## $f x-82 M S$ <br> fx－82SX PLUS <br> fx－85MS <br> fx－220 PLUS <br> fx－300MS <br> fx－350MS <br> User＇s Guide

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## CASIO．

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SA0912－A Printed in China

## 1．Important Information

The displays and illustrations（such as key markings）shown in
this Users suuide are for ilsustative purposes only，and may differ
somewhat trim the actual －Themewhat from the actual items they represent．， In no event shall CASIO Computer CO．，Ltd．be liable to anyone
for special，collateal，incidental，or consequential dameges in
connection with or arising out of the purchase or use of this product
 shall not te liable for any claim of any kind whatsoever by any other
party arising out of the use of this product and the items that come
party arising out of the use of this product and the items that come
with it
－Be sure to keep all user documentation handy for future reference．

## 2．Sample Operations

Sample operations in this manual are indicated by a icon．Unless
specifically stated，all sample operations assume that the calculator is


## 3．Initializing the Calculator

Perform the following procedure when you want to initialize the
calculator and return the calculation mode and setup to their initial calculator and return the calculation mode and setup to their intitial
defauls setings．Notet that this operation also clears all data currently
dincel in calculator memory．

4．Safety Precautions
4．Battery
Keep batteries out of the reach of small children．
－Use only the type of battery specified for this calculator in this
manual．

## 5．Handling Precautions

－Dim figures on the display of the calculator indicate that battery
power is $\mathbf{l}$ ow．Continued use of the calculato when the batery is low can resultitin improper operation．Replace the battery as soon as possible when display figures becomes dim．Even
if the calculator is operating normally，replace the battery at least once every ywo years（tx－82MS $/ 822 \mathrm{SP}$ PLLUS $/ 222 \mathrm{O}$ PLUS），or
three years（ $\mathrm{x}-85 \mathrm{SMS} / 300 \mathrm{MS} / 350 \mathrm{MS}$ ）．A dead battery can leak，
 leave a dead battery in the calculator．
The battery that comes with the calculator discharges slightly Thu battery that comes with the calculator discharges slightly
during shipment and storage．Because of this it it may require
replacent
 Do ont use an oxyride battery＊＊or any other type of nickel－based
primary battery with this product Incompatibility between such batteries and product specifications can result in shorter
battery life and product malfunction． battery life and product malfunction．
Avoin use and storage of the calculator in areas subjected
to temperature extremes，and large amounts of humidity and to temperature extremes，and large amounts of humidy
dust． Do not sub
or bending．

Never try to take the calculator apart．
Use a soff，dry cloth to clean the exterior of the calculator． Whenever discarding the calculator or batteries，be sure to
do so in accordance with the laws and regulations in you do so in accordance win the laws and regulations in you
particular area． Company and product tames used in this manual may be registere

## 6．Removing the Hard Case

Before using the calculator，slid
its hard case downwards to
its hard case downwards to
lemove it，and then aftix the hard
case to the back of the calculator case ot the enack of the the calculuator
as shown in the illustration as show
nearby．


## 7．Turning Power On and Off


Auto Power Off
Your calculator will turn off automatically if you do not perform any

## 8．Adjusting Display Contrast

Press the nowe key a number of times until
you reach the setup screen shown to the you reac
right．
2 Press（2）
adjust contrast．
the seting sou want，press बC．
Important：If adiusting display contrast does not improve display
readability it trobably means that battery power is low．Replace
the battery．

## 9．Reading the Display

 Input expression ．．．．．．． Calculation result－－－－ 454353987

## 10．Specifying the Calculation Mode  <br> Note：$\cdot$ The initial default calculation mode is the COMP Mode． Mode indicators appear in the upper part of the display．Be sure check the current calculuation moupe（COMP，SD，REG）and angle uni

## 11．Configuring the Calculator Setup


 on result display
Note：In this manual，the Deg symbol next to a sample operation
 resuut．
Fix：The value you specify（from 0 to 9 ）controls the number of decimal
places for displayed calculation results．Calculation results are places tor displayed calculation results．Calculation
rounded off to the speceified digitite efore being displayed．
Example： $100 \div 7=14.286($ Fix 3 ．
Sci：The value you specify（from 1 to 10）controls the number of are rounded oft to the specified digitit before being displayed．
Example： $17=1.4866 \times 10^{-1}(\mathrm{Si}$ ） are rounded of to the specified digitit beto
Example： $1+7=1.4286 \times 10^{-1}$（Sgi 5 ）
Norm：Selecting one of the two avaialable settings（Norm 1，Norm
2）determines the range in which results will be displayed is 2）determines the range in which results will be displayed in non－
exponential format．Outside the specified range，results are displaye．

 $\frac{1(1) a b / c}{(2)} \mathrm{d} / \mathrm{c}$ Specities e either mixed fraction（ab／c）or （1）Dot［2 Comma Specifies whether to display a dot or a
comma for the ealculation result decimal point．A dot is always

Initializing Calculator Setting
erform the following procedure to initialize the calculator，which
eturns the calculation mode to COMP and returns all other settings， eterns the calculution mode to comP and returns al


## 12．Inputting Expressions and Values

 Note：• The memory area used for calculation input can hold 79
＂tteps＂．One step is taken up each time you press a number key

 Calculation Priority Sequence
When the priority of two expressions is the same，the calculation is When the priority of two expressions is the same，the calculation
pertormed from left to right． st $\begin{aligned} & \text { Function with parentheses：Pol }(x, y) \text { ，Rec }(r, \theta) \text { ，}\end{aligned}$
 Fers and roots：$\sim\left(x^{x}\right), x^{x} \sqrt{x}$
mplied multiplication of $\pi, e$（natural logarithm base），
nemory name，or variable name： $2 \pi, 3 e, 5 \mathrm{~A}, \pi \mathrm{~A}$ etc．
Type $B$ functions：With these functions，the function key is
pressed and then the value is entered．$(\sqrt{v} \sqrt[3]{ }, l$ log，$I n$,

Implied multipication of Type B functions： $2 \sqrt{3}$ ，Alog2，etc．
Permutation（nPr），combination（nCr） Permutation $(n P r)$ ，combination $(n C r)$ Idititicon，subtraction（ $(x,-)$

Correcting and Clearing an Expression

insert a character or function into a calculation

clear all of the calculation you are inputting：Press 莪

## 13．Basic Calculations

－Fraction Calculations

| $\frac{2}{3}+\frac{1}{2}=1 \frac{1}{6}$ | 2 图3田1图2曰 | $1\lrcorner 1\lrcorner 6$. |
| ---: | ---: | ---: |
| $4-3 \frac{1}{2}=\frac{1}{2}$ | $4 \boxminus 3$ 图1園2日 | $1\lrcorner 2$. |

Note：$\cdot$ Mixing
 ．switch a calculation result between improper fraction and
switch a calcuation result between fraction and decimal
To switch a a calcu．
ormat：Press ${ }_{\text {®at }}$ ．
$\square$ Percent Calculations
$150 \times 20 \%=30 \quad 150$ 区 20 開国 $(\%)$

30.
75



$$
\begin{aligned}
& \text { If } 300 \text { grams are added to a test sample originally weighng } \\
& 50 \text { grams, what is the percentage increase in weight? } \\
& (160 \%()
\end{aligned}
$$

(160\%)

$$
\begin{aligned}
& \text { What is the percentage change when a value is increased } \\
& \text { from } 40 \text { to } 46 \text { ? (15\%\%) }
\end{aligned}
$$

$$
\begin{equation*}
\text { 46 }-40 \text { 四 } \tag{15.}
\end{equation*}
$$

[^0]Note：You must always input something for the degrees and minutes，
$2^{\circ} 20^{\prime \prime} 30^{\prime \prime}+39^{\prime} 30^{\prime \prime}=3^{\circ} 00^{\circ} 00^{\prime \prime}$
$2^{\circ} 20^{\prime} 30^{\prime \prime}+39^{\prime} 30^{\prime \prime}=3^{\circ} 00^{\circ} 00^{\prime \prime}$
20 包 30 回田 39 回 30 回 $3^{\circ} 0^{\circ} 0$.
Convert $2^{\circ} 5^{\circ} 18^{\prime \prime}$ to its decimal equivalent．


$\square$ Multi－Statements（fx－82MS／85MS／300MS／350MS only）
You can use the colon character（：）to connect two or more
expressios and execute them in sequence from left to right when
youpress $\boxminus$ ． expressions an
you press $\boxminus$ ．

$\square$ Using Engineering Notation
A simple key operation transforms a displayed value to engineering
notation．
Transform the value 1234 to engineering notation，shitting the
decimal point to the right． 234目 1234. （国 $1.234 \times 10^{3}$
included on the fx －82SX PLUS In the COMP Mode，the calculator remembers up to approximately
150 bytes of data or the newest calculation．You can scroll through 150 bytes of data for the newest calculation． $\begin{aligned} & \text { Y．} \\ & \text { calculation history contents using }(\otimes \text { and }\end{aligned}$ ．

| 1＋1＝2 | 1田1曰 |
| :---: | :---: |
| $2+2=4$ | 2田2日 |
| $3+3=6$ | 3 田3回 |
|  | （Scrolls back．）（1） |
|  | （Scrolls back again．）（4） |

Note：Calculation history data is all cleared whenever you press ©0，
when you change to a different calculation mode，or whenever you when you change to a dififerent calculation mode，
initialize modes and setings．
－Replay（Not included on the fx－82SX PLUS

$\begin{array}{ll}4 \times 3 \\ 4 \times 3.5 & =14.5\end{array} 4$ 区 3 田 2.5 曰 $\quad 14.5$

－Answer Memory（Ans）
The last calculation result obtained is stored in Ans（answer）memory
Ans memory octuntents are uppated whenever a new calculation
lesult is displayed Ans memory con
esult is displayed

| To divide the result of $3 \times 4$ by 30 |  |  |
| :---: | :---: | :---: |
|  | 3囚4＠ | 2. |
|  | （Continuing） B $^{\text {30 }}$ ® | ${ }^{\text {Ans }} 300.4$ |
| 123＋456＝579 | ${ }^{123}$ 田 |  |


Your calculator has eight preset variables named $A, B, C, D, E, F$,
To assign the resulto of $3+5$ to variable $A$
$3 \pm 5$（minfaco（STO）$-(A)$
To multiply the contents of variable A by 10
To recall the contents of variable A （Continuing）㘟 $\Theta(A)$
80.

To clear the contents of variable
$\square$ Independent Memory（M）
You can add calculation results to or subbract results from independen
memory．The＂ M ＂appears on the display when there is any value other than zero stored in independent memory．
To clear the contents of M


To add the result of $10 \times 5$ to M
To subtract the result of $10+5$ from $M$ （Continuing） 10 田 5 쎙（ We（M－）
To recall the contents of M
fx $x$－82MS $/ 85 \mathrm{MS} / 300 \mathrm{MS} / 350 \mathrm{MS}$
$\qquad$

$$
\text { ote: Variable } M \text { is used for independent memory. }
$$

Clearing the Contents of All Memories
Independent memory and variable contents are retained even if you
ress $\mathbb{4 C}$ ，change the calculation mode，or turn off the calculator． press Aac，change the calculation mode，or turn off the calculator．
Perform the following procedure when you want to clear the contents
of all memories of all memories


## 14．Function Calculations

$\pi$ is displayed as 3.141592654 ，but $\pi=3.14159265358980$ is $e(\mathrm{ft}-82 \mathrm{MS} / / 85 \mathrm{MS} / 300 \mathrm{MS} / 350 \mathrm{MS}$ only）：$e$ is displayed as
2.718281828 ，but $e=2.71828182845904$ is used for internal $\frac{\text { calculations．}}{\text { sin，} \text { cos．tan，sin }{ }^{-1} \text { ，} \text { cos }^{-1} \text { ，tan } n^{-1} \text { ：Trigonometric functions．Specity }}$ ic functions．The
 ${ }^{r},{ }^{9}$ ：These functions specify the angle unit．${ }^{\circ}$ speeifies degrees， radians，and 9 grads．Input a function from the menu that appears
when you pertorm the following key operation： See $\neq 3$ ．
$0^{0}, e^{x}:$ Exponential functions．See 4.
og：Logarithmic function．See $\ell 5$ ．
In：Natural logarithm to base $e$ ．See $\ell_{6}$
$x^{2}, x^{3},\left(x x^{2}\right), \sqrt{2}, \sqrt[3]{\sqrt[3]{2}} \sqrt{x} \sqrt{2}, x^{-1}:$ Powers，power roots，and
leciprocals．See
Pol，Rec：Pol converts rectangular coordinates topolar coordinates，
while Rec converts polar coordinates to rectangular coordinates． see 8.

：Factorial function．See／s．
ant：：Generates a 3 －igigit pseudo random number that is less than
anint\＃（tx－82SX PLUS／220 PLUS only）：For input of the function
 Pr $r, n$ Cr：Permutation（ $n \mathrm{Pr}$ ）and combination（ $n \mathrm{Cr}$ r）functions．See
R12． ent rounded in accordance Wit Norm 1 or Norm 2，the argumentis is unded off to 10 digits．See $\ell 13$ ．
Note：Using functions can slow down a calculation，which may delay
display of the result．To interrupt an ongoing calculation before its display of the result．To int
result appears，press $\mathbb{C 0}$ ．

## Examples

$1 \sin 30^{\circ}=0.5$ Deg 这 30 回 0.5
$2 \sinh 1=1.175201194$ 包 Gisin（sinh） 1 ＠ 1.175201194 $\cosh ^{-1} 1=0$ 四
$3 \pi / 2$ radians $=90^{\circ}, 50 \mathrm{grads}=45^{\circ}$ Deg

4 To calculate $e^{5} \times 2$ to three significant digits（Sci 3）

Pol（x，y）＝（r，$\theta)$

50.

路


## 


 See
$\begin{array}{lll}1.2 \times 10^{3}=1200 & 1.2 \text { 区 } 10 \text { 【 } 3 @ & 1200 . \\ \left(5^{2}\right)^{3}=15625 & \square 5(x)\end{array}$

To calculate $\sqrt{2} \times 3(=3 \sqrt{2}=4.242640687 . .$.$) to three$
decimal places $($ Fix 3$)$

Q 8 To convert rectangular coordinates $(\sqrt{2}, \sqrt{2})$ to polar coordinates Deg
fx－82MS／85MS／300MS／350MS
 $r=2$.
$r=45$.
 fx－82SX PLUS／220 PLUS：

 To convert polar coordinates $\left(\sqrt{2}, 45^{\circ}\right)$ to rectangular
coordinates Deg coordinates Deg
fx－82MS／85MS $/ 300 \mathrm{MS} / 350 \mathrm{MS}:$
．
－Press 风（ess）to display the value of $x$ ，or 四（ a （ F ）to
display the value of $y$ ．
fx－82SX PLUS／220 PLUS：

$$
\begin{array}{ll}
x=1 \\
\text { display the value of } x, \text { or }
\end{array}
$$



10 To obtain two random three－digit integers

11 To generate random integers in the range of 1 to 6 （ $\mathrm{x}-82 \mathrm{8x}$

$\underset{\text { val results will difier．）}}{6 .}$

$$
\begin{aligned}
& \begin{array}{l}
\text { 12 To determine the number of permutations and combinations } \\
\text { possible when selecting four people from a group of } 10
\end{array} \\
& \text { Permutaions: } 10 \text { 玉 } \\
& \text { Combinations: } \quad 10 \text { 比4日 } 210 . \\
& { }^{\times 3} \ldots \\
& \text { 10団3 日 } 3 \text { 回 } 10.000
\end{aligned}
$$

| 15．Statistical Calculations（SD，REG＊） ＊fx－82MS／85MS／300MS／350MS only |  |
| :---: | :---: |
| shown in parentheses） | Perform this key operation： |
| Single－variable（ X ） |  |
| Paired－variable $(X, Y)$, linear regression $(y=A+B x)$ | $1 \times 1003^{3}$（REG） |
| $\begin{aligned} & \text { Paired-variable }(\mathrm{X}, \mathrm{Y}) \text { ) logarithmic } \\ & \text { regression } \\ & (y=\mathrm{A}+\mathrm{Blin} x) \end{aligned}$ | ㅍome 3 （REG）［2］（L） |
| Paired－variable（X，Y），$e$ <br> exponential regression $\quad\left(y=\mathrm{A} e^{\mathrm{B} x}\right)$ | ［1008［3（REG）${ }^{3}(\mathrm{Exp})$ |
| Paired－variable $(X, Y)$, power <br> regression$\quad\left(y=A x^{8}\right)$ |  |
| Paired－variable $(\mathrm{X}, \mathrm{Y})$ ，inverse regression $\quad(y=A+B / x)$ |  |
|  |  |

－Inputting Data
－In the SD Mode and REG Mode，the 四key operates as the 四
key．
 memory．




Data Input Precautions
While inputing data or after inputting data is complete，you can use
the $\Theta$ and $\nabla$ keys to scroll through data you have input．If you
 the tr－82SXPLUST220 PLUS）to specitit the datat requency（number
of data items as described above，scrolling through data shows
both the both the data item and a separate screen for the data frequency
（Freq）． －Input the new value and then press the $\boxminus$ key to replace the old
value with the new one．This also means that ifyou want to pertorm value with the new one．This also means that if you want toperform
some other operation，you should always press the ©CCC key first to
exit data display． Some other operation，you should aways press
exit
－Pressiang idsplay
®II key instead of $\boxminus$ after changing a value on the

You can delete a data value displayed using $\otimes$ and $\odot$ by pressing
simfol（ix）（CL）．Deleting a data value causes all values following it 0 Enirf（in（CL）．De
be shited up．
－The message＂D
The message＂Data Full＂appears and you wil any any more data it there is is no memory yeft for data storage．It this
happens，press． happens，press the E key to display the screen shown below．
Press 2 to exit data input without registering
 Press 1 I if you want to register the value
you just input．I y you thtis，however，you will not be able to display
or edit any of the data you have input． －Atere inputithg statisticial data in the SD Mode or REG Mode，you
will be unable o to dislay will be unabbe to diisplay or editi indiviviual data items any olone
after pertorm either the following operations：changing to another mode；changing the regression type．
Entering the REG Mode and selecting
Entering the REG Moge and seleceting a regression type（Lin，Log，
Exp，PWr，Inv，Quad）clear variables A through $F, X$ ，and $Y$ ． Don not use variables $A$ throuabh $F, X$ ，or $Y$ to store data when
performing statistical calculations．
－Obtaining Statistical Values from Input Data
Supported statistical variables and the keys you should press to recall fx－82SX PLUS／220 PLUS：


Tx－82MS／85MS／300MS／350MS：
For single－variable statistical calculations，the variables marked with




Regression Coefficients：$A, B$, Correlation Coefficient：$r$
Regression Coefficients for Quadratic Regression：$A, B, C$
Regression Coefficients for Quadra
\＃nff（2）（S－VAR）（D） 1 to 3
Estimated Values：$\hat{X}, 1$
Estimated Values for Quadratic Regression：$\hat{1}_{1}, \hat{x}_{2}$,
that take an argument immediately before them．See＂Calculytine
Estimated Values＂for more information．
1 To calculuate the mean $(\bar{x})$ and population standard devialion $\left(\sigma_{x}\right)$ for the following data： $55,54,51,55,53,53$ ， 54,52



fx－82MS／85MS／300MS／350MS：

2 $2 \mathrm{fx}-82 \mathrm{MS} / 85 \mathrm{MS} / 300 \mathrm{MS} / 350 \mathrm{MS}$ ：To calculate the linear coefficients $(r)$ tor the following paired－variabile data and determine the ererression formula ofor the strongest
correlation：$(x, y)=(20,3150),(110,7310),(200,8800)$. Correlation：$(x, y)=(20,3150),(110,7310)$, ，（200， 88800 ），
（290， 9310$)$ ．Specity
Fix 3 （h）（hree decimal places）for results． №re 3 （REG）TI（Lin）


피요（3）（REG）［2）（Log）

 $\begin{array}{ll}\sin (2)(S-V A R)(1)(1)(A) 日 & -3857.984 \\ 2357.532\end{array}$
Logarithmic Regression Formula
$y=-3857.984+2357.532 \ln x$

Calculating Estimated Values

Based on the regression formula obtained by paired－variable a given $x$－value．The corresponding $x$－value tiwo values，$x$ i and $x_{2}$ ，in
the case of quadratic regression）also can be calculated for a value of case of quacratic regression
D3 $\begin{aligned} & \text { To determine the estimate value for } y \text { when } x=160 \text { in the } \\ & \text { regression formula produced by logarithmic regression of }\end{aligned}$ tegression formula produced by logantitmmic regression of
the data i 2 ．Specify $F$ Fix forthe result．（Pertorm the
following operation ater completing the operations in
 Important：Regression coefficient，correlation coefficient，and
estimated value calculations can take considerable time when there are a large number of data items．

| 16．Calculation Ranges，Number of Digits，and Precision |  |  |
| :---: | :---: | :---: |
| Calculation Range and Precision Calculation Range：$\pm 1 \times 10^{-99}$ to $9.999999999 \times 10^{99}$ or 0 Number of Digits for Internal Calculation： 15 digits Precision：In general，$\pm 1$ at the 10th digit for a single calculation． Precision for exponential display is $\pm 1$ at the least signiificant digit．Errors are cumulative in the case of consecutive calculation Errors are cumulative in the case of consecutive calculations． |  |  |
| $\square$ Function Calculation Input Ranges and Precision |  |  |
| Functions |  | Input Range |
| $\begin{aligned} & \sin x \\ & \cos x \end{aligned}$ | DEG | $0 \leqq\|x\|<9 \times 10^{9}$ |
|  | RAD | $0 \leqq\|x\|<157079632.7$ |
|  | GRA | $0 \leqq\|x\|<1 \times 10^{10}$ |
| $\tan x$ | DEG | Same as sinx，except when $\|x\|=(2 n-1) \times 90$ ． |
|  | RAD | Same as sinx，except when $\|x\|=(2 n-1) \times \pi / 2$. |
|  | GRA | Same as $\sin x$ ，except when $\|x\|=(2 n-1) \times$ 100. |
| $\begin{aligned} & \sin ^{-1 x} \\ & \cos ^{-1} x \\ & \hline \end{aligned}$ | $0 \leqq\|x\| \leqq 1$ |  |
| $\tan ^{-1} x$ | $0 \leqq\|x\| \leqq 9.999999999 \times 10^{\text {or }}$ |  |
| $\sinh x$ cosh | $0 \leqq\|x\| \leqq 230.2585092$ |  |
| $\sinh ^{-1} x$ | $0 \leqq\|x\| \leqq 4.999999999 \times 10^{109}$ |  |
| $\cosh ^{-1} x$ | $1 \leqq x \leqq 4.999999999 \times 10^{\text {o8 }}$ |  |
| $\tanh x$ | $0 \leqq\|x\| \leqq 9.999999999 \times 10^{\text {080 }}$ |  |
| $\tanh ^{-1} x$ | $0 \leqq \mid$｜l｜ |  |
| $\log x / \ln x$ | $0<x \leqq 9.999999999 \times 10^{99}$ |  |
| $10^{*}$ | $-9.999999999 \times 10^{09} \leq x \leq 99.99999999$ |  |
| $e^{x}$ | $-9.9999999999 \times 10^{08} \leqq x \leq 230.2585092$ |  |
| $\sqrt{x}$ | $0 \leq x<1 \times 10^{100}$ |  |
| $x^{2}$ | $\|x\|<1 \times 10^{50}$ |  |
| $x^{-1}$ | $\|x\|<1 \times 11^{100} ; x \neq 0$ |  |
| $\sqrt[3]{x}$ | $\|x\|<1 \times 10^{100}$ |  |
| $x!$ | $0 \leqq x \leqq 69$（ $x$ is an integer） |  |
| $n \mathrm{Pr}$ | $\begin{aligned} & 0 \leqq n<1 \times 10^{10}, 0 \leqq r \leqq n(n, r \text { are integers }) \\ & 1 \leqq\{n!/(n-r)!\}<1 \times 10^{100} \\ & \hline \end{aligned}$ |  |
| ${ }_{n} \mathrm{C}$ r | $\begin{aligned} & 0 \leqq n<1 \times 10^{10}, 0 \leqq r \leqq n(n, r \text { are integers } \\ & 1 \leqq n!/ r!<1 \times 10^{100} \text { or } 1 \leqq n!/(n-r)!<1 \times 10^{100} \\ & \hline \end{aligned}$ |  |
| Pol $(x, y)$ | $\begin{aligned} & \left\|\|x\|,\|y\| \leqq 9.999999999 \times 10^{99}\right. \\ & \sqrt{x^{2}+y^{2}} \leqq 9.999999999 \times 10^{99} \\ & \hline \end{aligned}$ |  |
| $\operatorname{Rec}(r, \theta)$ | $\begin{aligned} & 0 \leqq r \leqq 9.999999999 \times 10^{99} \\ & \theta: \text { Same as } \sin x \end{aligned}$ |  |
| \％＂ | $\|a\|, b, c<1 \times 10^{100} ; 0 \leqq b, c$ <br> The display seconds value is subject to an error of $\pm 1$ at the second decimal place． |  |
| \％ | $\begin{aligned} & \|x\|<1 \times 10^{100} \\ & \text { Decimal }_{4} \text { Sexagesimal Conversions } \\ & 0^{\circ} 0^{\prime} 0^{\prime \prime} \leqq\|x\| \leqq 9999999^{\circ} 59^{\prime} \end{aligned}$ |  |
| $x^{*}$ | $\begin{aligned} & x>0:-1 \times 10^{100}<y \log x<100 \\ & x=0 . y>0 \\ & x<0: y=n, \frac{1}{2 n+1}(n \text { is an integer) } \\ & \text { However: }-1 \times 10^{100}<y \log \|x\|<100 \\ & \hline \end{aligned}$ |  |
| $\sqrt{y}$ | $\begin{aligned} & y>0: x \neq 0,-1 \times 10^{100}<1 / x \mid \log y<100 \\ & y=0: x>0 \\ & y<0: x=2 n+1, \frac{1}{n}(n \neq 0 ; n \text { is an integer }) \\ & \text { However: }-1 \times 10^{n 00}<1 / x \log \| \|\| \|<100 \end{aligned}$ |  |
| $a^{b / c}$ | Total of integer，numerator，and denominator must be 10 digits or less（including division marks）． |  |

Precision is basically the same as that described under＂Calculation Calculations theitisus＂，any ofve．the functions or settings shown belo cause accumulation of error that that occurs with each calculation．
 Error is cum
singular point and infilection point． Accumplation of errors tendst toint．cur during statistical calculations
involving data in which there is a large number of decimal place involving data in which there is accurgen number of decimal places
and there is ititle difference between data items．Input of statistical data is limited to six decimal places．

## 17．Error Messages

## The calculator will display an error $m$ ess for any reason during a calcuation

－Press © or ©（t）to return to the calculation screen．The cursor wis
 input．Make the necessary correctionsto the calculation and execute
it
itain．（Not included on the $x$－ 82 SXX PLUS） －Press Ace to return to the calculation screen．Note that this also
clears the calculation that contained the error． $\frac{\text { clears the calcu }}{\text { Math ERROR }}$
 Cause： －The intermediate or final result of the calculation you
are pertrming exceeds the allowable calculation range．Your
input exceeds the allowable einout range． input exceeds the elllowable input range．The calculation you are
performing contains an illegal mathematical operation（such as division by zero）．
Action ：Chek
Action：•Check the input values and reduce the number of digits．
－When using independent memory or a variable as the argument of －When using independent memory or a variable as the argument of allowable range for the function．
Cause：The calculation you are performing has caused the capacity of the numeric stack or the command stack to be exceeded．
Action： Simplify the calculation expression．－Try spiting the Action：－Simplify the calculation
calculation into two or more parts．
Syntax ERROR
Cause：There is
are perfirming．
Action：Make necessary corrections．
Arg ERROR
Crgese：IIproper use of an argument．
Action：Make necessary corrections．
8．Before Assuming Malfunction of the Calculator．
Perform the following steps whenever an error occurs during
calculation or when callulation results are not what you expected． Note that you should make separate copies of important data before performing these steps．
1．Check the calculation expression to make sure that it does not
contain any errors． 2．Make sure that you are using the correct mode for the type of
calculation you are trying to pertorm． 3．If the above steps do not correct you
correct your problem，press the＠on 4．Intitialize all modes and settings．See＂Initializing Calculator

## 19．Replacing the Battery

Important：Removing the battery will cause all of the calculator

To ensure that you do not accidentally turn on power while
replacing the batter，slide the hard case onto the front of the Calculator $(t x-350 \mathrm{MS})$ ．
Rhown in the illustration and replace the
battery，take cover as care that its plus（ + ）and minus $(-)$ ends are facing

[^1]


## 20．Specifications

ower Requirements： fx－355MS Button battiry LR44（GPA77）$\times 1$
fx－85MS／300MS：Built－in solar cell；button battery LR44（GPA76）
$\times 1$ Approximate Battery Life
fx－82MS／82SX PLUS／220

－85MS／300MS： 3 years（based on one hour of operation per day） Power Consumption：
0.0001 W（（x－82MS／82SX PLUS／220 PLUS／350MS） perating Temperature： $0^{\circ} \mathrm{C}$ to $40^{\circ} \mathrm{C}$（ $32^{\circ} \mathrm{F}$ to $104^{\circ} \mathrm{F}$ ）


| fx－82MS | $\begin{aligned} & 18.6 \times 85 \times 156 \mathrm{~mm} \\ & 3 / 4^{\prime \prime} \times 3^{3 / 3} / s^{\prime \prime} \times 6^{1 / g^{\prime \prime}} \end{aligned}$ | $\begin{aligned} & 115 \mathrm{~g} \\ & (4.1 \mathrm{oz}) \end{aligned}$ |
| :---: | :---: | :---: |
| fx－82SX PLUS fx－220 PLUS | $\begin{aligned} & 19.5 \times 78 \times 155 \mathrm{~mm} \\ & 3 / 4^{\prime \prime} \times 3^{1 / 1 / s^{\prime \prime} \times 6^{1} / \mathrm{s}^{\prime \prime}} \end{aligned}$ | $\begin{aligned} & 115 \mathrm{~g} \\ & (4.1 \mathrm{oz}) \end{aligned}$ |
| $\underset{f x-85 M S}{f-300 \mathrm{MS}}$ fx－350MS | $\begin{aligned} & 12.2 \times 85 \times 155 \mathrm{~mm} \\ & 1 / 2^{\prime \prime} \times 3^{3} / 8^{\prime \prime} \times 6^{1 / g^{\prime \prime}} \end{aligned}$ | $\begin{aligned} & 100 \mathrm{~g} \\ & (3.5 \mathrm{oz}) \end{aligned}$ |

wnload．

Manufacturer：
CAIO COMPUTER CO．，LTD．
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Shibuya－ku，Tokyo 151－8543，Japan
Responsible within the European Union： CASIO EUROPE GmbH Casio－Platz 1
22848 Norderstedt，Germany

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[^0]:    Degree，Minute，Second（Sexagesimal）
    Calculations
    

[^1]:    3．Replace the cover．
    4．Initiaize the calculato
    ．nititalize the calculator．See＂3．Intitalizing the Calculator＂． Do not skip the above step

