VIC-20

COLOR COMPUTER

DISK
BASED
16K EXPANSION REQUIRED

SIMPLICALC

commodore
COMPUTER

VIC-20
SIMPLICALC

SIMPLICALC
USER GUIDE

VIC3301 – diskette

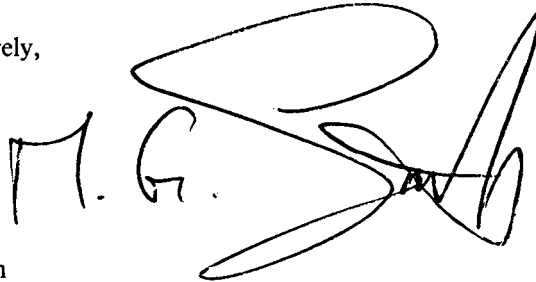**VIC3302 – cassette**

commodore
COMPUTER

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,

M. G. Smith

Technical Author

COMMODORE BUSINESS MACHINES (UK), LTD.
675 Ajax Avenue
Trading Estate
Slough, Berkshire SL1 4BG
ENGLAND

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1.1 INTRODUCTION

SIMPLICALC is a computer program which enables numeric information to be recorded and manipulated via your VIC 2Ø computer system.

SIMPLICALC combines the functions of pencils, paper and calculator in one package. You decide how large an area you wish to use to enter information, thereby enabling you to tailor SIMPLICALC to meet your own requirements. This area, because it is analogous to a sheet of paper, is called a 'worksheet'.

The worksheet is divided into columns and rows, each column being seven characters wide. The screen acts as a 'window' through which any part of the worksheet may be viewed. Using simple to define formulae, calculations may be performed on the entries you make and the results placed in selected areas on the worksheet. This information may then be stored on cassette or diskette (depending on the system you are using) and/or printed via your VIC printer.

1.2 INTRODUCTION TO THIS MANUAL

The SIMPLICALC manual is divided into seven sections, each of which is outlined below:

SECTION ONE – AN INTRODUCTION TO SIMPLICALC

This section contains an introduction to SIMPLICALC and the SIMPLICALC manual and an explanation, in very broad terms, of how SIMPLICALC 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 set up instructions are also given.

SECTION TWO – LEARNING TO USE SIMPLICALC

This part of the manual contains a step-by-step training guide to illustrate how SIMPLICALC 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 SIMPLICALC.

SECTION FOUR – AN INTRODUCTION TO THE OPERATING SECTION

Here a brief outline of each SIMPLICALC function is given. The functions are listed in the order in 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 prepare a diskette to receive information and how to load the SIMPLICALC program.

SECTION SIX – ENTERING AND STORING INFORMATION

Section Six shows how to enter information on the worksheet. Instructions are also given to enable you to set up formulae and then use them to perform calculations using the information entered. You are also shown how to store a worksheet and how to delete a stored sheet.

SECTION SEVEN – EXAMPLES OF SIMPLICALC APPLICATIONS

This section contains illustrations of typical SIMPLICALC 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 VIC 20 screen.

APPENDIX B – ERROR MESSAGES

A list of error messages that you may encounter, their meaning and probable cause is given in this Appendix.

GLOSSARY

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

1.3 AN OVERVIEW OF SIMPLICALC

1.3.1 INTRODUCTION

This section contains an explanation, in very broad terms, of how SIMPLICALC 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.

1.3.2 WHAT IS SIMPLICALC ?

SIMPLICALC is a means for recording and manipulating numeric information using the VIC 20 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 VIC is the calculator. No knowledge of, or experience with, computers is required for you to be able to use the features that SIMPLICALC provides.

1.3.3 HOW INFORMATION IS ENTERED

After you have loaded the SIMPLICALC program, you must specify the size of the area on which you wish to work. This area is called a 'worksheet' and is divided into columns and rows. Each column is seven characters wide. The position in which you wish to enter information is selected by moving a seven-character wide cursor bar into that position on the screen using the cursor control keys. The information is then entered using normal typing procedures.

1.3.4 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. By pressing a single key, SIMPLICALC then performs the calculation(s). No knowledge beyond elementary arithmetic is needed in order to use SIMPLICALC's calculation capabilities.

1.3.5 HOW INFORMATION IS STORED

When a worksheet has been completed it may be stored on a cassette tape or on a diskette.

1.4 EQUIPMENT REQUIREMENTS

1.4.1 THE HARDWARE

The SIMPLICALC program is designed to be used with a Commodore VIC 2Ø computer system. The elements of this system are as follows:

1. A COMMODORE VIC 2Ø computer.
2. A COMMODORE VIC 154Ø Disk Drive Unit and connecting cable or a COMMODORE C2N cassette unit.
4. A COMMODORE VIC printer and connecting cable.
5. A suitable television set or monitor.
6. A 16K (RAM) VIC 1111 memory expansion cartridge.
7. Four three-amp fused mains plugs.

The equipment must be connected as shown in Figure 1-1.
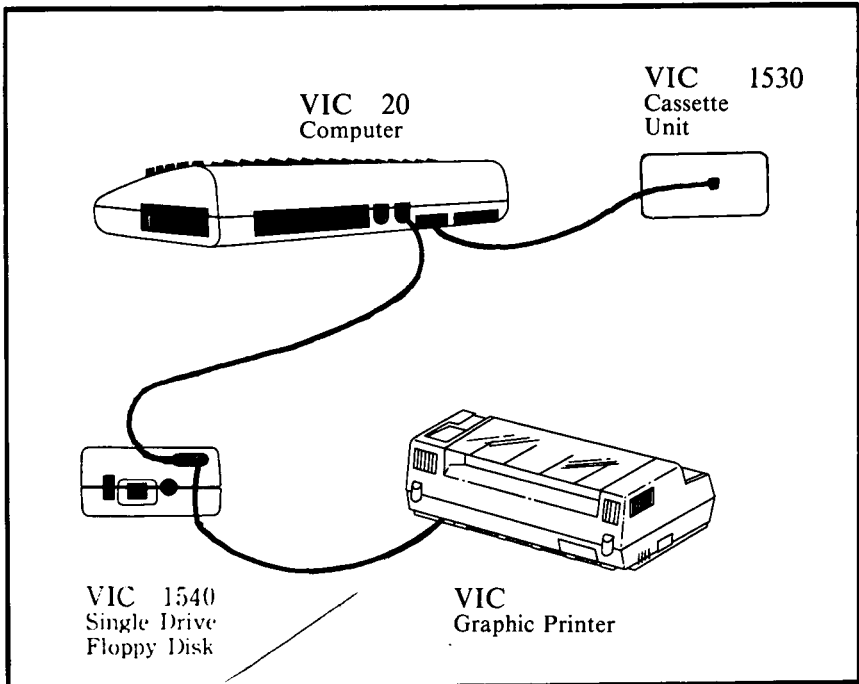
FIGURE 1-1 THE HARDWARE CONNECTED

1.4.2 THE SIMPLICALC SOFTWARE

The SIMPLICALC program is supplied either on a diskette or on a cassette tape. These differ only in their loading and storing procedures.

1.5 PRECAUTIONS

SIMPLICALC 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.

1.5.1 THE WORKING ENVIRONMENT

In order to gain maximum efficiency and facilitate trouble-free operation, your VIC 20 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. If you suspect that this is likely to occur, your COMMODORE dealer can analyse the problem and recommend solutions.

1.5.2 CARE OF DISKETTES AND CASSETTES

Diskettes and cassettes 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. Always keep a cassette in its protective box when it is not in the cassette unit.

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

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

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

6. 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.

7. Do not expose diskettes or cassettes to excessive heat or sunlight. The recommended temperature range for the storage and use of diskettes or cassettes is 50 to 120 degrees F.

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

9. Do not attempt to clean a diskette. Abrasion will result in the loss of stored information.

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

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

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

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

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

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

1.6 BACKING UP INFORMATION

It is essential that at least two copies are kept of all the information you have stored so that you will not lose this information if the diskette or cassette becomes damaged.

1.7 GETTING STARTED

This section contains an explanation of how to turn on the COMMODORE VIC 20 computer system and how to load, and then run, SIMPLICALC. As SIMPLICALC is available on both cassette and diskette, instructions are given for both systems.

1.7.1 CONNECTIONS

The VIC 20 computer system must be connected as shown in Figure 1-1. Ensure that each component is switched off before connecting it to the mains supply.

1.7.2 TURNING ON THE COMPONENTS

1.7.2.1 The Hardware

The components of the VIC 20 system should be turned on in the following order:

1. The T.V. set or monitor.

2. The COMMODORE VIC 20 computer (first ensuring that the 16K (RAM) memory expansion cartridge has been inserted, label uppermost, in the expansion port of the VIC).

3. The COMMODORE VIC 1540 disk drive unit, if used, and then:

4. The COMMODORE VIC printer.

The expansion port of the VIC is the large slot at the rear of the computer. The ON/OFF switch on the computer is of the rocker type and is located on the right side panel of the computer. Press the projecting half of the switch. After a few seconds, the screen will appear as shown in Figure 1-2.
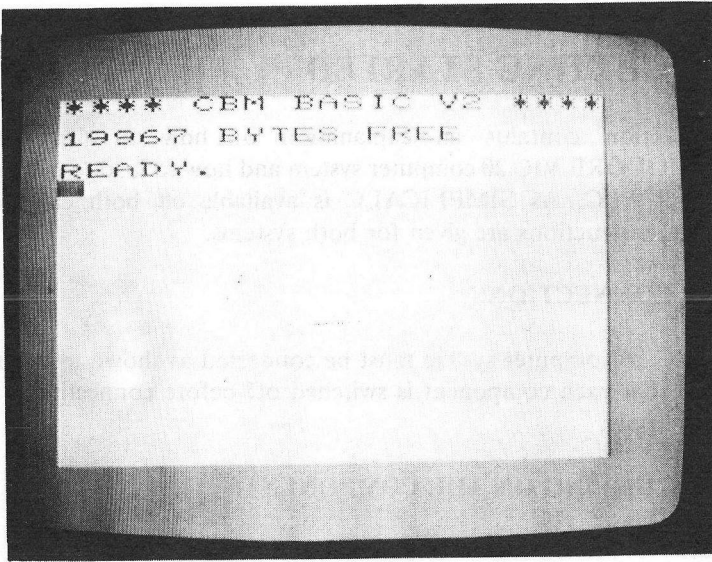
FIGURE 1-2 THE SCREEN AT POWER UP

The switch on the disk drive unit is also of the rocker type and is situated at the rear of the unit on the right hand side. Press the projecting half of the switch. The two lights on the disk drive, the red drive light and the green power light, will both come on. After a few seconds, the drive light will go off.

The ON/OFF switch on the printer is again of the rocker type and is located on the left hand edge of the machine. Press the projecting half of the switch. The print head will move to the centre of the page and then to its original position. The printer should not be switched on until it is required.

Note that the cassette unit has no ON/OFF switch.

1.7.2.2 Problems that may Arise

If any component of the system does not come on, or the screen display is not as shown, or the disk unit lights do not conform to the sequence above, turn the system off. Ensure that the cables and mains supply are properly connected and try again. If the trouble persists consult your COMMODORE VIC dealer.

1.7.3 THE SIMPLICALC SOFTWARE

SIMPLICALC is a computer program supplied either on a diskette or on a cassette tape. To begin using SIMPLICALC, first remove the diskette or cassette from its protective covering.

1.7.4 LOADING SIMPLICALC

1.7.4.1 Diskette Version

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. This procedure is shown in Figure 1-3.
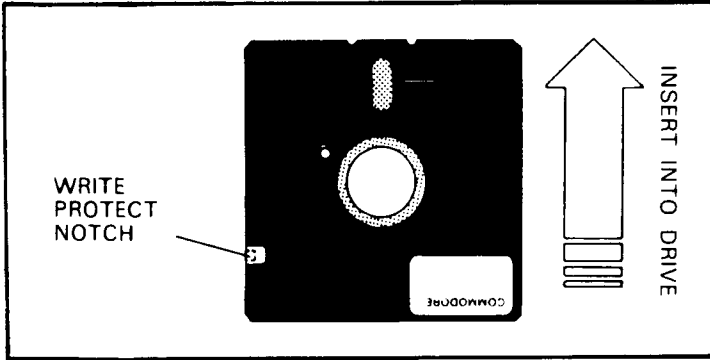
FIGURE 1-3 INSERTING A DISKETTE

Gently push the diskette into the drive and close the disk drive door.

Load the SIMPLICALC program by typing:

LOAD "Ø:*",8,1

and then pressing *RETURN.*

The red drive light will come on for a few seconds whilst the drive whirs quietly. The following messages will appear:

SEARCHING FOR Ø:*
LOADING

After a brief delay, the screen will appear as shown in Figure 1-4.
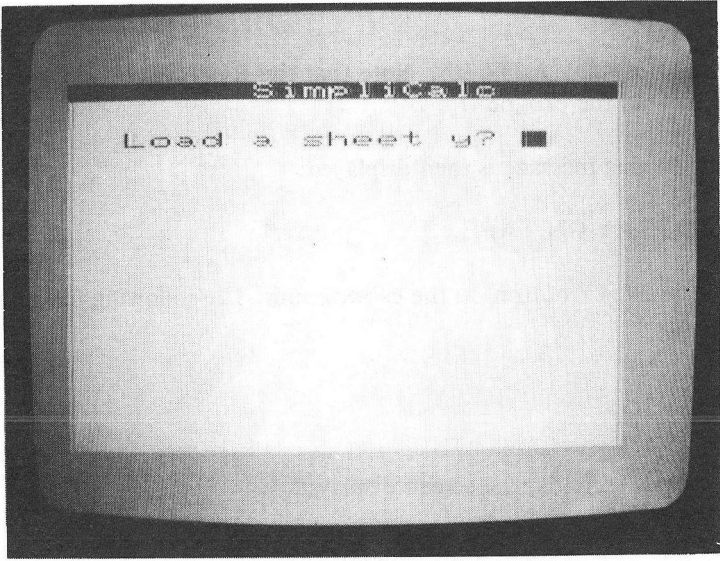
FIGURE 1-4 THE FIRST SIMPLICALC SCREEN

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.

1.7.4.2 Cassette Version

Open the cassette unit lid by pressing on the STOP/EJECT button. Insert the cassette tape into the unit ensuring that the exposed tape is facing you. Close the lid and press the *REWIND* button. When the cassette reels have stopped moving, press the *STOP/EJECT* button gently until the REWIND button returns to its normal position.

Load the SIMPLICALC program by typing:

LOAD "",1,1

and then pressing *RETURN*. Note that the RUN/STOP key cannot be used to load the program.

The following message is then displayed:

PRESS PLAY ON TAPE

Press the *PLAY* button on the cassette unit. The following messages will then appear:

OK
SEARCHING

After a few seconds, the screen displays:

FOUND
LOADING
SEARCHING

If LOADING does not appear, and the tape has ended, press the *STOP/EJECT* button and remove the cassette from the cassette unit. Turn the system off, wait fifteen seconds, turn the system back on and repeat the procedure as described above.

After a brief delay, the screen will appear as shown in Figure 1-4.

Remove the program cassette from the cassette unit and store the cassette in its protective case.

1.7.5   TURNING THE SYSTEM OFF

1.7.5.1   Cassette Version

Press down the *STOP/EJECT* button on the cassette unit until the lid rises. Remove the cassette and return it to its protective case.

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

1.7.5.2 Diskette Version

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, the drive unit, the computer and finally the T.V. set or monitor.

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

1.8 SUMMARY

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

TRAINING SECTION

SECTION TWO
LEARNING TO USE SIMPLICALC

2.1 INTRODUCTION

The section which follows is designed to train the first time user in the operation of SIMPLICALC by means of a step-by-step guide through a typical application. The example shows how the program was used to create a cash account for a home based business, i.e. to record the movement of money into and out of the company.

Only the most common features of SIMPLICALC are included in this section. Detailed instructions for the use of these and the remaining SIMPLICALC options can be found in the Operating Section of the manual.

2.2 THE EXAMPLE

Imagine that you have decided to open a small business at home. At first it was relatively easy to keep the accounts up to date. However the number of customers is now increasing and you find that your present book-keeping method is time-consuming and no longer efficient. Because of this, you have invested in a VIC computer system and the SIMPLICALC package. To experiment with the product, you have decided to use it, together with your VIC 20, to produce a cash account for the previous month identical to the one you wrote yourself. This account is shown in Figure 2-1.

VIC Co.

Cash   Account

AUGUST

DEBITS			CREDITS		
DAY	ACCOUNTS	AMOUNT	DAY	ACCOUNTS	AMOUNT
1	B/Fwd.	285.75	2	Rent	120.50
3	B. Hook	124.74	3	Rates	35.65
5	F. Todd	53.25	8	Gas	84.35
11	G. Gaunt	67.25	15	Salary	350.00
13	D. Pratt	23.85			
17	C. Gray	99.10		Sub Total	590.50
22	C. Dixon	121.67			
27	C. James	34.50	31	Cash	219.61
	Total	810.11		Total	810.11

FIGURE 2-1 THE CASH ACCOUNT

2.3 PREPARATION

Set aside two to three hours for this training session. Follow all the instructions closely and please DO NOT experiment at this stage.

2.3.1 TURNING ON THE SYSTEM

Read the precautions in Section 1.5 and follow the instructions in Section 1.7.1 before turning on your VIC 20 computer system. Ensure that the 16K Memory Expansion Cartridge has been inserted into the expansion port of your VIC. (The expansion port is the large slot at the rear of the computer.) The cartridge must be inserted with the label facing up. When the VIC is turned on, the screen appears as shown in Figure 1-2.

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 VIC screen. If you are not yet familiar with the use of these keys, carry out the exercises contained in this Appendix before proceeding with this section.

2.3.3 LOADING SIMPLICALC

The SIMPLICALC program is available in both cassette and diskette versions. These differ only in their loading and storing procedures.

2.4 CREATING A WORKSHEET

In Section 1.3.3 the concept of a worksheet was described. To refresh your memory, a worksheet is an area organised into columns and rows. The size of the sheet can vary according to your requirements but once the size is defined, it cannot be changed. When SIMPLICALC has been loaded, you are asked:

LOAD A SHEET Y ?

If a worksheet had previously been created and stored, you would now have the option of recalling the sheet and displaying it on the screen by pressing the *y* and *RETURN* keys. As no worksheet has yet been created, type *n* and press *RETURN*. The screen will then appear as shown in Figure 2-2.
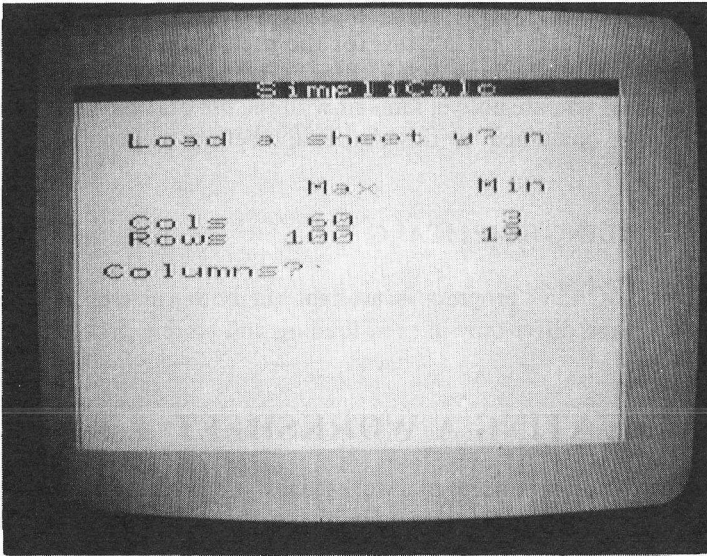
FIGURE 2-2 SCREEN PRIOR TO SHEET SET-UP

2.4.1 DEFINING THE WORKSHEET AREA

SIMPLICALC now displays the maximum and minimum number of columns and rows that may be selected when defining the size of the worksheet. You now specify the amount of space you need for your particular application.

COLUMNS ?

2.4.1.1 Selecting the Number of Columns

Each column on the worksheet can hold a maximum of seven characters. Columns are numbered from left to right across the sheet, beginning at column Ø.

In this example, as shown in Figure 2-1, you are setting up a Cash Account for the month of August. The account is divided into two halves: the DEBIT side, which is used to record all money received (income) and the CREDIT side which records what you have spent (expenditure). Four columns will be used for each side of the account and one column will be left blank to separate debit entries from credit entries.

In response to the prompt COLUMNS ?, type *9* and press *RETURN*.

If you attempt to enter a number outside the range shown on the screen, COLUMNS will be displayed again and you must then enter another number.

2.4.1.2 Selecting the Number of Rows

After you have entered the number of columns, SIMPLICALC asks:

ROWS ?

Rows are lines on the worksheet and are numbered from the top of the sheet to the bottom, beginning at row Ø. In this example, twenty-three rows will be used, so type *23* and press *RETURN*.

If you attempt to enter a number outside the range allowed, ROWS? will be displayed again and you must enter another number.

You have defined the size of the worksheet and SIMPLICALC now displays the first section of this sheet as shown in Figure 2-3.
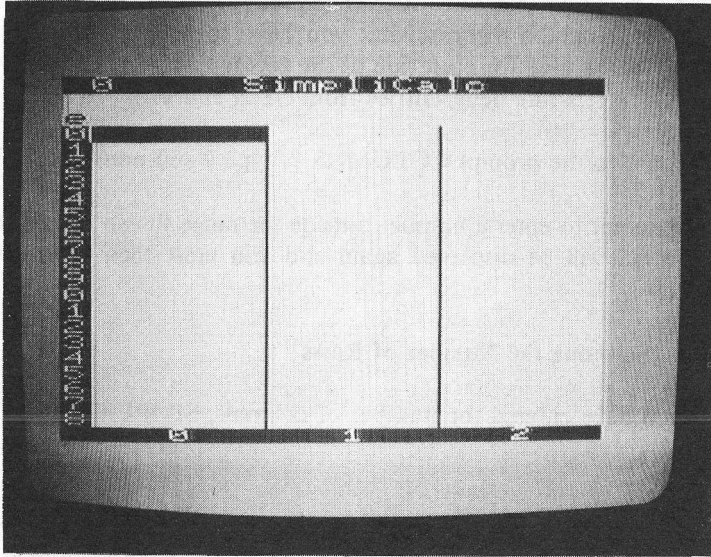
FIGURE 2-3 INITIAL SHEET DISPLAY

You will notice that the numbers Ø to 9 are repeated down the left hand edge of the screen. These numbers refer to the worksheet rows. For quick reference, there is also a row counter at the extreme top left of the screen. This indicates the number of the row at which you are positioned. Because of the screen size, only three columns are displayed at any one time. In this instance, these are columns Ø, 1 and 2.

Having loaded SIMPLICALC and specified the size of the worksheet you wish to use, you are now ready to enter your information on it. The sections that follow explain how this is done.

2.4.2 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 seven-character wide blue bar is displayed below the SIMPLICALC title in column Ø row Ø of the worksheet. This is the cursor bar. By positioning this bar in a particular column of a specific row of the sheet, any information that is entered will then be displayed beginning at that position.

The cursor bar is moved down the sheet by pressing the vertical cursor control key. Movement of the cursor bar up the sheet is achieved by pressing the vertical cursor key whilst holding down the SHIFT key. Try moving the cursor bar up and down the sheet. As you do so, the row counter (displayed at the left of the SIMPLICALC title) changes as the bar is moved to indicate at which row the cursor bar is situated.

To move the cursor bar across the sheet from left to right, press the horizontal cursor control key. To move from right to left, press the horizontal cursor control key whilst holding down the SHIFT key. Try moving the cursor bar in both directions. As it moves across the sheet, the column numbers at the bottom of the screen change accordingly.

The cursor bar will not move beyond the row and column limits you defined when specifying the size of the worksheet.

2.4.3 ENTERING INFORMATION

Having loaded SIMPLICALC and specified the size of the worksheet you wish to use, you are now ready to enter your information on it. The sections that follow explain how this is done. Information is entered on the worksheet in two stages. First, you must position the cursor bar in the location on the sheet where you wish the information to appear. The information is then entered using normal typing procedures. As each character is typed, it is displayed at the top of the screen. Every seventh character typed causes the string of seven characters to be automatically cleared from the top of the screen and placed in the cursor bar position on the worksheet. The cursor bar then moves to the next column in that row.

If you wish to place less than or more than seven characters in a position on the sheet, press the vertical cursor control key after the information has been typed (the cursor bar will then move one row down the sheet) or the horizontal cursor control key (to move one column to the right on the same row).

2.4.3.1   Amending a Worksheet Entry

If you wish to amend information after it has been entered on the worksheet, position the cursor bar over the entry you wish to change and then type in the new information. If a multiple of seven characters has been entered, the cursor bar will automatically move to the next column following the revised entry in the same row of the worksheet. If the revised information is not a multiple of seven characters, press the vertical cursor key to move the cursor bar to the next row on the sheet after the amended entry or the horizontal cursor key to move the cursor bar to the next column.

2.4.3.2   Deleting a Worksheet Entry

To remove an item of information from the worksheet, first position the cursor bar over the entry. Now press the space bar and the vertical cursor key. The entry will be blanked and the cursor bar will be positioned in the same column in the row below. If you wish to reposition the cursor bar at the column following the deleted characters, press the horizontal cursor key after pressing the space bar.

If you make a mistake when typing in an entry and you wish to erase the characters that are displayed at the top of the screen, simply press the *F7* function key (located at the bottom right of the VIC keyboard). You may then enter the correct information.

2.4.3.3   The Main Worksheet Headings

In this Cash Account example, the main headings on the worksheet will be the name of your company, the title of the account and the period for which the account has been produced.

Beginning with the cursor bar in column Ø row Ø, press the horizontal cursor control key four times. The cursor bar is now positioned in column 4 row Ø. Type *VIC Co.* The first six characters of this entry are shown at the top of the screen as they are typed. As you type the full stop, the information is automatically cleared from the top of the screen and placed in the selected position on the worksheet. The cursor bar then moves to column 5 row Ø.

Press the vertical cursor control key twice. Then hold down the SHIFT key and press the horizontal cursor control key twice. The cursor bar is now in column 3 row 2. Type *Cash* and press the horizontal cursor key twice. Enter *Account* and the cursor bar automatically moves to column 6 row 2.

Press the vertical cursor control key twice and then hold down the SHIFT key and press the horizontal cursor control key twice. The cursor bar is now in column 4 row 4. Enter *AUGUST* and press the vertical cursor control key twice. Hold down the SHIFT key and press the horizontal cursor key three times. The cursor bar is now positioned in column 1 row 6. Type *DEBITS* and press the horizontal cursor control key five times. Enter *CREDITS*. This text is placed into the selected worksheet position and the cursor bar then moves to the right, i.e. into column 7 row 6.

The main headings for the cash account have now been entered.

2.4.3.4 The Column Headings

Next, the columns that will be used in the account must be labelled.

Position the cursor bar at the left hand edge of the sheet in column Ø row 8. Note that there is an alternative to always using the cursor keys to move the cursor bar. SIMPLICALC provides a 'go to' function which enables you to 'jump' from position to position on the worksheet.

2.4.3.5 Using the g function

Press the *F1* function key (positioned at the top right of the VIC keyboard). At the top of the screen, SIMPLICALC displays:

gfpmsrtX

These letters each represent a SIMPLICALC function. Press the *g* key. VIC displays:

C

Enter the number of the column into which you wish to place the cursor bar by pressing the Ø key followed by *RETURN*.

R

SIMPLICALC is now asking you for the number of the row in which to place the cursor bar. Type *8* and press *RETURN*. The cursor bar moves immediately to column Ø row 8.

Three column headings will be needed on each side of the cash account: the DAY of each transaction, the type of ACCOUNT and the AMOUNT involved. Enter them as follows. Type *DAY* and press the horizontal cursor control key. Enter *ACCOUNTS* and press the horizontal cursor control key again. Type *AMOUNT* and press the vertical cursor key. The cursor bar is now positioned in column 3 row 9.

The column headings for the DEBITS, or left-hand side, of the account have now been entered. The column headings for the CREDITS, or right-hand side of the account, will be the same as those you have just entered. There is no need to type in the headings again. SIMPLICALC provides a function which enables information to be 'replicated', i.e. copied from one area of a worksheet to another.

2.4.3.6 Replicating Worksheet Information - the r function

The first thing you must do is position the cursor bar over the first item of information you wish to copy. The easiest way to do this is to use the **g** function. Press the *F1* function key to display the option codes and then press the *g* key to select 'go to'. As the C and R are prompted, type *Ø RETURN* and *8 RETURN* respectively. The cursor bar is now positioned at the location containing the column heading DAY.

Press the *F1* function key once more to display the list of options and press the *r* key to select 'replicate'.

COPY R OR C

SIMPLICALC is now asking if you wish to copy a row (R) or a column (C) of information. Press the *c* key to indicate a column.

FROM ROW

You must now enter the number of the row on which the first item of information to be copied is displayed. If you look at the row counter (at the left of the SIMPLICALC title) you will see that the row number is eight, so type *8* and press *RETURN*.

FROM ROW 8 TO

The number you enter here must be that of the row containing the last item of information to be copied. As you only wish to copy one item of information from this column, the number will be the same as that for the row containing the first item of information, so again type *8* and press *RETURN*.

INTO COL

SIMPLICALC is now asking into which column you wish to begin copying the information. Type *5* and press *RETURN*.

INTO COL 5 TO

You are now required to enter the last column into which the information will be reproduced. Because the information will appear in only one column, enter *5* again and press *RETURN*.

REL/NO CHGE R/N

This question is only relevant if a formula is associated with the information being replicated. The entry is text, so press the *n* key. If you now press the horizontal cursor key five times to move to the new location, you will see that the title DAY has been copied into the selected column.

Hold down the *SHIFT* key and press the horizontal cursor key four times. The cursor bar is now positioned over the first seven characters of the title ACCOUNTS, i.e. in column 1 on row 8 of the sheet. Press the *F1* key and then the *r* key to again select replicate. Repeat the procedure above to copy the information FROM ROW 8 TO 8 INTO COL 6 TO 6. Press the *n* key when REL/NO CHGE is prompted.

The first seven characters of the heading ACCOUNTS are then copied into the selected position. To copy the rest of the heading, position the cursor bar over the remaining character and follow the procedure outlined above until INTO COL is displayed. Then type *7* and press *RETURN*. When INTO COL 7 TO is shown, enter *7* and press *RETURN* again.

Position the cursor bar over the column heading AMOUNT. Carry out the procedure outlined above to copy this heading from column 3 to column 8 row 8 of the worksheet.

The column headings for the cash account have now been entered.

2.4.3.7 The Debit Entries

Having set up the headings for your account, the next step is to enter the details of all transactions for the month. For the purposes of this example, all debit entries, i.e. the details of all monies that have come into the business, will be entered first.

The cursor bar is now in column 3 row 8. Press the vertical cursor key twice. Hold down the *SHIFT* key and press the horizontal cursor key three times. The cursor bar is now positioned underneath the DAY title, i.e. in column Ø row 1Ø of the sheet. Type *1* and press the horizontal cursor key. The first entry is the amount of money 'brought forward' from the previous month, so type *B/Fwd.* and press the horizontal cursor key twice. The cursor bar is now underneath the AMOUNT title in column 3 row 1Ø of the worksheet. Enter *285.75* and press the vertical cursor key. You will note that the figures are right-justified, i.e. the numbers align at the right hand edge of the column. Hold down the *SHIFT* key and press the horizontal cursor key three times. The cursor bar is positioned in the DAY column, i.e. in column Ø row 11 of the sheet. You are now ready to enter details of the next debit entry.

Type in the details of the debit entries listed below. Remember to position the cursor bar in column Ø for each date, column 1 for the transaction description and column 3 for the amount. Press the vertical cursor key after the completion of each entry.

DAY	ACCOUNTS	AMOUNT
3	B. Hook	124.74
5	F. Todd	53.25
11	G. Gaunt	67.25
13	D. Pratt	23.85
17	C. Gray	99.1Ø
22	C. Dixon	121.67
27	C. James	34.5Ø

All the entries for the right hand side of the account have now been entered. Before proceeding to the credit side of the account, the total amount of debits will be calculated.

2.4.3.8 Adding the Debit Entries

The cursor bar is now in column 3 row 18. Press the vertical cursor key and then hold down the *SHIFT* key and press the horizontal cursor key. Type *Total* and press the horizontal cursor key. The cursor bar is now positioned in column 3 row 19 of the worksheet which is the location where the sum of the entries in that column will appear. Press the *F1* function key (situated at the top right of the VIC keyboard) and SIMPLICALC displays:

gfpmsrtX

at the top of the screen.

These are the initial letters of the eight special SIMPLICALC options. Press the *f* key indicating that you wish to define a formula, i.e. the procedure to be used when performing a calculation. SIMPLICALC displays:

F e

The "e" indicates that at present there is no formula in the cursor bar location. Type + , and then press the *RETURN* key. Now hold down the *SHIFT* key and press the *?* key. After a few moments, the value "81Ø.11", i.e. the result of the calculation, is displayed in column 3 row 19 of the sheet.

You have now completed the left-hand side of the cash account. The following explains how to complete the sheet.

2.4.3.9   The Credit Entries

Before the details of the credit entries, i.e. what has been paid out, can be typed in, the cursor bar must be positioned in the DAY column on the right-hand side of the worksheet. The simplest way to do this is to use the *g* function. Press the *F1* function key to get the initial letter display and then select 'go to' by pressing *g*. When the C appears, type *5 RETURN* and when the R appears, *10 RETURN*.

The cursor bar is then beneath the column headed DAY on the debits side of the account. The first entry on this side of the account will be the rent for the month. Type *2* and press the horizontal cursor key. The cursor bar is now positioned in column 6 row *10* of the worksheet. Enter *Rent* and press the horizontal cursor key twice. The cursor bar is now in the AMOUNT column. Type *120.50* and press the vertical cursor key. Hold down the *SHIFT* key and press the horizontal cursor key three times. You are now ready to enter the details of the next credit transaction.

Type in the details of the credit entries listed below. Position the cursor bar in column 5 for each date, column 6 for the transaction description and column 8 for the amount involved. Remember to press the vertical cursor key after you complete each entry.

DAY	ACCOUNTS	AMOUNT
3	Rates	35.65
8	Gas	84.35
15	Salary	350.00

Next you must add these figures together to discover how much money has been paid out during the month. Press the vertical cursor key. Then hold down the *SHIFT* key and press the horizontal cursor key twice. The cursor bar is now in column 6 row 15. Type *Sub Total* and press the horizontal cursor key. To add the values in this column, first press the *F1* function key and then select **f** from the list.

F e

is displayed.

Type +, and press *RETURN*. Now press the ? key (obtained by holding down the *SHIFT* key and pressing the / key). After a few moments, the value "59Ø.5", i.e. the result of the calculation, is displayed in column 8 row 15.

Assume that you have counted the amount of cash on hand and you have arrived at a figure of "219.61". This is the amount to be carried forward to the next month's cash account where it will be entered as a 'brought forward' entry. Press the vertical cursor key twice. Hold down the *SHIFT* key and press the horizontal cursor key three times. The cursor bar is now in the DAY column. Type *31* and press the horizontal cursor key. Enter *Cash* and then press the horizontal cursor key twice.

To see if the amount of cash in hand corresponds to the difference between what you have received and what you have spent, first press the *F1* key to display the letters of the SIMPLICALC functions.

Press the *f* key. The formula used here will enable the sub-total on the credits side of the account to be subtracted from the grand total on the debits side. The debits total appears in column 3 row 19 of the worksheet, so type "Ø319". (Note that all single-digit numbers are preceded by a zero.) The credits sub-total is displayed in column 8 row 15 of the sheet. Enter −Ø815 and press *RETURN*. The formula to carry out this calculation has now been defined.

Press the vertical cursor key twice. Hold down the *SHIFT* key and press the horizontal cursor key. Type *Total* and press the horizontal cursor key. The total on this side of the account will be the result of adding together the sub-total and the cash on hand figures. To define the formula, first press the *F1* key. When the initial letters of the SIMPLICALC functions are displayed, press the *f* key. The sub-total is in row 15 and the carried forward figure in row 17 both in column 8 of the worksheet. To add these figures together, simply type +15 and press *RETURN*. When SIMPLICALC performs this calculation, it will add together all the figures from row 15 down.

Next you must check that both sides of the account balance, i.e. both main totals are the same. To complete all the outstanding calculations, hold down the *SHIFT* key and press the *!* key. At the top of the screen SIMPLICALC displays:

CALCULATING

After a few moments, the calculations are completed and you will see, if you have closely followed the instructions given, that the account does indeed balance.

2.5   PRINTING THE WORKSHEET

Your worksheet has now been completed. The main requirement of any business is the recording of all business activity. SIMPLICALC enables you to produce a 'hard copy' of your worksheet, i.e. a print-out via the VIC printer.

Press the *F1* key and SIMPLICALC displays the initial letters. Select print by pressing the *p* key. The screen clears and SIMPLICALC asks:

PRINTER READY Y ?

Ensure that the printer is connected and switched on before pressing the *y* and *RETURN* keys. (If you are unsure how to connect the printer, refer to Section 1.7.1 or your printer manual before proceeding.)

SHEET OR FORMULAE S/F ?

SIMPLICALC now provides two options. You can print out the entire worksheet or only the formulae you have defined. In this example, only the worksheet will be printed. Instructions for printing only formulae may be found in Section 6.6.2 of this manual.

Type *S* and press *RETURN*. The worksheet is then printed. It is shown in Figure 2-4.

```
|       |.      |       |     VIC Co.|      |       |       |
|       |       |       |     |       |  Account|      |       |       |
|       |       |       |  Cash  |       |       |      |       |       |
|       |       |       |     |       |       |       |       |       |
|       |       |       |  AUGUST |      |       |       |       |       |
|       |       |       |     |       |       |       |       |       |
|       |  DEBITS |     |       |       |     CREDITS|      |       |
|       |       |       |       |     |       |       |       |       |
DAY    ACCOUNTS    AMOUNT |      DAY     ACCOUNTS      AMOUNT
|       |       |       |     |       |       |       |       |
    1B/Fwd. |       285.75|          2Rent  |        120.50
    3B.Hook |       124.74|          3Rates |         35.65
    5F.Todd |        53.25|          8Gas   |         84.35
   11G.Gaunt|        67.25|         15Salary |        350.00
   13D.Pratt|        23.85|          |      |    |
   17C.Gray |        99.10|          Sub Total        590.5
   22C.Dixon|       121.67|          |      |    |
   27C.James|        34.50|         31Cash  |        219.61
|       |       |       |     |       |       |       |       |
|       |       Total  810.11|     |       |       Total   810.11
```

**FIGURE 2-4 WORKSHEET GENERATED FROM THE TRAINING
SECTION**

When printing has ended, the first section of the worksheet is again
displayed.

Another function that SIMPLICALC provides enables you to store your
worksheet on cassette tape or diskette (depending on which system you are
using). This facility will not be discussed here but may be found in Section
6.7 of this manual.

2.6 CONCLUSION

You have now completed the training section of this manual. If you have carefully followed the instructions given, you will have seen some of the SIMPLICALC's most useful attributes.

You will have had practice in turning on the VIC 20 computer system, creating a worksheet and entering information on it. You will also have experienced how to define formulae using them to perform calculations on the information on the sheet.

Further details of these, and other SIMPLICALC 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.

The functions outlined in this section will have shown you how SIMPLICALC can provide a quick and easy method of recording and manipulating numeric data.

SECTION THREE
A GUIDE TO DESIGNING YOUR OWN APPLICATION

3.1 INTRODUCTION

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

3.3.1   WORKSHEET RESTRICTIONS

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

1.   1ØØ is the maximum number of rows that may be selected for a worksheet.

2.   6Ø is the maximum number of columns that may be selected for a worksheet.

3.   19 is the minimum number of rows that may be selected for a worksheet.

4.   3 is the minimum number of columns that may be selected for a worksheet.

5.   A numeric entry may not exceed seven characters in length including a decimal point.

NOTE

Although the maximum number of columns and rows you may select for a worksheet is 6Ø and 1ØØ respectively, the number of rows and columns when multiplied together cannot exceed 12ØØ. For example, you may specify a sheet comprising 6Ø columns and 2Ø rows or one comprising 25 columns and 48 rows but a sheet containing 6Ø columns and 1ØØ rows would not be within the range allowed by SIMPLICALC.

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).

SIMPLICALC can present information in two basic forms, i.e. printed via the VIC printer or displayed on the screen. Any application of the package will usually require 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 SIMPLICALC you will ensure that all essential information is included. The following points should be noted when analysing 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. how many columns on the worksheet will be required for each item of information.

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 SIMPLICALC. Label each column where specific information will appear. Remember that each column is seven characters wide. Make particular note of the number of columns and rows needed. There is no way to change the size of a worksheet once information has been entered on it.

NOTE

Take great care when designing the worksheet that you do not define a formula that is liable to produce a result greater than seven characters. If you do so, you will generate an OVERFLOW error, signified by seven greater-than signs, i.e. "> > > > > > >", in the position selected for the result of a calculation. 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 SIMPLICALC is the information you require from the system. Always design your worksheet on paper before using SIMPLICALC. 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 Seven.

OPERATING SECTION

SECTION FOUR
AN INTRODUCTION TO THE
OPERATING SECTION

4.1. INTRODUCTION

The purpose of the rest of this manual is to provide you with a detailed step-by-step guide through the SIMPLICALC functions. This section briefly outlines each function and indicates where you will find the detailed information.

4.2 THE SIMPLICALC FUNCTIONS

Each time you press the F1 function key, the initial letters of eight SIMPLICALC functions are displayed at the top of the screen. Each function is described briefly below.

4.2.1 MOVING AROUND THE SHEET – THE g FUNCTION

The g function enables you to move the cursor bar around the worksheet without using the cursor control keys. This is done by specifying the row and column co-ordinates of the location into which you wish to move the bar. See Section 6.3.1.3.

4.2.2 DISPLAYING ROW HEADINGS – THE t FUNCTION

Using this function, you may see the heading for a particular row without moving to the beginning of the sheet. See Section 6.4.3.

4.2.3 DEFINING FORMULAE – THE f FUNCTION

This allows you to define the arithmetic operations required to produce a calculation result. See Section 6.5.2.

4.2.4 MEMORY AVAILABILITY – THE m FUNCTION

The **m** function enables you to check the computer memory space available. See Section 6.5.2.2.

4.2.5 REPLICATING INFORMATION – THE r FUNCTION

Using this function, you may copy information from one area of a worksheet to another. See Section 6.5.5.

4.2.6 STORING A WORKSHEET – THE s FUNCTION

The s function allows you to store a worksheet on tape or diskette. See Section 6.7.

4.2.7 PRINTING A WORKSHEET – THE p FUNCTION

This function enables you to print a worksheet and/or the formulae used on the worksheet. See Section 6.6.

4.2.8 CLEARING A WORKSHEET – THE X FUNCTION

This function removes all existing information from a worksheet. See Section 6.8.

4.3 USING THE SIMPLICALC OPTIONS

Detailed instructions for each function 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:

Formatting a Data Diskette
Designing a Worksheet.

SECTION SIX – ENTERING AND STORING INFORMATION

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

Moving across the Worksheet
Entering Data
Defining Formulae
Performing Calculations
Printing a Worksheet
Storing a Worksheet
Deleting a Stored Worksheet

SECTION SEVEN – EXAMPLES OF SIMPLICALC APPLICATIONS

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

SECTION FIVE
PREPARING YOUR SYSTEM

5.1 INTRODUCTION

The techniques described in this section are used before loading the SIMPLICALC program. They include formatting a diskette on which to store your worksheets, and designing a worksheet.

5.2 FORMATTING A DATA DISKETTE

WARNING
THIS PROCEDURE MUST TAKE PLACE BEFORE LOADING THE SIMPLICALC PROGRAM.

Before a new diskette can be used for storing information, it must be specially prepared. After connecting your system (see Section 1.7.1) and turning on the components (see Section 1.7.2), the screen will appear as shown in Figure 1-2. Insert a new diskette into the drive unit (see Figure 1-3). Type:

OPEN15,8,15,"N0:diskname,id"

and press *RETURN*, where 'diskname' is any name up to a maximum of ten characters in length and 'id' is a any two-character identification code. The red light on the drive unit will then come on to indicate that the diskette is being prepared. After approximately three minutes, this light will go off. Type:

CLOSE 15

and press *RETURN*. Remove the diskette from the drive unit, write out a label with the name with which it was assigned, affix this to the diskette and then return it to its protective envelope. This diskette can then be used to store SIMPLICALC worksheets.

5.3 DESIGNING A WORKSHEET

A SIMPLICALC worksheet consists of three elements: text, numeric data and worksheet locations. These are described below:

Text

Text 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.

Numeric Data

Numeric data is any item of information entirely composed of figures. An item of numeric information may be placed in any location on the sheet. It may be items you type in or the results of calculations performed by SIMPLICALC.

Worksheet Locations

A worksheet is divided into vertical columns and horizontal rows. Worksheet locations are individual positions on the sheet each containing up to a maximum of seven characters. Each location is identified by its co-ordinates, i.e. the column in which it is placed and the row in which it is positioned.

5.3.1 WORKSHEET RESTRICTIONS

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

1. 100 is the maximum number of rows that may be selected for a worksheet.

2. 60 is the maximum number of columns that may be selected for a worksheet.

3. 19 is the minimum number of rows that may be selected for a worksheet.

4. 3 is the minimum number of columns that may be selected for a worksheet.

5. A numeric entry may not exceed seven characters in length including a decimal point.

NOTE
Although the maximum number of columns and rows you may select for a worksheet is 60 and 100 respectively, the number of rows and columns when multiplied together cannot exceed 1200. For example, you may specify a sheet comprising 60 columns and 20 rows or one comprising 25 columns and 48 rows but a sheet containing 60 columns and 100 rows would not be within the range allowed by SIMPLICALC.

Always design your worksheet on paper before you use the SIMPLICALC package. Make special note of the maximum number of characters that will be required on a line of the sheet including spaces. By dividing this figure by seven, you will arrive at the number of columns you need for the sheet. When counting the number of rows required, remember to include all blank lines used to separate entries. Remember that once the size of a worksheet has been set, it cannot be changed.

5.4 LOADING SIMPLICALC

5.4.1 Diskette Version

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. Load the SIMPLICALC program by typing:

LOAD "0:*",8,1
and then pressing *RETURN.*

The red drive light will come on for a few seconds whilst the drive whirs quietly. The following sequence of messages will appear:

SEARCHING FOR 0:*
LOADING

After a brief delay, the screen will appear as shown in Figure 1-4.

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.

5.4.2 Cassette Version

Open the cassette unit lid by pressing down on the *STOP/EJECT* button. Insert the cassette tape into the unit ensuring that the exposed tape is facing you. Close the lid. Press the *REWIND* button until the cassette reels have stopped moving and then press the *STOP/EJECT* button gently until the REWIND button returns to its normal position.

Load the SIMPLICALC program by typing:

LOAD "",1,1
and then pressing *RETURN.*

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

The following message is then displayed:

PRESS PLAY ON TAPE

Press the *PLAY* button on the cassette unit. The following sequence of messages will then appear:

OK
SEARCHING

After a few seconds, the screen displays:

FOUND
LOADING
SEARCHING

If LOADING does not appear, and the tape has ended, press the *STOP/EJECT* button and remove the cassette from the cassette unit. Turn the system off, wait fifteen seconds, turn the system back on and repeat the procedure as described above.

After a brief delay, the screen will appear as shown in Figure 1-4.

SECTION SIX
ENTERING AND STORING INFORMATION

6.1 INTRODUCTION

This section describes how to create a new worksheet and how to recall a stored sheet. 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 LOADING A STORED WORKSHEET

When the SIMPLICALC program has been loaded, you are asked:

LOAD A SHEET Y ?

If you wish to create a new worksheet, follow the instructions contained in Section 6.3. To recall an existing sheet, obey the instructions below.

6.2.1 DISKETTE VERSION

Insert the diskette containing the sheet you wish to recall into the drive unit. Type *y* and press *RETURN* in response to the LOAD A SHEET prompt. SIMPLICALC asks:

NAME ?

Enter the name of the sheet you wish to recall and press *RETURN*.

If you enter the name of a sheet that does not exist, the screen flashes and SIMPLICALC displays:

62ØØokØØ

to indicate that it cannot find the sheet. After a few moments, NAME is displayed again and you may enter the correct name. When you have done this, SIMPLICALC displays:

LOADING

The red light on the drive unit comes on to indicate that the sheet is being loaded. After a few moments, the first section of the stored sheet is displayed to indicate that loading has ended.

6.2.2 CASSETTE VERSION

If you wish to load a stored worksheet from a cassette tape, insert the cassette containing the sheet into the cassette unit and close the lid. Press the *REWIND* button until the tape stops moving. Press the *STOP/EJECT* button gently until the REWIND button returns to its original position. When LOAD A SHEET is displayed, type *y* and press *RETURN*.

NAME ?

Enter the name of the sheet you wish to recall and press *RETURN*.

PRESS PLAY ON TAPE

Press the *PLAY* button on the cassette deck.

OK
SEARCHING

When the tape reaches the position of each stored worksheet, SIMPLICALC displays:

FOUND name

where 'name' is the name assigned to the sheet reached. When the position of the worksheet you wish to load is reached, SIMPLICALC displays:

FOUND name
LOADING

where 'name' is the name assigned to the selected sheet. After a brief delay, depending on the size of the worksheet being recalled, the first section of the stored sheet is displayed to indicate that loading has ended.

6.3   CREATING A NEW WORKSHEET

To create a new worksheet, first press the *n* and *RETURN* keys when LOAD A SHEET is shown. SIMPLICALC then displays the maximum and minimum number of rows and columns that may be selected for a worksheet and asks:

COLUMNS ?

You must now define the width of the sheet you wish to use by typing the number of columns you require and pressing the *RETURN* key. Each column can contain a maximum of seven characters, so a six column wide sheet, for example, would enable you to enter up to forty-two characters on each line of the sheet. After you have defined the number of columns, SIMPLICALC asks:

ROWS ?

You must now specify how many rows you wish the worksheet to contain, i.e. how deep the sheet will be. Enter a number within the range shown on the screen and press *RETURN*. After a few moments, the first section of the worksheet is displayed as shown in Figure 6-1.
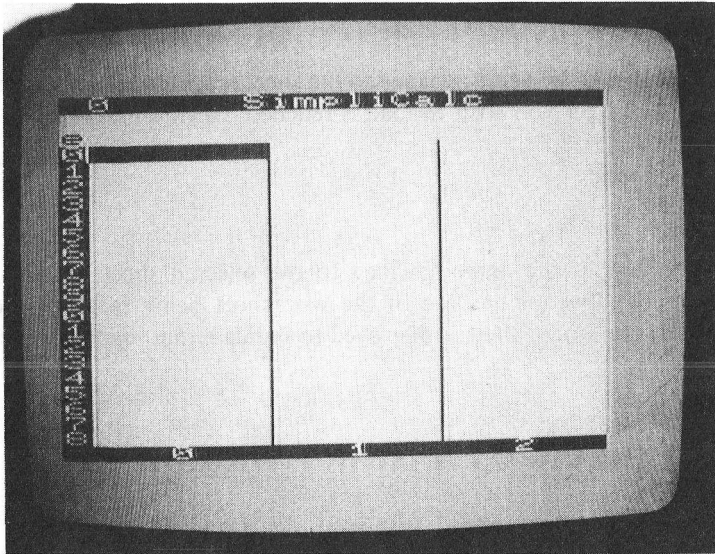
FIGURE 6-1 THE FIRST WORKSHEET SECTION

NOTE

If you specify a worksheet size greater than the area
available within the VIC's memory, SIMPLICALC
displays:

SHEET TOO LARGE

and indicates the maximum and minimum number
of rows and columns again.

You have now defined the size of the worksheet you wish to use. The
following sections will show how information may be entered on this
sheet.

6.3.1   MOVING ACROSS THE WORKSHEET

6.3.1.1   The Cursor Bar

When the first section of the worksheet is shown, a seven character wide blue bar is displayed in column Ø row Ø of the sheet. This is the cursor bar. By placing this bar in a specified location on the sheet, any information entered will be displayed beginning at the selected position. 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 a special SIMPLICALC function. Both methods are described below.

6.3.1.2   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.

6.3.1.3   Using the g function

If you have a large worksheet, using the cursor keys to move the cursor bar over the sheet can sometimes be very time-consuming. SIMPLICALC provides a function to enable the cursor bar to be placed in a selected location. Press the *F1* function key (positioned at the top right of the VIC keyboard). At the top of the screen, SIMPLICALC displays:

gfpmsrtX

These are the initial letters of the eight special SIMPLICALC options. Press the *g* key. C is displayed. Enter the number of the column into which you wish to place the cursor bar and press *RETURN*. An R is displayed. Now enter the number of the row within this column where you wish to position the bar and press *RETURN*. After a few seconds, the bar is placed in the selected position.

6.4 ENTERING INFORMATION

Information is entered on the worksheet using normal typing procedures. First position the cursor bar in the selected worksheet location as described above. When this has been done, simply type in the information. As you do so, the characters are displayed at the top of the screen. Each string of seven characters is automatically cleared from the top of the screen and placed in the selected location. The cursor bar then moves to the next column on that row.

If you make a mistake when typing in an entry and you wish to erase the characters that are displayed at the top of the screen, simply press the *F7* function key (located at the bottom right of the VIC keyboard). You may then enter the correct information.

If the information you wish to enter is not an exact multiple of seven characters, the characters remaining at the top of the screen can be placed in the cursor bar location by pressing a cursor key. If you press the horizontal cursor key, the information is placed in the selected position and the cursor bar moves to the next column on the same row. If you press the vertical cursor key, the cursor bar moves immediately below the information in the same column.

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

6.4.1   AMENDING AN ENTRY

If you wish to amend information on the worksheet, position the cursor bar over the entry you wish to change and then type in the new information. This information is first displayed at the top of the screen. To place the revised information in the selected position press either the horizontal or vertical cursor keys. In the former case the cursor bar will then move to the next column following the amended entry. In the latter, it will move to the row immediately below the amended entry. Note that if a multiple of seven characters has been entered, the cursor bar will automatically move to the next column on the same row.

6.4.2   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 space bar. To position the cursor bar in the next column following the deleted entry, press the horizontal cursor key. To reposition the cursor bar in the row immediately below the deleted entry press the vertical cursor key.

6.4.3   DISPLAYING ROW HEADINGS - THE t FUNCTION

If you have entered row headings in column Ø on the worksheet, SIMPLICALC provides an option to allow you remind yourself of what these are without having to move the cursor bar back to the beginning of the sheet.

Press the *F1* key. The SIMPLICALC functions (gfpmsrtX) are displayed at the top of the screen. Press the *t* key.

T/C

To display the row headings, press the *t* key. The headings for the section of the sheet in which the cursor bar is located are then shown in the left hand column of the screen. To revert to the original display, simply press the *C* key.

6.5   CALCULATIONS

6.5.1   INTRODUCTION

SIMPLICALC calculations are made in four stages. Before making a calculation, you must check on the available computer memory. (See Section 6.5.2.2.) If this is sufficient to enable a calculation to be made, you must then position the cursor bar in the location on the sheet where you wish to display the result of the calculation. You then define the formula, i.e. the arithmetic procedure you wish to use. Finally 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.

6.5.2   DEFINING FORMULAE

6.5.2.1   Introduction

A SIMPLICALC formula consists of operands and arithmetic operators. An operand, in this context, is a value on the worksheet and is indicated by its column and row position on the sheet. (All single-digit row and column numbers must be preceded by a zero.) A maximum of eight operands may be used in a single calculation except when adding columns or rows of figures in which case there is no limit. 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

6.5.2.2 Memory Availability - the m function

Before defining a formula, it is essential that you check on the amount of available computer memory to ensure that you have enough space to perform the calculation. Press the *F1* key to display the SIMPLICALC options. Press the *m* key and SIMPLICALC displays the number of bytes, i.e. the amount of characters, that the VIC can accomodate. Check this value before defining each formula in your application. As a rule of thumb, **if this figure is below 300, DO NOT attempt to define any more formulae.**

6.5.2.3 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 *F1* key to display the SIMPLICALC options. Press the *f* key for formula.

F e

is displayed. The **e** indicates that there is no formula in the selected location. The sub-sections that follow explain the various SIMPLICALC formulae that may be defined.

6.5.2.4 Making Corrections

If you make a typing mistake when entering the formula at the top of the screen, use the cursor keys to position the flashing cursor over the incorrect character and then type in the revised information.

If you wish to change a formula that has been entered on the worksheet, first place the cursor bar over the position you have selected for the result of the calculation. Press the *F1* key to display the SIMPLICALC functions and then press the *f* key to select formula. The formula specified for this location is displayed at the top of the screen. To amend it, position the flashing cursor over the character(s) you wish to change, type in the new information and press *RETURN*.

6.5.2.5   Adding figures in rows or columns

To add all the numeric entries to the left of the position you have selected, type *h* and press the *RETURN* key. You may, if you wish, add only those entries from a specific column on the row by typing *hn* and pressing the *RETURN* key (where n is the number of the column on the row where you wish to begin the addition). For example, suppose row Ø contained the following figures:

Column	Ø	1	2	3	4	5	6
	35.4Ø	112.78	234	21.5	231.5	34.7	

To add all these numbers and place the result in column 6 row Ø, you first place the cursor bar in this location. Press the *F1* key to display the SIMPLICALC options and then press *f* for formula. Type *h* and press *RETURN*. Then hold down the SHIFT key and press the ? key and 669.88, i.e. the result, appears in column six. To add only those figures from column 3 right, you would enter *h3* instead of h. Then, by holding down the SHIFT key and pressing the ? key, 287.7 would be displayed.

To add all the numeric entries in the same column above the position you have selected, type + and press the *RETURN* key. You may, if you wish, add only those entries from a specific row in the column by typing + *n* and pressing the *RETURN* key (where n is the number of the row in the column where you wish to begin the addition). For instance, suppose column Ø contained the following numbers:

Row

Ø	123.67
1	34.78
2	567.3Ø
3	345.Ø8
4	88.9Ø
5	

To add all these numbers and place the result in column Ø row 5, first place the cursor bar in this location. Press the *Fl* key to display the SIMPLICALC options and then press *f* for formula. Type + and press *RETURN*. Then hold down the SHIFT key and press the ? key and 1159.73, i.e. the result, appears in row 5. To add only those figures from row 2, you would enter + *2* instead of + . By holding down the SHIFT key and pressing the ? key, 1ØØ1.28 would be displayed.

6.5.2.6   Other Formulae

SIMPLICALC calculations may be made between non-adjacent values on the worksheet. A maximum of eight values may be used in this type of calculation.

Type in the column and row numbers of the first value to be used in the calculation. Note that you must enter two digits for each. Therefore values less than ten must be preceded by zero. Enter the arithmetic operator you wish to use followed by the sheet location of the next value. Continue this process until you have completed the formula and then press *RETURN*. For example, suppose you wished to produce the retail price of a batch of items and then subtract a cash discount from this figure. The worksheet for this problem is shown below. The formulae used to arrive at each value is shown in brackets:

Column	Ø	1	2	3
Row				
Ø	Unit Cost		2.15	
1	Quantity		12ØØ	
2	Cost		(Ø2ØØ*Ø2Ø1)	
3	Discount Rate		Ø.1Ø	
4	Discount		(Ø2Ø2*Ø2Ø3)	
5	Total Cost		(Ø2Ø2-Ø2Ø4)	

6.5.3   PERFORMING CALCULATIONS

SIMPLICALC provides two calculation options: local and global calculating. Local calculating is used when you have defined a formula and wish to see the result of only that calculation. Global calculating is used to perform calculations using all the formulae you have defined so far. The instructions for the use of each option are described below.

6.5.3.1   Local Calculations - the ? command

Position the cursor bar in the location on the sheet reserved for the result of the calculation. The formula is then displayed at the top of the screen. Press the ? key (accomplished by holding down the SHIFT key and pressing the / key). SIMPLICALC then performs the calculation and places the result in the specified location.

6.5.3.2   Global Calculations - the ! command

To perform the calculations for all the formulae on the worksheet, hold down the SHIFT key and press the ! key. At the top of the screen SIMPLICALC displays:

CALCULATING

The calculations are performed and, after a few moments, the results are placed in the specified locations on the sheet. This command can be used regardless of where the cursor bar is located.

6.5.4   CALCULATION ERRORS

Three of the most common errors which occur when using formulae to perform calculations are DIVISION BY ZERO, OVERFLOW and OUT OF MEMORY. Each error is described below.

6.5.4.1   Division by Zero Error

If the position you have selected for the result contains seven asterisks after SIMPLICALC performs a calculation, this indicates that you have attempted to divide a value by zero. This of course is an impossible arithmetic operation.

Move the cursor bar to the location containing the asterisks. The formula used to produce the result for this location is then displayed at the top of the screen. Make a note of the worksheet locations specified in the formula. If you then move the cursor bar to each location, you will soon discover that you have specified either an empty location or a location containing alphanumeric information, i.e. letters or a mixture of letters and figures which are interpreted by SIMPLICALC as having the value zero. When you have discovered the error, return the cursor bar to the location containing the asterisks. Press the *F1* key.

gfpmsrtX

is displayed at the top of the screen. Press the *f* key. Type in the revised formula and then press *RETURN*. Hold down the SHIFT key and press the ! key. The error should then not occur unless an invalid operand is specified elsewhere. If it does, repeat the procedure outlined above until all worksheet locations selected for results no longer contain any asterisks. You will then have eliminated all DIVISION BY ZERO errors.

6.5.4.2   Overflow Error

Another common arithmetic error is OVERFLOW, signified by seven greater-than signs, i.e. > > > > > > >, in the position selected for the result of a calculation. This indicates that the result generated is greater than seven characters, i.e. bigger than "9999999" or smaller than ".0000001". 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, you will soon make your numbers more manageable and produce the required results.

6.5.4.3   Out of Memory Error

If you have specified a worksheet size that uses most of the available computer memory, you will run the risk of an OUT OF MEMORY error when performing calculations. If this occurs, SIMPLICALC displays:

OUT OF MEMORY ERROR IN 196

There is no way to recover from this error other than switching off the system, waiting fifteen seconds, then switching back on and creating the sheet again.

SIMPLICALC provides a function enabling you to check on the amount of free computer memory before defining a formula in order to prevent this from occuring. This function is described in Section 6.5.2.2.

6.5.5 REPLICATING INFORMATION - THE r FUNCTION

SIMPLICALC provides a facility to enable you to copy information from one area of the worksheet to another. Position the cursor bar over the first item of information you wish to copy. Press the *F1* function key. At the top of the screen, SIMPLICALC displays the function options (gfpmsrtX). Press the *r* key.

COPY R OR C

SIMPLICALC is now asking if you wish to copy a row (R) or column (C) of information.

6.5.5.1 Replicating Columns of Information

Press the *c* key to indicate a column.

FROM ROW

Enter the number of the row in which the first item of information to be copied is displayed. (The row counter at the left of the SIMPLICALC title displays this figure.) Press *RETURN*. The following is displayed:

FROM ROW n TO

where n is the row number. Next enter the number of the row containing the last item of information to be copied. If you wish to copy only one item in a column, simply enter the same number as before. In both cases then press the *RETURN* key.

INTO COL

SIMPLICALC is now asking into which column you wish to begin copying the information. Type in this figure and press *RETURN*. The screen displays:

INTO COL n TO

where n is the column number. Enter the last column into which the information is to be copied. If you wish to copy the information into only one column, simply enter the same number as before. In both cases then press the *RETURN* key.

REL/NO CHGE R/N

If the information being copied contains a formula, you must specify whether the formula is to be duplicated exactly, i.e. NO CHANGE, or if you wish it to use values RELATIVE to the new position. For example, if column 1 contained the formula 0104 + 0310 and you wished to copy the column into column 6 relatively, you would press the *r* key. The formula would then be automatically changed to 0604 + 0310 when it appeared in its new location on the sheet.

If you wish to copy the formula exactly as it appears, or if the information you are copying contains no formulae, simply press the *n* key. In either case, the information is then copied into the selected position. If the information you wish to copy contains a formula and you do not want to use this formula in the new location, simply erase the formula in the new location using the instructions contained in Section 6.4.2.

6.5.5.2 Reproducing Rows of Information

When COPY R OR C is displayed, press the *r* key.

FROM COLUMN

Enter the number of the column where you wish to begin copying information and press *RETURN*.

FROM COLUMN n TO

where n is the column number. Type in the number of the last column you wish to copy and press *RETURN*. If you wish to copy only one group of seven characters in the row, simply enter the same number as before. In both cases, SIMPLICALC prompts:

INTO ROW

Type in the number of the row into which you wish to begin copying the information and press *RETURN*.

INTO ROW n TO

where n is the row number. Now enter the last row into which the information will be reproduced. If you wish to copy the information into only one row, simply enter the same number as before. In both cases then press the *RETURN* key.

REL/NO CHGE R/N

If the information being copied contains a formula, you must specify whether the formula is to be duplicated exactly, i.e. NO CHANGE, or if you wish it to use values relative to the new position. For example, if row 1 contained the formula 0401 + 0701 and you wished to copy the row into row 6 relatively, you would press the *r* key. The formula would then be automatically changed to 0406 + 0706 when it appeared in its new location on the sheet.

If you wish to copy the formula exactly as it appears, or if the information you are copying contains no formulae, simply press the *n* key. In either case, the information is then copied into the selected position. If the information you wish to copy contains a formula and you do not want to use this formula in the new location, simply erase the formula in the new location using the instructions contained in Section 6.4.2.

6.6 PRINTING WORKSHEET INFORMATION - THE p FUNCTION

When you have completed a worksheet you may print out the information it contains via the VIC printer. Press the *F1* key to display the options (gfpmsrtX). Press the *p* key to select print. SIMPLICALC asks:

PRINTER READY Y ?

Ensure that the printer is connected and switched on before pressing the *y* and *RETURN* keys. (If you are unsure how to connect the printer, refer to Section 1.7.1 or your printer manual.) SIMPLICALC prompts:

SHEET OR FORMULAE S/F ?

There are two print options. You can print out the entire worksheet or only the formulae you have defined. The instructions for each option are described in the following sections.

6.6.1 PRINTING THE ENTIRE WORKSHEET

If you wish to print the entire worksheet, type *s* and press *RETURN*. The worksheet is then printed. When this has been done, the first section of the worksheet is displayed on the screen once more.

NOTE
Up to ten worksheet columns can be printed at any one time. If you have set up a wider worksheet, the second and subsequent ten columns are printed below the first after a gap. When printing has ended, you can assemble the 'strips' into your sheet by fastening them together.

6.6.2 PRINTING THE WORKSHEET FORMULAE

You may print only the worksheet formulae (including the row and column numbers containing the formulae) by pressing the *f* and *RETURN* keys when SHEET OR FORMULAE is prompted. SIMPLICALC then asks:

SUPPRESS E Y ?

If you wish to print the formulae and also an "e" (to indicate 'empty') for every location that does not contain a formula, type *n* and press *RETURN*. To print only those locations that contain formulae and the formula each contains, press the *y* and *RETURN* keys. In both cases, the formulae are then printed. An example is shown in Figure 6-2.

```
COLUMN          0
COLUMN          1
COLUMN          2
COLUMN          3
ROW 19 +
COLUMN          4
COLUMN          5
COLUMN          6
COLUMN          7
COLUMN          8
ROW 15 +
ROW 17 0319-0815
ROW 19 +15
```

FIGURE 6-2 FORMULAE FROM THE EXAMPLE IN SECTION TWO

After printing has ended, the first section of the worksheet is displayed on the screen.

6.7 STORING A WORKSHEET

6.7.1 INTRODUCTION

When you have completed your worksheet you may store it on cassette tape or diskette depending on which medium you are using. The sections that follow explain both procedures.

6.7.2 DISKETTE VERSION

Before a worksheet can be stored on diskette, the diskette must have been formatted, i.e. specially prepared to receive the information. Section 5.2 contains the instructions for formatting a new diskette.

Remove the SIMPLICALC 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 information and then press the *F1* function key. The option codes (gfpmsrtX) are displayed at the top of the screen. Press the *s* key.

NAME ?

If you have recalled a worksheet for updating and wish to overwrite the stored sheet, enter the name of the sheet and press *RETURN*. If you enter the name of a sheet that does not exist, the screen flashes and SIMPLICALC displays:

62ØØokØØ

After a few moments, NAME is displayed again and you may re-enter another name. When SIMPLICALC finds the sheet, it displays:

63ØØokØØ
REPLACE Y ?

If you don't wish to overwrite the sheet, press the *n* and *RETURN* keys. NAME will then be displayed again. To overwrite the original sheet press the *y* and *RETURN* keys.

To store a new worksheet, enter a unique name up to ten characters in length when NAME is prompted and press *RETURN*.

In both cases, the red light on the drive unit will come on to indicate that the worksheet is being stored. After a brief delay, the first section of the worksheet will be displayed on the screen to indicate that the procedure has been completed.

6.7.3 CASSETTE VERSION

Press the *STOP/EJECT* button on the cassette unit to open the lid. Insert the cassette on which the worksheet is to be stored and close the lid. Press the *REWIND* button and, when the reels stop moving, press the *STOP/EJECT* button gently until the REWIND button returns to its original position. Zero the cassette unit tape counter by pressing the small button next to the counter display window.

<div align="center">

CAUTION
ALWAYS CHECK THE TAPE COUNTER AND MAKE A NOTE OF THE POSITION REACHED ON THE TAPE AFTER A WORKSHEET HAS BEEN STORED. BEFORE STORING A SUBSEQUENT SHEET, YOU MUST PRESS THE FWD KEY UNTIL YOU ARE BEYOND THIS POSITION. FAILURE TO DO SO WILL RESULT IN PREVIOUSLY STORED INFORMATION BEING LOST.

</div>

Press the *F1* key to display the functions (gfpmsrtX) at the top of the screen. Press the *s* key. SIMPLICALC asks:

NAME ?

Enter a unique name up to ten characters in length and press *RETURN*.

PRESS RECORD AND PLAY ON TAPE

Press down both the *PLAY* and *RECORD* keys on the cassette unit.

OK

is displayed. After a period, the duration of which depends on the size of the worksheet, the first section of the sheet will be displayed on the screen to indicate that it has been stored. If you wish to overwrite an existing sheet, refer to the tape counter in order to position the tape at the start point of the worksheet you wish to overwrite. Then follow the record procedure as outlined above.

CAUTION
IT IS ONLY WISE TO OVERWRITE A STORED WORKSHEET IF NO INFORMATION FOLLOWS THE ORIGINAL SHEET ON THE TAPE. IF THIS IS NOT THE CASE, SAVE THE NEW SHEET ON A SEPARATE CASSETTE.

6.8 CLEARING A WORKSHEET

If, during a SIMPLICALC session, you wish to erase the sheet on which you are working, first press the *F1* key. The codes (gfpmsrtX) are displayed at the top of the screen. Hold down the SHIFT key and press the *X* key.

CLEAR C ?

To retain the original sheet, press the *n* and *RETURN* keys. To clear the sheet, type *c* and press *RETURN*.

LOAD A SHEET ?

If you wish to load a stored sheet, follow the instructions contained in Section 6.2. To create a new worksheet, see Section 6.3.

6.9 REMOVING A WORKSHEET

6.9.1 DISKETTE VERSION

To remove a worksheet that is no longer required from a diskette, first insert the diskette containing the sheet into the drive unit. Type:

OPEN15,8,15,"S0:name" and press *RETURN.*

where 'name' is the name you assigned to the sheet when it was stored. The drive-active indicator light will then come on. After a few seconds it will go off. When this happens, type *CLOSE15* and press *RETURN.* The worksheet will then have been removed from the diskette.

6.9.2 CASSETTE VERSION
.

A worksheet can be removed from a cassette in two ways: by overwriting the worksheet with another sheet or 'wiping' the sheet from the tape. To overwrite an existing sheet, you must first refer to the tape counter to ensure that the tape is positioned at the start of the sheet you wish to overwrite. Then follow the storing procedure as outlined in Section 6.7.3.

> **CAUTION**
> **IT IS ONLY WISE TO OVERWRITE A STORED WORKSHEET IF NO INFORMATION FOLLOWS THE ORIGINAL SHEET ON THE TAPE. IF THIS IS NOT THE CASE, SAVE THE NEW SHEET ON A SEPARATE CASSETTE.**

To 'wipe' a worksheet from the tape, ensure that the tape is positioned at the start of the sheet and press the *PLAY* and *RECORD* keys. When the tape counter indicates the end of the sheet, press the *STOP/EJECT* button.

> **WARNING**
> **USE THESE OPTIONS WITH EXTREME CARE. ALWAYS ENSURE THAT THE WORKSHEET YOU WISH TO REMOVE IS NO LONGER REQUIRED. THERE IS NO WAY TO RECOVER A DELETED WORKSHEET.**

SECTION SEVEN
EXAMPLES OF SIMPLICALC APPLICATIONS

7.1 INTRODUCTION

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

7.2 EXAMPLE 1 – PERSONAL FINANCE

7.2.1 THE APPLICATION

Mr Bill Thyme wished to keep an accurate check of where and to whom his money is going every week in order to plan his spending for the following period accordingly. Even though he had no book-keeping experience, he was soon able to record his spending accurately thanks to SIMPLICALC and his VIC 20 computer system.

7.2.2 THE IMPLEMENTATION

It took no time at all to design a worksheet to meet Bill's requirements. Figure 7-1 shows the formulae he defined to produce the required figures and Figure 7-2 shows the results of the calculations made by SIMPLICALC to give him a running total for the end of each week.

```
COLUMN              0
COLUMN              1
COLUMN              2
ROW 11 +
ROW 15 0213-0211
COLUMN              3
ROW 11 +
ROW 15 0313-0311
COLUMN              4
ROW 11 +
ROW 15 0413-0411
COLUMN              5
ROW 11 +
ROW 15 0513-0511
COLUMN              6
COLUMN              7
COLUMN              8
COLUMN              9
```

FIGURE 7-1 PERSONAL FINANCE FORMULAE

		Week 1	Week 2	Week 3	Week 4
Rent		24.50	24.50	24.50	24.50
Rates		6.75	6.75	6.75	6.75
Food		31.50	28.65	33.89	34.67
Electricity		10	10	10	10
Petrol		18.50	13.50	17	19.50
Cigarettes		8.50	7	6.75	8.75
Entertainment		0	17.50	0	22.75
Sundries		2.50	0	0	3.46
Total for Week	102.25	107.9	98.89	130.38
Wages		112.50	112.50	112.50	175.38
Weekly Balance	10.25	4.59999	13.61	45

FIGURE 7-2 PERSONAL FINANCE WORKSHEET

7.3   EXAMPLE 2 – DEPRECIATION

7.3.1   THE APPLICATION

Mr Ben Tupp, the proprietor of a small car hire firm, wanted to know the optimum time for renewal of his hire fleet in order to recoup the most money for his vehicles when he traded them in. He had recently renewed his fleet and thought that this was the best time to compile a depreciation forecast.

7.3.2   THE IMPLEMENTATION

In only half an hour Ben had designed his worksheet to forecast the depreciation on his vehicles for the next four years. Using simple formulae, SIMPLICALC would work out the depreciation and net book value of each vehicle for each year. The formulae Ben defined for his application are shown in Figure 7-3.

```
COLUMN          0   COLUMN          6
COLUMN          1   ROW 12 0512*0603
COLUMN          2   ROW 13 0513*0603
ROW 12 0112*0603    ROW 14 0514*0603
ROW 13 0113*0603    ROW 15 0515*0603
ROW 14 0114*0603    COLUMN          7
ROW 15 0115*0603    ROW 12 0512-0612
COLUMN          3   ROW 13 0513-0613
ROW 12 0112-0212    ROW 14 0514-0614
ROW 13 0113-0213    ROW 15 0515-0615
ROW 14 0114-0214    COLUMN          8
ROW 15 0115-0215    ROW 12 0712*0603
COLUMN          4   ROW 13 0713*0603
ROW 12 0312*0603    ROW 14 0714*0603
ROW 13 0313*0603    ROW 15 0715*0603
ROW 14 0314*0603    COLUMN          9
ROW 15 0315*0603    ROW 12 0712-0812
COLUMN          5   ROW 13 0713-0813
ROW 12 0312-0412    ROW 14 0714-0814
ROW 13 0313-0413    ROW 15 0715-0815
ROW 14 0314-0414
ROW 15 0315-0415
```

FIGURE 7-3 DEPRECIATION WORKSHEET FORMULAE

Having entered the present value of each vehicle and defined the formulae he needed, Ben then simply pressed a key to display the results of the calculations. These are shown in Figure 7-4.

```
            DEPRECIATION FORECAST
            ━━━━━━━━━━━━━━━━━━━━━━

            At a Rate of 18 % or  0.18
            ━━━━━━━━━━━━━━━━━━━━━━━━━━

          Year 1       Year 2       Year 3       Year 4
          ━━━━━━       ━━━━━━       ━━━━━━       ━━━━━━

VEHICLEC/PRICE  DEP   NBV    DEP   NBV    DEP   NBV    DEP   NBV
━━━━━━━━━━━━━━  ━━━   ━━━    ━━━   ━━━    ━━━   ━━━    ━━━   ━━━
Cortina   6350  1143   5207 937.264269.74768.5533501.18630.2122870.96
Jaguar   16800  3024  13776 2479.681296.32033.339262.971667.337595.64
Pick Up   8250  1485   6765 1217.7 5547.3998.5144548.78818.780  3730
Transit   5750  1035   4715  848.7 3866.3695.9343170.36570.6642599.69
```

FIGURE 7-4 DEPRECIATION WORKSHEET RESULTS

Ben had no difficulty in extending the forecast over a longer period and entering the details of all his fleet. By storing the worksheet, he could then recall it, change the depreciation rate (should interest and inflation rates change), and, by pressing a single key, recalculate all values.

7.4   EXAMPLE 3 – PAYROLL

7.4.1   THE APPLICATION

B. Cratchitt, the payroll clerk of a small company, tended to make a great many mistakes when calculating the wages for the workforce.   His boss, E. Scrooge, didn't like this much as the mistakes tended to cost HIM money! As it was nearing Christmas, Mr Scrooge decided to buy his clerk a useful gift - a VIC 20, a VIC 1540 drive unit and the SIMPLICALC package!! No excuse now to get the figures wrong.

7.4.2 THE IMPLEMENTATION

In less than half an hour, Cratchitt had designed his worksheet and
worked out what formulae he would require to produce each week's
payroll. A print out of the sheet he used is shown in Figure 7-5.

```
Clock Number  |      34552  34554  34555  34558
Name    |     |      Brown  Curtis Davis  Edwards
Standard Hours|        40     40     40     40
Standard Rate |       3.55   3.75   3.55   3.55
Standard Pay  |        142    150    142    142
Overtime Rate |     |       |       |      |
(Stand.Rate*)       1.3  4.615  4.875  4.615  4.615
Overtime Hours|         4      6      9      3
Overtime Pay  |       18.46  29.25 41.535 13.845
Gross Pay     |      160.46 179.25183.535155.845
Tax Free Pay  |       45.76  51.87  44.89  33.65
TaxablePay    |      114.7 127.38138.645122.195
 |     |       |       |       |      |      |
Deductions    |       |      |      |      |
==========    |      .|      |      |      |
 |     |       |       |      |      |      |
Employee NIC @ 0.087514.040215.684316.059313.6364
Tax @    0.30|        34.41 38.21441.593536.6585
 |     |       |       |      |      |      |
Total Deductions     48.450253.898357.652850.2949
 |     |       |       |      |      |      |
Net Pay|      |      112.009125.351125.882105.550
```

FIGURE 7-5 PAYROLL WORKSHEET

By recalling this sheet each week and changing any relevant figures, the
wages could be worked out by simply pressing a single key. The sheet was
then stored using the date as the sheet's name in order to keep an up to
date record of where Mr Scrooge's money was going.

7.5 EXAMPLE 4 – TAX COMPUTATION

7.5.1 THE APPLICATION

The Wises, Penny and Andrew, had both recently had a pay rise. Because of the combined salary they were now earning, they wished to know whether it would now be more beneficial to be taxed separately rather than jointly. SIMPLICALC resolved their dilemma.

7.5.2 THE IMPLEMENTATION

In less than two hours, a worksheet had been designed on paper and then entered on the screen. Having worked out what formulae were required, it was a simple matter to produce the required results. Figure 7-6 shows the formulae that were used to perform the calculations and Figure 7-7 shows how the finished sheet looked.

```
COLUMN          0
COLUMN          1
COLUMN          2
ROW 16 +
COLUMN          3
ROW 16 +
COLUMN          4
ROW 6 H
ROW 9 0209+0309
ROW 11 H
ROW 12 H
ROW 13 H
ROW 14 H
ROW 18 +
ROW 24 0216+0211*0324
ROW 28 0424+0524
COLUMN          5
ROW 24 0316*0324
ROW 29 0628-0428
COLUMN          6
ROW 24 0124*0324
ROW 25 0418-0124*0325
ROW 26 0418-0124-0125*0326
ROW 28 +
```

FIGURE 7-6 TAX COMPUTATION FORMULAE

```
|        |         TAX COMPUTATION     |        |
|        |         ================    |        |
|        |      |       |       |      |        |
|        |      Mr     Mrs    Total |  |        |
|        |      ==     ===    ===== |  |        |
|        |      |       |       |   |  |        |
Salaries       11500   9000   20500|  |        |
|        |      |       |       |   |  |        |
|        |      |       |       |   |  |        |
Pers.Allowanc  -1375   -1375   -2750|  |        |
|        |      |       |       |   |  |        |
Married All.    -770|          -770|  |        |
Mortgage All.   -430|          -430|  |        |
Aff.Fees        -13|           -13|   |        |
Annuities.Prem  -250|          -250|  |        |
|        |      |       |       |   |  |        |
Taxable Income  8662   7625|       |  |        |
|        |      |       |       |   |  |        |
Joint Taxable Income |        16287|  |        |
|        |      |       |       |   |  |        |
|        |      TAX DUE|       |    |  |        |
|        |      =======|       |    |  |        |
|        |      |       |     Separate Inc.Joint
|        |      |       |     Mr      Mrs   |
Band 1    11250@30% or   0.30 2367.6 2287.5   3375
Band 2     2000@40% or   0.40      0      0 2014.8
Band 3     3500@45% or   0.45      0        01366.65
|        |      |       |       |       |     |
Total Tax  |       |         4886.1|        6756.45
Benefit of Separate Taxation    =    1870.35|
```

FIGURE 7-7 TAX COMPUTATION RESULTS

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 will appear on the screen when you type them. There are two keys on the keyboard of your VIC 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 will move the cursor one space to the right. Pressing this key whilst holding down the SHIFT key will move the cursor back to the left. Similarly, the vertical CRSR key will move the cursor down and with the SHIFT key depressed will move 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 VIC 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 VIC 2Ø 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 will 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 will display the message:

?syntax error
ready

You may now load SIMPLICALC as explained in Section X.Y.Z.

APPENDIX B
ERROR MESSAGES

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

OUT OF MEMORY ERROR IN 196

The amount of available computer memory has been exceeded when attempting to define a formula.

SHEET TOO LARGE

The maximum sheet size has been exceeded.

****

(in a worksheet location)
You have attempted to divide a value by zero.

> > > > > >

(in a worksheet location)
The result generated is longer than seven characters.

62øøokøø

An attempt has been made to load a worksheet that is not on the __ diskette.

74øøckøø

There is no diskette in the drive unit.

GLOSSARY

A list of terms used in this manual.

BYTE
A unit of computer memory capable of holding one character of information.

CHARACTER
Each individual symbol which appears on the screen, whether it is a number, letter punctuation mark, mathematical symbol or space, i.e. everything which is 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 will move 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 will move 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 and then the row number of the location.

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

CURSOR BAR
The seven-character-wide blue bar which, when positioned on a worksheet, determines where the typed information will appear.

DATA
The information on your worksheet.

FORMATTING
A procedure that prepares a new diskette to be used in a COMMODORE disk drive unit.

FORMULA
A sequence of arithmetic operations.

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

F1 FUNCTION KEY
The tan key at the top right of the VIC keyboard used to display the SIMPLICALC function codes.

F7 FUNCTION KEY
The tan coloured key at the bottom right of the VIC keyboard used to erase any characters displayed at the top of the screen in the input area.

HARD COPY

A copy generated on paper via the printer.

NUMERIC DATA
An item of information comprised entirely of figures.

OPERAND
The quantity used in an arithmetic operation. In SIMPLICALC, an operand is the value on a worksheet specified in terms of its column and row position.

OPERATOR
An arithmetic sign, e.g. $+$, $-$, $*$, $/$, $\uparrow$.

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

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

TEXT
Descriptive information on the worksheet.

UPPER/LOWER CASE
The screen input mode option that enables you to produce characters from the computer keyboard much as you would with a typewriter, i.e. if the SHIFT key is down, capital letters are produced and if it is up, lower case letters result.

WORKSHEET
A user-defined area on which information is entered and manipulated.

WRITE PROTECT
A tab placed over the square cutout on the edge of a diskette that prevents the user from storing anything on that diskette.

INDEX

SIMPLICALC

SIMPLICALC is an "electronic worksheet" that makes pencils, paper and calculators redundant. With SIMPLICALC, the paper is your computer display (work sheet), the pencils your keyboard, and the calculator is your VIC. Using simple formulae, calculations may be performed on the entries you make and the results placed in selected areas on the sheet. The program has great value in answering the question "WHAT IF?". Because of its calculating power it is easy to explore the effects of such things as changes in interest rates or commission structures, etc. Typical applications include:

Cash Flow Analysis
Balance Sheet Analysis
Home Budgets
DIY Estimates
VAT Calculations
Retail Mark-up

SIMPLICALC can add, subtract, divide, multiply and even raise a value to a certain power to give squares, cubes, etc. Columns and/or rows of figures can be totalled with a simple one letter command. The product can perform recalculations if a value has been changed and perform calculations dependent on previous results. If requested, SIMPLICALC can reproduce some or all of the contents of a column or row in another location on the sheet. When completed, the sheet can be stored on cassette or diskette and/or printed on the VIC Printer.

This package also includes a comprehensive guide to using SIMPLICALC, which contains a number of useful applications both at home and in business. Two copies of the program are included, providing a back-up if required.

NOTE: SIMPLICALC requires the use of a VIC 1540 Single Drive Floppy Disk Unit for the disk-based package or a VIC 1530 Cassette Deck for the cassette-based package. Both versions require the use of a VIC 1111 16K RAM Memory Expansion Cartridge and can be used with the VIC Printer. These items are available from Commodore dealers.

```
0    43467 00171
```