Basic Calculations

In the RUN Mode you can perform arithmetic calculations (addition, subtraction, multiplication, division) as well as calculations involving scientific functions.

- 1. Addition and Subtraction
- 2. Multiplication
- 3. Division
- 4. Quotient and Remainder Division
- 5. Mixed Calculations
- 6. Other Useful Calculation Features
- 7. Using Variables
- 8. Fraction Calculations
- 9. Selecting Value Display Modes
- 10. Scientific Function Calculations

1. Addition and Subtraction

Example 6.72 + 9.08

6 · 7 2 + 9 · 0 8 EXE

6.72+9.08

You can input the operation just as it is written. This capability is called "true algebraic logic."

Be sure to press AC to clear the display before starting a new calculation.

2. Multiplication

Example

 3.71×4.27

AC 3 • 7 1 X

4 · 2 7 EXE

• The range of this calculator is $-9.99999999 \times 10^{99}$ to $+9.99999999 \times 10^{99}$.

3. Division

Example 64 ÷ 4

AC 6 4 ÷ 4 EXE

64÷4 16



Parentheses also come in handy when performing division. For full details on using parentheses, see "Parentheses Calculation Priority Sequence".

To use parentheses in a calculation

Example 1
$$2 \times 3 + 4$$

You should input this calculation as: $(2 \times 3 + 4) \div 5$

Example 2
$$\frac{6}{4\times}$$

You can input this calculation as: $6 \div (4 \times 5)$ or $6 \div 4 \div 5$.

4. Quotient and Remainder Division

This calculator can produce either the quotient or the quotient and remainder of division operations involving two integers. Use OPTN to display the Option Menu for the function key menu you need to perform quotient and remainder division.

Operation

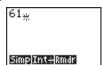
Use the RUN Mode for quotient and remainder division.

Quotient Division <integer> OPTN F2 (CALC) F2 (Int+)<integer> EXE Reminder Division <integer> OPTN F2 (CALC) F3 (Rmdr) <integer> EXE

To perform quotient division

Example To display the quotient produced by 61 ÷ 7

AC 6 1 (OPTN) F2 (CALC)



F2 (Int+) 7 EXE



 Remember that you can use only integers in quotient division operations. You cannot use expressions such as \overline{72} or sin60 because their results have a decimal part.

•To perform remainder division



Press our to clear the Option Menu after you finish your remainder and quotient calculations.



- Remember that you can use only integers in remainder division operations. You
 cannot use expressions such as \(\frac{7}{2} \) or \(\sin 60 \) because their results have a decimal
 part.
- Quotient and remainder division can also be used with lists to divide a multiple integers by each other in a single operation.

5. Mixed Calculations

(1) Mixed Arithmetic Calculation Priority Sequence

For mixed arithmetic calculations, the calculator automatically performs multiplication and division before addition and subtraction.

Example 2 7×8-4×5

@7 X 8 — 4 X 5 5 7×8-4×5

36

(2) Parentheses Calculation Priority Sequence

Expressions enclosed inside parentheses are always given priority in a calculation.

Example 2
$$(7-2) \times (8+5)$$

EXE

· A multiplication sign immediately in front of an open parenthesis can be omitted.

· Any closing parentheses at the end of a calculation can be omitted, no matter how many there are.

Parentheses are always closed in the operation examples presented in this manual.

(3) Negative Values

Use the (-) key to input negative values.

(4) Exponential Expressions

Use the EXP key to input exponents.

Example
$$(4.5 \times 10^{75}) \times (-2.3 \times 10^{-79})$$



The above shows what would appear when the exponential display range is set to Norm 1. It stands for -1.035×10^{-3} , which is -0.001035.

(5) Rounding

Example 74 ÷ 3

AC 7 4 ÷ 3 EXE

The actual result of the above calculation is 24.66666666... (and so on to infinity), which the calculator rounds off. The calculator's internal capacity is 15 digits for the values it uses for calculations, which avoids precision problems with consecutive operations that use the result of the previous operation.

6. Other Useful Calculation Features

(1) Answer Memory (Ans)

Calculation results are automatically stored in the Answer Memory, which means you can recall the results of the last calculation you performed at any time.

To recall Answer Memory contents

Press SHIFT and then [Ans] (which is the shifted function of the [-] key). This operation is represented as SHIFT Ans throughout this manual.

Example

To perform 3.56 + 8.41 and then divide 65.38 by the result

AC 3 - 5 6 + 8 - 4 1 EXE 6 5 · 3 8 ÷ SHIFT Ans EXE

(2) Consecutive Calculations

If the result of the last calculation is the first term of the next calculation, you can use the result as it is on the display without recalling Answer Memory contents.

To perform a consecutive calculation

To perform 0.57×0.27 , and then add 4.9672 to the results Example

> AC 0 • 5 7 X 0 • 2 7 EXE +4 · 9 6 7 2 EXE

(3) Replay

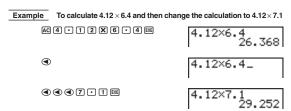
While the result of a calculation is on the display, you can use
and to move the cursor to any position within the expression used to produce the result. This means you can back up and correct mistakes without having to input the entire calculation. You can also recall past calculations you have already cleared by pressing AC.

Operation

The first press of

displays the cursor at the beginning of the expression, while displays the cursor at the end. Once the cursor is displayed, use for move it right and (1) to move it left.

To use Replay to change an expression



Multi-Replay

Pressing AC and then (a) or (v) sequentially recalls and displays past calculations.

(4) Error Recovery

Whenever an error message appears on the display, press
or
to re-display the expression with the cursor located just past the part of the expression that caused

the error. You can then move the cursor and executing the calculation again.	make necessary corrections before
•To correct an expression that causes	an error
$\begin{tabular}{ c c c c c } \hline Example & To recover from the error general instead of 148 ÷ 0.3 × 3.37 \\ \hline \end{tabular}$	erated by performing 148 \div 0. \times 3.37
AC 1 4 8 ÷ 0 • X 3 • 3 7 EE	148÷0.×3.37
	Ma ERROR

(You could also press ►).
 148÷0. ≥3.37
 (See below for details as making.).

(See below for details on making corrections.)

148÷0.3×3.37
1662.533333

(5) Making Corrections

Use the
and
keys to move the cursor to the position you want to change, and then perform one of the operations described below. After you edit the calculation, you can execute it by pressing , or use to the end of the calculation and input more.

To change a step

Example To change cos60 to sin60	
cos 6 O	cos 60_
\odot	<u>c</u> os 60
sin	sin <u>6</u> 0

Sin	sin <u>6</u> 0
●To delete a step	
369 X X 2	369××2_
④ ● ■	369× <u>2</u>
●To insert a step	
Example To change 2.362 to sin2.362	
2 • 3 6 22	2.362_

@@@@	2.36²
SHIFT (INS)	[2], 36²
sin	sin 2,36²

When you press IK a space is indicated by the symbol "C?". The next function or value you input is inserted at the location of "C?". To abort the insert operation without inputting anything, move the cursor, press IK again, or press ②, ② or ☑.

7. Using Variables

A total of 26 variables, named A through Z, are available for assignment of numeric values. Variable contents are retained even when you turn the calculator off. Note that when you assign a value to a variable, the calculator assigns its 15-digit internal value.

To assign a value to a variable

Operation

<value or expression> → APHA <variable name: A to Z>

Example 1 To assign 1024 to variable A

AC 1 0 2 4 → ALPHA A EXE

1024+A	
	1024

Example 2 To display the contents of variable A

AC ALPHA A EXE

А	
	1024

Example 3 To clear the contents of variable A

To clear a variable, simply assign 0 to it.

AC 0 ALPHA A EXE



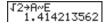
To assign the same value to more than one variable

Operation

<value or expression>→ (LAM) < start variable name> (LAM) (F3) (~) (LAM) < end variable name> (SE)

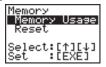
Example To assign the result of $\sqrt{2}$ to variables A, B, C, D, and E

AC SHIFT \checkmark 2 \rightarrow ALPHA (A JUPHA F3 (~)
ALPHA (E) EXE



To clear the contents of all variables

In the Main Menu, select the MEM icon and press EXE.



Select Memory Usage.

EXE



Press To scroll the display until "Alpha" is highlighted.





F1(DEL)



Press [F] (YES) to clear all variables or [4] (NO) to abort the clear operation without clearing anything.

8. Fraction Calculations

(1) Fraction Display and Input

Example 1 Display of
$$\frac{3}{4}$$

Mixed fractions (such as 3 1/4) are input and displayed as:

integer_numerator_denominator.

Improper fractions (15/7) and proper fractions (such as 1/4) are input and displayed as: numerator_denominator.

Use the key to input each part of a fraction.

To input a fraction

Operation

Proper Fraction or Improper Fraction Input: <numerator value>@<denominator value> Mixed Fraction Input: <integer value>@</numerator value>@</numerator value>

Example To input
$$3\frac{1}{4}$$

Press 3 @ 1 @ 4 .

Note that the maximum size of a fractional value is 10 digits, counting the integer, numerator, and denominator digits and separator symbols. Any value longer than 10 digits is automatically converted to its equivalent decimal value.

(2) Performing Fraction Calculations

Example
$$\frac{2}{5} + 3\frac{1}{4}$$
AC 2 @ 5 + 3 @ 1 @ 4 EE

To convert between fraction and decimal values

Operation

Fraction to Decimal Conversion: F-D

Decimal to Fraction Conversion: F-D

Example

To convert the result of the previous example to a decimal and then back to a fraction

F↔D

2,5+3,1,4

F÷D

3,13,20 2,13,20

•To convert between proper and improper fractions

Operation

Mixed Fraction to Improper Fraction Conversion: SHIFT @/c

Improper Fraction to Mixed Fraction Conversion: SHFT @/cl

Example T

To convert the result of the previous example to an improper fraction and then back to a proper fraction

SHIFT d/c

SHIFT d/c

The calculator automatically reduces the results of fraction calculations. You can
use the procedure described under "Changing the Fraction Simplification Mode"
below to specify manual fraction simplification.

•To perform a mixed decimal and fraction calculation

Example 5.2 × 1/5

AC 5 • 2 × 1 AR 5 EXE

 The result of a calculation that mixes fractions and decimal values is always a decimal value.

•To use parentheses in a fraction calculation

Example $\frac{1}{\frac{1}{3} + \frac{1}{4}} + \frac{2}{7}$

+ 2 ab 7 EXE

AC 1 @ (1 @ 3 + 1 @ 4)

1,(1,3+1,4)+2

(3) Changing the Fraction Simplification Mode

The initial default of the calculator is automatic simplification of fractions produced by fraction calculations. You can use the following operation to change the fraction simplification mode to manual.

To change the fraction simplification mode

Example To change the fraction simplification mode to manual

SHIFT SETUP

(Displays the Set Up Screen.)



▼ ▼ ▼ F2 (Man)



When the fraction simplification is set to manual, you have to use the Option Menu to simplify fractions. You can let the calculator select the divisor to use for simplification or you can specify a divisor.

•To simplify using the calculator's divisor

Operation

Perform calculations after selecting the RUN icon in the Main Menu to enter the RUN Mode.

To display the simplification menu: OPTN F2 (CALC)

To select automatic simplification: F1 (Simp) [EXE]

To specify the divisor for simplification*: F1 (Simp) < Divisor> EXE

* You can specify only a positive integer as the divisor.

To perform the calculation $1\frac{6}{27} + 1\frac{1}{9}$ and reduce the result

AC 1 @ 6 @ 2 7 + 1 @

1 a 9 EXE

1,6,27+1,1,9

(The result that appears when using manual simplification is the least common multiple of the fractions used in the calculation.)

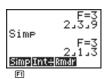
OPTN F2 (CALC) F1 (Simp) EXE

1,6,27+1,1,9
Simp
_ E=3
SimpInteRmon
Sumblance Puntal
F1

- F = 3 indicates that 3 is the divisor.
- The calculator automatically selects the smallest possible divisor for simplification.

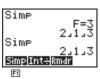
Repeat the above operation to simplify again.

F1 (Simp) EXE



Try once again.

F1 (Simp) EXE

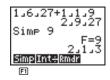


This display indicates that further simplification is impossible.

•To simplify using your own divisor

Example To perform the above calculation and then specify 9 as the divisor to use for simplification

F1 (Simp) 9 EXE



 If the value you specify is invalid as a divisor for simplification, the calculator automatically uses the lowest possible divisor.

9. Selecting Value Display Modes

You can make specifications for three value display modes.

Fix Mode

This mode lets you specify the number of decimal places to be displayed.

This mode lets you specify the number of significant digits to be displayed.

Norm 1/Norm 2 Mode

This mode determines at what point the display changes over to exponential display

Display the Set Up Screen and use the (a) and (v) keys to highlight "Display".



To specify the number of decimal places (Fix)

- While the set-up screen is on the display, press F1 (Fix).
- 2. Press the function key that corresponds to the number of decimal places you want to set (0 to 9).
 - Press D to display the next menu of numbers.

To specify two decimal places Example F1 (Fix) F3 F3 (2) Display:Fix2

Press the function key that corresponds to the number of decimal places you want to specify.

- · Displayed values are rounded off to the number of decimal places you specify.
- A number of decimal place specification remains in effect until you change the Norm Mode setting.

To specify the number of significant digits (Sci)

- 1. While the set-up screen is on the display, press F2 (Sci).
- Press the function key that corresponds to the number of significant digits you want to set (0 to 9).
 - Press D to display the next menu of numbers.

Example To speci

To specify three significant digits



F2 (Sci)







Press the function key that corresponds to the number of significant digits you want to specify.

- Displayed values are rounded off to the number of significant digits you specify.
- . Specifying 0 makes the number of significant digits 10.
- A number of significant digit specification remains in effect until you change the Norm Mode setting.

• To specify the exponential display range (Norm 1/Norm 2)

Press [F3] (Norm) to switch between Norm 1 and Norm 2.

Norm 1: $10^{-2} (0.01) > |x|$. $|x| \ge 10^{10}$

Norm 2: 10^{-9} (0.000000001)>|x|, |x| $\ge 10^{10}$

10. Scientific Function Calculations

Use the **RUN Mode** to perform calculations that involve trigonometric functions and other types of scientific functions.

(1) Trigonometric Functions

Before performing a calculations that involves trigonometric functions, you should first specify the default angle unit as degrees (°), radians (r), or grads (g).

Setting the Default Angle Unit

The default angle unit for input values can be set using the set up screen. If you set degrees (°) for example, inputting a value of 90 is automatically assumed to be 90° The following shows the relationship between degrees, radians, and grads.

 $90^{\circ} = \pi/2 \text{ radians} = 100 \text{ grads}$

•To set the default angle unit

Example To change the angle unit from radians to degrees

SHIFT SETUP



▼ (F1)(Deg)



 Once you change the angle unit setting, it remains in effect until you change it again using the set up screen. You also should check the set up screen to find out what the current angle unit setting is.

■ Converting Between Angle Units

You can use the following procedure to input a value using an angle unit that is not the current default angle unit. Then when you press , the value will be converted to the default angle unit.

To convert between angle units

Example

To convert 4.25 radians to degrees while degrees are set as the default angle unit

AC 4 • 2 5 OPTN >



F2

4.25r 243.5070629

F2

F2 (ANGL) F2 (r) EXE



■ Trigonometric Function Calculations

Always make sure that the default angle unit is set to the required default before performing trigonometric function calculations.

•To perform trigonometric function calculations

Example 1 sin (63° 52' 41")

Default angle unit: Degrees

SHIFT SETUP (TO F1 (Deg) QUIT

sin 6 3 PTN \triangleright F2(ANGL) \triangleright F1(°'") 5 2 F1(°'") 4 1 F1(°'") EXE

Result: 0.897859012

Example 2 $\sec(\frac{\pi}{3} \text{ rad}) = \frac{1}{\cos(\frac{\pi}{3} \text{ rad})}$

Default angle unit: Radians

SHIFT SETUP TO F2 (Rad) QUIT

1 \div \cos (SHIFT π \div 3) EXE

Result: 2

Example 3 tan(-35grad)

Default angle unit: Grads

tan (-) 3 5 EXE

Result: -0.6128007881

(2) Logarithmic and Exponential Function Calculations

- A base 10 logarithm (common logarithm) is normally written as log10 or log.
- A base $e\left(\lim_{n\to\infty}\left(1+\frac{1}{n}\right)^n=2.71828...\right)$ logarithm (natural logarithm) is normally written as log or In.

Note that certain publications use "log" to refer to base $e \log \operatorname{arithms}$, so you must take care to watch for what type of notation is being used in the publications you are working with. This calculator and manual use "log" to mean base 10 and "ln" for base e.

•To perform logarithmic/exponential function calculations

Example 1 log1.23

log 1 • 2 3 EXE

Result: 0.0899051114

Example 2 In90

In 9 0 EXE

Result: 4.49980967

Example 3 To calculate the anti-logarithm of common logarithm 1.23 (10^{1.23})

SHIFT 102 1 • 2 3 EXE

Result: 16.98243652

Example 4 To calculate the anti-logarithm of natural logarithm 4.5 ($e^{4.5}$)

SHIFT e^x 4 • 5 EXE

Result: 90.0171313

Example 5 $(-3)^4 = (-3) \times (-3) \times (-3) \times (-3)$

(-) 3) A 4 EXE

Result: 81

Example 6 7√123

7 SHIFT 7 1 2 3 EXE

Result: 1.988647795

(3) Other Functions

Example	Operation	Display
$\sqrt{2} + \sqrt{5} = 3.65028154$	SHIFT 72 + SHIFT 75 EXE	3.65028154
$(-3)^2 = (-3) \times (-3) = 9$	((-)3) x² EXE	9
$-3^2 = -(3 \times 3) = -9$	(-) 3 x ² EXE	- 9
$\frac{1}{\frac{1}{3} - \frac{1}{4}} = 12$	(3 SHIFT 2° -4 SHIFT 2° EXE	12
8! (= 1 × 2 × 3 × × 8) = 40320	80FN F4 (PROB) F1 (x!) EXE	40320
$\sqrt[3]{36 \times 42 \times 49} = 42$	SHIFT ₹ (36 × 42 × 49) EXE	42
Random number generation pseudo random number petween 0 and 1.)	@TN F4 (PROB) F4 (Ran#) @E	(Ex.) 0.4810497011

Example	Operation	Display
What is the absolute value of the common logarithm of $\frac{3}{4}$?		
$ \log \frac{3}{4} = 0.1249387366$	(Abs) (G (3 ÷ 4) EXE	0.1249387366
What is the integer part of $\frac{7800}{96}$?	©™ ▷ F1 (NUM) F2 (Int) 【 7800 → 96 〕	81
What is the decimal part of $\frac{7800}{96}$?	PTN ▷ F1 (NUM) F3(Frac) (7800 ÷ 96) E©	0.25
200 + 6 = ×3 = Round the value used for internal calculations to 11 digits*	200 🕂 6 EE X 3 EE 200 🕂 6 EE PM D F1 (NUM) F4(Rnd) EE X 3 EE	33.3333333 100 33.33333333 33.33333333 99.99999999
What is the nearest integer not exceeding – 3.5?	(NUM) > F1 (NUM) > F1 (Intg) -3.5 € €	- 4

[•] When a Fix (number of decimal places) or Soi (number of significant digits) is in effect, Rnd rounds the value used for internal calculations in accordance with the current Fix or Soi specification. In effect, this makes the internal value match the displayed value.

(4) Coordinate Conversion

• Rectangular Coordinates

P(x,y) Pol Rec

Polar Coordinates



• With polar coordinates, θ can be calculated and displayed within a range of $-180^\circ < \theta \le 180^\circ$ (radians and grads have same range).

	Example To calculate r and θ when $x = 14$ and $y = 20.7$		
Operation		Display	
	SHF EUP ▼ ▼ F1 (Deg) (UII) (PTN) ▷ [2] (ANGL) ▷ ▷ F1 (Pol()14 ▼ 20.7 ()) EE	Ans 1 24.989 → 24.98979792 (r) 2 55.928 → 55.92839019 (θ)	

(5) Permutation and Combination

- Permutation
- Combination

$$nPr = \frac{n!}{(n-r)!}$$

$$nCr = \frac{n!}{r! (n-r)!}$$

Example

To calculate the possible number of different arrangements using 4 items selected from 10 items

Formula	Operation	Display
10P4 = 5040	10@TN F4 (PROB) F2 (nPr)4EXE	5040

Example

To calculate the possible number of different combinations of 4 items selected from 10 items

Formula	Operation	Display
10C4 = 210	10(PTN F4)(PROB)	
	F3 (nCr)4EXE	210

(6) Other Things to Remember

■ Multiplication Sign

You can leave out the multiplication sign in any of the following cases.

- In front of the following scientific functions:
 - sin, cos, tan, sin⁻¹, cos⁻¹, tan⁻¹, log, ln, 10^x , e^x , $\sqrt{}$,

Examples: 2 sin30, 10log1,2, 2 √3, etc.

- In front of constants, variable names, Ans memory contents.
- Examples: 2π , 2AB, 3Ans, 6X, etc. In front of an open parenthesis.

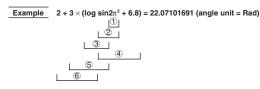
in in one or an opon paronalous.

Examples: 3(5 + 6), (A + 1)(B - 1)

■ Calculation Priority Sequence

The calculation priority sequence is the order that the calculator performs operations. Note the following rules about calculation priority sequence.

- · Expressions contained in parentheses are performed first.
- When two or more expressions have the same priority, they are executed from right to left.



The following is a complete list of operations in the sequence they are performed.

- Coordinate transformation: (Pol (x, y), Rec (r, θ); differential calculations: d/dx(; List: Fill, Seg, Min, Max, Mean, Median, SortA, SortD
- Type A functions (value input followed by function): x², x⁻¹, x! sexagesimal input: ° ' "
- Powers: ^ (x^y): roots: x√
- 4. Fraction input: a^b/c
- Multiplication operations where the multiplication sign before π or a variable is omitted: 2π: 5A: 3sinx: etc.
- Type B functions (function followed by value input):
 √, ³√, log, ln, e^x, 10^x, sin, cos, tan, sin⁻¹, cos⁻¹, tan⁻¹, (-), Dim, Sum
- Multiplication operations where the multiplication sign before a scientific function is omitted: 2√3; Alog2; etc.
- 8. Permutation: nPr; combination: nCr
- 9. Multiplication; division; integer division; remainder division
- 10. Addition: subtraction
- 11. Relational operators: =, +, >, <, \ge , \le

■ Using Multistatements

Multistatements are formed by connecting a number of individual statements for sequential execution. You can use multistatements in manual calculations and in programmed calculations. There are two different ways that you can use to connect statements to form multistatements.

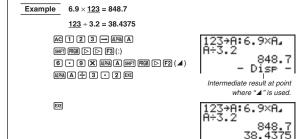
Colon (:)

Statements that are connected with colons are executed from left to right, without stopping.

Display Result Command (▲)

When execution reaches the end of a statement followed by a display result command, execution stops and the result up to that point appears on the display. You can resume execution by pressing the EXE key.

To use multistatements



- Note that the final result of a multistatement is always displayed, regardless of whether it ends with a display result command.
- . You cannot construct a multistatement in which one statement directly uses the result of the previous statement.

Stacks

When the calculator performs a calculation, it temporarily stores certain information in memory areas called a "stacks" where it can later recall the information when it is necessary.

There are actually two stacks: a 10-level numeric stack and a 26-level command stack. The following example shows how data is stored in the stacks.

A calculation can become so complex that it requires too much stack memory and cause a stack error (Stk ERROR) when you try to execute it. If this happens, try simplifying your calculation or breaking it down into separate parts. See "How to Calculate Memory Usage" for details on how much memory is taken up by various commands.

Errors

An error message appears on the display and calculation stops whenever the calculator detects some problem. Press AC to clear the error message.

The following is a list of all the error messages and what they mean.

Ma ERROR - (Mathematical Error)

- A value outside the range of ±9.99999999 × 10⁹⁹ was generated during a calculation, or an attempt was made to store such a value in memory.
- An attempt was made to input a value that exceeds the range of the scientific function being used.
- · An attempt was made to perform an illegal statistical operation.

Stk ERROR - (Stack Error)

• The calculation being performed caused the capacity of one of the stacks to be exceeded

Syn ERROR - (Syntax Error)

An attempt to use an illegal syntax.

Ara ERROR - (Argument Error)

An attempt to use an illegal argument with a scientific function.

Dim ERROR - (Dimension Error)

 An attempt to perform an operation with two or more lists when the dimensions of the lists do not match.



In addition to the above, there are also a Mem ERROR and Go ERROR. See "Error Message Table" for details.

How to Calculate Memory Usage

Some key operations take up one byte of memory each, while others take up two bytes.

1-byte operations: 1, 2, 3, ..., sin, cos, tan, log, ln, $\sqrt{}$, π , etc.

2-byte operations: d/dx(, Xmin, If, For, Return, DrawGraph, SortA(, Sum, etc.

■ Memory Status (MEM)

You can check how much memory is used for storage for each type of data. You can also see how many bytes of memory are still available for storage.

To check the memory status

1. In the Main Menu, select the MEM icon and press EXE.



2. Press 🕮 again to display the memory status screen.



3. Use (a) and (b) to move the highlighting and view the amount of memory (in bytes) used for storage of each type of data.

The following table shows all of the data types that appear on the memory status screen.

Data type	Meaning
Program	Program data
Stat	Statistical calculations and graphs
List	List data
Y=	Graph functions
Draw	Graph drawing conditions (View Window, enlargement/reduction factor, graph screen)
V-Win	View Window memory data
Table	Table & Graph data
Alpha	Alpha memory data

■ Clearing Memory Contents

To clear all data within a specific data type

 In the memory status screen, use and to move the highlighting to the data type whose data you want to clear.

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2. Press F1 (DEL).

F1(DEL)



 Press Fi (YES) to clear the data or F4 (NO) to abort the operation without clearing anything.

■ Variable Data (VARS) Menu

You can use the variable data menu to recall the data listed below.

- · View Window values
- · Enlargement/reduction factor
- Single-variable/paired-variable statistical data
- · Graph functions
- · Table & Graph table range and table contents

To recall variable data, press WARS to display the variable data menu.





F1 (V-WIN) View Window values

F2 (FACT) x and y-axis enlargement/reduction factor





F1 (STAT) Single/paired-variable statistical data

F2 (GRPH) Graph functions stored in the GRAPH Mode

[F3] (TABL) Table & Graph function table range and table contents

Press D to return to the previous menu.

To recall View Window values

Pressing [F] (V-WIN) while the variable data menu is on the screen displays a View Window value menu.

F1 (V-WIN)



- [F1] (Xmin) x-axis minimum
- F2 (Xmax) x-axis maximum
- F3 (Xscl) x-axis scale



- F1 (Ymin) y-axis minimum
- F2 (Ymax) y-axis maximum
- F3 (Yscl) y-axis scale



- F1 (Tmin) Minimum of T
- F2 (Tmax) Maximum of T
- F3 (Tpth) Pitch of T

Press D to return to the previous menu.

To recall enlargement and reduction factors

Pressing [72] (FACT) while the variable data menu is on the screen displays an enlargement/reduction factor menu.

F2 (FACT)



- F1 (Xfct) x-axis enlargement/reduction factor
- F2 (Yfct) y-axis enlargement/reduction factor

To recall single/paired-variable statistical data

Pressing $\[igorims_{} \]$ and then $\[igorims_{} \]$ while the variable data menu is on the screen displays a statistical data menu.

▶ F1 (STAT)



 $\fbox{\bf F1} \ (X) \ Single/paired-variable$

x-data menu

F2 (Y) Paired-variable y-data menu

F3 (GRPH) Statistical graph data menu

F4 (PTS) Summary point data menu

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The following menu appears whenever you press [F] (X), while the statistical data menu is on the display.

F1 (X)

F1 (n) Number of data

[F2] (\bar{x}) Mean of x data

F3 (Σx) Sum of x data



26 n 26 n (min X max X

- [f1] $(x\sigma_n)$ x data population standard deviation
- F2 (xon-1) x data sample standard deviation
- F3 (minX) x data minimum value
- F4 (maxX) x data maximum value

Press D to return to the previous menu.

The following menu appears whenever you press [2] (Y) while the statistical data menu is on the display.

F2 (Y)



- **F1** (\bar{y})...... Mean of y data
- F2 (Σy) Sum of y data
- F3 (Σy^2) y data sum of squares
- **F4** (Σxy) x data and y data sum of products

 \Box



- [f1] $(y\sigma_n)$ y data population standard deviation
- F2 (yon-1) y data sample standard deviation
- F3 (minY) y data minimum value
- F4 (maxY) y data maximum value

Press D to return to the previous menu.

The following menu appears whenever you press [3] (GRPH) while the statistical data menu is on the display.

F3 (GRPH)



F1(a)-F3(c) ... Statistical graph regression coefficient and multinomial coefficients

F4 (r) Statistical graph correlation coefficient



F1 (Q1) First quartile

F2 (Med) Median of input data

F3 (Q3) Third quartile

F4 (Mod) Mode of input data

Press D to return to the previous menu.

The following menu appears whenever you press [4] (PTS) while the statistical data menu is on the display.





[F1](x1)-[F4](y2) Coordinates of summary points



[F1] (x3)-[F2] (y3) Coordinates of summary points

Press D to return to the previous menu.

To recall graph functions

Pressing D and then (2) (GRPH) while the variable data menu is on the screen displays a graph function menu.

F2 (GRPH)



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Input a storage area number and then press one of the following function keys to recall the corresponding graph function stored in that storage area.

F1 (Y)Rectangular coordinate or inequality function

F2 (Xt) Parametric graph function Xt

F3 (Yt) Parametric graph function Yt

•To recall Table & Graph table range and table content data

Pressing D and then (3) (TABL) while the variable data menu is on the screen displays a Table & Graph data menu.

F3 (TABL)



F1 (Strt) Table range start value (F Start command)

F2 (End) Table range end value (F End command)

F3 (Pitch) Table value increment (F Pitch command)