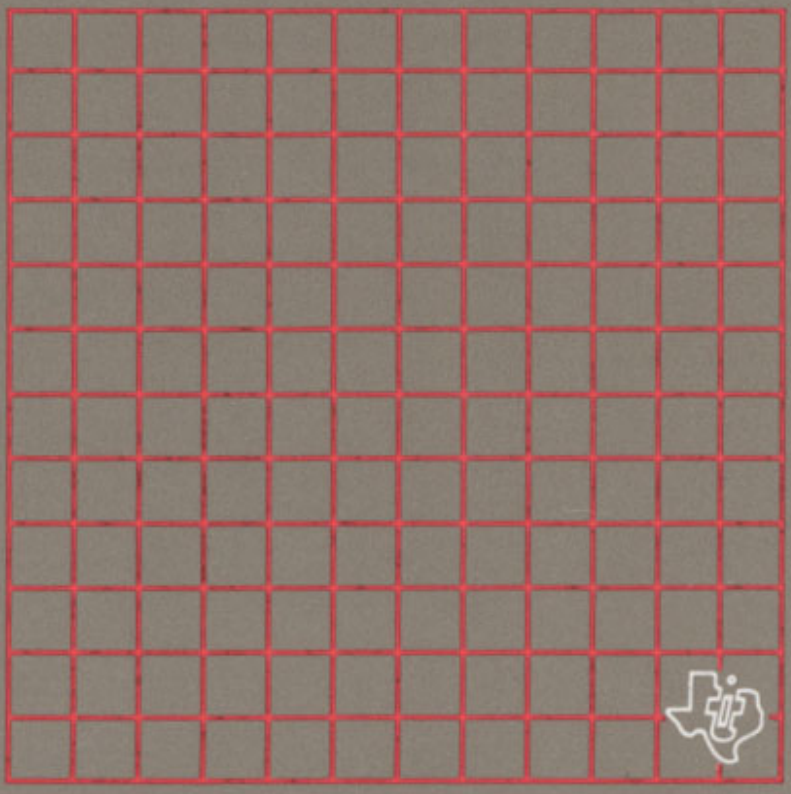
TEXAS INSTRUMENTS
BA-45 MICRO BUSINESS MANAGER™

QUICK REFERENCE GUIDE



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MICRO BUSINESS MANAGER™ QUICK REFERENCE GUIDE

For complete details and examples of how the calculator can be used for specific applications. refer to the BA-45 *Micro Business Manager™ Guidebook*.

A TOUR OF THE KEYBOARD

Switches

PRINT/POWER Switch—Controls power to both the calculator and the printer according to the following settings:

- **OFF**—Turns both the calculator and the printer OFF.
- ■—Turns the calculator ON and the printer OFF.
- **ON**—Turns both the calculator and the printer ON.

  Note: If the calculator is operated without paper, the PRINT/POWER switch should always be set to the ■ position. This setting prevents unnecessary wear on the printhead.

MODE Switch—Used exclusively for financial and cost-sell-margin calculations.

- **FIN**—Selects the financial mode.
- **MARGIN**—Selects the cost-sell-margin mode.

  Note: The financial and cost-sell-margin registers are cleared when the setting of the MODE switch is changed. Be sure the switch is in the correct position before beginning any calculation that uses these registers.

Arithmetic Function Keys

Add Key [+]—Completes any pending operation and adds the next entered number to the displayed number.

Subtract Key [−]—Completes any pending operation and subtracts the next entered number from the displayed number.

Multiply Key [×]—Completes any pending operation and multiplies the displayed number by the next entered number.

Divide Key [÷]—Completes any pending operation and divides the displayed number by the next entered number. An error/overflow condition occurs if a number is divided by zero.

Equals Key [=]—Completes any pending operation and displays the result.

Change Sign Key [+/−]—Changes the sign of the displayed number. A positive number becomes negative. and a negative number becomes positive.

Percent Key

Percent Key [%]—Instructs the calculator to use the displayed number as a percent value. The percent key completes any pending operation.

Percentage
principal [×] percent [%]

Percentage Add-on
principal [+] percent [%]

Percentage Discount
principal [−] percent [%]

Clear Entry/Clear Key

Clear Entry/Clear Key [CE/C]—Pressing this key once immediately following a number entry clears the entered number and allows another number to be entered in its place without affecting operations in progress. If pressed twice, or if pressed following a non-number key, **[CE/C]** clears the display, any pending operation, and the automatic constant.

Pressing the key sequence **[CPT] [CE/C]** clears the financial or cost-sell-margin registers, depending on the setting of the MODE switch.

Pressing **[CE/C]** also clears the calculator from an error/overflow condition, and returns the calculator to its operative state from an *Automatic Power Down* ™.

Fixed-Decimal Key

Fixed-Decimal Key [FIX]—Selects the number of decimal places displayed and printed in the result of a calculation. The calculator is set for the floating-decimal format when it is first turned on.

To select a fixed-decimal format, press **[FIX]** and the digit for the desired number of decimal places (0-8). You can enter a fixed format at any point in a calculation without affecting operations in progress.

To return to the floating-decimal format, press **[FIX]** 9. You can select the floating format at any point in a calculation without affecting operations in progress.

Except as noted below, a fixed-decimal format does not affect the accuracy of your calculations. Even in a fixed format, the calculator internally retains the floating format of the result. If this result is used for subsequent calculations, the floating format of the result is used.

Note: If **[M ±]** completes an operation in a fixed-decimal format, the *rounded* result is added to memory, not the floating value internally retained by the calculator. For maximum accuracy, complete the operation with **[=]**, then press **[M ±]**.

Memory Keys

Sum to Memory Key [M ±]—Completes any pending operation and adds the result to the memory. An M appears on the left side of the display when a non-zero number is stored in memory. **Note:** If **[M ±]** completes an operation in a fixed-decimal format, the *rounded* result is added to memory, not the floating value internally retained by the calculator. For maximum accuracy, complete the operation with **[=]**, then press **[M ±]**.

Subtract from Memory Key [M −]—Completes any pending operation and subtracts the result from the memory. An M appears on the left side of the display when a non-zero number is stored in memory. **Note:** If **[M −]** completes an operation in a fixed-decimal format, the *rounded* result is subtracted from memory, not the floating value internally retained by the calculator. For maximum accuracy, complete the operation with **[=]**, then press **[M −]**.

Memory Recall Key [MR]—Displays and prints the memory subtotal. Pressing **[MR]** does not affect the contents of the memory.

Memory Clear Key [MC]—Displays and prints the memory total, then clears the memory. Pressing **[MC]** turns off the memory indicator M in the display.

Financial Keys

The MODE switch must be set to the FIN position.

[N]—Enters the displayed number as the total number of payment or compounding periods. The number is printed with an N to its right.

[%i]—Enters the displayed number as a periodic interest rate. The number is printed with a %I to its right.

[PMT]—Enters the displayed number as a payment amount. The number is printed with a PM to its right.

[PV]—Enters the displayed number as the present value. The number is printed with a PV to its right.

[FV]—Enters the displayed number as the future value. The number is printed with an FV to its right.

[CPT]—Used to compute the unknown value for annuities with end-of-period payments (ordinary annuities) and for compound interest problems. Press **[CPT]** and the key for the unknown value. A C is printed when the **[CPT]** key is pressed.

[DUE]—Used to compute the unknown value for annuities with beginning-of-period payments (annuities due). Press **[DUE]** and the key for the unknown value. A D is printed when the **[DUE]** key is pressed.

[INT]—Used with the [CPT] or [DUE] key to compute the interest paid for the payment number entered in the display. The computed value is printed with an I to its right. Note that values may not be entered with this key.

[BAL]—Used with the [CPT] or [DUE] key to compute the balance remaining on the loan principal after a specified payment. The computed value is printed with a BL to its right. Note that values may not be entered with this key.

[RCL]—Used to recall (display and print) any of the values entered into the financial registers—N. %i. PMT. PV. or FV. Press [RCL] and the key for the value you want to recall. Note that Interest [INT] and Balance [BAL] can not be recalled because they are computed answers.

Cost-Sell-Margin Keys

The MODE switch must be set to the MARGIN position.

[COST]—Enters the displayed number as the cost or buying price of an item. The number is printed with a CS to its right.

[SELL]—Enters the displayed number as the selling price of an item. The number is printed with an SL to its right.

[MARGIN]—Enters the displayed number as the profit or loss margin of an item. The number is printed with a %M to its right. Note that this value is interpreted as a percentage. with profit margins represented as positive numbers and loss margins as negative numbers.

CLEARING SEQUENCES

[MC]—Clears the memory and prints *M.

[CPT] [CE/C] (FIN mode)—Clears the financial registers and prints CF.

[CPT] [CE/C] (MARGIN mode)—Clears the cost-sell-margin registers and prints CM.

[CE/C] [CE/C]—Clears any pending operation and the automatic constant. and prints 0.*.

GENERAL KEYSTROKE SOLUTIONS

The keystroke solutions in this section are designed to help you solve cost-sell-margin. compound interest. and annuity problems. Each solution provides a general guideline. and may be used to solve a wide range of problems.

Cost-Sell-Margin Calculations

Use the following procedure for computations involving an item's cost. selling price. and profit margin. The MODE switch must be set to the MARGIN position.

You must know two of the following values:

- cost of the item
- selling price of the item
- profit/loss margin

IMPORTANT: For a *profit* margin. enter [MARGIN] as a positive number. For a *loss* margin. enter [MARGIN] as a negative number.

Set Switches:
PRINT/POWER (ON), MODE (MARGIN)

Procedure	Key Sequence
1. Clear memory, margin registers, and calculator.	[MC] [CPT] [CE/C] [CE/C] [CE/C]
2. Select two decimals.	[FIX] 2
3. Perform any two of the following steps.	
a. Enter item cost.	cost [COST]
b. Enter selling price.	price [SELL]
c. Enter profit or loss margin.	margin [MARGIN]
4. Compute the unknown value.	[CPT] unknown value key

Reference: "Cost-Sell-Margin Calculations," Chapter 3, *Micro Business Manager*™ *Guidebook*.

Compound Interest Calculations

Use the following procedure for compound interest calculations involving only an initial and a final cash flow. The MODE switch must be set to the FIN position, and the payment register must contain a zero (done automatically when the registers are cleared).

You must know three of the following values:

- number of compounding periods
- annual interest rate
- present value
- future value

For monthly compounding periods,
number (N) = years × 12
rate (%i) = annual rate ÷ 12

Set Switches:
PRINT/POWER (ON), MODE (FIN)

Procedure	Key Sequence
1. Clear memory, financial registers, and calculator.	[MC] [CPT] [CE/C] [CE/C] [CE/C]
2. Select two decimals.	[FIX] 2
3. Perform any three of the following steps.	
a. Enter number of compounding periods.	number [N]
b. Enter percent interest rate per compounding period.	rate [%i]
c. Enter present value.	present value [PV]
d. Enter future value.	future value [FV]
4. Compute the unknown value.	[CPT] unknown value key

Reference: "Compounding Interest" and "Solving Compound Interest Problems," Chapter 4, *Micro Business Manager™ Guidebook*.

Annuity Calculations

Use the following procedure for an ordinary annuity or an annuity due. The MODE switch must be set to the FIN position.

You must know four of the following values:

- number of payment periods
- annual interest rate
- payment amount
- present value
- future value

IMPORTANT: For *present* value annuities, [PMT] must be positive. For *future* value annuities, [PMT] must be negative.

For monthly compounding periods,
number (N) = years × 12
rate (%i) = annual rate ÷ 12

Set Switches:
PRINT/POWER (ON), MODE (FIN)

Procedure	Key Sequence
1. Clear memory, financial registers, and calculator.	[MC] [CPT] [CE/C] [CE/C] [CE/C]
2. Select two decimals.	[FIX] 2
3. Perform any four of the following steps.	
a. Enter total number of payments.	number [N]
b. Enter percent interest rate per payment period.	rate [%i]
c. Enter regular payment amount.	payment [PMT]
d. Enter present value.	present value [PV]
e. Enter future value.	future value [FV]
4. Compute the unknown value.*	[CPT] unknown value key

*If payments occur at the beginning of each month (annuity due), press [DUE] to compute the unknown value.

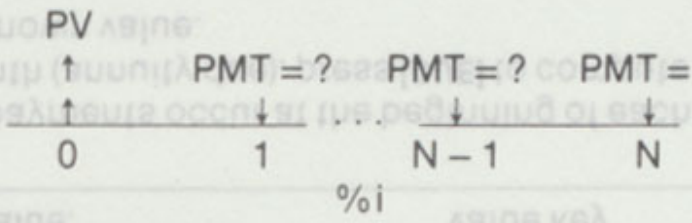
Reference: "Annuities with Beginning or Ending Cash Flows." Chapter 4. *Micro Business Manager™ Guidebook*.

COMMON KEYSTROKE SEQUENCES

Monthly Payment for a Home Mortgage

Purpose: To find the amount of the monthly payment on a home mortgage loan when payments are made at the end of each month (ordinary annuity).

Time-Line Diagram:



You must know the following values:

- number of years of mortgage
- annual interest rate
- mortgage amount

Set Switches:
PRINT/POWER (ON), MODE (FIN)

Procedure	Key Sequence
1. Clear memory, financial registers, and calculator.	[MC] [CPT] [CE/C] [CE/C] [CE/C]
2. Select two decimals.	[FIX] 2
3. Calculate total number of payments, and enter.	years [×] 12 [=] [N]
4. Calculate monthly interest rate and enter.	rate [÷] 12 [=] [%i]
5. Enter mortgage amount.	mortgage [PV]
6. Compute monthly payment.*	[CPT] [PMT]

*If payments occur at the beginning of each month (annuity due), press [DUE] to compute the monthly payment.

Reference: "Computing Payment Amount and Balloon Payment," Chapter 6, *Micro Business Manager™ Guidebook*.

Mortgage Amortization

Purpose: To find an amortization schedule for a level-payment mortgage. This keystroke solution calculates the interest and principal portions of each payment, and the remaining balance.

Time-Line Diagram:

A time-line diagram is not given for this application.

You must know the following values:

- annual interest rate
- monthly payment
- mortgage amount

Set Switches:
PRINT/POWER (ON). MODE (FIN)

Procedure	Key Sequence
1. Clear memory, financial registers, and calculator.	[MC] [CPT] [CE/C] [CE/C] [CE/C]
2. Select two decimals.	[FIX] 2
3. Calculate monthly interest rate and enter.	rate [÷] 12 [=] [%i]
4. Compute monthly payment.	payment [PMT]
5. Enter mortgage amount.	mortgage [PV]
6. Beginning with payment #1, repeat Step 6 for each payment.	
a. Enter payment # and compute interest portion.*	payment # [CPT] [INT]
b. Compute principal portion.	[+/−] [+] [RCL] [PMT] [=]
c. Enter payment # and compute remaining balance.*	payment # [CPT] [BAL]

*If payments occur at the beginning of each month (annuity due), press [DUE].

Reference: "Mortgage Amortization," Chapter 6. *Micro Business Manager™ Guidebook.*

Payment for a Buy-Down Mortgage

Purpose: To find the lump-sum amount that must be deposited in an escrow account for a buy-down mortgage. This amount is used to reduce the monthly payment on a home mortgage to a subsidized amount over the subsidy period.

Time-Line Diagram:

A time-line diagram is not given for this application.

You must know the following values:

- number of years of mortgage
- mortgage amount
- actual annual interest rate
- subsidized annual interest rate
- number of subsidized periods
- annual interest rate of escrow account

Set Switches:
PRINT/POWER (ON), MODE (FIN)

	Procedure	Key Sequence
1.	Clear memory, financial registers, and calculator.	[MC] [CPT] [CE/C] [CE/C] [CE/C]
2.	Select two decimals.	[FIX] 2
3.	Calculate total number of payments, and enter.	years [×] 12 [=] [N]
4.	Enter mortgage amount.	mortgage [PV]

5. Calculate actual monthly interest rate, and enter.	actual rate [÷] 12 [=] [%i]
6. Compute payment, and store.*	[CPT] [PMT] [M±]
7. Calculate subsidized monthly interest rate, and enter.	subsidized rate [÷] 12 [=] [%i]
8. Compute subsidized payment.*	[CPT] [PMT]
9. Calculate difference in payments and enter as a monthly subsidy.	[M−] [MC] [PMT]
10. Enter number of subsidized periods.	subsidy periods [N]
11. Calculate escrow rate per month, and enter.	escrow rate [÷] 12 [=] [%i]
12. Compute lump-sum deposit.*	[CPT] [PV]

*If payments occur at the beginning of each month (annuity due), press [DUE].

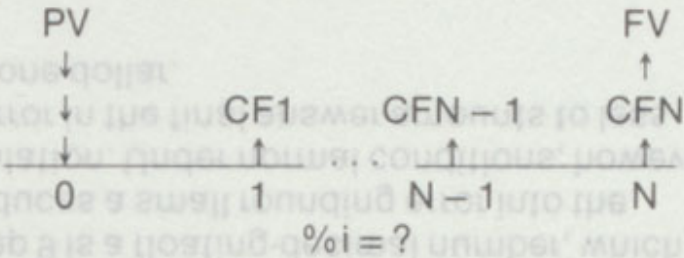
Note that the monthly subsidy payment entered in Step 9 is a floating-decimal number, which introduces a small rounding error into the calculation. Under normal conditions, however, the error in the final answer amounts to less than one dollar.

Reference: "Payment for a Buy-Down Mortgage," Chapter 6, *Micro Business Manager™ Guidebook*.

Net Present Value for Variable Cash Flows

Purpose: To find the net present value of an asset with variable cash flows.

Time-Line Diagram:



You must know the following values:

- discount (hurdle) rate
- period number when cash flow occurs
- amount of operating cash flow for each period
- initial cash outlay to purchase asset

Set Switches:
PRINT/POWER (ON), MODE (FIN)

Procedure	Key Sequence
1. Clear memory, financial registers, and calculator.	[MC] [CPT] [CE/C] [CE/C] [CE/C]
2. Select two decimals.	[FIX] 2
3. Enter discount rate.	rate [%i]
4. Calculate present value of cash flow.	
a. Enter period number when cash flow occurs.	period [N]
b. Enter amount of cash flow.	cash flow [FV]
c. Compute PV and store.	[CPT] [PV] [M±]
5. Repeat Step 4 for each cash flow.	
6. Recall total present value of cash flows.	[MC]
7. Subtract initial cash outlay to find NPV.	[−] outlay [=]

Reference: "Net Present Value with Uneven Cash Flows," Chapter 7. *Micro Business Manager™ Guidebook*.

APPENDIX A—AUDIT TRAILS

The "audit trail" feature of the calculator allows you to keep track of all calculations by the symbols printed on the right side of the paper. Each symbol is produced by pressing a function key or by a calculator condition.

	Symbol	Key Pressed or Condition
Clearing Sequences	0.*	[CE/C] [CE/C]
	CF	[CPT] [CE/C] (FIN)
	CM	[CPT] [CE/C] (MARGIN)
Decimal Settings	FX	Fixed-Decimal Format
	FFX	Floating-Decimal Format
Arithmetic Keys	+	[+]
	−	[−]
	×	[×]
	÷	[÷]
	=	[=]
Percent Key	%	[%]
Constants	=K	[=] (Arithmetic Constant)
	%K	[%] (Percentage Constant)
Results	*	Final arithmetic or percentage result.
Memory Keys	M+	[M+]
	M−	[M−]
	*M	[MC]
	◇M	[MR]

Financial Keys	N	[N]
	%i	[%i]
	PM	[PMT]
	PV	[PV]
	FV	[FV]
	C	[CPT]
	D	[DUE]
Cost-Sell-Margin Keys	CS	[COST]
	SL	[SELL]
	%M	[MARGIN]
Error/ Overflow	E	Refer to Appendix B
	Error	

APPENDIX B— SERVICE INFORMATION

Battery Replacement

Four "AAA" alkaline batteries

Printing Paper Replacement

TP-25000 Thermal Paper

Reference: "Replacing the Batteries" and "Replacing the Printing Paper," Appendix C, *Micro Business Manager™ Guidebook*.

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