



**Manual abstract:**

$2^{\circ}20'30 + 39'30 = 3^{\circ}00'00$  2 \$ 20 \$ 30 \$ + 0 \$ 39 \$ 30 \$ = To add the result of  $10 \times 5$  to M (Continuing)  $10 * 5$  l To subtract the result of  $10 + 5$  from M (Continuing)  $10 + 5$  l l(M) To recall the contents of M fx-82MS/85MS/300MS/350MS: (Continuing)  $l(M)$  fx-82SX PLUS/220 PLUS: (Continuing) n Note: Variable M is used for independent memory. 50. 15.  $3^{\circ}0'0$ . 6. Removing the Hard Case Before using the calculator, slide its hard case downwards to remove it, and then affix the hard case to the back of the calculator as shown in the illustration nearby. 12. Inputting Expressions and Values  $4 \times \sin 30 \times (30 + 10 \times 3) = 120$  v 4 \*s 30 \*( 30 + 10 \* 3 )= Note: · The memory area used for calculation input can hold 79 "steps". One step is taken up each time you press a number key or arithmetic operator key (+, -, \*, /). A ! or a (fx-82MS/85MS/300MS/350MS only) key operation does not take up a step, so inputting !W(3'), for example, takes up only one step.

· Whenever you input the 73rd step of any calculation, the cursor changes from "\_" to "k" to let you know memory is running low. Convert  $2^{\circ}15'18$  to its decimal equivalent. 2 \$ 15 \$ 18 \$ =  $2^{\circ}15'18$ . (Converts sexagesimal to decimal.) \$ 2.

255 (Converts decimal to sexagesimal.) !\$( )  $2^{\circ}15'18$ . 35. 35. k Multi-Statements (fx-82MS/85MS/300MS/350MS only) You can use the colon character (:) to connect two or more expressions and execute them in sequence from left to right when you press =.

$3+3:3 \times 3 + 3$  Sr(:)  $3 * 3 = =$  k Clearing the Contents of All Memories Independent memory and variable contents are retained even if you press A, change the calculation mode, or turn off the calculator. Perform the following procedure when you want to clear the contents of all memories.

fx-82MS/85MS/300MS/350MS: p!,(CLR)l(Mcl)= fx-82SX PLUS/220 PLUS: prl(Mcl)= 7. Turning Power On and Off Press O to turn on the calculator. Press 1A(OFF) to turn off the calculator. Auto Power Off Your calculator will turn off automatically if you do not perform any operation for about 10 minutes.

6.Disp 9. k Calculation Priority Sequence When the priority of two expressions is the same, the calculation is performed from left to right. 1st Function with parentheses: Pol(x, y), Rec(r, ), RanInt#(a, b)\* (\*fx-82SX PLUS/220 PLUS only) Type A functions: With these functions, the value is entered and then the function key is pressed.

@@@@1234. 1234 = W 1.234 $\times 10^3$  W 1234. $\times 100$  14. Function Calculations : is displayed as 3.141592654, but = 3.14159265358980 is used for internal calculations. <http://edu.casio.com> CASIO EDUCATIONAL FORUM <http://edu.casio.com/forum/>

8. Adjusting Display Contrast 1. Press the , key a number of times until you reach the setup screen shown to the right. 2.

Press c. 3. Use d and e to adjust contrast. 4. After the setting is the way you want, press A.

Important: If adjusting display contrast does not improve display readability, it probably means that battery power is low. Replace the battery. 2nd 3rd 4th 5th e (fx-82MS/85MS/300MS/350MS only): e is displayed as 2.718281828, but e = 2.71828182845904 is used for internal calculations. sin, cos, tan, sin-1, cos-1, tan-1 : Trigonometric functions. Specify the angle unit before performing calculations. See 1. sinh, cosh, tanh, sinh-1, cosh-1, tanh-1 : Hyperbolic functions. The angle unit setting does not affect calculations.

See 2 . r RJA521989-001V01 SA0912-A Printed in China k Calculation History (Not included on the fx-82SX PLUS) In the COMP Mode, the calculator remembers up to approximately 150 bytes of data for the newest calculation. You can scroll through calculation history contents using f and c.  $1+1=2$   $2+2=4$   $3+3=6$   $1+1= 2+2= 3+3=$  (Scrolls back.) f (Scrolls back again.) f °, r, g : These functions specify the angle unit. ° specifies degrees, radians, and g grads.

Input a function from the menu that appears when you perform the following key operation: 1G(DRG'). See 3. 4.

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6th 7th 8th 9th ex, 10x, sin, cos, tan, sin-1, cos-1, tan-1, sinh, cosh, tanh, sinh-1, cosh-1, tanh-1, (-) 9. @@@@4. 6. 4. 2. 10x, ex : Exponential functions. See log : Logarithmic function. See 5. 10th Addition, subtraction (+, -) reciprocals. See ln : Natural logarithm to base e.

See 6 . @@@@Use the procedure under "3. @@@@See 8. @@Calculation result is displayed in the range  $180^{\circ}$ . of  $-180^{\circ}$  k Replay (Not included on the fx-82SX PLUS) While a calculation result is on the display, you can press d or e to edit the expression you used for the previous calculation.  $4 \times 3 + 2.5 = 14.5$   $4 * 3 + 2.5 = 4 \times 3 - 7.1 = 4$ .

9 (Continuing) dYYYY- 7.1 = 14.5 4.9 Rectangular Coordinates (Rec) Polar Coordinates (Pol) 9. 13.

Basic Calculations k Fraction Calculations  $2+1= 1$  1 32 6 4-3 1=1 22 2\$3+1\$2= 4-3\$1\$2= 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 default settings. Note that this operation also clears all data currently in calculator memory. fx-82MS/85MS/300MS/350MS: p!,(CLR)3(All)= fx-82SX PLUS/220 PLUS: pr3(All)= Note: · The initial default calculation mode is the COMP Mode. · Mode indicators appear in the upper part of the display.

Be sure to check the current calculation mode (COMP, SD, REG) and angle unit setting (Deg, Rad, Gra) before beginning a calculation. k Answer Memory (Ans) 1{1}{6. 1{2. The last calculation result obtained is stored in Ans (answer) memory. Ans memory contents are updated whenever a new calculation result is displayed. To divide the result of  $3 \times 4$  by 30  $3*4=$  (Continuing) / 30 = 123 + 456 = 579 789 579 = 210 123 + 456 = (Continuing) 789 -G= x ! : Factorial function. See Ran# : Generates a 3-digit pseudo random number that is less than 1. See 10. RanInt# (fx-82SX PLUS/220 PLUS only): For input of the function of the form RanInt#(a, b), which generates a random integer within the range of a to b. See 11.

11. Configuring the Calculator Setup Pressing the , key more than once displays additional setup screens.



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Underlined (      ) settings are initial defaults. 1Deg 2Rad 3Gra Specifies degrees, radians or grads as the angle unit for value input and calculation result display. Note: In this manual, the v symbol next to a sample operation indicates degrees. @@@@ See 12. 579. @@With Norm 1 or Norm 2, the argument is rounded off to 10 digits. See 13. @@@@75.

2875. @@@@Handling Precautions · Dim figures on the display oa value causes all values following it to be shifted up. @@If this happens, press the = key to display the screen shown below. @@Press b if you want to register the value you just input. @@@@Specify Fix 3 for the result. @@r9 2 ,9 2 )= -t(F) = 45. @@fx-82SX PLUS/220 PLUS: r9 2 (,)9 2 )= r = 2. !q(y, )= = 45. · Press ! @@@@~t(F) y = 1. @@fx-82SX PLUS/220 PLUS: q9 2 (,) 45 = x = 1.

!q(y, )= y = 1. · Press ! r ( x , r ) = to display the value of x , or !q(y, )= to display the value of y. 9 (5 + 3) ! = 40320 ( 5 + 3 )!E(x!)= · Precision is basically the same as that described under "Calculation Range and Precision", above. · Calculations that use any of the functions or settings shown below require consecutive internal calculations to be performed, which can cause accumulation of error that occurs with each calculation. y, ' , xy, x' 3 x!, nPr, nCr; °, r, g (angle unit: radians); x, sx, regression coefficient. · Error is cumulative and tends to be large in the vicinity of a function's singular point and inflection point. · Accumulation of errors tends to occur during statistical calculations involving data in which there is a large number of decimal places and there is little difference between data items. Input of statistical data is limited to six decimal places. 20. Specifications Power Requirements: fx-82MS/82SX PLUS/220 PLUS: AA-size battery R6P (SUM-3) × 1 fx-350MS: Button battery LR44 (GPA76) × 1 fx-85MS/300MS: Built-in solar cell; button battery LR44 (GPA76) × 1 Approximate Battery Life: fx-82MS/82SX PLUS/220 PLUS: 17,000 hours (continuous display of flashing cursor) fx-350MS: 9,000 hours (continuous operation) fx-85MS/300MS: 3 years (based on one hour of operation 11 To generate random integers in the range of 1 to 6 (fx-82SX PLUS/220 PLUS only) 12(RanInt) 1 1(,) 6 )= = 2.

6. (Actual results will differ.) 12 To determine the number of permutations and combinations possible when selecting four people from a group of 10 Permutations: Combinations: 10 1!(nPr) 4 = 10 {4 = x |x| |x| 5040. 210. 18. Before Assuming Malfunction of the Calculator... Perform the following steps whenever an error occurs during a calculation or when calculation 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 perform.
- 3.

If the above steps do not correct your problem, press the O key. 4. Initialize all modes and settings. @@@@I. Press 1A(OFF) to turn off the calculator. @@2. Remove the cover as shown in the illustration and replace the battery, taking care that its plus (+) and minus (-) ends are facing correctly. Screw Screw Screw Paired-variable (X, Y), linear ,3(REG)1(Lin) regression ( y = A + Bx) Paired-variable (X, Y), logarithmic ,3(REG)2(Log) regression ( y = A + Blnx) Paired-variable (X, Y), e ,3(REG)3(Exp) exponential regression ( y = AeBx ) Paired-variable (X, Y), power ,3(REG)e1(Pwr) regression ( y = Ax<sup>B</sup>) Paired-variable (X, Y), inverse ,3(REG)e2(Inv) regression ( y = A + B/x) Paired-variable (X, Y), quadratic ,3(REG)e3(Quad) regression ( y = A + Bx + Cx<sup>2</sup>) 2 n 1 × 1010, 0 r n (n, r are integers) n!/r! 1 × 10100 or 1 n!/(nr)! 1 × 10100 |x|, |y| 9.999999999 × 1099 x<sup>2</sup> + y<sup>2</sup> 9.999999999 × 1099 0 fx-82MS/85MS/300MS/350MS: !c(S-VAR)b(o) 53.375 !c(S-VAR)c(x) 1.316956719 fx-82MS/85MS/300MS/350MS: To calculate the linear regression and logarithmic regression correlation coefficients (r) for the following paired-variable data and determine the regression formula for the strongest correlation: (x, y) = (20, 3150), (110, 7310), (200, 8800), (290, 9310). Specify Fix 3 (three decimal places) for results. ,3(REG)1(Lin) , 1(Fix)3 20, 3150 7 110 , 7310 7 200 , 8800 7 290 , 9310 7 !2(S-VAR)ee3(r)= 0.923 ,3(REG)2(Log) 20 , 3150 7 110 , 7310 7 200 , 8800 7 290 , 9310 7 !2(S-VAR)ee3(r)= 0.

998 !2(S-VAR)ee1(A)= -3857.984 !2(S-VAR)ee2(B)= 2357.532 Logarithmic Regression Formula: y = 3857.984 + 2357.532lnx r 9.999999999 × 1099 : Same as sinx ° " |a|, b, c 1 × 10100; 0 b, c The display seconds value is subject to an error of ±1 at the second decimal place. |x| 1 × 10 Decimal Sexagesimal Conversions 0°0'0" |x| 9999999°59' 100 k Inputting Data · In the SD Mode and REG Mode, the I key operates as the 7 key. · Always start data input with ! , (CLR) b (Scl) = (rb(Scl)= on the fx-82SX PLUS/220 PLUS) to clear statistical memory. · Input data using the key sequence shown below. SD Mode: <x-data> 7 REG Mode: <x-data> , <y-data> 7 · 77 inputs the same data twice.

· You can also input multiple entries of the same data using !,(;) (!)(;) on the fx-82SX PLUS/220 PLUS). xy (n is an integer) 2n+1 However: 1 × 10100 ylog |x| 100 x 0: 1 × 10100 x = 0: y 0 x 0: y = n, 1 ylogx 100 x y ' y 0: x G 0, 1 × 10100 1/x logy 100 y = 0: x 0 y 0: x = 2n+1, 1 (n G 0; n is an integer) n However: 1 × 10100 1/x log |y| 100 Total of integer, numerator, and denominator must be 10 digits or less (including division marks). Manufacturer: CASIO COMPUTER CO., LTD. 6-2, Hon-machi 1-chome Shibuya-ku, Tokyo 151-8543, Japan fx-82MS/82SX PLUS/ 220 PLUS fx-350MS fx-85MS/300MS a b/c RanInt#(a, b) 3.

Replace the cover. 4. Initialize the calculator. See "3. Initializing the Calculator".

· Do not skip the above step! Responsible within the European Union: CASIO EUROPE GmbH Casio-Platz 1 22848 Norderstedt, Germany This mark applies in EU countries only. RJA521989-001V01 a b; |a|, |b| integers) 1 × 1010; b a 1 × 1010 (a, b are .



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