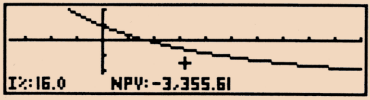
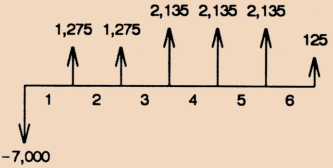
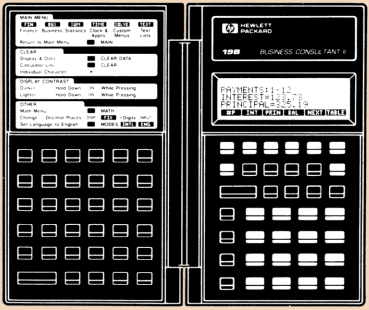
THE HP-19B POCKET BOOK







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List of Examples

Introduction

The HP-19B Pocket Book uses a standard convention for describing keystroke procedures. There are three classes of keystrokes:

[EXIT]	Primary keys are in a box
■[MAIN]	Shifted keys begin with ■
FIN	Menu keys have a shaded box

The display is represented as follows:

The top line is called *line 1*, the next line down as *line 2*, and the third line is *line 3*, or the *calculator line*, where calculations may be performed.

Lines 1 and 2 often show the results of previous calculations, and thus are called the *history stack*.

The bottom line contains *menu key* definitions: each box defines the action of the key just below it. A menu key can be either a menu selection or a menu variable.

Press ■[CLEAR] to clear the calculator line. Press ■[CLEAR DATA] to clear the history stack and menu variables.

The Calculator Line

The *calculator line* is used for arithmetic:

Keys:	Display:
■ CLEAR DATA	0.00
247 × 3 =	741.00
55 ÷ 6 =	9.17

A *chain calculation* uses the previous result:

Keys:	Display:
+ 4	9.17+4■
=	13.17

The previous answer (in line 2) may be used in a chain calculation by pressing ■ LAST:

Keys:	Display:
+ ■ LAST	13.17+741.00
=	754.17

To begin a chain calculation with a number on the history stack, press ↓ or ↑ until the number you want is on line 3.

Keys:	Display:
↓ + 83	741.00+83■
=	824.00

Calculating With Menus

All menu functions behave on the same principle – enter what you know, then ask for what you don't know. For a simple example, suppose you want to know the percentage difference between 36 and 45. Press ▮[MAIN] BUS %CHG to start the %CHG menu.

When you're starting a new problem, you may wish to clear the history stack and the menu variables by pressing ▮[CLEAR DATA]. Now you're ready to enter the numbers you know.

Enter the known numbers by typing the number and pressing the appropriate menu key. In this example, you know the OLD and NEW values, 36 and 45, so key in 36 OLD, then 45 NEW.

To solve for the number you don't know, just press its menu key. To calculate the percent change, press %CH.

The history stack (but not the calculator line) is cleared when you change menus.

Storage Registers

Storage registers 0 through 9 may be used to store and recall numbers. To store the rightmost number on the calculator line, press [STO] followed by any number from 0 through 9. To recall the number, press [RCL], then the register number.

Numbers can be stored or recalled during a chain calculation. Pressing 8 [+] 1 [STO] 2 [=] stores 1 in register 2 and displays the answer 9.00 in the calculator line. Pressing 5 [+] [RCL] 2 [=] adds 5 plus the contents of register 2 and displays the answer 6.00 in the calculator line.

You can do arithmetic on numbers in registers by pressing [STO] followed by a math operator:

Keys:	New Contents of Register *n*:
[STO] [+] *n*	Old number + displayed number
[STO] [−] *n*	Old number − displayed number
[STO] [×] *n*	Old number x displayed number
[STO] [÷] *n*	Old number ÷ displayed number
[STO] [y^x] *n*	Old number ^ displayed number

The [STO] and [RCL] functions also work with menu variables. [RCL] NEW recalls the contents of the variable NEW, and [STO] [+] OLD adds the displayed number to the variable OLD.

Modes

The Modes Menu

The MODES menu (■ MODES) controls most calculator modes and contains the language menu:

D/R	Switches between Degrees and Radians modes (Radians modes shows (2π) in the display)
BEEP	Switches between three choices: ON, APPTS ONLY, and OFF
PRNTR	Switches print speeds (faster when printer is connected to AC adapter)
INTL	Selects the language menu

Pressing EXIT returns you to the previous menu.

Finance and Date Modes

The Begin and End modes are selected in the ■ MAIN FIN TVM OTHER menu by pressing either BEG or END.

The date and clock modes are selected in the ■ MAIN TIME SET menu. Press M/D to switch between MM.DDYYYY and DD.MMYYYY modes. Press 12/24 to switch between 12- and 24-hour clock modes.

Printing

The HP-19B can produce printed output on an HP 82240 printer. Depending on the calculator state, pressing [PRNT] prints the following:

- The rightmost number in line 3
- All of line 3 when entering a message
- The current equation in the SOLVE menu
- A graphics display

The PRINTER menu (■[PRINTER]) contains these entries:

DISPL	Prints the first three display lines
LIST	Prints the current menu variables
REGS	Prints registers 0 through 9
TIME	Prints the current date and time
TRACE	Toggles the Trace mode

To print the entire display, hold down [ON], press [PRNT], and release them together. To print an amortization schedule, see *Amortization*. To print a histogram (or plot), press [PRNT] while the graph is displayed.

If the printer is connected to an AC adapter, the PRNTR key in the MODES menu may be used to speed up printing.

Percentage Calculations

Use [%] to add or subtract percentages:

Keys:	Display:
35 [+] 8 [%]	35.00+2.80
[=]	37.80
[−] 20 [%]	37.80−7.56
[=]	30.24

To calculate 65% of 124, use [×]:

Keys:	Display:
124 [×] 65 [%]	124.00×0.65
[=]	80.60

The BUS menu contains percentage menus:

%CHG Percent change using *old* and *new* values

%TOTL Percent of total using *total* and *part* values

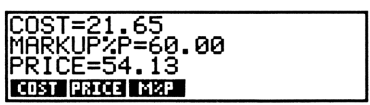
MU%C Markup as a percentage of cost using *cost* and *price* values

MU%P Markup as a percentage of price using *cost* and *price* values (sometimes referred to as margin on sales)

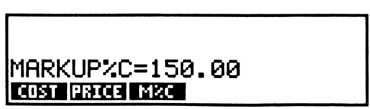
Suppose you want to know the markup as a percentage of price for a product with a cost of $21.65 and a selling price of $44.95. Press ■[MAIN] BUS MU%P to start the MU%P menu, and ■[CLEAR DATA] to clear the menu variables:

Keys:	**Display:**
21.65 COST	COST=21.65
44.95 PRICE	PRICE=44.95
M%P	MARKUP%P=51.84

To find the minimum price be to achieve a markup of 60%, press 60 M%P PRICE:



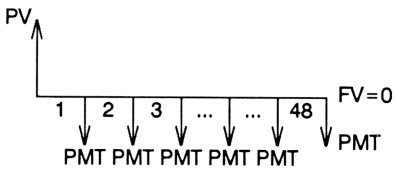
The variables COST and PRICE are shared between percentage menus. Continuing from the previous example, find the markup as a percent of cost by pressing [EXIT] MU%C M%C:



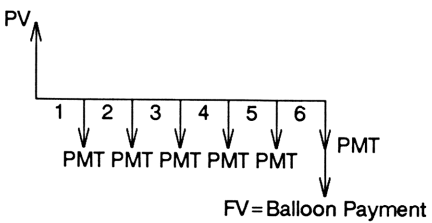
Cash Flow Diagrams

Time-Value-of-Money (TVM) calculations use a sign convention: money received is shown with a positive number, money paid out is shown with a negative number. In cash flow diagrams, money received shows an arrow pointing up, while money paid out shows an arrow pointing down.

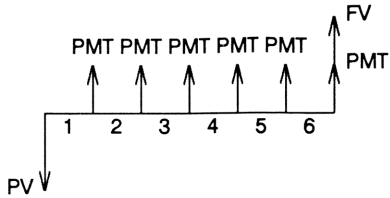
The following diagrams illustrate several common cash flow problems:



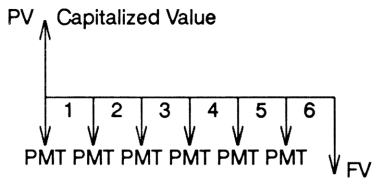
48-Month Automobile Loan



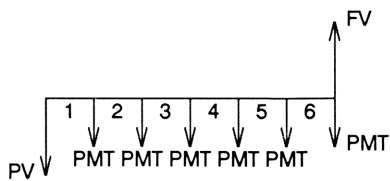
Loan With Balloon Payment



Loan From Lender's Point of View



Lease Payments at Beginning of Each Period



Deposits Into Account at End of Each Period Including an Initial Deposit

Time Value of Money (TVM)

The Time-Value-of-Money (TVM) menu (■ MAIN FIN TVM) is used for compound interest calculations where identical payments occur over regular periods which coincide with the compounding periods. In TVM calculations money received is displayed as a positive number; money paid out is displayed as a negative number (see also *Cash Flow Diagrams*).

The TVM menu entries store or calculate the following:

N	Number of periods N
I%YR	Annual interest I%YR as a percentage
PV	Present value
PMT	Payment amount
FV	Future value
	↓ OTHER EXIT ↑
P/YR	Stores the number of payments per year
BEG	Sets Begin mode: payments at the start of each period
END	Sets End mode: payments at the end of each period
AMRT	Displays the amortization menu

To begin a new TVM problem, press ■ CLEAR DATA. Set the number of payments per year and Begin or End mode as needed. To change the number of payments per year, key in the new value and press P/YR. Select the payment mode by pressing BEG or END.

To solve TVM problems, enter the values you know and solve for the unknown by pressing the appropriate key.

Auto Loan Example

The new 1989 Grande Chrome Deluxe sells for $26,780. The buyer has $8500 down. Calculate the payments on a 13% annual interest, four-year loan, starting in the TVM menu:

Keys:	Display:
■ CLEAR DATA	
OTHER	
■ CLEAR DATA	
EXIT	12 PMTS/YR: END MODE
4 × 12 N	N=48.00
13 I%YR	I%YR=13.00
26780 − 8500	26,780.00-8,500■
PV	PV=18,280.00
PMT	PMT=-490.41

Loan Amount From Payment

The monthly payment in the previous example is $490.41. Suppose the purchaser wants a $475 payment. To calculate the new loan amount, enter

the desired payment (remember the sign convention) into PMT, and press PV:

Keys:	Display:
475 +/-	-475
PMT	PMT=-475.00
PV	PV=17,705.72

The amount that can be borrowed is $17,705.72, so adding back the down payment ($8,500) shows that the seller would have to reduce the price to $26,205.72.

Auto Lease Example

Calculate the minimum payment on a four-year lease for a car valued at $21,650, using 13% annual interest and a residual value expected to be $12,250. To solve the problem, set Begin mode, enter the purchase option in FV, and solve for the payment:

Keys:	Display:
CLEAR DATA	
OTHER BEG	12 PMTS/YR: BEGIN MODE
EXIT	
48 N	N=48.00
21650 PV	PV=21,650.00
13 I%YR	I%YR=13.00
12250 +/-	-12,250
FV	FV=-12,250.00
PMT	PMT=-380.76

Savings Example

Open an account that pays 7.5% annual interest compounded monthly with an initial investment of $3500. Calculate the future value of the account five years from now if no other deposits are made, or if monthly deposits of $25 are made:

Keys:	Display:
■ CLEAR DATA	
OTHER END	
EXIT	12 PMTS/YR: END MODE
12 × 5 N	N=60.00
7.5 I%YR	I%YR=7.50
3500 +/- PV	PV=-3,500.00
FV	FV=5,086.53
25 +/- PMT	PMT=-25.00
FV	FV=6,899.71

Balloon Payments

Calculate the monthly payment on a 20-year loan of $136,000 at 11.25%, then the balance due after 10 years, using the TVM menu:

Keys:	Display:
■ CLEAR DATA	12 PMTS/YR: END MODE
20 × 12 N	N=240.00
11.25 I%YR	I%YR=11.25
136000 PV	PV=136,000.00
PMT	PMT=-1,426.99
10 × 12 N	N=120.00
FV	FV=-102,536.39

Fund With Regular Withdrawals

To finance a college education, you project withdrawals at the start of each quarter of $1,950 for four years. If the fund earns 8% compounded monthly and will be entirely depleted at the end of the four years, what should the initial balance be?

First convert the interest rate:

Keys:	Display:
■ MAIN	
FIN ICONV	
PER 12 P	P=12.00
8 NOM%	NOM%=8.00
EFF%	EFF%=8.30
4 P	P=4.00
NOM%	NOM%=8.05

Now use the adjusted rate to compute the initial balance (PV) of the fund:

Keys:	Display:
EXIT EXIT	
TVM	12 PMTS/YR: END MODE
STO I%YR	I%YR=8.05
OTHER	
4 P/YR	P/YR=4.00
BEG EXIT	4 PMTS/YR: BEGIN MODE
16 N	N=16.00
1950 +/- PMT	PMT=-1,950.00
0 FV	FV=0.00
PV	PV=26,981.03

Amortization

An amortization schedule may be calculated after a loan is specified in the TVM menu by pressing OTHER, then AMRT.

The AMRT menu keys offer the following options:

#P	Stores the number of periods to amortize and calculates the amortization schedule
INT	Displays the amount of the payments applied toward interest
PRIN	Displays the amount of the payments applied toward principal
BAL	Displays the loan balance
NEXT	Amortizes the next set of #P payments
TABLE	Prints an amortization table

Amortization Example

A four-year home equity loan of $15,000 at 11% annual interest has a monthly payment of $387.68. Starting in the TVM menu, calculate the interest and principal payment contributions for the first two years:

Keys:	Display:
■ CLEAR DATA	
OTHER	
■ CLEAR DATA	12 PMTS/YR: END MODE
EXIT 48 N	N=48.00
11 I%YR	I%YR=11.00
15000 PV	PV=15,000.00
387.68 +/-	-387.68■
PMT	PMT=-387.68
OTHER AMRT	
12 #P	PAYMENTS:1-12
	BALANCE=11,841.76
	INTEREST=-1,493.92
PRIN	PRINCIPAL=-3,158.24
NEXT	PAYMENTS:13-24
	BALANCE=8,318.05
	INTEREST=-1,128.45
PRIN	PRINCIPAL=-3,523.71

Printing An Amortization Table

To print an amortization table on an HP 82240 printer, prepare the loan values in the TVM menu, press OTHER AMRT. Enter the number of periods per table entry into #P, and press TABLE. Finally, key in the number of the last payment to print and press START.

For example, print an amortization table for the first two years of the previous example:

Keys:	Display:
■ MAIN	
FIN TVM	
■ CLEAR DATA	
OTHER	
■ CLEAR DATA	12 PMTS/YR: END MODE
EXIT	
4 × 12 N	N=48.00
11 I%YR	I%YR=11.00
15000 PV	PV=15,000.00
387.68 +/-	-387.68■
PMT	PMT=-387.68
OTHER AMRT	
12 #P	PAYMENTS:1-12
	BALANCE=11,841.76
	INTEREST=-1,493.92
TABLE	KEY IN LAST PMT TO
	PRINT; PRESS <START>
24 START	-1,493.92

```
I%YR=                    11.00
PV=                  15,000.00
PMT=                   -387.68
P/YR=                    12.00
END MODE

PAYMENTS:1 - 12
INTEREST=          -1,493.92
PRINCIPAL=         -3,158.24
BALANCE=           11,841.76

PAYMENTS:13 - 24
INTEREST=          -1,128.45
PRINCIPAL=         -3,523.71
BALANCE=            8,318.05
```

Interest Rate Conversions

The ICONV menu (▮ MAIN FIN ICONV) converts between nominal and effective interest rates. Press PER to select periodic compounding, or CONT for continuous compounding. These are the menu selections:

NOM%	Stores or calculates the *nominal* rate
EFF%	Stores or calculates the *effective* rate
P	Stores the no. of compounding periods

The variables NOM% and EFF% are shared between the two conversion menus. To convert between nominal and effective interest rates, store the number of compounding periods in P (periodic only), key in the interest rate you know, and solve for the other. For example:

Convert 7.25% annual interest, compounded continuously to the equivalent rate compounded quarterly, starting from the ICONV menu:

Keys:	**Display:**
CONT 7.25 NOM%	NOM%=7.25
EFF%	EFF%=7.52
EXIT PER 4 P	P=4.00
NOM%	NOM%=7.32

To use this calculated interest rate in TVM, press EXIT EXIT TVM STO I%YR.

Uneven Cash Flows

The CFLO menu (■[MAIN] FIN CFLO) operates on a *cash flow list*, which consists of an *initial cash flow* followed by a series of *grouped cash flows*. Cash flows obey the TVM sign convention: positive numbers show money received, negative numbers show money paid out.

The CFLO menu contains these entries:

CALC	Menu for TOTAL, IRR%, NPV, NUS, NFV
INSRT	Inserts a cash flow group into the list
DELET	Deletes a cash flow group from the list
NAME	Names the current list
GET	Changes to a new or existing list
PLOT	Plots graph of NPV vs. I%

To begin a new list, press GET *NEW. (You may need to clear or name the current list; press ■[CLEAR DATA], or press NAME, type a name, and press [INPUT].)

Enter the initial cash flow by keying in the value (use [+/−] if needed) and pressing [INPUT].

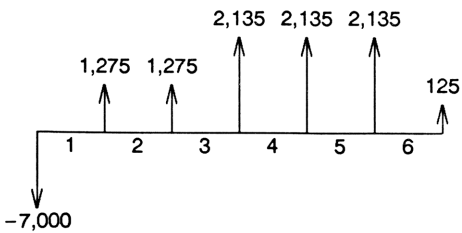
Each *cash flow group* consists of the value and number of consecutive occurrences:

Enter or change the value pointed to by ▶ by keying in the new value and pressing [INPUT]. Press [↑] or [↓] to move between cash flows, and [■][↑] or [■][↓] to move to the top or bottom of the list.

Insert a new cash flow group by pressing INSRT when positioned at the group below the desired new flow. Delete a group by pressing DELET. Press [RCL] [INPUT] to recall a flow to the calculator line.

Uneven Cash Flow Example

In this example the *initial flow* of $7,000 is paid out, followed by three *groups* of cash flow receipts: 2 at $1,275, 3 at $2,135, and 1 at $125:



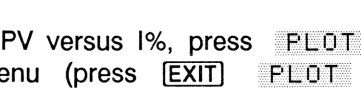
Starting at the CFLO menu, enter this series of cash flows as follows:

Keys:	Display:
GET *NEW	▶INIT=
7000 [+/-]	-7000
[INPUT]	▶FLOW(1)=
1275 [INPUT]	▶#TIMES=1
2 [INPUT]	▶FLOW(2)=
2135 [INPUT]	▶#TIMES=1
3 [INPUT]	▶FLOW(3)=
125 [INPUT]	▶#TIMES=1

Calculate the sum of the series, the IRR%, then NPV, NUS, and NFV at 7%:

Keys:	Display:
CALC TOTAL	TOTAL=2,080.00
IRR%	IRR%=8.34
7 I%	I%=7.00
NPV	NPV=282.32
NUS	NUS=59.23
NFV	NFV=423.68

To plot NPV versus I%, press PLOT from the CFLO menu (press [EXIT] PLOT after the previous example):



Press the arrow keys to move the cursor, [PRNT] to print the graph, and [EXIT] to return to the CFLO menu. The horizontal axis is always I% = −18% to 50%. The vertical axis is scaled automatically.

Bonds

The BOND menu (■ MAIN FIN BOND) performs the following bond calculations:

- The price of a bond
- The yield to maturity of a bond
- The yield to call on a coupon date
- Accrued interest

Values are expressed *per $100 face value* or as a *percentage*.

Upon entering the menu, the display shows the current bond type:

TYPE	Displays the bond type menu
SETT	Stores the settlement date
MAT	Stores the maturity date
CPN%	Stores the annual coupon rate
CALL	Stores the call price per $100 face value
	↑ MORE ↓
YLD%	Stores or calculates the yield to maturity
PRICE	Stores or calculates the price (per $100)
ACCRU	Calculates accrued interest (per $100)

Press ■ [CLEAR DATA] to clear the bond variables and set CALL=100. (Bonds held to maturity must have a call value of 100.)

Press TYPE to specify the bond type: 30/360 or actual/actual calendar, semi- or annual payments:

360	Sets the calendar to a 360 day year
A/A	Sets the calendar to the actual basis
SEMI	Sets semi-annual coupon payments
ANN	Sets annual coupon payments
[EXIT]	Returns to the BOND menu

Key in the purchase date in the current format (MM.DDYYYY or DD.MMYYYY– see *Modes*) and press SETT. Key in the maturity (or call) date and press MAT.

Key in the coupon rate as a percentage and press CPN%.

Press MORE to perform price/yield and accrued interest calculations.

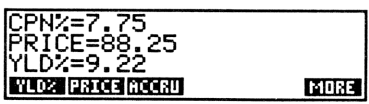
To calculate price, key in the yield and press YLD%, then press PRICE. To calculate yield, key in the price and press PRICE, then press YLD%.

Calculate accrued interest by pressing ACCRU. Add price and accrued interest to calculate the total amount owed the seller.

Bond Yield Example

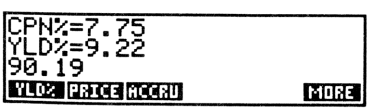
Calculate the yield of a 7 3/4% bond purchased 8/10/1987 maturing on 5/1/2002 if the quote is 88 1/4. Assume semi-annual payments and a 30/360 calendar.

Keys:	Display:
[MAIN]	
FIN BOND	
TYPE 360	
SEMI [EXIT]	30/360 SEMIANNUAL
[CLEAR DATA]	
8.101987 SETT	SETT=08/10/1987 MON
5.102002 MAT	MAT=05/01/2002 FRI
7.75 CPN%	CPN%=7.75
MORE	
88.25 PRICE	PRICE=88.25
YLD%	YLD%=9.22



Now add accrued interest to the price:

Keys:	Display:
[RCL] PRICE [+]	88.25+
ACCRU	88.25+1.94
[=]	90.19



The following is a partial list of bonds that can be solved with the BOND menu:

30/360 Bonds, Semi-Annual Coupon Payments

- State/Municipal/Local Government
  - Zero-coupon bonds
  - Tax supported bonds
  - Revenue, assessment, or special supported bonds
- Corporate bonds
- Certificates of deposit with periodic interest
- Inter-American Development Bank bonds
- World Bank Bonds
- Federal agency instruments
  - Commodity Credit Corporation (CCC) bonds
  - Export-Import Bank (Ex-Im) participation certificates
  - Federal Home Loan Bank (FHLB) bonds and notes
  - FICB debentures if coupon interest is paid periodically
  - Federal Land Bank (FLB) bonds
  - FNMA debentures
  - GNMA bonds and participation certificates
  - New Communities Act debentures
  - U.S. Postal Service bonds
  - Tennessee Valley Authority (TVA) bonds
  - Merchant Marine bonds

Actual/Actual, Semi-Annual Coupon Payments

- U.S. Treasury Bonds and Notes
- Federal agency instruments
  - Farmers Home Administration (FHDA) insured notes
  - Federal Housing Administration (FHA) debentures

Depreciation

The DEPRC menu (■ MAIN FIN DEPRC) calculates depreciation and remaining depreciable value (RDV) using *cost, salvage,* and *life* values. The following methods are available:

- Declining balance (DB)
- Sum-of-the-years'-digits (SOYD)
- Straight line (SL)
- Accelerated Cost Recovery System (ACRS)

BASIS Stores the depreciable-cost basis
SALV Stores the salvage value
LIFE Stores the useful life of the asset
ACRS% Stores the ACRS percentage
ACRS Calculates ACRS based on BASIS and ACRS%
↑ MORE ↓
YR# Stores the year# for calculating depreciation
FACT% For DB: stores the DB factor as % of SL
DB Calculates DB and RDV
SOYD Calculates SOYD and RDV
SL Calculates SL and RDV

Asset Description

The asset description is stored in the menu variables BASIS, SALV, and LIFE. For example, enter a $8500 machine to be depreciated over 5 years with a salvage value of $350:

Keys:	Display:
[MAIN]	
FIN DEPRC	
[CLEAR DATA]	0.00
8500 BASIS	BASIS=8,500.00
350 SALV	SALV=350.00
5 LIFE	LIFE=5.00

DB, SOYD, and SL Depreciation

Enter the BASIS, LIFE, and SALV values as shown above, then press MORE to show the depreciation methods. Calculate the depreciation and RDV using the double-declining balance method (DB with FACT% = 200) for two years:

Keys:	Display:
1 YR#	YR#=1.00
200 FACT%	FACT%=200.00
DB	RDV=4,750.00
	DB=3,400.00
2 YR#	YR#=2.00
DB	RDV=2,710.00
	DB=2,040.00

Now calculate the depreciation for the 2nd year using SOYD:

Keys:	Display:
SOYD	RDV=3,260.00 DB=2,173.33

ACRS Deductions

ACRS deductions are based on BASIS and ACRS%. Enter the cost basis, then the ACRS percentage from IRS tables (use 15% and 20% in this example) and calculate the deduction as follows:

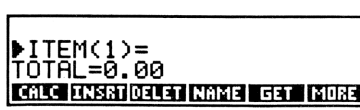
Keys:	Display:
8500 BASIS	BASIS=8,500.00
15 ACRS% ACRS	ACRS=1,275.00
20 ACRS% ACRS	ACRS=1,700.00

Lists and Statistics

The SUM menu (■[MAIN] SUM) manages lists of numbers and calculates totals and statistics:

CALC	Menu for statistics and graphics
INSRT	Inserts a number into the list
DELET	Deletes a number from the list
NAME	Names the current list
GET	Changes to a new or existing list
	↑ MORE ↓
COPY	Copies the list to another list
LABEL	Labels entries in the list
START	Marks the start of the subtotal range
SUBT	Calculates the subtotal from *start*

To begin a new list, press GET *NEW. (You may need to clear or name the current list: press ■[CLEAR DATA], or press NAME, type a name, and press [INPUT].)



Enter or change the value pointed to by ▶ by keying in the new value and pressing [INPUT].

Press [↑] or [↓] to move between values, and ■[↑] or ■[↓] to move to the top or bottom of the list.

Inserting & Deleting Values

To insert a new value, press INSRT when positioned at the value below the desired new value. Press DELET to delete the current value.

Labeling Values

To label values, press LABEL, type the label, then press CURR to label the current value or GLOBL to label all the values in the list.

Copying Values

To copy a value into the calculator line, press [RCL] [INPUT]. To make a copy of the current list, press COPY and enter the name of the new list.

Calculating Subtotals

To calculate a subtotal, move to the start of the desired subtotal range, press START, move to the last element of the range and press SUBT.

Clearing Labels or Numbers

Press ■[CLEAR DATA] OTHER LABEL to clear all the labels. Press ■[CLEAR DATA] OTHER NUM to clear just the numbers.

Deleting a List

To delete an entire list from memory, press ■[CLEAR DATA] YES.

Statistics Calculations

The CALC menu calculates the following values using the numbers in the current SUM list:

TOTAL	Sum of the list values
MEAN	Mean of the list values
MEDN	Median of the list
STDEV	Standard deviation
RANG	Difference between MIN and MAX
	↑ MORE ↓
MIN	Smallest value in the list
MAX	Largest value in the list
SORT	Sorts the list in ascending order
FRCST	The FRCST menu (see *Forecasting*)
HIST	Draws a histogram (see *Histograms*)

Starting from the SUM menu, try the CALC menu functions on the following data set:

658	495	531	534	454
459	670	657	556	623

Enter all the numbers, starting like this:

Keys:	**Display:**
GET *NEW	▶ITEM(1)=
	TOTAL=0.00
658 INPUT	ITEM(1)=658.00
	▶ITEM(2)=
	TOTAL=658.00

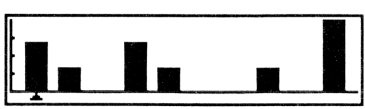
Keys:	Display:
495 [INPUT]	ITEM(2)=495.00
	▶ITEM(3)=
	TOTAL=1,153.00
531 [INPUT]	ITEM(3)=531.00
	▶ITEM(4)=
	TOTAL=1,684.00

... until the last number has been entered. Then calculate the range, mean, and standard deviation:

Keys:	Display:
623 [INPUT]	ITEM(10)=623.00
	▶ITEM(11)=
	TOTAL=5,637.00
CALC RANG	RANGE=216.00
MEAN	MEAN=563.70
STDEV	STDEV=83.09

Histograms

Continuing from the example above, press MORE HIST to draw a 10-cell histogram:



To view a cell's data, press [←] and [→] to select the cell, then hold down [INPUT]. Press [PRNT] to print the histogram, and [EXIT] to return to the CALC menu.

Forecasting

The FRCST menu (SUM CALC MORE FRCST) does curve fitting and forecasting with two SUM lists using the following steps:

1. Prepare and name an *x-value* list.
2. Make the *y-values* the current list.
3. Press CALC MORE FRCST and press the menu key for the x-value list.
4. Select the model to use:

   LIN Linear: $y = B + Mx$

   LOG Logarithmic: $y = B + M \ln x$

   EXP Exponential: $y = Be^{Mx}$

   PWR Power curve: $y = Bx^{M}$

5. To display the curve fitting results, press CORR , M , or B .
6. To forecast a y-value (or x-value), key in the known value and press XLIST (YLIST) then press YLIST (XLIST) to display the forecast.
7. To plot the data and curve fit, press MORE PLOT . Press ↑ ↓ ← → to move the cursor, PRNT to print the display, or EXIT to return to the FRCST menu.

The FRCST menu keys do the following:

XLIST	Stores or calculates an x-value
YLIST	Stores or calculates a y-value
CORR	Displays the correlation coefficient
M	Displays the model's M value
B	Displays the model's B value
MORE ↓	
PLOT	Plots the data and curve fit
W.MN	Calculates the weighted mean
G.SD	Calculates grouped standard deviation
SIZE	Displays the size of each list
MORE ↓	
ΣX	Calculates the sum of the x-values
ΣY	Calculates the sum of the y-values
ΣX2	Calculates the sum of squares of the x-values (ΣX^2)
ΣY2	Calculates the sum of squares of the y-values (ΣY^2)
ΣXY	Calculates the sum of products (ΣXY)

Forecasting Example

Prepare and name two lists, XVAL and YVAL, with the following values:

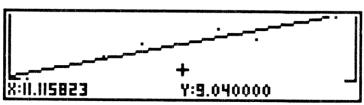
XVAL	3	7	9	13	15	19
YVAL	2	17	26	38	30	46

With the list YVAL current in the SUM menu, press CALC MORE FRCST, then XVAL to select the XVAL list for the x-values.

Select the linear model by pressing LIN, then display the correlation coefficient, slope (M), and y-intercept (B):

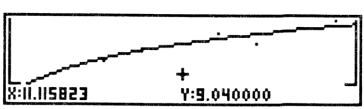
Keys:	Display:
CORR	CORR=0.95
M	M=2.55
B	B=-1.52

Press MORE PLOT to plot the data and fit:



Now compare the linear fit with a logarithmic fit:

Keys:	Display:
EXIT EXIT	SELECT A MODEL
LOG CORR	CORR=0.96
MORE PLOT	



Notice the difference between the two models. The logarithmic model gives a slightly better correlation coefficient.

Time and Appointments

The TIME menu (■ MAIN TIME) displays the current time and date and the following menu:

CALC Menu for date calculations
APPT Menu for setting and viewing appointments
ADJST Menu for adjusting the clock setting
SET Menu for setting the clock

Setting the Time and Date

The SET key displays the following menu:

DATE Sets the current date
TIME Sets the current time
A/PM Switches between AM and PM
M/D Switches between MM.DDYYYY and DD.MMYYYY formats
12/24 Switches between 12 & 24 hour formats
HELP Displays a help message

To set the time, enter the time in HH.MMSS format and press TIME. Press A/PM to switch between AM and PM in 12 hour clock mode. To set the date, enter the date in MM.DDYYYY (or DD.MMYYYY) format and press DATE.

Setting Appointments

To view or set appointments, press APPT:

Line 1 of this display shows that appointments 1 and 2 are pending, and line 2 shows that no appointments are past due.

To display an appointment, press one of the six appointment keys:

Line 1 shows the appointment time and date. Line 2 shows the related message.

Use the DATE, TIME, and A/PM keys to set the appointment time and date in the same manner as setting the clock. To enter the message, press MSG, type the message, and press [INPUT].

For repeating messages, press RPT, enter the interval, and press the appropriate menu key, or press NONE for no repetitions.

Acknowledging Appointments

When an appointment arrives, the HP-19B beeps (unless BEEPER OFF mode is set), and the message is displayed in line 1. Press any key to acknowledge the appointment while the HP-19B is beeping. After 20 seconds, the appointment becomes past due, and can be acknowledged by pressing its menu key in the APPT menu. Past due appointments are indicated in the display with the ((•)) annunciator.

Date Calculations

Date calculations are performed in the TIME CALC menu:

DATE1	Stores or calculates the oldest date
DATE2	Stores or calculates the newest date
DAYS	Stores or calculates the actual number of days between DATE1 and DATE2
360D	Calculates the difference between DATE1 and DATE2 using the 360 day calendar
365D	Calculates the difference between DATE1 and DATE2 using the 365 day calendar (ignores leap years)
TODAY	Displays today's date

Press ■ [CLEAR DATA] to clear DATE1, DATE2, and DAYS.

Date Calculation Examples

Calculate the number of days between May 18, 1989 and June 23, 1995 using the actual calendar and the 360 day calendar (assuming MM.DDYYYY format) from TIME CALC:

Keys:	Display:
5.181989	
DATE1	DATE1=05/18/1989 THU
6.231995	
DATE2	DATE2=06/23/1995 FRI
DAYS	ACTUAL DAYS=2,227.00
360D	360 DAYS=2,195.00

Calculate the date which is 1000 days after September 2, 1989:

Keys:	Display:
9.021989	
DATE1	DATE1=09/02/1989 SAT
1000	
DAYS	ACTUAL DAYS=1,000.00
DATE2	DATE2=05/29/1992 FRI

Text Lists

The TEXT menu (■ MAIN TEXT) manages lists of text information which may consist of *individual entries* or *records* consisting of groups of one or more entries. The lists below illustrate a simple list and a list using records:

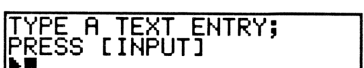
Price List	Phone List
APC-01:$23.95	ACME MACHINE CO.
APC-19:$6.95	804-555-3839
APC-28:$7.95	.....
JAD-47:$12.75	ARMSTRONG PUBLISHING
MCD-34:$33.90	503-757-0282
MHN-01:$94.25	.....
RJD-01:$55.50	BRIDGE ENGINEERING CO
SGB-88:$35.50	601-555-7893
STN-54:$3.50	.....
SZB-77:$125.60	GIBSON IMPORTED CARS
RGR-88:$2.50	555-760-5100
GBM-55:$34.99	ENGLISH SPORTS CARS

The price list contains 11 entries, while the phone list contains 4 records, each of which contains 2 entries, except the last, which contains 3 entries.

The TEXT menu contains the following entries:

MARK	Adds a record marker after the pointer
EDIT	Edits an existing entry
DELET	Deletes the current entry
NAME	Names the current list
GET	Changes to a new or existing list
↑ MORE ↓	
FIND	Finds a character string
EDIT	Edits an existing entry
PREV	Moves to the previous record
NEXT	Moves to the next record
SORT	Sorts the list

To begin a new list, press GET *NEW. (You may need to clear or name the current list: press ■ CLEAR DATA, or press NAME, type a name, and press INPUT.)



Add a new entry after ▶ by keying in the new entry and pressing INPUT.

Press ↑ or ↓ to move between values, and ■↑ or ■↓ to move to the top or bottom of the list. Press PREV or NEXT to move between records.

Deleting Entries

Press DELET to delete the entry or record mark pointed to by ▶.

Editing an Entry

To edit the entry pointed to by ▶, press EDIT, edit the entry (you may use [INS], [DEL], [←], and [→]), and press [INPUT].

Separating Records

Press MARK to place a record mark after the current entry. A record mark may be deleted by pressing DELET.

Finding Information

To find a character string, press FIND, enter the string, and press [INPUT], The HP-19B will begin searching below the current entry.

Sorting the List

Press SORT YES to sort the list in ascending alphabetical order. Records are sorted based on the first entry.

Deleting a List

To delete an entire list from memory, press [CLEAR DATA] YES.

Equation Solving

The SOLVE menu (■ [MAIN] SOLVE) is used for storing equations in an *equation list* and performing calculations using the equations. This is a sample list:

To move between equations, press [↑] or [↓] . Press ■[↑] or ■[↓] to move to the top or bottom of the list.

To enter a new equation, press ■[↓] to move the pointer to the bottom of the equation list, type the equation, and press [INPUT] or CALC . An equation may be named by using a leading label followed by a colon (:), such as INVOICE:.

Press CALC to display the variable menu for the equation pointed to by ▶. Variables may be shared between two or more equations. To edit an equation, press EDIT , correct the equation, and press [INPUT].

To view a long equation, press EDIT , use the arrow keys to view the equation, then press [EXIT].

Press DELET to delete the current equation and (optionally) its associated variables.

Writing Solver Equations

Solver equations consist of one or more of the following elements:

- *Variables* hold the values that you store or calculate. Variable names can have up to 10 characters with no spaces, cannot contain the characters +, −, x, ÷, (,), <, >, =, and :, and cannot begin with a number or decimal point.
- *Constants* are numbers: $12,000, 365 days, 7%. Constants must be entered without digit separators or other characters: 12000, 365, or 7.
- *Operators* perform arithmetic: +, −, x, ÷, ^.
- *Functions* do calculations: SQ(*x*), TAN(*x*).

The Solver uses the following order to control calculations:

Priority	Operation
1	Expressions within parentheses
2	Functions: SQRT(*x*), USFV(*i*%:*n*)
3	Power (^)
4	Multiply (x) and divide (÷)
5	Add (+) and subtract (−)
6	Relational operators:
	> < = ≥ ≤ <>
7	NOT
8	AND
9	OR and XOR
10	=

Add-On to APR

This example converts between add-on interest rate (RATE) and annual percentage rate (APR).

Enter and use the equation as follows:

Keys:	Display:
■ MAIN	
SOLVE ■↓	▶

CALC VERIFYING EQUATION...

To use the variable menu, store the known values, then press the menu key for the unknown value. For example, calculate the add-on rate for a 36-month loan with an APR of 13%:

Keys:	Display:
36 #MO	#MO=36.00
13 APR	APR=13.00
RATE	RATE=7.10

Press EXIT to return to the equation list.

Using the IF Function

The IF function adds test capabilities to the Solver:

IF(*test* : *expression-if-true* : *expression-if-false*)

The test may use one or more of the relational (> < = ≥ ≤ <>) or logical (NOT AND OR XOR) operators. Tests may be combined– the expression

A>B AND C<D

means A *greater than* B *and* C *less than* D.

If the test is true, the IF function returns the result of *expression-if-true*, otherwise the result of *expression-if-false* is returned.

Suppose a commodity sells for $12 per pound, or $11.50 for purchases over 50 pounds:

Starting from the equation's variable menu, calculate the sales price for 50 and 51 pounds:

Keys:	**Display:**
50 LBS	LBS=50.00
PRICE	PRICE=600.00
51 LBS	LBS=51.00
PRICE	PRICE=586.50

Using the S Function

The S function indicates whether a variable is being solved for, and can be used to combine two equations. To use the S function, rearrange the equations to place 0 on one side, and place them in an IF function:

$$PAY = HRS \times WAGE + SALES \times .05$$

$$HRSLS = SALES \div HRS$$

This equation reads: "If solving for PAY, use the PAY expression, otherwise use the HRSLS expression". The =0 at the end is optional.

Suppose a salesperson earns $4.75 per hour and has sales of $11,250 in a 40-hour week. Starting from the equation's variable menu, calculate the week's pay (PAY) and average hourly sales (HRSLS):

Keys:	**Display:**
40 HRS	HRS=40.00
4.75 WAGE	WAGE=4.75
11250 SALES	SALES=11,250
PAY	PAY=752.50
HRSLS	HRSLS=281.25

Solver Functions

Function	Description
ABS(*x*)	Absolute value
ACOS(*x*)	Arc cosine*
ACOSH(*x*)	Hyperbolic arc cosine
ALOG(*x*)	Base 10 antilogarithm: 10^x
ANGLE(*x*:*y*)	∠ polar coordinate for rectangular coordinates (*x*,*y*)*
ASIN(*x*)	Arc sine*
ASINH(*x*)	Hyperbolic arc sine
ATAN(*x*)	Arc tangent*
ATANH(*x*)	Hyperbolic arc tangent
CDATE	Current date†
COMB(*x*:*y*)	Combinations of *x* items taken *y* at a time
COS(*x*)	Cosine*
COSH(*x*)	Hyperbolic cosine
CTIME	Current time in H.MMSS (24-hr format)
DATE(*date*:*n*)	The date *n* days after *date*
DDAYS(*d1*:*d1*:*cal*)	Number of days between *d1*† and *d2*†

cal	Calendar Used
1	Actual, recognizes leap years
2	365 days, no leap years
3	360 days: 12, 30-day months

DEG(*x*)	Converts *x* in radians to decimal degrees
EXP(*x*)	Natural antilogarithm e^x

* Uses the current angle mode – degrees or radians

† Uses the current date format (MM.DDYYYY or DD.MMYYYY)

Function	Description
EXPM1(*x*)	$e^x - 1$
FACT(*x*)	Factorial: *x* is an integer ≥ 0
FLOW(*name*:*x*)	Returns the value of FLOW(*x*) in the CFLO list with the specified *name*.
FP(*x*)	Fractional part
FV(*n*:*i%yr*:*pv*:*pmt*: *p/yr*:*m*)	TVM function for future value
G(*variable*)	Returns contents of *variable*
HMS(*x*)	Converts decimal hours (degrees) to H.MMSS (D.MMSS) format
HRS(*x*)	Converts *x* in H.MMSS (D.MMSS) format to decimal
IDIV(*x*:*y*)	Integer part of the quotient of $x \div y$
IF(*con*:*alg1*:*alg2*)	*con* is a conditional, *alg1* and *alg2* are algebraic expressions
INT(*x*)	The greatest integer $\leq x$
INV(*x*)	Reciprocal, $1/x$
IP(*x*)	Integer part
ITEM(*listname*:*x*)	Returns value of ITEM(*x*) in the specified SUM list
I%YR(*n*:*pv*:*pmt*:*fv*: *p/yr*:*m*)	TVM function for annual interest
L(*variable*:*expr*)	Assigns *expr* to *variable*
LN(*x*)	Natural (base e) log
LNP1(*x*)	$\ln(1+x)$
LOG(*x*)	Common (base 10) log
MAX(*x*:*y*)	Larger of *x* and *y*
MIN(*x*:*y*)	Smaller of *x* and *y*
MOD(*x*:*y*)	The remainder of $x \div y$ $\text{MOD}(x{:}y) = x - y \times \text{INT}(x \div y)$

Function	Description
N(*i*%/*yr*:*pv*:*pmt*:*fv*: *p*/*yr*:*m*)	TVM function for number of payments
PERM(*x*:*y*)	Permutations of *x* items taken *y* at a time
PI	π: 3.14159265359
PMT(*n*:*i*%*yr*:*pv*:*fv*: *p*/*yr*:*m*)	TVM function for payment
PV(*n*:*i*%*yr*:*pmt*:*fv*: *p*/*yr*:*m*)	TVM function for present value
RAD(*x*)	Converts *x* in decimal degrees to radians
RADIUS(*x*:*y*)	*R* polar coordinate for (*x*,*y*) rectangular coordinates
RAN#	Pseudo-random number ($0 \leq r < 1$)
RND(*x*:*y*)	*x* rounded to $\lvert y \rvert$ decimal places (when $0 \leq y \leq 11$), or to *y* significant digits (when $-12 \leq y \leq -1$). *y* must be an integer
S(*var*)	Returns 1 if the *var*iable is being solved for - used with IF function to create a variable menu. *var* is a variable
SGN(*x*)	Sign of *x* (+1 if $x > 0$, 0 if $x = 0$, -1 if $x < 0$)
Σ(*cv*:*c1*:*c2*:*s*:*alg*)	Sums values of the algebraic expressing *alg* for values of the counter variable *cv*. *cv* increments from *c1* to *c2* in steps of *s*
SIN(*x*)	Sine*
SINH(*x*)	Hyperbolic sine
SIZEC(*name*)	The group number of the last flow in the CFLO list with the specified *name*

* Uses the current angle mode – degrees or radians

Function	Description
SIZES(*listname*)	Returns the number of items in the specified SUM list
SPFV(*i*%:*n*)	Future value of $1.00: *i*% is the periodic interest rate, *n* is the number of compounding periods
SPPV(*i*%:*n*)	Present value of $1.00: *i*% is the periodic interest rate, *n* is the number of compounding periods
SQ(*x*)	x^2
SQRT(*x*)	$\sqrt{x}$
#T(*name*:*x*)	Returns #TIMES for FLOW(*x*) of the CFLO list with the specified *name*
TAN(*x*)	Tangent*
TANH(*x*)	Hyperbolic tangent
TRN(*x*:*y*)	*x* truncated to *y* decimal places (when $0 \leq y \leq 11$), or to $\|y\|$ significant digits (when $-12 \leq y \leq -1$). *y* must be an integer
USFV(*i*%:*n*)	Future value of a series of $1.00 payments: *i*% is the periodic interest rate, *n* is the number of compounding periods
USPV(*i*%:*n*)	Present value of a series of $1.00 payments: *i*% is the periodic interest rate, *n* is the number of compounding periods
XCOORD(*R*:∠)	*x*-coordinate of polar coordinates*
YCOORD(*R*:∠)	*y*-coordinate of polar coordinates*
+ − x ÷ ^	Arithmetic operators
> < = ≥ ≤ <>	Relational operators
AND OR XOR NOT	Logical operators

* Uses the current angle mode – degrees or radians

Math Functions

The math functions are available from almost every menu. Press ■ [MATH] to display math functions, and [EXIT] to return to the menu you were previously viewing.

RND rounds to the current display setting

PI returns the number π (3.14159265359)

LOGS displays the logarithmic functions

LOGS HYP displays the hyperbolic functions

TRIG displays the trigonometric functions

CONV displays the conversion functions

PROB displays the probability functions

The trigonometric functions interpret angles in degrees or radians, depending on the current mode. Press D/R in the MODES or CONV menu to switch between degrees and radians modes.

Key:		Function:
LOG	10^X	Base 10 log, antilog
LN	EXP	Base *e* log, antilog
SINH	ASINH	Hyperbolic sine, inverse
COSH	ACOSH	Hyperbolic cosine, inverse
TANH	ATANH	Hyperbolic tangent, inverse
SIN	ASIN	Sine, arc sine
COS	ACOS	Cosine, arc cosine
TAN	ATAN	Tangent, arc tangent
>DEG	>RAD	Radians to degrees, inverse
>HR	>HMS	H.MMSSss to decimal, inverse
XCORD		Store X or calculate X & Y
YCORD		Store Y or calculate X & Y
R		Store R or calculate R & ∠
∠		Store ∠ or calculate R & ∠
D/R		Toggle degrees/radians mode
X	Y	Store X & Y for C X,Y and P X,Y
C X,Y		Combinations of X items Y at a time
P X,Y		Permutations of X items Y at a time
N!		Factorial
RAN#		Displays random number $0 \leq n < 1$

Conversion Functions

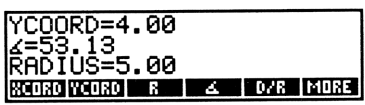
To convert a number from decimal hours (or degrees) to H.MMSSss (D.MMSSss) format press ■ [MATH] CONV:

Keys:	Display:
12.575 >HMS	12.34
■ [SHOW]	FULL PRECISION IS:
	12.343

To find the polar coordinates of X=3 and Y=4, press MORE:

Keys:	Display:
3 XCORD	XCOORD=3.00
4 YCORD	YCOORD=4.00
R	∠=53.13
	RADIUS=5.00

Both the radius and angle are returned:



(This example assumes Degrees mode. Use D/R to switch between Degrees and Radians modes.) To convert the angle of 53.13 degrees to radians, press ↓ MORE >RAD and the angle is then expressed as 0.93 radians.

Probability Functions

To find the number of combinations of 6 items taken 4 at a time, use the ■MATH PROB menu:

Keys:	Display:
6 X	X=6.00
4 Y	Y=4.00
C X,Y	C X,Y=15.00

Currency Exchange

The CURRX menu (■ MAIN BUS CURRX) contains currency exchange functions. Calculations are performed with *currency sets*, each of which consists of two *currencies* and a *rate* expressing currency 2 in terms of currency 1. The CURRX menu displays the following entries:

US$	Stores or calculates *currency 1*
YEN	Stores or calculates *currency 2*
RATE	Stores or calculates the conversion *rate*
C.STO	Stores the current currency set
C.RCL	Recalls the current currency set
SELCT	Displays the menu of currencies

Establishing A Currency Set

A currency set is established by selecting two currencies and entering or calculating the rate. For example, enter the conversion between British Pounds and Dollars:

Keys:	Display:
SELCT	SELECT CURRENCY 1
UK£	CURRENCY 1 IS: UK£
	SELECT CURRENCY 2
US$	1 UK£ = 1.0000 US$
	ENTER A RATE
1.87 RATE	1 UK£ = 1.8700 US$
	RATE=1.87

A conversion rate can also be established by selecting the currencies, entering a value for each currency, then pressing RATE to calculate the rate:

Keys:	Display:
SELCT	SELECT CURRENCY 1
UK£	SELECT CURRENCY 2
US$	ENTER A RATE
35 UK£	UK£=35.00
61.6 US$	US$=61.60
RATE	1 UK£ = 1.7600 US$
	RATE=1.76

Exchange Calculations

Once the two currencies are named and a rate has been established, calculations are performed like any other menu calculation (see *Calculating With Menus*). Using the conversion entered above, convert $354.25 to British Pounds:

Keys:	Display:
354.25 US$	US$=354.25
UK£	UK£=201.28

Storing & Recalling Currency Sets

Up to six currency sets can be stored for repeated use. To store the current currency set, press C.STO and press any blank menu key. If the menu

key you select is not blank, its currency set will be overwritten. Recall a currency set by pressing C.RCL and selecting the desired menu key.

Currency Choices

US$	CAN$	DM	FF	UK£
U.S. Dollar	Canadian Dollar	W. German Mark	French Franc	British Pound
BF	FL	LIT	PTS	SF
Belgian Franc	Dutch Florin	Italian Lira	Spanish Pesetas	Swiss Franc
DR	ESC	IR£	S	NIS
Greek Drachma	Portuguese Escudo	Irish Pound	Austrian Schilling	New Israeli Shekel
D.KR	N.KR	S.KR	F.MK	R
Danish Krone	Norwegian Krone	Swedish Krona	Finnish Markka	Russian Rouble
A	B	CZ$	INTI	PESO
Argentinean Austral	Venezuelan Bolivar	Brazilian Cruzado	Peruvian Inti	Mexican Pesos
HK$	NT$	RMB	WON	YEN
Hong Kong Dollars	New Taiwan Dollar	Chinese Renminbi	S. Korean Won	Japanese Yen
$A	M$	NZ$	RP	S$
Australian Dollar	Malaysian Dollar	New Zealand Dollar	Indonesian Rupiah	Singapore Dollar
BAHT	IN.RS	PK.RS	CURR1	CURR2
Thai Baht	Indian Rupee	Pakistani Rupee	Miscellaneous	

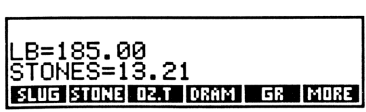
Unit Conversions

The UNITS menu (■ MAIN BUS UNITS) contains five categories of unit conversions:

Key	Category	Example
LENG	Length	Feet to meters
AREA	Area	Acres to hectares
VOL	Volume	Gallons to liters
MASS	Mass	Pounds to kilograms
TEMP	Temperature	Fahrenheit to Celsius

To convert from one unit to another, key in the value, press the menu key for the original unit, then press the menu key for the new unit. For example, convert 185 *pounds* to *stones*:

Keys:	Display:
MASS	MASS CONVERSIONS
185 LB	LB=185.00
MORE MORE	
STONE	STONES=13.21



To add mixed units, use STO +. For example, add 2 slugs to the previous answer:

Keys:	Display:
2 STO + SLUG	2.00
STONE	STONES=17.81

Unit Conversion Choices

Press UNITS LENG for length conversions:

FEET feet	INCH inches	M meters	CM centi-meters	MM milli-meters
MILE miles	N.MI nautical miles	KM kilo-meters	YARD yards	FATH fathoms
ST.MI US statute miles	ROD rods	CHAIN chains	SU.FT survey feet	

Press UNITS AREA for area conversions:

SQ.YD square yards	SQ.FT square feet	SQ.IN square inches	SQ.M square meters	SQ.CM sq. centi-meters
SQ.MI square miles	ACRE acres	SQ.RD square rods	SQ.K sq. kilo-meters	HA hectares

Press UNITS VOL for volume conversions:

GAL US gallons	I.GAL imperial gallons	QUART quarts	PINT pints	LITER liters
CU.YD cubic yards	CU.FT cubic feet	CU.IN cubic inches	CU.M cubic meters	AC.FT acre-feet
CUP cups	TBSP table-spoons	TSP tea-spoons	FL.OZ US fluid ounces	ML milli-liters
BU bushels	PECK pecks	D.GAL dry gallons	BD.FT board feet	BBL barrel of oil

Press UNITS MASS for mass conversions:

LB pounds	OZ ounces	KG kilo-grams	GRAM grams	MG milli-grams
TON short tons	L.TON long tons	CWT short hndrdwts	L.CWT long hndrdwts	T metric tons
SLUG slugs	STONE stones	OZ.T troy ounces	DRAM drams	GR grains

Press UNITS TEMP for temperature conversions:

°F degrees Fahrenheit	°C degrees Celsius	°R degrees Rankine	°K degrees Kelvin

THE HP-19B POCKET BOOK

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