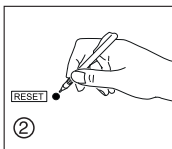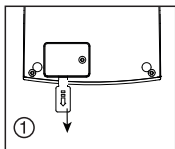# Canon

F-730SX
SCIENTIFIC CALCULATOR
User Guide

First Tme Operation

1. Remove the battery insulation tab to load the battery. (Figure ①)
2. To initialize the calculator, use the tip of a ballpoint pen (or similar sharp object) to press the [RESET] button on the back of the calculator. (Figure ②)
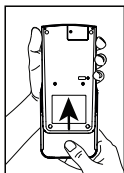

E-IE-492

ENGLISH

CONTENTS

SAFETY PRECAUTIONS

- This calculator contains precision components such as LSI chips and should not be used in places subject to rapid variations in temperature, excessive humidity, dirt or dust, or exposure to direct sunlight.
- Do not apply excessive pressure on the liquid crystal display panel as it is made of glass.
- Use a soft, dry cloth to clean the calculator. Do not clean with a damp cloth or volatile liquid such as paint thinner.
- Do not under any circumstances dismantle the device. If the calculator is not functioning properly, please contact Canon Service & Support or mail the device with the Warranty to a Canon service location.
- Do not improperly dispose of the calculator such as in an incinerator as it may cause personal injury or harm. Please dispose of the product in accordance with National regulations
- It is recommended to replace the battery once every two years.

USING THE PROTECTIVE SLIDE CASE

Slide the unit out of the protective case to open or close the cover as shown in the figure.

OPEN
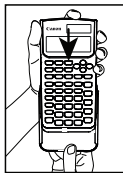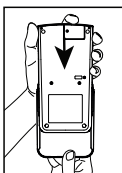
CLOSE

DISPLAY (2-LINE DISPLAY)

Extension mark (Shows the presence of hidden formula)

Formula (11 characters)

Next or Previous page

Mantissa minus sign

Exponent minus sign

Exponent

2nd DEG GRAD RAD K HYP FIX SCI ENG STAT

Status indicators

Mantissa

<Status Indicators>
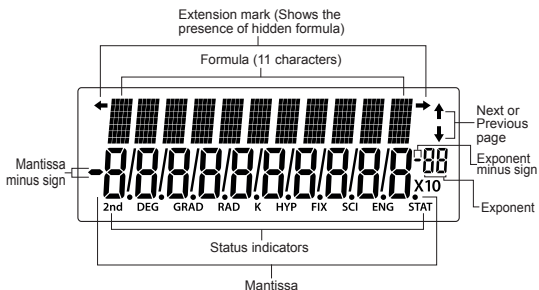
2nd	:	2nd Function
DEG	:	Degree Mode
GRAD	:	Gradient Mode
RAD	:	Radian Mode
K	:	Constant
HYP	:	Hyperbolic
FIX	:	Fixed Mode
SCI	:	Scientific Exponential Mode
ENG	:	Engineering Exponential Mode
STAT	:	Statistic Mode

TO GET STARTED

Power ON and OFF

$\boxed{\text{ON}}$ **(Power ON):** Turns on the calculator.

$\boxed{\text{OFF}}$ **(Power OFF):** Turns off the calculator.

■ **Auto Power Off Function:**
 If the calculator is not used for about 7 minutes, it will automatically power off. Press $\boxed{\text{ON}}$ key to turn the calculator on again.

Input Capacity

F-730SX can accommodate up to 87 steps in Normal mode and 47 steps in STAT mode in a single calculation. One step is used when you press one of the numeric keys, arithmetic keys, scientific calculation keys or $\boxed{\text{ANS}}$ key. Pressing $\boxed{\text{2nd}}$, $\boxed{\text{SCI/ENG}}$, $\boxed{\text{DRG}}$ and the direction keys will not take up any steps.

When you reach 79 steps in Normal mode or 39 steps in STAT mode of any calculation, the cursor changes from [▉] to [▓] notifying you that the memory is running low. In case you need to input a single calculation with more than 87 steps in Normal mode and 47 steps in STAT mode, you can separate the calculation into two or more segments.

Display Format Setting (Notation – Fix, Sci, Eng)

F-730SX can display up to 10 digits. Values exceeding the 10-digit limit will automatically be displayed in exponent notation format.

Example : Changing the display format of 0.12345

Display Setting	Operation	Display (Lower)
Default Setting : Floating-Decimal	$\boxed{1}$ $\boxed{2}$ $\boxed{3}$ $\boxed{4}$ $\boxed{5}$ $\boxed{\times}$ $\boxed{\cdot}$ $\boxed{0}$ $\boxed{0}$ $\boxed{0}$ $\boxed{0}$ $\boxed{1}$ $\boxed{=}$	0.12345
Scientific Notation (SCI)	$\boxed{\text{2nd}}$ $\boxed{\text{SCI/ENG}}$ $\boxed{\rangle}$ $\boxed{=}$	1.2345×10^{-01}
Engineering Notation (ENG) (Exponent is a multiple of 3)	$\boxed{\text{2nd}}$ $\boxed{\text{SCI/ENG}}$ $\boxed{\rangle}$ $\boxed{=}$	123.45×10^{-03}
Fixed Decimal places: 1	$\boxed{\text{2nd}}$ $\boxed{\text{FIX}}$ $\boxed{1}$	123.5×10^{-03}
Restore to Standard Notation (Floating-decimal)	$\boxed{\text{2nd}}$ $\boxed{\text{SCI/ENG}}$ $\boxed{\rangle}$ $\boxed{=}$	0.1
	$\boxed{\text{2nd}}$ $\boxed{\text{FIX}}$ $\boxed{\cdot}$	0.12345

New input begins on the left of the upper (entry) line. When the
entries are over 11 digits, the line will move to the right
consecutively. Press ⓒ ⓓ to scroll the cursor within the upper
(entry) line and edit your calculation as needed.

Example (Editing an Entry):

234567 + 889900

←567+889900█

Replacing an Entry (1234567 → 1234560)

Display Setting	Operation	Display (Upper)
Press or press continuously for "7" blinks	ⓒ	123456█+889→
Replace with "0"	0	1234560█889→

Deletion (1234560 → 134560)

Display Setting	Operation	Display (Upper)
Press or press continuously for "2" blinks	ⓒ	1█34560+889→
"2" is deleted	DEL	1█4560+8899→

Insertion (889900 → 2889900)

Display Setting	Operation	Display (Upper)
Press or press continuously for "8" blinks	ⓓ	134560+█899 →
"8" and "_" blinks alternately	2nd INS	134560+8899 →
Insert "2", "8" continues to blink	2	134560+2899 →

Replay

- After the calculation is executed, the calculation expression and
  its result is automatically stored in memory.
- Press ⓐ (or ⓥ) to replay the performed calculation expressions
  and results.
- The calculation memory is cleared when:
  - i) 2nd RESET ⓓ = (RESET: Y) keys are pressed (which initializes
    the calculator).
  - ii) Calculation mode is changed.

Order of Operations

The calculator will automatically determine the operation priority. This means that algebraic expressions can be entered just as they are written and the calculation priority is as follows:

1st Priority	Recall memory (A-E), RAND
2nd	Calculation with parentheses ( ).
3rd	Function with parentheses that requests the input argument to the right. log(, ln(, 10^(, e^(, $\sqrt{\ }$(, sin(, cos(, tan(, sin^{-1}(, cos^{-1}(, tan^{-1}(, sinh(, cosh(, tanh(, sinh^{-1}(, cosh^{-1}(, tanh^{-1}(, R>Pr(, R>Pθ(, P>Rx(, P>Ry(and RANDI(
4th	Fractions
5th	Functions that come after the input value preceded by values. x^2, x^{-1}, x! and angle units (o $\prime$ $\prime\prime$ r g)
6th	Power (^) and Power root ($x\sqrt{\ }$)
7th	Negation (+/–) Logical NEG, NOT
8th	Permutations (nPr) and Combinations (nCr)
9th	Multiplication, implied multiplication and division
10th	Addition and subtraction
11th	Logical AND
12th	Logical OR, XOR, XNOR
13th	Conversions (A b/c↔d/e , F↔D, ►DMS)
14th	Calculation ending instruction [=], Base-n transformation, Storage

Input Ranges

Functions	Input Range	
$\sin x$	DEC $0 \le |x| \le 4.499999999$ E 10	
	RAD $0 \le |x| \le 785398163.3$	
	GRA $0 \le |x| \le 4.999999999$ E 10	
$\cos x$	DEC $0 \le |x| \le 4.500000008$ E 10	
	RAD $0 \le |x| \le 785398165$	
	GRA $0 \le |x| \le 5.000000009$ E 10	
$\tan x$	DEG same as sinx, except when $x = (2n-1) \times 90$	
	RAD same as sinx, except when $x = (2n-1) \times \pi/2$	
	DEG same as sinx, except when $x = (2n-1) \times 100$	
$\sin^{-1} x$ $\cos^{-1} x$	$|x| \le 1$	
$\tan^{-1} x$	$|x| < 1 \times 10^{100}$	
$\sinh x$ $\cosh x$	$|x| \le 230.2585092$	For sinh and tanh, errors are cumulative and accuracy is affected at a certain point when $x = 0$
$\tanh x$	$|x| < 1 \times 10^{100}$	
$\sinh^{-1} x$	$|x| < 5 \times 10^{99}$	
$\cosh^{-1} x$	$1 \le x < 5 \times 10^{99}$	
$\tanh^{-1} x$	$|x| < 1$	
$\log x$ / $\ln x$	$1 \times 10^{-99} \le x < 1 \times 10^{100}$	
10^x	$-1 \times 10^{100} < x < 100$	
e^x	$-1 \times 10^{100} < x \le 230.2585092$	
$\sqrt{x}$	$0 \le x < 1 \times 10^{100}$	
x^2	$|x| < 1 \times 10^{50}$	
$1/x$	$|x| < 1 \times 10^{100}$; $x \ne 0$	
$x!$	$0 \le x \le 69$ (x is an integer)	

Functions	Input Range
nPr/nCr	$0 \leq r \leq n$ $n < 1 \times 10^{10}$ (n and r are integers)
R → P	$\sqrt{x^2 + y^2} < 1 \times 10^{100}$
P → R	$0 \leq r < 1 \times 10^{100}$ (DEG) $|\theta| < 9 \times 10^9$ (RAD) $|\theta| < 5 \times 10^7 \pi$ rad (GRA) $|\theta| < 1 \times 10^{10}$ grad
° ′ ″	° : $|x| < 1 \times 10^{100}$ ′ : $x \geq 0$ ″ : $x \geq 0$
x^y	$x > 0$: $-1 \times 10^{100} < y \log x < 100$ $x = 0$: $y > 0$ $x < 0$: $y = n$; $\frac{1}{2n+1}$ (n is an integer) However : $-1 \times 10^{100} < y \log |x| < 100$
$x^{1/y}$	$x > 0$; $y \neq 0$ $-1 \times 10^{100} < 1/y \, \log x < 100$ $x = 0$: $y > 0$ $x < 0$: $y = 2n + 1$; $1/n$ ($n \neq 0$; n is an integer) However: $-1 \times 10^{100} < 1/y \, \log |x| < 100$
$a^{b/c}$	Total of integer, numerator, and denominator must be 10 digits or less (including division marks)
STAT	1-VAR : $|x| < 1 \times 10^{50}$ $0 \leq$ FRQ < 100 2-VAR : $|x| < 1 \times 10^{50}$ $|y| < 1 \times 10^{50}$
EEx	$-99 \leq x \leq 99$ (x is an integer)

• In Base-n mode, valid values in each number system:

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

• Calculation range:

Number system	Calculation range
Binary	Positive $0111111111 \geq x \geq 0$
	Negative $1111111111 \geq x \geq 1000000000$
Octal	Positive $3777777777 \geq x \geq 0$
	Negative $7777777777 \geq x \geq 4000000000$
Decimal	Positive $9999999999 \geq x \geq 0$
	Negative $-1 \geq x \geq -9999999999$
Hexadecimal	Positive $2540BE3FF \geq x \geq 0$
	Negative $FFFFFFFFFF \geq x \geq FDABF41C01$

Error Messages and Error Locator

The calculator is locked up while an error message is shown on the display to indicate the cause of the error.
■ Press CLEAR to clear the error.

Error Message	Cause
ARUGMENT Error	Improper use of an argument
DIVIDE BY 0 Error	An attempt to perform a calculation divided by 0 Or in STAT mode, no. of input data ≤ 1
DOMAIN Error	• An attempt to perform a illogical operation For example: • log x or ln x, x=0 • tan x, x=90º, −90º, 270º, −270º, 450º, −450º, etc. • x!, x is not an integer ≥0 • nCr or nPr: n and r are not an integer ≥0
FRQ DOMAIN Error	In STAT 1-VAR mode, FRQ value is not an integer or 0< or >99
OVERFLOW Error	An attempt to perform a calculation using a value that exceeds the allowable input range Or calculation result is outside the allowable calculation range
STAT Error	In STAT mode, no defined data points after pressing STATVAR . Or in mode other than STAT mode, press DATA , STATVAR or 2nd EXITSTAT
SYNTAX Error	An attempt to perform a problematic format of the calculation For example: • Misplaced functions, parentheses or commas

BASIC CALCULATIONS

Arithmetic Calculations $\boxed{+}$ $\boxed{-}$ $\boxed{\times}$ $\boxed{\div}$

• To calculate negative values (excludes the negative exponent), make sure that the values are enclosed with parentheses.
• To input negative values, use $\boxed{+/-}$.

Calculation Expression	Operation	Display (Result)
$(-2.5)^2$	$\boxed{(}$ $\boxed{+/-}$ $\boxed{2}$ $\boxed{.}$ $\boxed{5}$ $\boxed{)}$ $\boxed{x^2}$ $\boxed{=}$	6.25
$(4 \times 10^{75})(-2 \times 10^{-79})$	$\boxed{4}$ $\boxed{2nd}$ $\overset{EE}{\frown}$ $\boxed{7}$ $\boxed{5}$ $\boxed{\times}$ $\boxed{+/-}$ $\boxed{2}$ $\boxed{2nd}$ $\overset{EE}{\frown}$ $\boxed{+/-}$ $\boxed{7}$ $\boxed{9}$ $\boxed{=}$	−0.0008

• You can omit the close parenthesis $\boxed{)}$ if the calculation ends with $\boxed{=}$ or if the values are stored in memory variables.

Calculation Expression	Operation	Display (Result)
$(\tan -45) \div (-2)$	$\boxed{\tan}$ $\boxed{+/-}$ $\boxed{4}$ $\boxed{5}$ $\boxed{)}$ $\boxed{\div}$ $\boxed{+/-}$ $\boxed{2}$ $\boxed{=}$	0.5
$\tan (-45 \div -2)$	$\boxed{\tan}$ $\boxed{+/-}$ $\boxed{4}$ $\boxed{5}$ $\boxed{\div}$ $\boxed{+/-}$ $\boxed{2}$ $\boxed{=}$	0.414213562

! [SYNTAX Error] will appear if the number of $\boxed{)}$ is higher than the number of $\boxed{(}$.

Memory Calculations

Memory Variables

- There are 5 Memory Variables (A, B, C, D and E) which are used for storing data, results, or dedicated values.
- To store values in memory, press $\boxed{\text{STO}}$ + Memory Variable.
- To recall a previous calculation in memory, press **2nd** $\underset{\frown}{\text{RCL}}$ + Memory Variable.
- To clear all memory values, press **2nd** $\underset{\frown}{\text{CLRVAR}}$.
- To input memory variables, press MEMVAR, select variable using $\textcircled{\scriptsize<}$ $\textcircled{\scriptsize>}$ and then press $\boxed{=}$.

Example: Calculate hypotenuse X and angle Y

Operation	Display (Upper)	Display (Lower)
$\boxed{3}$ $\boxed{\text{STO}}$ $\boxed{=}$ $\boxed{4}$ $\boxed{\text{STO}}$ $\textcircled{\scriptsize>}$ $\boxed{=}$ **2nd** $\underset{\frown}{\surd}$ MEMVAR $\boxed{=}$ $\boxed{x^2}$ $\boxed{+}$ MEMVAR $\textcircled{\scriptsize>}$ $\boxed{=}$ $\boxed{x^2}$ $\boxed{=}$	$4 \rightarrow B$ $\sqrt{(A^2+B^2}$	4. 5.
Calculate X $\boxed{\text{STO}}$ $\boxed{=}$ $\boxed{1}$ $\boxed{2}$ $\boxed{\text{STO}}$ $\textcircled{\scriptsize>}$ $\boxed{=}$ $\textcircled{\scriptsize\wedge}$ $\textcircled{\scriptsize\wedge}$ $\textcircled{\scriptsize\wedge}$ $\boxed{=}$	$12 \rightarrow B$ $\sqrt{(A^2+B^2}$	12. 13.
Calculate Y **2nd** $\underset{\frown}{\text{tan-1}}$ **2nd** $\underset{\frown}{\text{RCL}}$ $\boxed{=}$ $\boxed{a\,b/c}$ **2nd** $\underset{\frown}{\text{RCL}}$ $\textcircled{\scriptsize>}$ $\boxed{=}$ $\boxed{=}$	tan-1(5⌐12	22.61986495

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Answer Memory
- The inputted values or the most recent calculation result is automatically stored in Answer Memory when you press $=$, $\boxed{\text{STO}}$ followed by a Memory Variable or entering Base-n mode ($\boxed{\text{2nd}} \overset{\text{HEX}}{\frown}$ / $\overset{\text{DEC}}{\frown}$ / $\overset{\text{OCT}}{\frown}$ / $\overset{\text{BIN}}{\frown}$).
- If you continuously press an operator key (x^2, $\wedge$, $x\sqrt{\ }$, %, x^{-1}, +, −, x, ÷, nPr , nCr, x!, ▶DMS, degree (°), radians (r) or gradient (g)), the displayed value change to into [Ans] plus the operator key. You can then perform a new calculation with the latest Answer Memory.

Operation	Display (Upper)	Display (Lower)
$\boxed{1}\boxed{2}\boxed{3}\boxed{+}\boxed{4}\boxed{5}\boxed{6}\boxed{=}$ $\boxed{x^2}\boxed{=}$	123+456 Ans^2	579. 335241.

- You can recall and use the latest stored Answer Memory by pressing $\boxed{\text{2nd}} \overset{\text{ANS}}{\frown}$.

Operation	Display (Upper)	Display (Lower)
$\boxed{7}\boxed{8}\boxed{9}\boxed{9}\boxed{0}\boxed{0}\boxed{-}$ $\boxed{\text{2nd}} \overset{\text{ANS}}{\frown}\boxed{=}$	789900−Ans	454659.

! Answer Memory is not updated if an error occurs in the operation.

Constant Memory
Constant memory can store a combination of numbers, operators and/or values. When Constant Memory is enabled, the stored operation will apply to the previous result or the current entry by subsequently pressing $=$.

Example: Calculate 12 x 8, 2.4 x 8 and 7 x 8

Operation	Display (Upper)	Display (Lower)
$\boxed{\text{2nd}} \overset{\text{K}}{\frown}\boxed{\times}\boxed{8}\boxed{=}$ (Enable and store constant memory)	K=x8	
$\boxed{1}\boxed{2}\boxed{=}$	12x8	96.
$\boxed{2}\boxed{\cdot}\boxed{4}\boxed{=}$	2.4x8	19.2
$\boxed{7}\boxed{=}$	7x8	56.
$\boxed{\text{2nd}} \overset{\text{K}}{\frown}$ (Clear constant memory)		

Fraction Operations

$\boxed{a\,b/c}$ $\overset{F\rightleftharpoons D}{\boxed{}}$ $\overset{a\,b/c\rightleftharpoons d/c}{\boxed{}}$

The calculator supports calculations with fractions and conversions between Decimal and Fractional display and between Mixed and Improper fractions.

Example	Operation	Display (Lower)
Fraction Calculation	$\boxed{2}$ $\boxed{+}$ $\boxed{1}$ $\boxed{a\,b/c}$ $\boxed{1}$ $\boxed{a\,b/c}$ $\boxed{3}$ $\boxed{=}$	3⌐1/3
Mixed and Improper Fraction Conversion	**2nd** $\overset{a\,b/c\rightleftharpoons d/c}{\boxed{}}$ $\boxed{=}$	10 / 3
Fraction and Decimal Conversion	**2nd** $\overset{F\rightleftharpoons D}{\boxed{}}$ $\boxed{=}$	3.333333333

- Result will automatically display in decimal or fraction format automatically.
- The result of a calculation involving both a fraction and decimal value will display in decimal format.
- Fraction conversions may take up to two seconds.

Percentage Calculations

$\overset{\%}{\boxed{}}$

To calculate a certain percentage of a value (A $\boxed{\times}$ B **2nd** $\overset{\%}{\boxed{}}$ $\boxed{=}$).

Example	Operation	Display (Upper)	Display (Lower)
To calculate 25% of 820	$\boxed{8}$ $\boxed{2}$ $\boxed{0}$ $\boxed{\times}$ $\boxed{2}$ $\boxed{5}$ **2nd** $\overset{\%}{\boxed{}}$ $\boxed{=}$	820 ✕ 25%	205.

Degrees-Minutes-Seconds Calculations

$\boxed{\circ\,'\,''}$

The Degrees(hours)-Minutes-Seconds key can be used to perform a sexagesimal (base-60 notational system) calculation or convert the sexagesimal value into decimal value.

Degrees-Minutes-Seconds ↔ Decimal points

Example	Operation	Display (Lower)
86°37'34.2"÷0.7 =	$\boxed{8}$ $\boxed{6}$ $\boxed{\circ\,'\,''}$ $\boxed{=}$ $\boxed{3}$ $\boxed{7}$ $\boxed{\circ\,'\,''}$ $\boxed{\rangle}$ $\boxed{=}$ $\boxed{3}$ $\boxed{4}$ $\boxed{\cdot}$ $\boxed{2}$ $\boxed{\circ\,'\,''}$ $\boxed{\rangle}$ $\boxed{\rangle}$ $\boxed{=}$ $\boxed{\div}$ $\boxed{0}$ $\boxed{\cdot}$ $\boxed{7}$ $\boxed{=}$	123.7516667
Result → DMS format	$\boxed{\circ\,'\,''}$ $\boxed{\langle}$ $\boxed{=}$ $\boxed{=}$	123°45'6"

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Angle Unit Conversion

The default calculator setting for Angle Unit is "Degree". To change the angle units to "Radian" or "Gradient", press $\boxed{\text{DRG}}$ for the setup screen to appear.

D E G   RAD   GRD

DEG

Next press $\bigcirc$ / $\bigcirc$ and then press $\boxed{=}$ for the angle unit you want to use. The display will then show the DEG, RAD or GRAD indicator accordingly.

To convert an angle unit between "Degree", "Radian" and "Gradient", press $\boxed{\circ\,\prime\,\prime\prime}$, $\bigcirc$ / $\bigcirc$ and $\boxed{=}$ into the selected angle unit.
To indicate the value using another degree unit, change the unit by pressing $\boxed{\text{DRG}}$.

Example: Converting 180 degree into radian and gradient
$(180° = \pi^{\,r} = 200^{\,g})$

Operation	Display (Upper)	Display (Lower)
$\boxed{1}\boxed{8}\boxed{0}\boxed{\circ\,\prime\,\prime\prime}\boxed{=}\boxed{\text{DRG}}\bigcirc$ $\boxed{=}$ (Radian mode) $\boxed{=}$	180°	3.141592654 **RAD**
$\boxed{\text{DRG}}\bigcirc\boxed{=}$ (Gradient mode) $\boxed{=}$	180°	200. **GRAD**

FUNCTIONAL SCIENTIFIC CALCULATIONS

Square, Root, Power, Power Root, Reciprocal and Pi

x^2 Square $\sqrt{\ }$ Root $\wedge$ Power

$\sqrt[x]{\ }$ Power Root x^{-1} Reciprocal π Pi

Pi

Calculation : $\pi = 3.141592653589793$

Display : $\pi = 3.141592654$

Example : $\sqrt{(-2)^2 + 5^3} \times \pi + (\sqrt[3]{27} - 4)^{-1} = 34.68163348$

Operation	Display (Upper)	Display (Lower)
2nd $\sqrt{\ }$ (**+/-** 2) x^2 + 5 $\wedge$ 3) π + (3 **2nd** $\sqrt[x]{\ }$ 2 7) - 4) x^{-1} =	$\sqrt{((-2)^2 + 5^{\wedge}3}$	34.68163348

Trigonometry Calculations $\boxed{sin}$ $\boxed{cos}$ $\boxed{tan}$ $\overset{sin^{-1}}{\frown}$ $\overset{cos^{-1}}{\frown}$ $\overset{tan^{-1}}{\frown}$ $\overset{HYP}{\ }$

■ Before using the trigonometric functions (except hyperbolic calculations), press $\boxed{DRG}$ to select.' the appropriate angle unit (Deg/ Rad/ Grd) .

■ 90° (Deg) $= \pi/2$ (Rad) $= 100^g$ (Grd)

Trigonometric (sin/ cos/ tan), Inverse Trigonometric (sin⁻¹/ cos⁻¹/ tan⁻¹) Functions

Examples	Operation	Display (Lower)
Degree Mode	$\boxed{DRG}$ $\bigodot$ / $\bigodot$ (DEG) =	
sin53º22'12" = 0.802508183	$\boxed{sin}$ 5 3 $\boxed{\circ\,'\,''}$ = 2 2 $\boxed{\circ\,'\,''}$ $\bigodot$ = 1 2 $\boxed{\circ\,'\,''}$ $\bigodot$ $\bigodot$ =	0.802505183
tan⁻¹(5/6) = 39.80557109	**2nd** $\overset{tan^{-1}}{\frown}$ 5 $\boxed{a\,b/c}$ 6 =	39.80557109
Radian Mode	$\boxed{DRG}$ $\bigodot$ =	
cos(π/6)r = 0.866025404	$\boxed{cos}$ π ÷ 6 =	0.866025404
cos−1 1/√2 = 0.785398163 = 0.25π (Rad)	**2nd** $\overset{cos^{-1}}{\frown}$ 1 ÷ **2nd** $\sqrt{\ }$ 2 = ÷ π =	0.785398163 0.25

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Hyperbolic (sinh/ cosh/ tanh), Inverse Hyperbolic (sinh⁻¹/ cosh⁻¹/ tanh⁻¹) Functions

Examples	Operation	Display (Lower)
sinh 2.5 – cosh 2.5 = –0.082084999	[2nd] $\overset{HYP}{\smile}$ [sin] [2] [•] [5] [)] [−] [2nd] $\overset{HYP}{\smile}$ [cos] [2] [•] [5] [=]	–0.082084999
cosh⁻¹ 45 = 4.499686191	[2nd] $\overset{HYP}{\smile}$ [2nd] $\overset{cos^{-1}}{\smile}$ [4] [5] [=]	4.499686191

Logarithm, Natural Logarithm and Antilogarithm   [LOG] [LN] $\overset{e^x}{\smile}$ $\overset{10^x}{\smile}$

Examples	Operation	Display (Lower)
log 255 + ln 3 = 3.505152469	[LOG] [2] [5] [5] [)] [+] [LN] [3] [=]	3.505152469
$e^{-3} + 10^{1.2}$ = 15.89871899	[2nd] $\overset{e^x}{\smile}$ [+/−] [3] [)] [+] [2nd] $\overset{10^x}{\smile}$ [1] [•] [2] [=]	15.89871899

Coordinate Conversion $\overset{R\rightleftharpoons P}{\smile}$

With polar coordinates, you can calculate and display result θ within –180º ≤ θ < 180º range. (Same as Radian and Gradient)

$\overset{R\rightleftharpoons P}{\smile}$: R>Pr & R>Pθ to convert Rectangular Coordinates (x,y) to Polar Coordinates (r, θ).

Example : With Rectangular Coordinate (x=1, y=√3). Find Polar Coordinate (r, θ) at degree mode.

Examples	Operation	Display (Lower)
Degree Mode	[DRG] $\bigcirc\rangle$ / $\langle\bigcirc$ (DEG) [=]	
Calculate Radius (r) = 2	[2nd] $\overset{R\rightleftharpoons P}{\smile}$ (R>Pr) [=] [1] [2nd] $\overset{,}{\smile}$ [2nd] $\overset{\sqrt{}}{\smile}$ [3] [=]	2.
Calculate Polar Angle (θ) = 60º	$\bigwedge$ [2nd] $\overset{R\rightleftharpoons P}{\smile}$ $\bigcirc\rangle$ (R>Pθ) [=] [=]	60.

$\overset{R \leftrightarrow P}{\boxed{}}$	: P>Rx & P>Ry to convert Polar Coordinates (r, θ) to Rectangular Coordinates (x,y).

Example : In Degree mode, express the point defined by Polar Coordinates (r=2, 0=60°) in Rectangular Coordinates (x,y).

Examples	Operation	Display (Lower)
Calculate x-coordinate = 1	$\boxed{2nd}$ $\overset{R \leftrightarrow P}{\boxed{}}$ $\bigcirc$ $\bigcirc$ (P>Rx) $\boxed{=}$ $\boxed{2}$ $\boxed{2nd}$ $\overset{,}{\boxed{}}$ $\boxed{6}$ $\boxed{0}$ $\boxed{=}$	1.
Calculate y-coordinate =√3	$\bigwedge$ $\boxed{2nd}$ $\overset{R \leftrightarrow P}{\boxed{}}$ $\bigcirc$ $\bigcirc$ $\bigcirc$ (R>Pθ) $\boxed{=}$ $\boxed{=}$	1.732050808.

! [ARGUMENT Error] will appear if $\overset{,}{\boxed{}}$ is missing from the coordinate conversion calculation.

Base-n Calculations and Logical Calculations

■ Press $\boxed{2nd}$ $\overset{BIN}{\boxed{}}$ / $\overset{OCT}{\boxed{}}$ / $\overset{DEC}{\boxed{}}$ / $\overset{HEX}{\boxed{}}$ to select and enter Base-n mode for Binary (base 2), Octal (base 8), Decimal (base 10) or Hexadecimal (base 16).
■ In Binary, Octal, and Hexadecimal mode, logical operators allow you to perform logical calculations including: Logic Connection [AND] / [OR], Exclusive Or [XOR], Exclusive Nor [XNOR], Argument Complement [NOT] and Negation [NEG].
■ In Binary, Octal and Hexadecimal mode, all scientific functions cannot be used, and values with decimal place or exponents cannot be inputted. In Decimal mode, scientific calculations can be performed and decimal place is rounded down when performing Base-n transformation.

Basic arithmetic operations using binary, octal, decimal and hexadecimal values:

Example: $0011_2 + 11010_2 = 11101_2$

Operation	Display (Upper)	Display (Lower)
$\boxed{2nd}$ $\overset{BIN}{\boxed{}}$		b
$\boxed{1}$ $\boxed{1}$ $\boxed{+}$ $\boxed{1}$ $\boxed{1}$ $\boxed{0}$ $\boxed{1}$ $\boxed{0}$ $\boxed{=}$	11+11010	11101^b

Example: $12_8 + 5_8 \times 2_8 = 24_8$

Operation	Display (Upper)	Display (Lower)
CLEAR 2nd OCT		o
1 2 + 5 × 2 =	12+5✳2	24°

Example: $10_{10} \div 2_{10} = 5_{10}$

Operation	Display (Upper)	Display (Lower)
CLEAR 2nd DEC		
1 0 ÷ 2 =	10/2	5.

Base-n transformation HEX DEC OCT BIN

Operation	Display (Upper)	Display (Lower)
CLEAR 2nd BIN		b
1 1 + 1 1 0 1 0 =	11+11010	11101ᵇ
2nd OCT	Ans → OCT	35°
2nd DEC	Ans → DEC	29.
2nd HEX	Ans → HEX	1dᴴ

Logical Operation NOT AND OR XOR XNOR NEG(~)

Examples (Hexadecimal Mode)	Operation	Display (Lower)
789ABC XNOR 147258	CLEAR 2nd HEX 7 8 9 ⌐A ⌐B ⌐C XNOR 1 4 7 2 5 8 =	FFFF93171b ᴴ
Ans OR 789ABC	2nd ANS OR 7 8 9 ⌐A ⌐B ⌐C =	FFFFFb9FbF ᴴ
NEG 789ABC	NEG(~) 7 8 9 ⌐A ⌐B ⌐C =	FFFF876544 ᴴ

! Beware of the allowable input range of each number system (page 8).
! Logical Operation does not support Decimal Mode.

Permutation, Combination, Factorials and Random Number Generation

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

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

- Factorial : $x! = x(x-1)(x-2).....(2)(1)$

Examples	Operation	Display (Lower)
$_{10}P_3$	`1` `0` `PRB` (nPr) `=` `3` `=`	720.
$_5C_2$	`5` `PRB` `◯` (nCr) `=` `2` `=`	10.
5!	`5` `PRB` `◯` `◯` (!) `=`	120.

Random Number Generation
RAND:

`PRB` `◁` `◁` : To generate a random number between 0 and 1.
  * Using seed value by storing an integer to rand
  (`STO` `◁` `=`) to control a sequence of random numbers.

RANDI:

`PRB` `◁` : To generate a random integer between two specified integers. Results differ each time with the same possibility occurrence within a boundary. The entry is divided with " , ".

Example:

Operation	Display (Upper)	Display (Lower)
`PRB` `◁` `◁` `=` `=`	RAND	0.298023224*
`PRB` `◁` `=` `1` **2nd** `⌣` `1` `0` `0` `=`	RANDI (1,100	15.*

* The value is only a sample, results will differ each time.

STATISTICAL CALCULATIONS

- To enter the statistical mode, press **2nd** $\frac{STAT}{}$. Then press
  $\boxed{=}$ (1-VAR) to enter one-variable mode, or press $\bigcirc$ $\boxed{=}$
  (2-VAR) to enter two-variable mode. The linear regression
  equation **y = Ax + B** is represented in two variables.
- Before starting a new statistic data entry, be sure to clear the
  statistic memory by pressing **2nd** $\frac{STAT}{}$ $\bigcirc$ $\boxed{=}$ (CLRDATA).
- Perform data input and edit:
  - Press $\boxed{DATA}$ to register data
    - In 1-VAR mode:
      - Input first data for X1.
      - Press $\bigcirc$ to save and to set the frequency of occurrence
        (FRQ).
      - Frequency of occurrence default is set to 1 (FRQ=1).
        Input data value when needed.
      - Press $\bigcirc$ to save and to enter the next data (X2) for input.
      - Repeat these steps by pressing $\bigcirc$ to input the data
        value and set the FRQ until finished.
      - Press $\boxed{=}$ or $\bigcirc$ to save the last entered data point or
        FRQ value.
    - In 2-VAR mode:
      - Input first data for X1.
      - Press $\bigcirc$ to save and set the Y1 value.
      - Y value default is set to 1 (Y=1). Input data value when needed.
      - Press $\bigcirc$ to save and enter the next data (X2) input
        value.
      - Repeat these steps by pressing $\bigcirc$ to input data value
        for X and Y until finished.
      - Press $\boxed{=}$ or $\bigcirc$ to save the last entered data point.
  - To edit data, press $\bigcirc$ or $\bigcirc$ to migrate to that value. After
    inputting the new value, press $\boxed{=}$ or $\bigcirc$ to save.
  - You can press $\boxed{DATA}$ to return to a STAT mode screen for
    other calculations. Calculations in blank STAT mode screen
    will not be stored in statistic memory.
- After finishing all data entries, press $\boxed{STATVAR}$ to calculate the statistic
  functions.

- You can recall the following statistic values by pressing ⟨ and ⟩, and select a variable by pressing $=$ to evaluate the calculation.

Variables	Explanations
n	Total number of x or (**x,y**) (2-VAR) data points
$\overline{x}$ or $\overline{y}$	Mean of all **x** or **y** (2-VAR) values
Sx or **S**y	Sample standard deviation of **x** or **y** (2-VAR)
σx or σy	Population standard deviation of **x** or **y** (2-VAR)
∑x or ∑y	Sum of all **x** or all **y** (2-VAR) values
∑x^2 or ∑y^2	Square sum of all **x** or **y** (2-VAR) values
∑xy	Sum of all multiply **x** and **y** pairs in 2-VAR mode
a	Linear regression of slope in 2-VAR mode
b	Linear regression of **y**-intercept in 2-VAR mode
r	Correlation coefficient in 2-VAR mode
x'	Uses linear regression to calculate **x** value when input a **y** value in 2-VAR mode
y'	Uses linear regression to calculate **y** value when input a **x** value in 2-VAR mode

- To clear all entered data without exiting STAT mode, press **2nd** $\overset{STAT}{}$ ⟨ $=$ (CLRDATA).
- To clear all entered data and to exit STAT mode, press **2nd** $\overset{EXITSTAT}{}$ $=$ (EXIT ST: Y).
- Changing into another mode will clear all entered data.

Example: To calculate n, x̄ , σx and variance of a population (σx²)
of data: 75, 85, 90, 77, 77 in one-variable mode.

Operation	Display (Upper)	Display (Lower)
2nd STAT = (1-VAR)		
2nd STAT ⊙ = (CLRDATA)		
DATA	X1=	
7 5 ⊙ ⊙ 8 5 ⊙ ⊙ 9 0 ⊙ ⊙ 7 7 ⊙ 2 ⊙	X5=	
STAT/VAR	n x̄ Sx σx	5.
⊙	n x̄ Sx σx	80.8
⊙ ⊙	n x̄ Sx σx	5.741080038
=	σx	
x^2 =	σx²	32.96

Example: To calculate correlation coefficient (r) and x value when
y = data set of 10: (20,20), (30,26), (40,30)

Operation	Display (Upper)	Display (Lower)
2nd STAT ⊙ = (2-VAR)		
DATA	X1=	
2 0 ⊙ 2 0 ⊙ 3 0 ⊙ 2 6 ⊙ 4 0 ⊙ 3 0 ⊙	X4=	
STAT/VAR	n x̄ Sx σx ȳ	3.
⊙ ⊙ ⊙	∑xy a b r	0.993399268
⊙	x' y'	
=	x'(	
1 0 =	x'(10	–0.666666667
2nd EXITSTAT =		

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BATTERY REPLACEMENT

When the display characters are dim, turn off the calculator and immediately replace the alkaline battery.
Please replace the alkaline battery using the following procedure:

1. Press **2nd** OFF to power off the calculator.
2. Remove the screw that secrues the battery cover in place.
3. Slide the battery cover slightly and lift it.
4. Remove the old battery with a ball point pen or similar sharp object.
5. Load the new battery with the positive "+" side facing up.
6. Replace the battery cover, tighten the screw, and use the tip of a ballpoint pen (or similar sharp object) to press the [RESET] button on the back of the calculator to initialize the calculator.
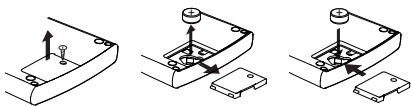
Battery Replacement

⚠️ **CAUTION:** There is risk of explosion if the battery is replaced by an incorrect type. Dispose of used battery according to the below instructions.

① Electromagnetic interference or electrostatic discharge may cause the display to malfunction or the contents of the memory to be lost or altered. Should this occur, press **2nd** RESET ⟩ = to restart the calculator.

BATTERY CAUTION

- Keep the Battery out of reach of children. If the battery is swallowed, contact a doctor immediately.
- Misuse of battery may cause leakage, explosion, damages or personal injury.
- Don't recharge or disassemble the battery, it could cause a short circuit.
- Never expose the battery to high temperatures, direct heat, or dispose by incineration.
- Never leave a dead battery in the calculator as the dead battery may leak and cause damage to the calculator.
- Continued use of the calculator in a low battery condition may cause improper calculations or the stored memory may get corrupted or lost completely. Keep written records of important data all the time; and replace the battery as soon as possible.

SPECIFICATIONS

Power Supply   : Solar Cell and alkaline battery (LR44 x 1)
Power Consumption : DC1.5V / 0.038mW
Battery Life   : Approximately 3 years
                      (Based on 1 hour operation per day)
Auto power off   : Approx. 7 minutes
Operation Temperature : 0º ~ 40º C (32º F ~ 104º F)
Size: 158 (L) x 81 (W) x 18 (H) mm (with cover)
      6-7/32" x 3-3/16" x 45/64" (with cover)
Weight : 109g (3.7 oz) with cover
* Specifications are subject to change without notice

For CA, USA Only
Included battery contains perchlorate material - special handling may apply.
See http://www.dtsc.ca.gov/hazardouswaste/perchlorate/ for detail.

For all general inquiries, operational assistance, accessory orders or for the location of the nearest service facility for this product in the United States, please contact:

Canon U.S.A., Inc.
One Canon Park, Melville, NY 11747
Customer Relations Division
1-800-828-4040

Please keep a copy of your original bill of sale. In order to obtain warranty service, you will need to present a copy of your original bill of sale from your Consumer Calculator retailer at the time of service.

Also please keep all packing materials and the original packing box to protect your equipment, should you need to transport it for service.