Calc Result

™

THE
SPREAD
SHEET

handic
software ab
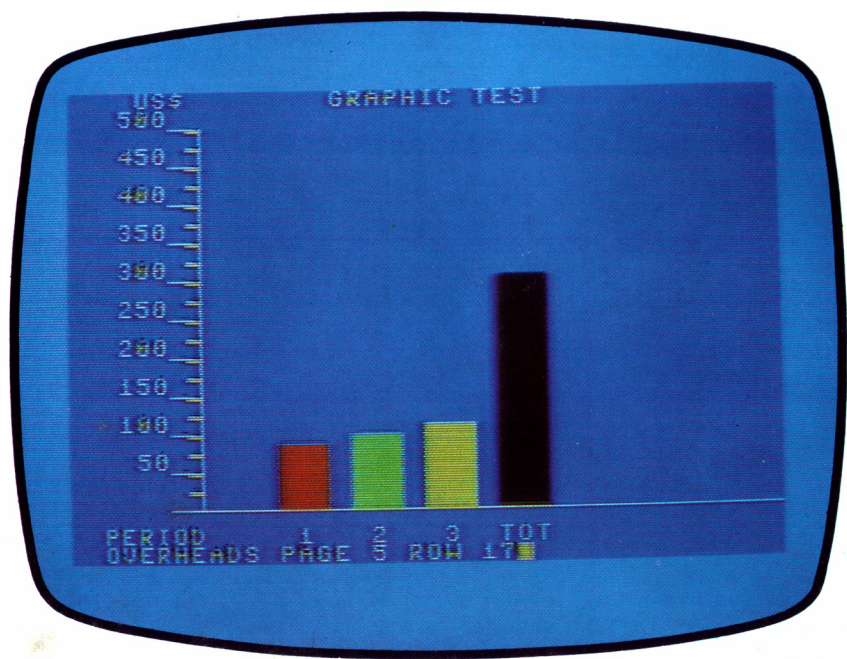
Disclaimer

Neither Handic Software AB nor its distributors, make any warranty, either expressly or implied, with respect to the program described herein, its quality, performance, merchantability, or fitness for any particular purpose. This program is sold "as is". The risk as to its quality and performance is with the buyer. Should the program prove defective following its purchase, the buyer (and not the creator of the program, Handic Software Ab, their distributors or their retailers) must assume the cost of any necessary servicing, repair or correction and any incidental or consequential damages resulting from any defect in the program even if the creator of the program has been advised of the possibility of such damages.

Copyright

Help

If you have any comments about the contents of the Calc Result manual, or the program itself, please write to your national distributor. Whilst Handic Software Ab have made every effort to ensure the accuracy of the manual, and the operation of the program itself, any errors noticed by users will be corrected as quickly as possible. Your help in this respect will be greatly appreciated by other users.

CONTENTS

Part 3 Commands and functions   **3**

APPENDICES

*DIF is a registered trademark of Software Arts. Inc

INTRODUCTION

CALC RESULT is a new business software package from HANDIC SOFTWARE. With their knowledge and experience of earlier 'spread sheet' programs they felt it possible to create a program that would be easier to understand and at the same time be more powerful than those which already existed. These ideas gave birth to CALC RESULT.

For those who deal with complex calculations or simulations CALC RESULT will quickly become irreplacable and not only speed up your work but make complex jobs easier.

The many unique facilities in CALC RESULT greatly ease and speed up the many ways in which you can manipulate data:

* CALC RESULT works three dimensionally giving a natural overview of work. This three dimensional structure makes it easier to create layouts, extend data handling and add pages.

* CALC RESULT can use up to 32 pages, each divided into rows and columns. The intersections between the rows and columns create thousands of positions or co-ordinates. In every one of these positions you can enter numbers, words or formulas which are to be calculated. The format commands allow you to give each position an individual character format.

* Each of CALC RESULT's pages can be split – horizontally and vertically – so that two different parts of a page can be looked at simultaneously.

* It is possible to place different pages in two parts of the screen. A window can be placed in any position on a page and, just like the page, be split. You can thus have on the screen parts of four totally different pages at the same time.

* To make it as easy as possible to use, CALC RESULT has help screens that give a short description of the functions that you are currently using.

* The editing functions in CALC RESULT allow you to change, insert and erase text, formulas and values. CALC RESULT's original appearance can be reorganised as often as you want to accommodate new rows and columns.

* Once entered, a formula can be repeated anywhere in the page. CALC RESULT can also sum, calculate the mean value and manipulate chosen rows, columns or positions. CALC RESULT interprets as many other spread sheet programs do not, formulas according to the normal mathematical rules.

* CALC RESULT records the formulas you use and protects them when working through a problem. If you change any given value, all other related values will be automatically recalculated. Recalculation makes CALC RESULT a powerful planning and calculation tool allowing you not only to correct errors, but vary values to study different solutions.

* CALC RESULT has a graphic output which can print bar chart with user defined scales. Tables of data can also be individually formatted for printing.

USING THE MANUAL

This manual has been divided into three main parts. As users of CALC RESULT will have varying degrees of computer experience, the manual has been designed with this in mind.

Part 1
This contains information about the minimum equipment you need, details on how to start using CALC RESULT for the first time, and how to prepare programs and data disks for CALC RESULT.

Part 2
This is a lesson-by-lesson tutorial in the use of CALC RESULT. Those who have little or no experience with computers or spread sheet programs will find that this section will answer all their questions. From the simple mechanics of CALC RESULT in Lesson 1 to a final example in Lesson 5 it aims to take you painlessly through CALC RESULT showing the unique handling of pages and how graphic output works.

Each section of the tutorial shows what to do, which keys to type, what to expect. With practice you will become familiar with the more advanced features of CALC RESULT and you will find that you only have to use Part 3 with CALC RESULT's command reference.

Part 3
This defines all CALC RESULT's commands and functions as well as gives a full description of the screen. Every function structure is described and, where necessary, a short example will show how it works.

Appendices
These details use of DIF-files and Error messages.

DIF is a registered trademark of Software Arts. Inc

Part 1 Using CALC RESULT

1.1 MINIMUM EQUIPMENT

To be able to use this version of CALC RESULT you will need the following equipment:

1 A Commodore 64

2 A VIC 1541 Disk drive

3 A VIC 1515/1525, 1520 or 1526 printer

4 The CALC RESULT programme, disk-check that it is the correct disk for your system

5 The special CALC RESULT cartridge which must be inserted in the CPU before you can use CALC RESULT. NOTE ! Remember that the CPU must be turned off before you insert or remove the cartridge, otherwise the cartridge will be destroyed!

1.2 THE CBM KEYBOARD

The CPU keyboard has a number of keys with double functions. To be able to use the upper function you must press the SHIFT key at the same time as pressing the key with the double function. With this in mind, when we describe a key such as **INST** you will have to press the SHIFT key and at the same time the key with the symbol **INST**. When capital letters are to be used always SHIFT to uppercase.

The following symbols are used in calculations:
+ addition
− subtraction
/ division
* multiplication
↑ exponentiation

In this manual when a single key is to be pressed, the key is placed between apostrophes eg: **'A', '1', 'HOME'** and **'SPACE'**

Letters, both in texts and as co-ordinate references, are printed as capitals in this manual. It is up to you to decide whether you want to use small letters or capitals in titles.

Positions, values, text and formulas in the manual are written between quotation-marks eg: **"A157", "1600", "PROFIT"** and **"A1+B1"**.

The keys carrying special functions are:
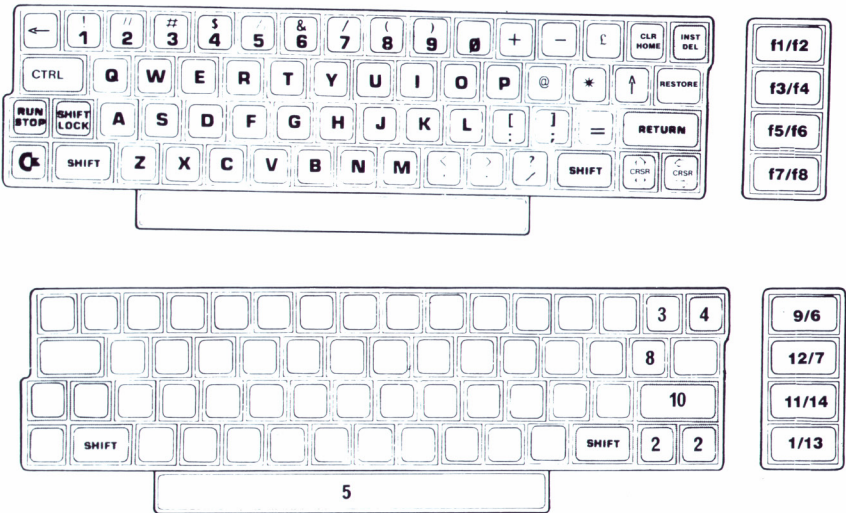
1 **F7** – this key is the CALC RESULT command key. Pressing the key once gives you access to the CALC RESULT commands and functions. This key is also used for stopping a chosen function, and when you use it, the program returns to where it was before the function keys were used. It thus halts printing if required.

2 **CRSR** – these keys are used to move the cursor on the screen. A cursor movement is shown by an arrow, '◗', in the direction to be moved.

3 **HOME** – used to move the cursor to the upper left corner of the screen. Pressing this key twice will place the cursor in position A1.

4 **DEL** – this is part of the INST/DEL function. This key is used when incorrect input is to be erased. By placing the small cursor to the right of the text that is to be erased everything to the right is moved one position to the left.

4 **INST** – is used to insert texts. By placing the small cursor at the place where the insertion is to be made everything is moved one position to the right.

5 **SPACE** – to enable CALC RESULT to differentiate between values and labels this key is used. When a label is entered the SPACE key is pressed first. Every input which is not preceeded by a SPACE is accepted as either a value or formula.

SHIFTED SPACE is used to change an earlier input which has been accepted as a LABEL to become a VALUE, and vice versa.

6 **F2** – is used to move the cursor between splitted screen parts.

7 **F4** – this key is used to switch on and off the synchronised rolling between the parts of the screen.

8 ↑ – uparrow is used to undertake a recalculation.

9 **F1** – this key is used for alternating between the two pages which are in the internal memory.

13 **F8** – this key makes it possible to edit the input line. All keys that are usually used for editing can be used for correcting this line.

10 **RETURN** this key is used to send what has been written to the computer.

The **F7** key accesses the CALC RESULT control functions:

3 **CLR** – the CLR key is used to clear the current page

11 **F5** – when help screens are wanted

12 **F3** – is GO TO. This is used to move the cursor to a particular position. For example to BK150, the command is **'F3' "BK150" 'RETURN'**

14 **F6** – Hardcopy. Prints the screen. The printer will print out the entire screen except for the top three lines.

1.2.1 COLOR KEYS

The color keys are the following:

Together with the CTRL key
- 1 = Black
- 2 = White
- 3 = Red
- 4 = Cyan
- 5 = Purple
- 6 = Green
- 7 = Blue
- 8 = Yellow

Together with the Commodore key
- 1 = Orange
- 2 = Brown
- 3 = Light red
- 4 = Grey 1
- 5 = Grey 2
- 6 = Light green
- 7 = Light blue
- 8 = Grey 3

1.3 HOW CALC RESULT HANDLES DATA

CALC RESULT uses three places for storing data:

* in RAM, which is the computer's internal memory. All calculations are made there.
* in the work area, this is used as a temporary storage area and extra memory to the RAM. When the internal memory (RAM) is full, certain parts are moved to the work area on the program disk. When work is to be saved, it is moved from the work area to the data disk. When data is fetched from the data disk to the internal memory, it goes via the work area. To avoid any misunderstanding, note that the page or pages that are in the internal memory are not in the work area at the same time.
* on a data disk, where all completed work is stored.

Pages are divided into a number of rows and columns. The intersection between those rows and columns creates thousands of positions or co-ordinates in which to enter values, labels and formulas. The format command enables you to give every position an individual character.

When working with CALC RESULT your data is sent to the computer's internal memory. This memory is sufficient in a Commodore 64 machine for storing about 2000 memory positions — that is room for a co-ordinate formula or a piece of text. This memory for storing data will normally be enough for storing several pages, but if this is not enough you can easily save one of your pages on the work area. Since CALC RESULT is working with the program disk as a complement to the memory, you have available a very large memory, sufficient for 7800 memory positions or about four 'filled' pages on a 1541 disk drive if only one help language is kept. It is this part of the memory that is called the work area in this manual. This work area is located on the program disk in drive 0.

When you have finished your work you can save the work area, or part of it, on to the data disk located in drive 1. There you save it under a filename. Of course you can load it back to the work area for further use.

The data handling works the same way when using a single disk drive, apart from that the program disk then **also** includes the data disk.

If the day ends before you have finished your work, you just move the computer's internal memory to the work area — from where it can be later retrieved on power up — using CALC RESULT's Quit function.

1.4 AVOIDING DISK ERRORS

Problems due to disk errors are something which may happen sooner or later. The problems this causes can be reduced or eliminated by proper care. If you are careless with disks, errors will eventually occur.

Disk error problems can be avoided by:

— CORRECT HANDLING OF DISKS
— REGULAR SAFETY BACKUPS

1.4.1 CORRECT HANDLING OF DISKS

The following points cover disk care

a) Always keep the disk in its cover.

b) Never bend the disk.

c) Do not expose the disk to direct sunlight or heat.

d) Never touch the exposed part of the disk.

e) Protect the disk from smoke and dust.

f) Keep the disk away from magnetic fields, such as motors, telephones etc.

g) Write disk labels before putting them on the disk and never use a ball point pen on a disk, or allow the disk surface to become damaged in any way.

1.4.2 REGULAR SAFETY BACKUP (double disk drive)

The following copying routine is recommended to protect your data:

a) Have three disks, COPY 1, COPY 2 and ORIGINAL (work disk).

b) Copy your original work disk to COPY 1 after having worked with it — check carefully that it is backed up properly.

c) Copy COPY 1 to COPY 2 at the end of the day.

If a disk error should occur and your information on the disk is found to be unreadable, take the following measures:

1 Take COPY 1 and make a backup on a new disk (see section 3.20). Mark this new disk ORIGINAL, this will be your new workdisk.

2 Restart from where you were before the error showed up.

3 If the error continues call your local CBM dealer.

The advantage of having two copies is that if something happens during the backup both disks could be corrupted. If this happens to you, you will quickly understand the advantage of having two copies.

For those of you who have very valuable information on Data Disk the copying routine that follows is recommended. Here you also use three disks, but for protection against physical wear, you rotate the disks.

Since the disk is treated in the same way as an ordinary record — but at high speed — it is understandable that there will be wear in use. Other factors that causes wear are careless disk handling, badly supressed or irregular electricity and power failures. Power failures can, in certain cases, be avoided by power stabilisers, but the chances are reduced by disk rotation.

Take three files to contain your DATA DISKs and mark them ORIGINAL, COPY 1 and COPY 2. All diskettes should be marked with the words DATA DISK.

Place each disk in one of the files and start by using the one in the ORIGINAL file.

1 The data on the ORIGINAL disk is copied to the COPY 1 disk on every work occasion or more often if desirable.
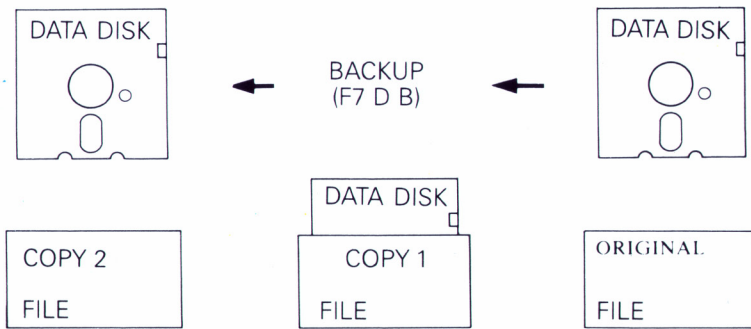
2 The disk from COPY 1 is moved to the COPY 2 file
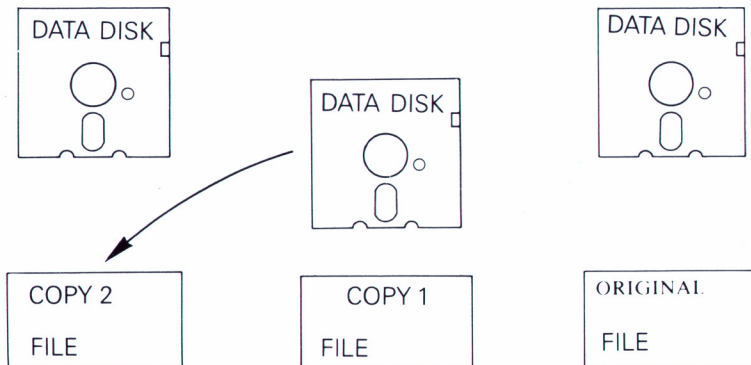
3 The disk from ORIGINAL is moved to COPY 1

DATA DISK

DATA DISK

DATA DISK

COPY 2
FILE

COPY 1
FILE
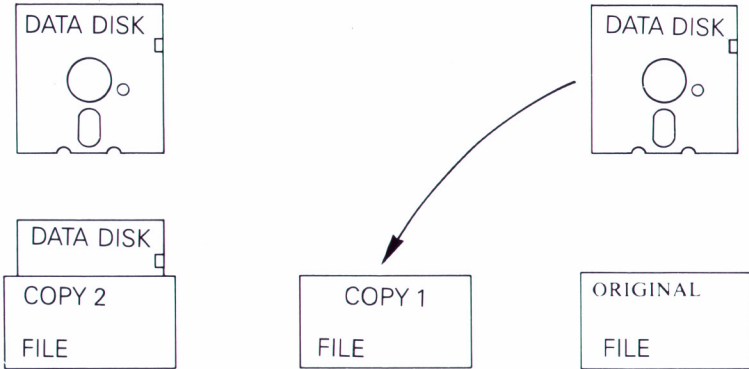
ORIGINAL
FILE

4 The **old** disk from COPY 2 is moved to ORIGINAL

DATA DISK

DATA DISK

COPY 2
FILE

DATA DISK

COPY 1
FILE

ORIGINAL
FILE
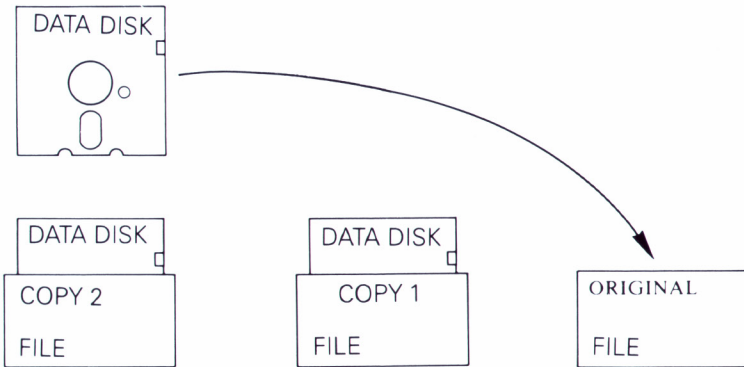
By using this copy routine the wear will be distributed between the three disks and you are well prepared to deal with errors if they occur.

1.4.3 REGULAR SAFETY BACKUP (single disk drive)

Since it is not possible to store all data from a 'full' disk in the internal memory, at the same occasion, the backup will be splitted in several parts. The number of parts are dependent on the number of saved files.
NOTE!! The CALC RESULT master disk **can only** be used for creating a new copy!

After that you have pressed:

'F7' 'D' 'B' 'Y'

1 CALC RESULT will store as many files as possible in the internal memory. When ready you find the following message in the screen:

<div align="center">

INSERT BACKUP DISK
PRESS RETURN WHEN READY

</div>

2 Replace the master disk with another. If you are using an 'old' disk remember that the backup will delete ALL earlier stored information.

When ready press **'RETURN'**

CALC RESULT will now prepare the disk and then store what it earlier fetched. When the storing is ready you will have the following message:

<div align="center">

INSERT MASTER DISK
PRESS RETURN WHEN READY

</div>

3 If you did not have so many files on the disk the backup may now be completed, otherwise go back to point 1.

When starting CALC RESULT for the first time the backup will end with the message:

<div align="center">

SECURE MASTER DISK
INSERT BACKUP DISK IN DRIVE 0
PRESS RETURN WHEN READY

</div>

Remember to make backups! Compared to the time it takes to reconstruct a work those are well used minutes.
You can use the same copy routines here as for the double disk drive, see section 1.4.2.

1.5 USER REGISTER

The program disk stores special information about your help screens, four different languages, and system configuration. When you select the User Register – it is explained in the following section – you will be prompted with the following questions. To accept the prompted answer you only have to press RETURN.

0 DEUTSCH	1 ENGLISH
2 FRANCAIS	3 ESPANOL
4 ITALIANO	5 HOLLANDS
6 SVENSKA	7 SUOMEKSI
8 OTHER	

Single Disk	**Y**/N
Border color	**X**
Background color	**X**
Foreground color	**X**

(For color alternatives, see section 1.2.1.)

The Border is the field that surrounds the CALC RESULT working area.

The Background is the total area used by CALC RESULT.

The Foreground consists of the three control lines, the horizontal X-axis and the vertical Y-axis.

When the foreground color is ready part two of the register follows:

1 = VIC 1515/1525 Graphic Printer

2 = VIC 1520 Printer/Plotter

3 = VIC 1526 Printer

Type of printer	**1**
Printer-device number	**4**
Disk-device number	**8**
Number of lines on paper	**48**
Number of characters per line	**80**
Left margin	**1**

1.6 STARTING CALC RESULT FOR THE FIRST TIME

1 Switch on the power to:

Your printer, VIC 1515/1525, 1520 or 1526

Your disk drive, Single or Double disk drive

2 Insert your cartridge as explained in the Commodore 64 USER'S GUIDE.

3 Now switch on the power to your Commodore 64.

4 When the text 'INSERT DISK' appears on the screen, place master disk in drive (0 (right) if you are using a double disk drive).

The program CALC RESULT will now be loaded from the disk.

5 Complete the User Register by answering the following questions:

Give the language you want to use for your help screens:

for example press **'1'** for English

If you are going to use the double disk drive type

'N' otherwise just press **'RETURN'**

Choose Border, Background and Foreground colors (see section 1.2.1 for colors).

Give the printer number. Choose either 1, 2 or 3.

After this, and the following prompts, press **'RETURN'**

Give printer device number — 4 is normally used but the number can be between 4 and 7.

Give the disk device number. Normally·it is 8 but it can be between 8 and 15.

Give the number of lines on the paper you are going to use. This can vary from 48 to 72 lines.

The width of the paper is dependent on the number of characters/lines, it can vary between 40 and 132.

Set the left margin by typing in a number, 1 to 132, normally it is 1.

6 CALC RESULT will now make a copy of your master disk. If you have a single disk drive follow the instructions at 1.4.3 and then continue with point 8.

7 Place a new (blank) disk in drive 1 (left) and press:

'RETURN'

8. You will now have to choose which language to keep. NOTE! When many languages are kept in the program, all 32 pages cannot be used. Thus, the fewer languages you keep, the more space you reserve for filing, operations etc.
Press 'Y' for the ones you want to keep, and 'N' for the others, confirm with 'Y'.

9. Now follow the instructions on the screen. I e take out the master disk, and place it in a safe place. NOTE. This master disk can only be used for creating a new copy.
Then place your copy in the disk drive (0 right for double disk drive users).
Press 'RETURN' when ready.

10. Initialize the disk by pressing:

'F7' 'D' 'I'
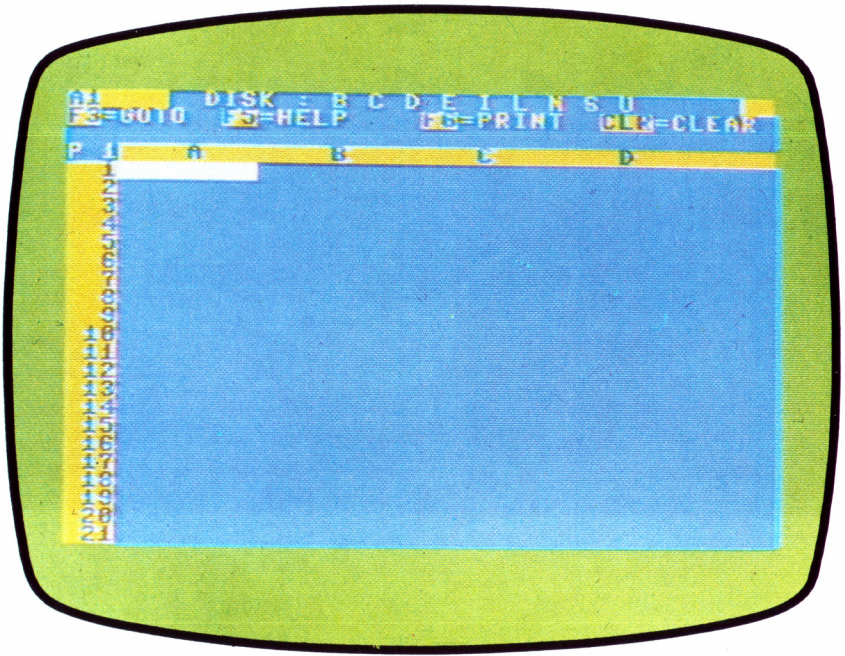
When you have answered all the questions above CALC RESULT will display the working screen.

1.7 PREPARING A DATA DISK (for double disk drive)

You should now prepare a data disk on which to save the work you create with CALC RESULT. Put a new disk in drive 1. Follow the instructions below and watch the second row from the top of the screen which is the command line.

1 If the command line is blank, press **'F7'**

On the command line you will see SYSTEM COMMAND: B D E F G L O P Q R –

2 Press **'D'**

Now you will see DISK COMMAND: B C D E I L N S U

3 Press **'N'** to choose the formatting function

On the command line NEW DRIVE 1 will be seen and on the help line NAME ?. Now give the disk a name (maximum 12 characters where none of the characters ' " ; : # * ? $ are included).

4 Type in what to call your data disk on the input line, for example **"DATA DISK'** and then press **'RETURN' 'Y'**

The active light on the disk drive will light up and the drive will run for some minutes.

During formatting the computer will create a pattern on the disk so that CALC RESULT can always find a given position on the disk and then save or read the data found there.

Information created in CALC RESULT and saved on the disk can be found and read by other programs written in BASIC.

NOTE! when formatting is undertaken all information on the disk is erased.
After the active light has gone out, and the disk has stopped spinning, you can then take out the disk. NEVER take out a disk during formatting or when the computer is working with the disk. Both the disk and the drive will be damaged.

Take one of the self adhesive labels in the disk box and write CALC RESULT DATA-DISK and the date on the label. Place the label on to the disk: always write on the label BEFORE placing it on the disk. Now put your DATA-DISK in drive 1.

You are now ready to go on to lesson one in the tutorial.

1.8 STARTING CALC RESULT NORMALLY

Switch on all the machines **except** for the Commodore 64.

Insert the CALC RESULT cartridge at the Commodore 64.

Switch on the Commodore 64.

When 'INSERT DISK' shows on the screen, place the program disk you work with in drive (0 when using a double disk drive).

When loading is finished, CALC RESULT will show its format on the screen.

If the format does not appear, remove the disk, switch off the CPU, replace the disk and go through the same procedure again.

Remember: to be able to use the CALC RESULT commands you have to press the 'F7' key.

Part 2 The CALC RESULT Tutorial

2.1 Lesson 1

2.1.1 THE SCREEN

Load CALC RESULT according to the instructions given earlier in Section 1.8. If the command line is blank press

'F7'

Then press:

'CLR' (SHIFT and CLR/HOME) **'Y'**

This will clear the screen of any unwanted data.

You will notice that the screen is divided into numbered rows and lettered columns. At every intersection between a column and a row there is a co-ordinate (input position), eg A1, C5, J11 etc. At every co-ordinate a word, numbers or formula can be written.

Above the horizontal axis there are three lines which make up the control panel:
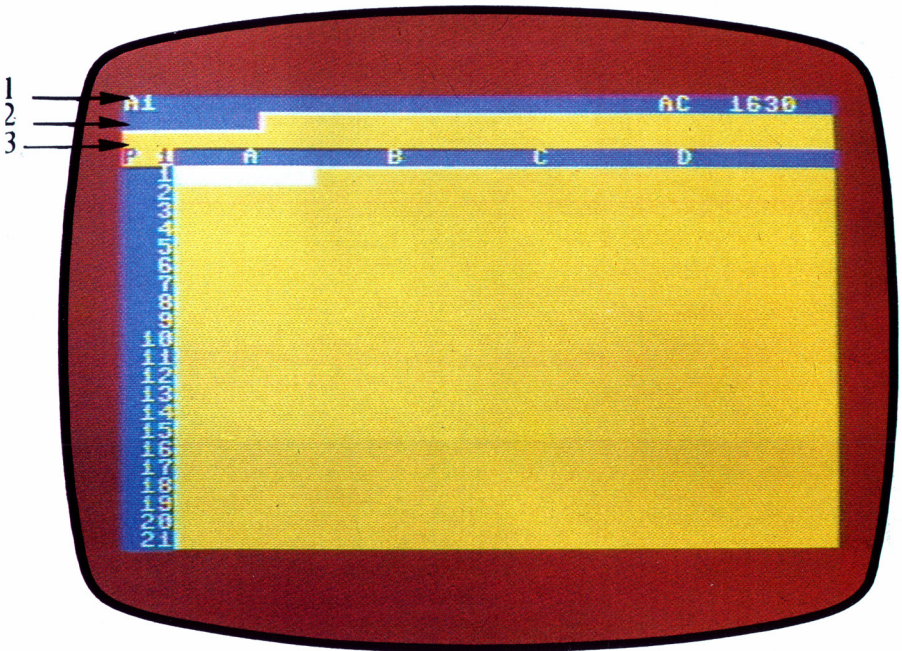
1 Command line, the top-most line, shows the CALC RESULT commands and the co-ordinates of the position of the cursor.

2 The middle line, Help line, shows the four functions which always follow the other command choices. These are:

F3 for GO TO. Moves the cursor to a specified co-ordinate.

F5 for HELP. Displays the current help screen.

F6 for HARDCOPY. The printer copies what is on the screen, except for the command lines.

CLR for CLEAR. Clears the current page.

This line is also used for:

– answering CALC RESULT's questions, except for printer functions where these are answered by one single character

– together with the input line it will display any instructions connected with editing printouts

– to the left it shows what type of information is in the cursor position
– either VALUE (values or formulas) or LABEL (texts).

3 Input line, on this line the characters that you have written for a particular co-ordinate will be shown while the cursor is in that co-ordinate. It is also used for accepting inputs.

See Section 3.1 for a detailed description of the format of the CALC RESULT screen.

2.1.2 HELP SCREENS

Since the commands and functions mostly consist of one letter only, the HELP function can help avoid a great deal of searching in the manual for functions you are unfamiliar with. CALC RESULT shows them on the screen at any time when you are working if you need them. By pressing F7 F5 for HELP, the commands and functions that are shown on the command line will be described on the screen with a short explanation.

When the command or function has been found, you can execute it by pressing its own command character. If it cannot be found you press the control key, **'F7'**. As always, the F7 key resets the screen to its original appearance.

2.1.3 CURSOR MOVEMENT

At the co-ordinate A1, which is at the upper left hand corner of the page, you will see a white bar called the cursor. Writing on the current page is done at the position of the cursor.

The cursor can be moved using the CRSR keys and the shift key. Press the '◗' key once. The cursor has now moved to the position immediately to the right, column B, row 1. The co-ordinate reference in the control line has changed to B1.

Now press the '◖' key, the cursor moves back to column A, row 1. Pressing the '➡' key the cursor moves down to column A, row 2, pressing the '➡' key the cursor moves back to its original position A1.

The cursor can move across the current page to column BK (63 columns), and down as far as line 254.

2.1.4 SCREEN SCROLLING

When CALC RESULT is loaded you will see two axes, one horizontal and one vertical. There are four columns and twenty-one rows on the screen.

By pressing the '◗' key several times you will come to the last column (D). Now press the '◗' key again and you will notice that column A disappears off to the left edge off the screen, while the last column on the screen is now column E. If you continue to press the '◗' key more columns will disappear off the left edge of the screen while an equal number of columns will appear on the right hand side of the screen.

This effect is called scrolling since it gives the effect of rolling up or out a sheet of paper. If you press the '➡' key, the same effect will be seen with the movement of the rows. To get back to A1 you use the same keys but SHIFTED.

2.1.5 AUTOMATIC CURSOR MOVEMENT

To speed up scrolling you use the same CRSR keys but, by keeping the key depressed, the cursor continues to move automatically in that direction. If you continue to press the '➡' key you will come to position A254 which is the bottom edge of the electronic page. Now press the '↓' key until you come to position BK254, this is the bottom corner of the page. This gives a total of 63 columns and 254 rows on each page.

As you can see the CALC RESULT electronic page is much larger than it appears at first.

2.1.6 FASTER CURSOR MOVEMENT

Even with the automatic repeat function it takes some time to get to the last position on the page. There is a much quicker way to move the cursor to the desired position. Press the control key, **'F7'**, to get the system commands.

The key **'F3'** is the command for GO TO. Press this. The text GO TO appears on the INPUT LINE.

Type **'A'** once

The letter "A" appears on the input line.

Now press the number **'1'** key as we want to go to co-ordinate A1, followed by **'RETURN'**.

The whole screen changes to the upper left hand corner of the page and the cursor is at position A1. Try some other co-ordinates and check that the cursor moves to your chosen positions.

The fast cursor movement works in all directions, but to move quickly to the top left of your screen you can use the HOME function.

Start by moving the cursor to co-ordinate M125. This you do by using the method we have just learned. Now if you press the **'HOME'** key (not SHIFTed) the cursor moves to the upper left corner. By pressing **'HOME'** once more the cursor is returned to co-ordinate A1. Irrespective of where the cursor is on the screen you need only to press the HOME key twice to move it to A1.

2.1.7 CORRECTING ERRORS

CALC RESULT has a number of features that allow you to correct errors. One of these is the DEL key. Suppose you type the co-ordinates for the movement of the cursor to A12 and you have written A122 by mistake. This is one '2' too many. Just press the DEL key once and the extra 2 will disappear. Every time you press the DEL key, you will move the cursor back one position erasing any character in that position.

To negate a chosen command you can use the F7 key. With it commands are aborted and you are returned to the last cursor position.

2.1.8 WRITING ON A PAGE

As we have seen, moving the cursor to different parts of the page on the screen is very easy. Writing on the page is just as straightforward. CALC RESULT must be able to differentiate between the different kinds of inputs since they can be values, labels and formulas. To do this all labels start with a depression of the SPACE key. All inputs which have not been started with a SPACE are regarded by CALC RESULT as either a value or a formula.

If you want your labels to be all capitals you can input them as values by not pressing the space bar and then change them to LABELS by pressing SHIFT SPACE. We are now going to construct the example shown in the picture below.
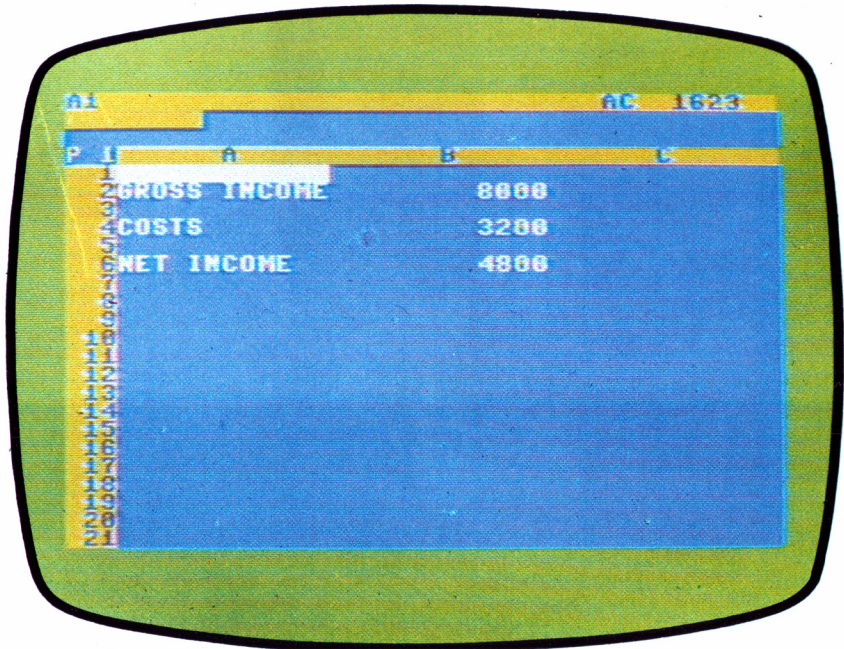
Let us start to write on our sheet. Just to make sure that we have not left any old data on the sheet, start by pressing

'F7' 'CLR' (this is the shifted home key) and **'Y'**

The screen will blank and the cursor will be placed at A1. Move the cursor to A2 then type:

'SPACE' (this is the space bar) **"GROSS INCOME"**

On the help line the text Label appears, this means an alphanumeric input is required and this input will not be used in calculations. Remember, if you make a mistake while typing, use the DEL key to backup to the position you wish to correct.

When you are ready press '◆'

On the input line the text GROSS INCOME disappears. The cursor has moved to the co-ordinate B2 and the words "GROSS IN" appears at A2.

Do not worry that the co-ordinate does not contain the complete label — it will be explained why a little further on.

Now type **"7000"**

Notice that on the help line the word Value appears, this is because of the numeric input and this input can be used in calculations. By pressing the:

'DEL' key four times you remove the figure 7000,

now type:

"5000+2000" 'RETURN'

If right, CALC RESULT should answer 7000.

When you press **RETURN** the cursor remains at B2 but if after making an input you press the ◆ key the value will also be accepted and the cursor moves directly to C2.

All the **CRSR** keys work in the same way and can help to make the input of data quicker.

2.1.9 USING FORMULAS AND RECALCULATION

Move the cursor to A4 and then type:

'SPACE' "COSTS" '◆'

The word COSTS should now be at A4 and the cursor at B4. We will now write a different kind of formula.

We want expenses to be 40% of the value of income. We could write ".4*B2" — the sign * represents multiplication — but it is easier to use CALC RESULT's percent-function (%). It works like this: if you

want to express 10 percent you just write %(10). In our example then it will be %(40).
Type the following at B4:

"%(40)∗B2" 'RETURN'

In B4 the sum 2800 should be seen and on the command line the formula %40∗B2
Move the cursor to co-ordinate B2 and try to type:

"8000" 'RETURN'

As you see the screen flashes and an ERROR message appears. CALC RESULT will not allow you to write over an existing formula (5000+2000). You must first empty the position or alternatively edit the formula. Blanking the position can be done with the function F7 B and editing on the input line with F8. This editing function will be explained later. We will blank the formula.

At position B2 type:

'F7' (for resetting the screen) **'F7' 'B'**

Now type **"8000" 'RETURN'**

You have now inserted a new value at position B2 (8000) but the interesting thing is that B4 has also been changed (3200). The value in B4 is still 40 % of the GROSS INCOME. This demonstrates CALC RESULT's recalculation feature.

2.1.10 MORE ABOUT LABELS AND VALUES

We will take a closer look at labels and values. Type the following to take us to A6.

'F7' 'F3' "A6" 'RETURN'

We will now write a formula to calculate the difference between income and expenditure. Type:

'SPACE'

After pressing SPACE we see the text LABEL on the command line. CALC RESULT looks at this first input to determine whether this is an alphanumeric (LABEL) or numeric (VALUE) input. Type:

"NET INCOME" '▼'

We are now ready to calculate net income which equals gross income less costs. Type:

"B2−B4" 'RETURN'

The answer 4800 is at B6. On the command line the formula B2−B4, will be shown.
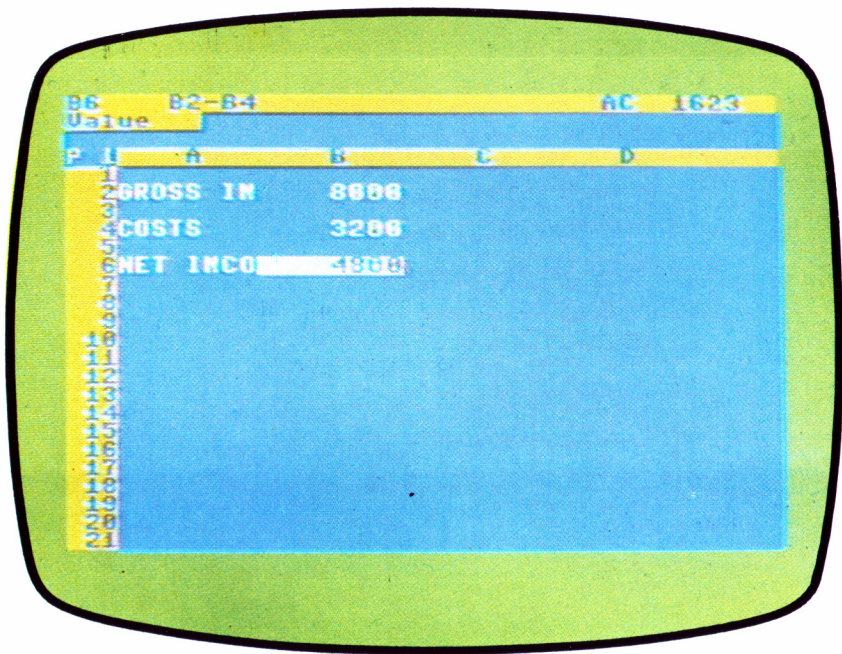
2.1.11 FORMULAS THROUGH CURSOR MOVEMENT

You already know how to move the cursor to different positions, write messages or titles, a number or numbers and formulas which refer to other positions. You will by now also realise that changing the values in B2, B4 or both will lead to new values in B6 thanks to the recalculation function.

When you were writing the formula for Income minus Expenditure, you most probably checked to see that Income was at B2 and Expenditure at B4. If you are writing a number of formulas you would have to keep careful track of positions. Due to the scrolling function, columns will disappear off the left edge of the screen which would make things even more difficult.

CALC RESULT has a solution to this problem. You write the formula and let CALC RESULT fill in the co-ordinates for you. To try, first blank B6 by typing:

'F7' 'F3' "B6" 'RETURN' 'F7' 'B'

Now type:

"B2−"

Move the cursor to B4 and press:

'RETURN'

You will see the formula completed. You can even get the first co-ordinate using the cursor.

With the cursor at B6 − blank the position again and type

'+'

Move the cursor to B2 press:

'−'

Move the cursor to B4 and press

'RETURN'

As you can see, you only have to type the arithmetic operation symbols +, −, /, ∗ and ↑ after positioning the cursor.

This technique of cursor movement between co-ordinates may seem a little strange at first but it will eventually enable you to forget about typing in actual co-ordinate positions.

Try the following example to test your understanding of this. Position the cursor at B8 and write a formula to express net income as a percentage of gross income. (The formula is B6 / B2 ∗ 100). Use the cursor movement method and type only +/and ∗ signs to write the formula. If you do it correctly your answer will be 60%.

2.1.12 SAVING INFORMATION ON THE DATA DISK

To save the data that you have created in this lesson, you will now use the formatted disk that you prepared earlier. If you did not do so, go back to Part 1 and read PREPARING A DATA DISK.

If you are using a single disk drive, remember that the program disk is also the data disk.

When you have your DATA DISK inserted in drive 1 (the left) press:

'F7' 'D'

On the command line DISK COMMAND: B C D E I L N S U   will be displayed. For an explanation of these functions press

'F5' for help and you will see:

```
B: Backup.............Drive 0 to drive 1
C: Catalog...........Directory of drive 1
D: DIF-file..........For saving and
                     loading DIF-files
E: Erase.............Scratches file
                     on drive 1
I: Initialize........Drives 0 and 1
L: Load..............File to work area
N: New...............Disk is formatted
                     in drive 1
S: Save..............Workarea to drive 1
U: User Register.....Containing language
                     for help screens,
                     type of printer
                     and paper format
```
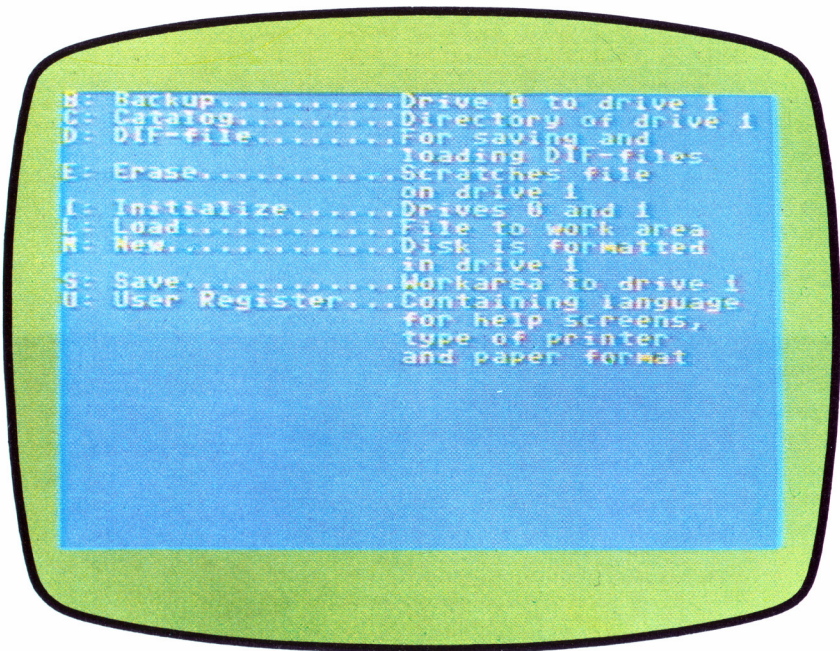
To save the file on the disk press:

'S'

The command line will display SAVE FILE and on the help line NAME ?.

The cursor is at the first position — which is blank — at the beginning of the disk library. Press

'RETURN'

The cursor now moves to the edit line.

A disk can save very large amounts of information, but to tell the difference between the information we use names for the data being saved on the disk. The saved information is called a file, and its name, the file name. This file name can contain up to 12 characters but must not contain the following ' " : , ; # * ? $

We will call our example TESTEX. Enter

"TESTEX." and then press **'RETURN'**

When your file is saved the screen will return your work. If you want to erase the current page use the **F7 CLR** function.

2.1.13 EDITING THE INPUT LINE

The F8 key enables you to correct information on the input line. When editing the following keys can be used ◀, ▶, INST, DEL, CLR and HOME.

To demonstrate this, type the following: THIS IS A LONG STATEMENT at co-ordinate A1. Press:

'HOME' 'HOME' 'SPACE' and **"THIS IS A LONG STATEMENT" 'RETURN'**

We will now change this to: THIS IS A **VERY** LONG STATEMENT. You could use the DEL key and retype it, but it is quicker to use F8 instead. Type:

'F8'

Move to the L in LONG and then use the INST key to create space for the word VERY (five spaces are needed). Type

"VERY" and **'RETURN'**

The text is now THIS IS A VERY LONG STATEMENT.

Now change the text to THIS IS A VERY VERY LONG STATEMENT, before you go on.

2.1.14 SAVE YOUR WORK PERIODICALLY

To guard against errors and power failures you should save your work to the data disk often while working.

The work of a complex problem should be saved several times during your session. Select the same file name and the latest information will always be saved over the old information. Note that CALC RESULT will ask you if you want to replace the earlier file when you try to save a new one using the old name.

2.1.15 SUMMARY OF LESSON 1

This lesson has given you a considerable insight to CALC RESULT's methods of working.

It is important that you understand these methods before going on to lesson 2.

If you need to practice the examples before going on, do so. If there are things you do not understand – or which do not seem to 'work' – write yourself a note. Most problems will disappear as you continue.

In this lesson we have seen how the CALC RESULT screen is created and what the control lines do, you learned how to move the cursor over the page and scroll the screen, insert text, values and formulas. You have amended text or values already inserted and seen how CALC RESULT recalculates values. You have also cleared the page using **F7 CLR**, edited on the input line and saved work on the Data Disk.

Just check that you remember how to do these things before going on. Do not forget that the Help screens are there to help you.

2.2 Lesson 2

2.2.1 GETTING DATA FROM DISK

Start by loading CALC RESULT. If you already have the program loaded press

'F7' **'CLR'** and **'Y'** to clear the screen

In this lesson we shall create a table which contains labels, values and formulas. But first a short look at the DISK COMMAND. Press:

'F7' **'D'**

On the command line DISK COMMAND: B C D E I L N S U will be seen. Press:

'L'

On the command line appears LOAD FILE and on the help line NAME?

Your screen will look like this:
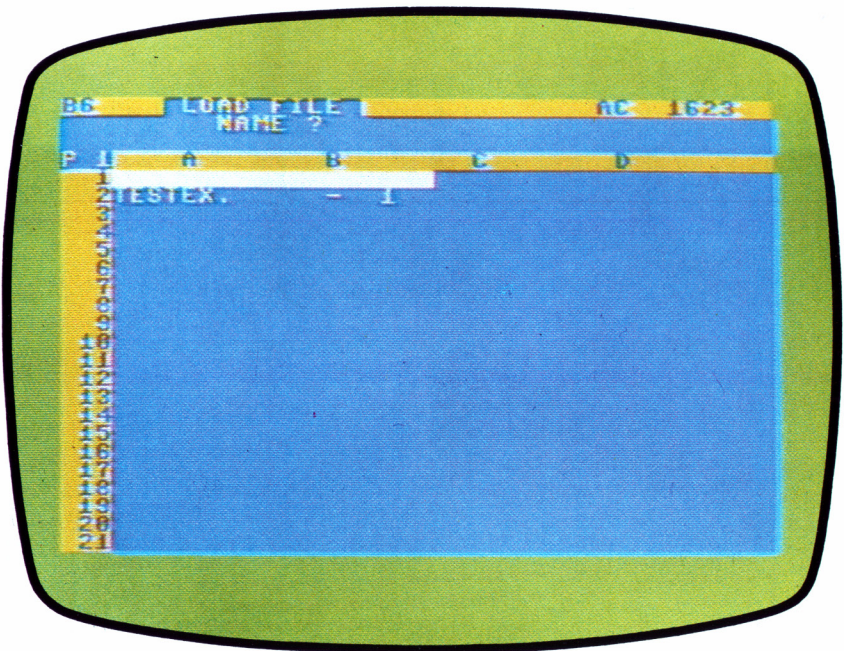
Move the cursor down to the file name you want — TESTEX — and press:

'RETURN'

The file name will now be on the edit line. Press

'RETURN' again

You are prompted ALL PAGES (Y/N). Type:

'N'

and now the TESTEX file will be fetched from the DATA DISK and the data placed in the computer's memory and displayed on the screen.

The loading of files from CALC RESULT data disks is designed to be quick and easy.

Sometimes when loading or saving files your library will not fit on the screen. Using the ➡ key you can scroll the screen so that all the files are shown. When you have found the right file place the cursor over it and press **'RETURN' 'RETURN'**.

You can now see that your data is once again on the screen.

Before we continue clear the screen using

'F7' 'CLR' 'Y'

2.2.2 INTEREST RATE CALCULATION

We are now going to create the table example. (Clear the screen if this has not yet been done.)

We want to see how much money we will have if we save 5000 during one year at simple interest of 15 percent.
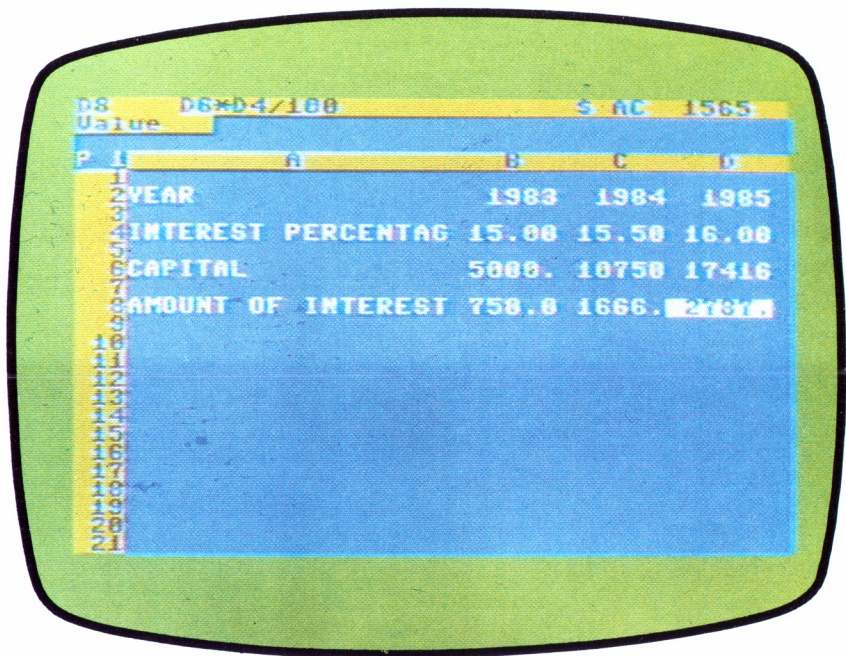
Move the cursor to A2 and press

'SPACE' "YEAR" '⬇' "1983" 'RETURN' 'F7' 'F' 'I'

Cursor to A4 and press:

'SPACE' "INTEREST PERCENTAGE" '⬇' "15" 'RETURN'

Cursor to A6. Press:

'SPACE' "CAPITAL" '⬇' "5000" 'RETURN'

Now we can calculate the interest. First place the text AMOUNT OF INTEREST in co-ordinate A8. Move the cursor to co-ordinate A8 and then type:

'SPACE' "AMOUNT OF INTEREST" and **'⬇'**

Do not worry that you cannot see all your text in the co-ordinate. This is fully explained later.

The formula that calculates the interest amount is B6∗B4/100. Type:

"B6∗B4/100" 'RETURN'

If we save 5000 during one year and receive 15% in simple interest we will have received 750 in interest at the end of the first year.

2.2.3 REPLICATING A FORMULA

Your screen should look like this:
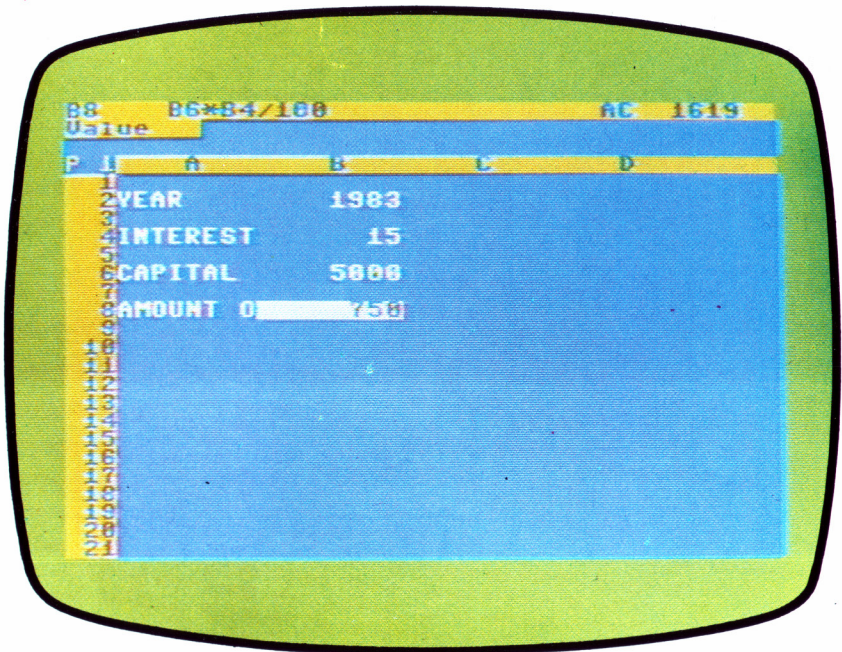
We will now calculate the interest amount during a ten year period: every year the capital will increase by 5000 and at the same time the interest will increase by half a percent per year.

Start by placing the cursor at position C2 and type:

"B2+1" 'RETURN' 'F7' 'F' 'I'

Now we will repeat this formula to give us ten years. The function that does this, is in the Edit command. Look at them by pressing:

'F7' and 'E'

On the command line you will see EDIT COMMAND: C D G I M P R S T W. To explain these functions use HELP. Press:

'F5'

Now we have every function described on the screen. The function that we are looking for is REPLICATE. When we know which function we want to use, just press the character.

Choose REPLICATE. Press:

'R'

On the screen REPLICATE will be seen on the command line and on the input line SOURCE RANGE C2 TO... TARGET RANGE...TO.. Press:

'RETURN' 'RETURN'

What we have done now is to state that we want to repeat the formula in position C2. CALC RESULT now want to know to where the formula is to be repeated (target range). We intend to expand our calculations to 10 years. The first year is B2 the second is C2 and the tenth will be K2. As we want to copy the formula in C2 to D2 and then up to K2 you type:

"D2" 'RETURN' and "K2"

An alternative way to do this would have been to move the cursor to D2 and then press:

'RETURN'

and then move the cursor to K2 and press:

'RETURN'

When you are ready the input line will look like this: SOURCE RANGE C2 TO C2 TARGET RANGE D2 TO K2. Press:

'RETURN'

On the help line you will now see ABSOLUTE OR RELATIVE. CALC RESULT is asking if we want the same formula $- B2+1 -$ in all the positions, or if the formula is to be made relative to the other positions. In our example we want to increase by one each year, so the formula will be B2 + 1 then C2 + 1 etc. Press:

'R' for relative

Numbers will have filled the positions D2, E2, F2 etc. If you move the cursor to K2 you will see in the last position 1992.

Go to C4. Now we have to increase the interest by 0.5% per year.

Do it yourself with the formula **"B4+0.5"** and then replicate this across to column K4.

When done correctly the interest at K4 should be 19.5.

To recap, to repeat a formula:

1 Place the cursor on the formula you want to repeat, then:

2 Press 'F7' 'E' 'R'

3 Give the SOURCE RANGE ...TO... by moving the cursor to the position that you want to repeat and then pressing RETURN twice (once for FROM and once for TO).

If you want to repeat an interval of positions, first move the cursor to the first position and press RETURN and then move the cursor to the last position in the interval and then press RETURN.

4 Give the TARGET RANGE ...TO... that is the range of positions over which you want the formula repeated.

5 State if the formula is unchanged (ABSOLUTE) or relative (RELATIVE).

If you make a mistake just press the DEL key and start again.

2.2.4 REPLICATING A CHAIN OF FORMULAS

To complete our calculation of interest over ten years we need two more formulas. The first formula will calculate the capital increase per year (B6+5000) plus the interest of the year before (B8). This formula is to go at C6. Press:

'F7' 'F3' "C6" 'RETURN' "B6+5000+B8" 'RETURN'

The answer in C6 should be 10750. The second formula will calculate the yearly interest amount which will be C6*C4/100

Cursor to C8, type

"C6*C4/100" 'RETURN'

The answer in C8 should be 1666.25. Now we have all the formulas to complete our calculations. Start by moving the cursor to C6 and then use the replicating function (REPLICATE). Press:

'F7' 'E' and **'R'**

On the input line REPLICATE: SOURCE RANGE C6 TO...TARGET RANGE ...TO...will be seen. If you press RETURN, RETURN like last time only the formula in C6 will be replicated. This time C8 is to be included. Press:

'RETURN' (for C6)

then move to C8 and press:

'RETURN'

On the input line SOURCE RANGE C6 TO C8 TARGET RANGE C8 TO...will be seen. Our replicating interval is between D6 and K6.

Move the cursor to D6 and press:

'RETURN'

Now give the end position for the TARGET RANGE by typing:

"K6" 'RETURN'

State if the formula is unchanged or relative. In our case it is relative. You will have to press R for every position. Press:

'R' 'R' 'R' and **'R'**

You will now see all the formulas and values in all these positions. Check that in K6 you have 114700. and in K8 22366.5.

By now CALC RESULT has done quite a lot of work for you, but some of the figures are a little difficult to read. We can improve this by reformatting the screen.

2.2.5 SCREEN FORMATTING

Type:

'F7' 'G' 'F' '$'

The letters mean GLOBAL FORMAT and $ means two decimal places. This is explained in detail further on in the manual. Now take a look at the picture below.
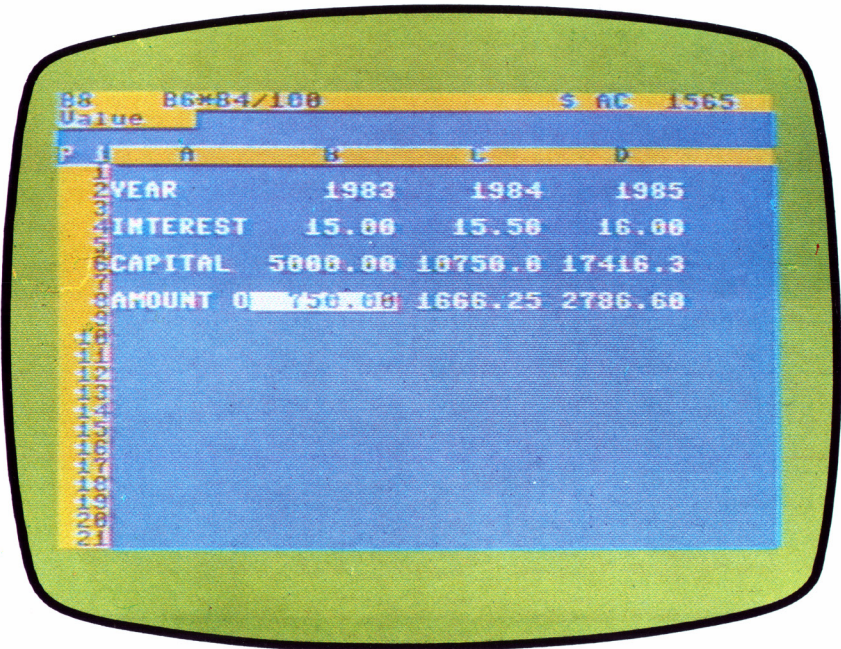
CALC RESULT has rounded off the values on the screen, where there is place enough, to two decimals. This does not mean that the values used to calculate in the memory are rounded off, they are still up to twelve digits long. You will see that the figures in row 2 are unchanged. This is because the individual formats always have a higher priority than a global one.

Before going on, reset the format to global to show the values as they were to begin with. Press:

'F7' . 'G' 'F' 'G'

Then change the screen back to two decimal format.

2.2.6 FIXING TITLES

Move the cursor to B1.

The values for every year are easily seen but not the titles. To improve this, press:

'F7' and **'G'**

On the command line GLOBAL COMMAND: C F R will be seen. Press:

'C' to change the column width

Now COLUMN WIDTH will be seen on the command line and CALC RESULT is waiting for a WIDTH on the input line. Choose 18 as the width. Type:

"18" and **'RETURN'**

The whole texts are now visible.

Use **'HOME' 'HOME'** to go to A1, then press:

'F7' and **'E'**

on the command line EDIT COMMAND: C D G I M P R S T W will be seen. Choose T for TITLES. Press:

'T'

This function fixes a column on the left hand edge of the screen. To remove the additional A column use the ▶ to move E onto the screen. For this title function to work the column to be fixed must be at the left hand edge of the screen. As you see CALC RESULT readjusts the rest of the columns so that irrespectively of the title width there will always be three columns shown on the screen. You will now readjust the columns widths (B and so on). Go to B1 and type:

'F7' 'G' 'C' '6' and **'RETURN'**

Try moving the cursor on the screen. As you see you cannot move the cursor to the fixed A column.

You can write on the second A column, however, and values or texts inserted there will be reproduced in the fixed A column also. You can quickly move the cursor to the unfixed A column by using the HOME function.

Before proceeding remove the TITLES function, and set normal column width. Type:

'F7' 'L' 'F7' 'G' 'C' '8' 'RETURN'

2.2.7 FAST RECALCULATION

With the help of the replicating command we have written a number of formulas and values. How are these related to each other?

Go first to B2, B4 or B6. There is only a value. If you go to B8 or any other position you will see that these are dependent on another, or several other, positions. This means that if you go to B4 and change the interest all the values that are related to B4 will be changed. Try changing B4 to 20 and see what happens.

Move the cursor to B4 and type:

"20" 'RETURN'

CALC RESULT will recalculate all the other values.

Change B4 back to 15 before you go on.

2.2.8 ADJUSTING THE COLUMN WIDTH

This is a function that can help avoid the need to scroll the screen when you are only using a few columns. Move the cursor to A1 (use the HOME function). When you are ready press:

'F7' 'G' 'C' '6' and **'RETURN'**

As you see, we now have more columns on the screen since every column is smaller.

You can use this Global command whenever you want to and choose a working size between 5 and 18 characters per column.

When you have only 6 characters per column you will see that the text entries lose some characters. If you move the cursor to positions A4 and A8 you will see on the command line that all the words are still there even though they are not shown on the screen. All the text is available just as it was written, and if you wish you can format the screen to be able to see it all.

2.2.9 SPLITTING THE SCREEN

Before doing anything else ensure that the column width is 6. Then move the cursor to D1. Now press:

'F7' 'E' 'S'

On the command line SPLIT is seen and on the help line HORIZONTAL OR VERTICAL. Press:

'V' for vertical

You have now created two screens. Each screen can be individually scrolled so that you can study each part as you want to. The cursor is now in the right half of the screen. If you cursor downwards you will see that only the right part of the screen is moving.

Move up to Row 1. Now move the cursor to the left side, press:

'F2'

This moves the cursor to the other side of the split screen.

When you change screens the cursor automatically moves to the last position it occupied, making it easier to find the place where you are working.

Move the cursor back to the right side of the screen using **'F2'**

Move with the '▶' key to column K. Now both the first and last result of the year are shown on the screen at the same time.

We will now calculate the total of the interest amounts at M6, but first place an appropriate text in position M2.

Move the cursor to M2 and press:

'SPACE' "TOTAL INTEREST"

Now the text is in M2. As mentioned before, it does not matter if there is insufficient room in the column for all the text, you can easily change the column width. Move the cursor to M8 and then type:

"B8+C8+D8+E8+F8+G8+H8+I8+J8+K8" 'RETURN'

The answer at M8 is 87066. This is a very long winded way of doing this when the formula is so easy. Later in the manual the sum function will be explained.

Move the cursor to the left half by pressing

'F2'

Move the cursor to position B6. Change the original capital to 1000 and see what happens to the total interest. It should be 71439.

When you have finished experimenting with this recalculation example press

'F7' 'L' 'HOME'

The screen will now be reset to the normal format without the split. There are other uses for this split screen function. If you look at the screen you will see that a large area at the bottom is unused. Move the cursor to B12. Then press:

'F7' 'E' 'S' 'H' (H for horizontal)

The screen will now look like this
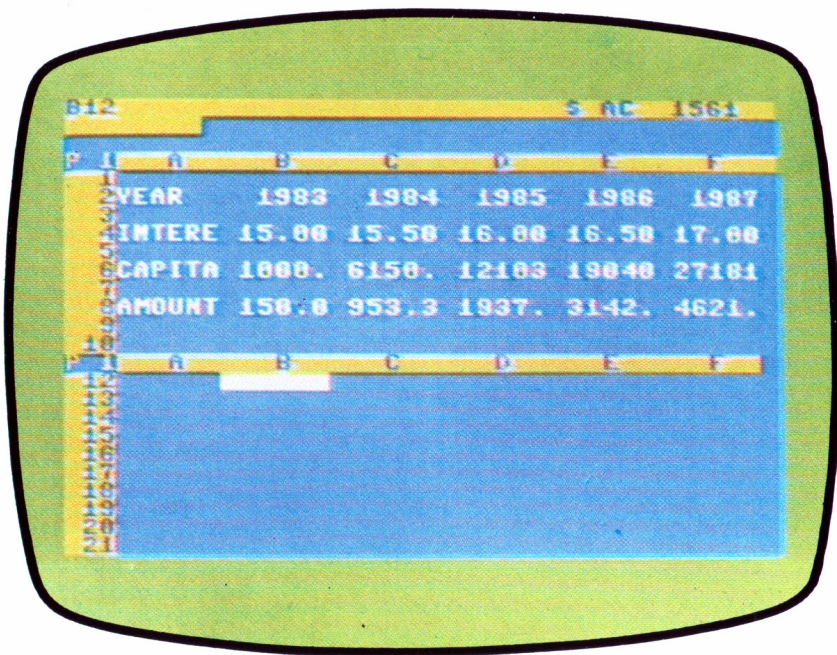
This time the screen is divided horizontally into two parts.

Press **'F2'** to move the cursor to the upper half of the screen and then back again.

Now keep the '▲' key depressed until the two halves have the same number of row numbers (1 – 10). Then press the '▶' key until the M column is visible in the lower half. By using the split function you can, by changing the column width, look at the entire period. Experiment by changing the Capital in B6, upper screen half, several times and then study the recalculations.

2.2.10 GLOBAL COMMAND IN A SPLIT SCREEN

Move the cursor to the upper screen section and then press:

'F7' 'G' 'C' '11' and 'RETURN'

We now have a 11 character column in this section. As you see one can have different column widths in the different parts.

The Global function Column only affects the part of the page which contains the cursor. Press:

'F7' 'G' 'F' and 'I'

This time the whole screen is changed to integer format. This is because the Global Format function affects the whole page and both parts of the screen belong to the same page. They therefore have the same format, but the upper half of the screen still has a column width of 11, and the lower 6.

2.2.11 SYNCHRONIZED SCROLLING

In THE CBM KEYBOARD Section 1.2 we introduced the key board functions including the **F4** key which switches synchronized scrolling on and off. Test this key by pressing:

'F4'

If you now keep the cursor ➡ key depressed the contents of both sides will scroll simultaneously.

Try scrolling the screen in another direction, as you see it works the same way irrespective of which direction you choose.

Switch off synchronized scrolling by pressing:

'F4'

Now only the upper section scrolls.

Practise to scroll both sections so that they both have the same start position A1.

2.2.12 A WINDOW ON THE SCREEN

Start by removing the SPLIT SCREEN by pressing

'F7' 'L' 'HOME'

Now change the column width to seven by pressing:

'F7' 'G' 'C' '7' 'RETURN'

Move the cursor to B11. Now we will place a window in the lower part of the screen, press:

'F7' 'E' 'W' 'RETURN'

The upper limit is shown as FROM B11, this is the upper left corner of the window. Now give the end position of the window, the lower right corner (TO). Press:

"E20" 'RETURN'

As we said earlier, it is possible to work and edit inside the window in the same way as the screen. You just use the EDIT and FORMAT commands in the normal way. It is possible to split the window vertically or horizontally.

Move the cursor to E16 and press

'F7' 'E' 'S' and 'H'
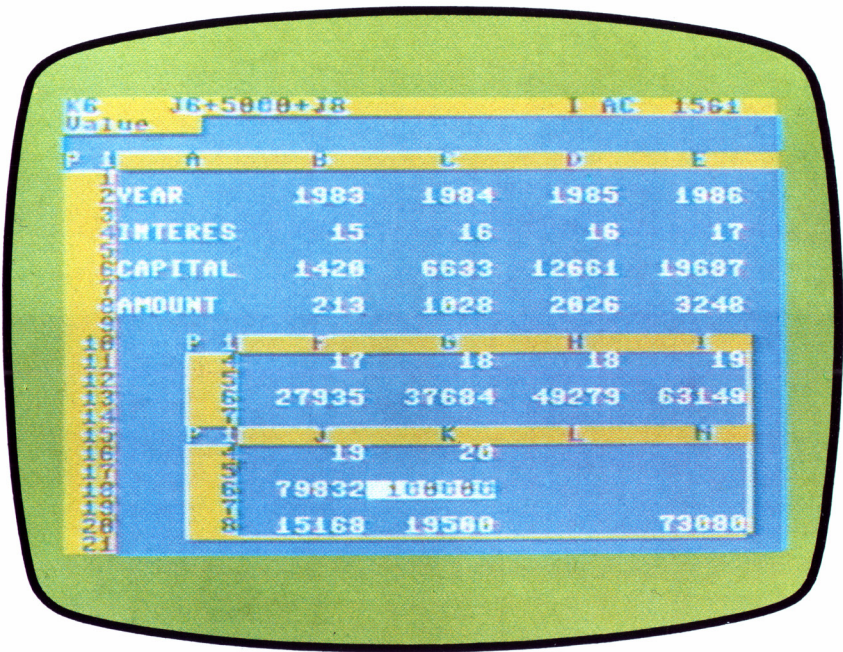
To remove both the split and the window use

'F7' 'L'

The versatility of the split screen and the window can easily be discovered by experimentation. Do not be afraid to practice these ideas — you can always remove the screen splits and window with the Leave command. Only the Edit command can ever change your values and of all the commands we have explored so far, only Replicate can alter your formulas.

If you want to save your work this time remember to use a new name. Go back to Section 2.1.12 if you need reminding how to do this.

2.2.13 SUMMARY OF LESSON 2

We have now learnt many of CALC RESULT's functions, and you may be finding it hard to keep track of them. Do not worry — make use of the Help screens. Do not be afraid of experimenting, if you have an idea, or are doubtful about how something works. You cannot damage either the computer or the CALC RESULT program.

In this lesson we have introduced some new commands and functions. They are:

— FORMAT COMMAND: 'F7' 'F' allows you to format the display of any individual co-ordinate.

— GLOBAL COMMAND: 'F7' 'G', using Column and Format makes it possible to change the column width and format all co-ordinates.

— EDIT COMMAND: 'F7' 'E', by using the functions Replicate, Split, Titles and Window it is possible to: duplicate formulas; split the screen into two halves either horizontally or vertically; fix the titles on the left of the screen and place a window on the screen.

— LEAVE: 'F7' 'L' restores the screen after using window or split functions.

— SYNCHRONIZED-SCROLLING: '←' key makes it possible to scroll the contents of the two different sections of the screen at the same time.

2.3 Lesson 3

2.3.1 FORMULA REPETITION

Start by loading CALC RESULT. If you already have the program loaded press:

'F7' 'CLR' 'Y' to clear the screen, then change column width to 7.

In this lesson we will create a table which contains ten columns and ten rows like this picture

First mark out the ten columns which start at column B1. One way is starting in column B with 1, inserting 2 for column C etc. but this is unnecessary when one can do it by using the replicate function.

Write COLUMN in A1 and 1 in B1 by moving the cursor to co-ordinate A1 and then press:

'SPACE' "COLUMN" '▸' '1'

Move cursor to C1. Now you shall write a formula which can be replicated. Enter the formula 1 + B1 in C1. Type

"1+B1" 'RETURN'

In C1 should be 2, but on the command line you see 1 + B1. Now there is a formula to repeat. Next press

'F7' 'E' 'R' (for Replicate)

Since just C1 is to be replicated you press:

'RETURN' 'RETURN' '↓'

Now you give the TARGET RANGE by pressing

'RETURN' "K1" and 'RETURN'

Here you are asked if the formula is ABSOLUTE or RELATIVE. It is relative. Press:

'R'

We want to draw a line under the column numbers.

Move the cursor to A2 and press:
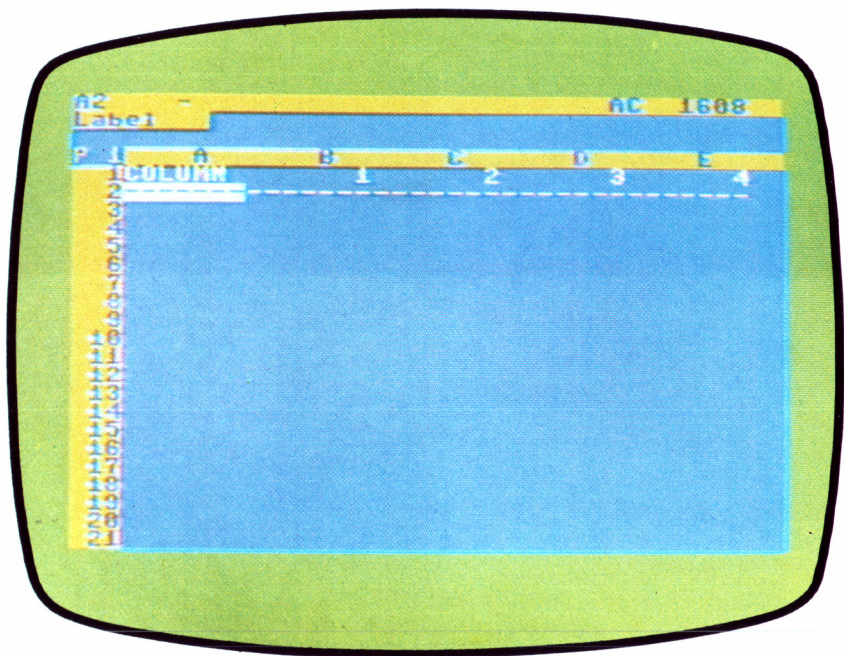
'F7' '–' '–'

You have now underlined the A column. By replicating this it can go over the entire table, press:

'F7' 'E' 'R' 'RETURN' 'RETURN' '↓'

'RETURN' "K2" and 'RETURN'

If you got it right your sheet should look like this.

2.3.2 REPLICATING VALUES AND TEXTS

Move the cursor to A4 and type:

'SPACE' "ROW 2" '↓' "150" and **'RETURN'**

Fill all the columns in ROW 2 with 150 by using the replicate function. Press:

'F7' 'E' 'R' 'RETURN' 'RETURN'

"C4" 'RETURN' "K4" and **'RETURN'**

Is this the best way if you later want to change the figure in every column? No, because if you want to change all the columns you will have to use the replicate function each time. It is much easier to let the values be related to each other from the beginning, this is done the following way:

'F7' 'F3' "C4" 'RETURN' "B4" 'RETURN'

'F7' 'E' 'R' 'RETURN' 'RETURN'

"D4" 'RETURN' "K4" and **'RETURN' 'R'**

It still shows 150 but if you move to D4 you will see on the command line C4 and if you continue to the right you will notice that the co-ordinate is related to the co-ordinate before. This means that you can change one value and all the dependent co-ordinates will have that new value as well.

Change all the co-ordinates to 1000:

'F7' 'F3' "B4" 'RETURN' "1000" 'RETURN'

We will now change co-ordinate E4 to K4 to the value 3000. This is done the same way as before. Enter 3000 in co-ordinate E4 and the rest is done by CALC RESULT. Remember that the co-ordinate is write protected and you have to use the Blank function. Look at the command line, where 3000 is seen and then go to F4, do you see that E4 is written here? As you can see E4 is a start value for the co-ordinates to K4.

What happens if a new value is placed in co-ordinate B4? Try with 200:

'F7' 'F3' "B4" 'RETURN' "200" and **'RETURN'**

Only co-ordinates B4 to D4 are changed. This is because E4 is not related to D4. If you wanted all the values to be changed, you would have to first of all place D4 in coordinate E4, but do not do this in our example.

Move the cursor to A6 and press:

'SPACE' "ROW 4" '▼' "400"

Move the cursor to A8 and press:

'SPACE' "ROW 6" '▼' "600"

Move the cursor to A10 and press:
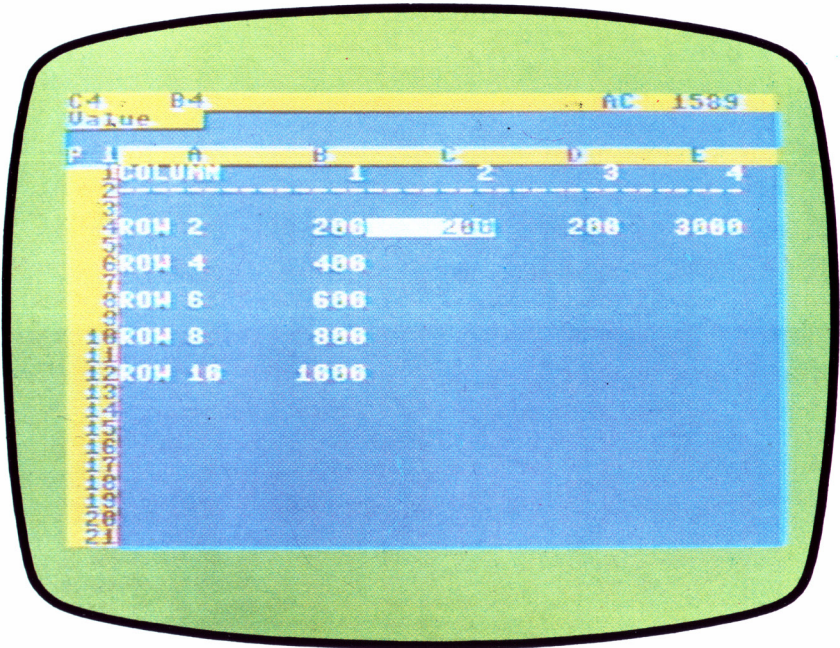
'SPACE' "ROW 8" '▼' "800"

Move the cursor to A12 and press:

'SPACE' "ROW 10" '▼' and "1000"

Move the cursor to C4.

At this stage your screen should look like the picture below.

Now we shall replicate the rest of the values in the remaining nine columns with the value in column B. Do you remember the method we used to fill ROW 2? You should use the same method here.

2.3.3 REPLICATING A COLUMN

In your position at C4 you will see on the command line B4. Relatively C4 is connected to B4 as C6 is to B6. Write the following at C4:

'F7' 'E' 'R' 'RETURN' 'RETURN'

"C6" 'RETURN' "C12" 'RETURN' and **'R'**

If you have followed the instructions correctly you will have the same values in COLUMN 2 as in COLUMN 1.

The NA messages stands for Not Available, we will describe it further on in this lesson. But for now just erase those positions which contains NA.

2.3.4 REPLICATING A COLUMN SEVERAL TIMES

Now we have formulas for every ROW. The next step is to replicate these formulas over the rest of the table. This time we must give the whole interval which will be copied as the Source Range.

Move the cursor to C6 and then type the following:

'F7' 'E' 'R' 'RETURN' "C12" 'RETURN'

"D6" 'RETURN' "K6" 'RETURN'

'R' 'R' 'R' and **'R'**

2.3.5 SUM FUNCTION

This function will total all the values in every COLUMN. First separate the total line from the values by underlining ROW 10 in the table.

Move the cursor to A13 and press:

'F7' '–' '–'

'F7' 'E' 'R' 'RETURN' 'RETURN' '♦' 'RETURN'

"K13" and **'RETURN'**

Enter the text SUM: in co-ordinate A15 by writing:

'F7' 'F3' "A15" 'RETURN' 'SPACE' "SUM:" and **'♦'**

First total COLUMN 1. As you have seen we can easily replicate the formula later to the other columns. The cursor should be in co-ordinate B15. Type:

"SUM(B4:B12)" 'RETURN'

Within the parenthesis is the range of positions to be totalled. Now the sum for COLUMN 1 – 3000 – is shown. The rest of the totals are obtained by replicating. Stay in co-ordinate B15 and type,

'F7' 'E' 'R' 'RETURN' 'RETURN' '◆' 'RETURN'

"K15" 'RETURN' 'R' 'R'

All the COLUMNS have individual totals and your screen should look like the picture below.

We will now create a sum total. Type:

'F7' 'F3' "A19" 'RETURN' 'SPACE' "TOTAL"

'◆' "SUM(B15:K15)" and 'RETURN'

In co-ordinate A20 49600 will be seen. It is just as easy to undertake the sum total of these numbers without first producing a row of totals which are themselves added together. CALC RESULT can sum an area — in this example the matrix with the top left corner B4 and the bottom right hand corner K12. Try this method.

Move the cursor to A21 and type:

"SUM(B4:K12)" 'RETURN'

You should now have the same answer as in A20. Now let us show every SUM as a percentage of this TOTAL.

Move the cursor to co-ordinate A17 and type:

'SPACE' "PERCENT" '◆' "B15/A21" and 'RETURN'

In COLUMN 1 the answer is 0.0605, ie approximately 6%.

2.3.6 FORMATTING A SINGLE CO-ORDINATE

The value at A17 − 0.0605 − is difficult to read and we do not need so many decimal places. The usual format in CALC RESULT is maximum precision (M) but for our needs integer format is better. First multiply the formula at B17 by 100 and then format it to an integer value. Move the cursor to B17 and type:

'F8'

Then edit the formula to read **"B15/A21*100"**

When ready type:

'RETURN' 'F7' 'F' 'I'

The title TOTAL is not in the correct position compared with other values. This is because CALC RESULT normally positions text on the left handside and numeric values to the right. We will change the format of the titles to place them under each other.

Move the cursor to A19 and type:

'F7' 'F' and **'R'**

See picture below.

2.3.7 REPLICATING A FORMAT

Move the cursor to B17. We will now replicate the formula for SUM as a percent of TOTAL. Write:

'F7' 'E' 'R' 'RETURN' 'RETURN' '♦'

'RETURN' "K17" and **'RETURN'**

To answer the question A = ABSOLUTE, R = RELATIVE think how we want to treat the formula B15/A21*100. The first value at B15 must change as we require the different sums each time, but A21 (total) remains the same. Press:

'R' (for relative at B15) and **'A'** (for absolute at A21)

You should now have percentage values in the rest of the columns. As you can see, the formatting to integer value has also been replicated.

2.3.8 REPLICATE FUNCTION FOR COPYING A ROW OR COLUMN

Move the cursor to A13.

We will now draw a line under the percentage values. This time we will use a different method. Press:

'F7' 'E' 'R' 'RETURN' "K13" 'RETURN'

"A18" 'RETURN' "A18" 'RETURN'

This uses the replicate command when a row needs to be copied. It works the same way when copying a column.

Before continuing further in this lesson, experiment by changing values in the table and observe what happens – do you understand why some can be changed, but not others?

2.3.9 NA (NOT AVAILABLE) FUNCTION

Suppose co-ordinate B4 is for the time being, unknown, then we can make use of the NA function – Not Available.

Move the cursor to B4 and type:

'F7' 'B' "NA" 'RETURN'

You will see a red NA in all the co-ordinates which are related to B4.

Now erase B4 with the BLANK-function.

Place the following formula at B4:

"1/0" and **'RETURN'**

Now we get a red ERROR instead of NA. ERROR means exactly that — in this case a division by zero error.

When a formula contains references to one or more co-ordinates which have a value of zero, an ERROR answer is given. If the formula contains references to another co-ordinate which is a LABEL, then NA will be shown. NOTE that these messages are red.

Before we go on blank B4 and place a value there.

2.3.10 INSERTING AND ERASING ROWS AND COLUMNS

If you want to insert an extra row in your table, eg ROW 12, first move to A13. Type:

'F7' 'E' 'I' 'R'

I is for insert and R is for row. This creates an empty row at row 13. All the rows under 13 are moved one row downwards.

Do this insertion once again.

Now we have a place for ROW 12. Move the cursor to A14 and type:

'SPACE' "ROW 12" 'RETURN'

To remove the line we have inserted, and to restore our table to its orginal appearance, move the cursor to A13 and press:

'F7' 'E' 'D' 'R' 'F7' 'E' 'D' 'R'

D stands for DELETE. Using these functions you can either insert or delete both columns and rows. If you insert a column all the other columns are moved one step to the right.

The formulas that are affected by insertion or deletion are adjusted. When deleting a row or column all formulas that contain references to the deleted row or column become LABELS. Those co-ordinates that then refer to these LABELS will show NA. You can then edit these co-ordinates using the edit function, **F8**.

2.3.11 MOVING MATRICES WITH THE MOVE FUNCTION

We are now going to move the matrix which contains the 2nd, 3rd and 4th values in ROW 6 and ROW 8. Move the cursor to co-ordinate C8 and press:

'F7' 'E' 'M' 'RETURN'

On the command line MOVE is seen and on the input line FROM C8 TO C8 TARGET RANGE...

The matrix to be moved is defined by the co-ordinates C8 — the upper left hand edge, and E10 the bottom right hand corner. Start by giving the position of the bottom corner. Type:

"E10" 'RETURN'

Now give the co-ordinate to which the whole matrix is to be moved, C19, by typing

"C19" 'RETURN'

Your screen will now look like the one below

Change the value in B8 or B10. As you can see CALC RESULT calculates the matrix just as if it was still in the TABLE.

Before continuing try moving some other matrices. This method works just as well as moving single rows and columns.

2.3.12 RECALCULATION ORDER

On many occasions now you have seen CALC RESULT recalculate values after every new input, for instance when you change the values in the TABLE. Recalculation in CALC RESULT works by starting with the upper left corner and then calculating downwards towards the lower right corner.

Each formula is calculated once only, unless you order a second recalculation by pressing the up arrow key. This means that co-ordinate A1 cannot be a formula that refers to other co-ordinates. Formulas must be under, or to the right of themselves.

CALC RESULT can look at the formulas either column by column or row by row. In the right corner on the command line a C is displayed. This is the RECALCULATION INDICATOR and indicates the order of calculation — C for column, or R for row. Normally CALC RESULT's recalculation is by column and calculates A1, A2, A3....B1, B2, B3.....etc.

In most circumstances this has no effect on the results of recalculations, but there are instances when the correct result is dependent on the direction of the recalculation and it is important to know when this arises.

We will take such an example, but first save your TABLE on a disk before you clear the screen. If you don't remember how to save your file refer to Section 2.1.12 or the command reference 3.8.1.

When the example has been saved type the following:

'F7' 'CLR' 'Y' "10" '♦' "10+A1" 'RETURN'

'F7' 'E' 'R' 'RETURN' 'RETURN'

"C1" 'RETURN' "D1" 'RETURN' 'R'

'F7' 'F3' "A3" 'RETURN' "2∗D1"

When you write formulas think about how the co-ordinates are dependent on each other. You will most probably see that this must be calculated row by row.

Test this by entering in A1 a value of 2. Press:

'HOME' '2' and **'RETURN'**

Try pressing the ↑ key once and study the screen.

This key depression orders a new recalculation and now A3 is correct.

If you now change the recalculation order by pressing:

'F7' 'O' 'R'

and place the value **"10"** in **A1** you can see that it now calculates properly.

The conclusion from this experiment is that one should construct models so that they either lie in rows or columns but, if possible, not in both directions. If you are unsure type ↑ several times just to be sure your model has no "forward" or "circular" references.

2.3.13 REFERENCE ORDER FOR FORMULAS

The formula in A3 is an example of "Forward Reference" because it refers to the co-ordinate which "normally" is calculated before B1.

In some cases the "Forward Reference" is built on others, so to get the result press ↑ key several times.

"Circular references" are impossible to calculate no matter how many recalculations one does.

Before going on, reset recalculation order to columns.

Clear the screen.

Now we will place the formula, 10+D2, in coordinates B2 and D2. With the cursor at B2 type:

"10+D2" 'RETURN'

As a reference to an empty co-ordinate the answer is NA. This is to help you to avoid and discover any mistakes. Type:

'♦' '♦' "0" 'RETURN' "10+D2" and **'RETURN'**

Why doesn't this formula give NA since it is also refering to an empty co-ordinate? True, but here the formula refers to a value of zero. This kind of formula is called a self-reference. You should always input a value — even if it is zero — at a co-ordinate before creating a self-reference formula, otherwise the answer will always be shown as NA.

Each time you undertake a further calculation — each time the '↑' key is pressed — a new value will be shown.

2.3.14 SUMMARY OF LESSON 3

We have gone through many of the more important CALC RESULT functions. In this lesson you have learned to use:

— REPLICATE used to repeat a value, formulas, text, rows, columns and formats

— SUM used to total rows, columns and areas

— EDITING used to insert, remove and move rows, columns and areas

— NA function used to represent information that is not present

as well as how formulas should or should not be referred to.

When you feel that you are ready, continue on to Lesson 4.

2.4 Lesson 4

2.4.1 MORE ABOUT FORMATS AND VALUES

Load in CALC RESULT as described in Part 1. If you have not already done so, clear the screen.

Write the following:

'F7' 'F3' "B10" 'RETURN'

"54.456" 'RETURN'

'F7' 'E' 'R' 'RETURN' 'RETURN'

'▼' 'RETURN' '▼'" and **'RETURN'**

You now have the same values in the three co-ordinates B10, C10 and D10 and as we have not given any format command all three co-ordinates have the normal global format. Move the cursor to B10 and press:

'F7' 'F' 'I'

'F7' 'F' 'L' '▼'

'F7' 'F' '$'

'F7' 'F' 'L'

We have now formatted B10 to whole numbers, positioned on the left, and C10 to 2 decimal places, also left adjusted.

Alongside VALUE on the Help line you will see "$L" for the format of the co-ordinate in the current cursor position. The dollar sign $ represents two decimal places and L the left hand positioning. CALC RESULT always leaves an empty position at the start of each column to leave a vertical space between them.

Now press:

'F7' 'G' 'F' and **'I'**

to change the global format to whole numbers – integer. The only co-ordinate which was affected was D1 because the others were individually formatted. Local formats always take priority over global ones. At the right hand edge of the Command line you will see "I" indicating the Global Format for the current page.

With the cursor in B10 press:

'F7' 'F' and **'M'**

This has deleted the Integer value and returns it to its original form – you have the value 54.456 again. The Maximum Precision format does not affect the left adjustment – M format is only concerned with the

way a number is rounded, not its position. Now we will do the same for C10. Move the cursor to C10 press:

'F7' 'F' and **'M'**

Lastly change the global format back to normal format by pressing:

'F7' 'G' 'F' and **'G'**

How the numbers are presented depends on the current column width. Type:

'F7' 'G' 'C' '6' 'RETURN'

And you have the value 54.46 in all the co-ordinates. CALC RESULT always leaves a blank position to the left while showing as many numbers as possible within the column width.

2.4.2 LARGE AND SMALL VALUES

Clear the screen. Note that earlier global command are erased, here giving normal column width (8).

Enter 9999999 (seven 9) in A1. Press:

"9999999" 'RETURN'

This is the largest value to be shown on a 8 character wide column.

Place the formula 1+A1 in co-ordinate B1. Goto B1 and press

"1+A1" 'RETURN'

The value 10000000 is written as 1E7 instead, which is 1 times 10 to the power of 7.

Place .0000001 in C1. Move the cursor to C1 and press:

".0000001" 'RETURN'

Here the value 1E-7 means 1 times 10 to the power of -7.

When a value is given, the column width is taken into consideration. If it is too small or too large the value is shown as above. Try to increase the column width. Type:

'F7' 'G' 'C' "11" and **'RETURN'**

As you see the value is now shown in full.

2.4.3 MATHEMATICAL PRIORITY

So far we have had relatively simple formulas in our examples. If a formula contains more than one function you must understand in which order the formulas will be calculated.

CALC RESULT always calculates according to the normal . mathematical laws. In the following list 1 has the highest priority, 11 the lowest.

1 Higher mathematical function references such as MIN, MAX, ABS and INT

2 Functions and characters within parenthesis

3 Exponent ↑

4 Multiplication and division * and /

5 Addition and subtraction + and −

6 Less than and greater than < and >
  Not equal to and equal to <> and =
  Equal to or bigger than =>
  Equal to or less than =<
  Greater than or equal to >=
  Less than or equal to <=

7 NOT
8 AND
9 OR
10 THEN and ELSE
11 IF

In general, the higher mathematical functions are followed by parenthesis containing the range of the expression. The colon character is used to describe the areas and each expression within the parenthesis is differentiated with a comma. See the example in Section 2.4.5.

2.4.4 A SMALL MATRIX

Start by clearing the screen. Now put in a series of different values which you can use in the tests which follow of the higher mathematical functions and priorities.

Move the cursor to B5, type:

"20" '♦' "2.25+B5" 'RETURN'

'F7' 'E' 'R' 'RETURN' 'RETURN' '♦' 'RETURN'

"F5" 'RETURN' 'R'

Move the cursor to B5, type:

'F7' 'E' 'C' 'RETURN' "F5" 'RETURN' "B10" 'RETURN'

Move the cursor to D5, type:

'F7' 'E' 'C' 'RETURN' "F5" 'RETURN' "B6" 'RETURN'

Move the cursor to B7, type:

"500" '⬇' "50" 'RETURN'

Move the cursor to B5, type:

'F7' 'E' 'R' 'RETURN' "B8" 'RETURN' "E6" 'RETURN'
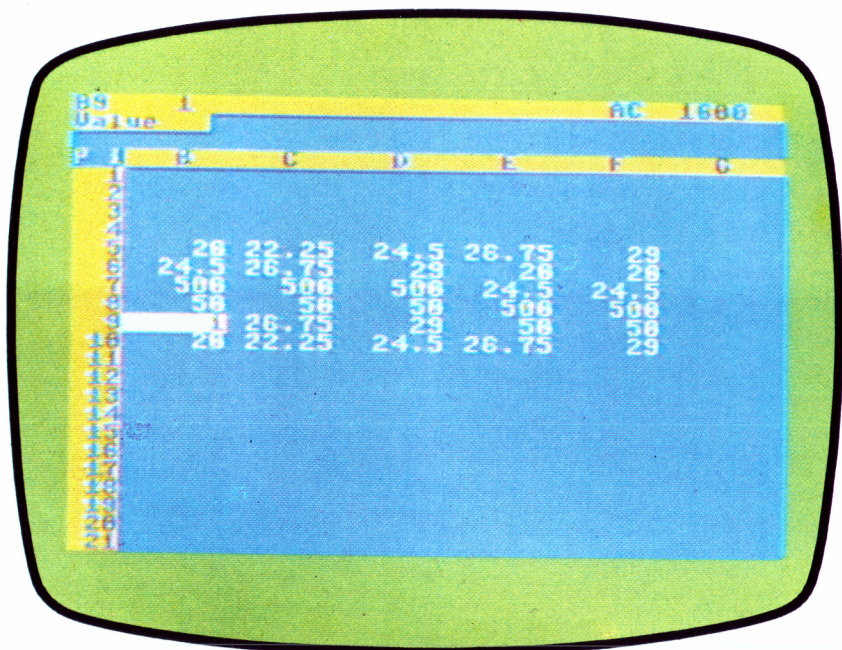
"F6" 'RETURN' 'A'

Move the cursor to E8, type:

'F7' 'E' 'C' 'RETURN' "F10" 'RETURN' "C7" 'RETURN'

Move the cursor to B9, type:

'1' 'RETURN' 'F7' 'G' 'C' '6' 'RETURN'

If everything is as it should be your screen should look like the following:

2.4.5 MINIMUM AND MAXIMUM VALUES

Start by searching for the smallest value in column F. Move the cursor with the **'HOME'** key to A1 and then type:

"MIN(E1:E10)" and **'RETURN'**

In A1 '20' is seen, and it is easy to check that this is the column's smallest value. The colon is used to split the start and end values for the area which is to be searched. The blank co-ordinates within F1 and F4 created no problems.

Now we look for the largest value within the matrix. Type:

'♦' **"MAX(B5:B10,C5:C10,D5:D10,E5:E10,F5:F10)"** **'RETURN'**

Here you see how the comma is used to separate the different expressions.

2.4.6 COUNT AND MEAN FUNCTIONS

The COUNT function, counts the number of co-ordinates containing values or valid formulas within the row/column or area.

Move the cursor to A5 and press:

"COUNT(B1:B10)" and **'RETURN'**

The answer is 7.

The MEAN function calculates the average value of the given row/column or given area.

Move the cursor to A7 and press:

"MEAN(F5:F9)" **'RETURN'**

The mean of 29, 20, 24.5, 500 and 50 should be 124.7. You can check this by moving to A8 and then type:

"SUM(F5:F9)/5" **'RETURN'**

This answer is also 124.7.

2.4.7 ABSOLUTE AND INTEGER FUNCTIONS

The ABSOLUTE function, ABS, works with an expression. ABS gives the value's absolute value. To get the absolute value of −150 write:

"ABS(−150)"

The answer is 150.

The INTEGER function, works like the ABS with expression. INT functions gives the integer part of a value. If we have 26.75 in C6 and 500 in C7 we could have the integer sum in A20 as follows:

Move the cursor to A20 and type:

"INT(C6+C7)" 'RETURN'

The answer will be 526. The INT function does not round off the numbers compared to the formatting function F7 F I which does.

2.4.8 IF THEN ELSE FUNCTION

IF is always followed by ELSE. With this function the following tests can be accomplished.

IF the value in position B5 is larger than the value in position F10 THEN 1 is placed in position A3 or ELSE the value at B5 will be placed in A3.

Move the cursor to A3 and type:

"IF(B5>F10)THEN(1)ELSE(B5)" 'RETURN'

Since the value in B5 is less than the value in F10, the answer is 20 as this is the value in B5.

Note! When using this function, if some of the conditions are not available, NA, then the answer will be NA even if the true condition is itself correct.

2.4.9 RANDOM FUNCTION

The RND random number function is used to produce random numbers. If you want a random number which lies between zero and 100 in co-ordinate G20 you type:

'F7' 'F3' "G20" 'RETURN' "RND(100)" 'RETURN'

The random value will stay in the position until you place another value there.

If you need a random number between 1 and 100 that changes each time a recalculation is done then use the function referring to a position like this: in G19 type

"99"

Cursor to G20, blank the old formula and insert the new one by typing:

'F7' 'B' "1+RND(G19)" '▾'

Each time a recalculation is undertaken a new value for the random number between 1 and 100 will be given at G20. Try this several times using the ↑ key for the recalculation.

2.4.10 PERCENT FUNCTION

This function is useful to express easily percentage values, eg to express 15 % you could write 0.15 but, with the percent function you just write "%(15)".

To get the percentage of a formula eg F5+F6, type:

"%(F5+F6)" 'RETURN'

In the first example you do not need the parenthesis – you could just write %15. In the other you have to have them because the function will otherwise only operate on the first value.

2.4.11 MANUAL AND AUTOMATIC RECALCULATION

As you most probably noticed in a number of your earlier examples CALC RESULT takes time when recalculating a value. Every value is calculated to up to twelve positions and it can take a number of seconds to recalculate many values over a large sheet. Often, you do not need a recalculation for every new value when you make an entry, but only when all the values have been input.

CALC RESULT lets you choose between automatic and manual recalculation. Automatic recalculation is set when you start up CALC RESULT.

If you want to avoid recalculation during every new input, press:

'F7' 'R' 'M'

You can enter as many new inputs as you want without being interrupted by recalculations. After you have changed a number of values in the matrix you can do a recalculation by pressing the up arrow key. When you have finished all your inputs, go back to Automatic Recalculation by pressing:

'F7' 'R' 'A'

As you see a recalculation is done.

2.4.12 SUMMARY OF LESSON 4

As well as practising some earlier functions we have also in this lesson learned:

– How CALC RESULT presents values on the screen even when its column size does not have room, for example, 1E7

– Some new formatting functions both local and global and how they influence each other

– More mathematical functions such as MIN, MAX, COUNT, MEAN, ABSOLUTE, RANDOM, INTEGER, % (percent), IF, THEN and ELSE.

– CALC RESULT's mathematical priorities.

– Lastly we have tried CALC RESULT's manual recalculation feature.

```
            A   B   C   D   E

   STANDARD FORM    BUDGET 1983

   PERIOD           1   2   3WHOLE

   Sales APPLES             0   0 0 0
   Sales ORANGES            0 0 0
   Sales BANANAS            0 0 0
   TOTAL SALES      0   0   0   0

   Salaries
   Rent,local tax
   Administration
   Marketing
   ALL DIRECT COSTS 0   0   0   0

   CONTRIBUTION     0   0   0   0
   OVERHEADS        0   0   0   0

   NET PROFIT       NA  NA  NA  NA
   PROFIT AS %      NA  NA  NA  NAERROR
```

2.5 Lesson 5

2.5.1 A SALES BUDGET

Having gone through the earlier lessons you will now have a good insight into the workings of CALC RESULT. We will now continue with the functions that make CALC RESULT such a powerful aid. To be able to present these functions we will create as an example a sales budget.

This example will introduce CALC RESULT's powerful multi-page working. To make certain that no part of the work area contains any used pages we will clear the screen, and **ALL** other pages, by pressing:

'F7' 'P' 'E' 'Y'

This function erases all pages in the work area and must be used with caution since there is no way of retrieving data once you have erased it.

For our example we will create a sales organisation which consists of three departments A, B, and C. The products which are sold are Apple, Orange and Banana. To simplify our work the three departments use a standard form.

When you have cleared the screen we will create a standard form. Make sure that the texts are in the right co-ordinates, this will make it easier to place the values in the corresponding co-ordinates.

NOTE that the word BUDGET and the YEAR on row 1, together with the PERIOD's and the word WHOLE YEAR on row 2 are all right adjusted labels.

2.5.2 ENTERING THE FORMULAS

The formulas that we will be using are simple addition and subtraction formulas. We start with sales, as you see TOTAL SALES consists of Apple, Orange and Banana.

Write the formula **B5+B6+B7** in co-ordinate B8 (use the SUM function)

Do the same for the remaining periods on this row, but here by using REPLICATE. Replicate the formula in co-ordinate B8 from C8 to D8. All the formulas in this example are relative.

Go on ALL DIRECT COSTS. The formula needed is **SUM (B10:B13).** Place the formula in co-ordinate B14 and then replicate it to the co-ordinates C14 and D14.

In co-ordinate B16, a formula which calculates the difference between TOTAL SALES and ALL DIRECT COSTS is needed. Place the formula **B8–B14** in co-ordinate B16.

Replicate this formula in C16 and D16.

NET PROFIT is calculated as CONTRIBUTION less OVERHEADS.

Write the formula **B16–B17** in co-ordinate B19 and then replicate this to co-ordinates C19 and D19. The NA's will soon be corrected.

PROFIT AS % is calculated as the NET PROFIT divided by TOTAL SALES multiplied by 100. The formula we place in co-ordinate B21 will then be **B19/B8*100**. Format this to integer value.

Replicate the formula to co-ordinates C21, D21 and E21.

Lastly we need a formula to add the three PERIODs to make an entire year in column E. The formula will be **SUM(B5:D5)** and this we place in E5. This is to be replicated from E6 to E19. Blank 9, 15 and 18 in the E–colum.

2.5.3 COPYING A PAGE

Now you have a complete form with formulas on page 1. Copy this to the pages 2, 3, 4 and 5 by typing:

'F7' 'P' 'C'

On the command line COPY PAGE is seen. Give the page to be copied. Type:

'2' 'RETURN' 'Y'

When the copying is finished repeat the process for pages 3,4 and 5. Then there will be five identical pages.

As the pages have the same content you will see no difference, but if you look at the X-axis (the horizontal one which indicates the columns) you will see the page number. All pages are now in the work area. You can have two pages in memory to work on, check that page one is on the screen.

A good tip is to have a Master page (standard form) from which you can make copies whenever you need one.

2.5.4 GETTING A PAGE TO THE SCREEN

Get page two to the screen. Press:

'F7' 'P' 'G' '2' and **'RETURN'**

Since the pages have no difference in appearance check the page number.

Remember that you can have two pages available in the internal memory at the same time. By pressing **F1** you will get the other page to the screen and vice versa. This can be tested by fetching page four and then switching between the pages by depressing **F1**.

When you get a new page to the screen from the work area, while having two pages in the internal memory, the page currently on the screen is moved back to the work area.

2.5.5 INPUT OF VALUES

Get page two, and to be able to differentiate between the different departments, write the text "DEPT A" at co-ordinate A1.

Place the cursor at co-ordinate B5 and type:

"150" '♦' "150" '♦' and **"150"**

This was sales of Apples during periods 1, 2 and 3. Continue with Oranges, move the cursor to co-ordinate B6 and type:

"0" '↓' "0" '↓' '0'

Now go to B7 and type:

"10" '↓' "15" '↓' '0'

Now for the direct costs: move the cursor to B10 and type:

"45" '↓' "45" '↓' "50"

Move the cursor to B11 and type:

"10" '↓' "10" '↓' "10"

Move the cursor to B12 and type:

"20" '↓' "20" '↓' "20"

Move the cursor to B13 and type:

"65" '↓' "50" '↓' "60" 'RETURN'

The "OVERHEADS" will be recorded on a separate page. Dept A is now finished and its formulas all calculated.

Get page three, mark this as DEPT B. Move the cursor to B5 and type the following values:

"150" '↓' "150" '↓' "150"

Move the cursor to B6 and type:

"300" '↓' "275" '↓' "350"

Move the cursor to B7 and type:

"10" '↓' "15" '↓' "0"

Now go on to the direct costs. Place the cursor at B10 and type:

"95" '↓' "95" '↓' "100"

Move the cursor to B11 and type:

"35" '↓' "35" '↓' "35"

Move the cursor to B12 and type:

"60" '↓' "45" '↓' "50"

Move the cursor to B13 and type:

"25" '↓' "25" '↓' "20" 'RETURN'

Dept B is now finished. Now get page 4. Write the text "DEPT C" at A1, then move the cursor to position B5 and type in the following values:

"75" '↓' "75" '↓' '0'

Move the cursor to B6 and type:

"300" '↓' "275" '↓' "350"

Move the cursor to B7 and type:

"950" '↓' "800" '↓' "1200"

Now direct costs. Place the cursor at B10 and type:

"300" '↓' "300" '↓' "300"

Move the cursor to B11 and type:

"65" '↓' "70" '↓' "65"

Move the cursor to B12 and type:

"60" '↓' "60" '↓' "50"

Move the cursor to B13 and type:

"125" '↓' "120" '↓' "110" 'RETURN'

Dept C is now finished.

Now get page 5 and input the overhead costs that are needed to complete our calculations. At A1 write the text "OVERHEAD COSTS" then move the cursor to co-ordinate B17 and type:

"90" '♦" "100" '♦' "115" 'RETURN'

Now format these co-ordinates with different colors. (Format function. See section 1.2.1 for choice of colors).

We now have five pages in total. The first is the standard form we used for copying; pages 2,3, & 4 provide our three departments; and page 5 is our overheads costs sheet.

Save this work on your DATA DISK before going on. Then practise moving pages from the screen to the work area. When you are familiar with the process continue.

2.5.6 ADDING PAGES

We can now total the departments and create a Totals page. To do this we make use of the page function. Type the following:

'F7' 'P'

Look at the help screen to see which function fits our needs. There are two functions, **A** and **+**, both of which can be used to add pages.

First, let us look at how **A function** works:

This function starts by moving the page with the lowest number to the Sum Page – this is always page 32. Then each of the other specified pages is moved to the Sum Page and added to it. The function treats the three kinds of data – TEXTS, VALUES and FORMULAS in different ways:

TEXT – where there is no text already in a corresponding co-ordinate on page 32 it will be inserted. If there is already text, a comparison will be made and if they are different in any way this will be reported after addition is completed. The text that is moved first remains on the sum page.

VALUES in corresponding co-ordinates are added together – otherwise they are treated like texts.

FORMULAS are dealt with in exactly the same way as TEXTS.

Page adding ends with a recalculation.

Let us compare this with the **+ function**:

Just as in A, the page with the lowest page number is moved to the Sum page (page 32). When this is done the other pages are then added to this page.

The most important difference between + and A function is that formulas are not carried to the sum page – only the value contained in a formula co-ordinate. This is important in some calculations, for example where different percentages are used for calculation on different pages.

The + function deals with data as follows:

TEXT has the lowest priority. As a result VALUES and the value of FORMULA co-ordinates are placed over TEXT in any co-ordinate when there is a difference. When TEXT is to be added to a VALUE a zero (0) will be added to the co-ordinate.

VALUES in corresponding co-ordinates are added in the same way as in A.

FORMULAS are not moved to the Sum page. If there are formulas, the values of the co-ordinates will be added, not the formulas themselves.

Of the two addition functions, the first one is the best to use in our example.

Choose the **'A'** function

There are always 32 pages in the work area, but we have only used 5. Answer **no** to the next question. Press:

'N'

Since page 1 does not contain any values we can exclude it from the addition, so now answer:

'2' 'RETURN' '3' 'RETURN' '4' 'RETURN' '5' 'RETURN'

'RETURN'

That final return tells CALC RESULT we have finished.

```
A1                              AC   1546
P32      A        B         C       D       E
 1
 2 page:  2
 3 page:  3
 4   Mismatch  in  pos  A1
 5 page:  4
 6   Mismatch  in  pos  A1
 7 page:  5
 8   Mismatch  in  pos  A1
 9 Remarks
10
11
12
13
14
15
16
17
18
19
20
21
```
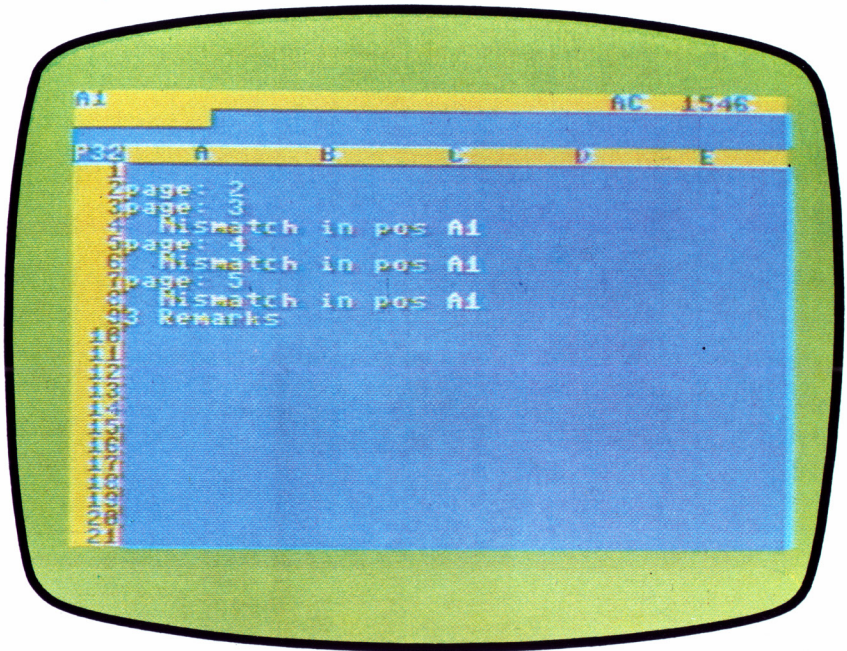
We now can see that some of the co-odinates do not match – we
know the Department Names will not, and the word COMMON
COSTS. These obviously do not matter. Are there any other messages
that do? Note these down and then press any key. Fetch in the page
with the error and correct it. When you have corrected all of them do a
new page addition.

Press any key.

```
A1    DEPT A                          AC   1546
Label

P32      A       B        C         D        E
 1DEPT A  BUDGET   1983
 2
 3PERIOD         1        2       3WHOLE Y
 4
 5sales A       375      375      300     1050
 6sales O       600      550      700     1850
 7sales B       970      830     1200     3000
 8TOTAL S      1945     1755     2200     5900
 9
10Salarie       440      440      450     1330
11Rent, 1       110      115      110      335
12Adminis       140      125      120      385
13Marketi       215      195      190      600
14ALL DIR       905      875      870     2650
15
16CONTRIB      1040      880     1330     3250
17OVERHEA        90      100      115      305
18
19NET PRO       950      780     1215     2945
20
21PROFIT         49       44       55       50
```

Before continuing write SUM PAGE at A1 on page 32. Now copy the
results to a blank page – page 6 – since we are likely to use page 32
for additions again. You could use the copy page function, F7 P C, but
instead we will learn how to use the RENUMBER function.

2.5.7 CHANGING A PAGE NUMBER

To move the contents of page 32 to page 6 using renumber make sure
your cursor is on page 32, then type:

'F7' 'P' 'R' '6' 'RETURN' 'Y'

Before continuing you may find it useful to go to Section 3.19.5 and
look at the NEGATING A PAGE function.

2.5.8 TWO PAGES ON THE SCREEN

Get page two to the screen and make sure the titles in column A are visible.

Change the column width to six.

Now split the screen vertically at D1.

Get page three on the right hand side part of the screen.

Change the column width of page three to five.

Your screen will look like the following when you have moved the cursor to E1 at page three.

Now you can compare the two pages on the screen. As you see you can have two different formats for the pages.

When you are ready, compare all the pages. Try to use as many functions as possible when you do this.

Remember you have already saved your work on the DATA DISK so it can come to no harm!

2.5.9 MORE ABOUT THE WINDOW

We will now see how one can use the window while having three different pages on the screen.

Fetch the sum page –6– to the screen. Format the screen so that it corresponds with the picture below – column width 5.
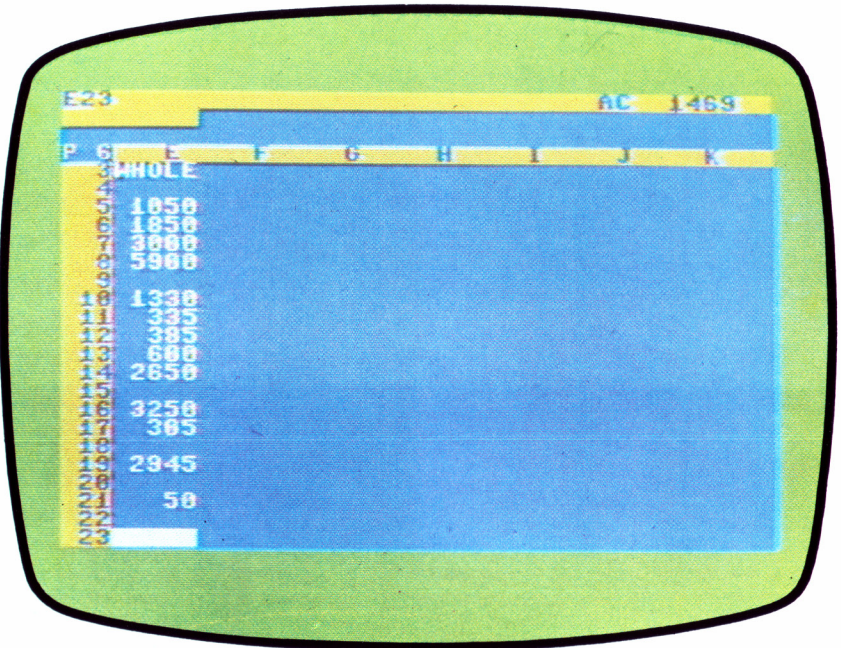
Move the cursor to G3 and press:

'F7' 'E' 'W' 'RETURN'

Now the upper left corner will be given. For the window's lower right corner enter K22 so that the screen is fully used. When you are ready split the window horizontally down the middle. Lastly place page two in the window in the upper section and page three in the lower.

| A1 | DEPT B | | | AC | 1476 |
| Label | | | | | |

```
P 6    E     P 2   A        B        C        D
   3WHOLE      1DEPT ABUDGET   1983
   4                2
   5 1050         3PERIOD    1        2        3
   6 1850         4
   7 3000         5sales    150      150      150
   8 5900         6sales      0        0        0
   9              7sales     10       15        0
  10 1330         8TOTAL    160      165      150
  11  335         9
  12  385    P 3   A        B        C        D        E
  13  600         1DEPT BUDGE 1983
  14 2650         2
  15              3PERIO     1        2        3WHOLE
  16 3250         4
  17  385         5sales    150      150      150      450
  18              6sales    300      275      350      925
  19 2945         7sales     10       15        0       25
  20              8TOTAL    460      440      500     1400
  21   50         9
  22             10Salar     95       95      100      290
  23
```

As you will remember from Lesson 2 you cannot move the cursor out of the window – you must remove the window with F7 L. But you can take in any page you need. Try scrolling the screen so that you can compare the two page's results with the results on page six.

This is one way of using the window. Another is to split the screen and then create a window.

When you have finished experimenting with the window press:

'F7' 'L'

You will notice that the page remaining is the one where the cursor was positioned before the leave command was executed.

2.5.10 FORMATTED PRINTOUTS

CALC RESULT enables you to format printouts to your requirements. Start by getting page two.

We will format a printout for this page. Press:

'F7' 'E' 'P'

P is for PRINTING. Here you will choose between formatted and direct printing.

— Direct printing allows you to choose a part of the page or the entire page to be printed in the same format as shown on the screen.

— Formatted printing lets you decide the number of rows and the width of each of the columns varying between 1 to 255 characters wide.

Choose formatted printout press:

'F'

OLD FORMAT is used when there is an earlier format which has been saved. As there is no old format we choose 'N' (NEW FORMAT). Type:

'N'

All the lines of a page — 254 lines — can be printed, but as our example contains only 21 we write this.

'1' 'RETURN' "21" 'RETURN'

We now decide which columns to print, press:

'A' 'RETURN' "20" 'RETURN'

For the other four columns you can have varying widths. Remember the smallest width allowed is 1 characters wide. After entering all the column widths press RETURN once again, this tells CALC RESULT we have finished.

Now you can save your format. If you want to save the format answer 'Y' 'RETURN'. Then give the format a name (max 12 characters) and the press 'RETURN' again.

When ready, the page will be printed according to your format. Make sure your printer is connected, switched on, and has paper!

2.5.11 GRAPHICS ON THE SCREEN AND PRINTED

CALC RESULT's graphic function gives you a bar chart which you specify.

The graphic function works in such a way that the row or column which is to be represented is determined by the current cursor co-ordinate.

Start by fetching the page with the OVERHEAD COSTS.

Move the cursor to the row which shows the common costs and then press:

'F7' 'E' 'G' and **'R'**

CALC RESULT now clears the screen and asks for UPPER and LOWER LIMIT. This is the scale interval within which the bars will lie. Since our values are 90, 100, 115 and 305 a range 0 to 500 will be fine. Type:

'0' 'RETURN' "500" 'RETURN'

You will now be asked to title your bar chart with a maximum of 39 characters. Then press:

'RETURN'
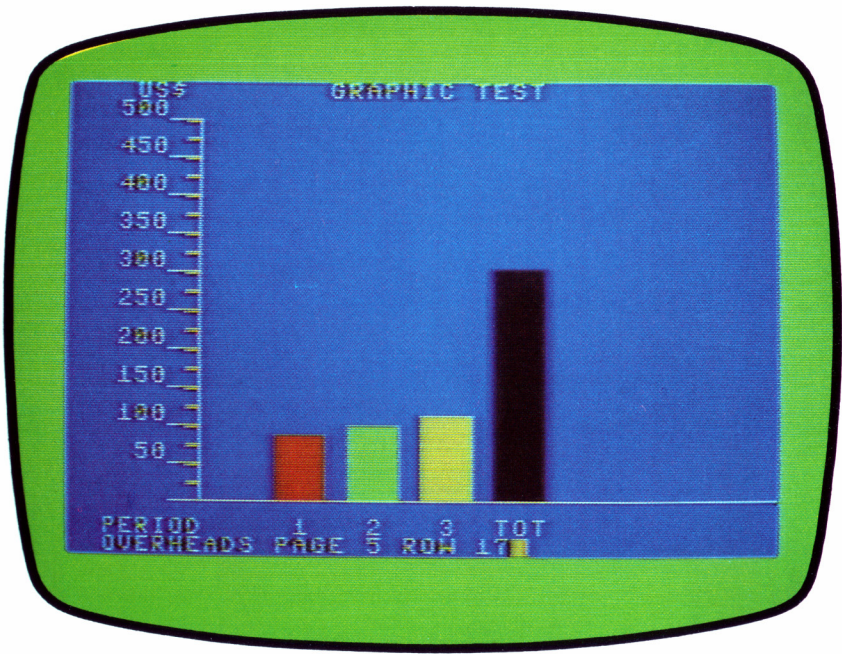
You can scroll across the chart using the ◀ and ▶ and thus choose any part to be printed. To print press:

'F6'

Now you will be given the option of adding two more rows of text to the printed version of the chart. When you have input the data for the first you can move to the second line with the **'RETURN'** key.

When you have completed titling your chart press

'RETURN'

2.5.12 TRUE AND FALSE STATEMENTS

These are expressions which impose certain conditions that must be passed before further calculation can be undertaken. This can be useful, for example, in a calculation of interest which is dependent on the amount saved when 1000 will attract 11% while 2000 will get 13% and so on. By using the IF...THEN...ELSE... structure, you can place conditions on co-ordinate values.

(IF A1=1 THEN C1 ELSE 2)*D1

In the example above we see that if A1 is equal to 1 then D1 will be multiplied by C1. If A1 is not equal to 1 then D1 will be multiplied by 2. When the statement is true then the value or expression after THEN will be taken as this represents truth, while a false statement will be given the section after ELSE. You could also have a condition within the condition e.g.:

F1*(IF A1=1 THEN 1 ELSE (IF A1=2 THEN 2 ELSE 3))

This shows that if A1 is equal to 1 then F1 will be multiplied by 1 otherwise it will be tested by the next condition. You must always have the ELSE at the end otherwise CALC RESULT will show that an error has been made. If you were to write the following:

IF A1 THEN 2*3/A2 (true) ELSE 3+B2 (false)

Now if A1 is blank or is a text, it will have the value NA so as to indicate that there is no value in it. But, if A1 had the value 0 then it will do 3+B2 as the statement is false. All other values will lead to a true statement.

If you should get FORMULA TOO COMPLEX as a reply then you will have to break up your expression as CALC RESULT cannot calculate your expression. Within the IF...THEN...ELSE structure you can use AND, OR and NOT to change the conditions. NOT will change the true/false statement so that it will be false/true instead.

When using AND both expressions must be true in order to make the statement true. See the example below:

IF A1=1 AND B1=10 THEN 100 ELSE 5

A1=1	**T**	**T**	**F**	**F** (T=TRUE F=FALSE)
B1=10	**T**	**F**	**T**	**F**
Result	**100**	**5**	**5**	**5**

When using OR both or one of the expressions must be true to make the statement true. See the example below:

IF A1=1 OR B1=10 THEN 100 ELSE 5

A1=1	**T**	**T**	**F**	**F**
B1=10	**T**	**F**	**T**	**F**
Result	**100**	**100**	**100**	**5**

NOT, AND and OR are the lowest in the mathematical priority. NOT is higher than AND while AND is higher than OR.

2.5.13 GLOBAL RECALCULATION

The function is used to move values between different pages and make it possible to undertake recalculations over several pages. You are able to specify which pages will be recalculated, and in what order. You could, for example, recalculate pages 25, 1, 8, 3 and 15 in just that order.

The function uses a column not visible to the user called the Alpha-column, and when co-ordinate refences to it are made it is referred to using the value-at key '@'. The Alpha column is positioned before column A – the figure below represents this.

We will set up a very simple example to demostrate this powerful feature of CALC RESULT. First clear your screen and get pages one and two in RAM memory.

PAGE 1

Alpha-column		A	B	C ...
	1			
	2	100	A2+100	
	3			
	4	200	A4+100	
	5			
	6	400	A6+100	
	.			
	.			

In this example the Alpha-column is empty, in column A we have some values and in B formulas which refer to column A. Input the values and formulas into page one. Check carefully that they are in the correct positions.

During a GLOBAL recalculation the last column of every page (starting here with page 1) will be copied to the Alpha-column on the page which follows. In this example it will be the column-B contents that will be copied to the Alpha-column on page 2.

Input the values and formulas shown in column A and B onto your page 2 – remember to use value-at '@' for the ALPHA references.

PAGE 2

Alpha-column		A	B	C ...
	1			
200	2	@2	A2+100	
	3			
300	4	@4	A4+100	
	5			
500	6	@6	A6+100	
	.			
	.			

As you can see page 2 – unlike page 1 – refers to the ALPHA column in the same way as it might refer to any other co-ordinate.

We will now make a GLOBAL recalculation which will use pages one and two. Press :

'F7' 'G' 'R'

You need not move any pages that are not being used in the Global-recalculation since CALC RESULT automatically restores your pages to the state they were in before it began Global-recalculation.

Since we do not want to recalculate all pages – the total of 32 – the answer to the question ALL PAGES ? Y/N will be NO. Press:

'N'

Input the pages we want to use in the calculation by pressing

'1' 'RETURN' '2' 'RETURN' 'RETURN'

After page two has been recalculated it contains the values shown in the picture below:

In this way you can use the Alpha-column to move chosen values between different pages. The Alpha column always reflects the values contained in the last column used on a page. The formulas in this column can of course themselves refer to values anywhere on the page. There is very little limitation on the amount of data that can thus be passed from page to page. Values placed in the Alpha-column will remain on that page until they are changed or erased. Note that only values can be placed in the Alpha-column, texts will not be accepted and only the actual value of a formula will be transferred.

If you want to experiment further, put both pages on the screen and change the values in page 1 column A and undertake further global recalculations.

2.5.14 SUMMARY OF LESSON 5

We have now introduced all the commands of CALC RESULT, but there are still a number of functions which are found in PART 3. You have now learned about:

— how CALC RESULT uses different pages

— The window showing several pages

— CALC RESULT's printing functions with formated print files

— How to produce graphs on both the screen and printed

— Lastly IF, THEN, ELSE, AND, OR, and NOT with their unlimited possibilities

— and finally about GLOBAL recalculation with its abilities to transfer values.

Part 3 Commands and functions

3.1 SCREEN STRUCTURE

CALC RESULT's screen contains not only the information that you input for your work, but also a number of different texts, characters and values to tell you what commands or functions you are using or have selected. What these symbols on the screen mean will be explained here.
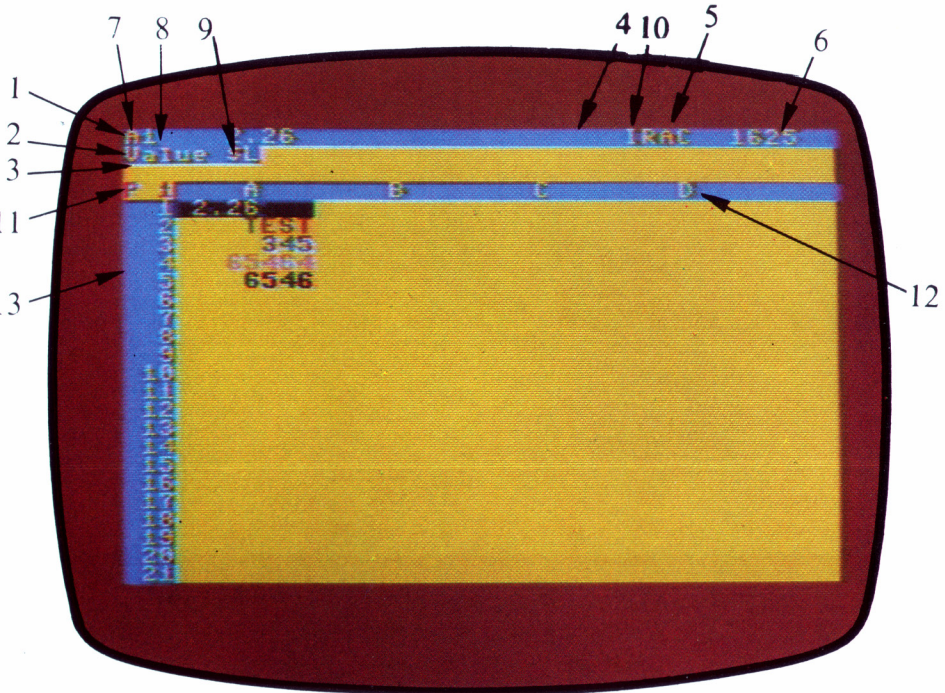
1 Command line. On this line commands, contents of the position of the cursor and functions can be seen

2 Help line. Here the four functions, 'F3' for GO TO, 'F5' for HELP, 'F6' for HARDCOPY and 'CLR' for CLEAR are shown when the command key has been pressed (F7).

CALC RESULT also uses this line to ask questions and indicates the answer to be given. Except for printout editing, all these answers can be given with one key depression. A small cursor shows where the input will be.

3 Input line. Here the characters which are being input are shown. Questions which need several key depressions to answer are also shown here. A small cursor shows where the input will be.

4 Error codes. One character is used for User errors, two characters for Disk errors and three for Formula input errors (see Appendices B)

5 AC, AR, MC and MR gives type of recalculation. For example; AC indicates automatic column-wise recalculation, MR manual row-wise.

6 Shows available memory space by indicating the number of memory positions remaining to use. A value uses a maximum of one position, but the number of memory positions used for formulas and labels depends on their length.

7 Shows the current cursor co-ordinate.

8 Here is shown the type of co-ordinate at the current cursor position: either LABEL (letters) or VALUE.

9 These characters tell you the format of the current co-ordinate position: M for maximum precision, I for integer, $ for two decimal places, R for right adjusted and L for left adjusted. The current format remains with the co-ordinate until it is changed or erased.

10 The same characters as above indicate the global format for the current page. Like the local format it remains with the current page until it is changed or erased.

11 This shows which page is on the screen where P indicates page.

12 X-axis, shows the columns labeled alphabetically from A to BK (63 columns)

13 Y-axis, shows the rows numbered from 1 to 254.

CALC RESULT COMMANDS

The CALC RESULT commands are shown here together with a short explanation of each command and function as they are shown on the help screens – press 'F5' when in any command for the screen.

3.2 SYSTEM COMMAND: B D E F G L O P Q R –

B:Blank . . . . Cancel contents of cell under cursor
D:Disk command . . . . . For disk communication or User register
E:Edit command . . . . . . For screen and printer
F:Format command . . . Individual cell
G:Global command . . . . Global format and column width
L:Leave . . . . Title, split-screen and window
O:Order . . . . Of recalculation
P:Page command . . . . . Page functions
Q:Quit . . . . Quit program
R:Recalculate . . . . Automatic or manual
–: . . . . Automatic repetition of characters at cell under cursor

3.3 DISK COMMAND: B C D E I L N S U

B:Backup . . . . Drive 0 to drive 1
C:Catalogue . . . . Directory of drive 1
D:DIF-file . . . . For saving and loading DIF-files
E:Erase . . . . Scratches file on drive 1
I:Initialize . . . . Drives 0 and 1
L:Load . . . . File to work area
N:New . . . . Disk is formatted in drive 1
S:Save . . . . Work area to drive 1
U:User Register . . . . Containing language for help screens, type of printer and paper format

3.4 EDIT COMMAND: C D G I M P R S T W

C:Copy . . . . Data area to another area
D:Delete . . . . Row or column
G:Graphic . . . . Histogram
I:Insert . . . . Row or column
M:Move . . . . Data area to another area
P:Print . . . . Worksheet or user-defined format
R:Replicate . . . . Data area to other areas
S:Split . . . . Screen (hor/vert)
T:Title . . . . Protects a title in the left column
W:Window . . . . Insert window

DIF is a trademark of Software Arts Inc.

3.5 FORMAT COMMAND: C G M I $ L R *

C:Color . . . . Select color
G:Global   Cell . . . . Sets global format
          Global . . . . . . Sets normal format
M:Maximum . . . . Sets maximum precision display mode
I:Integer . . . . Sets integer display mode
$: . . . . Sets 2 decimal display mode
L:Left . . . . Sets contents at left
R:Right . . . . Sets contents at right
*: . . . . Replace integer number with corresponding
                          number of stars, always left adjusted

3.6 GLOBAL COMMAND: C F R

C:Column width . . . . . . Sets global width in all columns except in
                          protected title-column
F:Format . . . . Sets given format in all cells
R:Recalculation . . . . Recalculate several pages by moving the
                          highest column in one page to the alpha-
                          column in the next page

3.7 PAGE COMMAND: A C D E G N P R +

A:Add . . . . Pages, checking that labels and formulas
                          match
C:Copy . . . . One page to another
D:Delete . . . . Page from work area
E:Erase . . . . Work area
G:Get . . . . Page from work area
N:Negate . . . . Changes signs (+ and −) in one page
P:Put . . . . 2nd Page to work area
R:Renumber . . . . Page
+: . . . . Add pages, values and formulas only

CALC RESULT FUNCTIONS

3.8 FILE FUNCTIONS

3.8.1 SAVE A FILE ON THE DATA DISK

This function is used to store work, consisting of one or more pages, on the data disk. The total contents of both the internal memory and work area, that is any pages which contain any data, are stored under their specific page number on the data disk.

The contents of the RAM and work area are still left intact after the file has been saved so that you can continue working with it.

If, when you have successfully saved your file, you are going to start a new project you will need to erase all pages and the work area using the Page command Erase – see Section 3.19.9

To save your file start by typing:

'F7' 'D' 'S'

If you are just updating a work file move the cursor to the name in the catalog that you want to use for saving this file and then type

'RETURN' 'RETURN' 'Y'

When you accept the 'YES' prompt you will overwrite any old data in the file! Have you prepared your back up disks?

If you want to save the file under a new name, press **'RETURN'** once, input the name and then accept it by pressing **'RETURN'**.

If you do not need to use the catalog type:

'F7' 'D' 'S' 'RETURN'

Enter the file name with a maximum 12 characters not including ' " : ; , # $ * ?

Then press **'RETURN'**

DIF Files are saved on the data disk in the following way. Type

'F7' 'D' 'D' 'S' 'RETURN'

Enter the file name and then press **'RETURN'**

You must then specify the area that will comprise the DIF file. First enter the upper left co-ordinate of the area you wish to save and then the lower right. The co-ordinates are followed by **'RETURN'**.

If you want to save your DIF-file by rows press **'R'**; for columns press **'C'**.

3.8.2 GET A FILE FROM DATA DISK TO WORK AREA

To get a file containing a number of pages type:

'F7' 'D' 'L'

Give the filename. You can use any of the methods described in Saving a file above.

Answer the question ALL PAGES? Y/N with **'Y'**.

If you just want to fetch one page then answer the question ALL PAGES ? Y/N with **'N'**.

Note! Where the file name has been given without using the catalog you must make sure the page number is preceded by the minus sign, and that these are the last characters within the file name.

DIF-files are fetched from the data disk in the following way – type:

'F7' 'D' 'D' 'L'

Enter the file name, press **'RETURN'**.

If getting your file by row press **'R'**, or **'C'** for column.

For users familiar with the Commodore way of working with disk files it is possible to use the normal file function abbreviations ie * and ?. For example,'BUD*' means that all files starting with the characters BUD will be found, and ???GET will find all those which, except for the three first characters, end with GET.

Be especially careful about getting files with this method because of the possibility of confusing pages. You should refer to your Commodore Manual for full details of these file handling protocols.

DIF is a registered trademark of Software Arts Inc.

3.8.3 ERASE A FILE FROM THE DATA DISK

If you want to erase work, completely or partially, from the data disk do the following.

To erase a complete file type:

'F7' 'D' 'E' 'RETURN'

Give the file name using any of the methods described in section 3.8.1. Then type

'RETURN' 'Y'

If only one page is to be erased: answer the question ALL PAGES ? Y/N with

'N'

For users familiar with the Commodore way of working with disk files it is possible to use the normal file function abbreviations ie * and ?. For example, 'BUD*' means that all files starting with the characters BUD will be erased, and ???GET will erase all those which, except for the three first characters, end with GET.

Be careful about erasing files with this method because of the possibility of making mistakes. You should refer to your Commodore Manual for full details of these file handling protocols.

3.8.4 COPY FILES BETWEEN DISKS (single disk drive)

If you want to copy one file from one disk to another do as follows:

Let's say you have a file named TEST-A on disk A which consists of three pages. This file you want to copy to a disk B.

1 When disk A is ready, type:

'F7' 'P' 'E' 'Y' (to clear the work area)

'F7' 'D' 'L' "TEST-A" 'Y'

The file TEST-A is now stored in the work area and page 1 is in the screen.

2 Fetch an empty page to RAM, type:

'F7' 'P' 'G' "10"

Now you shall have both page 10 and 1 in RAM. Page 10 in the screen and page 1 'behind'.

3 Replace disk A with disk B and then type:

'F7' 'D' 'I' (to initialize the disk)

4 Save page 1 (2 and 3) on disk B by typing:

'F7' 'P' 'P' (to put out extra page – 1 –)

Page 1 (2 and 3) has now been moved to the work area on disk B.

5 Change disks, initialize the disk and then fetch page 2 (3) from disk A by typing:

'F7' 'D' 'I'

'F7' 'P' 'G' '2' 'RETURN'

6 Swap the pages by typing:

'F1'

Go back to point 3, and then repeat the same procedure for page 3. Remember that it is always the 'back page' that is moved when using the page function, F7 P P.

When you have moved the total TEST-A file to disk B it can easily be saved as a new file by typing:

'F7' 'D' 'S' 'RETURN' "TEST-B" 'RETURN'

3.9 FORMATTING FUNCTIONS (GLOBAL)

3.9.1 FORMATTING

Also see FORMATTING (LOCAL). All positions (co-ordinates) within the current page, except those title protected, are set to the format which is given.

Note that 'F7' 'G' 'F' 'G' resets all earlier global formats. If, for example, left adjusted integer format has been chosen earlier, then both these formats will be deleted.

3.9.2 COLUMN WIDTH

The column width can vary between 5 and 18 characters. When CALC RESULT starts the column width is set to 8.

To change the column width type:

'F7' 'G' 'C'

Give the column width and then press **'RETURN'**

All the positions (co-ordinates), within the current page, are set to the given width.

Note that title protected columns are not influenced by this and if the screen has been split either by SPLIT or WINDOW it is only the current part that is altered.

3.10 FORMATTING FUNCTIONS (LOCAL)

It is possible in both global and local functions to combine two formats, eg left adjustment and integer.

Note that all local formats except GLOBAL FORMAT have the same effect as the corresponding global format except that they only affect one co-ordinate instead of the whole page. Used locally, however, the GLOBAL FORMAT does not have the same meaning as it does when used globally.

3.10.1 COLOR FORMAT

Changes the color on the current co-ordinate. See section 1.2.1 for color alternatives.

Place the cursor at the co-ordinate which is to be colored. Type

'F7' 'F' 'C' and choose color key NOTE! To set a local color formatted coordinate to global color, press **'F7' 'F' 'C' 'G'**

3.10.2 GLOBAL FORMAT

Locally:

Changes the format of the current co-ordinate to the global format set up earlier — this will be the 'start-up' format if the Global Format has not been changed.

Place the cursor at the co-ordinate which is to be formatted. Type

'F7' 'F' 'G'

Globally:

Resets all co-ordinates at the current page to CALC RESULT's normal format, that is labels are left adjusted, values right adjusted and with maximum precision (decimals are shown if there is enough room). All earlier global formats are overridden.

3.10.3 MAXIMUM PRECISION FORMAT

Changes format at current co-ordinate to maximum precision, decimals are shown if there is enough room. This function only affects integer and two decimal place functions, other local formats are not changed.

Place the cursor at current co-ordinate. Type

'F7' 'F' 'M'

3.10.4 INTEGER FORMAT

Sets integer format at current co-ordinate. Any decimals are not rounded mathematically, they are just not shown in the display. This function only affects maximum precision and two decimal place formats, other local formats are not changed.

Place the cursor in the position which is to be changed. Type

'F7' 'F' 'I'

3.10.5 TWO DECIMALS FORMAT

Presents the value at current co-ordinate to two decimal places. This function only affects maximum precision and integer formats, other local formats are not changed.

Place the cursor in the co-ordinate which is to be changed. Type

'F7' 'F' '$'

3.10.6 LEFT ADJUSTING

Changes from right adjusted to left adjusted at the current position (co-ordinate). This function only affects right adjusted formats, other formats are not changed.

Place the cursor at the co-ordinate which is to be changed. Type

'F7' 'F' 'L'

3.10.7 RIGHT ADJUSTING

Changes left adjustment to right adjustment at the current position (co-ordinate). This function only affects left adjusted formats, other formats are not changed.

Place the cursor at the co-ordinate which is to be changed. Type

'F7' 'F' 'R'

3.10.8 INTEGER SYMBOL

Sets stars at the current co-ordinate in the same number as the integer value at the co-ordinate. (Subject to sufficient column space being available).

Place the cursor at the co-ordinate which is to be changed. Type

'F7' 'F' '*'

3.11 GRAPHIC FUNCTIONS

This function represents the values from any row or column as a bar chart against a user selected scale.

3.11.1 GRAPHICS ON THE SCREEN

Move the cursor to the current row/column. Type

'F7' 'E' 'G'

If a row is to be represented press **'R'** otherwise press **'C'** for column.

Give the upper and lower limits of the scale for the bars of the chart. Provide a title, maximum 39 characters.

The chart can be scrolled by using the CRSR '⬧' and '⬧' keys.

The function ends by pressing **'F7'**.

3.11.2 GRAPHICS PRINTED

All graphics can be printed by using the hardcopy function, 'F6'.

By scrolling the screen, as above, you can choose separate parts to be printed. You are also able to include two further lines of titling for printed graphic output which can be used to label the bars of the chart.

3.12 HELP TEXT FUNCTIONS

3.12.1 HELP TEXTS ON SCREEN

Commands are shown on the command line abbreviated as one character. These characters, together with a short explanation of each of the functions, can be displayed on the screen at any time whilst working.

Help screens are available at two levels – when the system command line is on the screen and afterwards when you have selected a command such as DISK COMMAND.

When you have the command line you need on the screen simply press:

'5'

When you have finished referring to the help screen pressing 'F7' will return the screen to its former state.

Alternatively, having found the command reference you require, simply press the relevant command key and that command will be executed. You will, of course, be returned to your original screen.

3.12.2 HELP TEXTS PRINTED

First choose the help screen you need so that it is on the screen (see above), then press:

'F6'

When the printout has finished simply press 'F7' for the screen to revert to its previous state, or select one of the command keys and that command will be executed.

3.13 CURSOR FUNCTIONS

3.13.1 MOVING THE CURSOR

Movement of the cursor is controlled by the two CRSR keys together with SHIFT.

3.13.2 MOVING THE CURSOR TOWARDS A1

The HOME key is used for fast cursor movements towards co-ordinate A1.

One press of **HOME** results in the cursor being moved to the upper left corner of the screen – or part of the screen if a window or split has been created.

A second press of **HOME** makes the cursor, no matter where it is positioned on the page, go to co-ordinate A1 of that page. This function has the same affect on the current page even in windows or split screens.

3.13.3 GO TO

The cursor can be moved to any co-ordinate on the current page by typing

'F7' 'F3'

Write the co-ordinate to which the cursor is to be moved and then press **'RETURN'**

3.13.4 'JUMPING', IN A SPLIT SCREEN

When the screen has been split either horizontally or vertically, the cursor can be moved between the two parts with the F2 key. It is not necessary to use F7, simply press

'F2'

When you wish to return to the other half press

'F2' once again

This function works the same way with a split window. When the cursor jumps from one part to another it returns to the last co-ordinate position of the cursor.

3.13.5 'JUMPING', BETWEEN PAGES

The F1 key makes it possible to jump between the two pages in the internal memory. It is not necessary to use F7, simply press:

'F1'

When you wish to return to the other page press

'F1' once again

When the cursor jumps from one page to another it returns to the last co-ordinate position of the cursor.

3.14 MATHEMATICAL FUNCTIONS

3.14.1 ORDER OF PRIORITY

CALC RESULT always calculates according to the normal mathematical laws. In the following list 1 has the highest priority, 11 the lowest.

Note that CALC RESULT corrects formulas before saving them – unnecessary brackets are removed, double minus signs are changed to positive and when a number of plus signs are written, only one remains.

1 Higher mathematical function references such as MIN, MAX, ABS and INT

2 Functions and characters within parenthesis

3 Exponent ↑

4 Multiplication and division * and /

5 Addition and subtraction + and –

6 Less than and greater than < and >
Not equal to and equal to <> and =
Equal to or greater than =>
Equal to or less than =<
Greater than or equal to >=
Less than or equal to <=

7 NOT
8 AND
9 OR
10 THEN and ELSE
11 IF

In general, the higher mathematical functions are followed by parenthesis containing the range of the expression. The colon character is used to describe the areas and each expression within the parenthesis is differentiated with a comma.

Note that in the IF THEN ELSE function if any of the co-ordinates give NA then the result will be given as NA even if the condition is true.

3.14.2 ALL THE MATHEMATICAL FUNCTIONS

All the functions are presented here in groups within which they all have the same structure. An example is given for each group.

GROUP 1

COUNT Gives the number of co-ordinates containing a constant or valid formula (without NA or error).

MAX Chooses the largest value within a given area

MIN Chooses the smallest value within a given area

MEAN Gives average value for a certain area

STDDEV Calculates the standard deviation of a given area

SUM Calculates the sum of a given area

Structure: FUNCTION (argument, argument, argument.....)

Example: MEAN(A1:A5,B1:B5)

GROUP 2

NPV To calculate the net present value

Structure: FUNCTION (per cent, argument: argument)

Example: NPV(.10,C1:G15)

GROUP 3

NA For a co-ordinate which is missing a value or a formula which refers to an invalid co-ordinate

PI Gives the constant π value

Structure: FUNCTION

Example: NA

GROUP 4

ABS, ARCCOS, ARCSIN, COS, EXP, FRAC, INT, LN, LOG10, RND, SIN, SQRT and TAN

Structure: FUNCTION (expression)

Example: SIN(A1+1*10/B7)

GROUP 5

IF THEN ELSE

Structure: IF expression THEN expression ELSE expression

Example: IF A1=10 THEN B1+2 ELSE 5

GROUP 6

OR, AND and NOT

Structure: FUNCTION within IF THEN ELSE

Example: IF A1=10 OR C1=5 THEN B1+2 ELSE 5

3.15 POSITION FUNCTIONS

3.15.1 AUTOMATIC CHARACTER REPEAT

Is used to repeat a character in a given co-ordinate.

If one wants to fill a co-ordinate with, for example, equal signs, type:

'F7' '_' '='

The current co-ordinate will be filled, irrespective of the column width, with equal signs.

3.15.2 BLANKING A CO-ORDINATE

Used to empty a co-ordinate.

Place the cursor at the current co-ordinate and type:

'F7' 'B'

3.15.3 MOVING A CO-ORDINATE

Place the cursor at current co-ordinate and type:

'F7' 'E' 'M' 'RETURN' 'RETURN'

Give the co-ordinate to which co-ordinate contents are to be moved. Type

'RETURN'

3.15.4 COPYING A CO-ORDINATE

Place the cursor at the required co-ordinate and type:

'F7' 'E' 'C' 'RETURN' 'RETURN'

Give the co-ordinate where the copy is to be placed. Type

'RETURN'

3.15.5 REPEATING A CO-ORDINATE

Place the cursor at the co-ordinate and type:

'F7' 'E' 'R' 'RETURN' 'RETURN'

Provide the target range, over which the selected co-ordinate are to be repeated ending each entry with **'RETURN'**. The entries can be made by cursor movements or by direct inputs of the co-ordinate positions.

3.15.6 SELF REFERENCES IN A CO-ORDINATE

This is used for creating new values at every calculation. To create, for example, a counter at A1 go to A1 and type:

'F7' 'R' 'M' "–1" 'RETURN' "A1+1" 'RETURN'

There will now be a zero in A1 with the formula on the command line. Every time the up ↑ key is pressed for a recalculation the value at A1 is increased by one. If you return to automatic recalculation the value will increase each time an input is made. You can also test this with the automatic recalculation feature and recalculate a number of times.

Note: because of the way CALC RESULT works it will always calculate your self-reference as it is input – this is why we used minus one for the starting value. When the formula was accepted CALC RESULT calculated the value to be zero.

3.16 PROGRAM FUNCTIONS

3.16.1 LOADING THE PROGRAM

Switch on all the machines **except** for the Commodore 64.

Insert the CALC RESULT cartridge at the Commodore 64.

Switch on the Commodore 64.

When 'INSERT DISK' shows on the screen, place the program disk you work with in drive (0 when using a double disk drive).

When loading is finished, CALC RESULT will show its format on the screen.

If the format does not appear, remove the disk, switch off the CPU, replace the disk and go through the same procedure again.

Remember: to be able to use the CALC RESULT commands you have to press the 'F7' key.

3.16.2 ENDING THE PROGRAM

CALC RESULT is returned to CBM basic by typing

'F7' 'Q' 'Y'

All work currently in memory or on the work area is saved on the program disk. When used again your program will start up with this data. If you wish to clear your program disk – for security reasons, say – then you must first use the Erase all pages function 'F7' 'P' 'E'.

3.17 ROW/COLUMN FUNCTIONS

3.17.1 MOVING AN AREA (MATRIX)

A specified area can be moved within the current page. As an example we choose to move the area between A1 until C5 to J1.

Fill the area A1 – C5 with some characters and values.

Place the cursor at the co-ordinate which is the start position (here A1). Type:

'F7' 'E' 'M' 'RETURN'

Give the last co-ordinate of the area you want to move either through cursor movement or direct inputting of the co-ordinate. Then press

'RETURN'

Now input the starting co-ordinate of the area to receive the moved area – press

'J1' 'RETURN'

The original positions A1 to C5 are now empty. Move the cursor to J1 (use GO TO) to check that the movement has been made.

3.17.2 COPYING AN AREA (MATRIX)

A specified area can be copied within the current page. As an example we choose to move the area between A1 until C5 to J1.

Fill the area A1 – C5 with some characters and values.

Place the cursor at the co-ordinate which is the start position (here A1). Type:

'F7' 'E' 'C' 'RETURN'

Give the last co-ordinate of the area you want to copy either through cursor movement or direct inputting of the co-ordinate. Then press

'RETURN'

Now input the starting co-ordinate of the area to receive the copied area – press

'J1' 'RETURN'

Move the cursor to J1 (use GO TO) to check that the copy has been made.

3.17.3 REPLICATING AN AREA

This function is used to copy the content of several positions to various different places on the current screen. While it is possible to copy a single position, row or column it is not possible to copy a row to a column or vice versa. Nor is it possible to replicate a matrix.

As an example of this function we will place rows of stars over the whole page. Start by filling A1 and A2 with stars. Place the cursor at A1. Press

'F7' '–' '*' '⬇' 'F7' '–' '*' '⬆'

These stars will now be replicated to row 10. Press

'F7' 'E' 'R'

Give the origin of the area of the stars we are going to replicate.

'RETURN' '⬇' 'RETURN'

Now input the area they are to fill by typing

"A10" 'RETURN' "I10" 'RETURN'

Having given both SOURCE RANGE and TARGET RANGE, when there is a reference to another position, the question ABSOLUTE OR RELATIVE will be asked. You have to decide if the positions are RELATIVE or not. Answer the question with **'A'** or **'R'**.

3.17.4 INSERTING A ROW OR COLUMN

This function inserts an empty row or column at any place on the screen. To insert a row, type:

'F7' 'E' 'I' 'R'

Everything at and below the current row is moved one step downwards.

If a column is to be inserted, type:

'F7' 'E' 'I' 'C'

Everything at and to the right of the current column is moved one step to the right.

The formulas that are affected by the movement are adjusted to the new positions or changed to NA.

Note that it is not possible to insert a column if there is any data in the last column (BK), without first moving the contents of or blanking out the BK column. The same qualification is true when trying to insert rows if row 254 has been used.

3.17.5 DELETING A ROW OR COLUMN

This function enables you to remove a row/column from any position on the screen.

To create an example write the label **"A1"** at A1, **"B1"** at B1 and so on to fill the area as far as C5. We will now erase row 3.

Place the cursor at any position on row 3 and type:

'F7' 'E' 'D' 'R'

Everything below the cursor is moved one step upwards, this means that row 4 has replaced row 3. Thus row 3 has been deleted.

To delete a column: place the cursor at any position on column B and type:

'F7' 'E' 'D' 'C'

Everything to the right of the cursor is moved one column to the left an the original contents of column B are erased.

Note that formulas which contain references to a deleted row or column will be changed to LABELS and any references to them will become **NA.**

NOTE! The last column/row can NOT be deleted. Here you can replicate a blank co-ordinate instead.

3.18 RECALCULATION FUNCTIONS

3.18.1 AUTOMATIC/MANUAL RECALCULATION

When CALC RESULT is started automatic recalculation begins as well as that all positions that are relative to each other will be calculated. A recalculation will be undertaken each time a formula is entered or changed.

To change from automatic to manual recalculation type:

'F7' 'R' 'M'

When this function is chosen recalculation will only take place at the position of the cursor. This is useful when you are going to change several values on a page and every change affects other positions. After all the changes have been done you can change BACK to automatic recalculation to see the new results. Type

'F7' 'R' 'A'

Note that the calculation order remains with the current page until it is changed.

3.18.2 RECALCULATION BY ROW/COLUMN

When CALC RESULT is started it will calculate columnwise. If you want to change that type:

'F7' 'O' 'R'

and it will now calculate row by row (starting from A).

When you want to change it back to columnwise again, type:

'F7' 'O' 'C'

Note that the calculation order remains with the current page until it is changed.

3.18.3 UNDERTAKING RECALCULATION

You can undertake recalculation at any time by pressing the ' ↑ ' key.

3.18.4 UNDERTAKING MULTIPLE RECALCULATIONS

To undertake a number of recalculations type:

'F7' 'R' 'N'

Give the number of recalculations you require (1 – 999). If, for example, you want 25 type

"25" 'RETURN'

These recalculations can be stopped by pressing the 'F7' key.

3.18.5 GLOBAL RECALCULATION

This function makes it possible to undertake recalculations which involve several pages.

Which pages and in what order they will be recalculated can be specified, if for example the pages 2, 18 and 1 are to be recalculated, and in that order. Press

'F7' 'G' 'R' '2' 'RETURN' "18" 'RETURN' '1' 'RETURN'

'RETURN'

3.19 PAGE FUNCTIONS

3.19.1 ADDING PAGES

Page adding can be performed in two different ways, either by using the A function or the + function.

A: Here CALC RESULT compares labels and formulas from the different pages and checks that they are alike. Type

'F7' 'P' 'A'

If all pages are included press **'Y'** otherwise **'N'**

Input the page numbers that are to be included. The page numbers are separated by **'RETURN'** and the input ends by pressing **'RETURN'** twice.

+: Here all formulas are regarded as constants and no comparison of labels is made. Type:

'F7' 'P' '+'

Input the page numbers that are to be included. The page numbers are separated by **'RETURN'** and the input ends by pressing **'RETURN'** twice.

For further information see ADDING PAGES Section 2.5.6.

3.19.2 GETTING A PAGE FROM WORK AREA

This function is used to get a page from the work area into the internal memory (RAM). If there are two pages in the internal memory when a new page is fetched CALC RESULT automatically moves to the work area on the page where the cursor is positioned.

A new page can be fetched in two different ways:

1
Type **'F7' 'P' 'G'**

Give the page number (1 – 32) and then press 'RETURN'

2
Type **'F7' 'P' 'G' 'RETURN'**

CALC RESULT now shows the library of the work area – ie all pages that contain anything. You can scroll the directory with the ➡ key.

Place the cursor over the page you want to get and then press:

'RETURN' 'RETURN'

3.19.3 GETTING A PAGE FROM DATA DISK

A page is fetched from the data disk in the following way type:

'F7' 'D' 'L'

Give the file name, see GETTING DATA FROM DISK in Section 2.2.1.

ALL PAGES ? Y/N should be answered

'N'

Note that when a single page is fetched it will be placed on the current page on the screen and then take that page number.

3.19.4 COPYING PAGES

To help avoid mistakes when copying pages CALC RESULT expects that the page to be copied is on the screen. The page you are to copy onto will also be moved to the screen so you can check its content to avoid copying over data.

Place the page which is to be copied on the screen, see section 3.19.2 and, when ready, type:

'F7' 'P' 'C'

Give the number of the page on which you want the copy made. If, when you have seen this page, you want to continue with the copy, press

'Y' otherwise **'N'** to abort the copying

3.19.5 NEGATING A PAGE

By using this function you can make negative all the values on the current page on the screen. This means that this function changes positive values to minus ones and vice versa. The advantage of this function is if you want to be able to subtract certain pages when using the page adding functions.

Note however that it is mathematically wrong to negate a page which contains COS, LN and LOG10 as these demand positive values.

Type

'F7' 'P' 'N'

3.19.6 DELETING A PAGE FROM WORK AREA

With the cursor on the page to be deleted type:

'F7' 'P' 'D' 'Y'

Note that this function erases the current page both in the internal memory and on the work area.

Also note that clear page (F7 CLR Y) works in the same way.

3.19.7 DELETING A PAGE FROM DATA DISK

A page is deleted from the data disk as follows, type:

'F7' 'D' 'E'

Give the file name, see Section 2.1.12 and then press
'RETURN' 'N' followed by the page number

3.19.8 CLEARING A PAGE

With the cursor at the current page type:

'F7' 'CLR' 'Y'

Note that this function clears the current page both in the internal memory and in the work area.

Also note that page delete (F7 P D) works in the same way.

3.19.9 ERASING ALL PAGES

Type: **'F7' 'P' 'E'**

You will be prompted to confirm that you really do want to erase the work area. Note: this function erases all the contents of any pages that have been used and resets CALC RESULT. It is not possible to recover data. Use this function only after checking that you have saved your data on the data disk.

It is good practise to use this function at startup in case you or anyone else have inadvertantly used a page you cannot see.

3.19.10 INCREASING INTERNAL MEMORY (RAM)

When you have two pages in the internal memory (RAM) at the same time you can increase the memory available by moving one of them to the work area.

Assume that you have pages one and two in RAM with page two on the screen. To make more memory space for page two move page one to the work area by typing:

'F7' 'P' 'P'

The function moves that page which does not contain the cursor to the work area.

3.19.11 RENUMBERING A PAGE

Using this function you are able to change the page number of the current page.

To help avoid mistakes when renumbering pages CALC RESULT expects that the page to be renumbered is on the screen. If you do not have this page on the screen then fetch it, see section 3.19.2.

With the cursor on the current page type:

'F7' 'P' 'R'

Input the new page number and then press

'RETURN'

3.20 DISK FUNCTIONS

3.20.1 CATALOG CONTENTS

To see which files are on a data disk look at the catalog for the disk. Place the disk you want to look at in drive 1 (left). Press:

'F7' 'D' 'I'

This initializes the drives. Press:

'F7' 'D' 'C'

CALC RESULT shows the catalog on the screen. If the whole library cannot be shown you can scroll it using the ➥ key.

3.20.2 PREPARING A DISK (for double disk drive)

To make it possible for CALC RESULT to store data on a disk it must be prepared (formatted). With CALC RESULT this is done in the following way:

Place the disk which is to be prepared in drive 1 (left) and then type:

'F7' 'D' 'N'

Input a name for the disk using a maximum of 12 characters not including ' " : ; , # * ? $ and then press **'Y'**

It takes about eight minutes to prepare a new disk.

NOTE! if you are re-using a disk this formatting process ERASES all the data on the disk.

3.20.3 INITIALIZING A DISK

If CALC RESULT cannot 'read' the disk for any reason it will indicate the fact with the code 21 for BAD DISK. In such a case you should first try to initialize the disk.

Initialization can also be required when a disk has been taken out of a drive and then put back again. Type:

'F7' 'D' 'I'

Both disks will be initialized (using a double disk drive). If your disk still does not read then use a backup copy.

3.20.4 COPYING A DISK

This function is used to create backup copies of your data and program disks. Place a write protect label over the notch of the disk you are going to copy and place it in DRIVE 0 (right) and the disk which is to receive the copy in DRIVE 1 (left).

NOTE! It is important that the original disk has a write protect on it because if the disks are placed in the wrong drives your data will be destroyed.

Type **'F7' 'D' 'B' 'Y'**

After about 8 minutes you will have two disks that are identical.

If you use a single disk drive, see section 1.4.3. for backup instructions.

3.21 SCREEN SPLIT FUNCTIONS

3.21.1 A WINDOW ON THE SCREEN

A window is created on the screen in the following way: place the cursor in the co-ordinate that is to be the upper left hand corner of the window. Type

'F7' 'E' 'W'

If you want to change the start co-ordinate then move the cursor manually or by using GO TO. It is also possible to just rewrite the co-ordinate.

When you are satisfied with the start co-ordinate press **'RETURN'**

Now give the lower right corner of the window. It works the same way as specifying the upper left.

If you want to change the start co-ordinate at this stage, press **'DEL'**, and start from the beginning again.

When you are satisfied with the end co-ordinate press **'RETURN'**.

You can use both SPLIT and TITLE within the window, see the following notes.

The window is removed by typing **'F7' 'L'**

3.21.2 TITLE AT THE FIRST COLUMN

In the first column of the screen it is useful to be able to display text titles with a differant column width to the rest of the screen. It is also helpful for this column to be fixed in position when scrolling the page.

To create a title column, scroll the page until the column is at the left edge of the screen and then type:

'F7' 'E' 'T'

The title is removed by typing **'F7' 'L'**

3.21.3 SPLIT SCREEN

The screen can be split both horizontally and vertically. With a horizontal split, the axis that shows the split will be placed at the row above the cursor and with a vertical split, the axis will be placed at the column to the right of the cursor.

Note. It is not possible to make the split closer than three rows from the X-axis or three columns from the y-axis.

The split is done in the following way: place the cursor at the row or column where the split is to be made. Type:

'F7' 'E' 'S'

Indicate how the screen is to be split by pressing **'V'** for vertically or **'H'** for horizontally.

The split is removed by typing:

'F7' 'L'

3.22 PRINTOUT FUNCTIONS

Depending on your needs you can choose between three different types of printout of CALC RESULT data. Check that your printer is connected and has an adequate supply of paper. If you create a format wider than the selected paper width the rows will 'wrap round'. You can, of course, access the User Register and change the printer details and print on wide paper.

3.22.1 HARDCOPY

This function gives you a screen dump of everything except the first three lines of the screen. Position the data you want to print on the screen and press:

'F7' 'F6'

Note that when printing graphics you only need press 'F6' without using the F7 key.

3.22.2 DIRECT PRINTOUT

Direct printout enables you to choose part of the current page to print with the same format as the global format for that page. Press:

'F7' 'E' 'P' 'D'

Now give the area to be printed by inputting the co-ordinate that is the upper left corner of the area (FROM), press **'RETURN'** and then, in the same way, the lower right (TO).

3.22.3 FORMATTED PRINTOUT

Formatted printout gives you extensive control over the output of the data from the page. You can define the number of rows that the printout will include and the width of the columns to be included. The width of the columns can vary between 1 and 255 characters. Press:

'F7' 'E' 'P' 'F'

Print formats can be saved – if you are using an old format press **'O'** and **'N'** if it is not.

If it is an old format then give the NAME and then press **'RETURN'**

If you are creating a new format, give the number of rows you want to print by inputting the first and last row numbers. Follow each input with **'RETURN'**.

Input the letter of first column of the printout, for instance A, press **'RETURN'**, give its column width followed by **'RETURN'**.

Repeat this for each column that the printout is to include. End with **'RETURN'**.

If you want to save the format answer **'Y'** otherwise **'N'**.

Give the format a name (max 12 characters not including ' " : ; , # * ? $).

3.23 FORMULA REFERENCES

3.23.1 MOVING RELATIVE REFERENCES

Clear the screen and then input some formula containing references.

Move the cursor to A1 and type:

'1' '♦' "A1+1" 'RETURN'

'F7' 'E' 'R' 'RETURN' 'RETURN' '♦' 'RETURN' "D1" 'RETURN' 'R'

There is now a row where all the values are dependent on the value at A1, therefore they are relative. What will happen to these references if the formulas are moved to other co-ordinates?

Try by moving B1 and C1 to B5 and C5 respectively. With the cursor at B1 type:

'F7' 'E' 'M' 'RETURN' '♦' 'RETURN' "B5" 'RETURN'

When you move the cursor to the new co-ordinates you will see that the formula at B5 still refers to A1 but the formula at C5 has been changed, it now referes to B5. If you move the cursors to D1 you will see that the formula there has also been changed, it now refers to C5.

Move the cursor to C5 and press:

'F7' 'E' 'M' 'RETURN' 'RETURN' "D5" 'RETURN'

The formula at D5 is unchanged but at D1 you will find that the formula there now refers to D5.
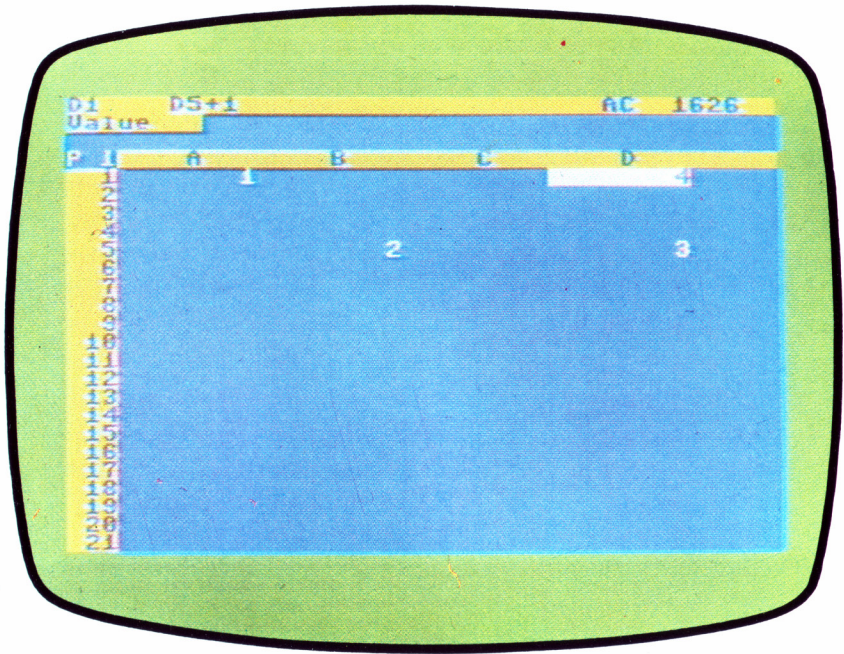
This works in the same way when moving formulas which contains absolute references. It is not possible to move a row to a column or vice versa.

3.23.2 COPYING ABSOLUTE REFERENCES

Clear the screen, move the cursor to A1 and type:

"1000"

Now move the cursor to C1 and type:

"A1–100" 'RETURN'

Repeat this formula from C1 to C10 by typing:

'F7' 'E' 'R' 'RETURN' 'RETURN'
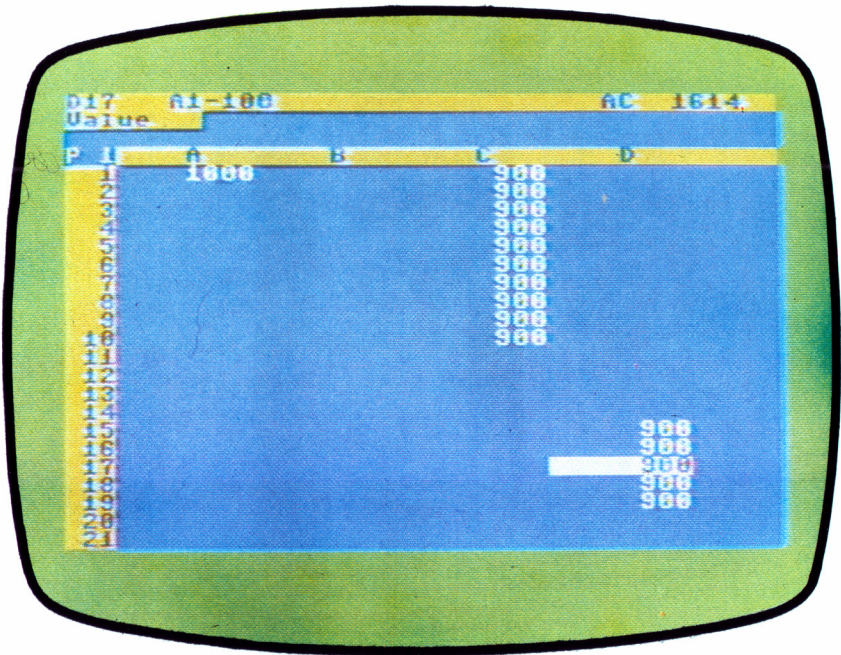
'↓' 'RETURN' "C10" 'RETURN' 'A'

When you look at the formulas you will see that they all refer to A1, they are absolute.

See what happens if a part of the column is copied to another column.

Move the cursor to C4 and type:

'F7' 'E' 'C' 'RETURN' "C8" 'RETURN' "D15" 'RETURN'

When you examine the D column you will see that the formulas look the same, the all refer to A1.

Note that it works the same way when copying formulas which contain relative references. It is not possible to copy a row to a column or vice versa.

3.23.3 REPLICATING REFERENCES

The two earlier reference examples showed how to use the REPLICATE function for replicating formulas with relative or absolute references. This example shall show how it works when both relative and absolute references are involved.

Clear the screen and type :

"10" '↑' "20" '↑' '↓' "A1+10+B1" 'RETURN'

'F7' 'E' 'R' 'RETURN' 'RETURN' '↓' 'RETURN'

"A10" 'RETURN' 'R' 'A'

When you have examined the formulas you will find that the A co-ordinate is relative and the B co-ordinate absolute. Now we shall replicate a part of this column.
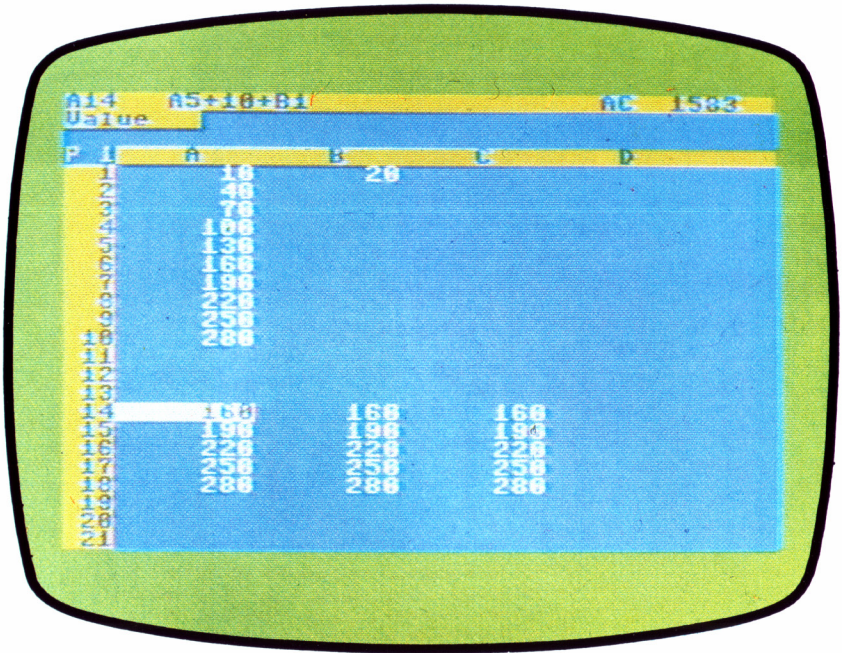
Move the cursor to A6 and type:

'F7' 'E' 'R' 'RETURN' "A10" 'RETURN'

"A14" 'RETURN' "C14" 'RETURN'

As A5 is the start value for all columns being replicated it must be absolute. B1 on the other hand is absolute all the time. Type: **'A' 'A'**

The following A-references will be relative, type:

'R' 'A' 'R' 'A' 'R' 'A' 'R' 'A'

Move the cursor to A14. As you can see the formula there is simular to the one at A6 (A5+10+B1), it is absolute. If you move the cursor to B14 and C14 you will see the same formula. You will notice the difference when you examine the others. Here the A reference has been related to its surrounding co-ordinates.

APPENDICES

A DATA INTERCHANGE FORMAT (DIF)

This format is specially designed to store data files in a way that makes them readable by other commercial programs.

This is a considerable advantage when one has for example one program that stores information and another that plots information. The usual problem is that most programs store information, from its own point of wiew, in the best possible way. Very often information stored by one program is only accesible by just the program which stored it.
Problems like this are solved by using the DIF format.

CALC RESULT is able to save your data in the DIF form, this also means that CALC RESULT can read data that has been saved in the DIF format by other programs. See section 3.8 about loading and saving files.

For more information on DIF please write to:

Data Interchange Format Clearinghouse
P.O Box 527
Cambridge MA 02139
USA

B ERROR MESSAGES

B.1 USER ERRORS

Error Code	Cause	Remedy
1	Attempting to split the screen in an illegal position eg vertical split at A0	Refer to SPLIT SCREEN section 3.21.3
2	Attempting to create a window that is too big/small	See A WINDOW ON THE SCREEN section 3.21.1
3	Illegal page number	Change to legal 1 – 32
4	Input of an illegal position, eg A0 or B1D12, when using the GO TO function	Change to valid position, A1 – BK254
5	Attempting to get a large page to RAM when there is already a page there	Get an empty page (F7 P G) and then move the unwanted page (F7 P P)
6–9	Unused error codes	

B.2 DISK ERRORS

20–75	These are the same references as given in your disk manual	

B.3 FORMULA ERRORS

100	Attempting to overwrite an earlier input formula (All formulas are write protected	Write the formula in another postion or delete the curent formula
101	Formula expressed in too complicated a manner	Put the formulain several positions If it uses IF THEN ELSE try to use OR, AND and NOT
102	Syntax error eg THEN argument IF argument ELSE argument	Correct the syntax in this example to: IF..THEN..ELSE...
103	Too many arguments in a multiple (max 8)	Put the formula in several positions
104	Attempting to mix areas with arguments eg (A1:C5+12)	Here it should be: (A1:C5)+12
105	Attempting to input a multiple argument as an argument within another argument function eg SUM(A1:E3,MIN(B1:D2))	Erase the inner multiple argument function
106	NPV is short of arguments (must have at least two)	Input missing argument
107	First argument within NPV is wrong (Should be percent, like .13 for 13 %)	Change the first argument to valid percentage value.

Calc Result