SHARP

SCIENTIFIC CALCULATOR

WriteView

	EL-W531TG
	EL-W531TH
MODEL	EL-W535XG

OPERATION MANUAL

INTRODUCTION

About the **calculation examples (including some formulas and tables)**, refer to the reverse side of this manual.
After reading this manual, store it in a convenient location for future reference.
Note: Some of the models described in this manual may not be available in some countries.

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 fragile.
- Keep the calculator away from extreme heat such as on a car dashboard or near a heater, and avoid exposing it to excessively humid or dusty environments.
- Since this product is not waterproof, do not use it or store it where fluids, for example water, can splash onto it. Raindrops, water spray, juice, coffee, steam, perspiration, etc. will also cause malfunctions.
- 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.
- Never dispose of batteries in a fire.
- Keep batteries out of the reach of children.
- For the sake of your health, try not to use this product for an extended period, be sure to allow your eyes, hands, arms, and body adequate rest periods (about 10–15 minutes every hour). If you experience any pain or fatigue 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 or altered in virtually any electronic memory product under certain circumstances. Therefore, SHARP assumes no responsibility for data lost or otherwise rendered unusable whether as a result of improper use, repairs, defects, battery replacement, use after the specified battery life has expired, or any other cause.
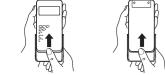- SHARP will not be liable for any incidental or consequential economic or property damage caused by misuse and/or malfunctions of this product and its peripherals, unless such liability is acknowledged by law.

♦ Press the RESET switch (on the back), with the tip of a ball-point pen or similar object, only in the following cases. Do not use an object with a breakable or sharp tip. Note that pressing the RESET switch erases all data stored in memory.
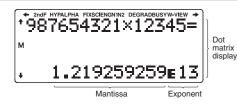- When using for the first time
- After replacing the battery
- To clear all memory contents
- When an abnormal condition occurs and all keys are inoperative
♦ If service should be required on this calculator, have the calculator serviced in the region (country) where you purchased it.

Hard Case

DISPLAY

Mantissa	Exponent

- During actual use, not all symbols are displayed at the same time.
- Only the symbols required for the usage under instruction are shown in the display and calculation examples.

←/→: Indicates that some contents are hidden in the directions shown.
↑/↓
2ndF: Appears when [2ndF] is pressed, indicating that the functions shown in the same color as [2ndF] are enabled.
HYP: Indicates that [hyp] has been pressed and the hyperbolic functions are enabled. If [2ndF][archyp] is pressed, the symbols "**2ndF HYP**" appear, indicating that inverse hyperbolic functions are enabled.
ALPHA: Appears when [ALPHA] is pressed, indicating that the functions shown in the same color as [ALPHA] are enabled. Appears when [STO] or [RCL] is pressed, and entry (recall) of memory contents can be performed.
FIX/SCI/ENG/N1/N2: Indicates the notation used to display a value and changes by SET UP menu. N1 is displayed on-screen as "NORM1", and N2 as "NORM2".
DEG/RAD/GRAD: Indicates angular units.
BUSY: Appears during the execution of a calculation.
W-VIEW: Indicates that the WriteView editor is selected.
M: Indicates that a numerical value is stored in the independent memory (M).

BEFORE USING THE CALCULATOR

Press [ON/C] to turn the calculator on. The data that was on-screen when the power was turned off will appear on the display.
Press [2ndF][OFF] to turn it off.

Key Notations Used in this Manual

[eˣ] [ln]	To specify eˣ: [eˣ] To specify ln: [ln] To specify E: [ALPHA] [E]

- Functions that are printed in gray adjacent to the keys are effective in specific modes.
- The multiplication operator "×" is differentiated from the letter "X" in this manual as follows:
  To specify the multiplication operator: [×]
  To specify the letter "X": [ALPHA] [X]
- In certain calculation examples, where you see the **LINE** symbol, the key explanations and calculation results are shown as they would appear in the Line editor.
- In each example, press [ON/C] to clear the display first. Unless otherwise specified, calculation examples are performed in the WriteView editor ([SETUP][0][0]) with the default display settings.

Clearing the Entry and Memories

Operation	Entry (Display)	A–F, M, X, Y	D1–D3	ANS	STAT*1
[ON/C]	O	×	×	×	×
[2ndF][CA]	O	×	×	×	×
Mode selection [MODE]	O	×	×	×	×*2
[2ndF][M-CLR][1][0]	O	×	×	×	×
[2ndF][M-CLR][1][1]	O	O	×	×	×
[2ndF][M-CLR][2][0]*3	O	O	O	O	O
RESET switch*3	O	O	O	O	O

O: Clear   X: Retain

*1 Statistical data (entered data)
*2 Cleared when changing between sub-modes in STAT mode.
*3 The RESET operation will erase all data stored in memory and restore the calculator's default settings.

Memory clear key

Press [2ndF][M-CLR] to display the menu.
- To initialize the display settings, press [0]. The parameters set as follows:
  - Angular unit: DEG
  - Display notation: NORM1
  - N-base: DEC
  - Recurring decimal: OFF

Mode Selection

NORMAL mode: [MODE][0]
Used to perform arithmetic operations and function calculations.

STAT mode: [MODE][1]
Used to perform statistical operations.

TABLE mode: [MODE][2]
Used to illustrate the changes in values of a function in table format.

DRILL mode: [MODE][3]
Used to practice math and multiplication table drills.

HOME Key

Press [HOME] to return to NORMAL mode from other modes.
Note: Equations and values currently being entered will disappear, in the same way as when the mode is changed.

SET UP Menu

Press [SETUP] to display the SET UP menu.
Press [ON/C] to exit the SET UP menu.
Note: You can press [BS] to return to the previously displayed parent menu.

Determination of the angular unit (degrees, radians, and grades)

DEG (°): [SETUP][0][0] (default)
RAD (rad): [SETUP][0][1]
GRAD (g): [SETUP][0][2]

Selecting the display notation and decimal places ❶

Two settings of Floating point (NORM1 and NORM2), Fixed decimal point (FIX), Scientific notation (SCI), and Engineering notation (ENG).
- When [SETUP][1][0] (FIX) or [SETUP][1][2] (ENG) is pressed, the number of decimal places (TAB) can be set to any value between 0 and 9.
- When [SETUP][1][1] (SCI) is pressed, the number of significant digits can be set to any value between 0 and 9. Entering 0 will set a 10-digit display.

Setting the floating point number system in scientific notation

NORM1 (the default) and NORM2. A number is automatically displayed in scientific notation outside a preset range:
NORM1: [SETUP][1][3]: 0.000000001 ≤ |x| ≤ 9,999,999,999
NORM2: [SETUP][1][3]: 0.01 ≤ |x| ≤ 9,999,999,999

Selecting the editor and setting the answer display

This calculator has the following two editors in NORMAL mode: WriteView and Line.
Set the display format for numerical calculation results in WriteView editor.
The WriteView editor
EXACT(a/b,√,π): [SETUP][2][0][0] (default)
APPROX: [SETUP][2][0][1]
The Line editor [SETUP][2][1]
Notes:
- When "EXACT(a/b,√,π)" is set, results will appear in fraction format or irrational number format (including π and √) when display is possible.
- When "APPROX" is set, results will be decimal display or fraction display, and will be not shown in irrational number format (including π and √).
- Press [change] to change the calculation results to another format that can be displayed.

Adjusting the display contrast

Press [SETUP][3], then [+] or [−] to adjust the contrast. Press [ON/C] to exit.

Insert and overwrite entry methods

When using the Line editor, you can change the entry method from "INSERT" (the default) to "OVERWRITE".
After you switch to the overwrite method (by pressing [SETUP][4][1]), the triangular cursor will change to a rectangular one, and the number or function underneath it will be overwritten as you make entries.

Setting the recurring decimal

In NORMAL mode, calculation results can be shown in a recurring decimal format.
Recurring decimal is OFF: [SETUP][5][0] (default)
Recurring decimal is ON: [SETUP][5][1]
- In the WriteView editor, the recurring part is indicated by "‾‾".
- In the Line editor, the recurring part is indicated in parentheses.
- If over 10 digits, including the recurring part, the result cannot be shown in recurring decimal format.

Setting of the decimal point

You can show the decimal point in the calculation result as either a dot or a comma.
DOT: [SETUP][6][0] (default)
COMMA: [SETUP][6][1]
- During entry, the decimal point is only shown as a dot.

ENTERING, DISPLAYING, AND EDITING THE EQUATION ❹

The WriteView Editor

Entry and display
In the WriteView editor, you can enter and display fractions or certain functions as you would write them.
- The WriteView editor can be used in NORMAL mode.

Displaying calculation results (when EXACT is selected)
When possible, calculation results will be displayed using fractions, √, and π. When you press [change], the display will cycle through the following display styles:
- Mixed fractions (with or without π) → improper fractions (with or without π) → decimal numbers
- Proper fractions (with or without π) → decimal numbers
- Irrational numbers (square roots, fractions made using square roots) → decimal numbers
Notes:
- In the following cases, calculation results may be displayed using √:
  - Arithmetic operations and memory calculations
  - Trigonometric calculations
- In trigonometric calculations, when entering values such as those in the table to the right, results may be shown using √.

	Entry value
DEG	multiples of 15
RAD	multiples of $\frac{1}{12}$π
GRAD	multiples of $\frac{50}{3}$

- 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 maximum number of displayable digits (including integers) is eight.
- If the number of digits in the denominator of a fractional result that uses π is greater than three, the result is converted to and displayed as a decimal number.

The Line Editor

Entry and display
In the Line editor, you can enter and display equations line by line.
Notes:
- Up to three lines of text may be viewed on the screen at one time.
- In the Line editor, calculation results are displayed in decimal form or line fraction notation if possible.
- Use [change] to switch the display format to fractional form or decimal form if possible.

Editing the Equation

Just after obtaining an answer, pressing [◄] brings you to the end of the equation and pressing [►] brings you to the beginning. Press [◄], [►], [▲], or [▼] to move the cursor. Press [2ndF] [◄] or [2ndF] [►] to jump the cursor to the beginning or end of the equation.

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 [2ndF] [DEL].
Note: In a multi-level menu, you can press [BS] to back to the previous menu level.

Multi-line Playback Function ❺

This calculator is equipped with a function to recall previous equations and answers in NORMAL mode. Pressing [▲] will display the previous equation. The number of characters that can be saved is limited. When the memory is full, stored equations will be deleted to make room, starting with the oldest.
- To edit an equation after recalling it, press [◄] or [►].
- The multi-line memory will be cleared by the following operations: [2ndF][CA], mode change, RESET, N-base conversion, angular unit conversion, editor change ([SETUP][2], and memory clear ([2ndF][M-CLR]).

Priority Levels in Calculation

This calculator performs operations according to the following priority: ① Fractions (1÷4, etc.) ② Functions preceded by their argument (x⁻¹, x², n!, etc.) ③ yˣ, ˣ√ ④ Implied multiplication of a memory value (2Y, etc.) ⑤ Functions followed by their argument (sin, cos, etc.) ⑥ Implied multiplication of a function (2sin30, A⅟₃, etc.) ⑦ nCr, nPr, GCD, LCM ⑧ ×, ÷ ⑨ +, − ⑩ AND ⑪ OR, XOR, XNOR ⑫ =, M+, M−, →M, ► DEG, ► RAD, ► GRAD, →r·θ, →x,y, and other calculation ending instructions.
- If parentheses are used, parenthesized calculations have precedence over any other calculations.

SCIENTIFIC CALCULATIONS

- Press [MODE] to select NORMAL mode.

Arithmetic Operations ❻

- The closing parenthesis [)] just before [=] or [M+] may be omitted.

Constant Calculations ❼

- In constant calculations, the addend becomes a constant. Subtraction and division are performed in the same manner. For multiplication, the multiplicand becomes a constant.
- In constant calculations, constants will be displayed as K.

Conversion to Engineering notation ❽

You can use [ALPHA][ENG►] or [ALPHA][◄ENG] to convert the calculation result to engineering notation.
- Press [ALPHA][◄ENG] to decrease the exponent. Press [ALPHA][ENG►] to increase the exponent.
- The settings (FSE) in the SET UP menu do not change.

Functions ❾

- Refer to the calculation examples for each function.
- In the Line editor, the following symbols are used:
  - [√] to indicate an expression's root (e.g. ³√4).
  - [,] to separate integers, numerators, and denominators (e.g. [a b/c]).
- When using [2ndF][log₂x] or [2ndF][abs] in the Line editor, values are entered in the following way:
  - log (base, value)
  - abs value

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 [ENTER]. Press [ON/C] to exit.

Random numbers
A pseudo-random number, with three significant digits from 0 up to 0.999, can be generated by pressing [2ndF][RANDOM][0][ENTER].
Note: In the WriteView editor, the result will be a fraction or 0.

Random dice
To simulate a die-rolling, a random integer between 1 and 6 can be generated by pressing [2ndF][RANDOM][1][ENTER].

Random coin
To simulate a coin flip, 0 (heads) or 1 (tails) can be randomly generated by pressing [2ndF][RANDOM][2][ENTER].

Random integer
You can specify a range for the random integer with "R.Int" only.
R.Int(minimum value, maximum value)
For example, if you enter [2ndF][RANDOM][3][1][,][99][ENTER], a random integer from 1 to 99 will be generated.

Angular Unit Conversions ⑪

Each time [2ndF][DRG►] is pressed, the angular unit changes in sequence.

Memory Calculations

Memory calculations can be performed in NORMAL and STAT modes.

Temporary memories (A–F, X and Y)
Press [STO] and a variable key to store a value in memory.
Press [RCL] and a variable key to recall the value from that memory.
To place a variable in an equation, press [ALPHA] 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 [ON/C] [STO] [M] 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.
- Calculation results from the functions indicated below are automatically stored in the X or Y memories replacing any existing values.
  - →r·θ, →x,y: X memory (r or x), Y memory (θ or y)
  - Two ˣ' values from a quadratic regression calculation in STAT mode: X memory (1:), Y memory (2:)
- Use of [RCL] or [ALPHA] will recall the value stored in memory using up to 14 digits.

Definable memories (D1–D3)

You can store functions or operations in definable memories (D1–D3).
- To store a function or operation, press [STO], followed by a definable memory key (D1 – D3), then the operation you want to store. Menu-related operations, such as [SETUP], cannot be stored. Press [ON/C] to return to the previous display.
- To call a stored function or operation, press the corresponding memory key. Calling a stored function will do nothing in the current context.
- Any functions or operations that are stored in a definable memory will be replaced when you save a new one into that memory.
- You cannot store functions or operations in definable memories when entering values or items in STAT mode.

Memory List

Press [ALPHA][MEMORY] to display a list of the values saved in memory. The values are shown in a 9-character type.
Applicable memories: A, B, C, D, E, F, X, Y, M

Chain Calculations ⑫

The previous calculation result can be used in the subsequent calculation. However, it cannot be recalled after entering multiple instructions.

Fraction Calculations ⑬

Arithmetic operations and memory calculations can be performed using fractions. In NORMAL mode, conversion between a decimal number and a fraction can be performed by pressing [change].
- 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 maximum number of displayable digits (including integers) is eight.
- To convert a sexagesimal value to a fraction, first convert it by pressing [2ndF][►DEG].

Binary, Pental, Octal, Decimal, and Hexadecimal Operations (N-base) ⑭

Conversions can be performed between N-base numbers in NORMAL mode. The four basic arithmetic operations, calculations with parentheses, and memory calculations can be performed, along with the logical operations AND, OR, NOT, NEG, XOR, and XNOR on binary, pental, octal, and hexadecimal numbers.
Note: The hexadecimal numbers A–F are entered by pressing [yˣ], [ˣ√], [,], [log], [ln], and [x⁻¹].
In the binary, pental, octal, and hexadecimal systems, fractional parts cannot be entered. When a decimal number having a fractional part is converted into a binary, pental, octal, or hexadecimal number, the fractional part will be truncated. Likewise, when the result of a binary, pental, octal, or hexadecimal calculation includes a fractional part, the fractional part will be truncated. In the binary, pental, octal, and hexadecimal systems, negative numbers are displayed as a complement.

Time, Decimal, and Sexagesimal Calculations ⑮

Conversion between decimal and sexagesimal numbers can be performed. In addition, the four basic arithmetic operations and memory calculations can be performed using the sexagesimal system. Notation for sexagesimal is as follows:

$$12°34'56.78''$$

Degree	Minute	Second

Coordinate Conversions ⑯

- Before performing a calculation, select the angular unit.
- The results of coordinate conversions will be displayed as decimal numbers even in the WriteView editor.

Rectangular coord.	↔	Polar coord.

Modify Function ⑰

Decimal calculation results are internally displayed in scientific notation, with up to 14 digits in the mantissa. However, since calculation results are displayed in the form designated by the display notation and the number of decimal places indicated, the internal calculation result may differ from that shown in the display. By using the modify function ([2ndF][MDF]), 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 using the WriteView editor, if the calculation result is displayed using fractions or irrational numbers, press [change] to convert it to decimal form first.

Calculating the Greatest Common Divisor (GCD) ⑱

What is the GCD of 24 and 36?
[ON/C] 24
[2ndF] [GCD] 36
[=]   12.

Calculating the Least Common Multiple (LCM)

What is the LCM of 15 and 9?
[ON/C] 15
[2ndF] [LCM] 9
[=]   45.

Calculating Quotient and Remainder ⑲

- "Q" indicates "Quotient", and "R" indicates "Remainder".
- Pressing [2ndF] [int÷] cannot be followed by pressing a key for another operation such as (+, −, ×, ÷), otherwise an error will result.
- The quotient and remainder are shown in "NORM1" format. If not all digits can be displayed in "NORM1" format, normal division is performed.

Prime Factorization ⑳

In NORMAL mode, the calculation result can be shown as a product of prime numbers.
- A positive integer greater than 2 and no more than 10 digits can be factored into primes.
- A number that cannot be factored into a prime number with 3 digits or shorter is shown in parentheses.
- The calculation result of prime factorization is displayed according to the editor setting (W-VIEW or LINE).
- The calculation result of prime factorization may extend off the edges of the screen. You can see those parts by pressing [◄] or [►]. [2ndF][◄], [2ndF][►] to jump to the left end or right end, press [2ndF][◄] or [2ndF][►].

STATISTICAL CALCULATIONS ㉑㉒

Statistical calculations can be performed in STAT mode. There are eight sub-modes within STAT mode. Press [MODE][1], then press the number key that corresponds to your choice:
- [0] (S0): Single-variable statistics
- [1] (a+bx): Linear regression
- [2] (a+bx+cx²): Quadratic regression
- [3] (a+e^bx): Euler exponential regression
- [4] (a+b·ln x): Logarithmic regression
- [5] (a·xᵇ): Power regression
- [6] (a+b / x): Inverse regression
- [7] (a·bˣ): General exponential regression

The statistical data input screen appears.

After entering statistical data from the input screen, press [DATA] or [ON/C] and close the input table. You can then check statistical values from the STAT menu [ALPHA][STAT] and specify statistical variables.

Data Entry and Correction

Data entry
Entry field

Single-variable data table

Two-variable data table

- After entering the data, press [ENTER]. The input is finalized and the cursor moves to the next line. If data was not entered in an x or y, 0 is entered, 1 is entered in FRQ (frequency), and the cursor moves to the next line.
- You can use [◄] to enter X and FRQ (or X, Y, and FRQ) at once.
- In the input table, up to 6 digits are displayed for each value, including the sign and decimal point. Any values that exceed 6 digits in length are displayed in exponent notation.
- Up to 100 data items can be entered. With single-variable data, a data item with an assigned frequency of one is counted as one data item, while an item with an assigned frequency of 2 or higher is stored as a set of two data items. With two-variable data, a set of data items with an assigned frequency of one is counted as two data items, while a set of items with an assigned frequency of 2 or higher is stored as a set of three data items.
- To execute statistical calculation, press [DATA] or [ON/C] and close the input table.

Data correction
Use [◄], [►], [▲], or [▼] to move the cursor and select the desired data. Press [2ndF][◄] or [2ndF][►] to jump the cursor to the beginning or end of the data.

Data correction
Move the cursor to the data that you want to correct, enter the numeric value, and press [ENTER].

Data insertion
To insert a line in front of the cursor position, press [ALPHA][INS►]. The initial values entered in the inserted data are 0 in x and y, and 1 in FRQ.

Data deletion
In STAT mode, all statistical data will be erased if the submode is changed or [2ndF][CA] is pressed.
Notes:
- To delete the entire line while cursor is positioned, press [DEL].
- In STAT mode, press [DATA] to display the input table.

Statistical Calculations and Variables

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

Single-variable statistical calculation
Statistics of ① and ③.

Linear regression calculation
Statistics of ①, ② and ④. In addition, the estimate of y for a given x (estimate y') and the estimate of x for a given y (estimate x').

Quadratic regression calculation
Statistics of ①, ② and ④. And coefficients a, b, c in the quadratic regression formula $y = a + bx + cx^2$. (For quadratic regression calculations, no correlation coefficient (r) can be obtained.) When there are two x' values, each value will be displayed with "1:" or "2:", and stored separately in the X and Y memories. You can also specify the 1st value (x1') and the 2nd value (x2') separately.

Euler exponential regression, logarithmic regression, power regression, inverse regression, and general exponential regression calculations
Statistics of ①, ② and ④. In addition, the estimate of y for a given x and the estimate of x for a given y. (Since the calculator converts each formula into a linear regression formula before actual calculation takes place, it obtains all statistics, except coefficients a and b, from converted data rather than entered data.)

①	n	Number of samples
	$\bar{x}$	Mean of samples (x data)
	sx	Sample standard deviation (x data)
	s²x	Sample variance (x data)
	σx	Population standard deviation (x data)
	σ²x	Population variance (x data)
	Σx	Sum of samples (x data)
	Σx²	Sum of squares of samples (x data)
	xmin	Minimum value of samples (x data)
	xmax	Maximum value of samples (x data)
②	$\bar{y}$	Mean of samples (y data)
	sy	Sample standard deviation (y data)
	s²y	Sample variance (y data)
	σy	Population standard deviation (y data)
	σ²y	Population variance (y data)
	Σy	Sum of samples (y data)
	Σy²	Sum of squares of samples (y data)
	Σxy	Sum of products of samples (x, y)
	Σx²y	Sum of products of samples (x², y)
	Σx³	Sum of 3rd powers of samples (x data)
	Σx⁴	Sum of 4th powers of samples (x data)
	ymin	Minimum value of samples (y data)
	ymax	Maximum value of samples (y data)
③	Q_1	First quartile of sample (x data)
	Med	Median of sample (x data)
	Q_3	Third quartile of sample (x data)
④	r	Correlation coefficient (Except Quadratic regression)
	a	Coefficient of regression equation
	b	Coefficient of regression equation
	c	Coefficient of quadratic regression equation
	R^2	Coefficient of determination (Quadratic regression)
	r^2	Coefficient of determination (Except Quadratic regression)

STAT Menu

After closing the input table, you can view statistical values, view regression coefficient values, and specify statistical values from STAT menu [ALPHA][STAT].

[ALPHA][STAT][0]: Display statistical values
[ALPHA][STAT][1]: Display regression coefficient values
[ALPHA][STAT][2]: Specify statistical value variables
[ALPHA][STAT][3]: Specify statistical value (Σ related) variables
[ALPHA][STAT][4]: Specify max/min value variables
[ALPHA][STAT][5]: Specify regression coefficient variables

Notes:
- List display of regression coefficient values and specification of regression coefficient variables do not appear in single-variable statistical calculation.
- Estimated values x' and y' are specified with the keys ([2ndF][x'], [2ndF][y']). If there are two x' values, you can specify x1' and x2' from the STAT menu ([ALPHA][STAT][5]) to obtain the values separately.
- In the statistical value specification of regression coefficient value lists, you cannot return to the menu by pressing [BS].

Statistical Calculation Formulas ㉓

An error will occur when:
- The absolute value of the intermediate result or calculation result is equal to or greater than 1 × 10^100.
- 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.

TABLE MODE ㉔

You can see the changes in values of one or two functions using TABLE mode.

Setting a table

1. Press [MODE][2] to enter TABLE mode.
2. Enter a function (Function1), and press [ENTER].
3. If needed, enter the 2nd function (Function2) and press [ENTER].
4. Enter a starting value (X_Start), and press [ENTER].
   The default starting value is 0.
5. Enter a step value (X_Step): The default step value is 1.
   - You can use [◄] and [►] to move the cursor between the starting value and step value.
6. Press [ENTER] when you finish entering a step value. A table with a variable X and the corresponding values (ANS column) appears, displaying 3 lines below the starting value.
   If you entered two functions, the ANS1 and ANS2 columns appear.
   You can use [▲] and [▼] to change the X value and see its corresponding values in the table.
   - The table is for display only and you cannot edit the table.
   - The values are displayed up to 7 digits, including signs and a decimal point.
   - Press [◄] or [►] to move the cursor to ANS column (ANS1 and ANS2 columns if you entered two functions) or X column.
   - Full digits of the value on the cursor are displayed on the bottom right.
Notes:
- In a function, only "X" can be used as a variable, and other variables are all regarded as numbers (stored into the variables).
- Irrational numbers such as √ and π cannot be entered into a starting value or a step value. You cannot enter 0 or a negative number as a step value.
- You can use WriteView editor when inputting a function.
- The following features are not used in TABLE mode: coordinate conversions, conversion between decimal and sexagesimal numbers, and angular unit conversions.
- It may take time to make a table, or "‒‒‒‒‒" may be displayed, depending on the function entered or conditions specified for the variable X.
- Please note that when making a table, the values for variable X are rewritten.
- Press [2ndF][CA] or mode selection to return to the initial screen of the mode, and return to the default values for the starting and step value.

DRILL MODE ㉕

Math Drill: [MODE][3][0]
Math operation questions with positive integers and 0 are displayed randomly. It is possible to select the number of questions and operator type.

Multiplication Table (× Table): [MODE][3][1]
Questions from each row of the multiplication table (1 to 12) are displayed serially or randomly.

To exit DRILL mode, press [MODE] and select another mode.

Using Math Drill and × Table

1. Press [MODE][3][0] for Math Drill or [MODE][3][1] for × Table.
2. **Math Drill:** Use [◄] and [►] to select the number of questions (25, 50, or 100).
   × Table: Use [◄] and [►] to select a row in the multiplication table (1 to 12).
3. **Math Drill:** Use [▲] and [▼] to select the operator type (+, −, ×, ÷, or +−×÷).
   × Table: Use [▲] and [▼] to select the order type ("Serial" or "Random").
4. Press [ENTER] to start.
   When using Math Drill or × Table (random order only), questions are randomly selected and will not repeat except by chance.
5. Enter your answer. Press [ON/C] or [BS] to clear the entered number and then enter the correct answer.
6. Press [ENTER].
   - If the answer is correct, "✓" appears and the next question is displayed.
   - If the answer is wrong, "✗" appears and the same question is displayed. This will be regarded as an incorrect answer.
   - If you press [ENTER] without entering an answer, the correct answer is displayed and then the next question is displayed. This will be regarded as an incorrect answer.
7. Continue answering the series of questions by entering the answer and pressing [ENTER].
8. After you finish, press [ENTER] and the number and percentage of correct answers are displayed.
9. Press [ENTER] to return to the initial screen for your current drill.

Ranges of Math Drill Questions

The range of questions for each operator type is as follows.
+   Addition operator: "0 + 0" to "20 + 20"
−   Subtraction operator: "0 − 0" to "20 − 20"; answers are positive integers and 0.
×   Multiplication operator: "1 × 0" or "0 × 1" to "12 × 12"
÷   Division operator: "0 ÷ 1" to "144 ÷ 12"; answers are positive integers from 1 to 12 and 0, dividends of up to 144, and divisors of up to 12.
+−×÷   Mixed operators: Questions within all the above ranges are displayed.

ERRORS AND CALCULATION RANGES

Errors

An error will occur if an operation exceeds the calculation ranges, or if a mathematically illegal operation is attempted. When an error occurs, pressing [◄] or [►] automatically moves the cursor back to the place in the equation where the error occurred. Edit the equation or press [ON/C] to clear the equation.

Error codes and error types

ERROR 01: Syntax error
- An attempt was made to perform an invalid operation.
  Ex. 2 [+] [−] 5 [=]

ERROR 02: Calculation error
- The absolute value of an intermediate or final calculation result equals or exceeds 10^100.
- An attempt was made to divide by zero (or an intermediate calculation resulted in zero).
- The calculation ranges were exceeded while performing calculations.
- 0 or a negative number was entered as a step value in TABLE mode. The absolute value of a starting value or a step value equals or exceeds 10^100 in TABLE mode.
- When the number to be factored into primes is greater than 2 and other than a 10-digit positive integer, or when the result of prime factorization is a negative number, decimal, fraction, √, or π.

ERROR 03: Nesting error
- The available number of buffers was exceeded. (There are 10 buffers for numeric values and 64 buffers for calculation instructions.)

ERROR 04: Data over
- Data items exceeded 100 in STAT mode.

Alert Messages

Cannot delete!
- The selected item cannot be deleted by pressing [BS] or [2ndF] [DEL] in the WriteView editor.
  Ex. 「x²」5 [►] [x²] [◄] [BS]
In this example, delete the exponent before attempting to delete the parentheses.

Cannot call!
- The function or operation stored in definable memory (D1 to D3) cannot be called.
  Ex. An attempt was made to recall a statistical variable from within NORMAL mode.

Buffer full!
- The equation (including any calculation ending instructions) 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.

Calculation Ranges ㉖

- **Within the ranges specified, this calculator is accurate to ±1 of the 10th digit of the mantissa. However, a calculation error increases in continuous calculations due to accumulation of each calculation error. (This is the same for yˣ, ˣ√, n!, eˣ, ln, etc., where continuous calculations are performed internally.) Additionally, a calculation error will accumulate and become larger in the vicinity of inflection points and singular points of functions.**
- Calculation ranges
  ±10^−99 to ±9.999999999 × 10^99 and 0.
  If the absolute value of an entry or a final or intermediate result of a calculation is less than 10^−99, the value is considered to be 0 in calculations and in the display.

Display of results using √ (when EXACT is selected)

Calculation results may be displayed using √ when all of the following conditions are met:
- When intermediate and final calculation results are displayed in the following form:
  $$\frac{\pm a \sqrt{b}}{e} \pm \frac{c \sqrt{d}}{f}$$
- When each coefficient falls into the following ranges:
  1 ≤ a < 100; 1 ≤ b < 1,000; 0 ≤ c < 100; 1 ≤ d < 1,000; 1 ≤ e < 100; 1 ≤ f < 100
- When the number of terms in the intermediate and final calculation results is one or two.
Note: The result of 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 calculator.
- The battery is factory-installed before shipment, and may be exhausted before it reaches the service life stated in the specifications.

> **Notes on erasure of memory contents**
> When the battery is replaced, the memory contents are erased. 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

EL-W531TH: If the display has poor contrast even after adjusting the display contrast, the battery requires replacement.
EL-W531TG/W535XG: If the display has poor contrast or nothing appears on the display when [ON/C] is pressed in dim lighting, even after adjusting the display contrast, it is time to replace the battery.

Cautions

- 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 safe place.
- Do not leave an exhausted battery inside the product.
- Keep batteries out of the reach of children.
- An exhausted battery left in the calculator may leak and damage the calculator.
- Explosion risk may be caused by incorrect handling.
- Do not throw batteries into a fire as they may explode.

Replacement Procedure

1. Turn the power off by pressing [2ndF] [OFF].
2. Remove two screws. (Fig. 1)
3. Lift the battery cover to remove.
4. **EL-W531TG/W535XG:** Remove the used battery by prying it out with a ball-point pen or other similar pointed device. (Fig. 2)
   EL-W531TH: Remove the used battery.
5. **EL-W531TG/W535XG:** Install one new battery. Make sure the "+" side is facing up.
   EL-W531TH: Install one new battery. First insert the "−" side toward the spring. (Fig. 3)
6. Replace the cover and screws.
7. Press the RESET switch (on the back) with the tip of a ball-point pen or similar object.
8. Adjust the display contrast. See "Adjusting the display contrast". And then press [ON/C].
- 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.

Fig. 1	Fig. 2	Fig. 3

Automatic Power Off Function

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

SPECIFICATIONS

Display: 96 × 32 dot matrix liquid crystal display
Display of calculation results:
    Mantissa: 10 digits
    Exponent: 2 digits
Internal calculations: Mantissa up to 14 digits
Pending operations: 64 calculations 10 numeric values
Power source:
    EL-W531TG/W535XG
    Built-in solar cells
    1.5 V ⎓ (DC): Backup battery
    (Alkaline battery (LR44 or equivalent) × 1)
    EL-W531TH
    1.5 V ⎓ (DC): Heavy duty manganese battery (size AAA or R03) × 1
Operating time:
    EL-W531TG/W535XG
    (varies according to use and other factors) Approx. 3,000 hours when continuously displaying 55555 at 25°C (77°F), using the alkaline battery only
    EL-W531TH
    Approx. 17,000 hours when continuously displaying 55555 at 25°C (77°F)
Operating temperature: 0°C–40°C (32°F–104°F)
External dimensions: 80 mm (W) × 166 mm (D) × 15 mm (H) 3-5/32" (W) × 6-17/32" (D) × 19/32" (H)
Weight:
    EL-W531TG/W535XG
    Approx. 108 g (0.24 lb) (including battery)
    EL-W531TH
    Approx. 113 g (0.25 lb) (including battery)
Accessories: Battery × 1 (installed), operation manual, and hard case

FOR MORE INFORMATION ABOUT SCIENTIFIC CALCULATORS

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

SHARP

SHARP CORPORATION

CALCULATION EXAMPLES
EXEMPLES DE CALCUL
ANWENDUNGSBEISPIELE
EJEMPLOS DE CÁLCULO
ESEMPI DI CALCOLO
RÄKNEEXEMPEL
LASKENTAESIMERKKEJÄ

WriteView

EL-W531TG
EL-W531TH
EL-W535XG

❶ SET UP (FSE)

$100000 \div 3 =$

[NORM1]	ON/C 100000 ÷ 3	
	=	33'333.33333
→ [FIX: TAB 2]	SET UP 1 0 2	33'333.33
→ [SCI: SIG 2]	SET UP 1 1 2	3.3E04
→ [ENG: TAB 2]	SET UP 1 2 2	33.33E03
→ [NORM1]	SET UP 1 3	33'333.33333

❷ SET UP (EDITOR)

→ [APPROX.]	ON/C SET UP 2 0 1	0.
$1 \div 2 =$	1 ÷ 2 =	0.5
→ [EXACT(a/b,√,π)]	SET UP 2 0 0	0.
$1 \div 2 =$	1 ÷ 2 =	$\frac{1}{2}$

❸ SET UP (RECURRING DECIMAL)

→ [ON]	ON/C SET UP 5 1	0.
$611 \div 495 =$	611 ÷ 495 =	$1\frac{116}{495}$
		$\frac{611}{495}$
		1.234
		1.234343434
		$1\frac{116}{495}$
LINE	611 ÷ 495 =	1.2(34)
		1.234343434
		1 r 116 r 495
		611 r 495
		1.2(34)
→ [OFF]	ON/C SET UP 5 0	0.

❹ CHANGE

$\frac{2}{5} + \frac{3}{4} =$

	ON/C 2 a/b 5 ► +	
	a/b 3 ► 4	$1\frac{3}{20}$
		$\frac{23}{20}$
		1.15
		$1\frac{3}{20}$

$\sqrt{3} \times \sqrt{5} =$

	√ 3 × √ 5 =	$\sqrt{15}$
		3.872983346

$\sin 45 =$

	sin 45 =	$\frac{\sqrt{2}}{2}$
		0.707106781

❺ ▲ ▼
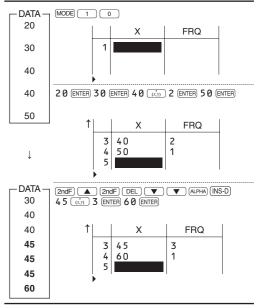
	2ndF CA	0.
① $3(5 + 2) =$	3 (5 + 2) =	21.
② $3 \times 5 + 2 =$	3 × 5 + 2 =	17.
③ $(5 + 3) \times 2 =$	(5 + 3) × 2 =	16.
→ ①	2ndF ▲	21.
→ ②	▼	17.
→ ①	▲	21.
	2ndF ▼	16.

❻ + − × ÷ ( ) (−) Exp

$45 + 285 \div 3 =$	ON/C 45 + 285 ÷ 3 =	140.
$\frac{18 + 6}{15 - 8} =$	(18 + 6) ÷ (15 − 8) =	$3\frac{3}{7}$
$42 \times -5 + 120 =$	42 × (−) 5 + 120 =	−90.
$(5 \times 10^3) \times (4 \times 10^{-3}) =$	5 Exp 3 × 4 Exp (−) 3 =	1'250'000.

❼

$34 + \frac{57}{} =$	34 + 57 =	91.
$45 + \frac{57}{} =$	45 + 57 =	102.
$68 \times 25 =$	68 × 25 =	1'700.
$68 \times 40 =$	40 =	2'720.

❽ ‹ENG ENG›

$6789=$

	ON/C 6789 =	6'789.
	ALPHA ‹ENG›	6.789E03
	ALPHA ‹ENG›	0.006789E06
	ALPHA ‹ENG ALPHA ‹ENG	6789.E00
	ALPHA ‹ENG	6789000.E−03

❾ sin cos tan sin⁻¹ cos⁻¹ tan⁻¹ π hyp arc hyp / ln log logₐb eˣ eˣ 10ˣ xˣ⁻¹ x² yˣ / yˣ ! ₙPᵣ ₙCᵣ % abs

$\sin 60 =$	ON/C SET UP 1 1	
	sin 60 =	$\frac{\sqrt{3}}{2}$
		0.866025403
$\cos\frac{\pi}{4}$ [rad]	SET UP 1 0 1	
	cos π a/b 4 =	$\frac{\sqrt{2}}{2}$
		0.707106781
$\tan^{-1} 1$ [g]	SET UP 1 0 2	
	2ndF tan⁻¹ 1 =	50.
	SET UP 1 0 0	
$(\cosh 1.5 + \sinh 1.5)^2 =$	2ndF hyp cos	
	1.5 + hyp sin	
	1.5) x² =	20.08553692
$\tanh^{-1}\frac{5}{7} =$	2ndF arc hyp tan	
	5 ÷ 7) =	0.895879734
$\ln 20 =$	ln 20 =	2.995732274
$\log 50 =$	log 50 =	1.698970004
$\log_2 16384 =$	2ndF logₐb 2 ► 16384 =	14.
LINE	2ndF logₐb 2 ◢ 16384 =	14.
$e^3 =$	2ndF eˣ 3 =	20.08553692
$1 \div e =$	1 ÷ ALPHA eˣ =	0.367879441
$10^{1.7} =$	2ndF 10ˣ 1.7 =	50.11872336
$\frac{1}{6} + \frac{1}{7} =$	6 2ndF xˣ⁻¹ + 7 2ndF xˣ⁻¹ =	$\frac{13}{42}$
		0.309523809

❿ DRG►

$90° \rightarrow$ [rad]	ON/C 90 2ndF DRG►	$\frac{1}{2}\pi$
→ [g]	2ndF DRG►	100.
→ [°]	2ndF DRG►	90.

⓫ ALPHA RCL STO M+ M− ANS D1 D2 D3

$8 \times 2 \Rightarrow M$	ON/C 8 × 2 STO M	16.
$24 \div (8 \times 2) =$	24 ÷ (ALPHA M) =	$1\frac{1}{2}$
$(8 \times 2) \times 5 =$	(ALPHA M) × 5 =	80.
$0 \Rightarrow M$	ON/C STO M	0.
$\$150 \times 3 \Rightarrow M_1$	150 × 3 M+	450.
$+)\ \$250: M_1 + 250 \Rightarrow M_2$	250 M+	250.
$-)\ M_2 \times 5\%$	RCL M− 2ndF M−	35.
$M =$	RCL M−	665.
$\frac{24}{4+6} =$	24 a/b 4 + 6 =	$2\frac{2}{5}$
$3 \times (A) + 60 \div (A) =$	3 × ALPHA ANS + 60 ÷ ALPHA ANS =	$32\frac{1}{5}$
$\sinh^{-1} \Rightarrow D1$	STO D1 2ndF arc hyp sin	
$\sinh^{-1} 0.5 =$	D1 0.5 =	0.481211825

⓬

$6 + 4 \Rightarrow ANS$	ON/C 6 + 4 =	10.
$ANS + 5 =$	+ 5 =	15.
$8 \times 2 \Rightarrow ANS$	8 × 2 =	16.
$ANS^2 =$	x² =	256.

⓭

$8^{-2} - 3^4 \times 5^2 =$

	8 yˣ (−) 2 −	
	3 yˣ 4 ► × 5 x² =	$-2024\frac{63}{64}$
		$\frac{129599}{64}$
		−2'024.984375
LINE	8 yˣ (−) 2 −	
	3 yˣ 4 ► × 5 x² =	−2'024.984375
		−2024 r 63 r 64
		−129599 r 64
$8^3 =$	8 2ndF xˣ³ =	512.
$\sqrt{49} - \sqrt[4]{81} =$	√ 49 ► −	
	4 2ndF xˣ√ 81 =	4.
LINE	√ 49 ◢ −	
	4 2ndF xˣ√ 81 =	4.
$\sqrt[3]{27} =$	3 2ndF xˣ√ 27 =	3.
$4! =$	4 2ndF n! =	24.
$_{10}P_3 =$	10 2ndF ₙPᵣ 3 =	720.
$_5C_2 =$	5 2ndF ₙCᵣ 2 =	10.
$500 \times 25\% =$	500 × 25 2ndF % =	125.
$120 \div 400 = ?\%$	120 ÷ 400 2ndF % =	30.
$500 + (500 \times 25\%) =$	500 + 25 2ndF % =	625.
$400 - (400 \times 30\%) =$	400 − 30 2ndF % =	280.
$|5 - 9| =$	2ndF abs 5 − 9 =	4.

	$\theta = \sin^{-1}x,\ \theta = \tan^{-1}x$	$\theta = \cos^{-1}x$
DEG	$-90 \leq \theta \leq 90$	$0 \leq \theta \leq 180$
RAD	$-\frac{\pi}{2} \leq \theta \leq \frac{\pi}{2}$	$0 \leq \theta \leq \pi$
GRAD	$-100 \leq \theta \leq 100$	$0 \leq \theta \leq 200$

⓮ ►BIN ►PEN ►OCT ►HEX ►DEC NEG NOT AND OR XOR XNOR

DEC (25) → BIN	ON/C 2ndF ►DEC 25		
	2ndF ►BIN	BIN	11001
HEX (1AC)	2ndF ►HEX 1AC		
→ BIN	2ndF ►BIN	BIN	110101100
→ PEN	2ndF ►PEN	PEN	3203
→ OCT	2ndF ►OCT	OCT	654
→ DEC	2ndF ►DEC	DEC	428.
BIN (111) → NEG	2ndF ►BIN 111		
	NEG 111 =	BIN	1111111001
1011 AND 101 = [BIN]	1011 AND 101 =	BIN	1
5A OR C3 = [HEX]	5A OR C3 =	HEX	DB
NOT 10110 = [BIN]	10110 NOT =	BIN	1111101001
24 XOR 4 = [OCT]	24 XOR 4 =	OCT	20
B3 XNOR 2D = [HEX]	B3 XNOR 2D =	HEX	FFFFFFFF61
	2ndF ►DEC =	DEC	−159.

⓯ ‹D'M'S ►DEG

$7°31'49.44'' \rightarrow$ [10]	ON/C 7 D'M'S 31 D'M'S	
	49.44 D'M'S 2ndF ►DEG	$7\frac{663}{1250}$
$123.678 \rightarrow$ [60]	123.678 2ndF ‹D'M'S	123°40'40.8''
3h 30m 45s + 6h 45m 36s = [60]	3 D'M'S 30 D'M'S 45 + 6 D'M'S 45 D'M'S 36 =	10°16'21.''
1234°56'12'' + 0°034.567'' = [60]	1234 D'M'S 56 D'M'S 12 + 0 D'M'S 0 D'M'S 34.567 =	1234°56'47.''
3h 45m − 1.69h = [60]	3 D'M'S 45 D'M'S − 1.69 =	2°3'36.''
$\sin 62°12'24'' = $ [10]	sin 62 D'M'S 12 D'M'S 24 =	0.884635235

⓰ →r θ →xy

$\begin{cases} x = 6 \\ y = 4 \end{cases} \rightarrow \begin{cases} r = \\ \theta = \end{cases}$	ON/C 6 2ndF →r θ 4 =	r: 7.211102551
	2ndF →r θ	θ: 33.69006753
$\begin{cases} r = 14 \\ \theta = 36 \end{cases} \rightarrow \begin{cases} x = \\ y = \end{cases}$	14 2ndF →xy 36 =	X: 11.32623792
	2ndF →xy	Y: 8.228993532

⓱ MDF

→ [FIX, TAB = 1]	ON/C SET UP 1 0 1	0.0
$5 \div 9 = ANS$	5 ÷ 9 =	$\frac{5}{9}$
		0.6
$ANS \times 9 =$	× 9 =	5.0
		$\frac{5}{9}$
		0.6
→ [MDF]	2ndF MDF	$\frac{3}{5}$
$ANS \times 9 =$	× 9 =	$5\frac{2}{5}$
		5.4
→ [NORM1]	SET UP 1 3	5.4

$^{*1}\ \frac{5}{9} \times 9 = 5.5555555555555 \times 10^{-1} \times 9$

$^{*2}\ \frac{3}{5} \times 9 = 0.6 \times 9$

⓲ int÷

$23 \div 5 =$	ON/C 23 int÷ 5	Q:	4.
	=	R:	3.
$9.5 \div 4 =$	9.5 2ndF int÷ 4	Q:	2.
	=	R:	1.5
$-32 \div (-5) =$	(−) 32 2ndF int÷ 5	Q:	6.
	=	R:	−2.

⓳ P.FACT

$12210 =$	ON/C 12210 =	12'210.
	2ndF P.FACT	2×3×5×11×37
	2ndF P.FACT	12'210.
$1234567 =$	1234567 =	1'234'567.
	2ndF P.FACT	127×(9721)

⓴ MODE (STAT) INS-D

㉑ MODE (STAT) DATA STAT x̄' y'

㉒

$$\bar{x} = \frac{\Sigma x}{n} \qquad \sigma x = \sqrt{\frac{\Sigma x^2 - n\bar{x}^2}{n}}$$

$$sx = \sqrt{\frac{\Sigma x^2 - n\bar{x}^2}{n-1}}$$

$$\bar{y} = \frac{\Sigma y}{n} \qquad \sigma y = \sqrt{\frac{\Sigma y^2 - n\bar{y}^2}{n}}$$

$$sy = \sqrt{\frac{\Sigma y^2 - n\bar{y}^2}{n-1}}$$

㉓ MODE (TABLE)

㉔

Function Fonction Funktion Función Funzioni Função Funktio	Dynamic range Plage dynamique zulässiger Bereich Rango dinámico Campi dinamici Definitionsområde Dynaaminen ala
$\sin x, \cos x, \tan x$	DEG: $\|x\| < 10^{10}$ $(\tan x: \|x\| \neq 90(2n-1))^*$ RAD: $\|x\| < \frac{\pi}{180} \times 10^{10}$ $(\tan x: \|x\| \neq \frac{\pi}{2}(2n-1))^*$ GRAD: $\|x\| < \frac{10}{9} \times 10^{10}$ $(\tan x: \|x\| \neq 100(2n-1))^*$
$\sin^{-1}x, \cos^{-1}x$	$\|x\| \leq 1$
$\tan^{-1}x, \sqrt[3]{x}$	$\|x\| < 10^{100}$
$\ln x, \log_2 x, \log_a b$	$10^{-99} \leq x < 10^{100},\ 10^{-99} \leq a < 10^{100}\ (a \neq 1)$
y^x	• $y > 0$: $-10^{100} < x\log y < 100$ • $y = 0$: $0 < x < 10^{100}$ • $y < 0$: $x = n$ $(0 < \|x\| < 1: \frac{1}{x} = 2n-1, x \neq 0)^*,$ $-10^{100} < x\log\|y\| < 100$
$x\sqrt{y}$	• $y > 0$: $-10^{100} < \frac{1}{x}\log y < 100\ (x \neq 0)$ • $y = 0$: $0 < x < 10^{100}$ • $y < 0$: $x = 2n-1$ $(0 < \|x\| < 1: \frac{1}{x} = n, x \neq 0)^*,$ $-10^{100} < \frac{1}{x}\log\|y\| < 100$
e^x	$-10^{100} < x \leq 230.2585092$
10^x	$-10^{100} < x < 100$
$\sinh x, \cosh x, \tanh x$	$\|x\| \leq 230.2585092$
$\sinh^{-1}x$	$\|x\| < 10^{50}$
$\cosh^{-1}x$	$1 \leq x < 10^{50}$
$\tanh^{-1}x$	$\|x\| < 1$
x^2	$\|x\| < 10^{50}$
x^3	$\|x\| < 2.15443469 \times 10^{33}$
$\sqrt{x}$	$0 \leq x < 10^{100}$
x^{-1}	$\|x\| < 10^{100}\ (x \neq 0)$
$n!$	$0 \leq n \leq 69^*$
$_nP_r$	$0 \leq r \leq n \leq 9999999999^*$ $n! < 10^{100}$ $(n-r)! < 10^{100}$
$_nC_r$	$0 \leq r \leq n \leq 9999999999^*$ $0 \leq r \leq 69$ $\frac{n!}{r!} < 10^{100}$
↔DEG, D'M'S	$0°0'0.00001'' \leq \|x\| < 10000°$
$x, y \rightarrow r, \theta$	$\sqrt{x^2 + y^2} < 10^{100}$
$r, \theta \rightarrow x, y$	$0 \leq r < 10^{100}$ DEG: $\|\theta\| < 10^{10}$ RAD: $\|\theta\| < \frac{\pi}{180} \times 10^{10}$ GRAD: $\|\theta\| < \frac{10}{9} \times 10^{10}$
DRG►	DEG → RAD, GRAD → DEG: $\|x\| < 10^{100}$ RAD → GRAD: $\|x\| < \frac{\pi}{2} \times 10^{98}$
$_nGCD, _nLCM$	$0 < n < 10^{10}\ *$
R.Int(m, n)	$\|m\| \leq 9999999999^*$ $\|n\| \leq 9999999999^*$ $n < m,\ \bar{n} - m < 10^{10}$
→ DEC → BIN → PEN → OCT → HEX AND OR XOR XNOR	DEC: $\|x\| < 9999999999$ BIN: 1000000000 $\leq x \leq$ 1111111111 $0 \leq x \leq$ 111111111 PEN: 2222222223 $\leq x \leq$ 4444444444 $0 \leq x \leq$ 2222222222 OCT: 4000000000 $\leq x \leq$ 7777777777 $0 \leq x \leq$ 3777777777 HEX: FDABF41C01 $\leq x \leq$ FFFFFFFFFF $0 \leq x \leq$ 2540BE3FF
NOT	BIN: 1000000000 $\leq x \leq$ 1111111111 $0 \leq x \leq$ 111111111 PEN: 2222222223 $\leq x \leq$ 4444444444 $0 \leq x \leq$ 2222222221 OCT: 4000000000 $\leq x \leq$ 7777777777 $0 \leq x \leq$ 3777777777 HEX: FDABF41C01 $\leq x \leq$ FFFFFFFFFF $0 \leq x \leq$ 2540BE3FE
NEG	BIN: 1000000001 $\leq x \leq$ 1111111111 $0 \leq x \leq$ 111111111 PEN: 2222222223 $\leq x \leq$ 4444444444 $0 \leq x \leq$ 2222222222 OCT: 4000000000 $\leq x \leq$ 7777777777 $0 \leq x \leq$ 3777777777 HEX: FDABF41C01 $\leq x \leq$ FFFFFFFFFF $0 \leq x \leq$ 2540BE3FF

*m, n, r: integer / entier / ganze Zahlen / entero / intero / heltal / kokonaisluku

---

For EU only:

Manufactured by
SHARP CORPORATION
1 Takumi-cho, Sakai-ku, Sakai City,
Osaka 590-8522, Japan
In Europe represented by
Sharp Electronics Europe Ltd,
4 Furzeground Way, Stockley Park,
Uxbridge, Middlesex, UB11 1EZ, U.K.
http://www.sharp.eu/

Imported into Europe by
MORAVIA Consulting, spol. s r.o.,
Olomoucká 83, 627 00 Brno, Czech Republic
Visit our Web site
http://www.moravia-consulting.com

For Canada only :
For warranty information, please see
http://www.sharp.ca/En/ForHome/HomeOffice/Calculator.aspx
Pour le Canada seulement
Pour en lire plus sur la garantie, visitez le
http://www.sharp.ca/Fr-CA/ForHome/HomeOffice/Calculator.aspx

For Australia / New Zealand only :
For warranty information please see www.sharp.net.au