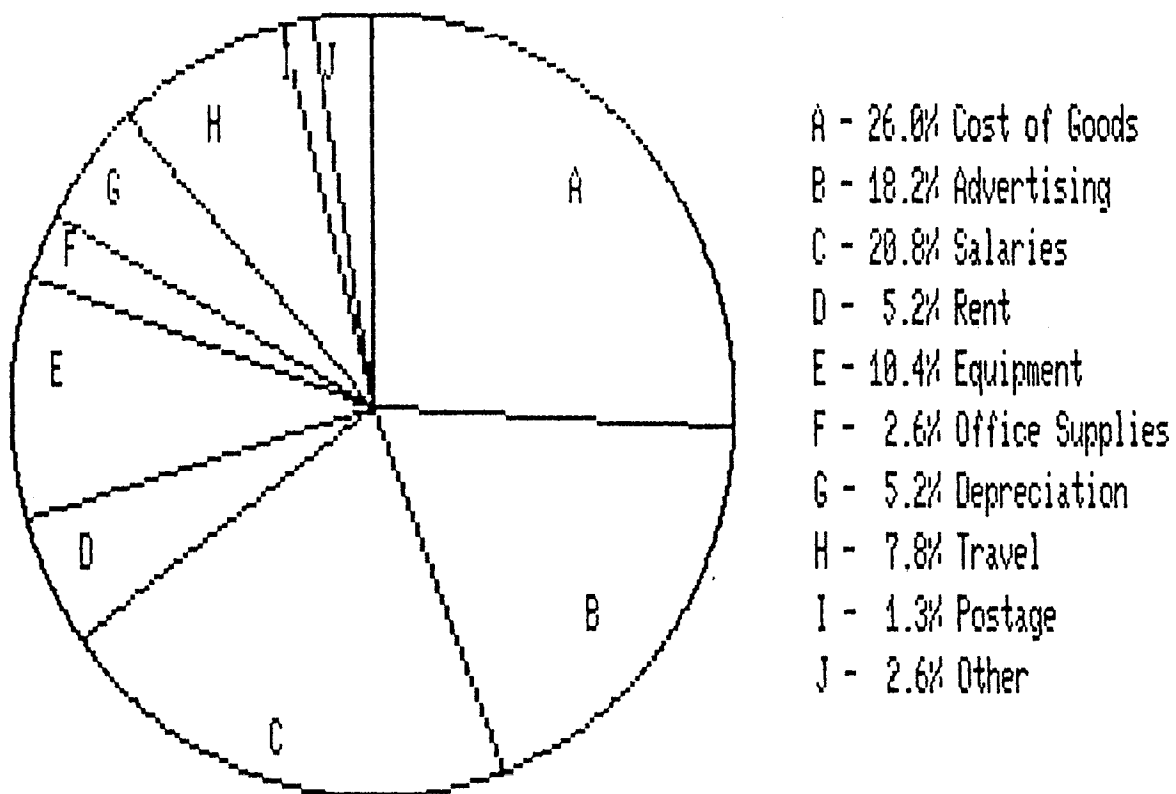


PIE CHART

Pie Charts are used when you wish to compare parts to a whole and show the fraction of the total that each data value comprises. Each slice in the pie represents a percentage of the complete pie. A Pie Chart might be used to show the percentage of the total income that each area of a company contributes.

Pie Charts can not be used when there are more than 12 data points or more than one set of data.

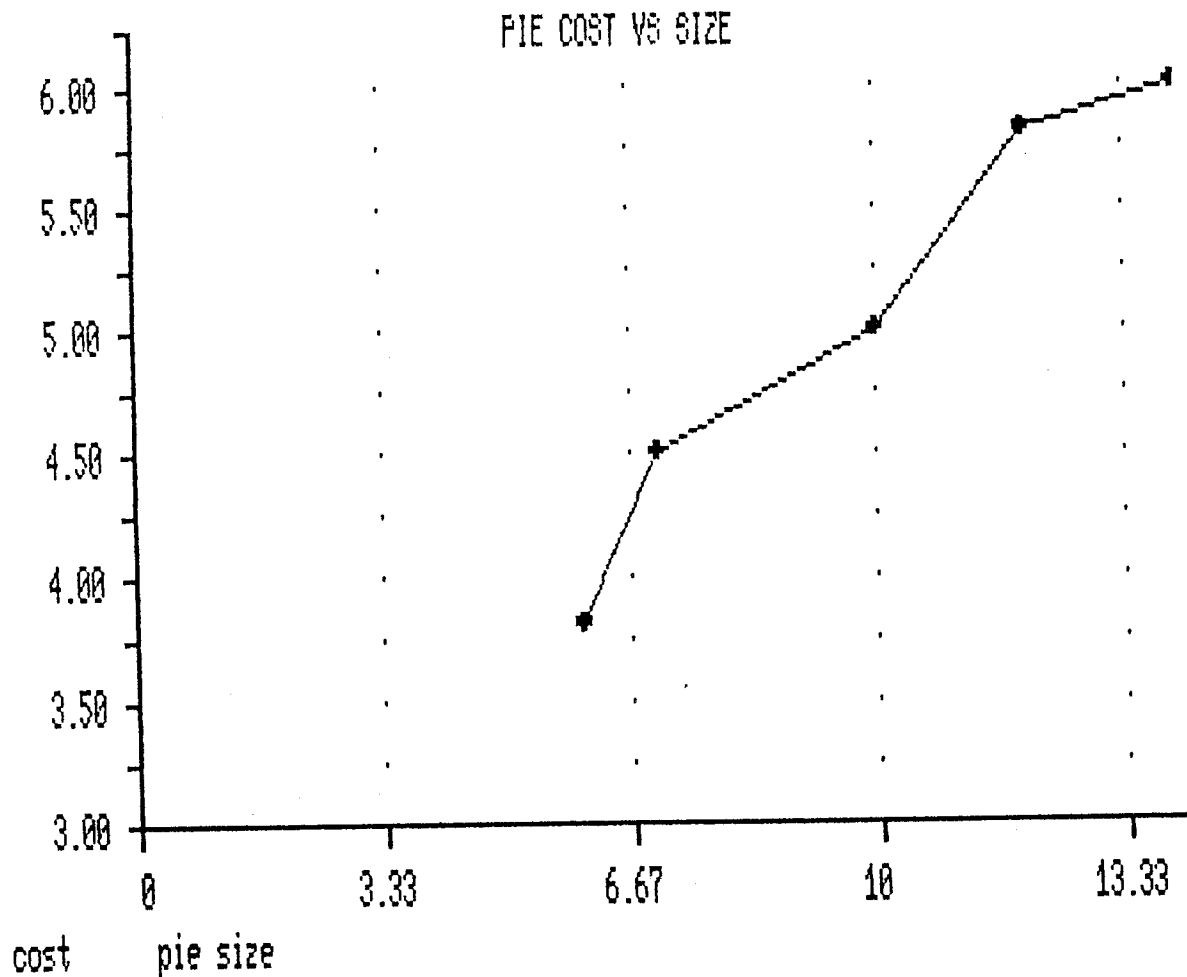
1982 Expenses for FUNNARE

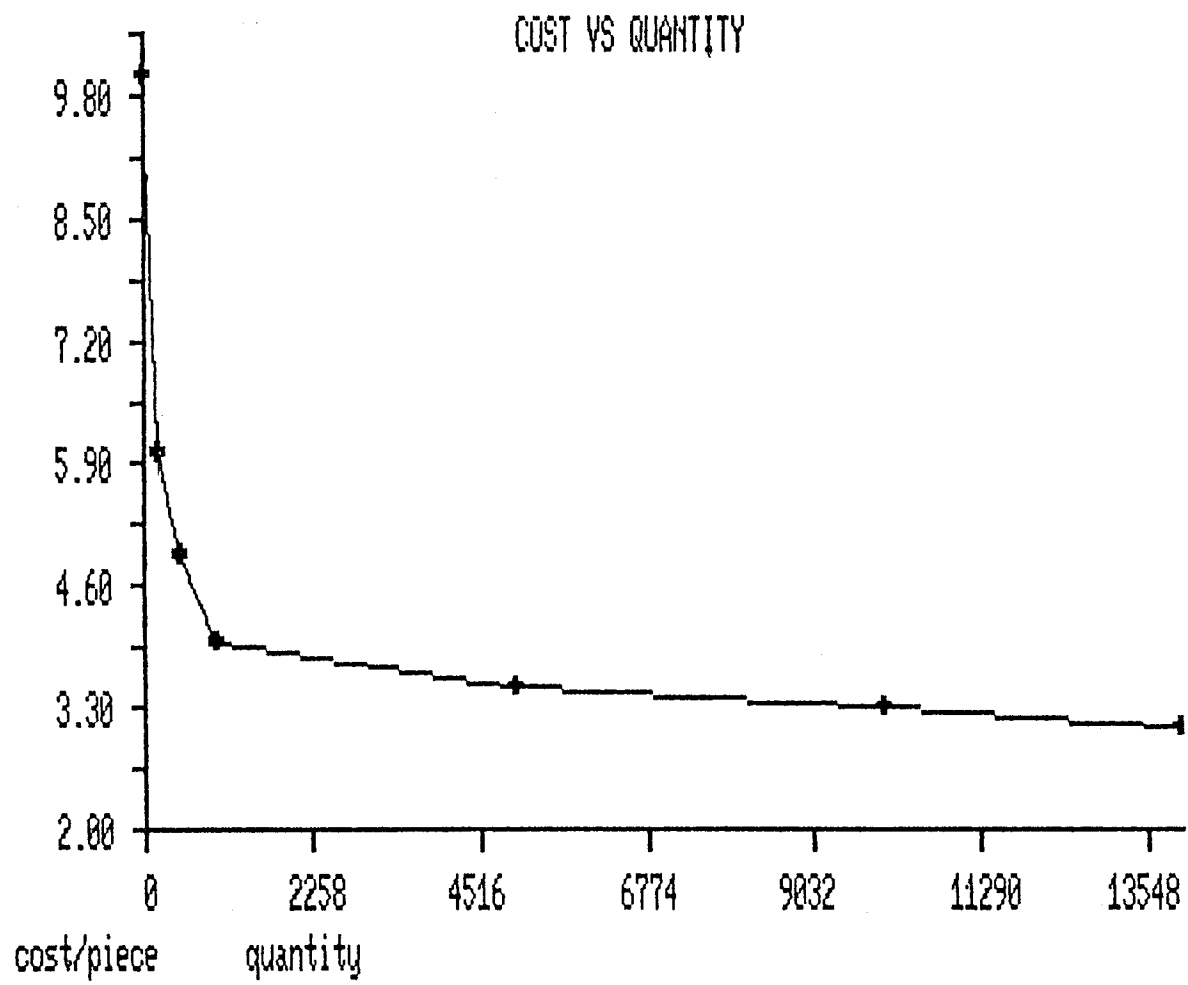


SCATTER PLOT

Scatter Plots, also referred to as X-Y Plots, show the relationship between two sets of data. It can be used to show a dependency of one set of data on the other or demonstrate that no interdependency exists. For example, one data set might be the quantity of widgets manufactured and the other would be the price per widget.

A Scatter Plot may contain up to 216 sets of X, Y coordinates.





C/ PREPARING GRAPH DATA

The data that you wish to graph can be entered directly from the TRS-80 keyboard or it can be read from an existing Data Interchange Format (abbreviated DIF) file created by BIZGRAPH or another program like VisiCalc.

C1/ ENTERING DATA FROM THE KEYBOARD

To enter a new set of data directly from the keyboard, choose main menu option G - Create a New Data File. The prompts that you will see are listed below and each one is then explained.

How many sets of data will you be entering (1-3)?

The number you enter corresponds to the number of curves or sets of bars that will be displayed on the graph. Note that there must be the same number of values in each of the data sets and that you can not have more than 216 values in each set.

Will each entry also have a descriptive label (Y/N)?

You have the option of entering some descriptive text that will be associated with each value that you enter and is used to label each of the points along the horizontal axis. If each value is a consecutive number, month, week, quarter or year then reply with a N since these labels can be generated automatically with less effort. Being able to enter your own label for each point is useful in cases where there are not too many values. For example, you might want each slice in a Pie Chart to have a descriptive label.

If you do not want to enter your own label for each point, you will be prompted for the Horizontal axis labels: 1)Numbers, 2)Weeks, 3)Months, 4)Quarters, 5)Years. If you are satisfied to have the points numbered consecutively beginning with 1, press the number 1 or the ENTER key. Otherwise, with the other options, the computer will ask for a beginning date and will automatically label each point with the proper consecutive time period.

Enter label for data set 1 (press ENTER if none)?

Each set of data that you enter, up to the maximum of three sets, can be named. These name(s) will be printed at the bottom of the graph so that you know which lines/bars are from which data set. If you

don't want to label each set, simply press the ENTER key in response to this question.

Entry 1?

At this point you will begin entering the data. If you are entering more than one set of data, you will enter a value for each set. If you requested that each value have a descriptive label you should enter that after entering the values. These entries will be on the same line, separated by commas, and terminated by pressing ENTER. If you do not wish to label a particular value, simply press ENTER instead of typing anything. Here are some valid entries:

```
2 data sets, no descriptive label: 1,2
3 data sets, descriptive label: 1.3,33,1,Test A
1 data set, descriptive label: 1,
```

If you accidentally enter a wrong value or leave out a value, don't worry because you can go back and edit your data after it has all been entered. When you have entered all of your data, enter a -1 for each data value. You are then asked if you wish to end data entry. Reply with a Y if you do. If the -1 is part of the data that you are entering, reply with a N and data entry will continue.

Once a data set has been placed in memory, you will be presented with the following menu options:

A - Save data on disk

This option lets you save the data in memory on disk. You will be prompted for a file name. You do not need to include an extension in the name since the program automatically adds the /DIF extension. You may include a drive specification, for example, NAME:1. You can also get a directory listing by entering a drive number from zero to three and pressing ENTER. Since it is saved in standard DIF format, the data may be recalled at a later time by BIZGRAPH or VisiCalc. The data is stored in Row format with the first horizontal row number one containing descriptive labels. Each data set is saved in consecutive rows. The first column, column A is reserved for the data set labels and is blank if none was specified.

B - View data values

This option will display all of the data values

currently in memory on the computer screen 15 values at a time. Pressing ENTER advances the display to the next page of values.

C - Print data values

This option sends all of the data values in memory to a printer.

D - Delete entries

After selecting this option you will be asked the number of the row to delete. When you entered the data originally, the values in each row were assigned sequential numbers beginning with 1. If you don't know the row number you can use the View data option to find out what it is. The values in the row you selected will be displayed and you will be asked to verify that it is the proper data to delete. If you answer with a Y, that row will be deleted and the next row will be displayed. You may continue to delete rows or answer with a N to return to the menu.

E - Insert entries

After selecting this option you will be asked which row number to begin inserting after. You may then enter as many rows as you like, entering a -1 for each value to terminate data insertion as described at the beginning of this section under the prompt "Entry 1".

F - Change entries

After selecting this option you will be asked which row number to change. The values in the selected row will be displayed and you will be asked to verify that it is the proper row to change. If you answer with a Y, you will be prompted for the new data values for that row. The next consecutive row is then displayed and you are asked if you wish to replace it also. This continues until you enter a N signifying that you do not want to change that row.

G - Enter a new set of data

This option erases the data currently in memory and lets you enter a new set of data.

H - Return to the main menu

Selecting this option will return you to the main BIZGRAPH menu. The data you entered or edited remains intact and can be graphed by selecting the appropriate function in the main menu.

C2/ ENTERING DATA FROM A VISICALC FILE

Although a number of programs save data in the DIF format and all of them can be read by the BIZGRAPH package, the main program of interest which we will address is VisiCalc.

As you are aware, VisiCalc lets you create a rectangular array of information composed of both text and numeric values. The BIZGRAPH program will allow you to simultaneously graph any 1, 2, or 3 rows, or 1, 2, or 3 columns, although you can not have both rows AND columns in the same graph. In addition, you can optionally specify a row or column which contains text labels corresponding to each point to be graphed. You may also optionally label each one of the up to three sets of data. For example, a sample VisiCalc file (saved under SAMPLE1/DIF on the BIZGRAPH disk) might look like this:

		Column letter				
Row #	A	B	C	D	E	F
1		Jan 79	Jan 80	Jan 81	Jan 82	Jan 83
2	Sales	10000	12000	12398	9999	13999
3	Profit	1000	2000	1122	-88	20

If the above data was graphed on a line graph, each point would have the text label "Jan nn" below it on the horizontal axis. In addition, the words Sales and Profit would appear in the lower, left corner of the screen and would identify which of the two lines on the graph represented sales and which profit. However, note that all of the text labels could have been omitted.

VisiCalc does not normally save data in DIF format and you must tell it to do so. A DIF file does not include the equations used to generate the VisiCalc data values. The DIF file contains only the displayed results. In order to save your VisiCalc data in a DIF file you should perform the following series of steps: position the cursor in the upper, left hand corner of the section of data to be saved, press the / key, the S key, the # key to specify DIF format, S to save, enter the file name, move the cursor to the lower, right hand corner of the section of data to be saved and press the ENTER key, then press R to save by rows.

It does not matter if you save more data than you will be plotting. Just note the row number or column letter of the data to be plotted and if applicable, the beginning and ending column letter or row number of

data to plot. For example, if you were using data from the above example, and wanted to plot row 3 using the labels in row 1, it does not hurt to save row 2 also. Similarly, if you only wanted to plot the last 4 values in each row, you could save the whole section, but when you actually read the file in with BIZGRAPH, specify that you only want to use the data beginning with column C. You don't need to remember that the last column of data is F since BIZGRAPH will default to the last column in the file if you don't specify one.

C3/ READING DATA FROM DISK

When you want to generate a graph (menu selections A-F) or edit existing data (menu selection H), assuming that you do not still have data in memory, you will be reading data from a previously created DIF file. The prompts that you will encounter, and an explanation of each one follows.

Enter name of /DIF file containing plot data:

Simply type in the name of the file containing the data to be plotted and press ENTER. The program automatically adds the /DIF extension to the name so that you don't have to. You can get a directory listing by entering a drive number from one to three and pressing ENTER. If you decide that you do not want to generate a graph, press ENTER without typing anything and you will return to the main menu.

Plot <R>ow(s) or <C>olumn(s) of data ?

This question may not be asked if the dimensions of the file make it obvious as to whether horizontal rows or vertical columns of data will be plotted. If the data you are interested in is displayed going sequentially left to right in VisiCalc, then specify rows; if it is going vertically down, then specify columns. If the file was created by BIZGRAPH, then answer with an R for rows.

How many rows/columns of data to plot (1-3)?

This question is basically asking you how many sets of data will be plotted and may be from one to three.

Enter the number/letter of the 1st row/column of data:

This question is asked for however many sets of data you are graphing. If you are plotting data saved by BIZGRAPH, remember that the first row is dedicated to descriptive labels so you would enter

a 2 for the row number of the first set of data, a 3 if you're prompted for a second set of data, and a 4 if you're prompted for a third.

Enter the number/letter(s) of the label field (press ENTER if none)?

If your data file contains a row/column of labels, each of which corresponds to a particular data point, enter the appropriate row number or column letter. If you are using data from a file created by BIZGRAPH and want to use the descriptive labels in the file, you should enter a 1. If there are not descriptive labels for each point, simply press the ENTER key without entering anything.

Horizontal axis labels:

1)Numbers, 2)Weeks, 3)Months, 4)Quarters, 5)Years

If you did not enter a row or column number in the previous question, you will be given these horizontal axis labeling options. If you are satisfied to have the points numbered consecutively beginning with 1, press the number 1 or the ENTER key. Otherwise, with the other options, the computer will ask for a beginning date and will automatically label each point with the proper consecutive time period.

Enter 1st column letter(s)/row number of data (ENTER for default):

Enter last column letter(s)/row number of data (ENTER for default):

If you wish to use all of the data points in a row or column as will usually be the case, press ENTER in response to both of these questions. However, if you do not want all of the data values in each set graphed, you can choose to graph any subset of data values. The first question asks the column letter/row number of the first point to use in the respective row/column. The second question asks what the last data point should be. If you press ENTER, the default is to begin with the first data item and end with the last one in the file.

At this point, the program will begin reading data from the selected file. Assuming that there are no problems with the specified parameters, the file data will be read into memory. If you selected a graphing option then you will be asked for additional information pertaining to the particular type of graph selected. If you selected option H to edit the data, then you will be presented with the same option menu shown after entering data from the keyboard in section C1.

D/ GRAPHING OPTIONS AND PROMPTS

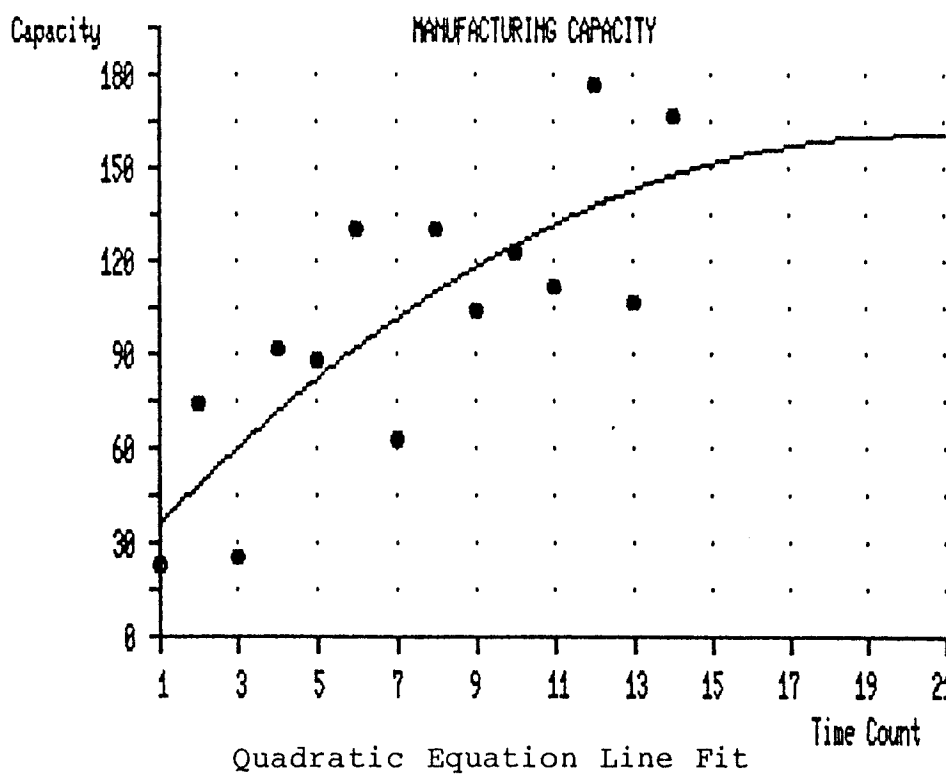
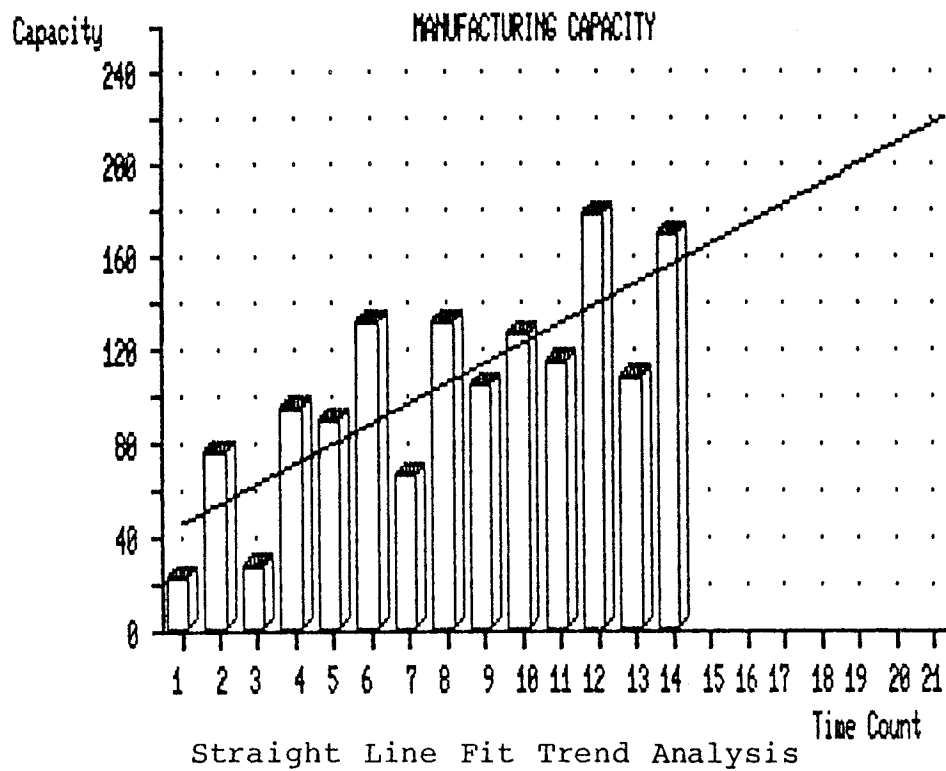
After you have either read data from disk (refer to Section C3) or entered data from the keyboard (refer to Section C1), you will be asked to specify some of the parameters for your graph. The options for each type of graph are explained in this section.

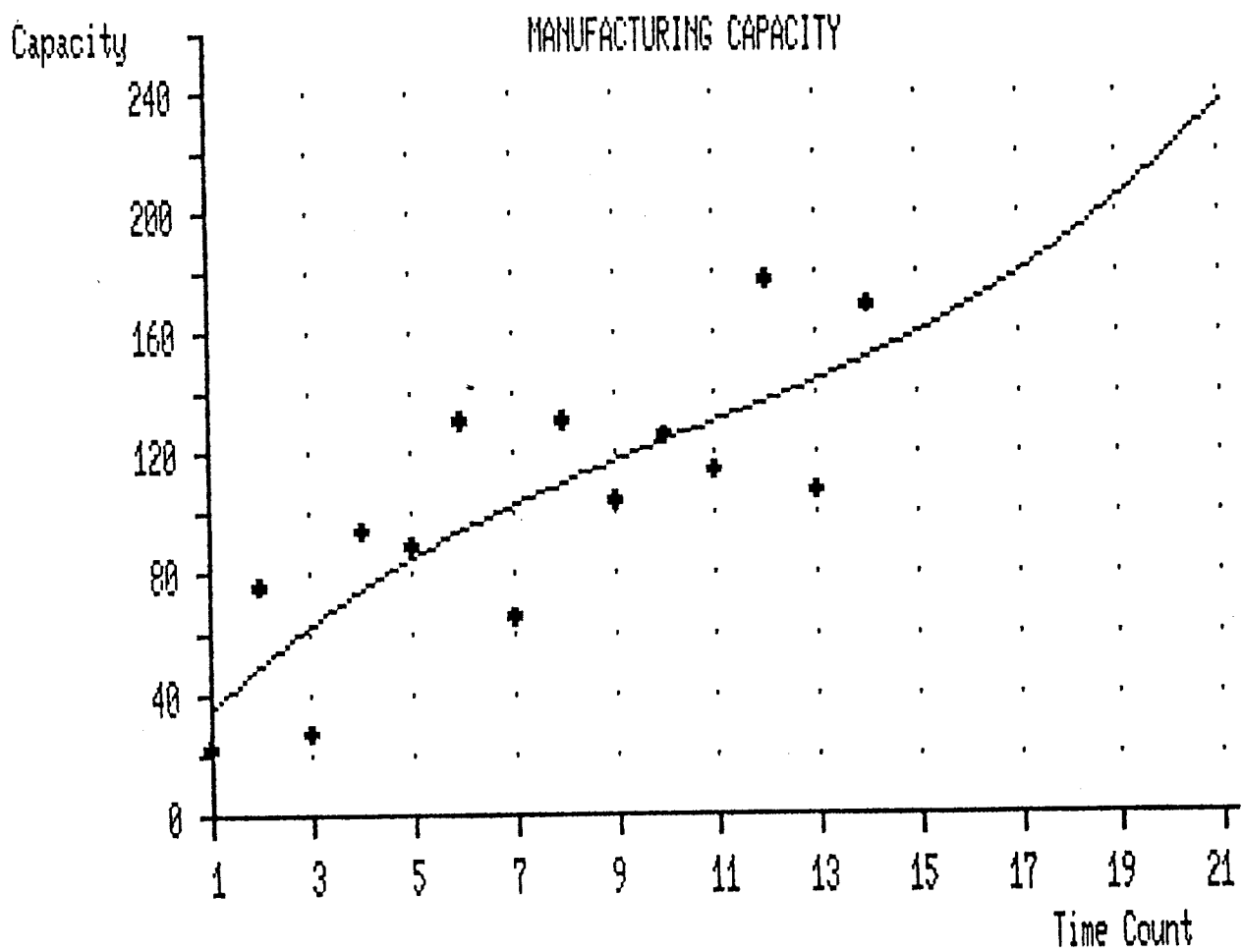
D1/ TREND ANALYSIS

If you are plotting a Bar or Line Graph and have only one set of data, you will be asked if you wish to perform trend analysis on the data. What the trend analysis function does is attempt to calculate a best fit curve for the given data. This is useful since you can extend the curve for any number of future points to try and predict what will happen in the future. Usually, the curve that the computer draws is more accurate than what you might guess by just looking at the data yourself.

If you elect to have trend analysis performed, you will be asked if you want a 1)Straight line fit, 2)Quadratic equation fit, or 3)Third order equation fit. What this refers to is how complex of an equation you want to try and match up with the data. The straight line fit is the simplest and quickest of the three but since it is simply a straight line, it may not correspond very well with some sets of data. The quadratic equation fit does a fairly good job of matching up with the data and is the type of equation you will usually use. The third order equation fit is used if your data varies a lot and you have the patience to wait for the computer to calculate the best fit. The straight line fit takes as long as 2 minutes, the quadratic equation fit as long as 5 minutes and the third order equation up to 10 minutes for the computer to calculate the curve that best corresponds to the data. The accompanying graph printouts show the results obtained with each type of equation fit given the same set of data.

After the best fit equation has been calculated, you will be asked for the number of projected values to plot. This number can be anything from just one value to up to three times as many points as are in the data set. You will usually want to enter a number that is about half the size of your data set.





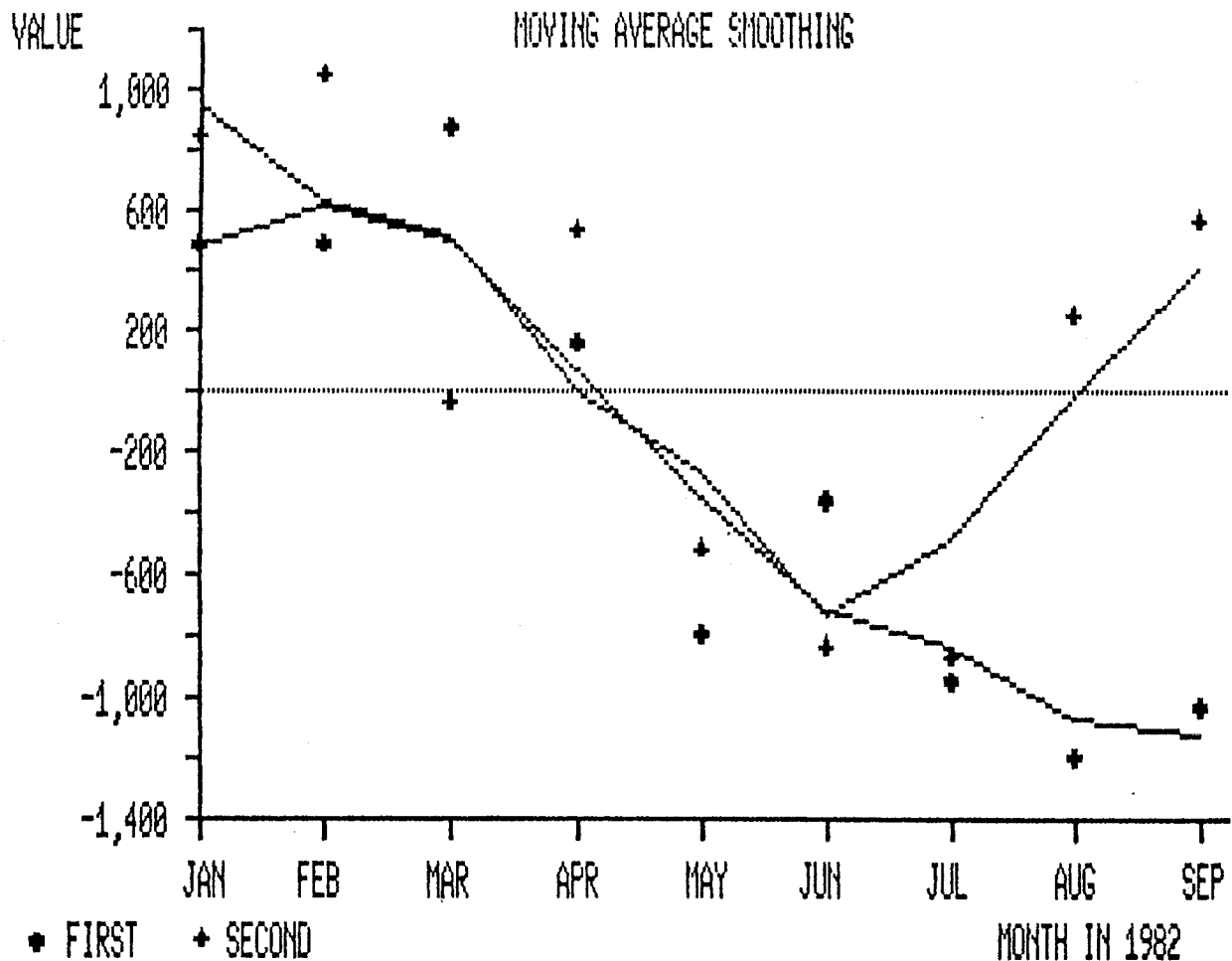
Third Order Equation Fit

D2/ LINE, AREA, BAR, HISTOGRAM, SCATTER GRAPHS

After you have either read data from disk (refer to Section C3) or entered data from the keyboard (refer to Section C1), you will be asked to specify some of the parameters for your graph. Each prompt is listed and explained:

Do you want to smooth data with a moving average (Y/N)?

This question will only be asked if you selected a Line Graph and did not perform a trend analysis. If you answer by pressing Y, the data points in your graph will be averaged with the surrounding points. This has the affect of smoothing out variations in the data so that the overall trend can more easily be seen. When the graph is displayed, symbols for each data point will be placed according to their actual value. However, since the lines connect the averaged values and not the actual values, the result is a smoother line.



Enter plot title (ENTER if none):

X-Axis Label (ENTER if none):

Y-Axis Label (ENTER if none):

These questions allow you to completely label your graph. The text that you enter for the title will be placed at the top, center of the graph. The X-Axis Label is placed in the lower, right corner of the graph. The Y-Axis Label is placed in the upper, left corner of the graph and can not exceed 13 characters. You can simultaneously press the SHIFT key and numeral 0 to enable the entry of lowercase letters. If you do not wish to enter any particular label, simply press the ENTER key without entering anything.

Do you want a grid drawn on your plot (Y/N)?

If you answer by pressing Y or by pressing ENTER, a grid of small dots will be placed on your graph. The grid makes it easier to determine the exact X and Y values which are labeled at the graph edges. However, if the values are not that important, the grid can be distracting and should be omitted. If you press ENTER the default is Y to draw a grid.

Do you want a stacked type bar chart (Y/N)?

This question will be asked if you are drawing a Bar Graph containing more than one data set and the data contains no negative values. It allows you to specify that the data sets are to be displayed in a cumulative fashion one on top of the other (stacked) or side by side. If you press ENTER the default is N for the side by side type Bar Graph.

Do you want connected points (Y/N)?

This question is only asked if none of the previous graph options dictate whether the data points should be connected by lines or not. The default if you press ENTER is for connected points. You may also press the CLEAR key if you want to go back to the previous question.

Do you want symbols used for each point plotted (Y/N)?

This question is only asked if none of the previous graph options dictate the answer. If you answer with a Y or press ENTER, then a symbol (circle, triangle, or square) will be placed at the location of every data point. Otherwise, only a small dot will identify the data points. You may also press the CLEAR key to go back to the previous question.

Y-Axis values range from ... to ...
Minimum Y value (ENTER for default)?
Maximum Y value (ENTER for default)?

At this point the program determines the smallest and largest number in the data set that you are graphing. You have the option of entering a beginning Y-Axis value which is lower than the smallest number or higher than the largest number. If you simply press ENTER for the default values, the minimum Y value will be set to 0 or to the smallest data value if that value is negative, and the maximum Y value will be set to a number slightly bigger than the largest data value. In most cases you should just press ENTER and use these default values. However, if you want to vertically compress the graph so that the lines are less jagged, you could enter a maximum Y value that is greater than the largest data value. You also might wish to set the minimum Y value to be equal to the smallest data value.

After answering all of these questions, the graph will be drawn. The completed graph will be displayed until you press a key. You will then be given further options which are explained in Section D4.

D3/ PIE CHART

Since the Pie Chart is a much simpler type graph, there is only one question to answer after the data has been read from disk or entered from the keyboard. You will be asked for a plot title. Whatever you type at this point will then be placed at the top, center of the final graph. You can simultaneously press the SHIFT key and numeral 0 to enable the entry of lowercase letters. If you don't want a title, press the ENTER key without typing anything. The Pie Chart will then be drawn and displayed until you press a key. You will then be given further options which are explained in the next section.

D4/ OPTIONS AVAILABLE AFTER VIEWING GRAPH

After pressing a key to end the viewing of the completed graph, you will be presented with the following menu of options:

A - Print your plot

This option allows you to obtain a hardcopy printout of the final graph on any of 20 popular printers. If this is the first graph you have printed in this session, you will be presented with a list of printers and must press the number of the appropriate one. If you do not have one of those listed, press the ENTER key to return without printing.

B - Save your plot on disk

You can save your final graph as a standard hi-resolution /HR file with this option. You will be asked for a file name and the plot will then be displayed as it is being saved.

C - View plot data values

All of the data values and descriptive labels which were graphed will be displayed sequentially on the computer screen. Every 15 lines of data, the computer will stop and wait for you to press a key to continue viewing the remaining data. Unlike the other menu options in this group, this one returns to the original main menu upon completion. Therefore, if you want to print or save your graph you should do it before selecting this option.

D - Print plot data values

All of the data values and descriptive labels which were graphed will be sent to the printer.

E - Return to the main menu

Choosing this option will put you back at the main menu. The most important thing to realize is that the data you just graphed is still in memory and can be displayed on a different type graph or edited.

E/ SAMPLE SESSIONS

This section contains five sample sessions designed to familiarize you with the BIZGRAPH program. These sessions show you how to enter data from the keyboard and then create each of the four major types of graphs. These sessions are designed to actually be completed on the computer as you go through them. The sessions may be done in any order although the best order is probably sequentially.

E1/ ENTERING DATA FROM THE KEYBOARD

In this sample session you will enter a single set of data consisting of six values and accompanying descriptive labels. This function is described in detail in Section C1.

1. When BIZGRAPH is first executed you will be presented with the main menu. Press the letter G for Create a New Data File.

2. Since we have only one set of data to enter, press the numeral 1 in response to the first question.

3. Each of our values has a descriptive label so press the letter Y in response to the second question.

4. You will now be asked to give a label for the whole data set. You can enter text such as PIZZA COSTS.

5. We are now ready to enter the six values and descriptive labels for the cost breakdown of a pizza like this: (In order to switch to lowercase, press the SHIFT key and numeral 0)

Entry 1? .90,cheese

Entry 2? .20,crust

Entry 3? .30,labor

Entry 4? .30,topping

Entry 5? .10,electricity

Entry 6? .20,sauce

Entry 7? -1,

Do you wish to end data entry (Y/N)?Y

6. In response to the secondary menu, press A to save the data on disk in the /DIF format which can be read by BIZGRAPH or VisiCalc. Then enter a unique file name such as TEST1. You will then be placed back at the secondary menu and should press H to return to the main menu.

E2/ CREATING A PIE CHART

In this sample session we will create a Pie Chart. The options available with a Pie Chart are explained in detail in Section D3.

1. In response to the main menu, press C for Create Pie Chart.

2. You will now be asked for the name of the file containing the plot data. If you created a file in Section E1 you can enter that filename. Otherwise, the same data is on the BIZGRAPH disk in a file named SAMPLE2.

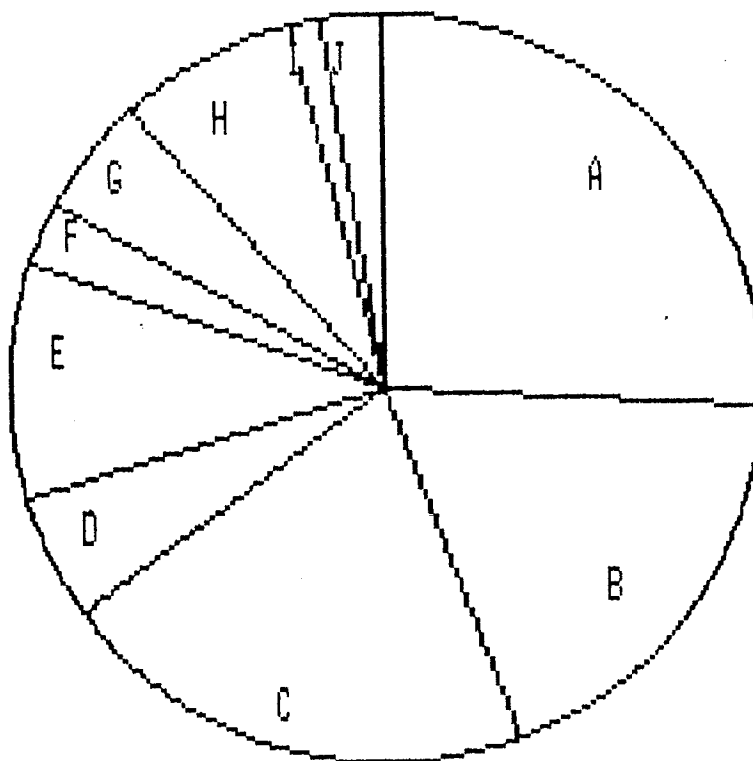
3. Enter 2 for the row number of the data set.

4. Enter 1 for the row number of the label field.

5. Press ENTER in response to the next two questions regarding beginning and ending columns of data.

6. The next question asks you for the title of the graph. Enter SAMPLE PIE CHART for the title and the following Pie Chart will be drawn:

1982 Expenses for FUNWARE



A - 26.0% Cost of Goods
B - 18.2% Advertising
C - 20.8% Salaries
D - 5.2% Rent
E - 10.4% Equipment
F - 2.6% Office Supplies
G - 5.2% Depreciation
H - 7.8% Travel
I - 1.3% Postage
J - 2.6% Other

E3/ CREATING A LINE GRAPH

In this and the next two examples, we will be using a data file contained on the BIZGRAPH disk named SAMPLE3/DIF. The layout of this file if you were to read it in with VisiCalc is like this:

	A	B	C	D	E	F	G	H
1		TRIAL1	TRIAL2	TRIAL3	TRIAL4	TRIAL5	TRIAL6	TRIAL7
2	TEST1	9	13	8	8	4	1	5
3	TEST2	3	5	8	12	14	18	16
4	TEST3	1	0	9	6	5	3	3
5	TEST4	3	4	6	7	3	9	9
6	TEST5	4	4	9	5	4	2	2
7	TEST6	1	5	1	7	6	5	9

This example will take the first two vertical columns of data and plot both of them on a line graph. The steps to do this follow:

1. Select option A on the main menu - Create Line Graph.

2. If you are asked if you want to use data in memory, answer by pressing N.

3. Enter SAMPLE3 for the name of the file containing plot data.

4. Enter C in response to whether you want to graph rows or columns.

5. Enter the number 2 since we will be graphing two sets of data.

6. Enter B for the letter of the first column of data and C for the letter of the second column of data.

7. Enter A for the column letter of the label field so that the labels TEST1,2... will appear on the horizontal axis of the final graph.

8. Press ENTER in response to the next two questions regarding beginning and ending rows of data.

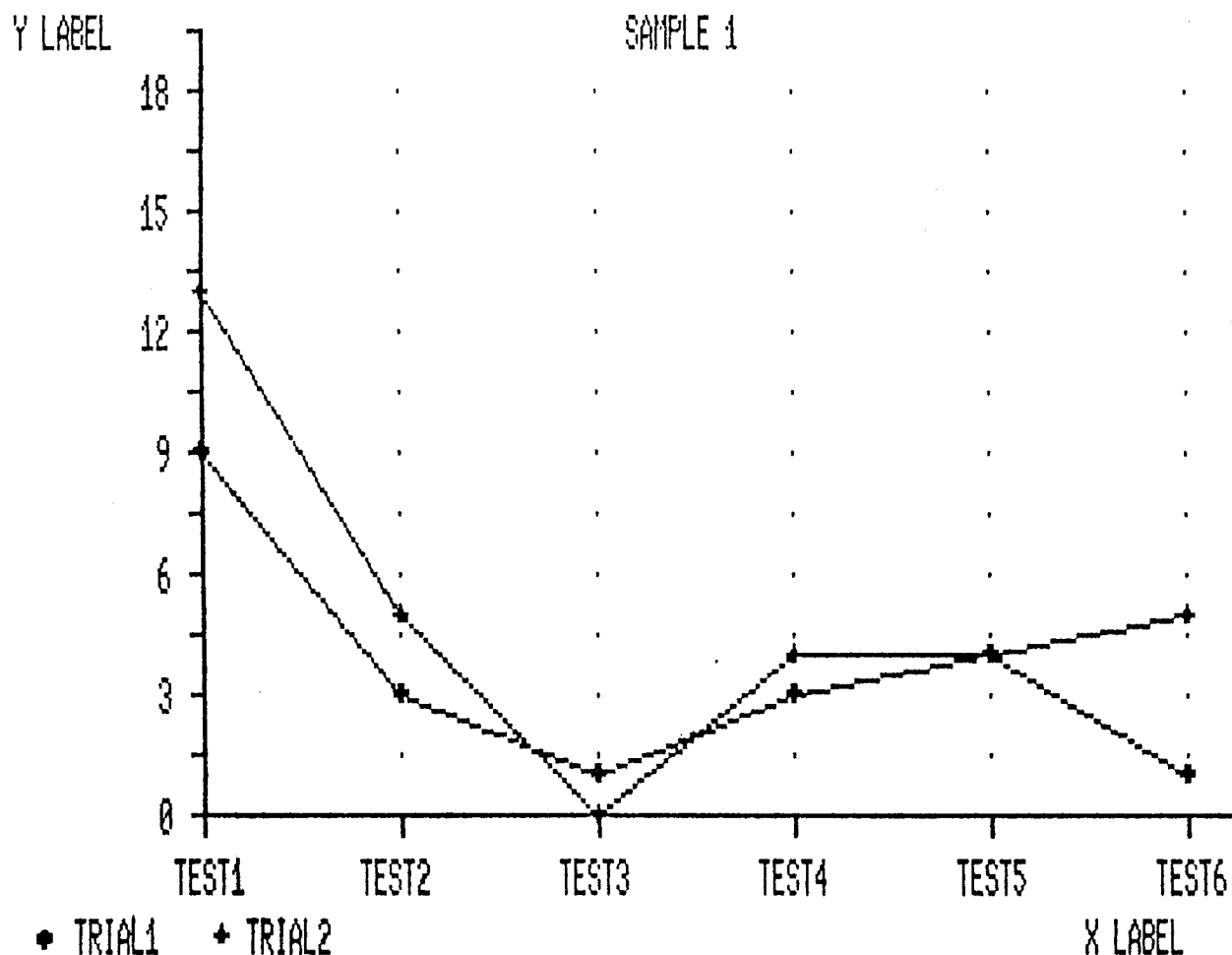
9. We aren't going to want a moving average on the data so answer this question by pressing N.

10. Enter SAMPLE 1 for the title.

11. Enter X LABEL for the X-Axis label for lack of imagination, and Y LABEL for the Y-Axis label.

12. From this point on, press ENTER in response to the next five questions and let the computer use the default settings.

The final graph is below. Note that all of our labels are in place. In addition, the computer automatically used the label at the top of each column to identify which data points belong with which data set.



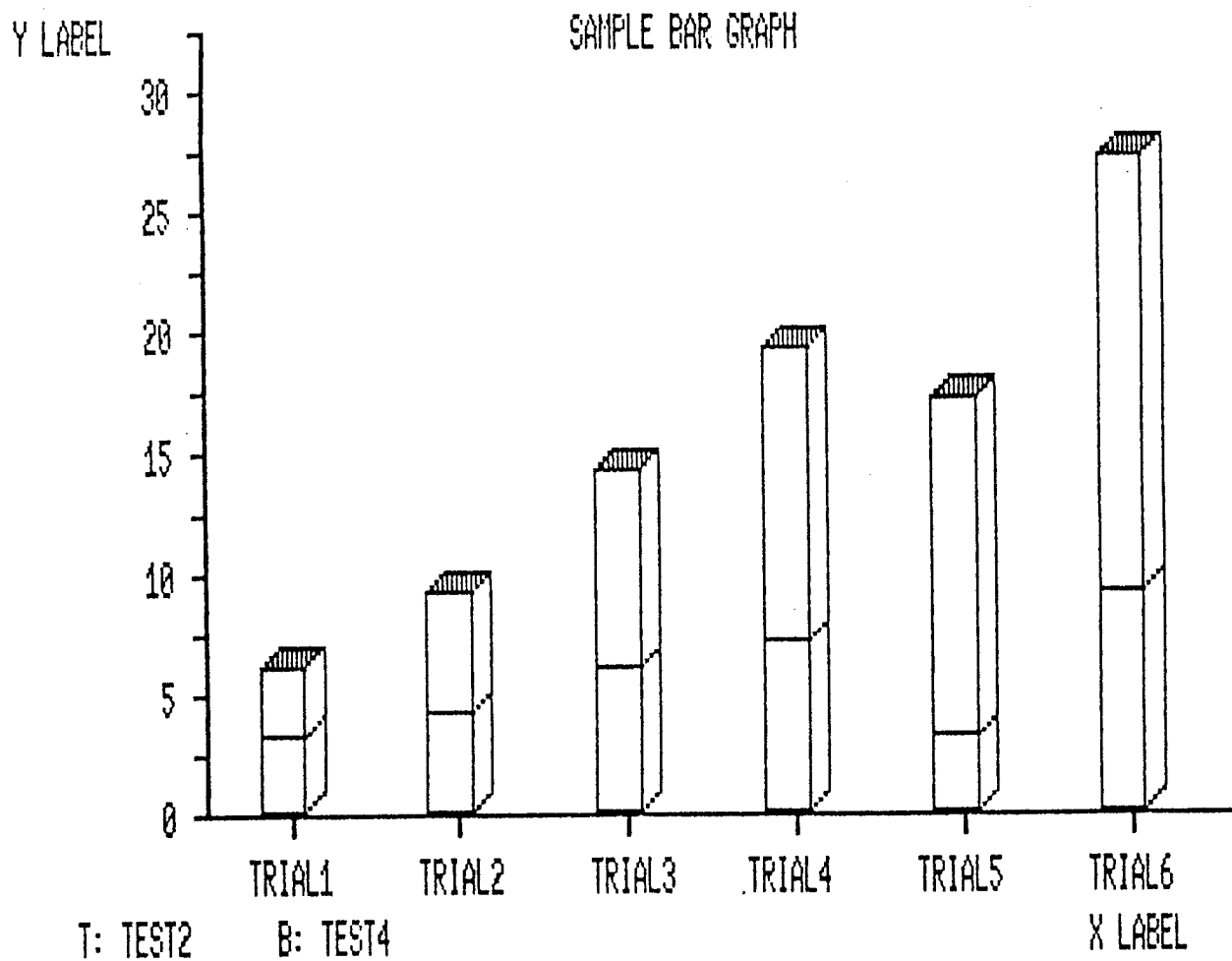
E4/ CREATING A BAR GRAPH

In this example, we will use the same data file listed in Section E3 to plot a Stacked Bar Chart. However, we will use the data from rows 3 and 5 and will omit the data from TRIAL7. The steps are as follows:

1. Select option B on the main menu - Create Bar Graph.
2. If you are asked if you want to use data in memory, answer by pressing N.
3. Enter SAMPLE3 for the name of the file containing plot data.
4. Enter R in response to whether you want to graph rows or columns.
5. Enter the number 2 since we will be graphing two sets of data.
6. Enter 3 for the number of the first row of data and 5 for the number of the second row of data.
7. Enter 1 for the row number of the label field so that the labels TRIAL1,2... will appear on the horizontal axis of the final graph.
8. Press ENTER in response to the next questions regarding the beginning column of data.
9. To omit the last data point under TRIAL7 we will enter G as the last column of data to use.
10. Enter SAMPLE BAR GRAPH for the title.
11. Enter X LABEL for the X-Axis label for lack of imagination, and Y LABEL for the Y-Axis label.
12. Press N in response to the question regarding a grid.
13. Answer Y so that we will get a stacked type Bar Graph.
14. In response to the maximum Y value, enter the number 30 just to keep from using the default value all the time.

The final graph is below. Note that all of our

labels are in place. In addition, the computer automatically used the label at the beginning of each row to identify which data points go with TEST2 and which with TEST4. The T in front of TEST2 stands for top bar, the B for bottom bar. (M would have stood for the middle bar if there had been one.)



E5/ CREATING A SCATTER PLOT

In this example, we will use the same data file listed in Section E3 to plot a Scatter Plot. However, we will use the data from rows 2 and 3. The steps are as follows:

1. Select main menu option F - Create Scatter Plot.
2. If you are asked if you want to use data in memory, answer by pressing N.
3. Enter SAMPLE3 for the name of the file containing the plot data.
4. Enter R in response to whether you want to graph rows or columns.
5. Enter 2 for the number of the first row of data and 3 for the number of the second row of data.
6. Press ENTER in response to the next two questions regarding beginning and ending columns of data.
7. Enter SAMPLE SCATTER PLOT for the title.
8. Enter X LABEL for the X-Axis label for lack of imagination, and Y LABEL for the Y-Axis label.
9. Hit ENTER so that we default to using a grid.
10. Answer N to the question regarding connected data points.
11. Just for variety, and so that you can see what it does to the resulting plot, enter a value of -5 for the minimum Y value. Then press ENTER to use the default value for the maximum Y value.
12. You will then be asked for the Number of labels on the X-Axis. If you press ENTER then the number will default to 11. For our example, enter 14.
13. You may then specify an X-Axis increment to insure a readable and logical numbering scale. If you press ENTER a default value will be chosen which insures that all of the data fits on the graph. For our example, enter 1.

The final graph is below. Note the Y axis labels begin with a negative number because we told the computer that we wanted to have room for a value of -5. A dotted line is drawn horizontally where Y=0.

