



ENGLISH
KF14380



INSTRUCTION MANUAL

SCIENTIFIC CALCULATOR
WITH FRACTIONAL, STATISTICAL, AND
EQUATION SOLVING FUNCTIONS

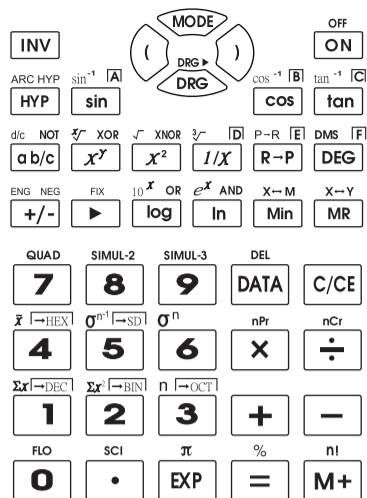


Please read before using.

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KEYS LAYOUT



PERCENTAGE CALCULATIONS

Example	Operation	Display
Percentage 26% of \$15.00	15 [×] [26] [INV] [%] [=]	3.9
Premium 15% increase from \$36.20	36.2 [+][15] [INV] [%] [=]	41.63
Discount 4% discount from \$47.50	47.5 [-][4] [INV] [%] [=]	45.6
Ratio 75 is what % of 250?	75 [÷] [250] [INV] [%] [=]	30.

SPECIFYING THE FORMAT OF CALCULATION RESULTS

You can change the precision of calculation results by specifying the number of decimal places. You can also shift the decimal place of a displayed value three places to the left for one-touch conversions of metric weights and measures.

SPECIFYING THE NUMBER OF DECIMAL PLACES

To specify the number of decimal places (FIX), [INV][FIX] then enter a value indicating the number of decimal places (0-9).

Example	Operation	Display
To set 3 decimal places	[INV][FIX]3	0.000
To reset the number of decimal places.	[INV][FIX][=]	0.

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LOGARITHMIC AND EXPONENTIAL FUNCTIONS

Example	Operation	Display
log 1.23	1.23 [log]	0.089905111
$\ln 90 = 4.49980967$	90 [ln]	4.49980967
$\log_{456} - \ln 456 = 0.434294481$	456 [log] ÷ [(456 [ln])] [=]	0.434294481
$10^{1.23} = 16.98243652$	1.23 [INV] [10 ^x]	16.98243652
$e^{4.5} = 90.0171313$	4.5 [INV] [e ^x]	90.0171313
$10^4 \cdot e^{-1} + 1.2 \cdot 10^{2.3} = 422.5878667$	4 [INV] [10 ^x] [×] [(1.2 [+][=] [10 ^x])] [+][=]	422.5878667
$(-3)^4 = 81$	3 [+][=] [4] [=]	81.
$-3^4 = -81$	[-] 3 [x ²] 4 [=]	-81.
$5.6^{3.3} = 52.58143837$	5.6 [x ²] 3.3 [=]	52.58143837
$\sqrt[3]{123} = 4.973189833$	123 [INV] [√ ^x]	4.973189833
$(78-23)^{-1.2} = 1.305111829 \times 10^{-21}$	[(78-[23]) [x ²] [-1.2] [=] [10 ^x]] [=]	1.305111829 ⁻²¹
$2+3 \times \sqrt[3]{64} - 4 = 10$	2 [+][3][×] [(64 [INV] [√ ^x])] [-4] [=]	10.
$2 \times 3.4^{(5+6.7)} = 3306232$	2 [×] [3.4] [(5+[6.7])] [=]	3306232.001

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SAFETY PRECAUTIONS

Be sure to read the following safety precautions before using this calculator. Keep this manual handy for later reference.

BATTERIES

- After removing the batteries from the calculator, put them in a safe place where there is no danger of them getting into the hands of small children and accidentally swallowed.
- Keep batteries out of the reach of children. If accidentally swallowed, consult with a physician immediately.
- Never charge batteries, try to take batteries apart, or allow batteries to become shorted. Never expose batteries to direct heat or dispose of them by incineration.
- Misuse of batteries can cause them to leak acid that can cause damage to nearby items and creates the possibility of fire and personal injury.
- Always make sure that a battery's positive (+) and negative (-) sides are facing correctly when you load it into the calculator.
- Remove the batteries if you do not plan to use the calculator for a long time.
- Use only the type of batteries specified for this calculator in this manual.

DISPOSING OF THE CALCULATOR

- Never dispose of the calculator by burning it. Doing so can cause certain components to suddenly burst, creating the danger of fire and personal injury.
- The displays and illustrations (such as key markings) shown in this Owner's Manual are for illustrative purposes only, and may differ somewhat from the actual items they represent.
- The contents of this manual are subject to change without notice.

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OPERATION MODES

When using this calculator, it is necessary to select the proper mode to meet your requirements. This can be done by pressing [MODE], then press 1-5 or 7-9 to select the mode.

CALCULATION MODES

"DEC" mode [MODE][1]: - general calculations, including function calculations can be executed. Either "DEG", "RAD" or "GRAD" symbol appears in the LCD display (depends on which angular measurement mode is active).

"BIN" mode [MODE][2]: - binary conversion and calculations. "BIN" symbol appears in the LCD display.

"OCT" mode [MODE][3]: - octal conversion and calculations. "OCT" symbol appears in the LCD display.

"HEX" mode [MODE][4]: - hexadecimal conversion and calculations.

"HEX" symbol appears in the LCD display.

"SD" mode [MODE][5]: - standard deviation calculation can be executed. "SD" symbol appears in the LCD display.

"Quad" mode [MODE][7]: - to solve quadratic equation. "Quad" symbol appears in the LCD display.

"Simul" mode [MODE][8] or [MODE][9]: - to solve simultaneous linear equation with either 2 or 3 unknown. "Simul" symbol appears in the LCD display.

Note: The calculation mode last selected is retained in memory when the power is switched OFF.

ANGULAR MEASUREMENT MODES

"DEG" mode:- specify measurement in "degrees". "DEG" symbol appears in display window.

"RAD" mode:- specify measurement in "radians". "RAD" symbol

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SHIFTING THE DECIMAL PLACE

You can use the key [INV][ENG] to shift the decimal point of the displayed value three places to the left. Each 3-place shift to the left is the same as dividing the value by 1000. This means that this function is useful when converting metric weights and measures to other metric units.

Example	Operation	Display
123m × 456 = 56088m = 56.088km	123 [×] [456] [=] [INV][ENG]	56088. 56.088 ⁰³
To reset	[INV][FLO]	0.

MEMORY

This calculator contains a single independent memory, which is accessed by using the [Min], [M+] [MR] and [INV][X↔M] keys. Content of this independent memory is protected even when the power is turned OFF.

Addition results can be stored directly in memory. Results can also be totaled in memory, making it easy to calculate sums. The icon "M" will be lighted as long as M is not empty.

* The display mode last selected is retained in memory when the power is switched OFF.

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HANDLING PRECAUTIONS

- Be sure to press the "ON" key before using the calculator for the first time.
- Even if the calculator is operating normally, replace the battery at least once every three years. Dead battery can leak, causing damage to and malfunction of the calculator. Never leave the dead battery in the calculator.
- The battery that comes with this unit discharges slightly during shipment and storage. Because of this, it may require replacement sooner than the normal expected battery life.
- Low battery power can cause memory contents to become corrupted or lost completely. Always keep written records of all important data.
- Avoid use and storage in areas subjected to temperature extremes. Very low temperatures can cause slow display response, total failure of the display, and shortening of battery life. Also avoid leaving the calculator in direct sunlight, near a window, near a heater or anywhere else it might become exposed to very high temperatures. Heat can cause discoloration or deformation of the calculator's case, and damage to internal circuitry.
- Avoid use and storage in areas subjected to large amounts of humidity and dust. Take care never to leave the calculator where it might be splashed by water or exposed to large amounts of humidity or dust. Such elements can damage internal circuitry.
- Never drop the calculator or otherwise subject it to strong impact.
- Never twist or bend the calculator. Avoid carrying the calculator in the pocket of your trousers or other tight-fitting clothing where it might be subjected to twisting or bending.
- Never try to take the calculator apart.
- Never press the keys of the calculator with a ball-point pen or other pointed object.

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appears in display window.

"GRA" mode:- specify measurement in "grads". "GRAD" symbol appears in display window.

These three angular measurement modes can be used in combination with the "DEC" mode.

DISPLAY MODES

"FIX" mode:- specify number of decimal places.

"SCI" mode:- numbers are displayed in scientific exponential format.

"FLO" mode:- cancels "FIX" and "SCI" specifications.

In combination with "FIX", "SCI" or "FLO" mode, you can use the exponent display for the number being displayed to change in multiples of 3 by pressing the [INV][ENG] key.

* The display mode last selected is retained in memory when the power is switched OFF.

Mode	Operation	Display
Decimal	[MODE][1]	DEG, RAD or GRAD
Binary	[MODE][2]	BIN
Octal	[MODE][3]	OCT
Hexadecimal	[MODE][4]	HEX
Statistical	[MODE][5]	SD
Quadratic equation	[MODE][7]	Quad
Simultaneous equations with 2 unknowns	[MODE][8]	Simul
Simultaneous equations with 3 unknowns	[MODE][9]	Simul
Deg	Press [DRG] to cycle through "DEG", "RAD" and "GRAD".	DEG
Rad		RAD
Grad		GRAD
Fix	[INV][FIX] then [0]-[9]	
Sci	[INV][SCI]	
Flo	[INV][FLO]	

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Example	Operation	Display
Input 123 into memory:	123 [Min] [CL/C]	M 123. M 0.
To recall the content of the memory	[MR]	M 123.
To add 25 into the memory	25 [M+] [CL/C]	M 25. M 0.
To replace the memory content by a new number, e.g. 369	369 [Min] [CL/C]	M 369. M 0.
To exchange the displayed number e.g. 123, with the content of the memory	[INV][X↔M] [MR]	M 123. M 369. M 123.
To clear the memory	[CL/C] [Min]	M 0. M 0.

SCIENTIFIC FUNCTIONS

TRIGONOMETRIC FUNCTIONS AND INVERSE TRIGONOMETRIC FUNCTIONS

- Be sure to set the unit of angular measurement before performing trigonometric function and inverse trigonometric function calculations.
- The unit of angular measurement (degrees, radians, grads) is selected by pressing [DRG].
- Once a unit of angular measurement is set, it remains in effect until a new unit is set. Settings are not cleared when power is switched OFF.

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Example	Operation	Display
x=14 and y=20.7, what are r and θ?	Press [DRG] to select "DEG" 14 [×] [20.7] [R→P] [INV][X↔Y] [INV][DMS]	24.98979792(r) 55.92839019(θ) 55.°55'42"(θ)
x=7.5 and y=-10, what are r and θ rad?	Press [DRG] to select "RAD" 7.5 [×] [10] [+][=] [R→P] [INV][X↔Y]	12.5(r) -0.927295218(θ)
r=25 and θ=56°, what are x and y?	Press [DRG] to select "DEG" 25 [×] [56] [INV][P→R] [INV][X↔Y]	13.97982259(x) 20.72593931(y)
r=4.5 and θ=2π/3 rad, what are x and y?	Press [DRG] to select "RAD" 4.5 [×] [(2) [×] [π] [INV][π]] [R→P] [INV][X↔Y]	-2.25(x) 3.897114317(y)

OTHER FUNCTIONS (√, x², 1/x, n!, √^x)

Example	Operation	Display
$\sqrt{2+5} = 3.65028154$	2 [INV] [√] [+][5] [INV] [√] [=]	3.65028154
$2^2 + 3^2 + 4^2 + 5^2 = 54$	2 [x ²] [+][3] [x ²] [+][4] [x ²] [+][5] [x ²] [=]	54.
$(-3)^2 = 9$	[(3] [+][=] [2] [=]	9.
$1/(1/3-1/4) = 12$	[(1] [÷] [3] [-][4] [÷] [1] [×] [10]] [1/×]	12.
$8! = 40320$	8 [INV] [n!]	40320.
$\sqrt[3]{(36 \times 42 \times 49) = 42}$	[(36 [×] [42] [×] [49])] [INV] [√ ^x]	42.
$\sqrt{(1-\sin^2 40)}$	Press [DRG] to select "DEG" [(1] [-] [(40 [sin])] [x ²]] [INV] [√]	0.766044443
$1/2! + 1/4! + 1/6! + 1/8! = 0.543080357$	2 [INV] [n!] [1/×] [1] [+] 4 [INV] [n!] [1/×] [1] [+] 6 [INV] [n!] [1/×] [1] [+] 8 [INV] [n!] [1/×] [1] [=]	0.543080357

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- Use a soft, dry cloth to clean the exterior of the unit. If the calculator becomes very dirty, wipe it off with a cloth moistened in a weak solution of water and a mild neutral household detergent. Wring out all excess moisture before wiping the calculator. Never use thinner, benzene or other volatile agents to clean the calculator. Doing so can remove printed markings and damage the case.

LCD DISPLAY



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ARITHMETIC OPERATIONS & PARENTHESIS CALCULATIONS

- For negative values, press [+/-] after entering the value
- For mixed basic arithmetic operations, multiplication and division are given priority over addition and subtraction
- Assuming that "DEC" mode [MODE][1] is selected.

Example	Operation	Display
23 + 4.5 - 53 = -25.5	23 [+][4.5] [-][53] [=]	-25.5
$56 \times (-12) \div (-2.5) = 268.8$	56 [×] [12] [+][=] [2.5] [+][=]	268.8
$12369 \times 7532 \times 74103 = 6.903680613 \times 10^{12}$	12369 [×] [7532] [×] [74103] [=]	6.903680613 ¹²
$(4.5 \times 10^{7.5}) \times (-2.3 \times 10^{-7.9}) = -0.001035$	4.5 [EXP] [7.5] [×] [2.3] [+][=] [EXP] [7.9] [+][=]	-0.001035
$(2+3) \times 10^2 = 500$	[(1] [2] [+][3] [×] [10 ²]] [=]	500.
$(1 \times 10^5) \div 7 = 14285.71429$	1 [EXP] [5] [+][7] [=]	14285.71429
$(1 \times 10^5) \div 7 - 14285 = 0.7142857$	1 [EXP] [5] [+][7] [-]	0.71428571
3 + 5 × 6 = 33	3 [+][5] [×] [6] [=]	33.
7 × 8 - 4 × 5 = 36	7 [×] [8] [-][4] [×] [5] [=]	36.
1 + 2 - 3 × 4 ÷ 5 + 6 = 6.6	1 [+][2] [-][3] [×] [4] [+] 5 [+][6] [=]	6.6
100 - (2+3) × 4 = 80	100 [-] [(2 [+][3] [×] [4])] [=]	80.
2 + 3 × (4 + 5) = 29	2 [+][3] [×] [(4 [+][5])] [=]	29.

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Example	Operation	Display
sin 63°52'41" = 0.897859012	Press [DRG] to select "DEG" 63.5241 [DEG] [sin]	0.897859012
cos (π/3 rad) = 0.5	Press [DRG] to select "RAD" [(π] [INV] [π]] [÷] [3] [×] [cos]	0.5
tan (-35 grad) = -0.612800788	Press [DRG] to select "GRAD" 35 [+][=] [tan]	-0.612800788
2sin45° × cos65° = 0.597672477	Press [DRG] to select "DEG" 45 [sin] [×] [2] [×] [(65 [cos])] [=]	0.597672477
sin ⁻¹ 0.5 = 30	0.5 [INV] [sin ⁻¹]	30.
cos ⁻¹ (√2/2) = 0.785398163 rad = π/4 rad	Press [DRG] to select "RAD" [(√2] [INV] [√]] [÷] [2] [×] [cos ⁻¹]] [INV] [cos ⁻¹]	0.785398163
tan ⁻¹ 0.741 = 36.53844577° = 36°32'18.4"	Press [DRG] to select "DEG" 0.741 [INV] [tan ⁻¹]	36.53844577

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PERMUTATION AND COMBINATION

Total number of permutations nPr = n!/(n-r)!

Total number of combinations nCr = n!/(r!(n-r)!)

Example	Operation	Display
Taking any four out of ten items and arranging them in a row, how many different arrangements are possible? 10P4 = 5040	10 [INV] [nPr] [4] [=]	5040.
Using any four numbers from 1 to 7, how many four digit even numbers can be formed if none of the four digits consist of the same number? (3/7 of the total number of permutations will be even.) 7P4 × 3 ÷ 7 = 360	7 [INV] [nPr] [4] [×] [3] [÷] 7 [=]	360.
If any four items are removed from a total of 10 items, how many different combinations of four items are possible? 10C4 = 210	10 [INV] [nCr] [4] [=]	210.
If 5 class officers are being selected for a class of 15 boys and 10 girls, how many combinations are possible? At least one girl must be included in each group. 25C5 - 15C5 = 50127	25 [INV] [nCr] [5] [-] [15] [INV] [nCr] [5] [=]	50127.

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FRACTIONS

Fractions are input and displayed in the order of integer, numerator and denominator.

Example	Operation	Display
$\frac{2}{5} + 3\frac{1}{4} = 3\frac{13}{20}$	$2[a^b/c]5[+]3[a^b/c]1$ [a^b/c]4[=] (conversion to decimal)[a^b/c] Fractions can be converted to decimals, and then converted back to fractions.	3.13 20. 3.65
$3\frac{456}{78} = 8\frac{11}{13}$	$3[a^b/c]456[a^b/c]78[=]$ [INV][D/C]	8.11 13. 115 13
$\frac{1}{2} \times 0.5 = 0.25$	$1[a^b/c]2[\times].5[=]$	0.25
$\frac{1}{3} \times (-\frac{4}{5}) = -\frac{4}{15}$	$1[a^b/c]3[\times]4[+/-][a^b/c]5$ [-]5[a^b/c]6[=]	-1.1 10.
$\frac{1}{2} \times \frac{1}{3} + \frac{1}{4} \times \frac{1}{5} = \frac{13}{60}$	$1[a^b/c]2[\times]1[a^b/c]3[+]$ $1[a^b/c]4[\times]1[a^b/c]5[=]$	13 60.
$\frac{1}{2} \div \frac{1}{3} = \frac{3}{2}$	$1[a^b/c]2[\div]3[=]$	1 6.
$\frac{1}{1/3 + 1/4} = 1\frac{5}{7}$	$1[1/a^b/c]3[+]$ $1[a^b/c]4[1/X]$	1.5 7.

DEGREE, RADIAN, GRADIENT INTERCONVERSION

Degree, radian and gradient can be converted to each other with the use of [INV][DRG>].

Example	Operation	Display
Change 20 radian to degree	Press [DRG] to select "RAD" 20[INV][DRG>][INV][DRG>]	1145.91559
10 radians + 25.5 gradients. The answer is expressed in degree.	Press [DRG] to select "RAD" 10[INV][DRG>][+][25.5[=]	595.9077951

STATISTICAL CALCULATIONS

This unit can be used to make statistical calculations including standard deviation in the "SD" mode.

STANDARD DEVIATION

In the "SD" mode, calculations including 2 types of standard deviation formulas, mean, number of data, sum of data, and sum of square can be performed.

Data input
1. Press [MODE] [5] to specify SD mode.
2. Input data, pressing [DATA] key each time a new piece of data is entered.
Example Data: 10, 20, 30
Key operation: 10 [DATA] 20 [DATA] 30 [DATA]
Performing calculations
The following procedures are used to perform the various standard deviation calculations.

Key operation	Result
[INV][x σ_n]	Population standard deviation, σ_n
[INV][x σ_{n-1}]	Sample standard deviation, σ_{n-1}
[INV][\bar{x}]	Mean, \bar{x}
[INV][$\sum x^2$]	Sum of square of data, $\sum x^2$
[INV][$\sum x$]	Sum of data, $\sum x$
[INV][n]	Number of data, n

Standard deviation and mean calculations are performed as shown below:
Population standard deviation $\sigma_n = \sqrt{\frac{\sum(x_i - \bar{x})^2}{n}}$
where $i = 1$ to n
Sample standard deviation $\sigma_{n-1} = \sqrt{\frac{\sum(x_i - \bar{x})^2}{(n-1)}}$
where $i = 1$ to n
Mean $\bar{x} = \frac{\sum x_i}{n}$

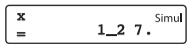
Press [8][+/-][DATA] for "b₂".



Finally, key in value for "c₂".



As [DATA] has been pressed to confirm the input of c₂, calculation starts to find x and y. The roots will be shown as below.



Press [DATA] again to find y.



Same as quadratic equation solving, you can press [DATA] to recycle the solving procedures. Or you can press [MODE] [1], [MODE] [2], [MODE] [3], [MODE] [4] or [MODE] [5] to leave equation solving modes.

3-UNKNOWN SIMULTANEOUS LINEAR EQUATIONS

Press [MODE] [9] to start 3-unknown simultaneous linear equation solving. The icon "Simul" will be ON. You will be asked to input the coefficients of "a₁", "b₁", "c₁", "d₁", "a₂", "b₂", "c₂", "d₂", "a₃", "b₃", "c₃" and "d₃" of the equations:

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

For example, you are going to solve x, y and z of the following three linear equations:-

$$\begin{aligned} 3x - 4y + 5z &= -6 \\ -x + 9y - 6z &= 1 \\ x + y - z &= -3 \end{aligned}$$

DEGREES, MINUTES, SECONDS CALCULATIONS

You can perform sexagesimal calculations using degrees (hours), minutes and seconds. And convert between sexagesimal and decimal values.

Example	Operation	Display
To express 2.258 degrees in deg/min/sec.	2.258[INV][DMS]	2.°15' 28"8
To perform the calculation: 12°34'56" × 3.45	12.3456[DEG][INV][DMS] [×]3.45[=] [INV][DMS]	43.40866667 43.°24' 31"2

BINARY, OCTAL, DECIMAL, HEXADECIMAL CALCULATIONS

- General function calculations cannot be performed.
- Only integers can be handled.
- Only valid values for the particular number system can be used.

Number system	Valid values
Binary	0,1
Octal	0,1,2,3,4,5,6,7
Decimal	0,1,2,3,4,5,6,7,8,9
Hexadecimal	0,1,2,3,4,5,6,7,8,9,A,B,C,D,E,F

- Negative numbers in binary, octal, hexadecimal are expressed as two's complements.

BINARY, OCTAL, DECIMAL, HEXADECIMAL CONVERSIONS

Example	Operation	Display
How is 22 ₁₀ expressed in binary, octal and hexadecimal number system?	22[MODE][2] (binary) [MODE][3] (octal) [MODE][4] (hexadecimal)	0. 10110 26

Example	Operation	Display
Data 55, 54, 51, 55, 53, 53, 54, 52	[MODE] [5] (SD Mode) 55[DATA]54[DATA] 51[DATA]55[DATA] 53[×]2[DATA] 54[DATA]52[DATA]	0. 8. 8. 8.
What is deviation of the unbiased variance, and the mean of the above data?	[INV][n] (Number of data) [INV][$\sum x$] (Sum of data) [INV][$\sum x^2$] (Sum of square of data) [INV][\bar{x}] (Mean) [INV][σ_n] (Population SD) [INV][σ_{n-1}] (Sample SD) [INV][σ_{n-1}^2] (Sample variance)	427. 22805. 53.375 1.316956719 1.407885953 1.982142857

EQUATION SOLVING FUNCTION

Three types of equations can be handled by this calculator. They are -

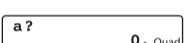
- Quadratic equation
 - 2-unknown simultaneous linear equations
 - 3-unknown simultaneous linear equations
- You can select these three types of equation by pressing [MODE][7], [MODE][8] or [MODE][9] respectively.

QUADRATIC EQUATION SOLVING

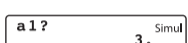
Press [MODE][7] to start quadratic equation solving. The icon "Quad" will be ON. You will be asked to input the coefficients of "a", "b" and "c" of the equation:

$$ax^2 + bx + c = 0$$

Example $2x^2 + 5x - 2 = 0$



Press the digit key [3] for a₁ input



then press [DATA] to confirm the entry and move to "b"



Press [4][+/-][DATA] to set "b₁" as 4 and proceed to "c₁".



Enter the value of "c₁" by pressing [5].

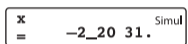


Press [DATA] to start entry for d₁.

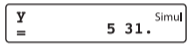


Enter [6][+/-] for "d₁". Press [DATA] to go on entering coefficients in the order of "a₂", "b₂", "c₂", "d₂", "a₃", "b₃", "c₃" and "d₃".

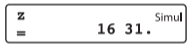
After confirming the entry "d₃" of by pressing [DATA], calculation will start and the answer for the first unknown, x will be shown.



Press [DATA] again to find y.



Further pressing of [DATA] to get the result of z.



As described above, you can press [DATA] to recycle the solving procedures. Or you can press [MODE] [1], [MODE] [2], [MODE] [3], [MODE] [4], or [MODE] [5], to leave equation solving modes.

BASIC ARITHMETIC OPERATIONS USING BINARY, OCTAL, DECIMAL, HEXADECIMAL VALUES

Example	Operation	Display
10111 ₂ + 11010 ₂ = 110001 ₂	[MODE][2] 10111[+]11010[=]	0 110001
B47 ₁₆ - DF ₁₆ = A68 ₁₆	[MODE][4] B47[-]DF[=]	0 A68
123 ₈ × ABC ₁₆ = 37AF4 ₁₆ = 228084 ₁₀	[MODE][3] 123[MODE][4] [×]ABC[=] [MODE][1]	0 53 37AF4 228084
1F2D ₁₆ - 100 ₁₀ = 7881 ₁₀ = 1EC9 ₁₆	[MODE][4] 1F2D[MODE][1] [-]100[=] [MODE][4]	0 7981 7881 1EC9
7654 ₈ + 12 ₁₀ = 334.3333333 ₁₀ = 516 ₈	[MODE][3] 7654[MODE][1] [+]12[=] [MODE][3]	0 4012. 334.3333333 516
1234 ₁₀ + 1EF ₁₆ + 24 ₈ = 2352 ₈ = 1258 ₁₀	[MODE][1] 1234[+]1EF[MODE][4] 1EF[+]24[MODE][3] 24[=] [MODE][1]	0. 4d2 757 2352 1258

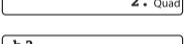
NEGATIVE EXPRESSIONS

Example	Operation	Display
How is 110010 ₂ expressed as a negative?	[MODE][2] 110010[NEG]	0 1111001110
How is 72 ₈ expressed as a negative?	[MODE][3] 72[NEG]	0 777777706
How is 3A ₁₆ expressed as a negative?	[MODE][4] 3A[NEG]	0. FFFFFFFC6

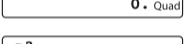
Press [2] to input the value of "a"



Then press [DATA] to confirm the entry and move to "b".



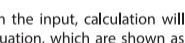
Then press [5] [DATA] to set "b" as 5 and proceed to "c".



Enter the value of "c" by pressing [2] [+/-].



As you press [DATA] to confirm the input, calculation will start to find the roots of the equation, which are shown as follows.



Press [DATA] again to view the next root.



If no real roots are found, error will occur and the display will show "E" as an indication.

Pressing [DATA] again can recycle the procedure and you can try to solve another quadratic equation by varying the value of "a", "b" or "c".

REPLACING THE BATTERY

Dim figures on the display of the calculator indicate that battery power is low. Continued use of the calculator when the battery is low can result in improper operation. Replace the battery as soon as possible when display figures become dim.

TO REPLACE THE BATTERY:

- Remove the screws that hold the back cover in place and then remove the back cover,
- Remove the old battery,
- Wipe off the side of the new battery with a dry, soft cloth.
- Load it into the unit with the positive(+) side facing up.
- Replace the battery cover and secure it in place with the screws.
- Press [ON] to turn power on.

AUTO POWER OFF

Calculator power automatically turns off if you do not perform any operation for about six minutes. When this happens, press [ON] to turn power back on.

SPECIFICATIONS

Power supply: 2 x LR1130 button type battery
Operating temperature: 0o ~ 40oC (32oF ~ 104oF)



LOGICAL OPERATIONS

Logical operations are performed through logical products (and), logical sums (or), negative (not), exclusive logic sums (xor), and negation of exclusive logic sums (xnor).

Example	Operation	Display
19 ₁₆ AND 1A ₁₆ = 18 ₁₆	[MODE][4] 19[AND]1A[=]	0 18
1110 ₂ AND 36 ₈ = 1110 ₂	[MODE][2] 1110[MODE][3] [AND]36[=] [MODE][2]	0 16 16 1110
23 ₈ OR 61 ₈ = 63 ₈	[MODE][3] 23[OR]61[=]	0 63
120 ₁₆ OR 1101 ₂ = 12D ₁₆	[MODE][4] 120[MODE][2][OR]1101[=] [MODE][4]	0 100101101 12d
1010 ₂ AND (A ₁₆ OR 7 ₁₆) = 1010 ₂	[MODE][2] 1010[MODE][4] [AND]([A]OR)7[MODE][2] [MODE][2]	0 A A 1010
5 ₁₆ XOR 3 ₁₆ = 6 ₁₆	[MODE][4] 5[XOR]3[=]	0 6
2A ₁₆ XNOR 5D ₁₆ = FFFFFFFF88 ₁₆	[MODE][4] 2A[XNOR]5D[=]	0 FFFFFFF88
Negation of 1234 ₈	[MODE][3] 1234[NEG]	0 777776544
Negation of 2FFED ₁₆	[MODE][4] 2FFED[NEG]	0 FFFFD00013

2-UNKNOWN SIMULTANEOUS LINEAR EQUATIONS

Press [MODE] [8] to start 2-unknown simultaneous linear equation solving. The icon "Simul" will be ON. You will be asked to input the coefficients of "a₁", "b₁", "c₁", "a₂", "b₂" and "c₂" of the equations:

$$\begin{aligned} a_1x + b_1y &= c_1 \\ a_2x + b_2y &= c_2 \end{aligned}$$

For example, we are going to solve x, y of the following two linear equations:-

$$\begin{aligned} 3x + 4y &= 5 \\ x - 8y &= -1 \end{aligned}$$

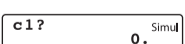
Press the digit key [3] for a₁ input



then press [DATA] to confirm the entry and move to "b₁".



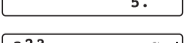
Press [4][DATA] to set "b₁" as 4 and proceed to "c₁".



Enter the value of "c₁" by pressing [5].



Press [DATA] to go on entering values of "a₂", "b₂" and "c₂".



Press [1][DATA] for "a₂".

