WriteView FI -W506X MODEL EL-W516X

OPERATION MANUAL

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INTRODUCTION

Thank you for purchasing the SHARP Scientific Calcula Model EL-W506X/W516X. About the calculation examples (including some formulas and tables), refer to the calculation example sheet. Refer to the number on the right of each title in the manual for use. After reading this annual, store it in a convenient location for future reference.

- available in some countries.

 This product uses a period as a decimal point.

- Operational Notes Do not carry the calculator around in your back pocket, as it may break when you sit down. The display is made of glass and is particularly fracile.
- and is particularly fragile.

 Keep the calculator away from extreme heat such as on a car disabboard on one at heater, and avoid exposing it to excessively humid or dusty environments.

 Since his product is not waterpoor, do not use it or store it where fluids, for example water, can apisah onto it. Raindrogo, water graph, juice, coffee, steam, perspiration, etc. will also cause malfunction.
- Clean with a soft, dry cloth. Do not use solvents or a wet cloth. Avoid using a rough cloth or anything else that may cause scratches.
- Do not drop it or apply excessive force.
- ies in a fin
- Keep batteries out of the reach of child
- Keep batteries out of the reach of children.
 For the saked sych brealth, my not to use this product for long periods of time. If you need to use the product for an extended princit, he sum to allow year, every hour, and body adequate rest periods (about 10–15 minutes every hour).

 If you experience any pain or falsigue while using this product, discontinue use immediately, if the discomfort continues, please consult a doctor.

 This product, including accessories, may change due to upgrading without prior notice.

- NOTICE

 SHARP strongly recommends that separate permanent written records be kept of all important data. Data may be lost of all ender the contract be kept of all important data. Data may be lost of altered in vintually any electronic memory product under certain circumstances. Therefore, SHARP assumes on responsibility of data foot of otherwise rendered unusable whether as a result of improper use, repairs, defects, battery life has expited, or any other cause.

 SHARP will not be table nor responsible for any incidenta or consequential economic or property damage caused by misuse andor mailtructions of this product and its peripherals, unless such liability is acknowledged by law.
- ball-point pen or similar object, only in the following case

 When using for the first time

 After replacing the battery

 To clear all memory contents

 When an abnormal condition occurs and all keys are inconcertive.

- Do not use an object with a breakable or sharp tip. Note that pressing the RESET switch erases all data stored in memor

If service should be required on this calculator, use only a SHARP servicing dealer, SHARP approved service facility, or SHARP repair service where available.

Hard Case



- During actual use, not all symbols are displayed at the same time
 Only the symbols required for the usage currently being explaine are shown in the display and calculation examples in this manual

- nown in the display and calculation examples in this im Indicates that some contents are hidden in the directions shown. Appears when [金] is pressed, indicating that the functions shown in cange are enabled. Indicates that [元] has been pressed and the hyperbolic functions are enabled. If [金] 原形 is pressed, the symbols 2mff HVP appear. Indicatine review hyperbolic functions are enabled.

pressed, the symbols when they appear in moutant parts where the present part of the present parts of the p BEFORE USING THE CALCULATOR

When using for the first time, press the RESET switch (on the back), with the tip of a ball-point pen or similar object. Adjusting the Display Contrast

s 2ndF SETUP 3, then + or - to adjust the ast. Press (NNC) to exit.

Power On and Off

Press (ONC) to turn the calculator on. The data that was onscreen when the power was turned off will appear on the display.

Press (ONE) OFF to turn the calculator off. Key Notations Used in this Manual

In this manual, key operations are described as follows



- Functions that are printed in orange above the key require
 ②□ to be pressed first before the key. When you specify the
 memory, press (2.39) lest. Numbers for input values are not
 shown as keys, but as ordinary numbers.
 Functions that are printed in gray adjacent to the keys are
 effective in specific modes.
 The multiplication operator 'X' is differentiated from the letter
 'X' in his manual as follows.

- To specify the letter "X": APAN X

This calculator has the following two editors in NORMAL mode: WriteView and Line. You can select between them in the SET LIP



(1(8-3)),2×9= 10.0623059 The Line ~**

In certain calculation examples, where you see the LINE

- . The WriteView Editor is only available in NORMAL mode

as they would appear				IOWII
learing the Entry	and Me	emorie	es	
Operation	Entry (Display)	A-F,	F1-F4, ANS STAT*3	natA-D*4

ONIC	0	×	×	×	×	×	
2ndF CA	0	×	×	0	0	0	
Mode selection (MODE)	0	×	×	×	×*5	0	
2ndF(M-CLR) 0 *7	0	×	×	×	×	×	
2ndF(H-CLR) 1 0 *7	0	0	0	0	0	0	
2ndF(M-0.R) 2 0 *7.*8	0	0	0	0	0	0	
RESET switch*8							
○: Clear ×: Betain							
"1 Press ONC STO and variable memory. "2 Formula memories ar Calculations".				,			
"3 Statistical data (entered data)							
*4 Matrix memories (matA, matB, matC, and matD)							
*5 List memories (L1, L2, L3, and L4)							
*6 Cleared when changing between sub-modes in STAT mode.							
*7 See "Memory clear key".							
*8 The username you st be cleared as well.	ored u	sing the	name	displa	ay func	tion w	ill
Memory clear key							

- to cleared as wee.

 Memory clear key deplay the menu.

 To initiatize the deplay settings, press [2] The parameters are set as follows:

 Angular unit DEG

 **Display notation: NORM1*

 **Notase: DEC

- N-base: LEC To clear all variables and memories (A-F, M, X, Y, F1-F4, D1-D4, ANS, STAT, math-D, and L1-L4) at once, press 1 1 0 1 RESET to acclusation; press 2 2 0 1 The RESET operation will erase all data stored in memory and restore the calculator's default settings. You can do the same thing by pressing the RESET switch on the back of the calculator.





STAT mode: MODE 1

Used to perform statistical operations DRILL mode: (MODE) 2

Used to practice math and multiplication table drills. CPLX mode: (MODE) 3

Used to perform complex number calculations MATRIX mode: MCCE 4

Used to perform matrix calcul

LIST mode: MODE 5

EQUATION mode: MODE 6

Used to solve equations

SET UP Menu

Determination of the angular unit
The following three angular units (degre
can be specified.

GRAD (pr. Graph (mr.) 2. 2

Selecting the display notation and decimal places
Five display notation and adecimal places
Five display notation systems are used to display colculation.
Five display notation systems are used to display colculation.
Five discinnal point (FIN), Geomitien notation (SCI), and
Emponening notation (END).

**When Graph (TIN) (FIN) or Graph (TIN) or Graph (TIN) or discinnal places (TIN) can be set to any value between 0 and value of the control of scientific places (TIN) can be set to any value between 0 and value of the control of

- Setting the floating point number system in scientific notation.

 Two settings are used to display a floating-point number: NORM1 (the default) and NORMZ. A number is automatically displayed in scientific notation outside a present range:
- NORM1 (@mF(strur) 1 3); 0.000000001≤|x|≤9,999,999,999 NORM2 (@mF(strur) 1 4); 0.01≤|x|≤9,999,999,999

- Adjusting the display contrast

 Press @st@ @stup 3, then + or to adjust the co

Insert and overwrite entry methods

When using the Line editor, you can change the entry method from "INSERT" (the default) to "OVERWHITE". After you switch to the overwrite method (by pressing @@F @TP . The triangular cursor will change to a rectangular one, and the number of function underneath it will be overwritten as you make entries. Name display function

Name display function
You can save a username in this calculator. When you turn the power off, the search denrame is displayed momentarily.
Up to 32 characters may be saved, spill over two lines.
Entering and editing the username.

1. Press (may (pro) 2. The editing score appears with a flashing cursor.

flashing cursor.

2. Use
 and
 to scroll
through the available characters. The following character be entered (listed in the order that they appear can be entered (listed in the order that they appear):
Letters (A to Z, uppercase only), numbers (0 to 9), slash (/),
hyphen (-), colon (-), apostrophe (-), comma (.), period (.),
and space (.).
Press () in jump to "A", and press () v or

@RC) to jump to the space.

ENTERING, DISPLAYING, AND EDITING THE EQUATION ②

The WriteView Editor
Entry and display
In the WriteView editor, you can
enter and display fractions or cortain
functions as you would write them.

In the following cases, calculation results may be displayed

- uring 4: covering tasses, calculations when ye as using 4 covering 4: coverin
- right portion is hidden). Improper/proper fractions will be converted to and displ as deciral numbers if the number of digits used in their expression is greater than nine. In the case of mixed tractions, the maximum number of displayable digits (including integrap) is eight. If the number of displayable digits (including integrap) is eight. If the number of digits in the denominator of a fraction result that uses "it a greater than three, the result is converted to and displayed as a decimal number.

Up to three lines of text may be viewed on the screen at one time

viewed on the screen at one time.

If the length of the equation exceeds three lines, parts of it
may be hidden from view after calculation. If you want to see
the rest of the equation, press
or to return to the

Back space and delete key

To delete a number or function, move the cursor to the right of it, then press (BS) You can also delete a number or function that the cursor is directly over by pressing (2mF) (DEL).





The CATALOG Menu
Using the CATALOG menu, you can select functions and variables that are available for what you are doing in the currently selected mode. To display the CATALOG menu, press [607]

- ress MATH) O.

 Press A or V to move the cursor (3) and press (NTIR) to select.

Multi-line Playback Function

This calculator is equipped with a function to recall previous equations and answers in NORMAL or CPLX modes. A maximum of 340 characters can be stored in memory. When the memory is full, stored equations will be deleted to make room, starting with the oldest.

room, starring with the oldest. Pressing [a. will display the previous equation. Further pressing [a.] will display preceding equations (after return to the previous equation, press [a.] to view equations in order). In addition, Tage [a.] can be used to jump to the indest equation, and [a...] by jump to the newest one. I so did an equation after recalling it, press [a...] or "a thin equation after recalling it, press [a...] or "b.". The multi-line memory will be cleared by the following operations:

- vperacortis:
 2mf CA, mode change, RESET, N-base conversion,
 angular unit conversion, editor change (2mf (2mf)
 0 or 2mf (2mf) 2 1), and memory clear (2mf)
 (4mg) 1 0).
- (EGR) The Equations that have one result require an additional eleven characters' worth of memory to store in order to hold the result in addition to the amount of memory needed to store an equation, the WriteView editor will require a certain amount of the sake of display.

 Equations also include calculation ending instructions, such asking

Priority Levels in Calculation

This calculator performs operations according to the following priority:

① Fractions (1 r 4, etc.) ② / Feetings according to the following priority:

priority. $\label{eq:continuous} \begin{aligned} &\text{Finding (r+4, otc.) \mathcal{Q}} \angle, &\text{Engineering prefixes} \\ &\text{Functions preceded by their argument $(x^+, x^*, e, h, etc.)$ \\ &\text{$\varphi_1 x^*, x^*$} &\text{In prior an among value $(\mathcal{R}', \text{otc.})$ \\ &\text{$\varphi_1 x^*, x^*$} &\text{In prior argument $(sin, \cos, (-), \text{otc.})$ \\ &\text{$\varphi_1 x^*, x^*$} &\text{In prior and $(sin, \cos, (-), \text{otc.})$ \\ &\text{$\varphi_1 x^*, x^*$} &\text{Engine and $(sin, \cos, (-), \text{otc.})$ \\ &\text{$\varphi_1 x^*, x^*$} &\text{$\varphi_1 x^*, x^*$} &\text{$\varphi_1 x^*, x^*$} &\text{$\varphi_1 x^*, x^*$} \\ &\text{$\varphi_1 x^*, x^*$} &\text{$\varphi_1 x^*, x^*$} &\text{$\varphi_1 x^*, x^*$} &\text{$\varphi_1 x^*, x^*$} \\ &\text{$\varphi_1 x^*, x^*$} &\text{$\varphi_1 x^*, x^*$} &\text{$\varphi_1 x^*, x^*$} &\text{$\varphi_1 x^*, x^*$} \\ &\text{$\varphi_1 x^*, x^*$} &\text{$\varphi_1 x^*, x^*$} &\text{$\varphi_1 x^*, x^*$} \\ &\text{$\varphi_1 x^*, x^*$} &\text{$\varphi_1 x^*, x^*$} &\text{$\varphi_1 x^*, x^*$} \\ &\text{$\varphi_1 x^*, x^*$} &\text{$\varphi_1 x^*, x^*$} &\text{$\varphi_1 x^*, x^*$} \\ &\text{$\varphi_1 x^*, x^*$} &\text{$\varphi_1 x^*, x^*$} &\text{$\varphi_1 x^*, x^*$} \\ &\text{$\varphi_1 x^*, x^*$} &\text{$\varphi_1 x^*, x^*$} &\text{$\varphi_1 x^*, x^*$} \\ &\text{$\varphi_1 x^*, x^*$} &\text{$\varphi_1 x^*, x^*$} &\text{$\varphi_1 x^*, x^*$} \\ &\text{$\varphi_1 x^*, x^*$} &\text{$\varphi_1 x^*, x^*$} &\text{$\varphi_1 x^*, x^*$} \\ &\text{$\varphi_1 x^*, x^*$} &\text{$\varphi_1 x^*, x^*$} &\text{$\varphi_1 x^*, x^*$} \\ &\text{$\varphi_1 x^*, x^*$} &\text{$\varphi_1 x^*, x^*$} &\text{$\varphi_1 x^*, x^*$} \\ &\text{$\varphi_1 x^*, x^*$} &\text{$\varphi_1 x^*, x^*$} &\text{$\varphi_1 x^*, x^*$} \\ &\text{$\varphi_1 x^*, x^*$} &\text{$\varphi_1 x^*, x^*$} &\text{$\varphi_1 x^*, x^*$} \\ &\text{$\varphi_1 x^*, x^*$} &\text$

If parentheses are used, parenthesized calculations have precedence over any other calculations

SCIENTIFIC CALCULATIONS

Arithmetic Operations

Press (MODE) 0 to select NORMAL mode. In each example, press (MIC) to clear the display first. Unless otherwise specified, calculation examples are performed in the WriteView editor (26%) (20%) 2 0) with the defautisplay settings (26%) (MIC) 0).

The closing parenthesis just before or m+ may be omitted. Constant Calculations

Unitaria: Catculations
In constant calculations, the added becomes a constant.
Subtraction and division are performed in the same manner.
For enabligation, the manipleared becomes a constant.
In constant calculations, constants with be deplayed as K.
Constant calculations can be performed in NORMAL or STAT modes.

Refer to the calculation examples for each function. In the Line editor, the following symbols are used: * \times to indicate an expression's power. ([3*], [2*eff e*], [2*eff [10*])

ite integers, numerators, and denominators When using (200F logs.) or (2ndF) also in the Line ed values are entered in the following ways:

egral/Differential Functions
' ---- refforential calculations can be performed in

E. Since integral and differential calculations are perforr based on the following equations, correct results may not be obtained, in certain rare cases, when perform special calculations that contain discontinuous points

 $S = \frac{1}{3} h\{f(a) + 4\{f(a+b) + f(a+3b) + \dots + f(a+(N-1)b)\} \\ + 2\{f(a+2b) + f(a+4b) + \dots + f(a+(N-2)b)\} + f(b)\} \\ & N = 2n \\ a \le x \le b$

Differential calculation: $f'(x) = \frac{f(x + \frac{dx}{2}) - f(x - \frac{dx}{2})}{.}$

Performing integral calculations

1. Press (III)

2. Specify the following parameters: range of integral (initial value (a), end value (b)), function with variable x, and number of subintervals (in the value (iv)). You do not need to specify the number of subintervals if the number of subintervals in the present of in a 100 will be used.

lotes: Parameters are entered in the following way

WriteView editor: \int_a^b function[, subintervals]dxLine editor: f(function, a, b[, subintervals])

Integral calculations, depending on the integrands and subintervals included, require longer calculation time. Ducalculation, the BUSY symbol will be displayed. To cancel calculation, press (ONE)

calculation, press (INE). Note that there will be greater integral erre large fluctuations in the integral values cluring minute shifting of the year of the year. Year of the year.

terval. The former case, divide integral intervals as small as sessible. For the latter case, separate the positive and negative luses. Following these tips will allow you to obtain results from localizations with greater accuracy and will also shorten the localization time. Performing differential calculations

. Press [mo^{*}] diff.

Specify the following parameters: function with variable x, value of x, and minute interval (d^{*}). You do not need to specify the minute interval. If the minuterival is not specified, it will automatically be set to 10^{-6} (while x = 0), or $|x| \times 10^{-6}$ (while $x \times 0$).

 $\frac{d(\text{function})}{dx} |_{x = \text{value of } x[\text{, minute interval}]}$

Line editor: d/dx (function, value of x[, minute interval]) Σ **Function** The Σ function returns the cumulative sum of a given expres from an initial value to an end value in NORMAL mode.

rforming Σ calculations

Press $(2nd^2)$ Σ .

Specify the following parameters: initial value, end value, function with variable x, and increment (n). fou do not need to specify the increment. If the increment is not specified, the default value of n = 1 will be used.

ers are entered in the following end value

\(\Sigma(\text{function}[, increment]) \)

Y = initial value Line editor: Σ(function, initial value, end value[, increm

Random Function The random function has four settings. (This function cannot be selected while using the N-base function.) To generate further random numbers in succession, press [NTEP. Press [QVC] to exit.

Random numbers Random numbers

A pseudo-random number, with three significant digits from 0 up to 0.999, can be generated by pressing [2mF] [weed 0.0 [6] [6] [7]

Note: In the WriteView editor, if the result is not 0 it can be shown as a fraction or decimal using (∞€€).

Random dice

To simulate a die-rolling, a random integer between 1 and 6 can be generated by pressing and wow 1 ENTER. Random coin
To simulate a coin flip, 0 (heads) or 1 (tails) can be randomly generated by pressing (2ndF) [Aucoil 2] [SITER].

LIST

Random integer
An integer between 0 and 99 can be generated randomly by pressing (2005) (www 3 (NTE)

Angular Unit Conversions

acquerice.						
Memory Cal	culations			0		
Mode	ANS	M, F1-F4	A-F, X, Y	D1-D4		
NORMAL	0	0	0	0		
STAT	0	0	0	0		
ODLY	0	0	~	0		

Each time [2ndF] [DRG#] is pressed, the angular unit changes in

Temporary memories (A–F, X and Y) Press (STO) and a variable key to store Press (RCL) and a variable key to recall the value from that memory. To place a variable in an equation, press (429%) and a variable key.

Independent memory (M)
In addition to all the features of temporary memories, a value can be added to or subtracted from an existing memory value.

Press ONE STO to clear the independent memory (M).

Last answer memory (ANS) The calculation result obtained by pressing or any other calculation ending instruction is automatically stored in the last answer memory.

- when the calculation result is in matrix or list form, the full matrix or list form, the full matrix or list is not stored into ANS memory. Only the value of the element covered by the cursor is stored.

rormula memories (F1-F4)
You can store expressions in formula memories (F1-F4). Storing a new expression in a memory space will automatically replace any content that may already exist there.

You can only recall expressions stored from the Line editor when entering values or items in STAT, MATRIX, LIST, or EQUATION modes, or into solver functions or simulation calculations.

Any recalled expressions will overwrite any expressions that are currently being entered.

You cannot store formulas in formula memories when entering values or items in STAT, MATRIX, LIST, or EQUATION modes, or into solver functions or simulation calculations.

Definable memories (D1-D4) You can store functions or oper (D1-D4).

U ー ローター, To store a function or operation, press (野豆), followed by a definable memory key (町丁), (ロュ), (ロュ), or (ロエ)), followed by the operation you want to store. Menu-related operations, such as (西野) (野中), cannot be stored. Press (砂豆) to return to the previous display.

such as (<u>and leases</u> source that previous displaces on the previous displaces on or operation, press the corresponding To call a stored function will not work if the funct that is called would be unusable in the current context. Any functions or operations that are stored in a definable mem will be replaced when you save a new one into that memory. """—""—""—" or or nearficing in definable memor and the properties of the control in a definable memory." Top Jacced when you save a new one into that memor
 You cannot store functions or operations in definable mer
 when entering values or items in STAT, MATRIX, LIST, or
 EQUATION modes, or into solver functions or simulation
 calculations

Chain Calculations The previous calculation result can be used in the subsequent calculation. However, it cannot be recalled after entering multiple instructions or when the calculation result is in matrix/list format.

Fraction Calculations
Arithmetic operations and memory calculations can be performed using fractions. In NORIMAL mode, conversion between a decimal number and a fraction can be performed by pressing

...

Improper/proper fractions will be converted to and displayed as decimal numbers if the number of digits used in their expression is greater than nine. In the case of mixed fractions, the miximum is greater than price in the case of mixed fractions, the miximum of the converted of digits (recolcularly impleges) is egylf. To convert a sexespectant value to a fraction, first convert it by pressing [207] [207].

Binary, Pental, Octal, Decimal, and Hexadecimal Operations (N-base) Operations (W-base)

Conversions can be performed between N-base numbers in NORMAL mode. The four basis anthreside operations, calculation with parentheses, and memory calculations can also be performed with parentheses, and memory calculations can also be performed with parentheses, and memory calculations can also be performed with the bloowing keys:

ANOTH on the parenth, codit, and the administration of the performed with the bloowing keys:

ANOTH on the parenth, codit, and the administration of the performed with the bloowing keys:

ANOTH on the parenth, codit, and the performed with the bloowing keys:

ANOTH the parenth codit, and the performed with the bloowing keys:

ANOTH the head confident numbers A. P. are on entered by pressing coming and the performed performed the performance of the pe

In the binary, pental, cot, and nead-on-strated systems, fractions parts cannot be entered. When a decimal number having a factional part to control time to binary, pental, cot, a factional part to control time to binary, pental, cot, a when the result of a binary pental, cot, or hexadecimal cubic when the result of a binary pental cot, or hexadecimal cubic includes a fractional part, the fractional part will be truncated. Like when the result of a binary pental, cot, and hexadecimal systems, negative number are displayed as a complement.

Time, Decimal, and Sexagesimal Calculations

Coordinate Conversions Before performing a calculation, select the angular unit.
 The calculation result is automatically stored in the X and Y memories (r or x in X memory, and θ or y in Y memory).
 The results of coordinate conversions will be displayed as decimal numbers even in the WriteView editor.



Physical Constants and Metric Conversions

The following table lists the physical constants. See the calculation example sheet for physical constant symbols and units.

Standard acceleration of		(273.15 K, 101.325 kPa)
gravity	30	Molar gas constant
Electron mass	31	Faraday constant
Proton mass	32	Von Klitzing constant
Neutron mass	33	Electron charge to mass
Muon mass		quotient
Atomic mass unit-kilogram	34	Quantum of circulation
relationship	35	Proton gyromagnetic ratio
Elementary charge	36	Josephson constant
Planck constant	37	Electron volt
Boltzmann constant	38	Celsius Temperature
Magnetic constant	39	Astronomical unit
Electric constant	40	Parsec
Classical electron radius	41	Molar mass of carbon-12
Fine-structure constant	42	Planck constant over 2 pi
Bohr radius	43	Hartree energy
Rydberg constant	44	Conductance quantum
Magnetic flux quantum	45	Inverse fine-structure constant
Bohr magneton	46	Proton-electron mass ratio
Electron magnetic moment	47	Molar mass constant
Nuclear magneton	48	Neutron Compton wavelength

nter a value to be converted, then press [adf] [CON], and letet a metric conversion by entering its 2-digit number. The metric conversion list is used in the same manner as the list of physical constants.

Unit conversions can be performed in NORMAL (excluding N-base), STAT, MATRIX, LIST, and EQUATION modes. The following table lists units used in metric conversion. See the calculation example sheet for the metric conversion reference table.

01	in.	: incn	23	n oz(US): fluid ounce (US)
02	cm	: centimeter	24	mL	: milliliter
03	ft	: foot	25	fl oz(UK	: fluid ounce (UK)
04	m	: meter	26	mL	: milliter
05	yd	: yard	27	cal _b	: calorien
06	m	: meter	28	J	: joule
07	mi	: mile	29	cals	: calorie (15°C)
08	km	: kilometer	30	J	: joule
09	n mi	: nautical mile	31	calir	: calorier
10	m	: meter	32	J	: joule
11	acre	: acre*1	33	hp	: horsepower (UK
12	m ²	: square meter	34	w	: watt
13	oz	: ounce (avoirdupois)	35	ps	: horsepower (met
14	g	: gram	36	W	: watt
15	lb	: pound (avoirdupois)	37	(kgf/cm²)
16	kg	: kilogram	38	Pa	: pascal
17	°F	: degree Fahrenheit	39	atm	: atmosphere
18	°C	: degree Celsius	40	Pa	: pascal
19	gal (US)	: gallon (US)	41	(1 mmH	g = 1 Torr)
20	L	: liter	42	Pa	: pascal
21	gal (UK)	: gallon (UK)	43	(kgf-m)	
22	L	: liter	44	N-m	: newton meter
*1 ba	ased on	US survey foot			

Entry and display

2.449489743

Leating the Equation Just after obtaining an answer, pressing ● brings you to the end of the equation and pressing ● brings you to the beginning. Press (♠) ● ♠ of ▼my you to the cursor. Press (♠) ● ♠ of pressing the beginning of the end of the equation. In the Wirthelive editor, you can use ♠ and ♥ o move the cursor you and down—between the numerator and denominator, for example.

The MATH Menu

ror each mode.

Press (Mam) to display the MATH
menur. For example, in NORMAL
mode, you can call the functions
shown on the right.

Other functions may be available on this calculator besides those printed on the key pad. These functions are accessed using the MATH menu. The MATH menu has different conte



Inter of lest page.

Enter the first digit of the 2-digit item number to jump to the page containing the number that begins with that digit. When you enter the second digit, the constant is displayed automatically according to the display and decimal placement settings.

Physical constants can be recalled in NORMAL (excluding N-base), STAT, CPUX, MATRIX, LST, and EQUATION modes.

vs units.

Physical constants and metric conversions are based on the 2006 CODATA recommended values, or on the 1995 Edition of the "Guide for the Use of the International System of Units (SI)" released by NIST (National Institute of Standards and Technology).

ent 49 First ra nent 50 Second nt 51 Charac vacuur ength 52 Standa

Notes:

The WriteView editor can only be used in NORMAL mode.

If the equation grows too large, it may extend off the edge of the display after you obtain the result. If you want to see the entire equation, press
or bo return to the editing screen.

Irrational numbers (square roots, fractic square roots) → decimal numbers

culations Using Engineering Prefixes ulation can be executed in NORMAL mode (excluding

	Prefix	Operation	Unit
k	(kilo)	MATH 3 0	103
М	(Mega)	MATH 3 1	109
G	(Giga)	MATH 3 2	109
Т	(Tera)	(MATH) 3 3	1012
m	(milli)	MATH 3 4	10-9
μ	(micro)	MATH 3 5	10-4
n	(nano)	(MATH) 3 6	10-9
р	(pico)	MATH 3 7	10-12
t	(femto)	MATH 2 A	10-15

mutiny Function

Decimal calculation results are internally obtained in scientific notation, with up to 14 digits in the mantissa. However, since calculation results are displayed in the form designated by the didgisy notation and the number of designal places indicated, the internal calculation result may differ from that shown in the display, by uning the modify function (gap (EM)), the internal value is converted to match that of the display, so that the displayed value can be used without change in subsequent operations.

When just the "Man and "Man a

- When using the WriteView editor, if the calculation result is displayed using fractions or irrational numbers, press (he convert it to decimal form first.)

 The modify function can be used in NORMAL, STAT, MATRIX or LIST modes.

Simulation Calculation (ALGB)

If you have to find values consecutively using the same expression, such as plotting a curve line for $2x^2 + 1$, or finding the variable values for 2x + 2y = 14, once you enter the expression, all you have to do is to specify the value for the variable in the equation. n. variables: A-F, M, X and Y

- nly be executed in NORMAL Calculation ending instructions other than _ cannot be used.

Performing calculations

- DE 0
- Input an expression with at least one variable

- Press SITE | The variable only screen will appear. Enter a value, then press SITE to confirm. The calculation result will be displayed after you have entered a value for each variable used in the equation.

 After completing the calculation, press SITE | To perform calculations using the same equation. I variables and numerical values stored in the memories will be displayed in the variable entry screen. If you do not want to charge any values, simply press SITE!

 Performing simulation calculation will cause values in memory to be overritten with new values.

- Solver Function

 The solver function finds the value for x that reduces the instead expression to zero.

 This function uses Newton's method to obtain an approximation. Depending on the function (e.g. periodic) or start value, an error may occur (ERDNO GO) due to there being no convergence to the solution for the equation. The value obtained by this function may include a margin of error. If it is larger than acceptable, recalculate the solution after changing the "Start" and dx values.
- over unsniging the "start" and dt values. Change the "Start" value (e.g. to a negative value) or dx value (e.g. to a smaller value) if:
 no solution can be found (ERROR 02).
 more than two solutions appear to be possible (e.g. a cubic equation).

- The calculation result is automatically stored in the X mem
 Press (ONC) to exit the solver function.
- Performing solver function

 1. Press (NODE) 0.

 2. Input an expression with an x variable.

- 2. Input an expression with an x variable.
 3. Press [MTB] 2.
 4. Enter a "Start" value and press [MTB] The default value is "0".
 5. Enter a dx value (minute interval).
- 6. Press ENTER.
- trans matrix name

turns the matrix with the columns nsposed to rows and the rows nsposed to columns. Creates lists with elements from the left column of each matrix. (matA-matB-L2, matC-L3, matD-L4) Mode changes from MATRIX mod LIST mode. mat→list (MATH 7) Creates lists with elements from each column of the matrix. (matA→L1, L2, L3, L4) matA→list ((MATH 8)) Mode changes from MATRIX mode to LIST mode.

- Notes:

 When the matrix entry screen is displayed, you cannot perform matrix calculations because the MATH menu is not available.

 If the calculation result is a matrix, it will be displayed in the matrix entry screen (note that this replaces any existing data in the buffer). To store the calculation result, first press (20%) to with the matrix entry screen. Press (20%) or and an arrian entry screen. Press (20%) or and and exist is memory (matA-matD) to store the nearly-created matrix in. hen the calculation results are in matrix form, press ither nor will bring you back to the origin

LIST CALCULATIONS

You can store and calculate up to four lists of up to sixteen elements each in LIST mode. Press MODE 5 to enter LIST

Entering and Storing Lists

Entering and Storing Lists Before performing list calculations, a list must be created. Follow the steps below to enter and store lists. Prises (800) 3 to enter LIST mode. Prises (800) 3 to enter LIST mode. Prises (800) 1 to thing up the list entry screen. Any list data remaining in the buffer, along with any previously entered, loaded, or accidated list data, will be

- List size Element fields 15T SIZE:4



- Enter each element in the list by entering a value in the entry field and pressing (mm).

 Each list element can display up to eight digits (the decimal point counts as one digit). If an element exceeds eight digits in length, it will be displayed in exponent notation within the list.
- notation within the list.

 A maximum of six elements can be displayed at one time. Use

 (), (), and) to move the cursor through the list. When you have entered a value for each element, press

 OCC to exit the list entry screen.
- Press MATH 4 and select a memory (L1–L4) to store the newly-created list in.

Modifying a stored list 1. To load a stored list into the list entry screen, press (MATH) 3. then select the memory (L1–L4) that holds the list you wish to modify.

- Loading new data into the screen will automatically replace any data that may already exist there.

 2. Using the list entry screen, you can modify the values of elements in the list. Assign new values wherever necess

- If you wish to modify the size of a list, first press (OWC)

 (MMH) 2. You can then enter new values for the list size

 When you have finished making changes, press (OWC) to

 xit the list entry screen.

- Press MATH 4 and select a memory (L1-L4) to store
 the newly-created list in.

STATISTICAL CALCULATIONS ical calculations can be performed in STAT mode are eight sub-modes within STAT mode. Press (i ress the number key that corresponds to your ch

(Stat 0 [SD]): Single-variable statistics
 (Stat 1 [LINE]): Linear regression

(Stat 2 [QUAD]): Quadratic regression (Stat 3 [E_EXP]): Euler exponential r

((Stat 4 (LoG)): Logarithmic regression ((Stat 5 (POWER)): Power regression ((Stat 6 (INV)): Inverse regression ((Stat 7 (G_EXP)): General exponential re

The following statistics can be obtained for each statistical calculation (refer to the table below):

Statistics of ① and use value.

Statistics of ① and ②. In addition, the estimate of y for a given x (estimate y') and the estimate of x for a given y (estimate x').

(estimate y) and the estimate of x for a given y (estimate x). Quadratic regression calculation Statistics of 3 and 3, and coefficients a, b, c in the quadratic regression formula $(y = a + bx + cx^2)$. (For quadratic regression calculations, no correlation coefficient (y can be obtained.) When there are two x' values, each value will be displayed with "1" or "2", and stored spearately in the X and Y memories.

ics of ① and the value of the normal pro

Statistical Calculations and Variables

Single-variable statistical calculation

sgression calculations at Matislates of x and x in addition, the estimate of y for a given y. (Since the calculator conveach formula into a linear regression formula before actual calculation takes place, it obtains all statistics, except coefficient d, from converted data rather than entered data.)

Euler exponential regression, logarithmic regression, po regression, inverse regression, and general exponential regression calculations

	X	Mean of samples (x data)
	SX	Sample standard deviation (x data)
	σχ	Population standard deviation (x data)
1	п	Number of samples
	Σx	Sum of samples (x data)
	Σx^2	Sum of squares of samples (x data)
	y	Mean of samples (y data)
	ay	Sample standard deviation (y data)
(2)	øy.	Population standard deviation (y data)
	Σy	Sum of samples (y data)
	Σy^2	Sum of squares of samples (y data)
2	Σχγ	Sum of products of samples (x, y)
	r	Correlation coefficient
	а	Coefficient of regression equation
	b	Coefficient of regression equation
	e	Coefficient of quadratic regression equation

- Use AUMA and (RCL) to perform a variable calculation in STAT mode. mode.

Data Entry and Correction

Before entering new data, clear the memory contents ([274] CA). Data entry

ble data Data DATA

Data (INTA)

Data (INTA)

To enter multiples of the same

data)

wowarable data

Data < Cad data y (SEA)

Data data y (SEA)

Data data y (SEA)

Data data data without frequency sessignment

sociated as one of the feet of the control of the cont

_	between adjacent items in the list.
aug (list name, list name)	Returns a list appending the specified lists.
min list name	Returns the minimum value in the list.
max list name	Returns the maximum value in the list.
mean <i>list name</i>	Returns the mean value of items in the list.
med list name	Returns the median value of items in the list.
sum list name	Returns the sum of items in the list.
prod list name	Returns the multiplication of items in the list.
stdDv list name	Returns the standard deviation of the list.
vari list name	Returns the variance of the list.
o_prod (list name, list name)	Returns the outer product of 2 lists (vectors)
i_prod (list name, list name)	Returns the inner product of 2 lists (vectors)
abs_list <i>list name</i>	Returns the absolute value of the list (vector)
list→mat ((MATH 7))	Creates matrices with left column data from each list. (L1→matA, L2→matB, L3→matC, L4→matD)
	Mode changes from LIST mode to MATRIX mode.
list→matA ([MATH] 8])	Creates a matrix with column data from each list. (L1, L2, L3, L4→matA)
	Mode changes from LIST mode to MATRIX mode.

- otes:
 When the list entry screen is displayed, you cannot perform list calculations because the MATH menu is not available.
- calculations because the NATH menu is not available. If the accludation result is a list, it bilb de displayed in the list entry screen (note that this replaces any existing data in the bilder). To store the accludation result, first press ($\infty \in \mathbb{R}$) to with the list entry screen. Press $(\infty \in \mathbb{R})$ and select a memory ((1-4.2)) solven the newly-created list in. pressing neither $(\infty \in \mathbb{R})$ is the calculation results are in list form, pressing neither $(\infty \in \mathbb{R})$ is the throughout the through calculation results are in list form, pressing neither $(\infty \in \mathbb{R})$ in the properties of the original expression.

EQUATION SOLVERS

its obtained by these functions may include a margin

imultaneous Linear Equations
multaneous linear equations with two unknowns (2-VLE) or
th three unknowns (3-VLE) may be solved using the followir

 $a_1x + b_1y = c_1$ $a_2x + b_2y = c_2$ $|D| = \begin{vmatrix} a_1 b_1 \\ a_2 b_2 \end{vmatrix}$ 2 3-VLE: MODE 6 1

 $\begin{bmatrix} a_1x + b_1y + c_1z = d_1 \\ a_2x + b_2y + c_2z = d_2 \\ a_3x + b_3y + c_3z = d_3 \end{bmatrix}$

- the determinant D = 0, an error occur If the absolute value of an intermediate re-result is 1 × 10¹⁰⁰ or more, an error occurs

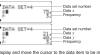
- no varia are ensered coefficient, press (QNC)
 Press ▲ or ▼ to move the cursor up or down through
 the coefficients. Press (@mf ▲ or (@mf ▼ to jump to
 the first or last coefficient.
 When all coefficients have been entered, press (@mf to solve
 the equation.
- While the solution is displayed, press (EMTER) or (DNC) to return to the coefficient entry display. To clear all the coefficients, press (2ndF) (CA).

Data correction

Correction before pressing @M] immediately after a data entry. Delete incorrect data with @GM], then enter the correct data. Correction after pressing @GM]:

Use @A and \(^T\) to deploy the previously entered data a Press \(^T\)) odesplay the data set in ascending (oldest first), press the (\(^A\)) exploy the data set in ascending (altest first), press the (\(^A\)) express the (\(^A\)) express great or deform of the data set.

Each data set is displayed with "X", "\(^T\)." or "F.".



- splay and move the cursor to the data item to be using
 and
 n, enter the correct value, the correct value value, the correct value value
- ANALO (###)

 To delete a data set, display and move the cursor to an item of the data set to delete by using

 and

 then press

 [266] CD). The data set will be deleted.

 To add a new data set, press (ONC) to exit the display of previously entered data and input the values, then press (ONT).
- Statistical Calculation Formulas

An error will occur when:

- The absolute value of the intermediate result or calculation result is equal to or greater than 1 × 10¹⁰⁰.
 The denominator is zero.
 An attempt is made to take the square root of a negative number.
 No solution exists in the quadratic regression calculation. e intermediate result or calculation ster than 1×10^{100} .
- Normal Probability Calculations

In STAT mode, the three probability density functions can be accessed under the MATH menu, with a random number used as a normal distribution variable.

Notes: , Q(t), and R(t) will always take positive values, even when 0, because these functions follow the same principle used

- values for [0, 0], one duse these functions follow the same principle u when solving for an area.

 Values for P(0, 0), and R(0) are given to six decimal place

 The standardization conversion formula is as follows: $t = \frac{\pi \pi}{0.5}$
- DRILL MODE

Math Drill: (MODE) 2 0
Math operation questions with positive integers and 0 are questions and opera tor type.

Multiplication Table (X Table); 1000 2 1 1

Questions from each row of the multiplication table (1 to 12) are displayed serially or randomly.

To exit DRILL mode, press MCDE and select another mode

- Using Math Drill and X Table ess (MODE) 2 0 for Math Drill or (MODE) 2 1 for
- X Table.

 Math Drill: Use __ and __ To select the number of questions (25, 50, or 100).

 X Table. Use __ and __ To select a row in the multiplication table (1 to 12).

 Math Drill: Use __ and i__ To select the operator type for questions (+, -2, or +->4).

 X Table. Use __ and __ To select the order type ('Serial' or 'Random').
- SS ENTER to start. rress ബ്രല്വ ൾ start. When using Math Drill or × Table (random order only), questions are randomly selected and will not repeat ex

- Quadratic and Cubic Equations
 Quadratic ($ax^2 + bx + c = 0$) or cubic ($ax^3 + bx^2 + cx + d = 0$) oquations may be solved using the following functions.

 Quadratic equation solver: (8008 6 = 0)

 Quadratic equation solver: (8008 6 = 0)
- olving quadratic and cubic equations
 Press MODE 6 2 or (MODE 6 3 .
 Coefficients for these equations can be entere manner as those for simultaneous linear equal
- ERRORS AND CALCULATION RANGES

An error will occur if an operation exceeds the calculation range or if a mathematically illegal operation is attempted. When an er occurs, pressing
or p automatically moves the cursor occurs, pressing
or p automatically moves the cursor back to the place in the equation where the error occured. Edit the equation or press

KEC or REF
CA to clear the equation. Error codes and error types

ERROR 01: Syntax error

An attempt was made to perform an invalid operation.

- ERROR 02: Calculation error

 The absolute value of an intermediate or final calculation result equals or exceeds 10¹⁰⁰.
- An attempt was made to divide by zero (or an intermediate calculation resulted in zero).

 The calculation ranges were exceeded while performing calculations.

ERROR 03: Nesting error

- The available number of buffers was exceeded. (There are 10 buffers* for numeric values and 64 buffers for calculation 5 buffers in CPLX mode, and 1 buffer for matrix/list data
- ERROR 04: Data over error

 Data items exceeded 100 in STAT mode.

ERROR 07: Definition error

• Matrix/List definition error or the attempted entering of an invalid value. ERROR 08: DIM unmatched error

Matrix/List dimensions inconsistent while calculating

ERROR 09: Invalid DIM error • Size of matrix/list exceeds of

ERROR 10: Undefined error • Undefined matrix/list used in calculation

Alert Messages

- Cannot delete!

 The selected item cannot be deleted by pressing so or some cannot be deleted by pressing so or some cannot be deleted by pressing so or some cannot be some
- delete the parentheses
- The function or operation stored in definable memory (D1 to D4) cannot be called.

 Ex. An attempt was made to recall a statistical variable from within NORMAL mode. sions stored in formula memories (F1 to F4) cannot be

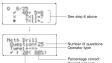
unter full: The equation (including any calculation ending instruction exceeded its maximum input buffer (159 characters in the WriteView editor or 161 characters in the Line editor). An equation may not exceed its maximum input buffer.

- 5. Enter your answer. If you make a mistake, press (ONC) or BS to clear any entered numbers, and enter your answer again.
 6. Press (NTER).
- ver is correct, "ve" appears and the next question
- - If the answer is wrong, "M" appears and the same quis displayed. This will be counted as an incorrect answ
- is displayed. This will be counted as an incorrect answer. If you press (griffle without entering an answer, the correct answer is displayed and then the next question is displayed. This will be counted as an incorrect answer. Continue answering the series of questions by entering the answer and pressing (tries).
- काञ्याम ताप pressing (क्षाण)

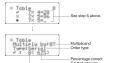
 A After you finish, press आणि and the number and percentage of correct answers are displayed.

 Press (क्षाण) to return to the initial screen for your current drill.

- Math Drill sample 0 1/25 Current question/ Total questions ÷ 13+ 9=_







- es of Math Drill Questions
 go of questions for each operator type is as follows.
 Addition operator: '10 + 0" to "20 + 20"
 Subtraction operator: '10 0" to "20 + 20"
 Subtraction operator: '10 0" to "20 20"; answers are
 peative integers and .

 Multiplication operator: "1 ** 0" o" 0" ** 1" to "12 ** 12"
 Division operator: "0 + 1" to "14 ** 12"; answers are
 peative integers from 1 to 12 and 0, dividends of up to
 14, and division of up to 12.

 Mixed operators: Ossestions within all the above
 ranges are displayed.

To carry out addition, subtraction, multiplication, and division using complex numbers, press (ACCE) 3 to select CPLX m Results of complex number calculations are expressed using

systems:

① (2mP → V): Rectangular coordinate system
(The XY symbol appears.)

② (2mP → P): Potar coordinate system
(The P9 symbol appears.)

mplex Number Entry

To a selecting another mode, the imaginary part of any complex number stored in the independent memory (M) and the last answer memory (ANS) will be cleared.

alculation Ranges
Within the ranges specified, this calculator is accurate ± 1 of the 10th digit of the mantissa. However, a calcula The forming the management of the management of a calculation of the calculation of the same of the s

pecome larger in the vicinity of inflection points and singular points of functions.

Calculation ranges ±10⁻⁶⁸ to ±9.999999999 × 10⁹⁸ and 0.

If the absolute value of an entry or a final or intermer result of a calculation is less than 10⁻⁶⁹, the value is considered to be 0 in calculations and in the display.

Display of results using √

Calculation results may be displayed using $\sqrt{}$ when all of the following conditions are met: • When intermediate and final calculation results are displayed in the following form:

 $\pm \frac{a\sqrt{b}}{c} \pm \frac{c\sqrt{d}}{c}$ pefficient falls into the following ra

When each coefficient falls into the following ranges: 1.5 a < 100; 1.5 c < 1,000; 0.5 c < 100; 1.5 d < 1,000; 1.5 c < 100; 1.5 f < 100
 When the number of terms in the intermediate and final calculation results is one or two.
 Note: The result of two fractional terms that include √ will be reduced to a common denominator.

BATTERY REPLACEMENT

Notes on Battery Replacement

Improper handling of batteries can cause electrolyte leakage or explosion. Be sure to observe the following handling rules:

Make sure the new battery is the correct type.

When installing, orient the battery properly as indicated in the The battery is factory-installed before shipment, and may be exhausted before it reaches the service life stated in the

Notes on erasure of memory contents When the battery is replaced, the memory contents are erase Erasure can also occur if the calculator is defective or when it is repaired. Make a note of all important memory contents in case accidental erasure occurs.

When to Replace the Battery If the display has poor contrast or nothing appears on the display when [Swo] is pressed in dim lighting, even after adjusting the display contrast, it is time to replace the battery.

Cautions

0

- An exhausted battery left in the calculator may leak and damage the calculator. Fluid from a leaking battery accidentally entering an eye could result in serious injury. Should this occur, wash with clean water and immediately consult a doctor. Should fluid from a leaking battery come in contact with your skin or clothes, immediately wash with clean water.

 If the product is not to be used for some time, to avoid damage to the unit from a leaking battery, remove it and store in a sale place.
- place.

 Do not leave an exhausted battery inside the product.

 Keep batteries out of the reach of children.

 Explosion risk may be caused by incorrect handling.

 Do not throw batteries into a fire as they may explode.

- A complex number expressed in rectangular coordinates with the y-value equal to zero, or expressed in polar coordinates with the angle equal to zero, is treated as a real

MATRIX CALCULATIONS ou can store and calculate up to ur matrices containing up to four was and four columns each in ATRIX mode Press MCDE 4 to enter MATRIX mode

r ress @MANU_ _ s , to writer MAT HIX mode. Note: You can use the MATH menu in MATRIX mode to edit, recall, and store matrices, as well as to call matrix-specific functions. Entering and Storing Matrices

- Entering and Storing Matrices
 Before performing marit; calculations, a marit; must be
 created. Follow the steps below to enter and store maritices.

 1. Press EXEC. I to enter MATRIX mode.

 2. Press MEMI 2. to bring up the maritix entry screen.

 4. Any matrix date remaining in the buffer, along with any
 previously entered, loaded, or calculated matrix data, will
 be displayed.

 3. Define the matrix dimensions (up to four rows by four
 columns) by entering the required dimensions using the
 number keys and pressing (EEE).



- Enter each element in the matrix by entry field and pressing [ENTER].
- entry field and pressing [exter].
 Each matrix element can display up to seven digits (the decimal point counts as one digit). If an element exceed seven digits in length, it may be displayed in exponent notation within the matrix.
- A maximum of three rows by three columns can be displayed at one time. Use (), , , and to move the cursor through the matrix.

- diffying a stored matrix

 To load a stored matrix into the matrix entry screen, press

 | MRTH | 3 | , then select the memory (matA-matD) that

 holds the matrix you wish to modify.
- holds the matrix you wish to modify.

 Loading new data into the screen will automatically replace any data that may already oxist there.

 Using the matrix entry screen, you can modify the values of elements in the matrix. Assign new values wherever necessary and press [ETT] after each one.

 If you wish to modify the number of rows or columns, find press [ETT] you can then enter new values for the matrix differentiation.

 When you have fireshed making changes, press [ETT] out the matrix differentiation.
- Press MATH 4 and select a memory (matA-matD) to store the newly-created matrix in.

Using Matrices in Calculations

Using Matrices in Calculations
Matrices stored in memories (matA-matD) can be used in arithmetic calculations (with the exception of division between matrices) and calculations that use x³, x², and x⁻¹. You can also use the following matrix-specific functions that are available in the MATH menu.

dim (matrix name, row, column)	Returns a matrix with dimensions changed as specified.
fill (value, row, column)	Fills each element with a specified value.
cumul matrix name	Returns the cumulative matrix.
aug (matrix name, matrix name)	Appends the second matrix to the first matrix as new columns. The first and second matrices must have the same number of rows.
identity value	Returns the identity matrix with specified value of rows and columns.
rnd_mat (row; column)	Returns a random matrix with specified values of rows and columns
det matrix name	Returns the determinant of a square matrix.

Replacement Procedure

Contrast".

Make sure that the display appears as shown below. If the display does not appear as shown, remove the battery, reinstall it, and check the display once again.



Automatic Power Off Function
This calculator will turn itself off to save battery power if no key is pressed for approximately 10 minutes.

Scientific calculations, complex number calculations, equation solvers, statistical calculations, etc. Math Drill and Multiplication Table 96 × 32 dot matrix liquid crystal

Internal calcula Pending operati

96 x 32 dot matrix liquid crystal display results:
results:
Exponent: 2 digits
Exponent: 2 digits
Mantissas of up to 14 digits
64 calculations of 10 numeric values
(5 numeric values in CPLX mode, 1 numeric value of 10 numeric values)
1 numeric value for Matrix List dat
Builti-in solar costles
1.5 V --- (COC): Backup battery
(4 deciles battery 1 RMz or can Match r (DC): Backup battery (Alkaline battery (LR44 or equivalent) ×1)

0°C-40°C (32°F-104°F)

FOR MORE INFORMATION ABOUT SCIENTIFIC CALCULATORS

Visit our Web site. http://sharp-world.com/calculator.

SHARP

Display of calcu

80 mm (W) × 168 mm (D) × 14 mm (H) 3-5/32" (W) × 6-5/8" (D) × 9/16" (H) Approx. 98.5 g (0.22 lb) (including battery) External dimensions: