TeleVideo®
TeleCalc™ User's Manual

● TeleVideo Systems, Inc.

TELEVIDEO SYSTEMS, INC.

TELECALC USER'S MANUAL

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TELECALC TABLE OF CONTENTS

1. INTRODUCTION

TeleCalc is an accounting software program that allows you to create a spreadsheet on the screen and do mathematical calculation and manipulation. TeleCalc also takes the figures that you enter into the spreadsheet and produces a pie, bar, or line chart to give a picture of the figures. Both the spreadsheet and the chart can then be output to a printer for a hard-copy.

TeleCalc is capable of handling many of your accounting needs and graphic presentations of your figures.

Some of the capabilities of TeleCalc include:

    Cashflow planning
    Budget preparation
    Variance reporting
    Product pricing analysis
    Financial report preparation
    Manufacturing planning
    Private investment counseling
    Merger and acquisition pro-formas
    Capital budgeting
    Sales forecasting
    Graphic presentations of all forms

TeleCalc addresses all levels of computation. The command menu and fully-prompting format with built-in formulas simplify the most complex computations. Using Telechart, you can compute 5-year projections, generate tables, develop customized models, do financial computations, and figure cashflow and balance sheet forecasting. TeleCalc also does "what-if" analysis to further enhance financial forecasting. The complete report generator then makes your presentations more effective.

TeleCalc can solve your problems in financial planning from the simplest table to the most advanced financial analysis. It requires no typing skills and, in addition to the command menu, it has a HELP command.

NOTATION CONVENTIONS

In this manual, certain words and symbols indicate actions to be used in TeleCalc. These conventions are in Table 1-1.

Table 1-1
Notation Conventions

Symbol	Key	Action
<CR>	RETURN (Carriage return)	This symbol indicates that you are to press the <RETURN> key.
<HOME>	HOME	Use your HOME key to cancel a command if the <CR> has been entered and you realize that you have entered an incorrect command. The <HOME> key can also be used to move from some sub-menus or from a chart display back to the main menu.
^	CTRL (Control)	This symbol indicates that you are to press the <CTRL> key simultaneously with the key that follows the symbol.
<DEL>	DEL	Use the <DEL> (delete) key to correct typing errors if you have not yet pressed <CR>.
	Arrow keys	Indicates keys that direct the movement of the cursor. Are Also called **cursor keys.**

COMMAND FORMAT

The format used in this manual for entering commands consists of two or three columns. The headings are boldfaced and can be labeled:

System Display   **User Action**   **Command**

System Display   **User Action**   **Comment**

System Display   **User Action**

The directions under these headings are described here:

System Display   Command line display. This is where your command will be entered.

User Action   You either type the command or follow the directions. The User Action is **boldfaced.**

Command   The name of the command is listed here.
                            For example, you might type the command
                            7 (under User Action), and the name of
                            the command, HELP, will be listed under
                            Command.

Comment   A comment is listed to give a brief
                            explanation of the User Action.

For example, the directions for entering the HELP (7) command
would be presented this way:

System Display	User Action	Command
ENTER COMMAND:	7<CR>	HELP

2. GETTING STARTED

INTRODUCTION

This chapter is an introduction to the fundamentals of TeleCalc. Before you build your first spreadsheet there are things about the general operation of TeleCalc that you need to know. The chapter reviews the importance of having a working copy of the master diskette, how to load it into your computer, what the TeleCalc screen looks like and how to read it, how to use the menu, how to move around in the table, how to get HELP, caring for diskettes, and how to exit from TeleCalc.

MAKING A WORKING COPY OF TELECALC

You should keep the original diskette issued by TeleVideo as a back-up diskette. Make a copy of TeleCalc for your daily work. Use this copy so that you will always have the master disk as a back up in case your working disk fails due to wear or accidental erasure. Make a back-up working copy for your TeleCalc diskette by following these instructions.

1.   Follow the instructions in the User's Manual that came with your TeleVideo computer to format a blank diskette. Make sure you include the operating system on the diskette.

2.   On CP/M systems, make sure you have the program PIP.COM on your newly formatted diskette. (i.e. PIP b:=pip.com)

3.   Insert your noew system diskette in drive A and the master TeleCalc diskette in drive B. Enter ^C, andissue the following command:

          PIP A:=B:*.*[V]

4.   Put the TeleCalc master diskette away for safe keeping. Label the new diskette as your TeleWrite system diskette.

LOADING TELECALC

To install TeleCalc on your system follow these directions.
Boldfaced words indicate what the user is to type, or enter.

USER: 1.   Be sure your computer is turned on.

            2.   Insert your TeleCalc system diskette in drive A
                  (the upper drive).

            3.   Enter

                  TC<CR>

                  (Type .TC and press the <RETURN> key.)

SYSTEM: 4.   Displays after a few seconds the main menu of
                  TeleCalc.

THE TELECALC SCREEN

When TeleCalc comes up on the screen, the screen is divided
into several sections: the table, the status line, the data
pointer, the command line, and the main menu.

TeleCalc Table

The major portion of the screen displays the TeleCalc table.

Figure 2-1
TeleCalc Table

ROW

	----1----	----2----	----3----	----4----	----5----
1	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0
5	0.0	0.0	0.0	0.0	0.0
6	0.0	0.0	0.0	0.0	0.0
7	0.0	0.0	0.0	0.0	0.0
8	0.0	0.0	0.0	0.0	0.0
9	0.0	0.0	0.0	0.0	0.0
10	0.0	0.0	0.0	0.0	0.0
11	0.0	0.0	0.0	0.0	0.0
12	0.0	0.0	0.0	0.0	0.0
13	0.0	0.0	0.0	0.0	0.0
14	0.0	0.0	0.0	0.0	0.0
15	0.0	0.0	0.0	0.0	0.0
16	0.0	0.0	0.0	0.0	0.0
17	0.0	0.0	0.0	0.0	0.0

Each row of the table has been labeled with row numbers on the left side of the screen. TeleCalc has 12 blank spaces following each row number that are used to display row description. Row descriptions can be up to 40 characters in length.

Each column of the table is also labeled with column numbers, with dashes on both sides. You can enter a two-line column description for each column that can vary from 4 to 20 characters for each line.

Status Line

The **Status Line** gives you information about TeleCalc's current mode, the current computing order, and the current row and column ranges.

MODE=NORMAL   ORDER=R/C   ROW=1-50   COL=1-20

Unless you set it up otherwise, these options default to the **NORMAL** mode; a computing order of **rows before columns (R/C)**; and a range of **50 rows and 20 columns.**

Data Pointer

The **Data Pointer** tells you the row or column to be used to store the results of your next computation.

ROW 1 <--

In this manual, the row or column that is shown by the data pointer is referred to as the **CURRENT** row or column.

Command Line

The **Command Line** prompts you for a command number.

ENTER COMMAND:

Enter the command number that you wish to use and press the <RETURN>(<CR>) key. The command is automatically entered and you are prompted for any additional information that is needed.

CHOOSING COMMANDS

TeleCalc works by responding to commands in the form of numbers. For every command that you need to execute, there is a corresponding built-in TeleCalc command.

In addition to using the command numbers, TeleCalc also responds to alpha characters that are codes for the regular numeric commands. So, if it is easier for you, simply use the "+" for the ADD (41) command, an "F" for the FORMULA (35) command, or any other single-keystroke codes.

The Menu

The TeleCalc menu is always showing on the right side of your
screen for easy reference. The main menu that you see when you
bring TeleCalc up on the screen is organized into several
groups. These groups follow the logical order used to build a
TeleCalc table. All commands followed by colons (:) have a
related sub-menu.

```
 1 format:
 2 data:
 3 math:
 4 graphics:*
 5 print:
 6 status:
 7 HELP
 8
 9 STOP
10 utility:
11
12 HOME
13 BOTTOM
14
15
16 format:
17 INSERT
18 DELETE
19    rows:
20 ROW TITLE
```

*The graphics command only applies to the TeleCalc-80. It is an
optional item in the TeleCalc-86.

If you wish to see the commands in any of the sub-menus, enter
the number of the group for which you want to see a sub-menu and
press <CR>. For example, if you want to see the available
commands under the math heading, enter **3** and press <CR>. A new
set of commands appear in the menu on the screen. Try it.

System Display	User Action	Command
ENTER COMMAND:	3<CR>	Math

TeleCalc responds with the menu shown below.

```
40  math:
41 ADD
42 SUB
43 MULT
44 DIV
45 NEGATE
46 INVERSE
47 INTEGER
48 ROUND
49 CUMULATE
50 ABSOLUTE
51 ADD K
52 SUB K
53 MULT K
54 DIV K
55 SUM
56 GET
57 FLOOR
58 CEILING
59
```

To get back to the main menu, press <CR>. When you press <CR> without a command, TeleCalc returns to the original menu.

MOVING AROUND IN THE TELECALC TABLE

TeleCalc usually displays 17 rows and 5 columns on the screen at one time even though your actual table size is much larger. Physical limitations of the screen allow only a portion of the table to be displayed at any one time.

TeleCalc automatically moves the screen to show other parts of your table. This means that the cursor position is always showing on your screen. You can move one column, one row, or you can move to any section of your table that you need to view by using the arrow keys to position your display.

Arrow Keys

Use your arrow keys to switch from the row mode to the column mode and vice versa. The right or left arrow keys put you in the column mode, and the up or down arrow keys switch you back to the row mode. In short, with the use of your arrow keys, you can move to any part of your worksheet with the press of a key.

Commands

You can also use the SELECT ROW (33) or SELECT COL (34) commands to quickly move to any part of the screen. The SELECT ROW (33) command allows you to position your cursor on a specific row; SELECT COL (34) lets you go to a specific column. The HOME (12) command allows you to move to the beginning of the table and the BOTTOM (13) command moves you to the bottom of your table.

Use the GOTO (36) command to position the screen at a specific portion of the table. For example, to see the results at row 30, column 10 of the table, you can use the GOTO (36) command and specify row 30, column 10. TeleCalc positions row 30, column 10 in the upper-left corner of the table.

HELP MENU

If at any time you need on-screen help for one of the TeleCalc commands, enter the HELP (7) command. The HELP (7) command prompts you for the command for which you need help. Enter the command number or the corresponding mnemonic command and press <CR>.

For example, if you need help for the ROW TITLE (20) command, you would enter the **7** (HELP) command, press <CR>, then enter **20** (ROW TITLE), and <CR>. A brief explanation of command 20 appears at the bottom of your screen as shown below.

  20 ROW TITLE title ... HOME   (DOWN, UP, HOME)
  Enter or change row titles. Each title entered is placed in
  the current row. The cursor keys move the current row pointer.

The HELP command gives you a three-line description of the commands. For a more comprehensive description, consult the Command Reference Section of the Appendices.

CARING FOR DISKETTES

Floppy diskettes are destructable and should be handled with care. In most cases diskettes prove to be surprisingly sturdy and will give you dependable service if you treat them properly.

* PROTECT your diskettes by keeping them in their protective envelope when not in use.

* DO NOT BEND diskettes.

* INSERT DISKETTES CAREFULLY into your disk drives. Never force a diskette into the disk drive.

* NEVER TOUCH THE DISKETTE SURFACE. Fingerprints and dust can destroy data. Always handle diskettes by their protective covering.

* DO NOT STORE DISKETTES NEAR A HEAT SOURCE. Like phonograph records, diskettes can warp or crack if exposed to extreme temperatures. For best results, store diskettes in a moderate temperature range.

* DO NOT EXPOSE DISKETTES TO MAGNETS. Magnetic fields can damage data stored on your diskettes. Be aware of possible magnetic fields from sources such as X-rays and other electronic equipment.

Backing up Diskettes

Accidents do happen. Just when you least expect it, a power
failure or a defective diskette can cause you to lose your data.
Unfortunately, no one is immune from this aspect of working with
computers, but you can prevent losing information by making back-
up copies of your diskettes.

Back-up copies are as important as your data. If the data is not
essential, you might feel that making back-up copies is a waste
of time. If, however, you have data on your diskettes that is
critical to your work, we strongly recommend that you make
frequent back-up copies of your data and store them separately in
a safe place. Consult the User's Manual for instructions on
making back-up copies of your data diskettes. THE CHOICE AND
RESPONSIBILITY FOR MAKING BACK-UP COPIES ARE YOURS.

SAVING AND EXITING TELECALC

Whenever you are through using TeleCalc and want to exit to the
operating system, do the following:

USER: 1.   Save any work you wish to keep by using the
                 UTILITY (10) command and then saving the part of
                 your file that you wish. For example, if you wish
                 to save both the entire file and the chart, you
                 would use the SAVE ALL (107) command.
           2.   When all work is saved, you are ready to exit to
                 the operating system.

System Display	User Action	Command
ENTER COMMAND:	9<CR>	STOP
VERIFY (Y OR N):	Y<CR>	

TeleCalc returns you to the system prompt of the operating
system.

3. DOING A SAMPLE REPORT

INTRODUCTION

In this chapter you learn the basic steps associated with building a table. These steps include entering row titles and table data and then doing some simple calculations. You produce a Five-Year Sales Forecast, make a change in your data and do a "what-if" analysis, and print a report.

THE FIVE-YEAR SALES FORECAST

Let's assume you have a business and want to do a sales and gross profit forecast for the next five years. Let's base the forecast on the following assumptions:

SALES: Start with a base of $1,000 and
                               grow 10% per period.

COST OF GOODS: Constant 45% of sales figures.

SALES AND ADMINISTRATION: Constant 20% of sales figures.

RESEARCH AND DEVELOPMENT: A flat $300 per year.

TOTAL COSTS: The sum of all costs (Cost of
                               Goods, Sales and Administration,
                               and Research and Development).

GROSS PROFIT: Sales less total costs.

1. The first step in building the sample table is to enter
    titles for each row using the ROW TITLE (20) command.

System Display	User Action	Command
ENTER COMMAND:	20<CR>	ROW TITLE

2. Follow the prompts on your screen and type the description
    for row 1, SALES.

System Display	User Action	Comment
:	SALES<CR>	row 1 title

3.   Notice that after you press <CR>, the title is displayed
      on row 1 and the prompt continues for the row 2 titles.

System Display	User Action	Comment
:	**COST OF GOODS<CR>**	row 2 title
:	**SALES AND ADMINISTRATION<CR>**	row 3 title

4.   The prompts continue to ask for row descriptions. Notice
      that ADMINISTRATION has not totally appeared on your screen.
      Don't worry. The screen is set to display only 15
      characters for each title. The full description is
      remembered for later use. Later you will learn how you can
      adjust the screen to correspond to your needs.

System Display	User Action	Comment
:	**RESEARCH AND DEVELOPMENT<CR>**	row 4 title
:	**TOTAL COSTS<CR>**	row 5 title
:	**GROSS PROFIT<CR>**	row 6 title

This is the last row title. To cancel the ROW TITLE (20)
command, press <HOME>.

This is what your screen should now display.

```
    ROW
    ---------------
  1 SALES
  2 COST OF GOODS
  3 SALES AND ADM
  4 RESEARCH AND
  5 TOTAL COSTS
  6 GROSS PROFIT
  7
  8
  .
  .
  .
 17
```

5.   The data pointer and cursor are now back on row 1. The
      command line is prompting you for your next command.

      According to our assumptions, SALES will start at $1,000 and
      grow at 10% per year.

Let's start with the ENTER (31) command which allows you to choose the method of data entry.

System Display	User Action	Command
ENTER COMMAND:	31<CR>	ENTER

You now have four ways that you can enter data. Choosing Option "0" you can enter data individually, value by value Choose Option "1" to enter a constant value for the entire line. The "2" option lets you enter a base value and have it grow by a certain percentage, and option "3" lets you enter a base value and have it increment by a certain amount.

6. For our example, choose the GROW option (2).

System Display	User Action
CHOOSE (VALUE=0, CONSTANT=1, GROW=2, INCR=3):	2<CR>

7. The command line prompts for the base value. Type in 1000. Notice that dollar signs and commas are not entered.

System Display	User Action
BASE VALUE:	1000<CR>

8. The prompt is now asking for the percentage rate. Type in **10**. Notice that the percent signs are not entered. After you press <CR>, notice that row 1 contains the computed sales. The values start with 1,000 and grow by 10% per year.

System Display	User Action
RATE:	10<CR>

9. The cursor and data pointer are now on row 2. According to our assumptions, the cost of goods is a constant 45% of sales, so you use the MULT K (53) command.

System Display	User Action	Command
ENTER COMMAND:	53<CR>	MULT K
VALUE:	.45<CR>	

10. The prompt now asks for a row number. Type in 1 to indicate that the sales figures in row 1 should be used in the constant percent calculation.

System Display	User Action
ROW (1-50):	1<CR>

Again notice that the cursor and data pointer have automatically moved to row 3, SALES AND ADMINISTRATION.

11. Now let's assume that sales and administrative costs are a constant 20% of our sales. Again use the MULT K (53) command and the sales figures in row 1.

System Display	User Action	Command
ENTER COMMAND:	53<CR>	MULT K
VALUE:	.20<CR>	
ROW (1-50):	1<CR>	

12. For row 4, we will assume that RESEARCH AND DEVELOPMENT is a constant cost of $300 each year. Choose the "constant" (1) option for the ENTER (31) command.

System Display	User Action	Command
ENTER COMMAND:	31<CR>	ENTER
CHOOSE (VALUE=0, CONSTANT=1, GROW=2, INCR=3):	1<CR>	

13. The command line now prompts you for the constant base value. Type in 300.

System Display	User Action
BASE VALUE:	300<CR>

Notice that row 4 shows the value of 300 in all columns.

14. The data pointer and cursor now indicate row 5. To calculate the TOTAL COSTS in row 5, sum beginning with row 2 and ending with row 4 using the SUM (55) command.

System Display	User Action	Command
ENTER COMMAND:	55<CR>	SUM
ROW BEGIN (1-50):	2<CR>	
END (2-50):	4<CR>	

Notice that the sum for each column of the table is computed and the result is displayed on row 5.

15. Finally, calculate the GROSS PROFIT in row 6 as SALES, row 1, minus TOTAL COSTS, row 5, using the SUB (42) command.

System Display	User Action	Command/Comment
ENTER COMMAND:	42<CR>	SUB
ROW (1-50):	1<CR>	first row number
ROW (1-50):	5<CR>	row number to subtract

After you enter the figures, TeleCalc calculates the GROSS PROFITS and displays the results in row 6.

16. You have now completed your first Five-Year Forecast. The screen should look like the following:

```
ROW
--------------     ----1----  ----2----  ----3----  ----4----  ----5----
1 SALES             1,000.0    1,100.0    1,210.0    1,331.0    1,464.1
2 COST OF GOODS       450.0      495.0      544.5      599.0      658.8
3 SALES AND ADM       200.0      220.0      242.0      266.2      292.8
4 RESEARCH AND        300.0      300.0      300.0      300.0      300.0
5 TOTAL COSTS         950.0    1,015.0    1,086.5    1,165.2    1,251.7
6 GROSS PROFIT         50.0       85.0      123.5      165.9      212.4
7
8
```

As you prepared the Five-Year Forecast, not only were the figures computed, but the commands required to create the table were memorized.

17. Let's take a look at the corresponding command logic using the SHOW ROWS (22) command.

System Display	User Action	Command
ENTER COMMAND:	22<CR>	SHOW ROWS

Your screen should show the following:

ROW	TYPE	UNDER LINE	BLANK LINES	DEC SIZ	FOR MAT	COMMAND	PARAMETERS
1 SALES	data		–	–	–		
2 COST OF GOODS	data		–	–	–	MULT K	K=0,45 ROW=1
3 SALES AND ADM	data		–	–	–	MULT K	K=0,2 ROW=1
4 RESEARCH AND	data		–	–	–		
5 TOTAL COST	data		–	–	–	SUM	ROWS 2 – 4
6 GROSS PROFIT	data		–	–	–	SUB	ROW=1 ROW=5
7	data		–	–	–		
8	data		–	–	–		
9	data		–	–	–		
10	data		–	–	–		
11	data		–	–	–		
12	data		–	–	–		
13	data		–	–	–		
14	data		–	–	–		
15	data		–	–	–		
16	data		–	–	–		
17	data		–	–	–		

To recover your display, press any arrow key.

"WHAT-IF" ANALYSIS

Let's make changes to our data and watch the entire Five-Year Forecast be recalculated based on some new assumptions.

Let's do a "what-if" analysis with the new assumption that the first year of RESEARCH AND DEVELOPMENT expenses row 4, column 1 will be $500 instead of $300. You need to begin with the CHANGE (32) command to indicate the new figures and then use the COMPUTER (98) command to see the effect of the new assumption.

System Display	User Action	Command
ENTER COMMAND:	32<CR>	CHANGE
ROW (1-50):	4<CR>	
COL (1-20):	1<CR>	
VALUE:	500<CR>	
ENTER COMMAND:	98<CR>	COMPUTE

In only a few seconds, the new Five-Year Forecast shows the following:

ROW	----1----	----2----	----3----	----4----	----5----
1 SALES	1,000.0	1,100.0	1,210.0	1,331.0	1,464.1
2 COST OF GOODS	450.0	495.0	544.5	599.0	658.8
3 SALES AND ADM	200.0	220.0	242.0	266.2	292.8
4 RESEARCH AND	500.0	300.0	300.0	300.0	300.0
5 TOTAL COSTS	1,150.0	1,015.0	1,086.5	1,165.2	1,251.7
6 GROSS PROFIT	-150.0	85.0	123.5	165.9	212.4

GENERATING A REPORT

Now that you have built your table, let's print the report. Be sure your printer is connected and turned on, and your paper adjusted. You will first want to enter titles of your chart using the TITLES (82) command which begins by prompting you for the date and the row and column range that you want printed. The title for your chart can be up to three lines long. The last prompt begins the printing.

System Display	User Action	Command
ENTER COMMAND:	82<CR>	TITLES
PAGE NUMBER (0-999):	1<CR>	
DATE (YEAR AS YY):	83<CR>	
MONTH (1-12):	1<CR>	
DAY (1-31):	1<CR>	
ROW-RANGE BEGIN (1-50):	1<CR>	
END (1-50):	6<CR>	
COL-RANGE BEGIN (1-20):	1<CR>	
END (1-20):	5<CR>	
TITLE 1:	**SAMPLE 5-YEAR PROJECTION<CR>**	
TITLE 2:	<CR>	
TITLE 3:	<CR>	

Pressing <CR> by itself indicates that there are no titles for the second and third lines.

System Display	User Action
SET PAPER; HIT RETURN	<CR>

The TITLES (82) command sends your Five-Year Forecast table to the printer to generate the following report.

(date)   PAGE 1
SAMPLE 5-YEAR PROJECTION

----------------	----1----	----2----	----3----	----4----	----5---
1 SALES	1,000.0	1,100.0	1,210.0	1,331.0	1,464.1
2 COST OF GOODS	450.0	495.0	544.5	599.0	658.8
3 SALES AND ADMINIS	200.0	220.0	242.0	266.2	292.8
4 RESEARCH AND DEVE	500.0	300.0	300.0	300.0	300.0
5 TOTAL COSTS	1,150.0	1,015.0	1,086.5	1,165.2	1,251.7
6 GROSS PROFIT	-150.0	85.0	123.5	165.9	212.4

SAVING YOUR TABLE

You should now save your table on disk with the SAVE TBL (112) command for future use. The FORECAST table will be used in some of the following chapters as examples. If you wish to save your table on a different drive, first use the SET DRIVE (108) command.

System Display	User Action	Command
ENTER COMMAND:	108	SET DRIVE
DRIVE (A-P):	(enter drive name)	
ENTER COMMAND:	112<CR>	SAVE TBL
TABLE NAME:	FORECAST<CR>	

ENDING THE LESSON

Congratulations, you have just completed your first report! To end the lesson and return to the operating system, use the STOP (9) command.

System Display	User Action	Command
ENTER COMMAND:	9<CR>	STOP
VERIFY (Y OR N):	Y<CR>	

4. BUILDING TABLES

INTRODUCTION

Chapter 4 shows how to format a table to your own specifications. You will learn how to enter line descriptions and data, and how to specify formatting options on the screen. You can view the FORMAT commands on your screen by entering command 1<CR>. To see the DATA ENTRY commands, enter command 2<CR>.

ENTERING A ROW OR COLUMN OF DATA

In Chapter 3 you used the ENTER (31) command to enter values for several rows in the Five-Year Forecast. The ENTER (31) command can be used to enter a column of data as well.

When entering data with the ENTER (31) command, you can choose the method of data entry from among four options.

Option 1: Choose the "0" option (VALUES) and you can enter data, value by value, one cell at a time.

Option 2: Choose the "1" option (CONSTANT) and you can enter a constant value for the entire row or column.

Option 3: Choose the "2" option (GROW)and you can enter a value and have it grow by a certain percentage.

Option 4: Choose the "3" option (INCR) and your base value will be increased or decreased by an amount specified by you.

For example, suppose you want to enter the values, 10, 20, 30, 40, etc. into column 3 of your table. To do this, you would use the SELECT COL (34) command to move to column 3 and the INCR (3) option of the ENTER (31) command to enter the data.

System Display	User Action	Command
ENTER COMMAND:	34<CR>	SELECT COL
COL (1-20):	3<CR>	

Notice that instead of using SELECT COL (34) to position your cursor to the column mode, you can also use either the right or left cursor arrow keys (-->, <--). The data pointer now shows **COL 3 <--**.

Use the ENTER (31) command and option 3 (INCR) to enter values
for column 3. The base value is 10 and you want it to increment
by 10.

System Display	User Action	Command
ENTER COMMAND:	**31<CR>**	ENTER
CHOOSE (VALUE=0, CONSTANT=1,GROW=2, INCR=3):	**3<CR>**	
BASE VALUE:	**10<CR>**	
RATE:	**10<CR>**	

Your display will show the changes in column 3. Notice that
the data pointer has automatically changed to **COL 4 <--** and is
ready for your next entry.

```
        COL 4   <--
ENTER COMMAND:
```

ROW	----1----	----2----	----3----	----4----	----5----
1	0.0	0.0	10.0	0.0	0.0
2	0.0	0.0	20.0	0.0	0.0
3	0.0	0.0	30.0	0.0	0.0
4	0.0	0.0	40.0	0.0	0.0
5	0.0	0.0	50.0	0.0	0.0
6	0.0	0.0	60.0	0.0	0.0
7	0.0	0.0	70.0	0.0	0.0
8	0.0	0.0	80.0	0.0	0.0
9	0.0	0.0	90.0	0.0	0.0
10	0.0	0.0	100.0	0.0	0.0
11	0.0	0.0	110.0	0.0	0.0
12	0.0	0.0	120.0	0.0	0.0
13	0.0	0.0	130.0	0.0	0.0
14	0.0	0.0	140.0	0.0	0.0
15	0.0	0.0	150.0	0.0	0.0
16	0.0	0.0	160.0	0.0	0.0
17	0.0	0.0	170.0	0.0	0.0

ENTERING INDIVIDUAL VALUES

If you prefer, you can enter values one at a time by using the
ENTRY (30) command. With this command, you can go directly to a
data entry position without having to go through the options
offered in the ENTER command.

With the ENTRY command you can use the arrow keys to move the
data pointer to the cell position of the value you wish to enter.
This position is highlighted on your display. For example,
suppose you want to enter the following data into column 4.

	-1-	-2-	-3-	-4-	-5-	-6-	-7-
COLUMN 4:	100	100	100	0	100	300	300

Use the ENTRY (30) command and then enter each value. Notice
that when you press <CR> for a value, the value from the previous
row is repeated.

System Display	User Action	Command/Comment
ENTER COMMAND:	30<CR>	ENTRY
VALUE:	100<CR>	column 4, row 1
VALUE:	<CR>	column 4, row 2
VALUE:	<CR>	column 4, row 3
VALUE:	0<CR>	column 4, row 4
VALUE:	100<CR>	column 4, row 5
VALUE:	300<CR>	column 4, row 6
VALUE:	<CR>	column 4, row 7

This is the last value to be entered in this row, so press the
<HOME> key to cancel the ENTRY (30) command.

System Display	User Action
VALUE:	<HOME>

Notice that while in the ENTRY (30) mode, each <CR> causes the
data pointer and the cursor to automatically move to the next row
or column.

Because of the different methods available for entering data, you
should determine the best way based on your particular
application. In order to save time, you should also decide
whether to use the row mode or the column mode before you begin
entering your data.

CLEARING THE TABLE

To clear the table so that you can continue to the next section, use the CLR DATA (113) command in the Utility Menu. See the section, Your Screen Display, in Chapter 8 for more information.

System Display	User Action	Command
ENTER COMMAND:	113<CR>	CLR DATA
VERIFY (Y OR N)	Y<CR>	

DOING A SAMPLE INVENTORY TABLE

To illustrate the formatting and data entry commands used in this chapter, let's prepare a sample inventory table.

Assume that you need an inventory report to include three items: desks, chairs, and shelves. For each of these items, you want to show a unit cost, quantity, and total cost. You also want to show a grand total for all three items' cost. Let's start by setting up the table size for your Inventory example.

Setting Table Size

Table sizes can be changed to accommodate a variety of applications. For example, by choosing a 5-column format, you can have up to about 200 available rows. This format could handle a full income statement, cash flow, and balance sheet in a single table. With 60 columns in your table, you can do a five-year, monthly projection of cash flows for a real estate development project.

The potential size of each table is determined by the RAM (Random Access Memory) capacity of your computer. Based on a system with 64K (kilobytes) of RAM, your table can be up to 99 columns, OR up to 250 rows, with a total of approximately 1000 data cells. The SET UP (109) command will automatically calculate the maximum number of columns and rows to let you know how large your table can be. Let's use the SET UP (109) command to build a sample inventory table that is 5 columns by 15 rows.

NOTE!   In an 8 bit system the the minimum number of rows you can have is one but in a 16 bit system the minimum number is 17.

If you use SET UP (109) to display less than the default number of columns (5), you must then use SET CRT (86) to increase your columns back to default size for a 16 bit system.

The SET UP (109) command allows you to select table sizes. When you bring your program up on your screen, the table that you see on the screen is 50 rows by 20 columns. The initial table size will always default to 50 rows by 20 columns unless you use the SET UP (109) command to specify another size.

System Display	User Action	Command
ENTER COMMAND:	**109<CR>**	SET UP
VERIFY (Y OR N):	**Y<CR>**	

Notice that answering "yes" (Y) to the SET UP verification query clears the data from your screen. If you do not want the data cleared, respond with an "N" for no.

Now you enter the number of columns and the number of rows. You want to have 5 columns in the table but you could have up to 99. You want 15 rows but could have up to 161 rows.

System Display	User Action
NUMBER OF COLUMNS (1-99):	**5<CR>**
ROWS (1-161):	**15<CR>**
VERIFY (Y OR N):	**Y<CR>**

The size of the table on the screen, the CURRENT table size, is shown in the upper-right corner of your screen (ROW=1-15 COL=1-5). The table will now be reset to show a table that is 5 columns by 15 rows.

ENTERING ROW AND COLUMN DESCRIPTIONS

Row and column titles are easy to enter. Using the ROW TITLE (20) command, you can enter titles of up to 40 alpha or numeric characters for each row. Each title entered is placed in the current row as indicated by the data pointer and the highlighted block. You can use the arrow keys to position the data pointer to the row in which you want to enter a title. Let's enter row titles for the Inventory table.

System Display	User Action	Command/Comment
ENTER COMMAND:	20<CR>	ROW TITLE
:	ITEM<CR>	Row 1 title
:	DESKS<CR>	Row 2 title
:	CHAIRS<CR>	Row 3 title
:	SHELVES<CR>	Row 4 title
:	TOTAL<CR>	Row 5 title

This is the last row title to be entered, so use the HOME command to cancel the ROW TITLE (20) command.

System Display	User Action
:	<HOME>

Now enter the column descriptions for your inventory table using the COL TITLE (25) command. Columns are allowed 2-line descriptions of up to 20 characters. Each line of the title is automatically right justified in the column. If only one line of description is needed, press <CR> to indicate that a second line is not necessary. If only one line is used, it is always printed on the lower of the two lines of titles.

System Display	User Action	Command/Comment
ENTER COMMAND:	25<CR>	COL TITLE
1:	UNIT<CR>	Column 1 first title
2:	COST<CR>	Column 1 second title
1:	QUANTITY<CR>	Column 2 title
2:	<CR>	
1:	TOTAL<CR>	Column 3 first title
2:	COSTS<CR>	Column 3 second title

This is the last column title to be entered, so press the <HOME> key to cancel the COL TITLE command.

System Display	User Action
:	<HOME>

Your screen should show the following:

```
      ROW 1 (ITEM)  <--
ENTER COMMAND:
                   UNIT                 TOTAL
ROW                COST   QUANTITY       COSTS
---------------- ----1---- ----2---- ----3---- ----4---- ----5----
  1 ITEM            0.0       0.0       0.0       0.0       0.0
2 DESKS             0.0       0.0       0.0       0.0       0.0
3 CHAIRS            0.0       0.0       0.0       0.0       0.0
4 SHELVES           0.0       0.0       0.0       0.0       0.0
5 TOTAL             0.0       0.0       0.0       0.0       0.0
6                   0.0       0.0       0.0       0.0       0.0
7                   0.0       0.0       0.0       0.0       0.0
8                   0.0       0.0       0.0       0.0       0.0
9                   0.0       0.0       0.0       0.0       0.0
10                  0.0       0.0       0.0       0.0       0.0
11                  0.0       0.0       0.0       0.0       0.0
12                  0.0       0.0       0.0       0.0       0.0
13                  0.0       0.0       0.0       0.0       0.0
14                  0.0       0.0       0.0       0.0       0.0
15                  0.0       0.0       0.0       0.0       0.0
```

The ROW TITLE (20) and COL TITLE (25) commands can also be used
to change row and column descriptions. They can be used to
correct typing errors or to supply new titles. The new
descriptions you supply replace the old descriptions in the
table.

Entering Data

Using the data entry commands discussed earlier in this section,
you can now enter data into the inventory table. Use your arrow
keys to position your cursor on column 1. You begin by using the
ENTRY (30) command and then entering the data. You end by using
the MULT (43) command to get the total cost of the Inventory
table.

Row 1 is a heading and should not have values. The cursor will
automatically go to column 1, row 2 ready for your next entry.

System Display	User Action	Command/Comment
ENTER COMMAND:	30<CR>	ENTRY
VALUE:	0<CR>	row 1 value
VALUE:	300<CR>	row 2 (desks) value
VALUE:	150<CR>	row 3 (chairs) value
VALUE:	200<CR>	row 4 (shelves) value

This is the last value to be entered here, so press the <HOME> key to cancel the ENTRY command.

System Display	User Action
VALUE:	**<HOME>**

The data pointer and the cursor automatically move to the next column ready for your next command. Let's use the ENTRY (30) command again to enter data in column 2.

Use the arrow keys to move to column 2.

System Display	User Action	Command
ENTER COMMAND:	**30<CR>**	ENTRY
VALUE:	**0<CR>**	row 1 value
VALUE:	**10<CR>**	row 2 (desks) value
VALUE:	**20<CR>**	row 3 (chairs) value
VALUE:	**5<CR>**	row 4 (shelves) value

This is the last value to be entered, so press the <HOME> key to cancel the ENTRY command.

System Display	User Action
VALUE:	**<HOME>**

To get the total costs of the Inventory table, use the MULT(43) command to multiply column 1 by column 2.

System Display	User Action	Command
ENTER COMMAND:	**43<CR>**	MULT
ROW (1-5):	**1<CR>**	
ROW (1-5):	**2<CR>**	

Your screen should show the following:

```
     ROW 1 (ITEM)  <--
ENTER COMMAND:
```

ROW	UNIT COST ----1----	QUANTITY ----2----	TOTAL COSTS ----3----	----4----	----5----
1 ITEM	0.0	0.0	0.0	0.0	0.0
2 DESKS	300.0	10.0	3,000.0	0.0	0.0
3 CHAIRS	150.0	20.0	3,000.0	0.0	0.0
4 SHELVES	200.0	5.0	1,000.0	0.0	0.0
5 TOTAL	0.0	0.0	0.0	0.0	0.0
6	0.0	0.0	0.0	0.0	0.0
7	0.0	0.0	0.0	0.0	0.0
8	0.0	0.0	0.0	0.0	0.0
9	0.0	0.0	0.0	0.0	0.0
10	0.0	0.0	0.0	0.0	0.0
11	0.0	0.0	0.0	0.0	0.0
12	0.0	0.0	0.0	0.0	0.0
13	0.0	0.0	0.0	0.0	0.0
14	0.0	0.0	0.0	0.0	0.0
15	0.0	0.0	0.0	0.0	0.0

SAVING AND LOADING TABLES

After you have created a table, you will probably want to save
the table for future use. You will also need to know how to
reload tables from your diskette onto your computer so that you
can change or update data. To see the commands associated with
saving and loading tables, enter command 10 (UTILITY) and press
<CR>.

You can save tables on diskettes and load the tables again using
the SAVE TBL (112) and LOAD TBL (111) commands. Each table is
identified by an 8-character name. You can direct the tables to
be saved or loaded from any of the disk drives of your computer.

To save tables on a specific disk drive, use the SET DRIVE (108)
command to specify the drive name. That drive will be used as
the data drive for all subsequent load and save operations until
you change the drive with the SET DRIVE (108) command or by
exiting the program.

To illustrate the save and load commands, let's save the table on
our screen as an inventory table example named INVENT on drive B,
reset the table, and then load the saved Inventory table back
from the disk. You will use this version of the INVENT table in
later chapters as an example.

If you wish to save the table on a different drive, you will
begin with the SET DRIVE (108) command followed by the SAVE TBL
(112) command.

System Display	**User Action**	**Command**
ENTER COMMAND:	108<CR>	SET DRIVE
DRIVE (A-P):	B<CR>	
ENTER COMMAND:	112<CR>	SAVE TBL
TABLE NAME:	INVENT<CR>	

When your table has been saved, you will see the message, **saved,** in the upper-left corner of your screen.

Now clear your screen using the RESET (114) command. Then reload the table using the LOAD TBL (111) command.

System Display	**User Action**	**Command**
ENTER COMMAND:	114<CR>	RESET
VERIFY (Y OR N):	Y<CR>	
ENTER COMMAND:	111<CR>	LOAD TBL

A directory is kept of all the tables that you save. After entering a load or save command, a message at the top of the screen will direct you to "Hit RETURN to see available tables or programs". If you wish to see the names of the tables in the directory, simply press <CR>. Continue pressing <CR> to view additional tables.

System Display	**User Action**
TABLE NAME:	INVENT<CR>

Each table will save the following information:

1. Report options and titles

2. Range settings and compute order

3. Row descriptions, options, and commands

4. Column descriptions, options, and commands

5. Table values

In general, all relevant parameters are saved so that you can continue from one session to another without worrying about losing data.

See Chapter 8, File Maintenance, for further information on maintaining files.

ENLARGING TABLES

The SET UP (109) command can also be used to enlarge a table--as long as you remain within the size limitations of your RAM. To enlarge a table, first set the current table to the new dimension you need. Then load your table to be enlarged into the CURRENT table.

Let's enlarge our current table from 5 columns by 15 rows to 20 columns by 50 rows. Begin with the SET UP (109) command to set the size and then use the LOAD TBL (111) command to display the current table.

System Display	User Action	Command
ENTER COMMAND:	109<CR>	SET UP
VERIFY (Y OR NO):	Y<CR>	
NUMBER OF COLUMNS (1-99):	20<CR>	
ROWS (1-54):	50<CR>	
VERIFY (Y OR N):	Y<CR>	

The current table will be set up to the new dimensions. The CURRENT table size is displayed in the upper-right corner of your screen (ROW=1-50 COL=1-20).

System Display	User Action	Command
ENTER COMMAND:	111<CR>	LOAD TBL
TABLE NAME:	INVENT<CR>	

TeleCalc displays this message on the screen:

    New table is smaller than current table dimensions. Enlarge?
        NEW=15x5   CURRENT=50x20

System Display	User Action
CHOOSE (NEW=0, CURRENT=1):	1<CR>

Your Inventory table will be loaded into the enlarged matrix. If for some reason you decide not to enlarge the table, choose "0" in the above prompt, signifying that you wish your new table to remain the same size.

Let's save the enlarged Inventory table using the SAVE TBL (112) command.

System Display	User Action	Command
ENTER COMMAND	112<CR>	SAVE TBL
TABLE NAME:	INVENT<CR>	

You will receive a message saying:

> Your file already exists. Continue with save?

System Display	User Action
VERIFY (Y OR N):	Y<CR>

By answering "yes" to the verification, you have indicated that you want to write over the existing file called INVENT. Because you now have an updated version of INVENT, you will want to save the new version instead of the old.

INSERTING LINES

You can insert a new row or column using the INSERT (17) command. For example, let's insert a new row into the Inventory table.

Use the arrow key to move to row 5, then:

System Display	User Action	Command
ENTER COMMAND:	17<CR>	INSERT

NOTE!   In the 16 bit system if your table is already filled to the last row/column then INSERT (17) will insert a new line and it will delete the last row/column of your existing table

An empty row or column will automatically be inserted on the line indicated by your cursor. In reality, the row being inserted is the last row or column of your current table. Data in that row or column will be carried to the new location.

DELETING LINES

To delete a row or column, put your cursor on the row or column you wish to delete and use the DELETE (18) command. The command line will issue a prompt asking you to verify the deletion. A "Y" response to the prompt clears the data from the deleted line.

For example, delete the line we just inserted into the Inventory table above.

Use your arrow keys to move the cursor back to row 5 and
then use the DELETE (18) command.

System Display	User Action	Command
ENTER COMMAND:	18<CR>	DELETE
VERIFY (Y OR N):	Y<CR>	

Row 5 has been deleted and your table adjusted.

REORDERING ROWS AND COLUMNS

You can change the order of your rows using the REORDER (28)
command. In the same way, the REORDER (28) command will let you
reorder columns. Using these commands, you can change the order
of rows and columns in already existing tables. For example,
let's switch the order of columns 2 and 3 in our Inventory table
using the REORDER (28) command.

System Display	User Action	Command
ENTER COMMAND:	28<CR>	REORDER
OLD NUMBER (1-20):	3<CR>	
NEW NUMBER (1-20):	2<CR>	

Your screen should show the following.

```
        ROW 1 (ITEM)  <--
ENTER COMMAND:
                    UNIT      TOTAL
ROW                 COST      COSTS   QUANTITY
---------------- ----1---- ----2---- ----3---- ----4---- ----5----
1 ITEM               0.0       0.0       0.0       0.0       0.0
2 DESKS            300.0     3,000.0    10.0       0.0       0.0
3 CHAIRS           150.0     3,000.0    20.0       0.0       0.0
4 SHELVES          200.0     1,000.0     5.0       0.0       0.0
5 TOTAL              0.0       0.0       0.0       0.0       0.0
6                    0.0       0.0       0.0       0.0       0.0
7                    0.0       0.0       0.0       0.0       0.0
8                    0.0       0.0       0.0       0.0       0.0
9                    0.0       0.0       0.0       0.0       0.0
10                   0.0       0.0       0.0       0.0       0.0
11                   0.0       0.0       0.0       0.0       0.0
12                   0.0       0.0       0.0       0.0       0.0
13                   0.0       0.0       0.0       0.0       0.0
14                   0.0       0.0       0.0       0.0       0.0
15                   0.0       0.0       0.0       0.0       0.0
```

By using the REORDER (28) command you can make adjustments to
your table without having to re-enter data. Of course, when you
insert or reorder a line, command references for existing rows
and columns are automatically retained.

DESIGNING ON-SCREEN FORMATS

Your screen will normally show 5 columns and 17 rows. Each cell
has one decimal place, each column is 10 spaces wide, and each
row title uses 15 spaces. Zero values are displayed on the
screen.

The SET CRT (86) command allows you to change the display
parameters for on-screen viewing. These changes are not
reflected on the printed copy. For example, let's change the
screen to show columns, each 20 spaces wide with 3 decimal
places, and with 15 spaces for row titles.

System Display	User Action	Command
ENTER COMMAND:	**86<CR>**	SET CRT
DECIMAL PLACES (0-3):	**3<CR>**	
ROW TITLE WIDTH (5-30):	**15<CR>**	
COLUMN WIDTH (4-20):	**20<CR>**	
DISPLAY ZERO VALUES (NO=0, YES=1):	**<CR>**	

Pressing <CR> after an option causes it to default to the current
setting.

Your screen should show the following:

ENTER COMMAND:

ROW	UNIT COST	TOTAL COSTS
	--------1--------	--------2--------
1 ITEM	0.000	0.000
2 DESKS	300.000	3,000.000
3 CHAIRS	150.000	3,000.000
4 SHELVES	200.000	1,000.000
5 TOTAL	0.000	0.000
6	0.000	0.000
7	0.000	0.000
8	0.000	0.000
9	0.000	0.000
10	0.000	0.000
11	0.000	0.000
12	0.000	0.000
13	0.000	0.000
14	0.000	0.000
15	0.000	0.000
16	0.000	0.000
17	0.000	0.000

You can change the on-screen parameters to allow financial
reports to show up to trillion dollar figures with penny
accuracy. Computations are accurate to 14 precision digits.

You can also design the display to show columns that are 3
characters wide. This displays more columns, but each number
has to be less than three digits wide. Large numbers that
require more space are displayed as three asterisks (***).

For an 80 column screen, 65 spaces are available for the table
area. After subtracting the space required for the row title,
the number of columns shown on-screen is calculated depending on
the size of the columns. Note that although all columns are the
same size on the screen, your printed report can have different
widths for each column.

The SET CRT (86) command does not change any of the values in the
table. Therefore, feel free to experiment with this command to
design screens to suit your needs.

ENDING THE LESSON

The original INVENT table without these last changes will be used
in other chapters as an example. The original INVENT table has
already been saved. You do not want to save the changes.

To end the lesson and exit to the operating system, press **9<CR>**,
the STOP command.

5. MATH AND FORMULAS

INTRODUCTION

Chapter 5 explains how to use the mathematical commands in
TeleCalc. You will see how easy it is to do common calculations
with TeleCalc's built-in commands. In addition, you will learn
how to enter formulas, how to use TeleCalc's handy PLUG command,
and how to calculate your results with surprising speed. To see
the TeleCalc mathematical commands on your screen enter command **3**
and then <CR>.

SIMPLE MATHEMATICAL FUNCTIONS

TeleCalc performs mathematical computations on rows and columns
of your table. Let's go through some of the more common
commands. Make sure your table on the screen is cleared. If
not, use the RESET (114) command.

System Display	User Action	Command
ENTER COMMAND:	114<CR>	RESET
VERIFY (Y OR N):	Y<CR>	

The RESET (114) command clears the entire screen and redisplays
the TeleCalc table.

In this example you will enter commands from a row mode. If you
prefer, you can also enter the mathematical commands in columns.

Entering Data

First, you must enter some numerical amounts in the first rows of
your table so that you can learn how to add, subtract, multiply,
and divide rows as well as how to manipulate them for other
mathematical formulas. Use the ENTER (31) command.

System Display	User Action	Command
ENTER COMMAND:	31<CR>	ENTER
CHOOSE (VALUE=0, CONSTANT=1, GROW=2, INCR=3):	1<CR>	
BASE VALUE:	20<CR>	
ENTER COMMAND:	31<CR>	ENTER

CHOOSE (VALUE=0, CONSTANT=1, GROW=2, INCR=3): 1<CR>

BASE VALUE:	10<CR>	

ADD (41) Command

Now you are ready to use the math commands. The cursor and data pointer are on row 3 indicating that TeleCalc is ready to enter data or put results on that row. Let's start with the ADD (41) command and add rows 1 and 2. Make sure your data pointer is pointing to row 3.

System Display	User Action	Command
ENTER COMMAND:	41<CR>	ADD
ROW (1-50):	1<CR>	
ROW (1-50):	2<CR>	

The ADD command adds any two rows or columns in a table and puts the results in the row or column indicated by the cursor and data pointer. For example:

Row 1 + Row 2 = Row 3

SUBTRACT (42) Command

Now let's subtract row 2 from row 1 and put the difference in row 4 using the SUBTRACT (42) command. Make sure your cursor is on row 4, then:

System Display	User Action	Command
ENTER COMMAND:	42<CR>	SUB
ROW (1-50):	1<CR>	
ROW (1-50):	2<CR>	

The SUBTRACT (42) command subtracts any two rows or columns of values and puts the results in the row or column indicated by the cursor and data pointer.

Row 1 - Row 2 = Row 4

MULTIPLY (43) Command

Using the MULTIPLY (43) command, multiply row 1 by row 2 and put the results in row 5.

System Display	User Action	Command
ENTER COMMAND:	43<CR>	MULT
ROW (1-50):	1<CR>	
ROW (1-50):	2<CR>	

The multiply command multiplies any two rows or columns of values in a table and puts the results in the row or column indicated by the cursor and data pointer. For example:

Row 1 x Row 2 = Row 5

DIVISION (44) Command

Use the DIV (44) command to divide row 1 by row 2 and put the results in row 6.

System Display	User Action	Command
ENTER COMMAND	44<CR>	DIV
ROW (1-50):	1<CR>	
ROW (1-50):	2<CR>	

The divide command divides any two rows or columns of values in a table and puts the results in the row or column indicated by the cursor and data pointer. For example, Row 1/Row 2 = Row 6.

Your screen should show the following:

ENTER COMMAND:

ROW
	----1----	----2----	----3----	----4----	----5----
1	20.0	20.0	20.0	20.0	20.0
2	10.0	10.0	10.0	10.0	10.0
3	30.0	30.0	30.0	30.0	30.0
4	10.0	10.0	10.0	10.0	10.0
5	200.0	200.0	200.0	200.0	200.0
6	2.0	2.0	2.0	2.0	2.0
7					
8					
9					

17

The other TeleCalc mathematical commands are used in the same manner as the commands described above. Try experimenting with some of the commands on your own. For more information about a specific command, consult the Command Reference Appendix.

CUMULATE (49) Command

The CUMULATE (49) command is helpful in situations where you need a cumulative total over a period of time. Let's use the CUMULATE (49) command to calculate the cumulative total for the data in row 5 and put the results in row 7. Make sure your cursor is on row 7, then:

System Display	User Action	Command
ENTER COMMAND:	49<CR>	CUMULATE
VALUE:	100<CR>	
ROW (1-50):	5<CR>	

The CUMULATE (49) command computes cumulative totals for a row or column of a table. After entering the command, the first prompt will ask for an initial or base value. This is especially useful for balance-forward types of calculations that have an ending balance to be carried forward. There must always be a base value entered when using the CUMULATE (49) command. If you have no previous balance value, a "0" must be entered.

SUM (55) Command

The SUM (55) command is one of the most frequently used of the mathematical commands. Use the SUM (55) command to total the data in each column of row 1 through row 6 and put the results in row 8. Put your cursor on row 8, then:

System Display	User Action	Command/Comment
ENTER COMMAND:	55<CR>	SUM
ROW BEGIN (1-50):	1<CR>	(Number of row to begin summing)
END (1-50):	6<CR>	(Last row to be included in the sum)

The SUM (55) command lets you add any number of consecutive rows or columns. Like the other TeleCalc mathematical commands, you can position your results wherever you need to have them appear. The results appear in the row or column indicated by your data pointer and cursor.

GET (56) Command

The GET (56) command copies data from one row or column to another. Use the GET (56) command to put the values from row 5 into row 9. Put your cursor on row 9, then:

System Display	User Action	Command
ENTER COMMAND:	56<CR>	GET
ROW (1-50):	5<CR>	

The GET (56) command allows you to retrieve data from any row and put it anywhere in your current table. Of course, the same thing can be done with columns in the column mode.

FLOOR AND CEILING COMMANDS

The FLOOR (57) and CEILING (58) commands in TeleCalc can be used to answer basic "if-then" questions about an existing row or column of values.

FLOOR (57) Command

Let's use the FLOOR (57) command to analyze the data in row 7 and put the results in row 10. Your data pointer should be pointing to row 10.

When using the FLOOR command, you set a minimum value, or floor and then compare each value in your row or column. If a value in that line is greater than the minimum value you have specified, then that value will remain unchanged. If a value is less than or equal to the minimum value, then TeleCalc will give you the minimum value.

System Display	User Action	Command/Comment
ENTER COMMAND:	57<CR>	FLOOR
VALUE:	700<CR>	(minimum value)
ROW (1-50):	7<CR>	(Row to compare to the minimum value)

In our example, every value in row 7 that was less than 700 became 700. Values greater than 700 remained unchanged.

CEILING (58) Command

The CEILING (58) command works the same way as the FLOOR (57) command, only in reverse. With the CEILING (58) command, you set a maximum value or ceiling. When you compare a line with your maximum value, anything greater than or equal to the ceiling value will become that value; anything less than that maximum value will stay the same.

Now use the CEILING (58) command to compare row 7 with a maximum value of 700. Put the results in row 11.

System Display	User Action	Command/Comment
ENTER COMMAND:	58<CR>	CEILING
VALUE:	700<CR>	(Maximum value)
ROW (1-50):	7<CR>	(Row to compare to maximum value)

In our example, all values in row 7 that were greater than 700 were changed to 700. Other values were not changed.

Your screen showing the examples used above should look like the following:

ENTER COMMAND:

ROW	----1----	----2----	----3----	----4----	----5----
1	20.0	20.0	20.0	20.0	20.0
2	10.0	10.0	10.0	10.0	10.0
3	30.0	30.0	30.0	30.0	30.0
4	10.0	10.0	10.0	10.0	10.0
5	200.0	200.0	200.0	200.0	200.0
6	2.0	2.0	2.0	2.0	2.0
7	300.0	500.0	700.0	900.0	1,100.0
8	272.0	272.0	272.0	272.0	272.0
9	200.0	200.0	200.0	200.0	200.0
10	700.0	700.0	700.0	900.0	1,100.0
11	300.0	500.0	700.0	700.0	700.0
12	0.0	0.0	0.0	0.0	0.0
17	0.0	0.0	0.0	0.0	0.0

SHOW COMMANDS

TeleCalc displays the current print options and commands for
each row shown on the screen with the SHOW ROWS (22) command. To
see the command logic for columns, use the SHOW COLS (27)
command. If you want to change the command for a particular row
or column, you can overwrite the original command by entering a
new command. The new logic is reflected when you use the SHOW
ROWS (22) or SHOW COLS (27) commands.

Use the SHOW ROWS (22) command to see the table logic for each of
the commands you just used.

System Display	User Action	Command
ENTER COMMAND:	22<CR>	SHOW ROWS

Your screen should show the following:

ENTER COMMAND:

	TYPE	UNDER LINE	BLANK LINES	DEC SIZ	FOR MAT	COMMAND	PARAMETERS
1	data			-	-	-	
2	data			-	-	-	
3	data			-	-	-	ADD	ROW=1 ROW=2
4	data			-	-	-	SUB	ROW=1 ROW=2
5	data			-	-	-	MULT	ROW=1 ROW=2
6	data			-	-	-	DIV	ROW=1 ROW=2
7	data			-	-	-	CUMULATE	K=100 ROW=5
8	data			-	-	-	SUM	ROWS 1 - 6
9	data			-	-	-	GET	ROW=5
10	data			-	-	-	FLOOR	K=700 ROW=7
11	data			-	-	-	CEILING	K=700 ROW=7
12	data			-	-	-	
13	data			-	-	-	
14	data			-	-	-	
15	data			-	-	-	
16	data			-	-	-	
17	data			-	-	-	

Press any arrow key to get back to your table.

NULLIFY (39) Command

If you want to delete a command from your table entirely, you must use the NULLIFY (39) command to nullify the logic associated with the command. The NULLIFY (39) command does not affect the data currently in your table.

USING FORMULAS

Although TeleCalc supplies many built-in formulas, it may be necessary for you to enter your own formulas for specialized computations. TeleCalc has two commands that let you enter formulas into your tables. The FORMULA (35) command applies your formula to an entire row or column, and the PLUG (37) command lets you use a formula on a single value, or cell. With these two commands you can do cell-by-cell calculations in addition to doing calculations on an entire row or column at a time.

When using the FORMULA (35) or PLUG (37) commands you will probably need to reference data already in your table. You can reference any row or column by preceding the row or column number with the letter "L". For example, you would reference row 7 as **L7** or column 19 as **L19**. TeleCalc automatically distinguishes between row and column references by looking at the data pointer. If the data pointer points to a row, then all line references are to rows. If the data pointer points to a column, then all line references are to columns.

You can also reference single values in the table. Single value references are formed by preceding the row and column number with the letter "V". For example, to reference the value in row 1, column 1, enter V1,1 as part of your formula. To reference row 8, column 19, you would enter V8,19 as your reference. Notice that in a single value reference, the row number must precede the column number. Also, you must use a comma to separate the two values.

Of course, you can always use constants in your formulas. Constants are numbers such as .45 and 300. Notice that negative numbers such as -1.0 cannot be used in TeleCalc. To use negative numbers, enter them as an expression such as (0-1).

Writing Formulas

You can combine table references and constants with mathematical operators to form formulas. The valid operations consist of addition (+), subtraction (-), multiplication (*), and division (/). TeleCalc allows you to use up to 40 characters in each formula.

Sample formulas include:

L1	Equivalent to the GET command
L1-L2-L3	Subtract lines 2 and 3 from line 1
L3/L2*100	Equivalent to the RATIO command
L3/V3,1*100	Calculate line 3 as a percent of the value in the first column of row 3.
V1,1	Set current row or column to the value in row 1, column 1.

In a complex formula, multiplication and division are performed prior to addition and subtraction. For example, in the formula **L3 + 2 * L1**, line 1 will be multiplied by 2 before adding the values from line 3.

If your intent is to add 2 to every value of L3 before multiplying by the values in line 1, you can use parentheses. The following example would clearly specify your intent:

(L3 + 2) * L1

The easiest way to learn is by doing. Try the examples above in TeleCalc. Be sure to enter the FORMULA (35) command before entering each formula.

System Display	User Action	Command
ENTER COMMAND	35<CR>	FORMULA
:	L3+2*L1<CR>	
ENTER COMMAND	35<CR>	FORMULA
:	(L3+2)*L1<CR>	

After entering the formulas, the table should look similar to the following:

ENTER COMMAND:

ROW	----1----	----2----	----3----	----4----	----5----
1	20.0	20.0	20.0	20.0	20.0
2	10.0	10.0	10.0	10.0	10.0
3	30.0	30.0	30.0	30.0	30.0
4	10.0	10.0	10.0	10.0	10.0
5	200.0	200.0	200.0	200.0	200.0
6	2.0	2.0	2.0	2.0	2.0
7	300.0	500.0	700.0	900.0	1,100.0
8	272.0	272.0	272.0	272.0	272.0
9	200.0	200.0	200.0	200.0	200.0
10	700.0	700.0	700.0	900.0	1,100.0
11	300.0	500.0	700.0	700.0	700.0
12	0.0	0.0	0.0	0.0	0.0
13	70.0	70.0	70.0	70.0	70.0
14	640.0	640.0	640.0	640.0	640.0
15	0.0	0.0	0.0	0.0	0.0
16	0.0	0.0	0.0	0.0	0.0
17	0.0	0.0	0.0	0.0	0.0

Using the FORMULA (35) Command

Let's experiment using the FORMULA (35) command in the following example. Suppose that your COST OF GOODS has a fixed and variable component. COST OF GOODS is 45% of sales plus a $300 constant expense. If row 1 contains sales data, you can enter the formula **.45 * L1 + 300** to calculate the desired results.

First, clear your screen using the RESET (114) command. Then, enter some sales data into row 1 of the table using the enter (31) command. Be sure your cursor is on row 1.

System Display	User Action	Command
ENTER COMMAND:	114<CR>	RESET
VERIFY (Y OR N):	Y<CR>	
ENTER COMMAND:	31<CR>	ENTER
CHOOSE (VALUES=0, CONSTANT=1,GROW=2, INCR=3):	3<CR>	
BASE VALUE:	1000<CR>	
RATE:	100<CR>	

Your cursor and data pointer are now pointing to row 2.

System Display	User Action	Command
ENTER COMMAND:	35<CR>	FORMULA
:	.45*L1+300<CR>	

Check your results against the following.

ENTER COMMAND:

```
ROW
--------------- ----1---- ----2---- ----3---- ----4---- ----5----
1               1,000.0   1.100.0   1,200.0   1,300.0   1,400.0
2                 750.0     795.0     840.0     885.0     930.0
3                   0.0       0.0       0.0       0.0       0.0
4                   0.0       0.0       0.0       0.0       0.0
```

Using the PLUG (37) Command

Sometimes it is useful to relate various entries of your table in a formula and store the single value result in a specific cell location on your table.

PLUG (37) formulas are similar to the regular formulas described above, however, these formulas cannot have references to an entire row or column. In other words, you cannot use line references (L1 or L19) in the PLUG (37) formulas. The PLUG (37) formulas can only reference individual table values (V1,1 or V2,19) or constants.

The results from the PLUG (37) command can be placed anywhere on your table. It is not necessary to enter the PLUG (37) command on the same row or column that your results will go. In other words, you can enter the PLUG (37) command on an unused row or column, say row 50, and have it place its calculated results in any cell, for example row 2, column 1.

To illustrate the use of PLUG (37), bring up the Forecast Table that you prepared with Chapter 3 by using the LOAD TBL (111) command. Suppose you want to do a special weighted profit margin. The formula is the sum of profits for the first three years divided by the sales for the first three years. The following commands show how to do this calculation:

System Display	User Action	Command/Comment
ENTER COMMAND:	111<CR>	LOAD TBL
TABLE NAME:	FORECAST<CR>	
ENTER COMMAND:	33<CR>	SELECT ROW
ROW (1-50):	50<CR>	(Select empty row)
ENTER COMMAND:	37<CR>	PLUG
ROW (1-50):	50<CR>	(Row for plug result display)
COL (1-20):	1<CR>	(Column for plug result display)
:	(V6,1+V6,2+V6,3)/(V1,1+V1,2+V1,3)*100<CR>	

The calculated result would be displayed in row 50, column 1.

Notice that TeleCalc allows you to put only one command per row or column. If you enter one command over another, the initial command will be overwritten. For example, if you enter your PLUG (37) command on the same row as a SUM (55) command, the PLUG (37) command overrides the SUM (55) command. You can use the SHOW ROWS (22) command to check the logic for your table.

Using the COMPUTE (98) Command

As you enter data in your TeleCalc table, TeleCalc memorizes all the commands you used to calculate the values for a row or column. When all your data and mathematical commands have been entered, issue the COMPUTE (98) command. In seconds, the table will be updated to reflect your changes.

In Chapter 3, you used the CHANGE (32) command to ask a "what-if" question. In fact, you can do many types of "what-if" analysis including:

1.   Change entire rows or columns of the table using the ENTER (31) command.

2.   Change the commands used to compute a row or column.

3.   Change the values associated with commands.

4.   Extend the model with more rows or columns.

Each command you enter replaces any command that was previously entered in that row or column. The new commands are used to compute new values, replacing the previous command.

Doing a "what-if" analysis with TeleCalc is simple. The following steps outline the procedures you need to perform a "what-if" analysis on any of your TeleCalc tables.

1.   Select the row or column you want to change by moving the data pointer.

2.   Issue the commands to perform the desired calculation or to enter the new data values.

3.   When all changes have been completed, use the COMPUTE (98) command to instantly update your table.

To illustrate more advanced uses of TeleCalc's "what-if" capability, load the five-year Forecast example table by using the following steps:

System Display	User Action	Command/Comment
ENTER COMMAND:	111<CR>	LOAD TBL
TABLE NAME:	FORECAST<CR>	(table name)

Suppose your COST OF GOODS in line 2 should be 42.5% of SALES instead of 45%. To ask this "what-if" question, use the MULT K (53) command again--but this time, use the new percentage.

System Display	User Action	Command
ENTER COMMAND:	**33<CR>**	SELECT ROW
ROW (1-50):	**2<CR>**	(select row 2)
ENTER COMMAND:	**53<CR>**	MULT K
VALUE:	**.425<CR>**	(new percentage)
ROW (1-50):	**1<CR>**	
ENTER COMMAND:	**98<CR>**	COMPUTE

Use the COMPUTE (98) to update your table.

In a few seconds, you would get the following:

ENTER COMMAND:

ROW	----1----	----2----	----3----	----4----	----5----
1 SALES	1,000.0	1,100.0	1,210.0	1,331.0	1,464.1
2 COST OF GOODS	425.0	467.5	514.3	565.7	622.2
3 SALES AND AD	200.0	220.0	242.0	266.2	292.8
4 RESEARCH AND	500.0	300.0	300.0	300.0	300.0
5 TOTAL COSTS	1,125.0	987.5	1,056.3	1,131.9	1,215.1
6 GROSS PROFIT	-125.0	112.5	153.8	199.1	249.0

As a second example, suppose COST OF GOODS starts at 45% of SALES and drops to 41% by year five. To make this change, enter the COST OF GOODS percentages as row 10 of the table and calculate COST OF GOODS using the percentages in row 10.

System Display	User Action	Command
ENTER COMMAND:	**33<CR>**	SELECT ROW
ROW (1-50):	**4<CR>**	
ENTER COMMAND:	**31<CR>**	ENTER
CHOOSE (VALUES=0, CONSTANT=1,GROW=2, INCR=3):	**3<CR>**	
BASE VALUE:	**700<CR>**	
RATE:	**-100<CR>**	
ENTER COMMAND:	**98<CR>**	COMPUTE

The screen will show the following:

ENTER COMMAND:

ROW	----1----	----2----	----3----	----4----	----5----
1 SALES	1,000.0	1,100.0	1,210.0	1,331.0	1,464.1
2 COST OF GOODS	425.0	467.5	514.3	565.7	622.2
3 SALES AND AD	200.0	220.0	242.0	266.2	292.8
4 RESEARCH AND	700.0	600.0	500.0	400.0	300.0
5 TOTAL COSTS	1,325.0	1,287.5	1,256.3	1,231.9	1,215.1
6 GROSS PROFIT	-325.0	-187.5	-46.3	99.1	243.0
7	0.0	0.0	0.0	0.0	0.0
8	0.0	0.0	0.0	0.0	0.0
9	0.0	0.0	0.0	0.0	0.0
10	0.0	0.0	0.0	0.0	0.0

6. DESIGNING AND PRINTING REPORTS

INTRODUCTION

This chapter explains how to design presentation-quality reports using TeleCalc's report generator. You can print reports that are 80 columns wide or reports that are 99 columns wide. The report width is limited by the printer and is controllable through TeleCalc options. You will learn how to set printing options for individual rows and columns as well as how to set global options for your entire report.

PRINT OPTIONS

TeleCalc has three different commands that let you set options for a printed report:

    OPTIONS (81) command
    SET TYPE (21) command for rows
    SET TYPE (26) command for columns

These commands set options only for printed reports. They do not show up on the screen.

The OPTIONS (81) command sets global or overall print options that apply to your entire report. Some of the options you can set with this command include overall row title widths, column widths, number of columns per page, and page controls. The OPTIONS (81) command also provides top and left margin options to support printers with automatic paper feeds. The global print options are the lowest level of print options in the options hierarchy, and is overridden by both the row and column SET TYPE (21, 26) commands.

The row SET TYPE (21) command sets print options for individual rows. Options include setting row types, underlining, and the number of decimal places for each row. The row SET TYPE (21) options overrides the global options, but is overridden by the column SET TYPE (26) command.

The column SET TYPE (26) command sets print options for individual columns. Options under this command include column widths and number of decimal places for each column. The column SET TYPE (26) options are the highest in the options hierarchy, and override both the global and row SET TYPE (21) option settings. Once set, the column options cannot be changed.

To illustrate the formatting and printing capabilities, let's use your Inventory table.

System Display	User Action	Command
ENTER COMMAND:	111<CR>	LOAD TBL
TABLE:	INVENT<CR>	

Your screen should show the following table:

```
     ROW 1 (ITEM)  <--
ENTER COMMAND:
                   UNIT              TOTAL
ROW                COST  QUANTITY    COSTS
---------------- ----1---- ----2---- ----3---- ----4---- ----5----
  1 ITEM          0.0       0.0       0.0       0.0       0.0
2 DESKS          300.0      10.0    3,000.0     0.0       0.0
3 CHAIRS         175.0      20.0    3,000.0     0.0       0.0
4 SHELVES        200.0       5.0    1,000.0     0.0       0.0
5 TOTAL            0.0       0.0       0.0       0.0       0.0
```

SETTING ROW OPTIONS

In TeleCalc you can specify a row as a heading, subtitle, footnote, or as a normal data row. You can also underline a row, insert trailing blank lines, specify the number of decimal places for row values, and specify if you want "$" or "%" signs with your values. For the Inventory report, let's assume that you want to designate rows 1, 4, and 5 as follows:

Row 1 ITEM:	Heading only; no data assigned to row.
Row 4 SHELVES:	Last item before TOTAL; need single underline.
Row 5 TOTAL:	Total figures; need double underline.

To specify these row print options, use the SET TYPE (21) command.

System Display	User Action	Command/Comment
ENTER COMMAND:	21<CR>	SET TYPE
ROW (1-50):	1<CR>	(Specify options for row 1)
TYPE (DATA=0,SUBT=1, HEADING=2,NOTE=3, OMIT=4):	2<CR>	

Each row can be identified as a row of numeric data; a subtitle that centers the corresponding row title in your report; a heading that leaves the area to the right of the row title blank; or a footnote that puts the row title at the the bottom of the page. If you prefer, the entire row can be omitted on the printed report.

Select option "2" to designate row 1 as a heading for the Inventory report. If you had pressed the <CR> key by itself, the option would have defaulted to the current setting of "0," meaning a data row. When you designate a row as a heading subtitle, or footnote, TeleCalc displays your entire row title text--up to 40 characters--on your screen. Once options have been selected, TeleCalc remembers the option settings you have chosen and saves them as part of your table until they are changed.

System Display   **User Action**

UNDERLINE (NO=0,[-]=1,[=]=2,[_]=3):   **<CR>**

Each row can be underlined with dashes, double underlined using equal signs, or underlined with a true single underline. By pressing the <CR> key by itself, the option setting defaults to the current setting of "0", no underline. If you had selected option "3" at an earlier date, then the current setting in the upper right corner would say CURRENT=3. A single <CR> would leave the "3" setting intact.

System Display   **User Action**

TRAILING BLANK LINES (NEW PAGE=9):   **<CR>**

Each row can have up to 8 blank lines trailing a particular row. A value of "9" tells TeleCalc to start a new page following this row. This option must be set to indicate the position of page breaks in multi-page reports. By pressing the <CR> key by itself, the option defaults to "0," trailing blank lines.

System Display   **User Action**

DECIMAL PLACES (0-3 OFF=4):   **<CR>**

Each row can have from 0 to 3 decimal places. By pressing the <CR> key by itself, the option defaults to 1 decimal place.

System Display   **User Action**

FORMAT (NO=0,[%]=1,[$]=2,NO,=3):   **<CR>**

Each row in TeleCalc can have "%" or "$" signs with each value. By pressing the <CR> key by itself, the option setting defaults to "0" where no signs are placed with the values.

The sign format is the last prompt for row 1. TeleCalc
automatically prompts you to set the options for another row.
Continue to set the print options for rows 4 and 5 with the
following commands.

System Display	User Action	Comment
ROW (1-50):	4<CR>	(Specify options for row 4)
TYPE (DATA=0,SUBT=1, HEAD=2,NOTE=3, OMIT=4):	<CR>	(Leave option at current setting)
UNDERLINE (NO=0, [-]=1,[=]=2, [_]=3):	3<CR>	(Underline row 4 with a single true underline)
TRAILING BLANK LINES (New Page=9):	<CR>	(Leave option at current setting)
DECIMAL PLACES (0-3 OFF=4):	<CR>	(Leave option at current setting)
FORMAT (NO=0,[%]=1, [$]=2,NO,=3):	<CR>	(Leave option at current setting)
ROW (1-50):	5<CR>	(Specify options for row 5)
TYPE (DATA=0,SUBT=1, HEAD=2,NOTE=3, OMIT=4):	<CR>	
UNDERLINE (NO=0, [-]=1,[=]=2, [_]=3):	2<CR>	(Specify a double underline)
TRAILING BLANK LINES (NEW PAGE=9):	<CR>	
DECIMAL PLACES (0-3 OFF=4):	<CR>	
FORMAT (NO=0,[%]=1, [$]=2,NO,=3):	<CR>	

Press the <HOME> key to cancel the SET TYPE (21) command. You
can display a summary of the row options that you have just set
with the SHOW ROWS (22) command.

System Display	User Action	Command
ENTER COMMAND:	22<CR>	SHOW ROWS

The SHOW ROWS (22) command displays the option settings as well
as the commands that have been specified for each row. Note that
if you have a table longer than the 17 rows that show on your
screen, you must show the other portion of the table on screen
before using the SHOW ROWS (22) command. Your screen shows the
following:

```
        ROW 1 (ITEM)  <--
ENTER COMMAND:
```

ROW	TYPE	UNDER LINE	BLANK LINES	DEC SIZ	FOR MAT	COMMAND	PARAMETERS
1 ITEM	head		-	-	-		
2 DESKS	data		-	-	-		
3 CHAIRS	data		-	-	-		
4 SHELVES	data	____	-	-			
5 TOTAL	data	====	-	-	-		
6	data		-	-	-		
17	data		-	-	-		

To recover your display, press any of the arrow keys.

Setting Column Options

You can format each column by using the column SET TYPE (26)
command. With this command you can control individual column
widths, specify the number of decimal places, and indicate
whether or not you want "$" or "%" signs with your values. Note
that column options will always override previously set row
options.

Let's format column 2 (QUANTITY) of the Inventory table so that
is has no decimal places.

System Display	User Action	Command/Comment
ENTER COMMAND:	26<CR>	SET TYPE
COL (1-20):	2<CR>	(Specify options for column 2)
COLUMN WIDTH (4-20):<CR>		(Select current setting)

Each column can have a different width, ranging from 4 to 20
characters (including commas and decimals). By pressing the <CR>
key by itself, the column width defaults to the current setting
of 10 spaces.

System Display   **User Action**

DECIMAL PLACES (0-3 OFF=4):   **0<CR>**

Each column can have from 0 to 3 decimal places. By pressing
the <CR> key by itself, the number of decimal places defaults
to the current setting of 1 decimal place. For the Inventory
report, set the number of decimal places in column 2 to "0."

System Display   **User Action**

FORMAT (NO=0,[%]=1,[$]=2,NO,=3):   **<CR>**

Each column can have "%" or "$" signs with each value. By
pressing the <CR> by itself, the option defaults to the current
setting of "0," and no signs are placed with the values.

Press the <HOME> key to cancel the SET TYPE (26) command. You
can see a summary of the column options that you have just set
with the SHOW COLS (27) command.

System Display   **User Action**   **Command**

ENTER COMMAND: **27<CR>**   SHOW COLS

The SHOW COLS (27) column displays the option settings as well as
the commands that have been specified for each column. Note that
if you have a table wider than the 5 columns that show on your
screen, you must show the other portion of the table on screen
before using the SHOW COLS (27) command. Your screen displays
the following.

```
        ROW 1 (ITEM)  <--
ENTER COMMAND:
                     COLUMN DEC FOR
ROW                  WIDTH SIZ MAT      COMMAND    PARAMETERS
------------------   ----- --- ---      -------    --------------
1 UNIT COST             10   1   -
2   QUANTITY            10   0   -
3 TOTAL COSTS           10   1   -      MULT       COL=1 COL=2
4                       10   1   -
5                       10   1   -
6                       10   1   -

17                      10   1   -
```

To recover the Inventory table display press any of the arrow
keys.

PRINTING REPORTS

After setting print options for individual row and column
formats, you will want to finish your report design by setting
options for the overall report. These global report options
include row description, width, column width settings, number of
columns per page, number of decimal places, and other features
that affect the overall report. These options do not show on the
screen--only on the printed report. Let's set the global print
options for the Inventory report.

System Display	User Action	Command
ENTER COMMAND:	81<CR>	OPTIONS
TOP MARGIN (0-50):	<CR>	
LEFT MARGIN (0-50):	<CR>	

The two options above support printers with automatic paper
feeds. If your printer does not have an automatic paper feeder
press <CR>. The options default to the current settings which
are listed in the upper-right corner of the screen.

System Display	User Action
ENHANCEMENT (0-3):	<CR>

This option gives TeleCalc the ability to take advantage of
special printer features such as bold print, expanded print, and
compressed print. Your dealer can assist you in accessing these
options with your printer.

System Display	User Action
ROW TITLE WIDTH (4-40):	10<CR>

Row descriptions can have from 4 to 40 alphanumeric characters.
By pressing the <CR> key by itself, the row title width option
will default to the current setting of 20 characters. For the
Inventory report, set the row title width to 10 characters.

System Display	User Action
COLUMN WIDTH (4-20):	<CR>

The columns can have from 4 to 20 numeric characters. By
pressing the <CR> key by itself, the column width defaults to
the current setting of 10 characters.

System Display   **User Action**

COLUMNS PER
PAGE (1-20):   **<CR>**

You can print up to 20 columns per page depending on your
printer. By pressing the <CR> key by itself, the number of
columns per page defaults to the current setting of 10 columns per
page. For example, if you have more than 10 columns in your
table to print, TeleCalc will print the first 10 columns on page
1 and continue to print the second 10 columns on page 2.
TeleCalc automatically repeats row titles, report titles, and
column titles on each page.

System Display   **User Action**

DECIMAL PLACES
(0-3):   **<CR>**

Each value in your table can have from 0-3 decimal places in the
printed report. By pressing the <CR> key by itself, the number
of decimal places defaults to the current setting of one decimal
place.

System Display   **User Action**

OMIT ZERO ROWS
(NO=0,YES=1):   **<CR>**

Any rows that have all zero values can be eliminated from the
printed report. By pressing the <CR> key by itself, the omit
zero rows option defaults to the current setting of "0" which
will print zero values.

System Display   **User Action**

SUPPRESS ZERO VALUES
(NO=0,[-]=1,[ ]=2):   **2<CR>**

Zero values in rows and columns can be printed with zeros,
identified with a "-" sign, or left blank. By pressing the <CR>
key by itself, the suppress zero values option defaults to the
current setting of printing zero values as zeros.

System Display   **User Action**

PRINT ROW TITLE
AFTER WHICH COLUMN
(0-9):   **<CR>**

Row titles can be printed between any two columns up through the
middle of the table. By pressing the <CR> key by itself, the
option defaults to "0", printing the row titles on the left side
of the report, in front of column 1.

System Display   **User Action**

NEGATIVE NUMBERS
(-N=0,N-=1,(N)=2):   **<CR>**

Negative numbers can be displayed with a minus (-) sign preceding the number, or, for accounting purposes, they may be shown with a trailing minus sign, or in parenthesis. By pressing the <CR> key by itself, the option defaults to the current option of "0," printing minus signs in front of the numbers.

System Display   **User Action**

PAGE CONTROL
(OFF=0,FEED=1,
PAUSE=2):   **<CR>**

For reports longer than a page, the printer can be set to the desired page control. The form feed option issues a page break command so that each page appears on a new sheet of paper. The pause option instructs the printer to break between pages to allow a new sheet of paper to be inserted into the printer. By pressing the <CR> key by itself, the page control option defaults to a continuous print without intervention. TeleCalc automatically skips three blank lines between pages.

Before using the feed and pause page control options, you must use the trailing blank line option in the SET TYPE (21) for rows command to identify page breaks.

System Display   **User Action**

OMIT COMMAS (NO=0,
YES=1):   **<CR>**

To accommodate wide reports, the comma option can be turned off to save space. By pressing the <CR> key by itself, the omit commas option defaults to printing all numbers with commas separating every three digits of large numbers.

System Display   **User Action**

DOUBLE SPACE (NO=0,
YES=1):   **<CR>**

Data rows can be single- or double-spaced. By pressing the <CR> key by itself, the double-space option defaults to the current setting of "0" indicating single spacing.

System Display   **User Action**

OMIT LINE NUMBERS
(NO=0, YES=1):   **<CR>**

Row and column numbers can be printed or eliminated on your final report. By pressing the <CR> key by itself, the omit line numbers option defaults to "0," printing the row and column numbers.

After completing the global options for your report, you will want to set the title information, report ranges, and print a final report using the TITLES (82) command. Each TITLE option identifies the default settings. However, if the TITLE option has been set before, the CURRENT setting will reflect the previous setting.

System Display	User Action	Command
ENTER COMMAND:	82<CR>	TITLES
PAGE NUMBER (0-999):	<CR>	

A page number can be printed in the upper-right corner of the report if you desire. By pressing the <CR> key by itself, the page number defaults to the "OFF" position and the report pages are not numbered.

System Display	User Action
DATE (YEAR AS YY):	83<CR>

Date information can be printed in the upper-left corner of the report. By pressing the <CR> key by itself, the date defaults to the "OFF" position, and no date is printed. If you enter the year as YY and <CR>, TeleCalc will prompt you for the month and date as follows. If no year number is entered, then the month and day options are skipped.

System Display	User Action
MONTH (1-12):	1<CR>

Months January through December are identified by corresponding numbers 1 through 12. By pressing the <CR> key by itself, the month option defaults to the "OFF" position, and no date is printed.

System Display	User Action
DAY (1-31):	1<CR>

Days of the month are identified by the numbers 1-31. By pressing the <CR> key by itself, the day option defaults to the "OFF" position and no date is printed.

System Display	**User Action**
ROW-RANGE BEGIN (1-50):	1<CR>
END (1-50):	5<CR>

You can print only a few rows of your table by using the row
ranges print option. By pressing the <CR> key by itself, the row
range defaults to printing all of the rows in the table.

System Display	**User Action**
COL-RANGE BEGIN (1-20):	1<CR>
END (1-20):	3<CR>

Indicate the columns to print in your report using the column
range option. By pressing the <CR> key by itself, the column
range defaults to printing all of the columns in the table.

Setting row and column ranges with the TITLES (82) command sets
the row and column ranges for the entire table. To change the
row and column ranges back to their original settings use the ROW
RANGE (92) and COL RANGE (93) commands.

System Display	**User Action**
TITLE 1:	**TAKING INVENTORY**<CR>
TITLE 2:	**SAMPLE PROBLEM**<CR>
TITLE 3:	<CR>

TeleCalc reports are allowed up to three title lines, with a
maximum of 40 alphanumeric characters each. Report titles are
centered at the top of each page of the report. Pressing the
<CR> key by itself tells TeleCalc that there is no title for
that line.

If you want to print your report, check to see that the printer
is connected and turned on, and your paper adjusted.

System Display	**User Action**
SET PAPER; HIT RETURN:	<CR>

Your printed Inventory report should look like the following:

1/1/83

TAKING INVENTORY
SAMPLE PROBLEM

	UNIT COST	QUANTITY	TOTAL COSTS
--------	----1----	----2----	----3----
1 ITEM			
2 DESKS	300.0	10	3,000.0
3 CHAIRS	175.0	20	3,000.0
4 SHELVES	200.0	5	1,000.0
5 TOTAL			
	=========	=========	=========

To show the overall report options for your Inventory report on screen, use the SHOW OPTIONS (84) command.

System Display	User Action	Command
ENTER COMMAND:	84<CR>	SHOW OPTS

Your screen should show the following:

ROW	UNIT COST	QUANTITY	TOTAL COSTS		
----------------	----1----	----2----	----3----	----4----	----5----

REPORT OPTIONS

DATE: 83/1/1   PAGE NUMBER: 0
TITLE 1: TAKING INVENTORY
TITLE 2: SAMPLE PROBLEM
TITLE 3:

TOP MARGIN: 0   LEFT MARGIN: 0
ROW TITLE WIDTH: 10
COLUMN WIDTH: 10   OMIT COMMAS: NO
COLUMNS PER PAGE: 10   DOUBLE SPACE: NO
DECIMAL PLACES: 1   OMIT LINE NUMBERS: NO
OMIT ZERO ROWS (NO=0,YES=1): 0
SUPPRESS ZERO VALUES (NO=0,[-]=1,[[=2): 2
PRINT ROW TITLE AFTER WHICH COLUMN: 0
NEGATIVE NUMBERS (-N=0,N-=1,(N)=2): 0
PAGE CONTROL (OFF=0,FEED=1,PAUSE=2): 0

Press any of the arrow keys to recover the table.

If you do not want to print your report at this time, you can either save the table by using the SAVE TBL (112) command or cancel the report by pressing the <HOME> key.

RINTING TABLES AND REPORTS

o get a printed copy of your table, complete with row settings,
ow commands, column settings, column commands, report options,
nd title information, use the PRINT TBL (118) command.

eleCalc reports can be printed without going through the TITLES
82) command. After you have set the report OPTIONS with command
1, you can send the report straight to the printer with the
EPORT (83) command. You can also use the REPORT (83) command to
rint tables that have already been saved on disk.

ANCELLING REPORTS

eports that have started printing can be stopped by pressing the
HOME> key. TeleCalc will stop the printing and print a message
n the screen that the report has been cancelled.

7. ADDITIONAL TELECALC COMMANDS

INTRODUCTION

This chapter covers the different modes available in TeleCalc.
It also discusses other commands that are helpful in using
TeleCalc's more advanced functions.

MODES

Chapter 2 discussed the mode indicator on TeleCalc's status
line. In the course of using TeleCalc, you use several
different modes or states of operation. For example, when you
use the COMPUTE (98) command, TeleCalc goes in and out of the
Compute Mode automatically.

Mode	Definition
COMPUTE	The COMPUTE (98) command starts computing rows and columns using the math and formula commands you have entered into your table.
PROTECT	The PROTECT (101) command turns the Protect Mode on and off. When the Protect Mode is on, a "P" is displayed in the top right corner of your screen. With Protect Mode is on, all formulas and row and column relationships you have established in your table are protected from tampering. With TeleCalc in the Protect Mode, you can make changes to data in your table without the fear of disturbing the underlying logic. This is useful in keeping unsophisticated users from disrupting your table.

SETTING ROW AND COLUMN RANGES

You can limit your data entry and your computations to a
particular section of your table by using the ROW RANGE (92) and
COL RANGE (93) commands. The right top corner of the screen
shows the current row and column ranges. Unless otherwise
specified, the range settings will default to the size of your
current table. The default table size and range settings are 50
rows by 20 columns.

In Chapter 4, you saw how the SET UP (109) command is used to redimension the table size. This command should not be confused with the ROW RANGE (92) and COLUMN RANGE (93) commands. The SET UP (109) command affects the physical size of the entire table. The ROW (92) and COLUMN (93) RANGE commands are temporary "working" range limitations that give you flexibility in your data entry, computations, and printing.

There are many ways to use the row and column range settings. For example, consider a table with budget columns and actual columns. In the budget columns you may have set up COST OF SALES as a percentage of SALES, or FRINGE BENEFITS as a percentage of SALARY EXPENSES. When the actual numbers are inserted in place of budget numbers to do rolling forecasts, you do not want to tamper with the actual COST OF SALES and FRINGE BENEFITS because of their mathematical relationship to SALES and SALARY EXPENSES respectively.

By setting the row and column ranges, you can limit the recalculations to affect only the budget columns, leaving the actual columns intact.

COMPUTING ORDER

When the COMPUTE (98) command is used, TeleCalc does computations for all rows of the row range and then for all columns of the column range, depending on the current computing order displayed on the TeleCalc status line. Initially, the computing order is displayed as "ORDER=R/C" signifying that TeleCalc will compute rows and then columns.

Suppose you have added a total column to the five-year projection. You want TeleCalc to compute this total every time you use the COMPUTE (98) command. TeleCalc lets you change the computational order by using the ORDER (102) command.

ORDER (102) allows you to choose among four options:

ROW/ONLY	Compute only rows.
COL/ONLY	Compute only columns.
ROW/COL	Compute all rows; then all columns. This is the default order.
COL/ROW	Compute all columns; then all rows.

Let's use the five-year forecast from Chapter 3 to illustrate th
ORDER (102) command.

System Display	User Action	Command
ENTER COMMAND:	111<CR>	LOAD TBL
TABLE NAME:	INVENT<CR>	

Now position your cursor on row 5 and use the SUM (55) command t
get a total for each of your three columns.

System Display	User Action	Command
ENTER COMMAND:	55<CR>	SUM
ROW BEGIN (1-50):	2<CR>	
END (1-50):	4<CR>	

Use the ORDER (102) command to change the computing order to
compute columns first and then rows.

System Display	User Action	Comment
ENTER COMMAND:	102<CR>	ORDER
(ROW/ONLY=1, COL/ONLY=2, ROW/COL=3, COL/ROW=4):	4<CR>	

After choosing option 4, TelePlan performs computations for all
columns and then for all rows. Notice that the computing order
on the status line at the top of your screen is now set to
ORDER=C/R.

Now make a change in your data, and compute your table according
to the new computing order.

System Display	User Action	Command/Comment
ENTER COMMAND:	32<CR>	CHANGE
ROW (1-50):	3<CR>	
COL (1-20):	1<CR>	
VALUE:	175<CR>	
ENTER COMMAND:	98<CR>	COMPUTE

Your screen should show the following:

DONE.
```
     ROW 6 <--
ENTER COMMAND:
```

ROW	UNIT COST ----1----	QUANTITY ----2----	TOTAL COSTS ----3----	----4----	----5----
1 ITEM					
2 DESKS	300.0	10.0	3,000.0	0.0	0.0
3 CHAIRS	675.0	50.0	10,125.0	0.0	0.0
4 SHELVES	200.0	5.0	1,000.0	0.0	0.0
5 TOTAL	0.0	0.0	0.0	0.0	0.0
17	0.0	0.0	0.0	0.0	0.0

Save your new Inventory table using the SAVE TBL (112) command.

System Display	User Action	Command/Comment
ENTER COMMAND:	112<CR>	SAVE TBL
TABLE NAME:	INVENT<CR>	

A message appears telling you that the table INVENT already
exists and asking if you want to continue with the save. Enter a
"Y" to indicate that you do want to overwrite the existing INVENT
table with the new INVENT table.

System Display	User Action	Command/Comment
VERIFY (Y OR N):	Y<CR>	

USING THE FIX COMMAND

The FIX (38) command recalculates only the current row or column
without computing other rows or columns. It allows you to
manually recalculate a single row or column. Sometimes, the
calculation order required to correctly update values is more
complex than a simple row/column order permitted by the ORDER
(102) command. FIX (38) can be used to manually supplement these
calculations.

For example, if you also add a PERCENTAGE PROFIT row to the five-
year FORECAST example, then none of the compute ORDER (102)
options correctly calculate the percentage profit for the total
column. Let's try it.

System Display	User Action	Command
ENTER COMMAND:	111<CR>	LOAD TBL
TABLE NAME:	FORECAST<CR>	
ENTER COMMAND:	20<CR>	ROW TITLE

Use the arrow keys to position your cursor on row 7.

System Display	User Action	Comment
:	PROFIT RATIO<CR>	
:	<HOME>	[cancel the ROW TITLE (20) command]

Use the arrow keys to put the cursor back on row 7.

System Display	User Action	Command/Comment
ENTER COMMAND:	44<CR>	DIV

Take ratio of GROSS PROFIT to SALES.

System Display	User Action	Comment
ROW (1-50):	6<CR>	(row 6 is GROSS PROFITS)
ROW (1-50):	1<CR>	(row 1 is SALES)

Row 7 now contains the ratio of the five years' GROSS PROFITSto SALES.

Now let's put a TOTAL column in column 5 to get the total for each of the four quarters. Enter the new column title and then recompute your results using the following commands.

System Display	User Action	Command
ENTER COMMAND	25<CR>	COL TITLE

Use the arrow keys to position the cursor on column 5.

System Display	User Action
1:	TOTAL<CR>
2:	<CR>
	<HOME>

The second <CR> indicates that there is no second title for this column. Since this is the only column title we want to enter, press the <HOME> key to cancel the COL TITLE (25) command.

Use the arrow keys to position the cursor back on column 5.

System Display	User Action	Command
ENTER COMMAND:	55<CR>	SUM
COL BEGIN (1-20):	1<CR>	
END: (1-20):	4<CR>	
ENTER COMMAND:	98<CR>	COMPUTE

Your screen should show the following. Unfortunately, it is not what we wanted to do.

DONE.
```
      ROW 6 <--
ENTER COMMAND:
```

ROW	----3----	----4----	TOTAL ----5----	----6----	----7----
1 SALES	1,210.0	1,331.0	1,464.1	1,610.5	1,771.6
2 COST OF GOODS	544.5	599.0	658.8	724.7	797.2
3 SALES AND ADM	242.0	266.2	292.8	322.1	354.3
4 RESEARCH AND	300.0	300.0	300.0	300.0	300.0
5 TOTAL COSTS	1,086.5	1,165.2	1,251.7	1,346.8	1,451.5
6 GROSS PROFIT	123.5	165.9	212.4	263.7	320.0
7 PROFIT RATIO	0.1	0.1	0.2	0.2	0.2
17	0.0	0.0	0.0	0.0	0.0

What we want to do is to calculate the combined ratio of the four quarters and the total, not the total of ratios for the four quarters. The correct order is to do rows first, then columns including the TOTAL column, and finally the row of profit margins. To do this, use these steps.

1.   Position the data pointer to the profit ratio row (row 7).

2.   Use the FIX (38) command to recalculate the profit margins.

System Display	**User Action**	**Command**
ENTER COMMAND:	38<CR>	FIX(R/C)

Your new screen should show:

```
FORECAST
     ROW 7 (PROFIT RATIO) <--
ENTER COMMAND:
```

ROW			TOTAL		
	----3----	----4----	----5----	----6----	----7---
1 SALES	1,210.0	1,331.0	1,464.1	1,610.5	1,771.
2 COST OF GOODS	544.5	599.0	658.8	724.7	797.
3 SALES AND ADM	242.0	266.2	292.8	322.1	354.
4 RESEARCH AND	300.0	300.0	300.0	300.0	300.
5 TOTAL COSTS	1,086.5	1,165.2	1,251.7	1,346.8	1,451.
6 GROSS PROFIT	123.5	165.9	212.4	263.7	320.
7 PROFIT RATIO	0.1	0.1	0.1	0.0	0.
17	0.0	0.0	0.0	0.0	0.

End the lesson by entering the STOP (9) command.

System Display	**User Action**	**Command**
ENTER COMMAND:	9<CR>	STOP

8.   TABLE MAINTENANCE

INTRODUCTION

This chapter discusses how to maintain and manipulate the tables that you create using TeleCalc. How to name files, to change disk drives, and to interface with word processors, are all included. The last section shows you the various ways that you can clear your screen.

MAINTAINING TABLES

As you have seen, all the tables you save are automatically put into a TeleCalc directory. Whenever you use a load or save command, you have the option to examine the contents of a diskette by pressing <CR> in response to the request for a filename.

By issuing a series of <CR> keys, you can see the names of the tables on disk, one table at a time. The TeleCalc directory displays the names of available tables, the report title information, and the table size information on line two of your screen. This helps you keep track of your tables.

You can use the LIST TBLS (116) command to print a list of all the tables on a particular disk. If you want to erase a table from your diskette, use the ERASE TBL (117) command. A prompt on the command line asks you for the filename of the table to be erased. The table is then deleted from your disk and the TeleCalc directory.

Naming Your Table

TeleCalc table names can be up to eight alphanumeric characters. All table names must start with an alpha character and may not include the following characters: . ? " / or a **space.** Lower-case characters are automatically converted to upper-case.

All CP/M filenames are constructed from three parts:

    A:FILENAME.EXT

where

        A: An optional disk drive identification character,
                    followed by a colon

        FILENAME   A filename of up to eight characters

        .EXT   An optional filename extension of up to three
                    characters preceded by a period.

CP/M disk drives are assigned names such as disk drive A: or B: and so on. If you supply a drive name, then you need to enter the colon character as well. In most cases, CP/M files should be saved on drive B. You can change drives in TeleCalc using the SET DRIVE (108) command.

Changing Disk Drives

To save tables on a specific disk drive, use the SET DRIVE (108) command to specify the drive name. That drive will be used as the data drive for all subsequent load and save operations until you change the drive with the SET DRIVE (108) command or until you exit TeleCalc.

The SET DRIVE (108) command also allows you to change diskettes during a working session. Whenever you change diskettes, you should always issue a SET DRIVE (108) command to initialize your new diskette.

INTERFACING WITH WORD PROCESSORS

You can save TeleCalc reports in a file for combining with text produced on your word processing software. The SAVE REP (85) command allows you to print reports into a file instead of to a printer.

The SAVE REP (85) command is similar to the REPORT (83) command in that all options and titles are included in the report. By saving the report in a file, you can include TeleCalc reports in the body of text from a word processor, enhance reports using a word processor editor, or spool reports to printers.

The SAVE REP (85) command does not save your table in TeleCalc. To save a table for future use in TeleCalc, use the SAVE TBL (112) command.

YOUR SCREEN DISPLAY

TeleCalc has several commands that allow you to clear your screen. These commands are explained below.

Table 8-1
CLEAR Commands

Command	Description
CLR DATA (113)	Allows you to clear the data from your current table within the current row or column ranges. It does not disturb the table logic, row or column titles, or print options. This command lets you use a master table, complete with print options to make duplicate tables.
RESET (114)	Clears all table information from memory.
REDISPLAY (115)	Refreshes your screen if it distortes. No changes are made to your data.

APPENDIX A ALTERNATE COMMAND KEYS

TeleCalc will respond to alpha characters that are codes for the
regular numeric commands. So, if it is easier for you, simply
use a "+" for the ADD (41) command, a "F" for the FORMULA (35)
command, or any of the other single keystroke codes. Of course,
the regular TeleCalc menu will still be available to provide you
with a constant reference.

Command	Alternative
ADD	+
SUBTRACT	—
MULTIPLY	*
DIVIDE	/
GET	=
CUMULATE	$
ADD K	A
SUB K	B
MULT K	C
DIV K	D
ENTRY	E
FORMULA	F
GOTO	G
INVERSE	I
NULLIFY	N
PLUG	P
CHANGE	Q
SUM	S
FIX	X

APPENDIX B TELECALC CUSTOMIZATION NOTES

This memo assists dealers in customizing TeleCalc, version 4, to specific systems. Features supported include:

1. Display attributes, table sizes, and identification

2. CRT feature control

3. Keyboard customization

4. Function key customization

TCSETUP.FIL

TCSETUP.FIL is a CP/M file used to store customized parameters for TeleCalc. The TCSETUP.FIL is one of the files on the TeleCalc system diskette. It contains numbers that allow you to customize TeleCalc to your microcomputer system and terminal.

Normally, TCSETUP.FIL is created by the TeleCalc CUSTOM program. If your system is listed on the CUSTOM menu, you simply select that system to get started. Otherwise, you need to change the contents of the TCSETUP.FIL to match your system. These numbers can be changed using any CP/M editor or word processor.

Technically, the contents of the TCSETUP.FIL are a series of numbers. These numbers must be separated be commas or placed on individual lines of the TCSETUP.FIL. These numbers are used to tell TeleCalc what specific features are available on the hardware and how to use them.

The following is a sample printout of the TCSETUP.FIL:

```
TeleCalc
50,20
15,10,1""
0,0,0
"TELEVIDEO 803"
2,80,24
2,27,0,0,0,61,32
0,0,0,0,0,0
27,46,48,0
27,40,27,46,49,0
27,41,0
0
0
27,40,0
0
0
27,40,32,0
0
0
27,89,0
27,84,0
11,22,12,8,30
0,127,13
"COMMAND KEY"
37
65,51,66,52,67,53,68,54,69,30,70,35,71,36,72,79,73,46,74,79
75,71,76,138,77,135,78,39,79,79,80,37,81,32,82,67,83,55,84,68
85,79,86,137,87,79,88,38,89,79,90,79,43,41,45,42,42,43,47,44
61,56,37,70,36,49,94,139,62,73,60,72,64,74
"FUNCTION KEY SELECTION"
1,-1,32
64,12,65,20,66,33,67,31,68,55,69,98,70,7,71,82,72,92,73,108
96,13,97,25,98,34,99,32,100,49,101,32,102,9,103,81,104,93,105,115
74,111,75,86,76,114,77,63,78,62,79,120
106,112,107,109,108,113,109,61,110,123,111,121
```

SETUP PARAMETERS

This section controls the initial TeleCalc table size, the row
title display area, the column sizes, the number of decimal
places, handling of zeroes and print page margins.

```
        TeleCalc
        ROW.N, COL.N
        ROW.SIZE, COL.SIZE, DEC.SIZE, DATA.DRIVE
        OMIT.ZERO, TOP.MARGIN, LEFT.MARGIN
```

Example:

```
        TeleCalc
        50, 20
        15, 10, 1
        0, 0, 0
```

ROW.N and COL.N are the initial table size for TeleCalc.
Normally, these are set at 50 rows and 20 columns. They can be
set to smaller values for small machines or larger values for 16-
bit machines with larger memory capacity. In 8-bit CP/M systems,
TeleCalc can normally accommodate approximately 1000 entries (i.e.
50 times 20 equals 1000) per table. Of course, the TeleCalc
SETUP command allows the user to dynamically set the table sizes.

ROW.SIZE is the row title display area. Normally, 15 spaces are
used. You can set it to any value from 5 to 40.

COL.SIZE is the size for each column. 10 is the default.

DEC.SIZE is the number of decimal places. 1 is the default.

DATA.DRIVE is the name of the drive for storing TeleCalc tables.
If this value is set to select drive "B:," then TeleCalc will
automatically store and retrieve TeleCalc tables from drive B.

OMIT.ZERO is treatment of zero values on the screen. A value of
-1 says to display zeroes as blanks. 0 is the default.

TOP.MARGIN is the number of lines to skip at the top of a page.

LEFT.MARGIN is the number of columns to skip at the left side of
a page. (Top and left margins support printers with single page
sheet feeders.)

CRT CONTROL FEATURES

This section describes the CRT interface for TeleCalc. Specific
features include cursor control, highlighting, screen clear, and
line clear.

Normally, for an application like TeleCalc to instruct the CRT to
clear the screen, a special command is sent by TeleCalc to the
CRT. This command might be the number 5 or a string of numbers
starting with a 27 followed by an 89. Unfortunately, this
command varies for each system and terminal. However, you can
look up the appropriate commands in your system or terminal CRT
interface section and enter the commmand sequence into
TCSETUP.FIL.

Screen Size

    "Terminal/System Name"
    CRT.TYPE, CRT.WIDTH, CRT.LENGTH

Example:

    TELEVIDEO 803"
    2, 80, 24

CRT.TYPE is used to identify specific terminals that may require special adjustments. Use 1 for Hazeltine terminals. Otherwise, any value is acceptable.

CRT.WIDTH and CRT.LENGTH control the screen size. Most terminals display 80 columns by 24 rows. 132 column screens are fully supported.

Cursor Addressing

FORMAT, LEAD.IN, LEAD.IN-2, LEAD.IN-3, DELIMITER, ADDR.CURSOR, ADDR.OFFSE

Example:

    2, 27, 0, 0, 0, 61, 32

These numbers control positioning of the cursor at specific locations on the screen. TeleCalc supports 3 techniques for cursor addressing. They are

    0. Hazeltine x, y format
    1. ANSI standard
    2. y,x format (most popular)

The Hazeltine format uses the following command structure for cursor addressing:

    ESC ADDR.CURSOR   x-value   y-value

In TCSETUP.FIL, the numbers would be set as follows:

Setting	Description
FORMAT = 0	Select Hazeltine format
LEAD.IN = 27	Use ESC for lead-in
LEAD.IN-2 = 0	Second lead-in set to null
LEAD.IN-3 = 0	
DELIMITER	Set to null
ADDR.CURSOR = 17	Address cursor command
ADDR.OFFSET = 96	Address offset

You can use the Hazeltine format for any terminal that closely matches the Hazeltine format by substituting the correct values. For example, if your terminal uses the x,y format, but uses a different command for cursor addressing, the correct value may be entered into TCSETUP.FIL in place of the original value.

The ANSI standard uses the following command structure:

LEAD.IN LEAD.IN-2 LEAD.IN-3 y-value DELIMITER x-value ADDR.CURSOR

For example, the HP-2621A would use the following settings:

Setting	Description
FORMAT = 1	Select ANSI standard
LEAD.IN = 27	Use ESC for lead-in
LEAD.IN-2 = 38	Second lead-in character
LEAD.IN-3 = 97	Third lead-in character
DELIMITER = 121	Delimiter
ADDR.CURSOR = 67	Address cursor command
ADDR.OFFSET = 0	Address offset

If your terminal follows the ANSI standards, you can use this format by changing selected values to suit your terminal. If your terminal uses less than 3 lead-in characters, then the remaining values should be set to zero.

The most popular format is the abbreviated y,x format:

ESC   ADDR.CURSOR   y-value   x-value

For example, the TeleVideo would use the following values:

Setting	Description
FORMAT = 2	Select y, x format
LEAD.IN = 27	Use ESC for lead-in
LEAD.IN-2 = 0	Second lead-in character
LEAD.IN-3 = 0	Third lead-in character
DELIMITER = 0	Delimiter
ADDR.CURSOR = 61	Address cursor command
ADDR.OFFSET = 32	Address offset

As with all three methods for cursor addressing, you can set the individual values to suit your system or terminal.

Printer Features

Printer features are supported. You can implement an initialization, a termination, and four enhancements for any printer.   These features can be used to select compressed, expended, or alternate fonts to issue paper feed messages and for other printer control uses.

PRINTER.INIT	0	Initialization string
PRINTER.END	0	Termination string
ENHANCE.0	0	Zeroth enhancement
ENHANCE.1	0	First enhancement
ENHANCE.2	0	Second enhancement
ENHANCE.3	0	Third enhancement

Each line can contain as many numbers as necessary and must be terminated by a zero. At minimum, each line must contain a zero.

The initialization sequence and one of the enhancement choices are sent to the printer at the beginning of every command that uses the printer. The end sequence is sent to the printer at the end of every command that uses the printer. The choice of enhancement is set in the OPTIONS command.

Initialization is used to send special paper load instructions or LPI commands. Each enhancement generally controls various CPI choices. The end sequence resets the printer to its original state.

Highlighting

You can highlight each portion of the TeleCalc display screen using features available in your system. For example, you can display the titles and the TeleCalc menu in reverse video and blink the status line.

Example for ADDS:

INITIAL	27, 91, 48, 0	CRT initialization
END.SET	0	CRT ending set
DEF.SET	14, 0	Default setting
PROMPT.ON	0	Not used
STATUS.ON	15, 0	TeleCalc status line
MESSAGE.ON	15, 0	Message line
ROW.ON	0	Not used
TBL.ON	15, 0	Row and column title area
POINTER.ON	14, 32, 0	Row/column pointer
DATA.ON	0	Data area
DPOINTER.ON	15, 32, 0	Data pointer
NEGATIVE.ON	0	Negative values
MENU.ON	15, 0	Menu area

Each line can contain as many numbers as necessary and must be terminated by a zero. A minimum, each line must contain a zero.

The numbers are commands that are sent to the CRT to select specific features such as reverse, blink, underline, color or other highlighting activities.

The INIT.SET sequence is sent to the CRT at the beginning of every TeleCalc session. The END.SET sequence is sent to the CRT at the end of every TeleCalc session. Other sequences are sent to the CRT prior to displaying that section of the TeleCalc screen. The DEF.SET sequence is sent to the CRT at the completion of any display on the CRT.

For example, whenever a message is printed on line 1 of the CRT, TeleCalc will send the MESSAGE.ON sequence to the CRT, followed by the message and the DEF.SET sequence.

For POINTER.ON and DPOINTER.ON, a space (32 decimal or 20H) needs to be inserted. If the highlighting feature used to distinguish the data pointer already occupies a space on the CRT, then the space should be omitted.

Clear screen and Line

```
CLEAR.SCREEN         27, 84, 0
CLEAR.LINE           27, 89, 0
```

The clear screen and clear to end of line sequence is handled the same way as highlighting. A sequence of numbers is sent to the CRT to clear the screen or to clear the line. These sequences must be terminated by a zero value.

KEYBOARD CUSTOMIZATION

TeleCalc allows single keystroke cursor control. In addition, you can customize the alphabetic portion of the keyboard to generate specific TeleCalc commands. You can match specific keys to functions in TeleCalc by looking up the values generated by a key and entering the values into TCSETUP.FIL as follows.

Cursor Control

```
UP.KEY, DOWN.KEY, RIGHT.KEY, LEFT.KEY, CANCEL.KEY
```

Example:

```
5, 24, 4, 19, 1
```

Cursor control allows the user to move the TeleCalc data pointer. Most keyboards have a set of keys with arrows on them that point in the up, down, right, left, and home positions. You can customize TeleCalc to respond to these arrow keys by entering the values generated by these keys into TCSETUP.FIL.

The above example allows the user to use CRTL-E, CTRL-X, CTRL-D, CTRL-S, and CTRL-A for the above actions.

Backspacing

ESC.KEY, BACKSPACE, CR.KEY

Example:

```
27, 127, 9
```

Backspacing is used to correct typing errors. Different keys are used on different systems to handle backspacing. For example, you can choose the BACK key, the DEL key, or the RUBOUT key depending on your keyboard. (If not defined for other uses, 8H is always used as the backspace key. In the current example, both 8H and the DEL key would perform backspacing.)

ESC.KEY can be used to capture a two character cursor key. In other words, if the cursor keys generate 2 ASCII characters, ESC.KEY should be set to the value of the first key.

The CR.KEY is an alternate carriage return key. 0CH by default, is always the carriage return key. CR.KEY defines an alternate key (TAB in the example).

Command Key Synonyms

This section allows you to map any alphabetic keystroke into specific TeleCalc commands. This provides each TeleCalc with an alphabetical synonym. For example, the S key can be trained to map into the SUM command (55) in TeleCalc. Normally, the S key generates a decimal 83 (or 53H). In the example below, it has been mapped into a 55 for SUM.

```
"Command key section"
COUNT
KEY1, COMMAND 1

      .
      :
KEYN, COMMANDN
```

Example:

```
"Command key section"

3                         3 keys
43, 41                    + key, TeleCalc ADD (41)
45, 42                    - key, TeleCalc SUB (42)
83, 55                    S key, TeleCalc SUM (55)
```

You can specify as many keys as you wish. Note that only alphabetic keys can be used since numeric keys interfere with normal TeleCalc command entry conventions.

FUNCTION KEY SECTION

Please set as follows:

```
"Function key section"
1, -1, 32

FUNCTION.INIT
FUNCTION.END              (true = -1 or false = 0)
#-OF-KEYS
```

You can change the function keys in the same way as you change the command keys.

APPENDIX C COMMAND REFERENCE

INTRODUCTION

The Command Reference Section is a convenient, quick reference that provides you with a detailed explanation for each TeleCalc command. The reference section outlines the prompts and defaults associated with each command. In addition, the command reference section will help you locate related information in the preceeding tutorial sections.

How to use this Reference

The TeleCalc commands are organized by their menu grouping. The command number, command name, screen prompts, defaults, and a description are given for each command.

TeleCalc memorizes your commands for "what-if" analysis. In the NORMAL mode, commands are stored in your table logic for recalculation. In the PROGRAM mode, commands that can be programmed are stored in your program logic file.

Throughout the following section, the notation below is used to describe how TeleCalc handles each command:

      T   Means this command can be stored in your tables.

      P   Means this command can be stored in your program.

      PT   Means this command can be stored in tables and programs.

If neither letter is given, TeleCalc does not store that command in either tables or programs.

MAIN MENU

1 format:

Display format commands: enter row and column titles, set row and column print options, look at options, insert and delete and columns, and reorder rows and columns.

2 data:

Display data entry commands: enter data, select row and column modes, fix, nullify, and go to commands.

3 math:

Display math commands: arithmetic functions, formula, plug, cumulate, negate, get, ceiling, floor, and row and column summation commands.

4 graphics: (optional for the 16 bit system)

Display finance commands: depreciation, mortgages, internal rate of return, ratios, percentages, growth, and tax schedule commands.

5 print:

Display print commands: set report titles and options, and print reports, models, and programs, list table and program directories, and send reports to printer or disk files.

6 status:

Display status commands: range settings, mode selection, and computing order.

7 HELP

   WHICH COMMAND (1-200):

Gives brief on-screen description for each command by entering command number or command alpha code. Description will appear at the bottom of the screen.

9 STOP (P)

   OK TO ERASE CURRENT DATA?
   VERIFY (Y OR N):

Exit to operating system. The current table logic and program, if any, are **NOT** automatically saved.

10 utility:

Display utility commands: save and load tables, enlarge table size, select drive, reset, and redisplay screen.

12 HOME:

Positions your cursor at row 1 and column 1.

13 BOTTOM

Positions your cursor at the last row and last column.

FORMAT COMMANDS

16 format:

Display format commands: enter row and column titles, set row and column print options, look at options, insert and delete rows and columns, and reorder rows and columns.

17 INSERT

Insert row or column by moving last row/column of the current table to the row or column indicated by the data pointer. Any logic reference is automatically maintained. For the 16 bit system INSERT will delete the last line and insert a new line where the cursor is resting.

18 DELETE

    VERIFY (Y OR N):

Delete row or column indicated by the data pointer by moving it to the last row or column of the current table. Requires positive verification before deleting. Any logic reference is automatically maintained.

19 rows:

Row section of format commands.

20 ROW TITLE

    Use cursor keys to select a row (UP, DOWN, CANCEL)

Enter or change row titles. Each title entered is placed in the row indicated by the data pointer. Continues prompting for sequential titles until command is cancelled. Use cursor keys to select the desired row.

Can enter up to 40 characters for each row title. The quote mark
(") is an illegal character and should not be used in row title
descriptions. Notice that if you have more than 15 characters,
in your row title, the description will be truncated on the
screen to the 15 character default. Use the SET CRT (86) command
to adjust the screen format. The entire row description will be
remembered for use in printing.

21 SET TYPE

        row option ... HOME

Allows you to specify the type of row, underlining, decimal
places, spacing and special formatting for each row.

22 SHOW ROWS

Display the current options for each row. Also shows the
commands stored for each row.

23 REORDER   old-row new-row

Move old-row into the position new-row. Use this command to
insert new rows or delete rows from your table.

24 cols:

Column section of format commands.

25 COL TITLE title1 title2 ... HOME (RIGHT, LEFT, HOME)

Enter or change col titles. Each title entered is placed in
the current col. The cursor keys move the current col pointer.

26 SET TYPE   column option ... HOME

Allows you to specify the column width, decimal places and
special column formatting for each column.

27 SHOW COLS

Display the current options for each column. Also shows the
commands stored for each column.

28 REORDER   old-column new-column
Move old-column into the position new-column. Use this command
to insert new columns or delete columns from your table.

29 data :

Display data entry commands. Enter data, move the data pointer
fix, nullify and goto commands.

30 ENTRY   value ... HOME (UP, DOWN, RIGHT, LEFT, HOME)

Enter values into table. Cursor keys allow movement to any cell in the current table range settings.

31 ENTER   value ... HOME (UP, DOWN, RIGHT, LEFT, HOME)

Enter values into table. Constant, grow and increase options allow quick entry. Cursor keys allow individual data entry.

32 CHANGE   row, column <-- value

Change one value in your table.

33 SELECT ROW row

Move the data pointer to a new row of the table. Also, use the up and down cursor keys to move the data pointer.

34 SELECT COL column

Move the data pointer to a new column of the table. Also, use the right and left cursor keys to move the data pointer.

35 FORMULA   RESULT <-- formula

Use a formula. Formulas may reference a row or column (Ln), values (Vr,c) or positive constants in the formula.

36 GOTO   row column

Position the display screen with row,column in the upper left corner of your terminal.
37 PLUG   row, column <-- formula

Use a formula to calculate results for a particular cell. The formula may reference table values (Vr,c) or constants.

38 FIX

Re-computes the current row or column. Use cursor keys to move the data pointer to the right row or column before using FIX.

39 NULLIFY   row/col

Nullify command associated with a row or column. The data in the table is not affected.

40 math:

Display math commands. Arithmetic, cumulate, negate, get, floor, ceiling and row and column summations.

41 ADD   RESULT <-- row/col1 + row/col2

Add two rows or columns of values.

42 SUBTRACT   RESULT <-- row/col1 - row/col2

Subtract the second row/col from the first row/col.

43 MULTIPLY   RESULT <-- row/col1 * row/col2

Multiply two rows or columns of values.

44 DIVIDE   RESULT <-- row/col1 / row/col2
Divide the first row/col by the second row/col.

45 NEGATE   RESULT <-- - (row/col)

Negate a row or column of values.

46 INVERSE   RESULT <-- 1 / (row/col)

Compute the inverse for a row or column of values.

47 INTEGER   RESULT <-- INT(row/col)

Compute the integer part of a row or column of values by
dropping the fractional portion of a number.
48 ROUND   RESULT <-- INT(row/col + 0.5)
Round a row or column of values to the nearest whole number.

49 CUMULATE   RESULT(t) <-- RESULT(t-1) + row/col(t)

Compute cumulative sums for a row or column. Cumulate prompts
for year zero value. Use for ending balance calculations.

50 ABSOLUTE   RESULT <-- ABS(row/col)

If a value is negative, the result is positive. If the value
is positive, the result is positive.

51 ADD K   RESULT <-- row/col + value

Add a constant amount to a row or column.

52 SUB K   RESULT <-- row/col - value

Subtract a constant amount from a row or column.

53 MULT K   RESULT <-- row/col * value

Multiply a row or column by a constant amount.

54 DIV K   RESULT <-- row/col / value
Divide a row or column by a constant amount.

55 SUM   RESULT <-- SUM(row/coll THROUGH row/col2)

Sum a group of rows or a group of columns.

56 GET   RESULT <-- row/col

Get the values from a row or column.

57 FLOOR   RESULT <-- MAX(row/col, value)

If row/col is less than value, then the RESULT is value.
Otherwise RESULT is row/col.

58 CEILING   RESULT <-- MIN(row/col, value)

If row/col is greater than value, then the RESULT is value.
Otherwise RESULT is row/col.

60 graphics:

Display graphics commands. Select, display, and print
chart. Options include bar, line and pie charts.

61 DISPLAY

Display the chart. Use SELECT to choose the rows and columns
to display. Options include bar, line and pie charts.

62 SELECT   row/col (line/bar/pie) ... HOME

Allow selection of rows or columns to display. Option include
lines, bars and pie charts. Use HOME key to end.

63 OPTION submenu   HOME

Define chart titles, stack option. Specify X data type and
scaling control of Y axis. Print chart.

80 print:

Display print commands. Set report options, titles and print
reports. Reports can be sent to disk files.

81 OPTIONS   option ...

Global report options. Row title width, column width, number
of columns, negative numbers, commas, line numbers, zeros, etc

82 TITLES   page date row-range col-range 3-line-title

Set page number, dates, row and column ranges and a 3 line
title. A report will follow.

83   REPORT

Print report on your printer.   Report options, title should be set prior to printing report.

84   SHOW OPTS

Display report options and title information.

85   SAVE REP   filename

Print report to a disk file. Interface with word processors, or spool output to printer.

86   SET CRT   row-width col-width decimal-places

Set display parameters. You can control the row title area, the column widths, and the number of decimal places.

90   status:

Display status commands. Range settings, mode selection, and selection of compute order.

91   range:

Range selection commands for rows and columns.

92   ROW RANGE   row1 TO row2

Set row range on status line (top line). Impacts calculations, printed reports, and general data manipulation.

93   COL RANGE   row1 TO row2

Set column range on status line (top line). Impacts calculations, printed reports and general data manipulation.

95   mode:

Mode selection commands. (top line)

98   COMPUTE

Set mode to compute. Re-compute your table to update for any changes in the data.

101   PROTECT

Toggles the protect mode on & off.   In protect mode, data can be changed, but the model logic will not change.

102 ORDER   option

Set the computing order for your table. Select ROW/ONLY,
COL/ONLY, ROW/COL or COL/ROW.

105 utility:

Display utility commands. Load, save, list, print, erase,
clear and reset tables. Also redisplay screen.

106 LOAD ALL filename (optional for the 16 bit system)

Load table and chart options file with the same name.
On prompting for filename, the available files will be shown.

107 SAVE ALL filename (optional for the 16 bit system)

Save table and chart options to disk for permanent storage.

108 SET DRIVE drive

Select drive for saving and loading your files. Normally, the
current drive is used for saving and loading files.

109 SET UP   number-of-columns number-of-rows

Redimension tables to a different number of rows and columns.
Generally, each table can have up to about 1000 entries.

110 tables:

Display table commands. Load, save, list, reset, and clear
tables.

111 LOAD TBL filename

Load your table from your diskettes. On prompting for file-
names, the available files will be shown.

112 SAVE TBL filename

Save your table on diskettes. The descriptions, data, logic,
and all print options will be saved as part of the file.

113 CLR DATA verify

Clear all data in table range. Row and column titles, and
table logic will be maintained.

114 RESET   verify

Reset table values, row and column titles, and table logic.

115   REDISPLAY

Clear the screen and redisplays your table, menu and status information. No data will be changed.

116   LIST TBLS

Print a list of the tables you have on your current diskette. Listing will go to the printer.

117   ERASE TBL filename

Erase a table from your current diskette.

118   PRINT TBL

Print a description of your model. Listing will include row titles, options, table commands and global options.

119   chart: (optional for the 16 bit system)

Display chart utility commands. Load, save, clear, and erase chart option files.

120 LOAD CHT   filename (optional for the 16 bit system)

Load chart options from your disk into the computer.

121 SAVE CHT   filename (optional for the 16 bit system)

Save chart options to disk for permanent storage.

122 ERASE CHT   filename (optional for the 16 bit system)

Erase a chart file from your current disk.

123 RESET CHT verify (optional for the 16 bit system)

Reset all chart options to default values.

124 LIST CHT (optional for the 16 bit system)

Print a list of charts you have on your current diskette. Listing will go to the printer.

APPENDIX D   ERROR MESSAGE

The following tables list possible error messages, their cause and how they can be corrected.

Table D-1
CP/M Error Messages

Error Message	Cause	Correction
BDOS ERROR ON d*: BAD SECTOR	Operating system cannot get information from diskette because disk being accessed is not correctly formatted.	Format disk correctly according to operating system manual.
	Operating system cannot get information from diskette because disk has physical defect (dust, finger prints, manufacturer's defect)	Press "R" to re-try command. If error persists, reboot system and re-try command. If error persists and is on data diskette, format new diskette and re-try command. If error is on systems disk make new working disk from master and re-try command. If error still occurs check disk drive for malfunction.
BDOS ERROR ON d: SELECT	Drive does not exist.	Reboot system and designate correct disk drive. Check to make sure that disk drive cables are properly connected.
BDOS ERROR ON d: READ ONLY (R/O)	Newly inserted diskette was accessed without ¨C command being issued to clear the drive.	Press and key to recover. Press ¨C and then re-try command.

	Operating system is trying to write disk that has been designated as "read only."	Press any key to recover from error. Check diskette for write protect tab: remove tab to make diskette read/write.
DISK WRITE ERROR	Operating system is trying to write to disk that has been designated as "read only" with the CP/M STAT command.	Change disk designation with STAT command.

*d = drive name

Table D-2
Execution Error Messages

Error Message	**Cause**	**Correction**
CM ERROR	The program file specified in a chaining statement could not be found in the directory.	Problem with systems disk. Use master diskette to make new systems disk. If error persists, contact your dealer.
DW ERROR	Disk full. No diskette space left.	Check available diskette space. Most likely an additional diskette will be needed to provide more storage space.
DZ ERROR	A division by zero was attempted.	Check logic and correct.
ME ERROR	Diskette directory is full causing an error while attempting to save a file.	Check available diskette directory space. Most likely an additional diskette will be needed to provide more storage space.

OE ERROR	Open file error. Has no effect on program.	Enter next command to clear error message on screen.
OF ERROR	Arithmetic over-flow. A number used in a calculation was to large.	Locate number causing overflow and correct. Re-try calculation.
OM ERROR	System has insufficient memory to complete action.	Break up action causing problem (table size, program, calculation) into smaller pieces.

Table D-3
TeleCalc Error Messages

Error Message	Cause	Correction
"The contents of this file are incorrect. (e.g. old version)"	Table was not saved properly due to full or defective diskette.	Resave table. Check operating system directory to confirm save. Use new data diskette if necessary.
"New table is smaller than current table dimensions. Enlarge?" 0=New, 1=Current	Table being loaded (new Table) has smaller matrix than table shown on the screen (current table).	Decide which table size is desired, then answer TeleCalc query with an "0" for new table or "1" for the current table.
"No help files available."	Due to limited disk space on this machine format, help files have been deleted.	Informative error message--no corrective action necessary.