ADVANCED VISICALC APPLE III

INDEX

MAIN LEVEL
You are at the main level of the VisiCalc program. At this level you can:
Move the cursor using
  ➢ the arrow keys
  ➢ the semicolon (;) to go to the other window
  ➢ the ">" or "GOTO" command
  ➢ the tab keys, TAB and SHIFT-TAB
Enter a VALUE or a LABEL in the current cell
Recalculate the entire sheet by typing "!"
Initiate any VisiCalc command by typing "/"
Get help by typing "?"
Correct typing mistakes by pressing ESCAPE
Use CTRL-C to cancel a command or data entry operation.

THE SCREEN (from APPLE /// USERS OF NORTHERN CALIFORNIA)

Top row - of screen
    Current location (cell) e.g. A1.
    If a value or label is in cell (V)alue or (L)abel
    Displays what is in that cell.
    Recalculation is taking place (!).
    Recalculation order "R" row or "C" column.

Second row - of screen
    Prompt line ----------------- memory indicator.

Prompt line tells you what to do next when you are working with a command.
Memory indicator tells the amount of memory available in thousands of characters.

Third row - of screen
    Edit Line ------------------- All the way across

The **cursor** is the intersection of column A and row 1 is location (cell) A1. The white rectangle is the "cursor".
This is the place where you can enter information on the sheet.
What you are typing into the cell also used when doing edit.

Spread sheet layout: 254 rows (numbers)
                      63 columns (letters) wide (BK)

Value or **Formula**
The system will come up ready to have values or labels entered. If you type a number then letters the system will beep at you.

Label
To start with a letter just type it in.
To start with a "space" type "<space>
To start with a number type "<number>
The " is used to start a "label" with a number or a operand (+,-,.,@,#,%,*,(,),/,=).

Moving around the Worksheet
To move from one location to another use the arrow keys.
GO TO command is another way to move to a location on the sheet.
> GO TO: (coordinate) type "shift >" and type cell you want to go to then (RETURN).

The cursor fills one cell.

A cell is referred to by its location: e.g. A1 or B12.

You can use the arrow key to point (move the cursor) to the cell that you want to include in your formula.

HELP
The VisiCalc HELP function gives you information on how to use the VisiCalc program while you are actually using it.

It consists of many frames which give you information about various aspects of VisiCalc. If a frame does not fit the screen, it continues on one or more additional screens. You can see the next screen by pressing the N key, and the previous one by pressing the P key. If the bottom line of a screen shows an N or P prompt, there is a NEXT or PREVIOUS screen.

A list of all topics for which HELP frames are available can be viewed by pressing the T key. When the topic list is on the screen, use the arrow keys to position the cursor on any topic, and press RETURN to display information contained in the desired frame. To return to the topic list, press RETURN again. To leave HELP and return to the VisiCalc sheet at the point where you asked for HELP, press ESCAPE.

To cancel the current worksheet command or data entry operation and return to the VisiCalc sheet from HELP, press CTRL-C. You will be at the main level of the VisiCalc program.

REPLICATE
When you replicate an expression containing cell references, the VisiCalc program asks whether the references in the newly created expressions should be written with No change (type N), or should always refer to the entry in the same Relative position (type R).
If you have a large number of expressions, all of which should be written with no change or with a change to the same relative position, use the /R (command. See Topics: Replicate.

CHARACTER STRING
To enter a label (or repeating label), complete a command for saving/loading a file, create a subdirectory, or create a setup string, press RETURN after you have finished typing the information.
If you make a mistake while typing a label, filename, subdirectory name, or setup string, you can edit the character string using CTRL-E (see EDITING) or by pressing ESCAPE and deleting one character at a time. Once you have finished typing the label, filename, subdirectory name or setup string, press RETURN to complete the entry.
If you are using the Storage command and wish to see what filenames occur on a disk, type the device name or directory name (or a subdirectory name followed by /), then press the right arrow key to scroll through the directory.
To enter a "?" in one of the above situations, type CTRL-Q. This enters the ? character and does not invoke the HELP facility.

COMPLETING A RANGE
To complete a range, you must specify its end by typing the coordinate or pointing to it with the cursor. To enter the range, press RETURN or colon.
To cancel the command, press CTRL C, or continue to press ESCAPE until the edit and prompt lines are clear.

CURSOR REPOSITIONING
If you have pressed >, type the coordinate of the cell where you want the cursor to go, then press RETURN.

If you are using /D, /I, /M or /R, type the coordinate or point with the cursor to the entry where you want the range to begin and type a period (.). Then type or point to the coordinate at the end of the range, and press RETURN or colon.
If you are defining an expression in a cell, type the coordinate of the cell you want referenced in the expression.

ACCEPT
VisiCalc is expecting some input such as an arithmetic expression, or a number.

EXPRESSIONS
If you are entering an arithmetic expression, and have just completed typing an operator (such as + or *), the VisiCalc program is expecting a number, a cell coordinate, a function name, or a parenthetic expression. You may use the arrow keys to indicate a cell coordinate, if you wish.

LOGICAL OPERATOR
The allowable logical operators are:
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    <   >   =   <=   >=   <>
    <   less than, e.g. 1<2
    >   greater than, e.g. 10>5
    =   equal to, e.g. 1=1
    <=  less than or equal to, e.g. A1 <= 5
    >=  greater than or equal to, e.g. A1 >= 5
    <>  not equal to, e.g. 1<>2
```

ENTERING AND COMPLETING A NUMBER
You have entered a number within an expression, cell reference or a command and the VisiCalc program is now waiting for you either to continue the number or to complete the command. In expressions or values, you must end the number by pressing RETURN which completes the expression or by entering an operator (+, -, *, /, ^) which will continue the expression.
In many commands, the VisiCalc program will accept numbers as part of the command. /M, /I, /D, /GC, /GCC, /PSL, /PSW, /PSF and CTRL-K all accept numbers as part of the command.
```
    /M, /I, and /D need R (row) or C (column) to complete the command.
    CTRL-K needs a sequence name to complete the command.
    /PS commands need RETURN or colon to complete the command.
    /GC or /GCC needs RETURN or colon to complete the command.
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Numbers also can be entered in scientific notation or can be scaled using %. For scientific notation, the VisiCalc program accepts E and then an integer, which may be preceded by either + or -, e.g. 1.23E-6. For percents, type the number and the percent sign (%). The program divides the number by 100 and displays the result. For example, if you type the characters 12%, the VisiCalc program will display .12.

COMPLETING A RANGE
/M, /I, /D and /R accept a range for both the source and/or target of the command. After the initial coordinate has been designated and a period (.) typed for the ellipsis (...), you can point to or type the coordinate for the end of the range. RETURN or colon completes the range.

EDIT OR KS SEQUENCE ERROR
You may encounter an error message while you edit a cell or while you are defining a keystroke sequence. The error message gives you information on what was not accepted by the program. To clear the error message from the edit line, cancel the operation by pressing CTRL-C.

SEQUENCE ALREADY EXISTS
The sequence name has already been used on this worksheet. Type Y if you want to overwrite the existing sequence with the new one. The existing sequence at this point will no longer be available to you. The new one has taken its place.
Type any key other than Y to cancel the request to replace the sequence.
If you are editing an existing sequence, you can press ESCAPE to erase the sequence name, and then type in another name. If you are defining the sequence, begin the command again with /K= or CTRL-K=, and choose another name.

LIMITING THE REPLICATE COMMAND

You can limit what part of the cell you replicate by typing (after you type /R.
    A Attributes. Replicate only the attributes of the source range.
    C Contents.   Replicate only the contents of the source range.
    N No Change. Replicate the source range with no change in expressions
which reference other cells.
    R Relative.   Replicate the source range making cell references refer to
the cell in the same relative position.
) Exit.   Completes the command.
See Topics for more information on Replicate (/R).

COMPLETING AN EXPRESSION
If you are building an expression (formula) and have completed a parenthetic
expression with) or a number, the VisiCalc program is now waiting for an
arithmetic operator (+, -, *, /, or ^) to continue the expression or RETURN to
complete the expression.
In some cases, you may have typed a number and an operator, and then erased the
operator. At this point, you cannot add digits to the number unless you use the
editing feature (CTRL-E). Again, VisiCalc is looking for an arithmetic operator
or RETURN at this point.

0 MEMORY CONDITIONS
When the VisiCalc program has used up all of its available memory, the memory
indicator displays an M with no integer. At this point:

You cannot enter any values, expressions or labels onto the sheet, nor define
new keystroke sequences or user formats. If you attempt to do so, the computer
will beep. If you attempt to display cells with the expression attribute (/AE),
they may display as 0M.

Sheet recalculation and command execution may take longer than usual, and
program disk activity may increase. If you are performing a function and run out
of memory in the middle of it, the program will do as much of the function as it
can within the memory limitations. For example, if you are replicating a range,
VisiCalc will replicate as much of the range as possible. The cursor will stop
at the last cell completed.

VisiCalc Commands (/)
By typing /, you invoke the set of commands listed below. For more details on
each command, please refer to the topic list and select the frame on the command
you wish to explore.

/ Command: **ABCDEFGIKMPRSTVW-** Advanced VisiCalc
           BCDEFGIMPRSTVW- VisiCalc

A	Attribute.	Sets a cell's attributes, which control the way a cell is displayed, what values may be entered into a cell, and whether modification is permitted.
B	Blank.	Clears a cell, erasing its contents.
C	Clear.	Clears the entire sheet.
D	Delete.	Deletes one or more rows or columns.
E	Edit.	Allows you to modify the contents of a cell.
F	Format.	Defines the display of a cell.
G	Global.	Global commands affect sheet recalculation and some cell display attributes.
I	Insert.	Inserts one or more rows or columns.
K	Keystroke Memory.	Allows you to assign multiple keystrokes to a single key.
M	Move.	Allows you to move entire rows or columns to another part of the worksheet.

P	Print.	Prints to a printer or to a disk. Also controls format of the printed worksheet.
R	Replicate.	Copies the entry and/or attributes from one cell or range of cells into other cells.
S	Storage.	Saves and loads files on disk.
T	Title.	Sets or eliminates horizontal and vertical title areas.
V	Version.	Displays the VisiCalc version number on the prompt line.
W	Window.	Splits the screen into two vertical or horizontal windows, or returns the screen to one window.
-	Repeating Label.	Repeats the character or characters typed after the - to fill the current cell.

ATTRIBUTES (/A)
The Attributes command allows you to change the way cells are displayed and control how they can be modified. Setting attributes affects only the display of the cell and not the label or value stored in memory. The VisiCalc program always retains values to full precision and labels to the maximum buffer size. Attribute options are:

/AE	Expression.	Displays worksheet as expressions or formulas.
/AH	Hide.	Hides the display, but retains any data or expressions in a cell.
/AL	Label.	Sets label display attributes.
/AM	Mode.	Specifies whether the contents of a cell can be modified and allows you to restrict the type of data that may be entered.
/AT	Tab.	Specifies where the cursor will go when TAB or SHIFT-TAB is pressed.
/AV	Value.	Sets value display attributes.
/AD	Default.	

See Topics for more information on each attribute setting.

To modify attributes:
     1. Erasing attributes: after choosing the type of attribute you want to modify (E, H, L, M, T, V), type the letter E (for erase) and then the attribute setting you want to delete. You do not need to type the integer for attribute settings that require an integer, such as /AV2F.
     2. Modifying attributes: after choosing the type of attribute you want to modify, type your new choices. In some cases, certain attributes supersede previous choices. For example, /AVC would replace /AV(as you should not have CR/DR notation inside parenthesis. Other attribute choices are added to the current setting.

EXPRESSION FORMAT (/AE)
Setting the expression attribute (/AE) displays the expression (formula) in the cell, and overrides all other attribute settings, including /AH (hide). The /AE setting is useful if you want to view your worksheet as a mathematical model.

/AEY	Yes.	Displays the expression.
/AEN	No.	Does not display the expression.
/AED	Default.	
/AE!		Immediate mode. Allows you to view attribute setting changes as you type them. Type ! to turn off immediate mode.

Using /AE, you can print the expressions on your worksheet just as you would print values on a worksheet (see /PP). Make sure your column width settings are wide enough to accommodate the entire expression.

HIDE ATTRIBUTE (/AH)

Setting the /AH attribute allows you to hide the contents of the cell by causing the display to be blank, but not affecting its value or label content.

/AHY Yes.	Hides the contents of the cell.
/AHN No.	Displays the contents of the cell.
/AHD Default.	
/AH!	Immediate mode. Allows you to view attribute setting changes as you type them. Type ! to turn off immediate mode.

MODE ATTRIBUTE (/AM)

The /AM setting determines whether the cell may be modified, and what kind of entry can be made in the cell.

/AMP Protected.	Locks the cell. A blank entry or any value, label, or expression (formula) currently in the cell when /AMP is set cannot be altered.
/AMU Unprotected.	Unlocks the cell.
/AMA All.	Allows values, labels, or expressions to be entered in the cell.
/AML Label.	Allows only labels to be entered in the cell.
/AMV Value.	Allows only numbers or expressions to be entered in the cell.
/AM# Number.	Allows only numbers to be entered in the cell; no expressions or labels may be entered.
/AMD Default.	
/AM! Immediate mode.	Allows you to view attribute setting changes as you type them. Type ! to turn off immediate mode.

To erase attributes, type /A and the letter of the attribute group you want to modify (E, H, L, M, T, V). Then type the letter E (for erase) and the attribute setting you want to clear. For example, if you type /AMP#, type E P. The setting then becomes /AM#. For more information, see the Topics list: Attributes.

TAB ATTRIBUTE SETTING (/AT)

/AT Allows you to set tab stops on specific cells. The setting specifies where the cursor will go when the TAB key or back tab key (SHIFT-TAB) is pressed. When the TAB key is pressed, the cursor will move to the next cell to the right which has the Tab attribute set; if none is found, it will go to the following row, and so on. Finally, it will move to cell A1 and search for the next cell from there.

/ATY Yes.	Sets tab.
/ATN No.	Removes tab.
/ATD Default.	
/AT! Immediate mode.	Allows you to view attribute setting changes as you type them. Type ! to turn off immediate mode.

LABEL ATTRIBUTES (/AL)

Label attribute settings control only the display of labels. /AL settings in effect in a cell do not affect any values or expressions that are entered in that cell. The attributes in effect in a cell in which @LABEL is used will control the display of the result.

/AL<	Left justifies the label between the gutters.
/AL>	Right justifies the label between the gutters.

/ALL Left gutter.	Sets the number of spaces for the left gutter (/AL6L, for example). If no integer precedes the second L, the gutter is set to 0 spaces.
/ALR Right gutter.	Sets the number of spaces for the right gutter (/AL6R, for example). If no integer precedes R, the gutter is set to 0 spaces.
/ALF Fill.	Fills the space between the gutters with the label repeated.
/ALC Center.	Centers the label between the gutters.
/ALD Default.	
/AL! Immediate mode.	Allows you to view attribute setting changes as you type them. Type ! to turn off immediate mode.

Left and right gutter settings for labels are 0 when the VisiCalc program is first loaded. You can set label attributes on cells that contain values. These settings, however, do not affect the display until a label is entered in the cell.

To erase attribute settings, type /A and the letter of the group you want to modify (E, H, L, M, T, V). Then type the letter E (for erase) and the attribute setting you want to clear. For example, if you type /AL>2R, then type E R; the setting becomes /AL>. For more information, see the Topics list: Attributes.

VALUE ATTRIBUTES (/AV)
Value attribute settings affect the display of values only.

/AV< Left.	Left justifies the displayed value between the gutters.
/AV> Right.	Right justifies the displayed value between the gutters.
/AVL Left Gutter.	Sets the number of spaces for the left gutter (/AV3L, for example). If no integer precedes L, the gutter is set to 1 space.
/AVR Right Gutter.	Sets the number of spaces for the right gutter (/AV3R, for example). If no integer precedes R, the gutter is set to 0 spaces.
/AV+ Sign.	Positive values are preceded by +; negative by -. No sign is associated with zero.
/AV- Negative.	Negative values are preceded by -. No signs are associated with 0 or positive values.
/AV(Parenthesis.	Encloses negative values in parentheses.
/AVC Credit.	Displays CR (Credit) to the right of negative values, and DR (Debit) to the right of positive values. Displays no notation for the value 0.
/AV, Comma.	Displays commas in positive and negative numbers with more than 3 integers, as in 1,000. The comma setting has no effect on values displayed in scientific notation.
/AV. Decimal.	Displays a decimal point in all values.
/AVZ Zero.	Suppresses trailing zeros after the decimal point. Use /AVZ with /AVF and /AVS (see below).
/AV% Percent.	Displays % to the right of the value. The /AV% command displays a value that is 100 times the value that is in memory, thus 0.5 will display as 50% and 1 as 100%.
/AV$ Dollar.	Displays $ to the left of the value, but does not affect the display of decimal places which are set with /AVF. (See below, /AVF.)
/AVG General.	Displays in general format, as when the VisiCalc program is first loaded.
/AVF Fixed Format.	Specifies the number of digits to the right of the decimal for display. An integer precedes F,

		e.g. /AV2F. If no integer is specified, /AVF displays values in the general format, except that the values do not change to scientific notation when limited by column width.
/AVI	Integer.	Displays values as integers.
/AVS	Scientific.	Displays values in scientific notation.
/AV*	Graph.	Displays the values as a graph using *.
/AVD	Default.	
/AV!	Immediate mode.	Allows you to view attribute setting changes as you type them. Type ! to turn off immediate mode.

To erase attribute settings, type /A and the letter of the group you want to modify (E, H, L, M, T, V). Then type the letter E (for erase) and the attribute setting you want to clear. For example, if you type /AVC%, then type E C; the setting becomes /AV%. For more information, see the Topics list: Attributes.

ATTRIBUTE DEFAULT (/AD)
AD sets the attribute to display the default settings in the current window, as set by /GA or the system default if no global attributes are in effect for the current window. The VisiCalc program prompts you to type Y to confirm that you indeed want to set all attribute settings to default.

BLANK Command (/B)
The Blank command clears an entry.
This command does not take effect until the arrow, tab or RETURN key is pressed.
If any other key is pressed, the Blank command is cancelled.

/B does not affect attributes or formats set at the current cell.

CLEAR Command (/C)
The Clear command clears the sheet of data and resets the display.

/CA All.	Clears the sheet of data, keystroke memory, format, attribute, printer, column width, and title settings, and all functions loaded into memory.
/CS Sheet.	Clears only data, attribute, column width, and title settings. Does not clear functions already loaded into memory, keystroke memory, printer settings or user-defined formats (/F=).

It is a good idea to clear the sheet before loading a new file. The new data is then written on a clear sheet, and no old data appears on the screen.

DELETE COMMAND (/D)
The Delete command allows you to delete one or more rows or columns. The VisiCalc program prompts you to type Y to confirm that you do indeed want to delete the designated rows or columns. Any other key will cancel the command.

To delete a single row or column, type R or C. Type Y to confirm your choice and the row or column where the cursor lies will then be deleted. Type any other key to cancel the command. The other rows or columns on the worksheet will shift to fill the space where the deleted row or column was. All row or column references will be adjusted automatically.

To delete multiple rows or columns, enter an integer before the R or C, e.g. /D3C. Again, you are prompted to type Y to confirm. The designated number of rows or columns are deleted, beginning with the row or column where the cursor lies and including the columns to the right or rows below the cursor. The rows or columns on the worksheet shift to fill the vacated space.

You can also delete multiple rows or columns by designating a range. The cell in which the cursor lies is defined as the beginning of the range. Define the end of the range by typing a period and pointing to or typing the coordinate of a cell in the same row or column as the cursor. Terminate the command with a RETURN or colon. The range must be defined horizontally or vertically. The /D command does not accept diagonal coordinates.

EDITING (/E and CTRL-E)
There are three ways to edit the contents of a cell:

1. With the ESCAPE key: If you have made a simple typing mistake while entering something in a cell, you can usually recover from it by pressing the ESCAPE key. Doing so erases the last character you typed. Repeatedly pressing ESCAPE will cancel whatever you have typed and returns you to a blank prompt line.

2. With the /E Command: Use /E to edit the contents of a cell that has already been entered. The contents of the cell are redisplayed on the edit line with the command /E. The edit cue that appears can be moved with the arrow keys. New characters typed are inserted to the left of the cue. Characters are erased by pressing the ESCAPE key. Erasures are made to the left of the cue. You can jump to the beginning or end of the edit node by typing the up-arrow or down-arrow key respectively. When you have finished editing a cell's contents, press RETURN.

3. With CTRL-E: If you have not yet entered an expression or label into the cell with RETURN, and wish to edit it, type CTRL-E. This invokes the editing function just as /E does after a cell has been entered. The editing operation is the same as /E.

You can edit cell contents, file names, subdirectory names or /P setup strings. To enter a "?" into a label, type CTRL-Q. This enters the "?" character, and does not invoke the HELP facility.

FORMAT (/F)
The Format command allows you to change the way cells are displayed. Only one format per cell is allowed if /F is used. To set multiple formats for a single cell, use the Attributes command (see /A).

/FD Default.	Resets an entry to use the global default format instead of an explicit format set with a /F command.
/FG General.	Displays the cell in the general format, as when the VisiCalc program is first loaded.
/FI Integer.	Displays values in integer format. Does not affect label entries.
/FL Left justified.	Left justifies the display of values.
/FR Right justified.	Right justifies the display of labels.
/F$ Dollars and cents.	Displays values with two decimal places, but does not add the dollar sign before the value. To display values with a dollar sign and 2 decimal places, you need to use /AV$2F. /F$ and /AV$ affect only the display; the value in the cell is carried in memory to full precision.
/F* Graph.	Displays values with appropriate number of * symbols, within the limits of the column size.
/F- Repeating label.	Displays characters typed after the - as a repeating label, filling the space between the gutters.
/F= User defined format.	Allows new formats to be defined. See Topics for more information on /F=.

DEFINING NEW FORMATS (/F=)
F= allows you to define your own formats. To define your own format, type /F=
and a character. Characters accepted are any alphabetic character (except D) or
!, @, #, $, %, ^, &, *, (,), ", or '. You can reset any existing formats, such
as L, R, $, etc. except D (default).
After naming the new format, you will be put into attribute setting mode. You
can now choose which attribute settings you want for the new format as you would
with the /A command. You can use the immediate mode of display to see changes as
you type them. Type ! to turn immediate mode on or off. The format is not set
until you press RETURN. See more at the topics list, Attributes (/A)
To return formats to their original setting or clear a format, type /F=xO, where
x is the name of the format.

ORIGINAL FORMAT ENTRY (/F=xO)
User-defined formats may be returned to their original settings when VisiCalc
was first loaded. This feature can be used to return settings such as I, *, $,
L, R to their original formats or for clearing formats.
To return to the original format, type /F=xO, where x is the name of the format.

GLOBAL Commands (/G)
Global commands apply to the entire sheet or window. The commands that can be
set globally are:

/GA	Sets attributes for the current sheet or window. (see attributes command for options). /GA! allows you to view attribute setting changes as you type them. ! is off, by default. To turn the immediate mode (!) on or off, type !. Attributes are not set until you press RETURN.
/GC	Sets the column width in the current window. All columns in the current window that have not been set by the /GCC command will be displayed with the new width specified. The width may be between 1 and 125. After entering a number, press RETURN.
/GO	Sets the order of recalculation for the entire sheet to be down the columns (/GOC) starting at entry A1, or across the rows (/GOR) starting at entry A1. If the order is down the columns, all entries in column A will be recalculated, then all entries in column B, and so on.
/GR	Sets the recalculation to be automatic (/GRA) or manual (/GRM). When recalculation is automatic, the entire sheet is recalculated each time an entry is modified. You can always manually recalculate all entries by pressing the ! key at main level.
/GF	Sets the global default format for the current window. The default format determines the display of all entries that have not been specifically set using the /F or /A commands.

Different global attributes, column and format commands can be set for each
window. If you split the screen and set global attributes, columns or formats,
the global command affects only the window where the cursor lies. When you
return to one window, the global settings where the cursor lies when you type
/W1 will be the global settings for the sheet.
Global attributes, columns and format settings affect all cells not set with /F,
/A or /GCC.

ORDER OF REEVALUATION (/GO)
The Re-evaluation Order command sets the order in which calculations are carried
out.
If by column (/GOC), the order is A1, A2...A254, B1, etc.
If by row (/GOR), the order is A1, B1...BK1, A2, etc.

C (column) or R (row) appears in the upper right hand corner of the worksheet to indicate the current order of re-evaluation. When the VisiCalc program is first loaded, the order of re-evaluation is C.

RECALCULATION (/GR)
The recalculation command sets the recalculation to automatic (/GRA) or manual (/GRM).
The sheet can always be recalculated by pressing ! at main level. If you have a large sheet with many expressions, you may want to set recalculation to manual (/GRM). In this case, the VisiCalc program will not recalculate the sheet each time you enter a new value or expression. Remember to type ! or set the recalculation to automatic (/GRA) when you have finished entering your data.
! will appear in the upper-right hand corner of the screen to indicate that your sheet is being recalculated.

COLUMN WIDTH SETTINGS (/GC)
GC controls column width settings in a window.
      /GC followed by an integer changes the column width settings for all columns in a window. Column widths of 1 to 125 characters are accepted by the program. RETURN completes the setting. The default setting for /GC is 9.
      /GCC followed by an integer sets the column width for the column where the cursor lies and, if the screen has been split, in both windows. Column widths of 1 to 125 are accepted. RETURN completes the setting.
      /GCCD sets the column width for a single column to the global default value. The column width then displays the current window's global column width.

INSERTING ROWS OR COLUMNS (/I)
The Insert command (/I) allows you to insert blank rows or columns on the worksheet. The program prompts you for R, C or RANGE.

To insert a single row or column, type R or C. A row (R) or column (C) will be inserted where the cursor is positioned. All references will be adjusted.

To insert multiple rows or columns, type an integer before R or C, e.g. /I3C. The designated number of rows or columns will be inserted, and references will be adjusted.

You can also insert multiple rows or columns by designating a range. The cell in which the cursor lies is defined as the beginning of the range. Define the end of the range by typing a period and pointing to or typing the coordinates of a cell in the same row or column as the cursor. The range must be defined horizontally or vertically. The /I command does not accept diagonal coordinates. Complete the command with RETURN or colon.

KEYSTROKE MEMORY (/K)
Keystroke memory allows you to save a sequence of up to 123 keystrokes, which can then be recalled by typing as few as three.

/KE Edit.	Edits a keystroke sequence.
/K= Equals.	Creates keystroke sequence. Some special characters are required. (See HELP frame on /K=)
/KC Clear.	Clears all keystroke sequences from memory.
/K RETURN.	Reviews the keystroke sequences currently in memory. To scroll to the next sequence, press the right arrow key.

CTRL-K= is similar to /K=, but differs in that the keystroke sequence is carried out as it is created. No special characters are needed. CTRL-K can be pressed at any time to begin collecting a keystroke sequence.

CREATING & EDITING KS SEQUENCES (/K=, /KE)
Sequences may be created, without carrying them out by using /K=. The VisiCalc
program prompts for a sequence name (a letter from A-Z). After naming the
sequence, you type the desired keystrokes, and complete the sequence by typing
RETURN. The sequence has been created and is available (see CTRL-K). The length
of the sequence is limited to 123 characters.

When creating a sequence with /K=, you must use the following special characters
to represent the single keystrokes indicated:
- ^^ caret (^)
- ^U up arrow
- ^D down arrow
- ^< left arrow
- ^> right arrow
- ^B Delete
- ^C Break
- ^E Edit
- ^K to chain sequences together
- ^P Pause (The prompt following the pause must be ended with :)
- ^R Return
- ^TF Tab
- ^TB Back tab
- ^? Help

To edit a sequence, type /KE. The VisiCalc program prompts for the sequence
name. Editing is the same as with /E, i.e. moving through the sequence with
arrow keys, etc. The special characters listed above must be used to add those
functions. RETURN completes the editing command.

CLEARING KS SEQUENCES (/KC)
KC is used to clear or delete all current sequences. The VisiCalc program
prompts you to type Y to confirm that you indeed want to clear all sequences in
memory.

To clear or delete individual sequences, you can type:
     /K=XY RETURN, where X is the name of the sequence
     /KEX then delete each character in the sequence, until the entire sequence
has been deleted; then press RETURN.

CREATE OR CARRY OUT KS SEQUENCES WITH CTRL-K
CTRL-K can be used to create and carry out a sequence. Type CTRL-K=; a K will
appear in the upper-right corner of the screen (next to the indicator for Row or
Column recalculation), indicating that you are defining a keystroke sequence.
The VisiCalc program prompts you for a sequence name. Enter a one letter name
(A-Z). Then enter the keystrokes as you would while executing functions and
cursor moves on the VisiCalc worksheet. No special characters are needed.
Complete the sequence by typing CTRL-K. This method creates the sequence, names
it, and carries it out as the keystrokes are typed.

To carry out a sequence that has already been created, type CTRL-Kx, where x is
the name of the sequence. A K will appear in the upper-right hand corner of the
screen indicating that a keystroke sequence is being carried out.
To carry out a sequence multiple times, type CTRL-Knx, where n is an integer and
x is the name of the sequence. For example, CTRL-K3A carries out the sequence A
three times.

SCROLLING THROUGH KS SEQUENCES
You can view or scroll through keystroke sequences you have created by typing
/K, then press RETURN. The first sequence appears on the edit line. Press the

right arrow-key to display the other sequences, which are displayed in the order
in which they were created.

MOVING ROWS OR COLUMNS (/M)
The Move command (/M) allows you to move entire rows or columns from one part
of the worksheet to another. All value references are automatically adjusted to
reflect the new position on the sheet.
To move one or more rows or columns, place the cursor on the row or column you
wish to move and type /M

PRINT (/P)
The print command lets you send a VisiCalc sheet to a printer or disk. Sheets
sent to a disk (/PF) are saved as text files and may be read by a BASIC or
Pascal program. The VisiCalc program also allows you to format the page to be
printed.

/PF	Prints the file to disk.
/PP	Sends the designated part of the sheet to the printer.
/PS	Sets printer settings for report formatting. See Topics for more information on printer settings.

Position the cursor at the upper-left corner of the rectangle of entries you
wish to output and type /P.

- To send a worksheet to a printer:
  1. Type P (i.e. /PP).
  2. The VisiCalc program then prompts with two printer options:
     A: Lower right - move the cursor to (or type the coordinates of) the
lower right corner of the rectangle of entries to be printed, press RETURN, and
printing will begin.
     B: "SETUP to send a special sequence of alphanumeric, control or escape
characters to setup the printer, e.g., for character width, type ", then type
the setup string and press RETURN to send to the printer. Non-printable
characters may be inserted into the setup string by typing:
     ^C char produces CTRL-char;
     ^E produces an escape character;
     ^Hnn produces the single ASCII character defined by hex number nn;
     ^R produces a Carriage Return character;
     ^L produces a Linefeed character;
     ^^ produces a ^.

- To send a sheet to a file on disk:
  1. Type F (i.e. /PF). VisiCalc prompts for the file name.
  2. Type the name followed by RETURN. (See also Topics: Storage)
  3. Move the cursor to (or type the coordinates of) the lower right corner of
the rectangle of entries to be printed, and press RETURN.

Files printed to disk cannot be loaded with the /SL command. Printing to disk
is used primarily to allow other programs to access the file. (See Topics:
Storing DIF Files, i.e. /S#S or /S#L).

Note: The screen may be overwritten by the printer controller. It is returned
to normal when the /P command is finished.

You may stop printing at any time by pressing CTRL-C.

OUTPUT TO A PRINTER (/PP)
The /PP command lets you output a VisiCalc sheet to a printer.

  1. Type /PP.
  2. The VisiCalc program then prompts for two printer options:

Lower Right Move the cursor to (or type the coordinates of) the lower-right corner of the rectangle of entries to be printed. Press RETURN, and printing will begin.

"Setup To output a special sequence of alphanumeric, control or escape characters to setup the printer, e.g., for character width, type ", then type the setup string and press RETURN to send the string to the printer.
Non-printable characters may be inserted into the setup string by typing:
- ^C char produces CTRL-char;
- ^E produces an ESC character;
- ^Hnn produces the single ASCII character defined by hex number nn;
- ^R produces a Carriage Return character;
- ^L produces a Linefeed character;
- ^^ produces a ^.

Printing to a printer does not save the file on disk. You should remember to save the file (/SS) if you plan to use it again. Otherwise, the only record you will have of a worksheet is what you have printed using /PP.

PRINTER SETTINGS (/PS)
PS commands control the settings for printer output.

/PS RETURN.	Allows you to scroll through current printer settings by pressing the right-arrow key.
/PSL Linefeed.	Sends carriage return and linefeed (Y), or carriage return only (N).
/PSB Break.	Breaks the printed page into pages. You are prompted for a Yes or No (Y,N).
/PST Titles.	Prints the sheet with titles or without (Y,N).
/PS# Number.	Numbers the pages (Y,N).
/PSP Page length.	Sets the number of printed lines on the page, from 0 to 253 lines.
/PSW Width.	Sets the width of the page, from 0 to 255 characters.
/PSF Form.	Sets the length of the form or paper, from 0 to 253 lines.
/PSM Margin.	Sets the width of the left margin, from 0 to 255 characters.
/PSS Setup string.	Allows you to edit the setup string saved with the sheet.
/PSR Replace.	Replaces the current setup string saved with the sheet.

REVIEWING PRINTER SETTINGS (/PS RETURN)
/PS followed by RETURN allows you to scroll through the current printer settings. Press the right arrow key to view subsequent settings.

You can edit the printer settings as you scroll by typing the new settings. Or you can type /PS and the appropriate setting option. To edit the setup string, use CTRL-E and normal editing sequences. For more information, see Topics: Printer Format Settings (/PS).

PRINTER SETTINGS (/PS)
Certain printer settings require you to enter an integer for the argument.

  1. Page length (/PSP) - type an integer to indicate the number of lines you want to print on each page. This number must be less than or equal to the setting for Paper Length (see below). Complete this setting by pressing RETURN or colon.

2. Page width (/PSW) - type an integer to indicate the width in characters of the area to be printed. Complete this setting by pressing RETURN or colon.
3. Form length (/PSF) - type an integer to indicate the number of lines available per page on the paper or form you are using. This number must be equal to or larger than the page length. Complete this setting by pressing RETURN or colon.

PRINTER SETTINGS (/PS)
Certain printer settings require you to enter Y or N (yes or no) for the argument.

1. Break Into Pages (/PSB) - If you press Y, this setting allows you to segment your printed worksheet into pages, the length and width of which are determined by other printer settings. If you press N, the worksheet is printed in a continuous format, limited only by the setting for the width of the printed area and the size of your paper. Pressing RETURN or colon completes this setting.

2. Print With Titles (/PST) - Enter N if you do not want titles to appear at the top of each page and/or at the beginning of each line. The titles that are printed are those you have set by the /T command. Pressing RETURN or colon completes this setting.

3. Number Pages (/PS#) - Enter Y if you want page numbers to appear at the bottom of each page printed. Page numbers are centered at the bottom of the page. Pressing RETURN or colon completes this setting.

4. Linefeed (/PSL) - This setting allows you to send a linefeed and carriage return to the printer (Y) or a carriage return only (N).

PRINTER SETTINGS (/PS)
As printer settings appear, you can change them by typing your new choice. Pressing RETURN or the right-arrow key completes the new setting. Use ESCAPE to erase typing errors. Use CTRL-E to modify the setup string.

REPLICATING A CELL OR RANGE (/R)
The Replicate command allows you to replicate a cell or range of cells to another part of the worksheet.
- (Limits what part of the cell (A for attributes only or C contents only) is replicated or whether expression references are all relative (R) or no change (N). RETURN or) completes this part of the command. Then continue by indicating the source range to be replicated and the target range where you want the copy to appear.
- Range   Indicates the source range of cells to be replicated. Both attributes and contents are replicated, unless specified otherwise by the (option. Type a period (.) and the coordinate of the end of the range. RETURN completes the source range. Indicate the target range by typing or pointing to the beginning and ending coordinates of the range where you want the copy or copies to appear. RETURN completes the command.
- RETURN   Indicates the source to be replicated is only the cell where the cursor lies. Both attributes and cell contents are replicated, unless specified otherwise by the (option. Indicate the target range by typing or pointing to the beginning and ending coordinates of the range where you want the copy or copies to appear.

If the (option for relative (R) or no change (N) has not been set, the VisiCalc program prompts you for R or N for each cell reference that is being replicated.

A block of cells may be replicated by indicating the upper-left and lower-right cell coordinates for the source range.

Multiple copies of the source range can be made by indicating a target range longer than the source range. The VisiCalc program makes an integer number of copies. That is, the program makes complete copies of the source range, given the length of the target range. For example, if the source range is A1...A3, and the target range is B1...B4, VisiCalc will make 2 complete copies of the source with one copy in B1...B3, and the second copy in B4...B6.

Multiple copies of a row range can be made by indicating a column range for the target. Similarly, multiple copies of a column range can be made by indicating a row range for the target. For example, if the source range is A1...A3, and the target range is B1...D1, VisiCalc will make 3 copies of A1...A3. These copies will appear in B1...B3, C1...C3 and D1...D3. You can indicate multiple rows or columns by typing an integer before R or C. For example, to move 3 rows, type 3R. You can also indicate a range of rows or columns to be moved. The cell where the cursor lies is the beginning of the range; type a period (.) for the ellipsis. Then point to or type the coordinates of the end of the range, and press RETURN or colon.

To complete the command, point to or type the coordinates of the location where you wish the range of moved rows or columns to be inserted. The last coordinate in the range specified will always appear immediately to the left (if moving columns) or above (if moving rows) the target coordinate. Complete the command with RETURN or colon.

STORAGE (/S)
The Storage commands let you save, load, or delete your VisiCalc worksheets, or exit from the program.
Any Storage command may be cancelled by pressing CTRL-C.

/SS	Saves all entries, titles, window settings, keystroke sequences, printer settings, etc. in a file. Prompts for file name.
/SL	Loads the contents of the worksheet that were saved in a file. Prompts for file name. The /SL command does not clear the sheet currently on the screen before loading the specified file. If that is desired, use the /C command first.
/SD	Deletes the specified file from the diskette. Prompts for file name, then asks you to type Y to confirm that you do indeed want to delete the file named.
/SQ	Quits the VisiCalc program and returns to the operating system.
/S#S	Saves data in a DIF file. Saves a sheet or a rectangular portion of one. The upper left corner of the sheet saved is the position where the cursor lies when the command is given. Prompts for a file name, then requests the coordinate of the cell in the lower right. Specify the coordinate by either pointing to the cell with the cursor or typing its coordinate. Finally, it asks whether the data is to be saved by rows (R or RETURN) or by columns (C).
/S#L	Loads data from a DIF file. Prompts for a file name, then asks whether the data is to be loaded by rows (R or RETURN) or by columns (C). When DIF files are loaded the cursor is not repositioned. The position of the cursor at the time the DIF file loads determines the location of the upper left of the file.
/SC	Creates subdirectory. Allows you to create a subdirectory in a directory of files.

DELETE FILE (/SD)
The Storage command to delete a file (/SD) allows you to name the file you want to erase. The program prompts for a file name. The program asks you to type Y to confirm that you indeed want to delete the file.

There is no way to retrieve a file that has been deleted from a diskette. The space from which the file has been deleted is now available to save other files.

QUIT FROM VISICALC (/SQ)
The Storage command to quit VisiCalc (/SQ) is the command used to terminate a VisiCalc session. VisiCalc prompts you to type Y to confirm that you indeed want to exit from the program. At this point, you can insert a system diskette and load the program.
If you are finished using VisiCalc and do not wish to load another program, you can just turn off the machine. You do not need any special command to exit from VisiCalc in that case.

DIRECTORY SCROLLING
When saving or loading files (see Storage Commands), you can scroll through the directory of file names already stored on your disk. After giving the storage command, for example /SL, press the right arrow key. The name of the first file on the disk will appear on the edit line. Using the arrow keys, continue to scroll through the file names on the disk.
When the name of the file you are seeking appears on the edit line, press RETURN and the file is selected. If you are saving a file, and have found the file name by scrolling through the directory, VisiCalc will prompt you to type Y to confirm that you want this new file to replace the existing one.

STORING DIF FILES (/S#)
IF files are data files that you can use to exchange data between the VisiCalc program and other programs. Only the data (actual values) are stored in DIF files, not the expressions that yield the data. For further information on the DIF format, refer to the DIF Appendix in your user's manual.

/S#S	Saves data in a DIF file. The program prompts for a filename. Next, it prompts for the coordinate of the cell that is the lower right of a rectangle of entries to be saved. Point the cursor or type the coordinate, then press RETURN. Finally, it asks whether the data is to be saved by rows (R or RETURN) or by columns (C).
/S#L	Loads a DIF file. The program prompts for a file name, and whether the data is to be loaded by rows (R or RETURN) or by columns (C).

FILE EXISTS
When you save a file with /SS or /S#S, using a file name that already exists on the same disk, the program will prompt you to type Y to replace the old file with the new file. Once you have written the new file in place of the old one, the old file no longer exists.

CREATING SUBDIRECTORIES (/SC)
The /SC command allows you to create subdirectories on the disk. Thus, you can create hierarchies of files. Subdirectory names end with a slash (/). Once you have indicated a subdirectory in the storage command, it becomes the default. You can always access files in other subdirectories by specifying the full pathname of the file.

To create a new subdirectory, type /SC, the drive designation, and the new subdirectory name. Then press RETURN. For example, /SC .d1/subdir1 RETURN.

You can also edit subdirectory names using CTRL-E. Type /SC and scroll the subdirectory name you want to edit. Type CTRL-E and press ESCAPE to back up and erase one character at a time. Then type in any new characters for the subdirectory name and press RETURN.

You can scroll through subdirectories using the arrow keys. After typing /SC, pressing the right-arrow key causes the next subdirectory name to appear on the edit line. Pressing the left-arrow key displays the previous subdirectory name. Pressing the up-arrow key backs up the edit cue to the previous slash (/) and deletes all the characters up to that point.

To delete a subdirectory, you must first delete all files in the subdirectory using /SD. You cannot delete the subdirectory itself from within VisiCalc. You must use the SOS DELETE command. See your owner's manual for further information about SOS commands.

TITLE (/T)
The Title command sets title areas so that you can scroll the worksheet, but keep the title area stationary. Titles may be set horizontally (/TH), vertically (/TV) or in both directions (/TB). /TN resets the window to have no title areas set.

The position of the cursor when the title command is given determines the setting of the title area, which always includes the row or column in which the cursor lies. Horizontal titles are set in those rows in and above the one containing the cursor; vertical titles are set in and to the left of the one containing the cursor.

The cursor cannot be moved into the title area by using the arrow keys. The machine thuds when the cursor runs into a title area, as it does when you run into a border. If you want to move into a title area, use the GO TO command (>). However, you can use the arrow keys to move the cursor out of a title area.

VERSION NUMBER (/V)
The copyright notice and version number are displayed when:

   1. The VisiCalc program is first loaded.
   2. The screen is cleared, using the /C command.
   3. /V has been pressed.

The copyright notice and version number for your VisiCalc diskette appears in all of the above circumstances. The notice disappears from the screen as soon as you press any key.

When reporting problems to your dealer or to VisiCorp, make sure you include the version number of your diskette.

WINDOW (/W)
The Window control splits the screen horizontally (/WH) or vertically (/WV) into two windows at the cursor position. To return the screen to one window, use /W1. You can scroll two windows together, or synchronized, with (/WS), or you can scroll them separately, or unsynchronized, with (/WU).

If the screen is split, most global commands apply only to the window in which the cursor lies when /G is used. When you return to one window, the global settings of the window where the cursor lies when /W1 is typed will be the settings for the screen.

When the screen is split, use the semicolon (;) to move the cursor from one window to the other.

REPEATING LABEL (/-)
The Repeating Label command (/-) allows you to indicate a character or series of characters to be repeated, filling the cell. The characters typed after /- are the characters repeated.
As you change the width of the column where this label lies, the number of characters will change to accommodate the width. Thus, if you widen the column,

the repeating label automatically fills the new space. Similarly, if you narrow the column, the label will adjust to fit the space.
This feature is useful for drawing a line across your worksheet or creating a border. See also Label Attributes (/ALF) and Formats (/F-).

@ FUNCTIONS
The VisiCalc program has a variety of built in functions that help you to set up sheets more quickly and efficiently. There are six groups of functions:

MATH FUNCTIONS

@SUM	@AVERAGE	@ABS	@LN	@ROUND
@MIN	@NA	@PI	@LOG10	
@MAX	@ERROR	@MOD	@EXP	
@COUNT	@SQRT	@INT	@DOTPROD	

FINANCIAL FUNCTIONS

@NPV	@RATE	@PERIODS	
@IRR	@PMT	@PV	@FV

LOGICAL FUNCTIONS

@TRUE	@FALSE	
@AND	@OR	@NOT
@IF	@ISNA	@ISERROR

TRIGONOMETRIC FUNCTIONS

@SIN	@COS	@TAN	@PI
@ASIN	@ACOS	@ATAN	

DATE AND TIME FUNCTIONS

@MDY	@VMDY	@MONTH	@DAY
@YEAR	@HMS		
@HOUR	@MINUTE	@SECOND	

CHOOSING AND LABEL FUNCTIONS

@CHOOSE	@LCHOOSE	@LOOKUP
@VALUE	@LABEL	

Please refer to the appropriate HELP frame for more information on each set of functions.

MATH FUNCTIONS
Math Functions include:

@SUM(list)	Calculates the sum of the values in a list.
@MIN(list)	Selects the minimum value in a list.
@MAX(list)	Selects the maximum value in a list.
@COUNT(list)	Calculates the number of non-blank entries in a list. The maximum number of entries in a list is 255.
@AVERAGE(list)	Calculates the average of the non-blank entries in a list. The maximum number of entries in a list is 255.
@NA	Results in "Not Available" value that makes all expressions using the value display as NA.
@ERROR	Results in an "Error" value that makes all expressions using the value display as ERROR.
@SQRT(v)	Results in the square root of v.
@ABS(v)	Results in the absolute value of v.
@PI	Results in 3.1415926536.
@MOD(v,m)	Results in value v modulo m. The sign associated

	with the result will match the sign of m.
@INT(v)	Results in the integer portion of v.
@LN(v)	Results in natural log (base e) of v.
@LOG10(v)	Results in logarithm (base 10) of v.
@EXP(v)	Results in e (2.71828...) to the power of v.
@DOTPROD(range1, range2)	Results in a value which is the the sum of each item in range1 multiplied by the corresponding value in range2. The number of entries in the two ranges must be the same.
@ROUND(v1, v2)	Results in value v1 rounded to the precision indicated by v2. Negative numbers are accepted for v2 to indicate rounding of numbers to hundreds, thousands, etc. If v2 is 0, v1 is rounded to the nearest integer. If v2 is not entered as an argument, the ROUND function will assume v2 is 0.

FINANCIAL FUNCTIONS

Financial Functions include the functions listed below. These functions observe a sign convention for the cash flow arguments. Money paid out has a negative sign. Money taken in has a positive sign. For example, income is positive and loan payments are negative. To compute the correct result, you need to enter the arguments according to this convention. VisiCalc will not change the signs for you automatically.

@NPV(i,range)	Calculates the net present value of the cash flows in range, discounted at the rate specified by i (i must be in decimal form, e.g. .18). The cash flows in the range do not include the cash flow at time 0.
@IRR(v,range)	Returns the interest rate for which the discounted cash flows in the range equals the cash flow v at time 0. In other words, @IRR returns a rate for which the NPV of the cash flows is 0.
@RATE(n,pmt,pv,fv)	Returns the interest rate given the number of periods (n), payment (pmt), present value of the sum (pv) or future value of the sum (fv). You must enter n and at least two additional arguments. You can enter all arguments. @NA specifies the argument not entered, for example, @RATE(12, -100, 1000, @NA).
@PMT(i,n,pv,fv)	Returns the payment necessary to comply with the parameters given. You must enter interest rate (i) in decimal form, and the number of periods (n). You must also enter either the present value (pv) or future value (fv). You can enter all arguments. @NA specifies the argument not entered, for example, @PMT(.12, 120, -1000, @NA).
@PERIODS(i, pmt, pv, fv)	Returns the number of periods necessary to comply with the parameters given. You must enter interest rate (i) in decimal form, and at least two additional arguments. You can enter all arguments. @NA specifies the argument not entered, e.g. @PERIODS(.18, 100, @NA, -1000).
@PV(i, n, pmt, fv)	Returns the present value of a future sum of money (fv) or of an annuity (pmt) given the parameters specified. You must enter the interest rate (i) in decimal form, and the number of periods (n). You must also specify either the payment or the future value. @NA specifies the

	argument not entered, e.g. @PV(.18, 25, @NA, 1000).
@FV(i, n, pmt, pv)	Returns the future value of a sum of money (pv) or of an annuity (pmt) given the parameters specified. You must enter the interest rate (i) in decimal form and the number of periods (n). You must also specify either the payment (pmt) or the present value (pv). You can enter all arguments. @NA specifies the argument not entered, for example, @FV(.18, 25, -100, @NA).

LOGICAL FUNCTIONS AND OPERATORS

The Logical Operators:

    <, >, =, <=, >=, <>

    Compare two numeric values giving the logical value TRUE or FALSE.

Logical Functions:

@TRUE	Results in the logical value TRUE.
@FALSE	Results in the logical value FALSE.
@AND(list)	Results in the logical value TRUE if ALL statements are true, and FALSE if ANY statement is false.
@OR(list)	Results in the logical value TRUE if ANY argument is true, and FALSE if ALL arguments are false.
@IF(logical value, v1, v2)	Results in value v1 if the logical value is TRUE; otherwise, results in value v2.
@NOT(logical value)	Results in the logical value TRUE if the statement is false, and FALSE if the statement is true.
@ISNA(v)	Results in TRUE if value v is NA; otherwise results in FALSE.
@ISERROR(v)	Results in TRUE if value v is ERROR; otherwise results in FALSE.

TRIGONOMETRIC FUNCTIONS

Calculates the appropriate function; trigonometric calculations are done in radians.

    @SIN(v)   @COS(v)   @TAN(v)   @PI
    @ASIN(v)   @ACOS(v)   @ATAN(v)

DATE AND TIME FUNCTIONS

Date Functions:

You can specify dates and perform date arithmetic using the calendar functions. The base date for the calendar functions is January 1, 1979, a Monday. In all date calculations the base date is day 0.

@MDY(v1, v2, v3)	Returns the number of days between the base date and the date specified by the month v1, day v2 and year v3. @MDY(1,2,1979) returns 1.
@VMDY(v1, v2, v3)	Similar to @MDY but accepts only valid dates. For example, @VMDY(2,29,1979) returns ERROR, because 1979 was not a leap year.
@YEAR(v)	Returns the year portion of a date represented by the number of days v, since the base date.
@MONTH(v)	Returns the month portion in numerical format (i.e. 1-12) of a date represented by the number of days v, since the base date.

@DAY(v)	Returns the day portion of a date represented by the number of days v, since the base date. To find the day of the week, use @MOD(@MDY(v1, v2, v3),7) which returns a value between 0 and 6, corresponding to the day of the week, Monday to Sunday.

Time Functions:

@HMS(v1, v2, v3)	Returns the fraction of the day corresponding to the hours v1, minutes v2 and seconds v3 specified. Hours are entered based on a 24 hour day, e.g. 1:00PM = 13. If seconds are not entered, they are assumed to be 0. For example, @HMS(11, 60) = .5.
@HOUR(v)	Returns the hour within the day (modulo 24) specified by the fractional portion of v.
@MINUTE(v)	Returns the minute within the day specified by the fractional portion of v.
@SECOND(v)	Returns the seconds within the day specified by the fractional portion of v.

CHOOSING AND LABEL FUNCTIONS
Choosing and Label Functions include:

@CHOOSE(n, list)	Returns the nth value in the list.
@LCHOOSE(n, range)	Returns the contents of the nth cell in the range.
@LABEL(expression)	Returns a label if the expression is evaluated to a label; otherwise, the value of the expression is displayed.
@VALUE(expression)	Returns the value of what is displayed in the cell. If the cell contains a label, 0 is returned.
@LOOKUP(v, range)	Compares the value v to the values of successive entries in range and selects a corresponding value from the column or row immediately to the right or below the entries in the range. Values in the range must be in ascending order. The value returned corresponds to the last entry in the range that is less than or equal to v, before any greater v is found. @NA is returned if the first entry in range is greater than v.

USE OF ARROW KEYS
Arrows may be used to point to cells for value references or to end a command and move to the next cell.

When you use /I, /D, /M, or /R or are entering an arithmetic expression, you may use the arrow keys to move around the worksheet. As the cursor moves, VisiCalc displays the cell coordinates on the edit line, automatically changing them as the cursor changes position.

To enter an arithmetic expression, press RETURN or colon if you have completed
the expression. If the expression is not complete, continue by typing an
operator (+, -, *, /, ^).

When entering a range:
1. If you have just typed or pointed to the beginning of a range, type
    an ellipsis (you need only to type a period, the program fills in the
    other periods to create the ellipsis). You are now ready to type or
    point to the coordinate that ends the range.
2. If you have just pointed to the end of the range, press RETURN, or
    colon (:), to enter the information.

COLUMN/ROW RANGES
In the Delete, Insert or Move commands, use the arrow keys or type the cell
coordinates to indicate the range of columns, rows, or cells that you wish to be
acted on. For information on the operation of the current command, please refer
to the HELP frame for that command (see Delete, Insert or Move).
You may enter:
- the letter R to indicate one row;
- the letter C to indicate one column;
- a number followed by R or C, indicating a number of rows or columns.
- a range of cells, e.g. A1...A8.
After you have entered the range, type RETURN.

ERROR - I/O
The error message ERROR - I/O indicates that the VisiCalc program is unable to
process your commands because of some limitation in one of your input/output
devices, such as a disk drive or a printer.
Typical situations causing this error message to appear are:

1. There is no disk in the drive.
2. Trying to save (/SS, /S#S, /PF) when the disk is full.
3. The printer is not connected or is turned off, or the printer driver
    is missing, or does not have the name specified.
4. Trying to save, load or print with an incorrect device name.

INVOICE2.VC	INVOICE3.VC
`>L28:/F-"-`	`>L28:/F-"-`
`>L23:+G23-H23`	`>L23:+G23-H23`
`>L22:+G22-H22`	`>L22:+G22-H22`
`>L21:+G21-H21`	`>L21:+G21-H21`
`>L20:+G20-H20`	`>L20:+G20-H20`
`>L19:/F-"-`	`>L19:/F-"-`
`>L18:/FR"Ordered`	`>L18:/FR"Ordered`
`>L17:/FR"Back`	`>L17:/FR"Back`
`>L16:/F-"=`	`>L16:/F-"=`
`>L15:/FL200`	`>L15:/ADY M#: TY: L<: V<G::200`
`>L14:/F-"-`	`>L14:/F-"-`
`>L9:/F-"-`	`>L9:/F-"-`
`>L5:/FR"10/16/83`	`>L5:/ADY ML: TY: L>: VG::"10/16/83`
`>L3:123`	`>L3:/ADY M#: TY::201`
`>K36:/F$+K33-K34`	`>K36:/F$+K33-K34`
`>K35:/F-"=`	`>K35:/F-"=`
`>K33:/F$@SUM(K29...K32)`	`>K33:/F$@SUM(K29...K32)`
`>K32:/F-"-`	`>K32:/F-"-`
`>K31:/F$@IF(J15>0,0,B15*.07)`	`>K31:/F$@IF(J15>0,0,B15*.07)`
`>K30:/F$@MAX(B16*K29,B17)`	`>K30:/F$@MAX(B16*K29,B17)`
`>K29:/F$@SUM(K20...K28)`	`>K29:/F$@SUM(K20...K28)`
`>K28:/F-"-`	`>K28:/F-"-`
`>K23:/F$+J23*H23`	`>K23:/F$+J23*H23`
`>K22:/F$+J22*H22`	`>K22:/F$+J22*H22`
`>K21:/F$+J21*H21`	`>K21:/F$+J21*H21`
`>K20:/F$+J20*H20`	`>K20:/F$+J20*H20`
`>K19:/F-"-`	`>K19:/F-"-`
`>K18:/FR"Price`	`>K18:/FR"Price`
`>K17:/FR"Total`	`>K17:/FR"Total`
`>K16:/F-"=`	`>K16:/F-"=`
`>K15:"Cust. #:`	`>K15:"Cust. #:`
`>K14:/F-"-`	`>K14:/F-"-`
`>K9:/F-"-`	`>K9:/F-"-`
`>K5:/FR"Date:`	`>K5:/FR"Date:`
`>K3:/FR"No:`	`>K3:/FR"No:`
`>J36:"Amt. Due`	`>J36:"Amt. Due`
`>J35:/F-"=`	`>J35:/F-"=`
`>J34:"Amt. Rcv.`	`>J34:"Amt. Rcv.`
`>J33:"Total`	`>J33:"Total`
`>J32:/F-"-`	`>J32:/F-"-`
`>J31:"Tax`	`>J31:"Tax`
`>J30:"Shipping`	`>J30:"Shipping`
`>J29:"Subtotal`	`>J29:"Subtotal`
`>J28:/F-"-`	`>J28:/F-"-`
`>J23:/F$+I23-(I23*(@LOOKUP(G23,C3...C10)/100))`	`>J23:/F$+I23-(I23*(@LOOKUP(G23,C3...C10)/100))`
`>J22:/F$+I22-(I22*(@LOOKUP(G22,C3...C10)/100))`	`>J22:/F$+I22-(I22*(@LOOKUP(G22,C3...C10)/100))`
`>J21:/F$+I21-(I21*(@LOOKUP(G21,C3...C10)/100))`	`>J21:/F$+I21-(I21*(@LOOKUP(G21,C3...C10)/100))`
`>J20:/F$+I20-(I20*(@LOOKUP(G20,C3...C10)/100))`	`>J20:/F$+I20-(I20*(@LOOKUP(G20,C3...C10)/100))`
`>J19:/F-"-`	`>J19:/F-"-`
`>J18:/FR"Price`	`>J18:/FR"Price`
`>J17:/FR"Disc.`	`>J17:/FR"Disc.`
`>J16:/F-"=`	`>J16:/F-"=`
`>J15:/FL1234567`	`>J15:/ADY M#: TY: L<: V<G::1234567`
`>J14:/F-"-`	`>J14:/F-"-`
`>J10:"SAME`	`>J10:/ADY ML: TY::"SAME`
`>J9:/F-"-`	`>J9:/F-"-`
`>J8:"Ship to:`	`>J8:"Ship to:`
`>J4:"enue`	`>J4:"enue`
`>J3:"upply`	`>J3:"upply`
`>I28:/F-"-`	`>I28:/F-"-`
`>I23:/F$@LOOKUP(E23,A4...A7)`	`>I23:/F$@LOOKUP(E23,A4...A7)`
`>I22:/F$@LOOKUP(E22,A4...A7)`	`>I22:/F$@LOOKUP(E22,A4...A7)`
`>I21:/F$@LOOKUP(E21,A4...A7)`	`>I21:/F$@LOOKUP(E21,A4...A7)`
`>I20:/F$@LOOKUP(E20,A4...A7)`	`>I20:/F$@LOOKUP(E20,A4...A7)`
`>I19:/F-"-`	`>I19:/F-"-`
`>I18:/FR"Price`	`>I18:/FR"Price`
`>I17:/FR"Retail`	`>I17:/FR"Retail`
`>I16:/F-"=`	`>I16:/F-"=`
`>I15:"Resale #:`	`>I15:"Resale #:`
`>I14:/F-"-`	`>I14:/F-"-`
`>I5:" CO 80513`	`>I5:" CO 80513`
`>I4:"untain Av`	`>I4:"untain Av`
`>I3:"ardware S`	`>I3:"ardware S`
`>H28:/F-"-`	`>H28:/F-"-`

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>H23:/FL50                          >H23:/ADY M#: TY: L<: V<G::50
>H22:/FL100                         >H22:/ADY M#: TY: L<: V<G::100
>H21:/FL36                          >H21:/ADY M#: TY: L<: V<G::36
>H20:/FL10                          >H20:/ADY M#: TY: L<: V<G::10
>H19:/F-"-                          >H19:/F-"-
>H18:"Shipped                       >H18:"Shipped
>H17:"Quantity                      >H17:"Quantity
>H16:/F-"=                          >H16:/F-"=
>H15:"Truck                         >H15:/ADY ML: TY::"Truck
>H14:/F-"-                          >H14:/F-"-
>H5:"Berthoud,                      >H5:"Berthoud,
>H4:"327 E. Mo                      >H4:"327 E. Mo
>H3:"Midwest H                      >H3:"Midwest H
>G28:/F-"-                          >G28:/F-"-
>G23:/FL50                          >G23:/ADY M#: TY: L<: V<G::50
>G22:/FL100                         >G22:/ADY M#: TY: L<: V<G::100
>G21:/FL36                          >G21:/ADY M#: TY: L<: V<G::36
>G20:/FL100                         >G20:/ADY M#: TY: L<: V<G::100
>G19:/F-"-                          >G19:/F-"-
>G18:"Ordered                       >G18:"Ordered
>G17:"Quantity                      >G17:"Quantity
>G16:/F-"=                          >G16:/F-"=
>G15:"Ship via:                     >G15:"Ship via:
>G14:/F-"-                          >G14:/F-"-
>G9:/F-"-                           >G9:/F-"-
>F28:/F-"-                          >F28:/F-"-
>F23:"Nails                         >F23:"Nails
>F22:"Hammer                        >F22:"Hammer
>F21:"Glue                          >F21:"Glue
>F20:"Gloves                        >F20:"Gloves
>F19:/F-"-                          >F19:/F-"-
>F18:"Desc.                         >F18:"Desc.
>F16:/F-"=                          >F16:/F-"=
>F15:"Net 30                        >F15:/ADY ML: TY::"Net 30
>F14:/F-"-                          >F14:/F-"-
>F12:" CO 80310                     >F12:" CO 80310
>F11:"ain                           >F11:"ain
>F10:"ply Co.                       >F10:/ADY ML: TY::"ply Co.
>F9:/F-"-                           >F9:/F-"-
>E28:/F-"-                          >E28:/F-"-
>E23:/FL21377                       >E23:/FL21377
>E22:/FL21329                       >E22:/FL21329
>E21:/FL20446                       >E21:/FL20446
>E20:/FL20416                       >E20:/FL20416
>E19:/F-"-                          >E19:/F-"-
>E18:"Number                        >E18:"Number
>E17:"Item                          >E17:"Item
>E16:/F-"=                          >E16:/F-"=
>E15:"Terms:                        >E15:"Terms:
>E14:/F-"-                          >E14:/F-"-
>E12:"Longmont,                     >E12:"Longmont,
>E11:"2025 S. M                     >E11:"2025 S. M
>E10:"Ranch Sup                     >E10:/ADY ML: TY::"Ranch Sup
>E9:/F-"-                           >E9:/F-"-
>E8:"Bill to:                       >E8:"Bill to:
>D10:/FL+D9+5                       >D12:/ADY HY::
>D9:/FL+D8+5                        >D11:/ADY HY::
>D8:/FL+D7+5                        >D10:/ADY HY::+D9+5
>D7:/FL+D6+5                        >D9:/ADY HY::+D8+5
>D6:/FL+D5+5                        >D8:/ADY HY::+D7+5
>D5:/FL+D4+5                        >D7:/ADY HY::+D6+5
>D4:/FL20                           >D6:/ADY HY::+D5+5
>D3:/FL0                            >D5:/ADY HY::+D4+5
>D2:/F-"-                           >D4:/ADY HY::20
>D1:"Percent                        >D3:/ADY HY::0
>C10:1000                           >D2:/ADY HY::"-
>C9:500                             >D1:/ADY HY::"Percent
>C8:100                             >C12:/ADY HY::
>C7:50                              >C11:/ADY HY::
>C6:25                              >C10:/ADY HY::1000
>C5:10                              >C9:/ADY HY::500
>C4:1                               >C8:/ADY HY::100
>C3:0                               >C7:/ADY HY::50
>C2:/F-"-                           >C6:/ADY HY::25
>C1:"Quantity                       >C5:/ADY HY::10
>B17:15                             >C4:/ADY HY::1
>B16:.05                            >C3:/ADY HY::0
>B15:.07                            >C2:/ADY HY::"-
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>B14:/F-"-                          >C1:/ADY HY::"Quantity
>B13:"hipping                       >B17:15
>B12:/F-"-                          >B16:.05
>B7:/F$.85                          >B15:.07
>B6:/F$7.75                         >B14:/F-"-
>B5:/F$3.35                         >B13:"hipping
>B4:/F$5.9                          >B12:/ADY HY::"-
>B3:/F-"-                           >B11:/ADY HY::
>B2:"Price                          >B10:/ADY HY::
>B1:"Retail                         >B9:/ADY HY::
>A17:"Min. Ship                     >B8:/ADY HY::
>A16:"Ship %                        >B7:/ADY HY::.85
>A15:"Sales tax                     >B6:/ADY HY::7.75
>A14:/F-"-                          >B5:/ADY HY::3.35
>A13:"Tax and S                     >B4:/ADY HY::5.9
>A12:/F-"-                          >B3:/ADY HY::"-
>A7:/FL21377                        >B2:/ADY HY::"Price
>A6:/FL21329                        >B1:/ADY HY::"Retail
>A5:/FL20446                        >A17:"Min. Ship
>A4:/FL20416                        >A16:"Ship %
>A3:/F-"-                           >A15:"Sales tax
>A2:"Number                         >A14:/F-"-
>A1:"Item                           >A13:"Tax and S
/W1                                 >A12:/ADY HY::"-
/GOC                                >A11:/ADY HY::
/GRA                                >A10:/ADY HY::
/GC9                                >A9:/ADY HY::
/X>E1:>E1:                          >A8:/ADY HY::
/PSLY                               >A7:/ADY HY::21377
/PSBY                               >A6:/ADY HY::21329
/PSTY                               >A5:/ADY HY::20446
/PS#Y                               >A4:/ADY HY::20416
/PSP55                              >A3:/ADY HY::"-
/PSW70                              >A2:/ADY HY::"Number
/PSF66                              >A1:/ADY HY::"Item
/PSM0                               /W1
/PSR                                /GOC
                                    /GRA
                                    /GADY MP:
                                    /GC9
                                    /X>E1:>E1:
                                    /PSLY
                                    /PSBY
                                    /PSTY
                                    /PS#Y
                                    /PSP55
                                    /PSW70
                                    /PSF66
                                    /PSM0
                                    /PSR
```