EASYCALC
SPREADSHEET

EASYCALC
USER GUIDE

ECL 6440

COMMENTS AND ERRATA REQUEST

TO THE READER

To the best of our knowledge, this manual is technically and typographically correct at the time of going to print. However, no matter how fine we make the sieve for catching errors, sometimes a few slip through.

If you notice any mistakes, we would be grateful if you would notify us of them. Comments, criticisms and suggestions are also earnestly solicited.

Yours sincerely,

Chris Maciejewski

Technical Author

COMMODORE BUSINESS MACHINES (UK), LTD.
1 Hunters Road
Corby
Northants
NN17 1QX
ENGLAND

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SECTION ONE
AN INTRODUCTION TO EASYCALC

1.1 INTRODUCTION

EASYCALC enables you to record and manipulate numeric information using your COMMODORE 64 computer system.

EASYCALC combines the functions of pencils, paper and calculator in one package. The area on which you enter information is analogous to a sheet of paper and hence is called a "worksheet". This is divided into columns and rows. The screen acts as a "window" through which you can view any part of the worksheet. Using your own formulae, or a formula incorporating one of the special EASYCALC functions, calculations are performed on the entries you make and the results are placed in selected areas of your worksheet. This information may be stored on diskette and/or printed out via your COMMODORE printer.

1.2 INTRODUCTION TO THIS MANUAL

The EASYCALC manual is divided into ten sections, each of which is outlined below:

SECTION ONE - AN INTRODUCTION TO EASYCALC
This section contains an introduction to EASYCALC and the EASYCALC manual and an explanation, in broad terms, of how EASYCALC works. The section also contains a list of the precautions to be followed in order to prevent system damage and loss of information. A list of the equipment required, and the set-up instructions are also given.

SECTION TWO - LEARNING TO USE EASYCALC
This part of the manual contains a step-by-step training guide to illustrate how EASYCALC may be used in a typical application.

SECTION THREE - A GUIDE TO DESIGNING YOUR OWN APPLICATION
This section contains helpful hints to assist you when setting up your own EASYCALC application.

SECTION FOUR - INTRODUCING THE OPERATING SECTION
Here a brief outline of each EASYCALC function is given. The functions are listed in the order which they might be used in typical applications.

SECTION FIVE - PREPARING YOUR SYSTEM
This part of the manual describes how to design a worksheet, how to load the EASYCALC program and how to prepare (format) a diskette to receive information.

SECTION SIX - ENTERING INFORMATION
Section Six shows how to move the cursor bar and how to enter information on the worksheet. Instructions are given to enable you to set up formulae and then use them to perform calculations on the information entered.

SECTION SEVEN - MODIFYING INFORMATION
This section contains information on how to modify your worksheet. Commands that enable you to insert or delete information are explained. Instructions on moving information and performing recalculations are also covered.

SECTION EIGHT - THE T COMMAND
Section Eight covers the "T", or "TRANSFER" command. This command is used to transfer information between the computer, and one of its peripherals. Commands that allow you to save, load and print worksheets are explained.

SECTION NINE - EASYCALC FUNCTIONS
EASYCALC contains thirty-three built-in functions which may be used as part of a formula. These functions can be divided into four groups: Mathematical functions, Trigonometrical functions, Statistical functions and Boolean functions.

SECTION TEN - EXAMPLE APPLICATIONS USING EASYCALC
This section contains illustrations of three typical EASYCALC applications including both domestic and business uses.

APPENDIX A - KEYBOARD NOTES
This appendix contains instructions for the control of the cursor and the correction of typing mistakes on your COMMODORE 64 screen.

APPENDIX B - CREATING AN EASYSCRIPT FILE
When you have completed your worksheet, you may save it as a file that can be read by the EASYSCRIPT word processor. Using this facility you can incorporate your worksheets within letters and reports produced with EASYSCRIPT.

APPENDIX C - ERROR MESSAGES
A list of error messages that you may encounter, their meanings and probable causes are given in this Appendix.

GLOSSARY
Contained here is a list of the definitions of terms used in this manual.

1.3 HOW TO USE THIS MANUAL

If you are a first time user of EASYCALC, you should read the overview in Section One and then carry out the procedures in the Training Section (Section Two). Once you have become fully conversant with all the EASYCALC functions, you may design and implement your own application referring to the instructions contained in Sections Four thru Nine, the Operating Section.

1.4 CONVENTIONS

Within this manual, certain abbreviations and conventions are used to represent various functions and keys. They are as follows:

SHIFT   hold down the SHIFT key

SHIFT & CLR HOME   hold down the SHIFT key and
                                                 press the CLR/HOME key.

Throughout the Training Section, anything that you are to press or type on your computer is shown in italics.

1.5 AN OVERVIEW OF EASYCALC

1.5.1 INTRODUCTION

This section contains an explanation, in broad terms, of how EASYCALC works and what its capabilities are. Detailed descriptions of each function are not given here but may be found in the Operating Section of this manual.

1.5.2 WHAT IS EASYCALC?

EASYCALC is a means for recording and manipulating numeric information using your COMMODORE 64 computer system. The program takes the place of the traditional trio of paper, pencil and calculator. The screen acts as the paper, the keyboard is your pencil and the 64 is the calculator. No knowledge of, or experience with, computers is required for you to be able to utilise the features that EASYCALC provides.

1.5.3 HOW INFORMATION IS ENTERED

When you load the EASYCALC program, a "worksheet" is displayed. This area is divided into columns and rows. There are 254 rows and 63 columns. Initially, each column is nine characters wide. The width of each column may be adjusted at any time from between 3 and 37 characters. Note that this does not affect the information that the columns previously contained. The position in which you wish to enter information is selected by moving a one-column wide cursor bar into that position on the screen using the cursor control keys. The information is then entered using normal typing procedures.

1.5.4 HOW CALCULATIONS ARE MADE

Calculations are performed in three stages. First you select the position on the worksheet where the result of the calculation is to appear. Having done so, you then define the formula you wish to use incorporating your own or one of the pre-defined functions contained in the EASYCALC library. By pressing a single key, EASYCALC then performs the calculation(s).

1.5.5 HOW INFORMATION IS STORED

When a worksheet is complete, it may be stored on a diskette and recalled and updated when required.

1.6 EQUIPMENT REQUIREMENTS

1.6.1 THE HARDWARE

The EASYCALC program is designed to be used with a COMMODORE 64 computer system. This system consists of the following elements:

1. A COMMODORE 64 computer.
2. A COMMODORE 1541 Disk Drive Unit and connecting cable.
3. A COMMODORE printer and connecting cable.
4. A suitable television set or monitor.
5. Blank diskettes for data storage.

NOTE

All the instructions in this manual refer to the use of a single disk drive unit. If you are using a dual disk unit, use drive Ø of this device when instructed to insert a diskette into the drive.

1.7 PRECAUTIONS

EASYCALC is easy to use and relatively foolproof. However, some simple precautions must be observed to protect the information in your system from being distorted or destroyed.

1.7.1 THE WORKING ENVIRONMENT

In order to gain maximum efficiency and facilitate trouble-free operation, your COMMODORE 64 computer system requires a controlled working environment. Avoid excessive heat, smoke or dust. What is comfortable for you is also satisfactory for the computer. A well regulated power supply is essential, as any sudden increase or decrease in power will adversely affect the smooth running of your computer system. If you suspect that this is likely to occur, your COMMODORE dealer can analyse the problem and recommend solutions.

1.7.2 CARE OF DISKETTES

Diskettes must be handled with care. The following rules must be obeyed in order to protect the information stored from being distorted or destroyed.

1. Keep a diskette in its storage envelope whenever it is not in the drive unit.

2. Store all diskettes in a diskette library case or other suitable rigid container.

3. NEVER leave a diskette on top of the drive unit.

4. Keep diskettes away from magnets and magnetic fields such as those generated by transformers, electric motors, loudspeakers and telephone bells.

5. Do not write on a diskette jacket or label with a lead pencil or ball-point pen. Use a felt-tip pen or fill out the label before attaching it to the diskette.

6. Do not expose diskettes to excessive heat or sunlight. The recommended temperature range for the storage and use of diskettes is 10 to 52 degrees C (50 to 125 degrees F).

7. Do not touch the diskette surface or centre hole. Hold a diskette only on the encased area.

8. Do not attempt to clean a diskette. Abrasion results in the loss of stored information.

9. Do not turn the drive unit on or off whilst a diskette is in place.

10. Gently insert a diskette into the drive unit. Rough handling or forcing may damage the centre hole.

11. Do not remove a diskette whilst a program is running.

12. Never remove a diskette from the drive unit whilst the red drive-active indicator light is lit or while the disk unit is whirring.

13. Never bend a diskette. Always keep it flat.

14. Do not attach notes to a diskette with a paper clip.

1.8 GETTING STARTED

1.8.1 CONNECTING THE SYSTEM

The COMMODORE 64 computer system must be connected as shown in Chapter 1 of your COMMODORE 64 User Manual. Ensure that each component is switched off before connecting it to the mains supply.

1.8.2 TURNING ON THE COMPONENTS

1.8.2.1 The Hardware

The components of the EASYCALC system should be turned on in the following order:

1. T.V. or monitor
2. computer
3. disk drive
4. printer (if used)

1.8.2.2 Problems that may arise.

If any component of the system does not come on, or the screen display is not as shown, on page 7 of your COMMODORE 64 User Manual, turn the system off. Ensure that the cables and mains supply are properly connected and try again. If the trouble persists, consult your COMMODORE dealer.

1.8.3 THE EASYCALC SOFTWARE

The EASYCALC package is supplied on a diskette. Since this diskette cannot be duplicated, two copies are provided. Further copies, if required, may be obtained from your COMMODORE dealer.

1.8.4 LOADING EASYCALC

To begin using EASYCALC, first remove the EASYCALC program diskette from its protective sleeve. Insert the diskette into the drive unit ensuring that the label on the diskette is facing up and that the square notch is to the left. Gently push the diskette into the drive and close the disk drive door.

To load the EASYCALC program type:

LOAD ":★",8,1

and press RETURN.

Note that the RUN/STOP key cannot be used to load the program.

The red disk drive light comes on for a few seconds and the drive unit whirs quietly. The following sequence of messages appears:

SEARCHING FOR ★

LOADING

The EASYCALC program is in two parts. The colour of the border surrounding the screen changes as the first part of the program is loaded. After a brief delay, the EASYCALC logo is displayed together with the word "LOADING". The second portion of the program is then loaded into the 64. After a few minutes, the EASYCALC worksheet is displayed. This is shown in Figure 1-1.
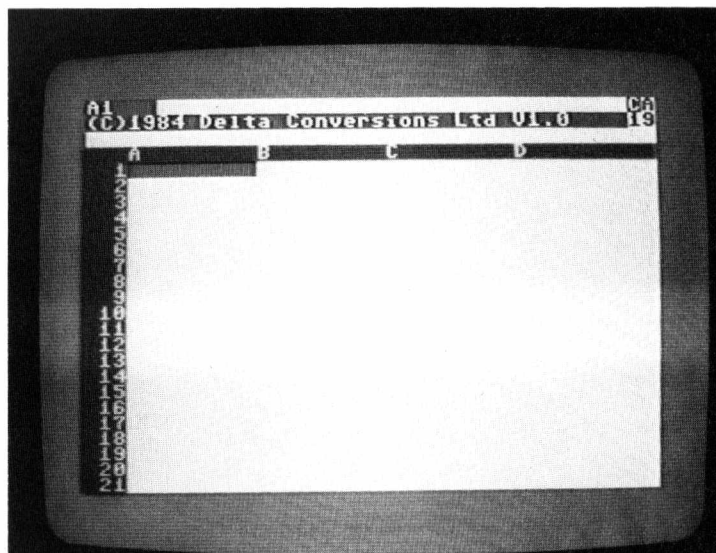
FIGURE 1-1 THE EASYCALC WORKSHEET

1.8.5 TURNING THE SYSTEM OFF

Ensure that the drive unit is not whirring. Push the drive door inwards and then let it rise to the open position. Remove the diskette, place it in its protective sleeve and store it in a safe place.

Switch off the equipment in the reverse order from that used when turning it on, i.e. the printer (if used), the drive unit, the computer, and finally the T.V. set or monitor.

<div align="center">

WARNING
DO NOT TURN THE SYSTEM OFF BEFORE REMOVING
THE DISKETTE FROM THE DRIVE UNIT.

</div>

1.9 SUMMARY

EASYCALC is a computerized system for the entry, storage, retrieval, manipulation and analysis of numeric information. It may be used to produce results based on actual values or in a "what if" situation, i.e. forecasting what results would occur based on theoretical values.

From the overview, you can see that EASYCALC enables numeric information to be manipulated quickly and easily. Because you decide how your information is to appear, you can tailor EASYCALC to meet your own particular application. This, together with its speed of operation, makes EASYCALC a powerful and effective accounting tool.
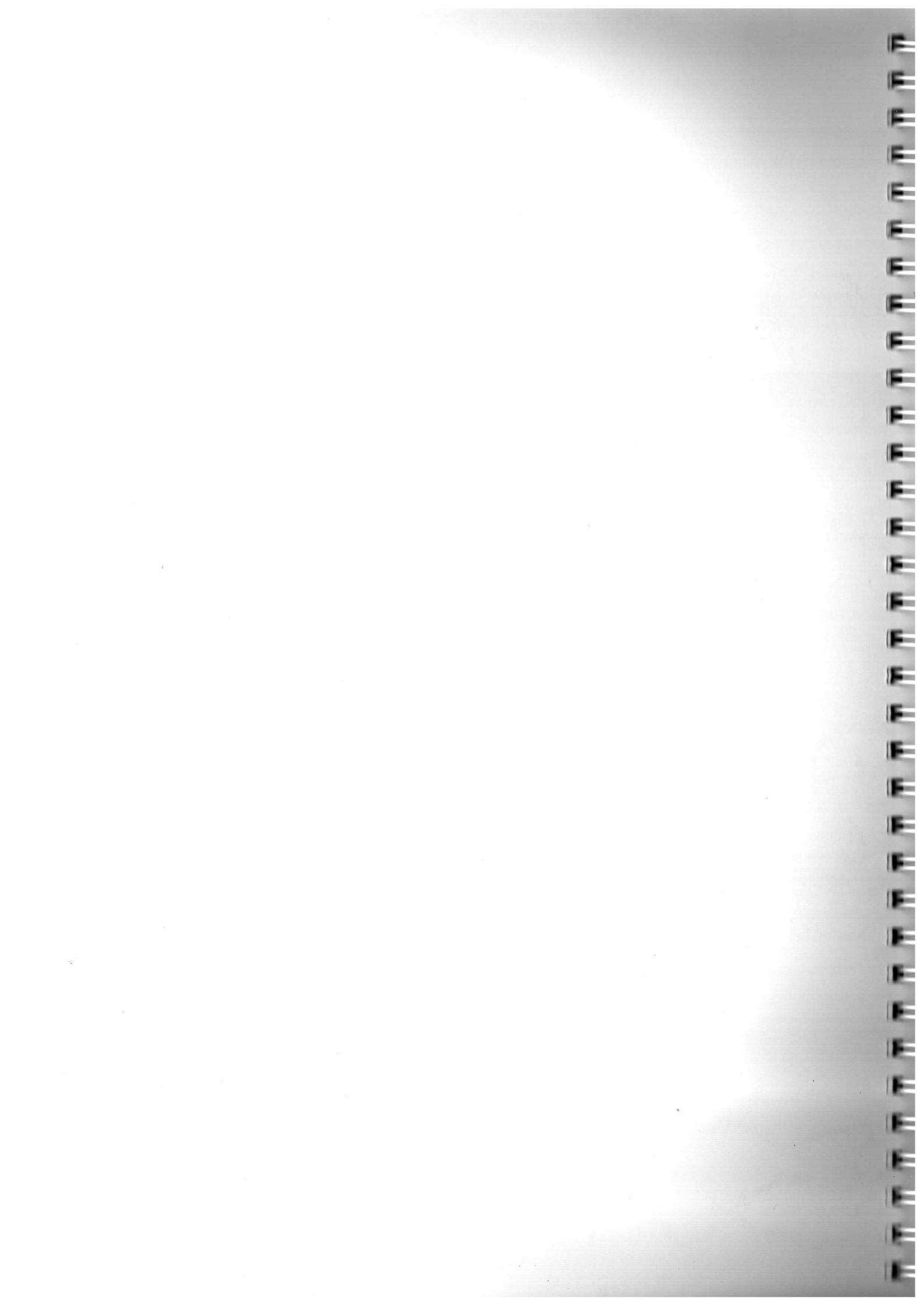
Training
Section

SECTION TWO
LEARNING TO USE EASYCALC

2.1 INTRODUCTION

The following section is designed to train you in the operation of EASYCALC by means of a step by step guide through a typical application. Not all the EASYCALC commands are included in this section, only those that are most common, or useful.

2.2 THE EXAMPLE

Suppose you wish to open a savings account making regular, automatic deposits. Before doing so, you need to prepare a budget for the next twelve months in order to estimate how much money will be available for savings after you have paid all your necessary expenses. This can be done using EASYCALC. In addition you will be able to see how much your savings will be worth at the end of the first year.

2.3 PREPARATION

2.3.1 TURNING ON THE SYSTEM

Read the precautions in Section 1.7 and follow the instructions in Section 1.8 before turning on your COMMODORE 64 computer system.

2.3.2 CORRECTING TYPING MISTAKES AND USING THE CURSOR

Appendix A contains instructions for the use of the cursor control keys and includes the techniques required for correcting typing mistakes on the 64 screen. If you are not yet familiar with the use of these keys, carry out the exercises contained in Appendix A before proceeding with this section.

2.3.3 LOADING EASYCALC

Insert the EASYCALC program diskette into the drive unit ensuring that the label on the diskette is facing up, and that the square notch is to the left. Gently push the diskette into the drive and close the disk drive door. To load the EASYCALC program, type:

LOAD":★",8,1

and press *RETURN*.

The red drive light comes on whilst the drive whirs quietly. After a short time the EASYCALC title page appears, and the main part of the program is loaded.

The border surrounding the screen now flashes as the main part of the EASYCALC program is loaded. After a brief delay, the screen appears as shown in Figure 1-1.

If LOADING does not appear, remove the diskette and turn off the system. Wait fifteen seconds, switch the system back on and repeat the procedure as outlined above.

Once the EASYCALC program has been loaded, place the program diskette in its protective envelope and store it safely to one side. It will not be needed until you wish to load the program at the beginning of a subsequent EASYCALC session.

2.4 FORMATTING A DATA DISKETTE

Before you begin to enter information on a worksheet, you must first prepare a diskette. This will be used as the storage medium for your worksheets. The preparation of a diskette in this way is called "formatting" and needs to be done only once when the diskette is to be used for the first time.

WARNING
TAKE SPECIAL CARE THAT ANYTHING RECORDED ON THE DISKETTE IS NO LONGER REQUIRED AS THIS PROCESS DESTROYS ANY INFORMATION IT PREVIOUSLY HELD.

Insert the diskette on which you wish to record your information into the drive unit and close the drive door. Press the SPACE bar, and then press the "/" key. At the top of the screen, EASYCALC displays:

COMMAND= BCDEFGIJLMPQRTWXZ

These are the initial letters of the seventeen special EASYCALC commands. Press the "T" key. The screen displays:

TRANSFER= P F L S D I E

The TRANSFER command has seven sub-options. Each is concerned with communication between the computer and an outside device, e.g. the disk drive unit or printer. Press the "I" key. EASYCALC prompts:

ENT DN

"DN" refers to the name you wish to assign to the data diskette. Type budget 85 and press RETURN. EASYCALC prompts:

ENT ID

An "ID" is a special identification code that is used to differentiate between diskettes with the same title. Enter 01 and press RETURN. EASYCALC displays:

ARE YOU SURE(Y/N) ?

If you have made an error, such as inserting the wrong diskette, press the "N" key and repeat the procedure detailed above using the correct diskette. Once you are confident that you have carried out the instructions correctly, press the "Y" key in response to this prompt. The drive light on the diskette unit comes on and the data diskette is formatted. This process takes approximately two minutes. When it has been completed, the screen displays:

00, OK,00,00

to indicate that no error has occurred during the formatting process.

2.5 THE EASYCALC WORKSHEET

2.5.1 WORKSHEET LOCATIONS

The worksheet is divided into vertical columns and horizontal rows. Worksheet locations are individual positions on the sheet. Each location is identified by its coordinates, i.e. the column in which it is placed, and the row on which it is positioned. Columns are labelled from A thru Z, then from AA thru AZ, and finally from BA to BK giving you a total of 63 columns. Initially each column is nine characters wide, but the width of the columns may be changed at any time during the operation of the program (see Section 6.2.2). Rows are numbered from 1 thru 254.

2.5.2 MOVING ACROSS THE SHEET

Before entering any details on the worksheet, you must know how to move from location to location on the sheet. A blue bar is displayed at the top left of the sheet in column A, row 1. This is the cursor bar. By placing this bar in a specific location on the sheet, any information entered is displayed in that position.

The cursor bar is moved across the worksheet from left to right by pressing the horizontal cursor control key. Movement of the cursor bar across the sheet from right to left is achieved by pressing the horizontal cursor control key whilst holding down the SHIFT key.

To move the cursor bar down the sheet, press the vertical cursor key. To move up the sheet, press the vertical cursor control key whilst holding down the SHIFT key. Practice moving the cursor around the sheet. Return it to the home position (A1) when you are done.

2.6 ENTERING INFORMATION

2.6.1 DATA TYPES

Three types of data may be entered onto an EASYCALC worksheet: labels, values and formulae. These are described below:

LABELS

Labels are items of text and may be entered anywhere on a worksheet either as a heading for a group of items or as the description of a particular item of information.

VALUES

A value is any item of information entirely composed of figures. A value may be placed in any location on the sheet. It can be a figure that you type in, or the result of calculations performed by EASYCALC.

FORMULAE

A formula is a sequence of mathematical operations. It may also include one of the 33 special EASYCALC functions.

The type of data is specified by the first character that you enter as detailed on the table below:

FIRST KEY	DATA TYPE
any letter	label
any figure	value
(	formula

Information is entered onto the worksheet in two stages. First you must position the cursor bar in the location on the sheet where the information is to appear. Then information is entered using normal typing procedures. When you type the first character, EASYCALC automatically displays the type of data that is being entered, i.e. LABEL, VALUE or FORMULA.

As each character is typed, it is displayed in the row above the worksheet. This is called the "EDIT" line. If you make a mistake as an entry is being typed, you may correct it, press CTRL-E for EDIT, and use the normal 64 editing procedures. These are detailed in Appendix A of this manual.

After entering the information, press the RETURN key. The characters are then entered into the selected sheet location.

<div align="center">NOTE</div>

If the number of characters entered exceeds the width of the column, any surplus characters are not displayed. However, the complete information is still retained in your 64's memory. When, in future, you move the cursor bar to that location, the entire number or extra characters are displayed at the top of the screen.

2.6.2 THE WORKSHEET LABELS

2.6.2.1 Column Titles

The first thing that must be done to prepare your annual budget is to lay out twelve monthly periods across the sheet. Position the cursor bar in column A, row 1. Type *Month* and press *RETURN*. Press the *horizontal cursor* key twice and enter *Jan* followed by *RETURN*. Repeat this procedure for the remaining eleven months of the year. Use only the three letters of each month and remember to press RETURN and move the cursor bar one column to the right after each title has been entered.

When you have entered your monthly period titles, the screen will appear as shown in Figure 2-1.
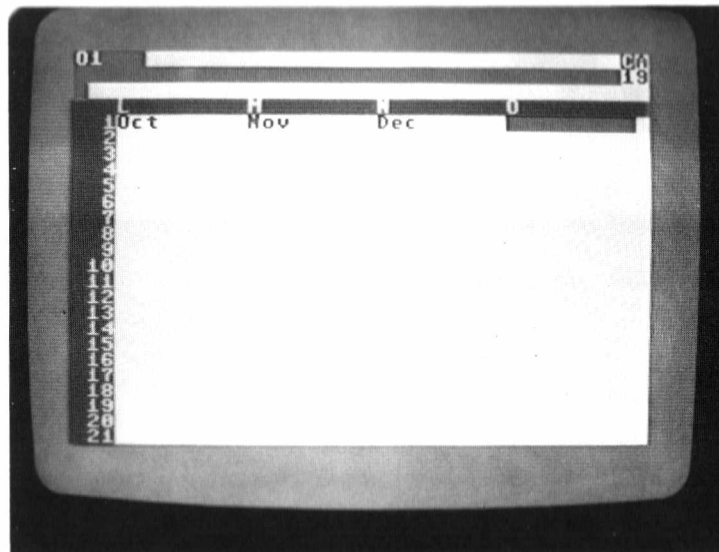
FIGURE 2-1 THE SCREEN AFTER ENTERING THE PERIOD TITLES

2.6.2.2 Using the Jump Command

The cursor bar is now positioned in column O row 1 of the sheet. Before continuing, you must place the cursor bar in column A row 1, i.e. the top left corner of the sheet. This can be done by holding down the SHIFT key and pressing the horizontal cursor key fourteen times. However, this type of cursor movement can become a little time-consuming. For this reason, EASYCALC has provided the "J" or "JUMP" command.

Press the "/" key to enter the EASYCALC command mode and press the "J" key. EASYCALC displays:

JUMP= L R G

To move the cursor bar to the top left of the worksheet, press the "L" key. The cursor bar automatically moves to location A1.

2.6.2.3 Row Headings

You must now enter a description for the values that are to be included in the budget. Press the *cursor down* key twice. The cursor bar is now positioned in location A3 (indicated at the top left corner of the screen). Type *Income*, press *RETURN* and press the vertical cursor key. Enter *Mortgage*, press *RETURN* and press the *vertical cursor* key. The cursor bar is now positioned in location A5. Enter the following row titles, remembering to press RETURN after each title, and to press the vertical cursor key before entering the next heading on the row beneath:

Food
Clothing
Utilities
Telephone
Car Expenses
Car Insurance

The cursor bar is now in location A10 on the worksheet.

2.6.2.4 Inserting a Row

For presentation purposes it would be helpful to separate the income from the expenditure by a dashed line. To do this, it is first necessary to insert a row between the Income and Mortgage titles.

Use the cursor control keys to position the cursor in location A4. Press the "/" to enter the command mode and then press the "/" key. EASYCALC displays:

INSERT= R C

Press the *"R"* key for "ROW". You are asked:

ARE YOU SURE(Y/N) ?

Press the *"Y"* key for "YES".

After a few moments, a blank row is inserted above the row on which the cursor bar is located. All other information on the sheet is moved down automatically.

2.6.2.5 Filling a Location with a Character

To enter the dashed line, first press the "/" key to enter the command mode and then press the *"Z"* key. Type "-" and press RETURN. This character is automatically repeated across location A4. In order to extend the line across the sheet, location A4 must be copied or "replicated" across row 4.

2.6.2.6 Replicating a Sheet Location

Press the "/" key to enter the EASYCALC command mode and press the "R" key for "REPLICATE". EASYCALC displays:

REPLICATE=SOURCE OR RETURN

A4

Press *RETURN*. This indicates that you only wish to replicate one item of information. EASYCALC displays:

REPLICATE=TARGET RANGE

A4...A4:

Since the information is to be copied into all the locations on row 4 from column B to column N inclusive, enter *B4*, press the "." (full stop) key, type *N4* and press *RETURN*. After a few moments, EASYCALC displays:

REPLICATE OVER

to indicate that the process has been completed. If you now move the cursor bar from left to right across row 4, you will see that the dashed line has been extended up to location N4.

Next position the cursor bar in location A12. Use the procedure above to draw a dashed line across row 12 between locations A12 and N12 inclusively. Having done so, press the *RETURN* key and the *vertical cursor* control key. The cursor bar is now in location A13. Type *Residual*, press *RETURN* and press the *horizontal cursor* key. Enter *Income* and press *RETURN*. Position the cursor bar in location A14. Again use the procedure above to draw a dashed line between locations A14 and N14 inclusively.

2.6.2.7 Completing the Labels

Press the *RETURN* key and the *vertical cursor* control key. The cursor bar is now in sheet location A15. Type *Yearly*, press *RETURN* and press the *horizontal cursor* key. Enter *Total =* and press *RETURN*.

Use the cursor control keys to position the cursor bar in location A17. Type *Savings/*, press *RETURN* and then press the *horizontal cursor* key. Enter *Month =* and press *RETURN*.

2.6.2.8 Fixing the Row Titles

In order to prevent yourself from overwriting the titles you have entered, you may inhibit access to the columns containing this information, i.e. columns A and B, by using EASYCALC's special FIX TITLES facility.

Use the cursor keys to position the cursor bar in location B3. Press the "/" key to enter the EASYCALC command mode and then press the "L" key. EASYCALC prompts:

FIX TITLE= H V B N

The letters stand for: Horizontally, Vertically, Both, None. Press the "V" key. The cursor bar then moves automatically to location C3. Hold down the *horizontal cursor* key. Notice how the titles in columns A and B remain "fixed" on the screen. Now hold the *SHIFT* key and press the *horizontal cursor* key. The cursor bar moves back to column C and then stops. It is now impossible to move the cursor bar into column B or A.

2.6.3 ENTERING VALUES

Having designed your worksheet, you are now ready to enter values on it and perform the necessary calculations on these figures.

2.6.3.1 Typing in Amounts

Values can be entered simply by typing in the information as you did with labels. Using this technique type in the following:

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Food	120	150	130	130	110	100	100	100	110	120	140	250
Clothing	30	25	35	30	35	100	100	0	0	25	35	45
Utilities	40	40	40	30	30	30	35	45	45	25	25	25
Telephone	15	15	15	15	15	15	25	17˙	15	15	25	25
Car Insurance	20	0	110	0	0	0	0	0	110	0	0	0

2.6.3.2 Replicating Amounts

Position the cursor bar in location C3. This position will hold the income amount for the month of January. Enter *950* and press *RETURN*. As your income will not vary from month to month, this figure will be entered in each of the monthly period columns. This is done by replicating the value.

Press the "/" key to enter the EASYCALC command mode and then press the "R" key. The screen displays:

REPLICATE=SOURCE OR RETURN

C3

Press *RETURN*. This indicates that you only wish to replicate one item of information. EASYCALC displays:

REPLICATE=TARGET RANGE

C3...C3:

The information is to be copied into all the locations on row 3 from column D to column N inclusive. Enter *D3*, press the "." key and then type *N3* and press *RETURN*. After a few moments EASYCALC displays:

REPLICATE OVER

to indicate that the process has been completed. If you now move the cursor bar from left to right across row 3, you will see that the figure "950" has been entered into the required sheet locations.

Using the same technique enter *300* in each month on row 5 (Mortgage), and *60* in row 10 (Car Expenses).

2.6.3.3 Amending an Entry

The car expenses amounts do not take into account six monthly major servicing. The values for March and September should be "280". To amend information on the worksheet, you must first position the cursor bar over the entry you wish to change. Move the cursor to location E10 and press the "/" key to enter EASYCALC's command mode. Now press the *"E"* key for "EDIT". The information in the cell is displayed in full at the top of the screen on the "EDIT" line. A flashing cursor is positioned over the first character of the entry. Use the normal 64 editing procedures (as detailed in Appendix A) to change the 60 to 280 and then press the *RETURN* key. The revised information is automatically entered into the selected sheet location. Now change the value for September to 280 in a similar way. Carefully check all your entries and make any other amendments required.

2.6.3.4 Overwriting a Worksheet Entry

Assume that the January Car Insurance amount should be 0. The value 20 may be changed by overwriting. First position the cursor bar over the entry you wish to change, in this case C11. Type the new value, in this case *"0"* and press *RETURN*. The old value is overwritten.

2.6.4 ENTERING FORMULAE

2.6.4.1 Calculating Residual Income for January

To work out how much you can afford to save at the end of January, you must first ascertain how much you have left from your income after paying all your expenses.

Position the cursor in location C13. This is the location where the result of the calculation is to appear. Type in the formula which is to be used for the calculation exactly as shown below:

(c3-@sum(c5:c11))

C3 is the sheet location where the income for January has been entered. The @ symbol stands for "AUTO", and means that one of the EASYCALC mathematical functions is to follow. SUM is one of the special EASYCALC mathematical functions. It indicates that the values within the range specified inside the parentheses following it, i.e. the values from location C5 to C11 inclusively, are to be added together. In this case the resulting figure is then to be subtracted from the value contained in location C3 and the final result stored in the current cursor bar location.

Press the *RETURN* key. The calculation is performed and the value "385.0000" is displayed in location C13.

2.6.4.2 Replicating a Formula Relatively

The formula for calculating the residual income for each successive month is the same as that for January except that the sheet references will be different. There is no need to type in separate formulae for each month. By using EASYCALC's REPLICATE command, the formula in location C13 can be copied into locations D13 to N13 "RELATIVE" to the values in these columns.

Ensure that the cursor bar is in location C13. Press the "/" key to enter the command mode and then type "R". EASYCALC displays:

REPLICATE=SOURCE OR RETURN

C13

Press the *RETURN* key. The screen displays:

REPLICATE=TARGET RANGE

C13...C13:

Type "D13". This is the first location into which the formula from C13 is to be replicated. Now press the "." key. Three dots are automatically placed after D13. EASYCALC is now waiting for you to enter the last location into which the formula is to be reproduced. Enter *N13* and press *RETURN.* The screen displays:

REPLICATE= R N

(C3-@SUM(C5:C11))

The cursor is flashing over the first letter C. Press the "R" key to indicate that you wish to reproduce the formula relatively to the new sheet locations. The cursor now moves to the second C of the formula. Again press the "R" key. Press this key once more when the cursor moves to the third sheet reference. EASYCALC displays:

PERFORMING RECALCULATION

After a few moments EASYCALC displays:

REPLICATE OVER

The residual income totals for each column are calculated and automatically displayed in the respective sheet locations. Move the cursor bar to location D13. At the top of the screen, EASYCALC displays:

(D3-@SUM(D5:D11))

This is the formula used to produce the result shown in the current cursor bar location, the sheet references being to the values in column D.

2.6.4.3 Calculating the Yearly Residual Income

Having calculated the residual income for each month, you must now produce the yearly total. Use the cursor control keys to position the cursor bar in location C15. Enter the following formula:

(@sum(c13:n13))

This instructs EASYCALC to add together the values in row 13 from column C to column N inclusively. Press the *RETURN* key. The value "3778.000" is automatically placed in the selected result position.

2.6.4.4 Calculating the Average Monthly Residual Income

The final stage in this preliminary budget is to work out the average amount per month that you can afford to save.

Place the cursor bar in location C17. Enter the following formula:

(@average(c13:n13))

This formula instructs EASYCALC to add together the range of values between locations C13 and N13 and then divide this figure by the number of values in the range. Press *RETURN*. The value "314.8330" is automatically placed in the selected sheet location.

2.7 SAVING THE SHEET

Now is a convenient time to save your sheet. Before you continue with the training section press the "/" key to enter the command mode and then press the "T" key. EASYCALC displays:

TRANSFER= P F L S D I E

Press the *"S"* key for "SAVE". EASYCALC prompts:

ENTER FILENAME

EASYCALC is now asking you for a name for your worksheet. This name will be used to recall the sheet for future use. Enter *budget 85* and press *RETURN.*

ARE YOU SURE(Y/N) ?

Ensure that your formatted data diskette is in the drive unit before pressing the *"Y"* key for "YES". The drive light comes on, and the sheet is stored on the data diskette. After a few moments, EASYCALC displays:

00, OK,00,00

to indicate that the procedure has been completed successfully. If you do not get this message then go back to the beginning of this section (2.7), and repeat the above procedure. If, after trying to save your worksheet for the second time EASYCALC does not display the message "00, OK,00,00", then repeat the above procedure with a new diskette. If you need to format your new diskette follow the instructions in Section 2.4 before returning to Section 2.7.

2.8 MAKING MODIFICATIONS

2.8.1 UNFIXING THE ROW TITLES

Having examined your projected budget, you have decided that you can afford to take out a life insurance policy. The premium payments will be 20 pounds per month. This information will be inserted into your budget below the Mortgage repayments row. In order to do this, it is first necessary to "unfix" the row titles so that you can enter a description for the insurance premiums in column A.

Press the "/" key to enter the EASYCALC command mode and press the "L" key. EASYCALC displays:

FIX TITLE= H V B N

Press the "N" key. You may now move the cursor bar into columns A and B.

Place·the cursor bar in location A6. Press the "/" key to enter the command mode and then press the "I" key for "INSERT". EASYCALC displays:

INSERT= R C

Press the "R" key for "ROW".

ARE YOU SURE(Y/N) ?

Press the "Y" key. The screen displays:

PERFORMING RECALCULATION

Because the information below the cursor bar is moved one row down the sheet to make way for the new row, some sheet references in the formulae you have entered are changed. For this reason, EASYCALC re-executes the formulae using the now revised sheet references. After a few moments, a blank row appears at the current cursor bar position.

2.8.2 INCREASING THE COLUMN WIDTH

Enter *Insurance* into location A6, press the *RETURN* key and then press the *horizontal cursor* key once. The cursor bar is now in location B6. Type *Premium* and press *RETURN*. Notice that the two words "Insurance" and "Premium" "run into" each other, i.e. there is no space between them. This is because the first word is nine characters long, i.e. the width of the column. To overcome this, you can increase the width of each column on the sheet.

Press the "/" key then type "G". On the prompt line, EASYCALC displays:

GLOBAL= W R C A M F

Press the "W" key. EASYCALC asks:

ENT COL(3-37)

The present column width is nine characters and you wish to increase this by one character, so enter *10* and press *RETURN*. The size of each column on the sheet is then increased automatically and a space appears between the information in locations A6 and B6.

Your insurance premium for each month will be 20 pounds. Place the cursor bar in location C6. Enter *20* and press *RETURN*. As this will be the same for each successive month, use the procedure described in Section 2.6.3.2 to replicate the value in location C6 from locations D6 to N6 inclusively.

2.8.3 RECALCULATING THE FORMULAE

Because you have entered another series of figures into your budget, you now need to re-execute the formulae you have set up to calculate the revised amount you can save per month. This is done by simply pressing the *F2* function key (obtained by holding down the SHIFT key and pressing the F1 function key). Because of the way that EASYCALC re-executes the formulae, you need to perform recalculation twice. EASYCALC displays:

PERFORMING RECALCULATION

Press the *F2* function key again. EASYCALC displays:

PERFORMING RECALCULATION

If you now glance at the Savings/Month result, you will see that it has changed to 294.83300 pounds.

2.8.4 CALCULATING INTEREST ON THE SAVINGS

Next, you want to forecast what interest will accrue on your savings. Although it is an oversimplification, it will be assumed that you are saving your residual income and that the rate of interest is 10% per annum compounded monthly. In order to provide flexibility in the future, this interest rate will be entered on the sheet.

2.8.4.1 The Labels

Place the cursor bar in location A19. Enter *Interest*, press *RETURN* and press the *horizontal cursor* key once. Type *Rate(%) =* and press *RETURN*.

Move the cursor bar to location C19. This position will be used to hold the savings interest rate (10%). Type in *10* and press *RETURN*.

Position the cursor bar in location A20. Enter *Interest/*, press *RETURN* and press the *horizontal cursor* key once. Type *Month* = and press *RETURN*. Press the *horizontal cursor* key once, and enter the following formula:

(c19/1200)

This formula converts the interest rate into a monthly figure that is much easier to work with.

Now place the cursor bar in location A21. Enter *Yearly*, press *RETURN* and press the *horizontal cursor* key. Type *Accrual* = and press *RETURN*.

2.8.4.2 The Formula

Press the *horizontal cursor* key. The cursor bar is now positioned in location C21. This will be used to hold the value of the year's savings after interest has been added. The formula required to do this can be represented as follows:

$$\frac{sm \times [(1 + im)^{12} - 1]}{im}$$

where "sm" is the amount that is saved each month, and "im" is the interest per month.

To calculate your total savings at the end of the year enter the following formula at location C21:

(c18★(((1+c20)↑12-1)/c20)

C18 is the location containing the monthly savings figure. C20 represents the monthly interest figure. This is raised to the power of twelve because there are twelve months.

Press the *RETURN* key. The value 3703.2200 is displayed in the current cursor bar location.

2.8.5 CONVERTING ALL VALUES TO TWO DECIMAL PLACES

Because the figures in your budget relate to monetary values, it would look more sensible if only two decimal places were displayed after each decimal point, i.e. to show values in terms of pounds and pence only. To do this, first press the "/" key to enter the EASYCALC command mode and then press the "G" key. EASYCALC displays:

GLOBAL= W R C A M F

Press the "F" key. On the prompt line, EASYCALC displays:

FORMAT= G S L R I M P

Press the "M" key. All values on the sheet are then displayed in decimal form with two characters after the decimal point.

2.8.6 RE-SAVING THE WORKSHEET

Your training session is almost at an end. The only remaining thing to do is to re-save the worksheet.

Press the "/" key to enter the command mode and type *"T"*. EASYCALC displays:

TRANSFER= P F L S D I E

Press the *"S"* key for "SAVE". You are then prompted to:

ENTER FILENAME

Type *budget 85* and press *RETURN*.

ARE YOU SURE(Y/N) ?

Press the *"Y"* key. Because you have used this name to identify the sheet when you stored the half-completed version on your diskette, EASYCALC prompts:

FILE EXISTS.REPLACE(Y/N)?

In order to replace the original worksheet with the current version, the original must first be deleted from the diskette, so press the *"Y"* key for "YES". After a few moments, EASYCALC displays:

00, OK,00,00

to indicate that the worksheet has been stored on the diskette.

2.9 PRINTING THE WORKSHEET

You might like to have a printed copy of your budget to keep with your cheque book as a reminder of your plan. The procedure for this is explained here.

EASYCALC lets you print out either your whole worksheet, or just part of it. This is done by specifying the top left and bottom right corners of the area to be printed. Because the budget spreadsheet is very wide, you will need to print it out in two parts. The first part will consist of columns A thru H, and the second part will consist of columns I thru N.

Before you proceed with this section please ensure that your printer is properly connected, and that it is on. Also check that the paper is properly aligned.

Position the cursor bar in location A1. Press the "/" key to enter the command mode and type "T" for "TRANSFER". EASYCALC displays:

TRANSFER= P F L S D I E

Press the "P" key for "PRINT". EASYCALC displays:

BOTTOM RIGHT :

A1...

By positioning the cursor bar in location A1 you have defined that location to be the top left corner of the part of the worksheet that you wish to print. EASYCALC is now asking for the coordinates of the bottom right corner. Enter H21 and press RETURN. EASYCALC displays:

SWITCH ON THE PRINTER AND CONFIRM

If you have not already done so switch on your printer. Press any key to continue. Once EASYCALC has finished printing, the message:

PRINT OVER
A1...H21

Is displayed. You are now ready to print out the second part of your worksheet. Position the cursor bar in location I1. Press the "/" key to enter the EASYCALC command mode and type "T". EASYCALC displays:

TRANSFER= P F L S D I E

Press the "P" key for "PRINT". EASYCALC displays:

BOTTOM RIGHT :
I1...

Enter N21, and press RETURN. EASYCALC continues automatically and prints the remaining part of the sheet. Once EASYCALC has finished printing, the message:

PRINT OVER
I1...N21

is displayed. Your printout is complete.

2.10 CONCLUSION

Now that you have completed the training section of this manual, you have seen some of EASYCALC's most useful attributes. You have had practice in turning on the system, loading the EASYCALC program, entering information on a worksheet and saving the worksheet on a formatted data diskette. You have also had experience in defining formulae and using these formulae to perform calculations on the information on the sheet.

Further details of these, and other EASYCALC options can be found in the Operating Section of this manual, i.e. the pages that follow. Guidelines to assist you in the design of your own particular application are also given. These can be found in Section Three.

The functions outlined in this section have shown you how powerful EASYCALC is and how it allows you to store and manipulate numeric data quickly and easily. It has not covered all of the capabilities of this program. For further information on all the EASYCALC commands and functions see the remaining sections in this manual.
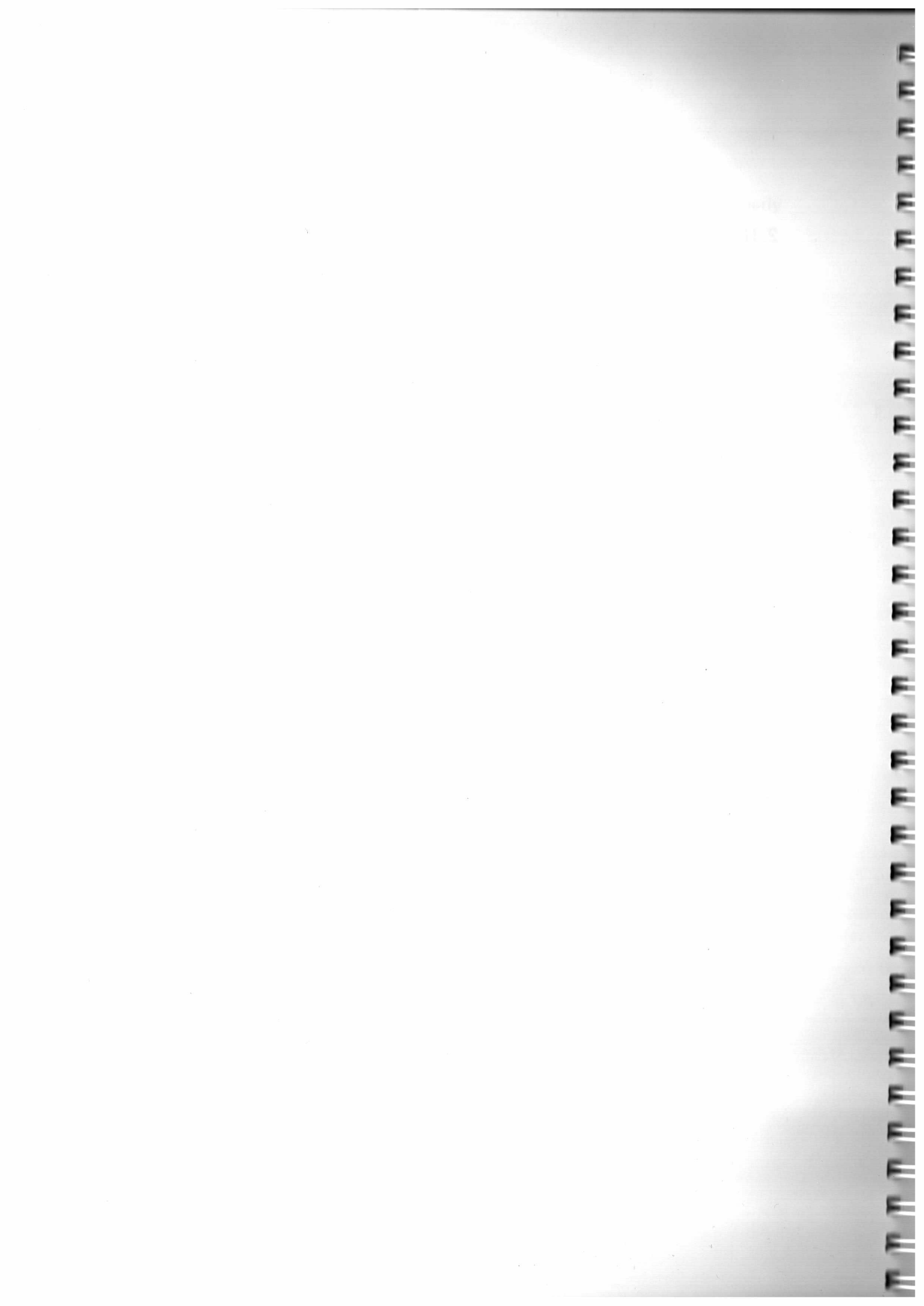
SECTION THREE
A GUIDE TO DESIGNING
YOUR OWN APPLICATION

3.1 INTRODUCTION

This section is a guide to assist you in designing your own EASYCALC application. How you use EASYCALC will depend on the information that you wish to have at your disposal. Therefore, the instructions that follow are general and will only be of use once the major EASYCALC functions i.e. defining formulae and performing calculations, have been mastered. The simplest way to do this is to work through the Training Section (Section Two) of this manual before proceeding with what follows.

3.2 THE PRESENT SYSTEM

When designing an application, you must first examine the information system now in use, whether formal or informal, and analyze it taking into account the following:

1. What information is available, i.e. what do you need to record?

2. Where does it come from?

3. How is it collected, i.e. via forms, statements, over the phone etc.?

4. How is the information used, accessed, updated, how often?

Make a list of each item of information you receive, e.g. customer number, quantity of goods ordered, price per unit of an item, etc. Compile a second list of items calculated from the information on the first list. This list should include what the calculations are and what information from the first list was used to make each calculation.

Finally note any other points that help to explain how the existing system is presently being operated, e.g. who does what, how are changes made to the information etc.

To summarize, compose a statement of the recording, analysis, storage and output procedures that are currently being used.

3.3 THE REQUIREMENTS OF YOUR SYSTEM

You are now ready to plan your own EASYCALC application. Before you do so, a number of restrictions must be observed.

3.3.1 WORKSHEET RESTRICTIONS

1. The minimum width of a worksheet column is 3 characters.

2. The maximum width of a worksheet column is 37 characters.

3. An alphabetical entry may not exceed 28 characters in length.

4. A numeric entry cannot exceed 36 characters in length including the decimal point.

5. A formula cannot exceed 28 characters in length including the opening and closing brackets.

3.3.2 DESIGNING THE WORKSHEET

The most important consideration to bear in mind when designing your worksheet is not what information is to go into the system (input), but what information you want to come out (output).

EASYCALC can present information in two basic forms, i.e. printed via your COMMODORE printer, or displayed on the screen. Any application of the package usually requires both these forms of output. Therefore, the procedures that follow have been designed accordingly.

Although it may seem logical to start by designing the input format, if you decide first what results you need to produce using EASYCALC, you will ensure that all essential information is included. The following points should be noted when analyzing your output requirements:

1. How many worksheets are required?

2. What information is required on each worksheet.

3. What is the maximum length of each element of information, i.e. what width should you set each column to on the sheet?

4. What information is to be derived from calculations and what are the instructions required to perform these calculations?

The best way to ensure that you have catered for all your output requirements is to design your worksheet on paper before using EASYCALC. Label each column where specific information is to appear.

NOTE

Take great care when designing your worksheet that you do not define a formula that is liable to produce a result greater than 10^{37} or less than 10^{-37}. If you do so, you will generate an OVERFLOW error. To overcome this problem, use either larger or smaller units in the values used in the calculation. For example, a figure such as "6500000" could be converted into "6.5" millions. A figure such as ".001" could be expressed as "1" thousandth. If you do this throughout the sheet in the design stage, you will make your numbers more manageable and produce the required results.

3.4 CONCLUSION

The most important point to consider when planning your own application of EASYCALC is the information you require from the system. Always design your worksheet on paper before using EASYCALC. In this way, you can ensure that you have catered for all the items of information that are required to enable the smooth running of your system.

Several example applications are shown in Section Ten.
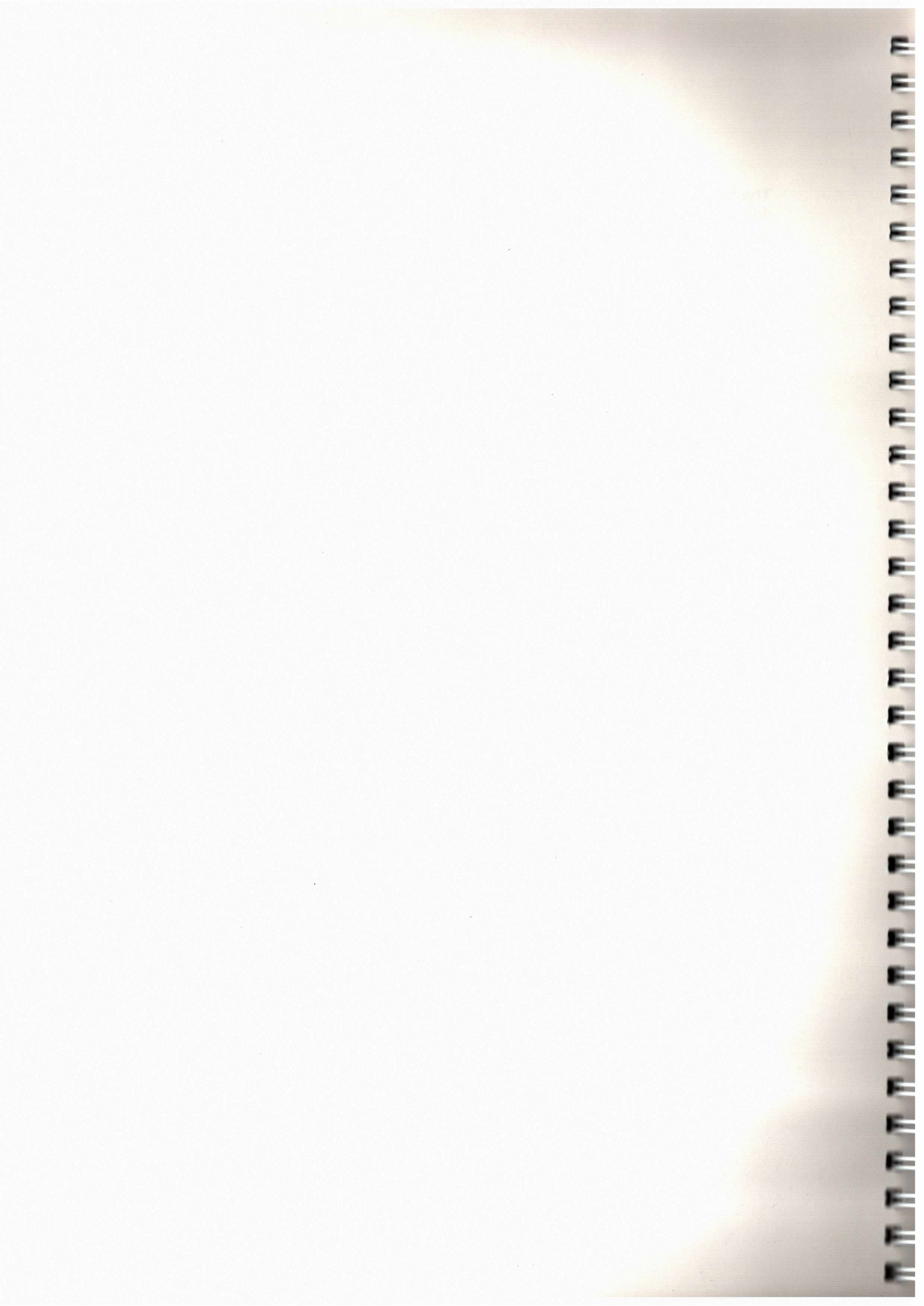
Operating Section

SECTION FOUR
AN INTRODUCTION TO
THE OPERATING SECTION

4.1. INTRODUCTION

The purpose of the Operating Section which comprises the rest of this manual is to provide you with a detailed step-by-step guide to the EASYCALC commands. Section Four briefly outlines each command and indicates where you will find the detailed information in the Operating Section.

4.2 THE EASYCALC COMMANDS

Each time you press the "/" key, the initial letters of seventeen EASYCALC commands are displayed at the top of the screen. Each command is described briefly in the following sub-sections.

4.2.1 ABORTING A COMMAND

If, after selecting an EASYCALC command, you do not wish to use it, hold down the SHIFT key and press the CLR/HOME key. The command selected is then cleared from the screen.

4.2.2 THE B COMMAND - BLANKING A CELL

The B command allows you to clear the contents of a cell and then, if you wish, enter revised information into the now empty space. See Section 7.2.4.

4.2.3 THE C COMMAND - CLEARING A WORKSHEET

This command removes all existing information from a worksheet, i.e. it blanks all cells, including labels. See Section 8.5.

4.2.4 THE D COMMAND - DELETING A ROW OR COLUMN

This allows you to remove a row or column of information from your worksheet. All other information on the sheet is automatically moved to close up the gap. See Sections 7.2.5 and 7.2.6.

4.2.5 THE E COMMAND - EDITING INFORMATION

The E command enables you to revise the information in a selected cell. See Section 7.2.1.

4.2.6 THE F COMMAND - FORMATTING DATA

This command allows you to display data in a selected sheet location in one of seven different formats. These are described briefly below:

I - INTEGER

This format displays only those digits of a decimal number that precede the decimal point. See Section 6.4.2.3.

M - CORRECT TO TWO DECIMAL PLACES

The M format allows you to display a value to two decimal places. This is especially useful for monetary values, e.g. pounds and pennies or dollars and cents. See Section 6.4.2.4.

L - LEFT JUSTIFICATION

This format permits you to align data so that the first character is displayed at the left edge of the selected location. See Section 6.4.2.1.

R - RIGHT JUSTIFICATION

This format permits you to align data so that the last character is displayed at the right edge of the selected location. See Section 6.4.2.2.

S - SCREEN DISPLAY IN GLOBAL FORMAT

This option permits you to change the format of an entry to that defined by the GLOBAL FORMAT command. See Section 6.4.2.5.

P - GRAPH FORMAT

This format allows you to display a value as a bar of a histogram. See Section 6.4.2.6.

4.2.7 THE G COMMAND - GLOBAL OPERATIONS

This command allows you to format all data on the sheet in the same way, change the size of all the columns on the worksheet and specify the order in which calculations are performed. It contains five sub-options, each of which is outlined below:

W - SET COLUMN WIDTH

This option allows you to change the width of all EASYCALC columns from a minimum of 3 to a maximum of 37 characters. See Section 6.2.2.

R - SET RE-CALCULATION ORDER BY ROW

Here, you can instruct EASYCALC to carry out calculations in row order, i.e. to perform all the calculations linearly across one row, move to the start of the next row and perform calculations in that row etc. See Section 6.8.3.

C - SET RE-CALCULATION ORDER BY COLUMN

This tells EASYCALC to carry out calculations in column order, i.e. to perform all the calculations vertically from the top to the bottom of one column and then do the same in each subsequent column on the sheet. See Section 6.8.2.

A - SET RE-CALCULATION TO AUTOMATIC

Here, manual calculation order (see below) is disabled. When instructed to carry out a calculation, EASYCALC executes ALL the formulae that have been define on the worksheet. See Section 7.3.2.

M - SET RE-CALCULATION TO MANUAL

This option allows you to perform only the calculation which is currently highlighted by the cursor bar. See Section 7.3.3.

F - GLOBAL FORMAT

This command is similar to the FORMAT command except that you can uniformly format ALL the information on the worksheet. See Section 6.4.3.

4.2.8 THE I COMMAND - INSERTING A ROW OR COLUMN

This command enables you to insert a row or column on the sheet. All other information is moved automatically and formulae sheet references are altered accordingly. See Sections 7.2.2 and 7.2.3.

4.2.9 THE J COMMAND - JUMPING AROUND THE WORKSHEET

The J command allows you to move the cursor to the top left or bottom right of the worksheet, or to a specified sheet location. See Section 6.2.1.2.

4.2.10 THE L COMMAND - FIXING TITLES ON THE SHEET

This command allows you to inhibit access to specific rows and/or columns on the worksheet. See Section 6.5.

4.2.11 THE M COMMAND - MOVING INFORMATION AROUND THE SHEET

Here, you can transfer a section of information from one sheet position to another. All formulae sheet references are changed automatically. See Section 7.2.7.

4.2.12 THE P COMMAND - PROTECTING INFORMATION ON THE SHEET

This command allows you inhibit access to the whole sheet or prevent the overwriting of specific locations within it. See Section 6.10.

4.2.13 THE Q COMMAND - DIRECTORY LISTING

Here, you can display the names of all the files on a diskette. See Section 8.7.

4.2.14 THE R COMMAND - REPLICATING INFORMATION

The R command allows you to copy information from one area of the sheet to another. See Section 6.9.

4.2.15 THE T COMMAND - TRANSFERRING INFORMATION BETWEEN THE COMPUTER AND PERIPHERALS

This command enables information to be transferred from the memory of the computer to a diskette and/or a printer. It contains 7 sub-options, each of which is described briefly below:

P - PRINT PART OF SHEET

You can print a specified section of the worksheet on your COMMODORE printer using the P command. See Section 8.4.

F - CREATE AN EASYSCRIPT FILE

This option allows you to create a file compatible with the EASYSCRIPT word processor. See Appendix B.

L - LOAD A WORKSHEET

This option allows you to load a stored worksheet from diskette. See Section 8.3.

S - SAVE A WORKSHEET

This option allows you to store your worksheet on a diskette. See Section 8.2.

D - DELETE A FILE

With this command, you can remove a file from diskette. See Section 8.6.

I - INITIALIZE A DISKETTE

This command allows you to prepare (format) a diskette in order to store worksheets on it. See Section 5.3.

E - EXIT

The E option allows you to terminate the EASYCALC program and return to the normal COMMODORE 64 power-up screen. See Section 8.8.

4.2.16 THE W COMMAND - SPLITTING THE SHEET INTO WINDOWS

This command allows you to split the worksheet horizontally or vertically into two sections or "windows". You may then move around each section of the sheet independently of the other or both sections simultaneously. See Section 6.6.

4.2.17   THE X COMMAND - REPLACING A FORMULA BY A VALUE

The X command enables you to delete a formula from a selected sheet location and replace it by the value that resulted from the execution of that formula. See Section 6.7.3.

4.2.18   THE Z COMMAND - REPEATING A CHARACTER

This command allows you to fill a cell with a specified character. See Section 6.3.1.

4.3 USING THE EASYCALC OPTIONS

Detailed instructions for each command described above can be found in the following sections of this manual:

SECTION FIVE - PREPARING YOUR SYSTEM

The information in this section is used to prepare your system before actually entering any worksheet information. It includes:

Loading the EASYCALC program.
Formatting a Data Diskette.
Designing a Worksheet.

SECTION SIX - ENTERING INFORMATION

This section is concerned with the entry and manipulation of information. It contains instructions for the following:

Moving across the Worksheet
Entering Titles
Fixing Titles
Entering Labels
Entering Values
Repeating a character across a column
Formatting data
Defining formulae
Performing calculations
Setting re-calculation order
Replicating information
Making a window
Protecting information

SECTION SEVEN - MODIFYING INFORMATION

This section covers the modification of your basic worksheet. It explains the following:

Editing data
Blanking a sheet location
Inserting/deleting rows and columns
Moving information
Performing recalculations

SECTION EIGHT - THE T COMMAND

Section Eight contains information on the "T", or "TRANSFER" command used for transferring information between the computer and one of its peripherals. It contains instructions for the following:

Storing a worksheet
Loading a stored worksheet
Printing worksheet information
Clearing a worksheet
Deleting a stored worksheet
Listing a diskette directory
Exiting to BASIC

SECTION NINE - EASYCALC FUNCTIONS

This section contains information on the thirty-three built-in EASYCALC functions:

Mathematical functions
Trigonometrical functions
Statistical functions
Boolean functions

SECTION TEN - EXAMPLES OF EASYCALC APPLICATIONS

Here examples of three EASYCALC applications are given for business and for the home.

SECTION FIVE
PREPARING YOUR SYSTEM

5.1 INTRODUCTION

The procedures outlined in this section are used before entering any information on an EASYCALC worksheet. They include LOADing and RUNning the EASYCALC program, formatting a diskette on which to store your worksheets and designing a worksheet.

5.2 LOADING EASYCALC

Insert the EASYCALC program diskette into the drive unit ensuring that the label on the diskette is facing up and that the square notch is to the left. Gently push the diskette into the drive and close the disk drive door. To load the EASYCALC program type:

LOAD ":★",8,1

and press RETURN.

The red drive light comes on for a few seconds whilst the drive whirs quietly. The following sequence of messages appears:

SEARCHING FOR ★

LOADING ★

After a brief delay, the screen appears as shown in Figure 1-1.

If LOADING does not appear, remove the diskette and turn off the system. Wait fifteen seconds, switch the system back on and repeat the procedure as outlined above.

5.3 FORMATTING A DATA DISKETTE

Before a new diskette can be used to store information, it must be specially prepared. This is called "formatting" a diskette and needs to be done only once when the diskette is to be used for the first time.

WARNING
TAKE SPECIAL CARE THAT ANYTHING RECORDED ON THE DISKETTE IS NO LONGER REQUIRED AS THIS PROCESS DESTROYS ANY INFORMATION IT PREVIOUSLY HELD.

First load EASYCALC (see the previous section) and then press the SPACE bar. Now press the "/" key. At the top of the screen, EASYCALC displays:

COMMAND= BCDEFGIJLMPQRTWXZ

These are the initial letters of the seventeen special EASYCALC commands. Press the "T" key. The screen displays:

TRANSFER= P F L S D I E

The TRANSFER command has seven sub-options. Each is concerned with communication between the computer and an outside device, e.g. the disk drive unit or printer. Press the "I" key. EASYCALC prompts:

ENT DN

where DN refers to the name you wish to assign to the data diskette. Enter a unique name up to sixteen characters in length and press RETURN. Use a name that is relevant to the information you wish to store on the diskette, e.g. Stocks/Shares, Payroll etc. EASYCALC then asks you to:

ENT ID

Type in any two character identification code. This is used to differentiate between diskettes with the same title. Press RETURN.

ARE YOU SURE(Y/N) ?

If you have made an error, such as inserting the wrong diskette, press the "N" key and repeat the procedure detailed above. Once you are confident that you have carried out the instructions correctly, and that you are willing to erase any information the diskette may hold, press the "Y" key when ARE YOU SURE is prompted. The drive light on the diskette unit comes on and the data diskette is formatted. This operation takes approximately three minutes.

5.4   ELEMENTS OF A WORKSHEET

An EASYCALC worksheet consists of three elements: labels, values and formulae. These are described below:

LABELS

Labels are items of text and may be entered anywhere on a worksheet either as a heading for a group of items or as the description of a specific piece of information.

VALUES

A value is any item of information entirely composed of figures. A value may be placed in any location on the sheet. It may be a figure you type in, or the result of calculations performed by EASYCALC.

WORKSHEET LOCATIONS

The worksheet is divided into vertical columns and horizontal rows. Worksheet locations are individual positions on the sheet. Each location is identified by its co-ordinates, i.e. the column in which it is placed and the row on which it is positioned. The columns are numbered from A thru Z, from AA thru AZ, and then from BA to BK, giving you a total of 63 columns. When you first load the EASYCALC program, each column is nine characters wide. The width of the columns may, however, be changed at any time during the operation of the program (see Section 6.3.2). Rows are numbered from 1 thru 254.

5.5   WORKSHEET RESTRICTIONS

When designing a worksheet, the following restrictions must be observed:

1.   The size of a worksheet cannot exceed 254 rows and 63 columns

2.   A numeric entry may not exceed 36 characters in length including a decimal point.

3.   The minimum width for a column is 3 characters.

4.   The maximum width for a column is 37 characters.

Always design your worksheet on paper before you use the EASYCALC package.

5.6   DESIGNING A WORKSHEET

Section Three includes information that will be useful in designing your worksheet.
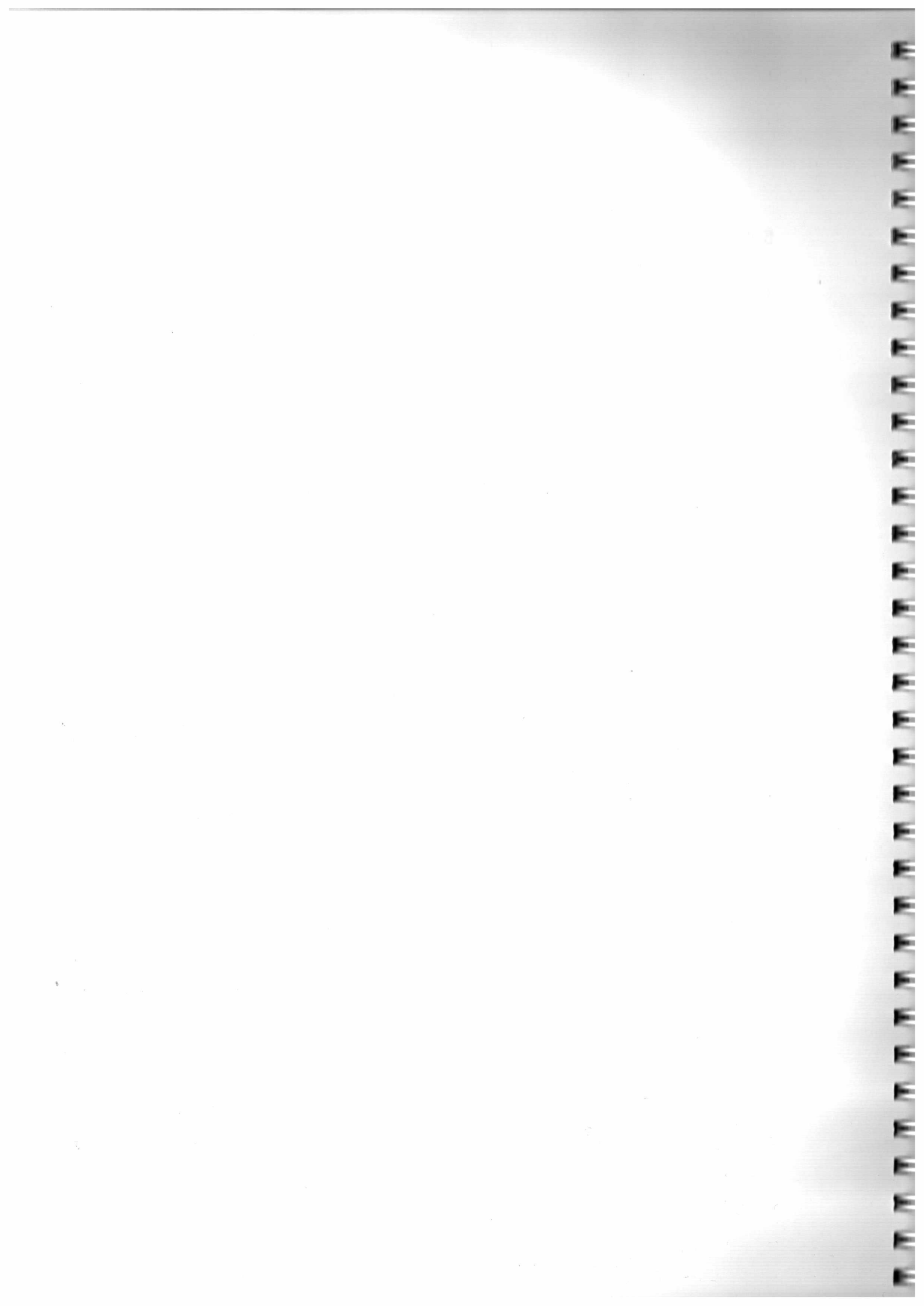
SECTION SIX
ENTERING INFORMATION

6.1 INTRODUCTION

This section describes how to create a new worksheet. Instructions are given to allow you to enter information on a worksheet and to enable you to define formulae and use these formulae to perform calculations.

6.2 CREATING A NEW WORKSHEET

6.2.1 MOVING ACROSS THE WORKSHEET

When the EASYCALC program is first loaded, a blue bar is displayed in column A1 of the sheet. This is the cursor bar. By placing this bar in a specified location on the sheet, any information entered is displayed in that location. The cursor bar may be moved in single steps, i.e. one row or column at a time, or it may be "jumped" across the sheet using the EASYCALC "JUMP" function. Both methods are described below.

6.2.1.1 Single Stepping

To move the cursor bar across the worksheet from left to right, i.e. from column to column, press the horizontal cursor key. If you wish to move the bar from right to left, simply hold down the SHIFT key while pressing the same key. Moving the cursor bar down the sheet is accomplished by pressing the vertical cursor key. To move up the sheet, press this key whilst holding down the SHIFT key.

6.2.1.2 Using the J command

Using the cursor keys to move the cursor bar over the sheet can sometimes be very time-consuming. EASYCALC provides a function that enables you to place the cursor bar in a selected location. Press the "/" key. This instructs EASYCALC that a command will follow. On the prompt line, EASYCALC displays:

COMMAND= BCDEFGIJLMPQRTWXZ

These are the initial letters of the seventeen special EASYCALC commands. Press the J key.

JUMP= L R G

is displayed. To move the cursor bar to the bottom right hand corner of the sheet, press the "R" key. To move the cursor bar to the top left of the worksheet, first select the "J" command as outlined above and press the "L" key. The cursor automatically moves to location A1.

If you wish to move the cursor bar to a specific location on the sheet, first select the "J" command as detailed above and then press the "G" key. Enter the location where you wish to position the bar by typing the column and row coordinates and press RETURN. The bar automatically moves to the selected position.

6.2.2 CHANGING THE WIDTH OF A COLUMN

When the EASYCALC program is first loaded, the width of each column is set at nine characters. This may be changed at any time during the operation of the program.

NOTE

At first glance, it may seem that, if you have information already entered on the sheet and you reduce the column width, some information is lost. This, however, is not the case. Altering the width of a column does not change the information stored within each location on the sheet, it only changes what is visible. If you afterwards expand the column, the "hidden" characters re-appear.

Note also that, if you have split the screen into windows (see Section 6.7), this command only affects the window in which the cursor bar is currently located.

To alter the width of each column on the worksheet, first press the "/" key to select the command mode and then press the "G" key. On the prompt line, EASYCALC displays:

GLOBAL= W R C A M F

Press the "W" key. You are asked:

ENT COL(3-37)

Select the column width you require within the range shown and press RETURN. The size of each column on the sheet is then changed automatically. If the column width you have defined is too small to accommodate a value, that value is truncated.

6.3 ENTERING INFORMATION

Three types of information can be entered on the worksheet: labels, values and formulae. A label is any item composed of alphanumeric data, i.e. letters, figures, or a combination of letters and figures. A value is an entry composed entirely of figures. A formula is a sequence of arithmetical operations on or between specific values on the sheet. The type of data is specified by the first character that you type as detailed on the table below:

FIRST CHARACTER	DATA TYPE
any letter	label
any figure	value
(	formula

Information is entered on the worksheet using normal typing procedures. First position the cursor bar in the selected worksheet location. When this has been done, simply type in the information. As you do so, the characters are displayed at the top of the screen. EASYCALC displays the type of data that is being entered after the first key has been pressed. A maximum of 28 characters may be entered for a label, and 36 characters for a value. A formula can contain a maximum of 28 characters including the opening and closing brackets.

Once you have entered the information, press the RETURN key. The characters are entered into the selected sheet location. Note that, if the number of characters entered exceeds the column width you have defined, any surplus characters are not displayed. However, the complete information is still retained in the memory of the 64 and is displayed at the top of the screen when, in future, you move the cursor bar to that location.

If you make a mistake as an entry is being typed, you may correct it using the normal 64 editing procedures. These are detailed in Appendix A of this manual.

WARNING
WHEN YOU ENTER INFORMATION, IF YOU EXCEED THE LAST COLUMN ON A ROW, THE INFORMATION IN THE LAST COLUMN, i.e. COLUMN BK, WILL BE OVERWRITTEN. THEREFORE IT IS WISE TO ALWAYS PLAN YOUR ENTRIES IN ORDER TO ELIMINATE THIS POSSIBILITY.

6.3.1 REPEATING A CHARACTER ACROSS A COLUMN

EASYCALC provides a facility whereby you can repeat a character across a cell. This is helpful, for example, when you wish to underline or outline a section of the sheet to highlight or offset information. To select this option, press the "/" key to enter the command mode and type "Z". Next enter the character you wish to use and press RETURN. The column is automatically filled with the selected character.

6.4 FORMATTING DATA

6.4.1 INTRODUCTION

EASYCALC provides a facility to enable you to display data in many different formats. You may justify, i.e. align, all or selected information on the worksheet to the right or left-hand edge of a column, convert all or specific values into integer format or display values correct to two decimal places.

There are two FORMAT commands: one allowing you to format individual entries on the sheet, and another which permits you to format ALL sheet entries at once.

NOTE
When the cursor bar is moved to a location containing a formatted value, the entry is displayed at the top of the screen in the original form. This is the value that is stored in memory, and used in calculations. The value that is displayed on the sheet is not used as it may be truncated by the formatting.

6.4.2 FORMATTING DATA IN SELECTED SHEET LOCATIONS

To format a specific entry on the sheet, first move the cursor bar to that position. Press the "/" key to enter the command mode and type "F". EASYCALC displays:

FORMAT= G S L R I M P

These are the initial letters of the seven format options. Each option is explained in the sections below.

6.4.2.1 Left-Justification of Data

To left-justify the information in a selected location, press the "L" key. The data is moved automatically so that the first character now appears at the left-hand edge of the column.

6.4.2.2 Right-Justification of Data

To right-justify the data in a specific location, press the "R" key. The information is moved automatically so that the last character is displayed at the right-hand edge of the column.

6.4.2.3 Converting Values into Integer Format

If the location you have selected contains a value and you wish to display it in integer form, i.e. only show those digits that precede the decimal point, press the "I" key.

6.4.2.4 Displaying Values to Two Decimal Places

If you wish to display a selected value correct to two decimal places, press the "M" key when the FORMAT options are displayed.

6.4.2.5 Displaying Data in its Original Format

If, after using the special EASYCALC formatting techniques, you wish to display the contents of a specific sheet location in the format that was originally set press the "S" key when the FORMAT options are displayed. Note that, if no global format has been set, the contents of the selected location reverts to that which was originally typed from the keyboard.

6.4.2.6 Graphing

This option allows you to convert a value into a histogram bar.

NOTE
This option is only useful for values between 0 and 37, as 37
is the maximum size to which a column can be set.

To display a value as a bar of a histogram, press the "P" key when the FORMAT options are displayed. The value is replaced by a line of asterisks, the number of which corresponds to the value contained in the selected location.

6.4.3 FORMATTING DATA OVER THE WHOLE SHEET

If you wish to format all the entries on the sheet, first press the "/" key to enter the EASYCALC command mode and then press the "G" key for "GLOBAL". EASYCALC displays:

GLOBAL= W R C A M F

Press the "F" key for "FORMAT". The screen displays:

FORMAT= G S L R I M P

Now follow the procedure outlined in Section 6.4.2 remembering that, because formatting takes place "globally", it is affecting all entries on your worksheet.

NOTE
If you have split the screen into windows (see Section 6.6), the GLOBAL FORMAT commands are only effective on information in the window in which the cursor bar is currently located. Using this technique, it is possible to vary the format on parts of your sheet and still use the GLOBAL FORMAT facility.

6.5 FIXING TITLES

6.5.1 INTRODUCTION

To prevent the overwriting of descriptive text, EASYCALC provides a facility whereby the row or column containing this information can be "locked out" from the rest of the sheet. This means that the cursor bar can no longer be moved into the restricted area.

To fix a title or titles in a row or column, first position the cursor bar in any position on the row or in the column containing the information. Press the "/" key to enter the EASYCALC command mode and press the "L" key. EASYCALC prompts:

FIX TITLE= H V B N

6.5.2 FIXING TITLES HORIZONTALLY

To fix titles horizontally, i.e. to prevent access to the ROW containing the information, first select the FIX TITLES option (see the section above) and press the "H" key. The cursor bar automatically moves to the line below the line containing the titles. Thereafter, no access will be possible to any information on the row containing the titles or any row above it until the FIX TITLES option is turned off, (see Section 6.5.5).

6.5.3 FIXING TITLES VERTICALLY

To fix titles vertically, i.e. to prevent access to the COLUMN containing the information, first select the FIX TITLES option (see Section 6.5.1) and then press the "V" key. The cursor bar then moves automatically to the right of the column containing the titles. Thereafter, no access is possible to any information in the column containing the titles or any column to the left of it until the FIX TITLES option is turned off (see Section 6.5.5).

6.5.4 FIXING TITLES HORIZONTALLY AND VERTICALLY

If you wish to fix titles in both the horizontal and vertical directions simultaneously, i.e. to prevent access to both the column AND the row containing the information, first select the FIX TITLES option (see Section 6.5.1) and press the "B" key. The cursor bar automatically moves one row down and one column to the right of the selected location. Thereafter, no access is possible to any information in, or any row above or any column to the left of this area until the FIX TITLES option is turned off, (see section below).

6.5.5 UN-FIXING TITLES

To un-fix titles, i.e. to allow access to the row and/or column containing the information, first select the FIX TITLES command (see Section 6.5.1) and press the "N" key when the initial letters of the four sub-options are displayed. You may now move freely over all areas of your worksheet.

6.6 SCREEN WINDOWS

EASYCALC allows you to split your worksheet so that you can work on one section of the sheet whilst viewing another section at the same time. You are also allowed to "step" between these windows. This facility removes the restriction of a limited screen size.

NOTE
Only ONE window may be set up at any one time. If an attempt is made to create a second window, the message:

WINDOW EXISTS

is displayed. The current window may be deleted using the procedure outlined in Section 6.6.5.

To create a window, first move the cursor bar to the position where you wish the sheet to be "split". Press the "/" key to enter the EASYCALC command mode and press the "W" key when the command letters are shown. EASYCALC displays:

WINDOW= H V S U N

6.6.1   CREATING A HORIZONTAL WINDOW

To create a horizontal screen window, press the "H" key when the WINDOW options are displayed. The worksheet column indicator line is repeated along the row on which the cursor was positioned and the cursor bar moves to the bottom row of the "window" above this position. You may move the cursor bar into the lower screen window by simply pressing the F1 function key. Press this key again if you wish to move the cursor bar to the upper window.

<div align="center">NOTE</div>

Global operations such as formatting data, changing column width etc., are only effective in the window in which the cursor bar is currently positioned.

6.6.2   CREATING A VERTICAL WINDOW

To create a vertical screen window, press the "V" key when the WINDOW options are displayed. The worksheet row indicator line is repeated down the column in which the cursor bar was positioned and the cursor bar moves into the newly-formed "window". Press the F1 function key to move the cursor bar between windows.

6.6.3   SYNCHRONIZED WINDOW SCROLLING

Normally, if a screen window has been set up, the contents of one window remain stationary when the cursor bar is moved around the other window. You may, however, scroll both windows at the same time. To enable this facility, press the "S" key when the WINDOW options are shown. Thereafter, when the cursor bar is moved in one window, the contents of this and the second window are scrolled at the same time.

6.6.4   UN-SYNCHRONIZED WINDOW SCROLLING

If, after setting synchronization of window scrolling (see the section above), you wish to disable this facility, press the "U" key when the WINDOW options are shown. Now, when you scroll one window, the contents of the other window remains stationary.

6.6.5   UN-SETTING WINDOWS

To remove a screen window, i.e. return the worksheet to its normal display, press the "N" key when the WINDOW options are displayed. The window is deleted.

6.7   CALCULATIONS

6.7.1   INTRODUCTION

EASYCALC calculations are made by first selecting the position on the sheet where you wish the result of the calculation to appear and then defining the formula you wish to use to perform the calculation. Two types of formula can be defined: those using only normal, arithmetic operators or those incorporating one of EASYCALC's thirty-three special functions. When you enter the formula and press RETURN, the calculation is performed. Calculations may be performed between any items of numeric information on the worksheet whether the information has been entered via the keyboard or is the result of a previous calculation.

6.7.2 DEFINING FORMULAE

6.7.2.1 Introduction

An EASYCALC formula consists of operands, arithmetic operators and, when selected, special EASYCALC functions. An operand in this context, is a value on the worksheet or the result of a previous calculation. The operand is indicated by its column and row position on the sheet. An operator is an arithmetic sign. The arithmetic operators and the functions they perform are listed below:

OPERATOR	FUNCTION
+	Addition
-	Subtraction
★	Multiplication
/	Division
↑	Raise to the power of

6.7.2.2 Relational Operators

Together with the arithmetical operators listed above, EASYCALC also provides a number of relational operators. These are used to compare values. The relational operators and the functions they perform are listed below:

OPERATOR	FUNCTION
>	Greater than
<	Less than
=	Equal to
>=	Greater than or equal to
<=	Less than or equal to

6.7.2.3 Order of Precedence

When EASYCALC executes a formula it does so using a specific order of precedence. First all expressions in brackets are evaluated. Then, any exponention is performed. Following this, all divisions, multiplications, additions and subtractions are carried out. The relational operators are then evaluated followed by the Boolean operators NOT, AND and finally, OR.

6.7.2.4 Selecting a Result Position

Position the cursor bar in the location on the sheet where you wish the result of the calculation to appear. To define the formula you wish to use in the calculation, first press the "(" key. This character instructs EASYCALC that a formula is to follow.

6.7.2.5 Making Corrections

If you make a typing mistake whilst entering a formula, press CTRL-E for EDIT and use the 64 editing procedures (see Appendix A) to amend the information.

If you wish to change a formula that has already been entered on the worksheet, first place the cursor bar over the position you have selected for the result of the calculation. Press the "/" to enter the command mode, press the "E" key for "EDIT" mode and use the procedure outlined in Section 7.2.1 to amend the information.

6.7.3 REPLACING A FORMULA BY A RESULT

If you wish, you may replace a formula in a specific sheet location by the value that has resulted from the execution of that formula.

First position the cursor bar in the sheet location containing the formula result. Press the "/" to enter the command mode and press the "X" key. If you look at the top of the screen, note that the result of the formula has now replaced the formula that was originally entered at the current cursor bar location.

6.8 ORDER OF CALCULATION

6.8.1 Introduction

EASYCALC allows you to specify the order in which calculations are performed on the sheet. You may instruct EASYCALC to perform calculations in row or column order. The order of calculation currently being used is denoted by either the letter "C" for "COLUMN" or "R" for "ROW" in the top right corner of the sheet. The effects of both orderings are explained in the sections below:

NOTE
If you have split the screen into windows (see Section 6.6),
the order of calculation you have defined is only effective in
the window in which the cursor bar is currently located.

6.8.2 Calculating in Column Order

This ordering is automatically put into effect when you load the EASYCALC program. In this mode calculations begin at column A1 and then work down column A before going to location B1 and repeating the exercise for that column, and subsequent columns. This process continues until all calculations on the sheet are performed. If you have instructed EASYCALC to perform calculations in row order (see the section below), and you wish to revert to column ordering, first press the "/" key to enter the command mode and type "G" (to indicate a global operation) followed by "C" for "COLUMN" and RETURN.

6.8.3 Calculating in Row Order

When you instruct EASYCALC to perform calculations in row order, calculations begin at coordinate A1 and then work across row 1 to location BK before going to row 2 repeating the procedure for that, and subsequent rows. This process continues until all calculations on the sheet are performed. To select this facility, first press the "/" key to enter the command mode and type "G" (to indicate a global operation) followed by "R" for "ROW" and RETURN.

6.9 REPLICATING INFORMATION - THE R FUNCTION

EASYCALC provides a facility to enable you to copy information from one area of the worksheet to another.

WARNING
YOU MAY NOT COPY A COLUMN OF INFORMATION
INTO A ROW OR VICE VERSA.

Position the cursor bar over the first item of information you wish to copy. Press the "/" key to enter the EASYCALC command mode. Press the "R" key for "REPLICATE". At the top of the screen EASYCALC displays:

REPLICATE=SOURCE OR RETURN

(current cursor bar location)

6.9.1 REPLICATING ONE ITEM OF INFORMATION

If you wish to reproduce only the information in the cell in which the cursor bar is located, press the RETURN key when the SOURCE OR RETURN message is shown. EASYCALC displays:

REPLICATE=TARGET RANGE

If you wish to reproduce the information in only one cell on the sheet, enter the relevant sheet location and press RETURN. To replicate the information to more than one location on the worksheet, first enter the sheet coordinate of the first cell into which the data is to be copied and then press the "." key. Now enter the sheet coordinate of the last cell into which the data is to be copied and press RETURN. If the cell you wish to copy contains a formula, the screen displays:

REPLICATE= R N

You must now specify whether the formula is to be duplicated exactly, or if you wish it to use values RELATIVE to the new position. For example, if location A6 contains the formula (A1+A3) and you wish to copy the information into location B6 relatively, you must press the "R" key twice, indicating that both sheet locations in the original formula are to be copied relatively. The new relative formula in location B6 is (B1+B3).

If you wish to copy the formula exactly as it appears, press the "N" key when the cursor is displayed over the sheet locations in the original formula.

After a few moments EASYCALC displays:

REPLICATE OVER

to indicate that the process has been completed.

6.9.2   REPLICATING A COLUMN OF INFORMATION

If you wish to replicate a column of information, first position the cursor bar at the location containing the first item of data you wish to copy. Press the "/" key to enter the command mode and then press "R" for "REPLICATE". Press the "." key. Three dots are displayed after the current sheet location. Type in the coordinate of the last entry in the column that you wish reproduce and press RETURN. EASYCALC asks:

REPLICATE=TARGET RANGE

Enter the coordinate of the sheet location into which the first item of information from the column is to be copied and press RETURN. If a formula or formulae are contained in the column of information that is being replicated, EASYCALC asks:

REPLICATE= R N

Follow the procedure in Section 6.9.1 (the section above), for replicating formulae.

6.9.3   REPLICATING A ROW OF INFORMATION

If you wish to replicate a row of information, first position the cursor bar at the location containing the first item of data you wish to copy. Press the "/" key to enter the command mode and press "R" for "REPLICATE". Press the "." key. Three dots are displayed after the current sheet location. Type in the coordinate of the last entry in the row that you wish to reproduce and press RETURN. EASYCALC asks:

REPLICATE=TARGET RANGE

Enter the coordinates of the sheet location into which the first item of information from the row is to be copied and press RETURN. If a formula or formulae are contained in the row of information that is being replicated, EASYCALC asks:

REPLICATE= R N

Now follow the procedure in Section 6.9.1 for replicating formulae.

6.10   PROTECTION

6.10.1   INTRODUCTION

EASYCALC provides facilities to permit you to inhibit access to the whole sheet and/or protect specific locations within it from being overwritten.

To select the protection option, press the "/" key to enter the command mode and press the "P" key for "PROTECT". EASYCALC displays:

PROTECT= P N O U

6.10.2 PROTECTING THE SHEET

If you wish to protect the entire worksheet, press the "P" key. EASYCALC prompts:

ENT PW

EASYCALC is now waiting for you to enter a password. This can be anything you wish provided that the password is no longer than six characters. Type in the password you wish to use and press RETURN. Make a note of this word as the sheet may not be re-called in future if the password is not known.

6.10.3 REMOVING SHEET PROTECTION

If you wish to remove sheet protection, first select the PROTECT option (see Section 6.10.1) and then press the "N" key. EASYCALC asks:

ENT PW

Type in the password you originally entered and press RETURN. The message:

SHEET UNPROTECTED

is displayed. The sheet may now be loaded normally, i.e. without the need for a password.

6.10.4 PROTECTING A CELL

If you wish to warn anyone against inadvertently overwriting a sheet location, first position the cursor bar over the information you wish to protect. Select the PROTECT option (see Section 6.10.1) and press the "O" key when the command options are shown. If an attempt is made to enter information into a protected sheet location, EASYCALC displays:

CELL PROTECTED.PROCEED(Y/N) ?

If you do not wish to overwrite the information contained in the protected cell, press the "N" key for "NO". To enter the revised information, press the "Y" key for "YES".

NOTE
Entering revised information into a protected sheet location
removes the protection. If you wish to re-protect the cell,
you must repeat the procedure outlined above.

6.10.5 REMOVING CELL PROTECTION

To remove protection from a sheet location, first move the cursor bar to the required location. Select the PROTECT command (see Section 6.10.1) and then press the "U" key when the command options are displayed. The CELL PROTECTED warning now no longer appears when information is entered into the specified position.

SECTION SEVEN
MODIFYING INFORMATION

7.1 INTRODUCTION

This section contains instructions on how to modify your information. Once you have designed your basic worksheet, you may decide that you wish to add to it, or change some of the information on it. The commands in this section have been designed with this in mind.

7.2 MODIFYING YOUR WORKSHEET

7.2.1 AMENDING AN ENTRY

If you wish amend information on the worksheet, first position the cursor bar over the entry you wish to change. Press the "/" key to enter EASYCALC's command mode and then press the "E" key. The information in the selected location is displayed in full at the top of the screen. A flashing cursor is positioned over the first character of the entry. Use the normal 64 editing procedures (as detailed in Appendix A) to change the information. When you are satisfied that the entry is correct, press RETURN. The revised information is automatically entered into the selected sheet location.

7.2.2 INSERTING A ROW ON THE WORKSHEET

To insert a row on the worksheet, first position the cursor bar at any location on the row ABOVE which you wish the new row to appear. Press the "/" key to enter the command mode and then press the "I" key. EASYCALC displays:

INSERT= R C

Press the "R" key for "ROW". EASYCALC asks:

ARE YOU SURE(Y/N) ?

If you do not wish proceed with the option, press the "N" key for "NO". To insert a row, press the "Y" key for "YES". EASYCALC displays:

PERFORMING RECALCULATION

All calculations on the sheet are re-executed taking into account the new, revised sheet coordinates. After a few moments, a blank row is inserted above the row on which the cursor bar is located. All other information on the sheet is moved down automatically. Note that any formulae references to information that has been moved are changed accordingly.

WARNING
ONLY USE THIS COMMAND IF THERE IS NO INFORMATION IN THE BOTTOM ROW, i.e. ROW 254, OF THE WORKSHEET. IF YOU ATTEMPT TO INSERT INFORMATION WHEN ROW 254 HAS BEEN USED, A "MEMORY OVERFLOW" ERROR IS INDICATED AT THE TOP OF THE SCREEN.

7.2.3 INSERTING A COLUMN ON THE WORKSHEET

To insert a column on the worksheet, first position the cursor bar at any location in the column BEFORE which you wish the new column to appear. Press the "/" key to enter the command mode and then press the "I" key. EASYCALC displays:

INSERT= R C

Press the "C" key for "COLUMN". EASYCALC asks:

ARE YOU SURE(Y/N) ?

If you do not wish to proceed with the option, press the "N" key for "NO". To insert a column, press the "Y" key for "YES". EASYCALC displays:

PERFORMING RECALCULATION

All calculations on the sheet are re-executed taking into account the new, revised sheet coordinates. After a few moments a blank column is inserted to the left of the column in which the cursor bar is located. All other columns on the sheet are moved across automatically. Note that any formulae references to information that has been moved are changed accordingly.

WARNING
ONLY USE THIS COMMAND IF THERE IS NO INFORMATION IN THE EXTREME RIGHT-HAND COLUMN, i.e. COLUMN BK, OF THE WORKSHEET. IF YOU ATTEMPT TO INSERT INFORMATION WHEN COLUMN BK HAS BEEN USED, A "MEMORY OVERFLOW" ERROR IS INDICATED AT THE TOP OF THE SCREEN.

7.2.4 DELETING AN ENTRY

To delete an item of information from the worksheet, first position the cursor bar over the entry you wish to remove. Press the "/" key to enter the command mode and press the "B" key for "BLANK". EASYCALC asks:

ARE YOU SURE(Y/N) ?

If you wish to leave the information intact, press the "N" key for "NO". To blank the location, press the "Y" key for "YES". The entry is deleted.

NOTE
If any formula on the sheet refers to the location you have deleted, the message ERROR is displayed in the result position when any calculations are performed.

7.2.5 DELETING A ROW ON THE WORKSHEET

To delete an entire row of information from the worksheet, closing up the space, first position the cursor bar at any location on the row you wish to delete. Press the "/" key to enter the command mode and then press the "D" key for "DELETE". EASYCALC displays:

DELETE= R C

Press the "R" key. EASYCALC asks:

ARE YOU SURE(Y/N) ?

If you wish to leave the information intact, press the "N" key for "NO". To delete the row, press the "Y" key for "YES". EASYCALC displays:

PERFORMING RECALCULATION

All calculations on the sheet are re-executed taking into account the new, revised sheet coordinates. After a few moments, the row is deleted from the sheet and the rows beneath it are moved up automatically to fill the empty space. Note that any formulae references to information that has been moved up are changed accordingly.

NOTE
If any formula on the sheet refers to a location in the deleted row, the message ERROR is displayed in the result position when any calculations are performed. To delete the information in a row, but leave the row, i.e. without closing up the gap, remove the information from each cell individually, (see Section 7.2.4).

7.2.6 DELETING A COLUMN ON THE WORKSHEET

To delete a column from the worksheet, first position the cursor bar at any location in the column you wish to delete. Press the "/" key to enter the command mode and then press the "D" key. EASYCALC displays:

DELETE= R C

Press the "C" key for "COLUMN". EASYCALC asks:

ARE YOU SURE(Y/N) ?

If you wish to leave the information intact, press the "N" key for "NO". To blank the column, press the "Y" key for "YES". EASYCALC displays:

PERFORMING RECALCULATION

All calculations on the sheet are re-executed taking into account the new, revised sheet coordinates. After a few moments, the column is deleted from the sheet, and the columns to the right of it are moved across automatically to fill the empty space. Note that any formulae references to information that has been moved are changed accordingly.

NOTE

If any formula on the sheet refers to a location in the deleted column, the message ERROR is displayed in the result position when any calculations are performed. To delete the information in a column, but leave the column, i.e. without closing the gap, remove the information from each cell individually, (see Section 7.2.4).

7.2.7 MOVING INFORMATION

EASYCALC provides a facility to enable you to move an entire column or row of information from one location on the sheet to another. All references to sheet locations in any formulae you have entered are revised automatically.

7.2.7.1 Moving a Column of Information

To move a column of information from one sheet location to another, first place the cursor bar at any position in the column you wish to move. Press the "/" key to enter the EASYCALC command mode and then press the "M" key. The location in which the cursor bar is currently positioned is displayed together with the prompt:

MOVE: FROM...TO

(current cursor bar position)

Press the "." key. Three dots are shown next to the displayed cursor bar location. Now enter the coordinate of the column to which you wish to move the information ensuring that the row number corresponds with the row number of the current current cursor bar location, i.e. if the current cursor bar location is A9, and you wish to move the information to column C, you should enter C9. Press RETURN.

NOTE
Information may only be moved to a different column in the SAME ROW as that on which it is positioned.

EASYCALC displays:

PERFORMING RECALCULATION

All the calculations that have been defined are re-executed taking into account the revised sheet references. After a few moments the worksheet is returned to its normal enter mode.

7.2.7.2 Moving a Row of Information

To move a row of information from one location to another, first place the cursor bar in any position on the row you wish to move. Press the "/" key to enter the EASYCALC command mode and press the "M" key. The location in which the cursor bar is currently positioned is displayed together with the prompt:

MOVE: FROM...TO

(current cursor bar position)

Press the "." key. Three dots are shown next to the displayed cursor bar location. Now enter the coordinate of the row to which you wish to move the information ensuring that the column number corresponds with the column number of the current cursor bar location, i.e. if the current cursor bar location is C1, and you wish to move the information to row 8, you should enter C8. Press RETURN.

NOTE
The location to which the information is moved must be in the SAME COLUMN as that in which the cursor is positioned.

EASYCALC displays:

PERFORMING RECALCULATION

All the calculations that have been defined are re-executed taking into account the revised sheet references. After a few moments the worksheet is returned to its normal enter mode.

7.3 RECALCULATIONS

7.3.1 INTRODUCTION

As explained in Section 6.7.1, when any new formula is entered onto the worksheet, the calculation indicated by that formula is performed automatically when the RETURN key is pressed. If, however, you have changed a value(s) on the sheet, you will need to perform all calculations again to view the results generated by the revised information. This is done by pressing the F2 function key (obtained by holding down the SHIFT key and pressing the F1 function key). All calculations are re-executed. This is called AUTOMATIC recalculation mode. EASYCALC also provides a MANUAL recalculation mode. Using this mode, only calculations that use the revised value(s) are re-performed. The recalculation mode currently in operation is denoted by either the letter "A" for "AUTOMATIC" or "M" for "MANUAL" in the top right corner of the sheet. The purpose and effects of both modes are explained in the sections below.

NOTE
If you have split the screen into windows (see Section 6.6),
the recalculation mode you have selected is only effective
in the window in which the cursor bar is currently located.

7.3.2 AUTOMATIC RECALCULATION

This recalculation mode is put into effect when you load the EASYCALC program. In this mode all calculations on the sheet are re-executed when you press the F2 function key. If you have selected the MANUAL recalculation mode (see the following section), and you wish to revert to the AUTOMATIC recalculation mode, first press the "/" key to enter the command mode and type "G" (to indicate a global operation) followed by "A" for "AUTOMATIC" and RETURN.

7.3.3 MANUAL RECALCULATION

In the MANUAL recalculation mode, only those calculations affected directly by the revised value(s) are re-executed when you press the F2 function key. To select this mode press the "/" key to enter the command mode and type "G" (to indicate a global operation) followed by "M" for "MANUAL" and RETURN.

7.4 FORMULAE ERRORS

If you make an error when entering a formula, the following message is displayed at the top of the screen:

SYNTAX ERROR 'code'

where 'code' is a letter corresponding to one of the errors on the table below:

CODE	ERROR
B	The format of the command is incorrect
C	Invalid column number
E	Invalid expression
K	Invalid function
N	Only one function is allowed in a formula
R	Invalid row number
U	Unidentified character

Note that if one of these errors is indicated, the formula must be re-entered in full again, i.e. you cannot edit an incorrectly entered formula.

SECTION EIGHT
THE T COMMAND

8.1 INTRODUCTION

This section covers the "T", or "TRANSFER" command. This command is used to transfer information between the computer, and one of its peripherals. To access the "T" command, first press the "/" key to enter the command mode and then press the "T" key for "TRANSFER". EASYCALC displays:

TRANSFER= P F L S D I E

The TRANSFER command has seven sub-options. Each is concerned with communication between the computer and an outside device, e.g. the disk drive unit or printer. The following sections cover five of the seven TRANSFER sub-options (the "I" option, for INITIALISING (formatting) a new diskette is covered in Section 5.3, and the "F" option for creating an EASYSCRIPT file is covered in Appendix B).

8.2 STORING A WORKSHEET

When you have completed your worksheet, you may store it on diskette. Ensure that the diskette has been formatted, i.e. specially prepared to receive the information. Section 5.3 contains the instructions for formatting a new diskette.

If you have not already done so, then remove the EASYCALC program diskette from the drive unit, replace it in its protective sleeve and put it into a safe place. Insert the diskette on which you wish to store your worksheet and press the "/" key to enter the command mode. The initial letters of the seventeen EASYCALC commands are shown at the top of the screen. Press the "T" key. EASYCALC displays:

TRANSFER= P F L S D I E

Press the "S" key for "SAVE". EASYCALC prompts:

ENTER FILENAME

Enter a filename up to sixteen characters long and press RETURN. This name will be used to identify the worksheet. EASYCALC asks:

ARE YOU SURE(Y/N) ?

If you have entered the name incorrectly, or you do not wish to store the sheet, press the "N" key for "NO". To store the worksheet, press the "Y" key for "YES" when the ARE YOU SURE prompt is displayed. If a worksheet with the same name has already been stored on the diskette, EASYCALC displays:

FILE EXISTS.REPLACE(Y/N) ?

To remove the existing file from the diskette and replace it with the worksheet currently in the computer's memory, press the "Y" key for "YES". If you wish to leave the existing file intact, press the "N" key for "NO". The name you gave to the file is re-displayed. Hold down the SHIFT key and press the CLR/HOME key. The name is deleted and you may now assign a different name to the worksheet. Having done so, follow the procedure above.

When the worksheet is stored, the screen displays:

00, OK,00,00

to indicate that the procedure has been completed successfully.

8.3 LOADING A STORED WORKSHEET

To load a stored worksheet, first press the "/" key to enter the EASYCALC command mode. Press the "T" key for "TRANSFER". EASYCALC displays:

TRANSFER= P F L S D I E

Press the "L" key for "LOAD". EASYCALC prompts:

ENTER FILENAME

Type in the name of the sheet you wish to load and press RETURN. EASYCALC asks:

ARE YOU SURE(Y/N) ?

If you have entered the name incorrectly, press the "N" key and repeat the procedure above. When you are sure that the name you have entered is correct, press the "Y" key for "YES" when the ARE YOU SURE prompt is displayed.

If you have used a password to protect your worksheet, you are asked:

ENT PW

Type in the password and press RETURN. If the password is incorrect, the screen displays:

WRONG PW

and you must repeat the procedure from the beginning of this section. Once the password has been entered correctly, the sheet is loaded into the computer's memory. To display the contents of the sheet, simply press any key.

8.4 PRINTING WORKSHEET INFORMATION

Once you have completed your worksheet, you may print it out via your COMMODORE printer.

EASYCALC lets you print out either your whole worksheet, or just part of it. This is done by specifying the top left and bottom right corners of the area to be printed. If your spreadsheet is very wide you will need to print it out in two, or even three parts.

First, ensure that your printer is properly connected, and that it is on. Also check that the paper is properly aligned. Before entering the command mode, make sure that the cursor bar is in the top left corner of the area that you wish to print. Press the "/" key to enter the EASYCALC command mode. Press the "T" key. EASYCALC displays:

TRANSFER= P F L S D I E

Press the "P" key for "PRINT". EASYCALC displays:

BOTTOM RIGHT :

(current cursor location)...

EASYCALC is now asking for the coordinate of the bottom right corner, enter it and press RETURN. EASYCALC asks:

SWITCH ON THE PRINTER AND CONFIRM

If you have not already done so then switch on your printer. Press any key to continue. Once EASYCALC has finished printing, the message:

PRINT OVER

is displayed to indicate that the procedure has been completed successfully.

8.5 CLEARING A WORKSHEET

If, during an EASYCALC session you wish to erase the sheet on which you are working, first press the "/" key to enter the command mode and then press the "C" key. EASYCALC asks:

ARE YOU SURE(Y/N) ?

If you do not wish to lose the information currently displayed, press the "N" key for "NO". To clear the sheet, press the "Y" key for "YES" when the ARE YOU SURE prompt is shown. If you have used a password to protect the sheet, EASYCALC prompts:

SHEET PROTECTED.PROCEED(Y/N) ?

Again, if you do not wish to clear the sheet, press the "N" key for "NO". To clear all the information in memory, press the "Y" key for "YES". A blank worksheet is displayed.

8.6 REMOVING A WORKSHEET FROM THE DISKETTE

To remove a worksheet that is no longer required from a diskette, first insert the diskette containing the sheet into the drive unit. Press the "/" key to enter the command mode and then press the "T" key. EASYCALC displays:

TRANSFER= P F L S D I E

Press the "D" key for "DELETE". EASYCALC prompts:

ENTER FILENAME

Type in the name of the worksheet you wish to delete and press RETURN. EASYCALC asks:

ARE YOU SURE(Y/N) ?

If you have made a mistake, press the "N" key for "NO". To delete the worksheet from diskette press the "Y" key for "YES". After a few moments EASYCALC displays:

01, FILES SCRATCHED,00,01

to confirm that the sheet has been removed from the diskette.

8.7 VIEWING THE DISK DIRECTORY

To display the contents of a diskette, first insert the diskette you wish to examine into the drive unit. Press the "/" key to enter the command mode and press the "Q" key.

EASYCALC displays the first entry on the diskette. This is the name you assigned to the diskette when it was formatted. Press RETURN. The size, name and type of the first file on the diskette are shown. Press the RETURN key to view the details of the next, and subsequent files on the diskette. When the last file has been shown, the command is terminated automatically.

8.8 EXITING TO BASIC

If you wish to terminate the EASYCALC program, first press the "/" key to enter the command mode and press the "T" key for "TRANSFER". EASYCALC displays:

TRANSFER= P F L S D I E

Press the "E" key for "EXIT". The EASYCALC program is terminated, and the COMMODORE 64 power-up screen is displayed.

SECTION NINE
EASYCALC FUNCTIONS

9.1 INTRODUCTION

EASYCALC contains a number of built-in functions which may be used as part of a formula. These functions can be divided into four groups: Mathematical functions such as SQRT; Trigonometrical functions, like TAN and COS; Statistical functions such as AVERAGE, MEDIAN and STDDV; and Boolean functions such as AND, OR and NOT.

NOTE

Only one special function may be used in each formula you define. You may, of course use the result of a previous calculation as the operand in another formula.

9.2 MATHEMATICAL FUNCTIONS

9.2.1 ABS

FORMAT : (@ABS(x))

PURPOSE: To return the absolute value of a number.

The ABS function makes a negative number positive, i.e. it removes the negative sign. The parameter x can be either the value on which the function is performed, or the sheet location containing the value on which the function is performed.

EXAMPLE: To convert the value -35.67, contained in sheet location D3, into its absolute form.

FORMULA: (@ABS(D3))

RESULT : 35.67

9.2.2 CHOOSE

FORMAT : (@CHOOSE(x,y1:y2))

PURPOSE: To select a specific value.

The CHOOSE function allows you to select a specific value from a specified range. The parameter x is the position within the range from which the value is extracted. The parameters y1 and y2 are the locations on the sheet of the first and last values in the range.

EXAMPLE: To select the fifth value from six locations, assuming that the locations contain the following values:

F5	32.78
G5	112.63
H5	5.00
I5	10.50
J5	100.00
K5	120.88

FORMULA: (@CHOOSE(5,F5:K5))

RESULT : 100

9.2.3 COUNT

FORMAT :(@COUNT(sl:el))

PURPOSE: To calculate the number of entries in a row or column on the worksheet.

The COUNT function allows you to count the number of entries that have been made in a specified row or column of the worksheet. The parameter sl is the location of the start of the area you wish to examine. Parameter el is the location of the end of the area.

EXAMPLE: To count the number of entries in column A of the example from the Training Section.

FORMULA: (@COUNT(A1:A254))

RESULT : 21

9.2.4 EXP

FORMAT : (@EXP(x))

PURPOSE: To raise E by a specific power.

The EXP function raises the value E (2.718280) to a defined power. The parameter x can be either the power by which E is raised, or the sheet location containing the power by which E is raised. This figure must be less than or equal to 88.02969191.

EXAMPLE: Assuming that location BA10 contains the value 6, to raise E to this power.

FORMULA: (@EXP(BA10))

RESULT : 403.4280

9.2.5 INT

FORMAT : (@INT(x))

PURPOSE: To return the integer value of a number.

The INT function rounds a decimal value down to the nearest whole number (integer).

EXAMPLE: To calculate the integer value of 45.321 in sheet location Z15.

FORMULA: (@INT(Z15))

RESULT : 45

9.2.6 LN

FORMAT : (@LN(x))

PURPOSE: To return the natural logarithm of a number.

The LN function calculates the natural logarithm of a value, i.e. the logarithm to base E (2.718280) instead of base 10. The parameter x can be either the value that is used in the expression, or the sheet location of the value that is used in the expression.

EXAMPLE: To find the natural logarithm of the value 8.56 in location Y18.

FORMULA: (@LN(Y18))

RESULT : 2.147100

9.2.7 LOG

FORMAT : (@LOG(x))

PURPOSE: To return the logarithm of a number.

LOG calculates the logarithm of a value to base 1Ø. The parameter x can be either the value in the expression, or the sheet location containing the value in the expression.

EXAMPLE: To find the logarithm of the value 48.89 in location C21.

FORMULA: (@LOG(C21))

RESULT : 1.69822Ø

9.2.8 SQRT

FORMAT : (@SQRT(x))

PURPOSE: To return the square root of a value.

SQRT allows you to calculate the square root of a number. The parameter x can be either the value on which the calculation is performed, or the sheet location containing the value on which the calculation is performed.

EXAMPLE: To calculate the square root of 45.67 in sheet location V14.

FORMULA: (@SQRT(V14))

RESULT : 6.75796Ø

9.2.9 PI

FORMAT : (@PI)

PURPOSE: To enter the value of PI.

PI is really an operator rather than a function. PI is equal to 3.14159265.

EXAMPLE: To compute the area of a circle assuming that the radius 5.5 is in sheet location A29.

FORMULA: (@PI★(A292))

RESULT : 95.Ø334Ø

9.3 TRIGONOMETRICAL FUNCTIONS

9.3.1 ACOS

FORMAT : (@ACOS(x))

PURPOSE: To calculate in radians the cosine of an angle.

ACOS returns the value, in radians, of the cosine of an angle. The parameter x can be either the cosine of the angle on which the function is performed, or the sheet location containing the cosine of the angle on which the function is performed.

EXAMPLE: To convert the cosine of an angle into radians, assuming that location B16 contains the cosine of the angle, i.e 0.900477.

FORMULA: (@ACOS(B16))

RESULT : 0.449931

9.3.2 ASIN

FORMAT : (@ASIN(x))

PURPOSE: To calculate in radians the sine of an angle.

ASIN returns the value, in radians, of the sine of an angle. The parameter x can be either the sine of the angle on which the function is performed, or the sheet location containing the sine of the angle on which the function is performed.

EXAMPLE: To convert the sine of an angle into radians, assuming that location D120 contains the sine of the angle, i.e. the value 0.247403.

FORMULA: (@ASIN(D120))

RESULT : 0.249999

9.3.3 ATAN

FORMAT : (@ATAN(x))

PURPOSE: To calculate in radians the tangent of an angle.

ATAN returns the value, in radians, of the tangent of an angle. The parameter x can be either the tangent of the angle on which the function is performed, or the sheet location containing the tangent of the angle on which the function is performed.

EXAMPLE: To convert the tangent of an angle into radians, assuming that location E20 contains the tangent of the angle, i.e. the value 0.122913.

FORMULA: (@ATAN(E20))

RESULT : 0.122300

9.3.4 COS

FORMAT : (@COS(x))

PURPOSE: To calculate the cosine of an angle.

COS returns the cosine of an angle. The parameter x can be either the angle on which the function is performed, or the sheet location containing the angle on which the function is performed.

EXAMPLE: To calculate the cosine of the angle 30 radians in sheet location A12.

FORMULA: (@COS(A12))

RESULT : 0.154252

9.3.5 SIN

FORMAT : (@SIN(x))

PURPOSE: To return the sine of an angle.

The SIN function calculates the sine of an angle. The parameter x can be either the angle whose sine is calculated, or the sheet location of the angle whose sine is calculated.

EXAMPLE: To calculate the sine of the angle 30 radians in location A43.

FORMULA: (@SIN(A43))

RESULT : -0.98803

9.3.6 TAN

FORMAT : (@TAN(x))

PURPOSE: To return the tangent of an angle.

The TAN function calculates the tangent of an angle. The parameter x can be either the angle whose tangent is calculated, or the sheet location of the angle whose tangent is calculated.

EXAMPLE: To calculate the tangent of the angle 60 radians in location C33.

FORMULA: (@TAN(C33))

RESULT : 0.320041

9.4   STATISTICAL FUNCTIONS

9.4.1   AVERAGE

FORMAT : (@AVERAGE(sl:el))

or : (@AVERAGE(location1,location2,location3...))

PURPOSE: To calculate the average value of a group of entries.

The AVERAGE function adds together a specified range of values and divides the result by the number of items in the range. The function can be used in two ways. You can calculate the average of a group of values in the same row or column on the worksheet, or you can calculate the average of non-adjacent values on the sheet. In the first format of the command, sl is the location of the first value in the range that is to be included in the calculation, and el is the position on the sheet containing the last value in the range. In the second command format, location1 refers to the position on the sheet of the first value to be computed, location2 the position of the second value, etc.

EXAMPLE: To calculate the average of locations A2 thru G2 inclusive, assuming that the contents of these locations is as follows:

A2	5.00
B2	10.00
C2	15.00
D2	18.95
E2	20.00
F2	25.00
G2	3.75

FORMULA: (@AVERAGE(A2:G2))

RESULT : 13.975710

9.4.2 MAX

FORMAT : (@MAX(sl:el))

or : (@MAX(location1,location2,location3...))

PURPOSE: To return the maximum number from a range of values.

The MAX function selects the maximum value from within a given range of values. The first format of the function refers to adjacent values on the sheet. The parameter sl is the start location, and el is the end location of the range. In the second format of the function, location1 contains the first value in the series, location2 the second value, and so on.

EXAMPLE: To find the maximum value of five locations on the sheet, assuming that the contents of each location are as follows:

A32   55.89
B16   7.90
C51   162.09
D45   100.67
E67   21.99

FORMULA: (@MAX(A32,B16,C51,D45,E67))

RESULT : 162.09

9.4.3 MEDIAN

FORMAT : (@MEDIAN(sl:el))

or : (@MEDIAN(location1,location2,location3...))

PURPOSE: To return the middle value from a range of values.

MEDIAN is a statistical function which returns the middle figure from a range of values. The median is the value which divides a distribution so that an equal number of values lie on either side of it. The first format of the function refers to adjacent values on the sheet. The parameter sl is the start location, and el the end location of the range. In the second format of the function, location1 contains the first value in the series, location2 the second value, and so on.

EXAMPLE: Using the values from the example in Section 9.4.2 (the previous section), to find the median of the series.

FORMULA: (@MEDIAN(A32,B16,C51,D45,E67))

RESULT : 55.89

9.4.4 MIN

FORMAT : (@MIN(sl:el))

or : (@MIN(location1,location2,location3...))

PURPOSE: To return the minimum number from a range of values.

The MIN function selects the minimum value from within a given range of values. The first format of the function refers to adjacent values on the sheet. The parameter sl is the start location, and el the end location of the range. In the second format of the function, location1 contains the first value in the series, location2 the second value, and so on.

EXAMPLE: Using the values from the example in Section 9.4.2, to find the minimum value in the series.

FORMULA: (@MIN(A32,B16,C51,D45,E67))

RESULT : 7.90

9.4.5 NPV

FORMAT : (@NPV(p,x))

PURPOSE: To return the net present value of a figure.

The NPV function allows you to calculate the value of an item after a defined discount rate has been subtracted. The parameter p is the discount rate, i.e. the value of each unit of currency after n years at a specified rate of interest.

EXAMPLE: To calculate the net present value of an item in sheet location C14, presently valued at 1200, after five years at a discount rate of 16%.

FORMULA: (@NPV(0.476,C14))

RESULT : 813.0080

9.4.6 STDDV

FORMAT : (@STDDV(sl:el))

or : (@STDDV(location1,location2,location3...))

PURPOSE: To calculate the standard deviation within a range of values.

STDDV is an abbreviation for the statistical function of Standard Deviation. This function allows you to compute the deviation of a range of values from the mean, or average, of the range.

EXAMPLE: To calculate the standard deviation of the salaries of a group of employees, assuming that the salary levels are in column D of the worksheet as shown below:

D1	12000
D2	10000
D3	8500
D4	16000
D5	22000
D6	7500
D7	8000
D8	6500

FORMULA: (@STDDV(D1:D8))

RESULT : 4936.710

9.4.7 SUM

FORMAT : (@SUM(sl:el))

or : (@SUM(location1,location2,location3...))

PURPOSE: To add values.

The SUM function allows you to add the values in a column or row. The first format of the function refers to adjacent values on the sheet. The parameter sl is the start location, and el the end location of the range. In the second format of the function, location1 contains the first value in the series, location2 the second value, and so on.

EXAMPLE: To add the values in row 1 of the worksheet, assuming that the values are as follows:

A1	35.40
B1	112.78
C1	234.00
D1	21.50

FORMULA: (@SUM(A1:D1))

RESULT : 403.68

9.5 BOOLEAN OPERATORS

9.5.1 AND

FORMAT : (@AND(argument1,argument2))

or : (@AND(location1,location2))

PURPOSE: To perform the Boolean AND operation.

In EASYCALC a Boolean or Logical function has a value of either TRUE or FALSE (see Sections 9.5.3 and 9.5.6). This function performs the Boolean AND operation on the values represented by arguments 1 and 2, or on the values in locations 1 and 2.

EXAMPLE: To perform the Boolean AND operation on the contents of locations A1 and B1. For the purposes of this example, assume that A1 contains TRUE, and that B1 contains FALSE.

FORMULA: (@AND(A1,B1))

RESULT : FALSE

9.5.2 OR

FORMAT : (@OR(argument1,argument2))

or : (@OR(location1,location2))

PURPOSE: To perform the Boolean OR operation.

This function performs the Boolean OR operation on the values represented by arguments 1 and 2, or on the values contained in locations 1 and 2.

EXAMPLE: To perform the Boolean OR operation on the contents of locations A1 and B1. Assume that A1 contains TRUE, and that B1 contains FALSE.

FORMULA: (@OR(A1,B1))

RESULT : TRUE

9.5.3 FALSE

FORMAT : (@FALSE)

PURPOSE: To create a Boolean FALSE condition.

This function does not require an argument, and is used to create a Boolean FALSE condition in a location or a formula.

EXAMPLE: To create a Boolean FALSE condition in a location.

FORMULA: (@FALSE)

RESULT : FALSE

9.5.4 IF

FORMAT : (@IF(argument1,argument2,argument3))

PURPOSE: To select a result depending on a condition.

The IF function allows you to select the result of a calculation, depending on a condition that you set. Argument1 must be a logical value, either TRUE or FALSE. The result of the calculation has the value of argument2 if argument1 is TRUE. If argument1 is FALSE, then the calculation has the value of argument3.

EXAMPLE: To select a value from either location C1 or location D1, depending on the contents of location B1. For the purposes of this example, assume that location B1 hold TRUE, and that the values in locations C1 and D1 are 33 and 66 respectively.

FORMULA: (@IF(B1,C1,D1))

RESULT : 33.00000

9.5.5 NOT

FORMAT : (@NOT(argument))

or : (@NOT(location))

PURPOSE: To perform the Boolean NOT operation.

This function performs the Boolean NOT operation on the value represented by argument 1, or on the value contained in location 1.

EXAMPLE: To perform the Boolean NOT operation on the contents of location A1. For the purposes of this example assume that A1 contains TRUE.

FORMULA: (@NOT(A1))

RESULT : FALSE

9.5.6 TRUE

FORMAT : (@TRUE)

PURPOSE: To create a Boolean TRUE condition.

This function does not require an argument, and is used to create a Boolean TRUE condition in a location or a formula.

EXAMPLE: To create a Boolean TRUE condition in a location.

FORMULA: (@TRUE)

RESULT : TRUE

9.6 SPECIAL FUNCTIONS

9.6.1 NA

FORMAT : (@NA)

PURPOSE: To mark a location as NOT AVAILABLE.

This function does not require an argument, and is used to create a NOT AVAILABLE condition in a location or a formula. If, during calculations EASYCALC encounters the NOT AVAILABLE condition, the result of those calculations becomes NOT AVAILABLE.

EXAMPLE: To mark a location as NOT AVAILABLE.

FORMULA: (@NA)

RESULT : NA

9.6.2 ISNA

FORMAT : (@ISNA(location))

PURPOSE: To determine if a location is in a NA condition.

This function requires one argument, and is used to determine whether or not a location is in a NA condition. If the location is NA, then a TRUE value is returned, otherwise a FALSE value is returned.

EXAMPLE: To determine whether or not location A1 is NA. For the purposes of this example, assume that A1 contains NA.

FORMULA: (@ISNA(A1))

RESULT : TRUE

9.6.3 ERROR

FORMAT : (@ERROR)

PURPOSE: To create an ERROR condition.

This function does not require an argument, and is used to create an ERROR condition in a location or formula.

NOTE
The ERROR condition may also be generated as a result of calculations.

EXAMPLE: To create an ERROR condition in a location.

FORMULA: (@ERROR)

RESULT : ERROR

9.6.4 ISERROR

FORMAT : (@ISERROR(location))

PURPOSE: To determine if location is in an ERROR condition.

This function requires one argument, and is used to determine whether or not a location is in an ERROR condition. If the location contains ERROR then a TRUE value is returned, otherwise a FALSE value is returned.

EXAMPLE: To determine whether or not location A1 is in an ERROR condition. For the purposes of this example, assume that A1 contains ERROR.

FORMULA: (@ISERROR(A1))

RESULT : TRUE

9.6.5 LOOKUP

FORMAT : (@LOOKUP(argument1,location1:location2))

PURPOSE: To search for a value.

This function performs a search for the value represented by argument 1, within the range of locations 1 and 2 inclusive, and takes the relative value from the column or row to the right of, or below the range represented by locations 1 and 2. Locations 1 and 2 may be either a column series, or a row series.

EXAMPLE: To search for the value held at location A1 in locations B1 to B10 inclusive, take the relative value from locations C1 to C10, and place it in location A2. For the purposes of this example assume that location A1 contains 3, locations B1 to B10 contain the values 1 to 10 (in ascending order), and that locations C1 to C10 contain the values 10 to 1 (in descending order). Also assume that the cursor bar is currently positioned in location A2.

FORMULA: (@LOOKUP(A1,B1:B10))

RESULT : 8.000000

SECTION TEN
EXAMPLES OF EASYCALC APPLICATIONS

10.1 INTRODUCTION

This section contains examples of typical EASYCALC applications both in business, and in the home. The examples shown demonstrate the scope and flexibility of EASYCALC.

The three examples are also stored on your EASYCALC program diskette. The filenames are "10.2", "10.3" and "10.4". Load these using the procedure outlined in Section 8.3.

10.2 REPLACEMENT OF ITEMS WHICH DETERIORATE

This example shows the optimal replacement policy for a car which initially costs £5000 with an interest rate of 8%.

The following locations contain figures which you may substitute for your own:

LOCATION	LABEL
C1	Price of new car
C2	Interest rate(%)
D7-I7	Selling price (over six years)
D8-I8	Running & servicing costs (also over six years)

Once you have replaced the relevant figures with your own, you may perform recalculation by pressing the F2 function key (obtained by holding down the SHIFT key and pressing the F1 function key).

10.3 ECONOMIC ORDER QUANTITIES

This example shows how an optimum order quantity may be obtained.

The following locations contain figures which you may substitute for your own:

LOCATION   LABEL

D1   Demand per year (tonnes)
D3   Ordering cost (£)
D4   Stockholding cost (%)
D7-G7   Order size (tonnes)
D8-G8   Price per tonne (£)

Once you have replaced the relevant figures with your own, you may perform recalculation by pressing the F2 function key (obtained by holding down the SHIFT key and pressing the F1 function key).

10.4 FORECASTING

This example shows a method of forecasting known as Exponential Smoothing. This method of forecasting involves sequential updating of the forecast dependent on the difference between the previous Forecast (locations D8-O8), and the previous Actual Data (locations C7-N7). The Smoothing Constant (Y) can have a value of between 0.1 and 1.0, but normally lies between 0.1 and 0.2. The higher the value of the Smoothing Constant (Y), the more sensitive the formula is to recent changes in Actual Data.

The following locations contain figures which you may substitute for your own:

LOCATION   LABEL

C7-N7   Actual Data

Once you have replaced the relevant figures with your own, you may perform recalculation by pressing the F2 function key (obtained by holding down the SHIFT key and pressing the F1 function key).

Appendices
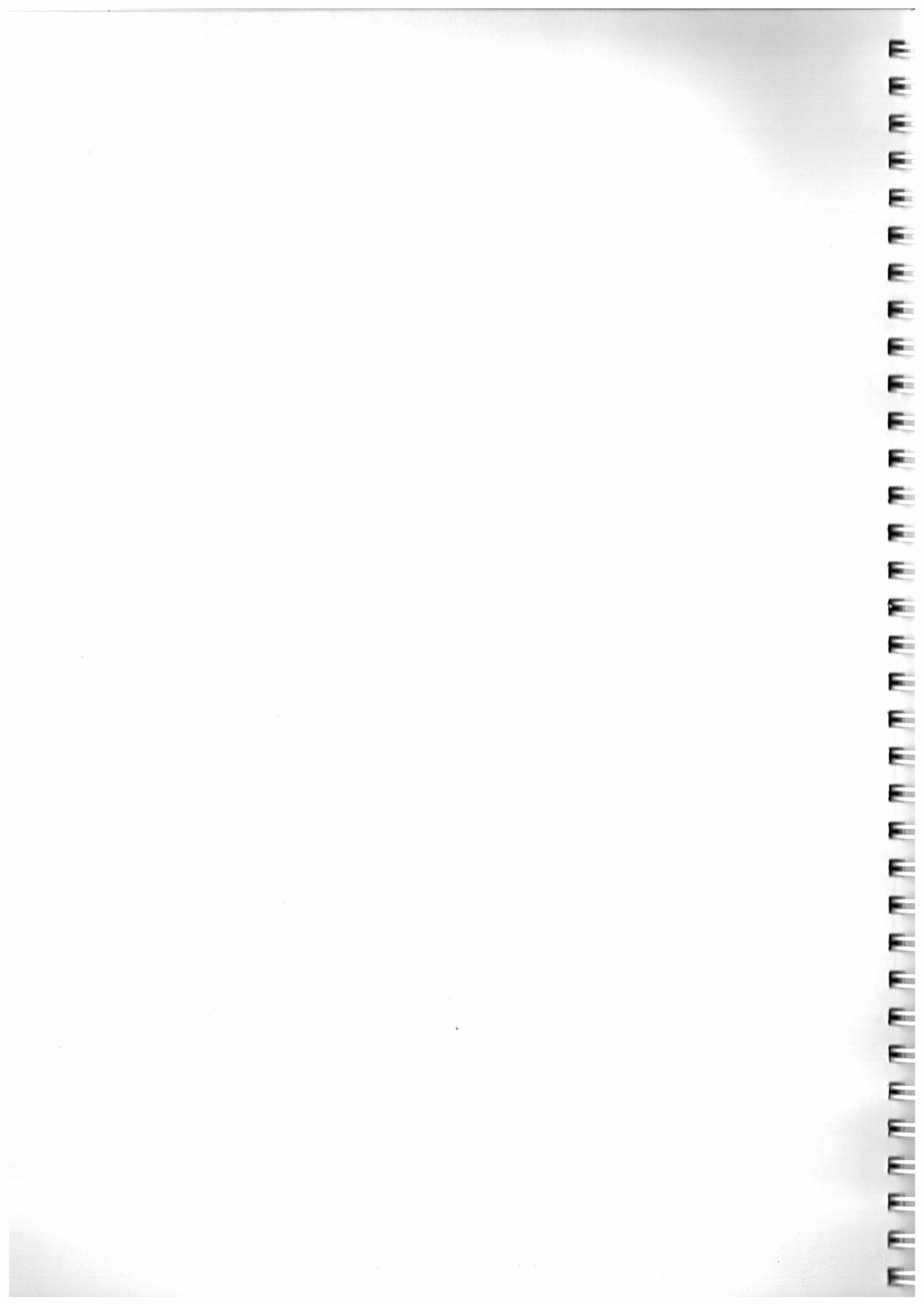
APPENDIX A
KEYBOARD NOTES

CONTROLLING THE CURSOR

The "cursor" is the flashing block below the READY which appears on the screen when you turn on the computer. The position of the cursor determines where the characters appear on the screen when you type them. There are two keys on the keyboard of your computer which control the principal movement of the cursor on the screen. These are the keys marked CRSR, one marked with horizontal (left and right) arrows and one with vertical (up and down) arrows.

Depressing the key with the horizontal arrow moves the cursor one space to the right. Pressing this key whilst holding down the SHIFT key moves the cursor back to the left. Similarly, the vertical CRSR key moves the cursor down and with the SHIFT key depressed moves it up. If you want the cursor to return directly to the upper left corner of the screen which is called the HOME position, simply press the key marked CLR/HOME. Practice moving the cursor around the screen using these keys.

CORRECTING TYPING MISTAKES

Before starting to use your 64 program, you should know how to correct typing errors so that you need not worry if you press the wrong key from time to time. Correcting errors is simple on the Commodore 64 computer. Try it.

Type the following anywhere on the screen:

WHERE ERRORRS ARE CONSERNED THE KY TO SCKSESS IS TRY.

To correct "ERRORRS", place the cursor over the "S". Now press the INST/DEL key once. You now have:

ERRORS

The DELETE function takes the letter under the cursor and "pulls" it, along with all the following text, one position to the left. This action covers whatever was originally in the position to the left of the cursor.

Next place the cursor over the "S" in "conserned" and press the "C" key. Notice how the computer simply overwrites whatever is under the cursor.

Now place the cursor over the "Y" in "KY". Hold down the SHIFT key and press the INST/DEL key once. Notice how the INSERT function "pushes" all of the text to the right of the cursor one position, leaving a blank space under the cursor where you can now type the missing "E".

Try out these techniques yourself by correcting "SCKSESS".

Before proceeding with any other activity on the screen press RETURN. The computer displays the message:

?SYNTAX ERROR
READY.

You may now load EASYCALC as explained in Section 2.3.3.

APPENDIX B
CREATING AN EASYSCRIPT FILE

When you have completed your worksheet, you may save it as a file that can be read by the EASYSCRIPT word processor. Using this facility you can incorporate your worksheets within letters and reports produced with EASYSCRIPT.

Remove the EASYCALC program diskette from the drive unit, replace it in its protective sleeve, and put it in a safe place. Insert the diskette on which you wish to store your information and press the "/" key to enter the command mode. The initial letters of the seventeen EASYCALC commands are shown at the top of the screen. Press the "T" key for "TRANSFER". EASYCALC displays:

TRANSFER= P F L S D I E

Press the "F" key for "FILE". EASYCALC displays:

ENTER FILENAME

Enter a name up to sixteen characters in length and press RETURN. EASYCALC asks:

ARE YOU SURE(Y/N) ?

If you have entered the name incorrectly, or you do not wish to create the file press the "N" key for "NO". To store the worksheet as an EASYSCRIPT file, press the "Y" key for "YES" when the ARE YOU SURE prompt is shown. If a file with the same name has already been stored on the diskette, EASYCALC displays:

FILE EXISTS.REPLACE(Y/N)?

To remove the existing file from the diskette and replace it with the worksheet currently in memory, press the "Y" key for "YES". If you wish to leave the existing file intact, press the "N" key for "NO". You are returned to the ENTER FILENAME section. Assign a different name to the worksheet and follow the procedure above.

When the worksheet is stored, the screen displays:

00, OK,00,00

to indicate that the procedure has been completed successfully.

WARNING
THIS OPTION HAS BEEN DESIGNED FOR USE WITH ONLY SMALL WORKSHEETS. DO NOT TRY TO CREATE AN EASYSCRIPT FILE USING DATA THAT EXCEEDS SCREEN LIMITS, I.E. YOU CAN ONLY CREATE AN EASYSCRIPT FILE IF THE WHOLE OF YOUR WORKSHEET IS VISIBLE ON SCREEN. FAILURE TO ADHERE TO THIS WARNING WILL RESULT IN DATA CORRUPTION AND OMISSION.

You are now free to merge the EASYSCRIPT file with EASYSCRIPT using the methods described in the EASYSCRIPT USER GUIDE, Sections 4.2.3 and 4.3.3.

APPENDIX C
ERROR MESSAGES

In the course of using EASYCALC, you may generate one of the following error messages. The error its meaning and probable cause are given with each.

ERROR	CAUSE
FILE NOT FOUND	An attempt has been made to load a worksheet that does not exist.
RANGE ERROR	The worksheet coordinate does not exist.
MEMORY OVERFLOW	The size of the worksheet has been exceeded.
SYNTAX ERROR 'B'	The format of a formula is incorrect.
SYNTAX ERROR 'C'	Invalid column number in a formula.
SYNTAX ERROR 'E'	Invalid expression in a formula.
SYNTAX ERROR 'K'	Invalid function in a formula.
SYNTAX ERROR 'N'	An attempt has been made to use more than one pre-defined function in a formula.
SYNTAX ERROR 'R'	Invalid row number in a formula.
SYNTAX ERROR 'U'	Unidentified character in a formula.
WINDOW EXISTS	An attempt has been made to split the screen into windows when windows have already been set up.
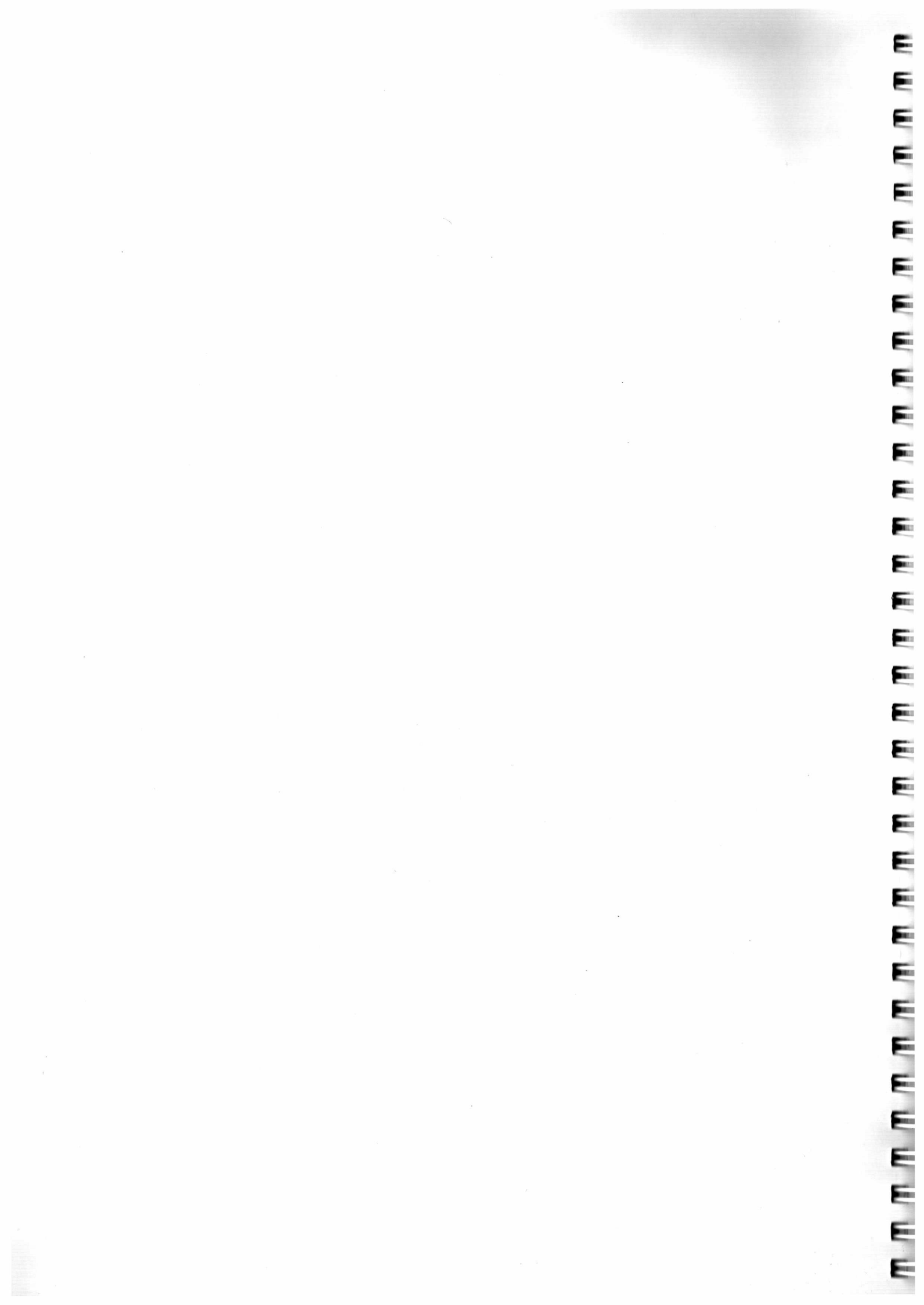
GLOSSARY

A list of terms used in this manual.

ABORTING
Terminating an EASYCALC command by holding down the SHIFT key and pressing the CLR/HOME key.

ALIGN
To position information at the right or left edge of a column.

BLANKING
To clear the contents of a worksheet location.

CELL
A specific location on the worksheet.

CHARACTER
Each symbol which appears on the screen, whether it is a number, letter punctuation mark, mathematical symbol or space, i.e. everything created by a keystroke.

CONTROL KEY, CURSOR
The two keys marked CRSR, one with horizontal arrows and the other with vertical arrows. The horizontal key moves the cursor or cursor bar to the right when it is pressed alone and left when it is pressed with the SHIFT key down. The vertical key moves the cursor or cursor bar down when it is pressed alone and up when it is pressed with the SHIFT key down.

CO-ORDINATE
A set of numbers that refer to a specific worksheet location. The co-ordinate is expressed in terms of first the column letter and then the row number of the location.

CURSOR
The flashing block below the "READY." on the screen when you turn on the computer. When you type a character it appears in the position indicated by the cursor.

CURSOR BAR
The blue bar which, when positioned on a worksheet, determines where the typed information appears.

DATA
Information that is entered on the worksheet.

EXPONENTION
Raising a value to a defined power.

FORMATTING
A procedure that prepares a new diskette to receive information.

FORMULA
A sequence of arithmetic operations.

FUNCTION KEYS
The tan keys on the right of the keyboard used to perform specific operations.

GLOBAL
Over the whole worksheet.

GRAPHING
Converting a value into a histogram bar.

HISTOGRAM
A graph using vertical columns to illustrate frequency distribution.

INTEGER
Any whole number.

JUSTIFICATION
To align data to the left or right of a worksheet column.

NUMERIC DATA
An item of information comprised entirely of figures.

OPERAND
The quantity used in an arithmetic operation. In EASYCALC, an operand is a value entered from the keyboard or one on the worksheet specified in terms of its column and row position.

OPERATOR
An arithmetic sign, e.g. +, -, $\star$, /, ↑

PARAMETER
A variable that refers to a sheet location.

PRECEDENCE
The order in which a formula is evaluated.

SCROLLING
To move the sheet across the screen.

STRING
Any group of characters, alphabetic, numeric or a combination of both.

SYNTAX
The arrangement of characters in an expression.

REPLICATE
To copy information from one area of the worksheet to another.

TEXT
Descriptive information on the worksheet.

WINDOW
The screen or a section of it.

WORKSHEET
An area on which information is entered and manipulated.

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