Using the Casio

Fx-82AU PLUS II and fx-100AU PLUS

scientific calculators

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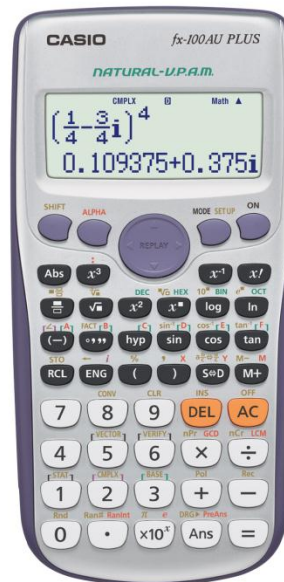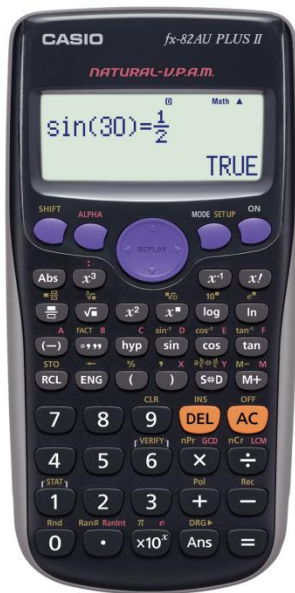
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Operating instructions

Casio fx-82AU PLUS II and Casio fx-100AU PLUS

In addition to the best features of previous models the calculators have several new and improved features.

Contents

Getting started

After you have turned on the calculator the first step is to choose the type of calculation you wish to do. Press [MODE] to bring up the possibilities. While the fx-100AU PLUS has more possibilities both calculators work in the same way.

fx-82AU PLUS II   **fx-100AU PLUS**

```
1:COMP  2:STAT          1:COMP   2:CMPLX
3:VERIF                 3:STAT   4:BASE-N
                        5:VERIF  6:VECTOR
```

COMP is the computation mode. This is the mode for performing the majority of scientific calculations.

CMPLEX is the complex number mode.

STAT is the mode for statistics and regression.

BASE-N allows calculations and conversions in bases 10, 6, 2 and 8.

VERIF is a new mode which enables the user to check whether a calculation or process is true or false.

VECTOR is another new menu that makes two and three dimensional vector calculations possible.

To enter a mode press the key for the digit indicated. For example, on both calculators press [1] for the computation mode, while statistics is accessed by pressing [2] on the fx-82AU PLUS II and [3] on the fx-100AU PLUS.

The Computation mode

The computation mode offers a choice of how you would like to display mathematical expressions.

MthIO setup   **LineIO setup**

$$1\frac{3}{5} \times \frac{9}{10} \qquad\qquad \text{Math} \blacktriangle$$

$$\frac{36}{25}$$

$$1 \lrcorner 3 \lrcorner 5 \times 9 \lrcorner 10 \qquad\qquad \blacktriangle$$

$$36 \lrcorner 25$$

Press [SHIFT] [MODE] to bring up the setup menu. Then select [1] for mthIO or [2] for lineIO.

```
1:MthIO 2:LineIO
3:Deg   4:Rad
5:Gra   6:Fix
7:Sci   8:Norm
```

Setup information

Setting the calculator to degrees or radians

In the computation mode press [SHIFT] [MODE] to bring up the following screen:

```
1:MthIO  2:LineIO
3:Deg    4:Rad
5:Gra    6:Fix
7:Sci    8:Norm
```

Press ③ for degrees or ④ for radians. The calculator will remember the setting until you change it.

Decimal places and scientific notation

In the computation mode press [SHIFT] [MODE] for the above screen. Press ⑥ to fix the number of decimal places. The calculator will ask for the required number of decimal places. Press the number you require and the calculator will continue to display answers in this form until you instruct it to do otherwise. Refer to information on page 4 about toggling between fractions and decimals to obtain answers in different forms.

Answers expressed in scientific notation

In the computation mode press [SHIFT] [MODE] for the setup screen. The calculator will then ask for the number of significant figures required. Press the number you require and the calculator will continue to display answers in this form until you instruct it to do otherwise.

Setting the calculator back to 'normal'

In the computation mode press [SHIFT] [MODE] for the setup menu. Press ⑧ for 'normal display'. The calculator will ask you whether you want Norm 1 or Norm 2. The difference between Norm 1 and Norm 2 is the value when the calculator swaps from a display as a decimal or a display as a decimal in scientific notation.

In Norm 1, the answer to ① [÷] ② ⓪ ⓪ is displayed as 5×10^{-3}.

In Norm 2, the answer to ① [÷] ② ⓪ ⓪ is displayed as 0.005.

Norm 2 doesn't use scientific notation until the display is of the order of 5×10^{-9}.

Fractions and decimals

The key strokes for fractions are slightly different in the MthIO than in the LineIO mode.

Fractions in the LineIO mode

Use the ▤ button to enter any expression involving a fraction. You need to press ▤ after the whole number and after the numerator.

To enter 1⅔ + 5⅞ press ①▤②▤③⊞⑤▤⑦▤⑧⊟.
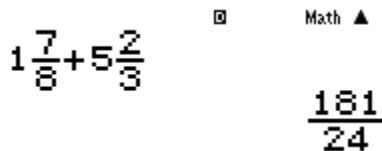
Fractions in MthIO mode

To enter a traditional fraction, for example ⅝, press ▤⑤ then use the arrow down section of the blue, round replay button (⊙) to move to the position for the denominator. The press ⑧.

To enter a mixed numeral, for example 3⅘, press [SHIFT]▤ then ③▶④⊙⑤▶.
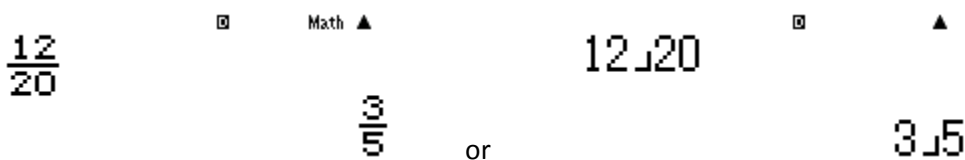
To enter 1⅞ + 5⅔ press [SHIFT]▤①▶⑦⊙⑧▶⊞[SHIFT]▤⑤▶②⊙③▶⊟.

$$1\frac{7}{8}+5\frac{2}{3}$$

$$\frac{181}{24}$$

Answers in different forms

The calculator can display the answer as an improper fraction or decimal and pressing [S⇔D] will toggle between the two. Pressing [SHIFT] [S⇔D] (for $(a\frac{b}{c}\leftrightarrow\frac{d}{c})$) will toggle the display between a mixed numeral and an improper fraction.

Simplifying fractions

In MthIO and in LineIO mode the calculator can simplify fractions. Enter the fraction followed by ⊟.

$$\frac{12}{20}$$

$$\frac{3}{5}$$ or   12⌐20

3⌐5
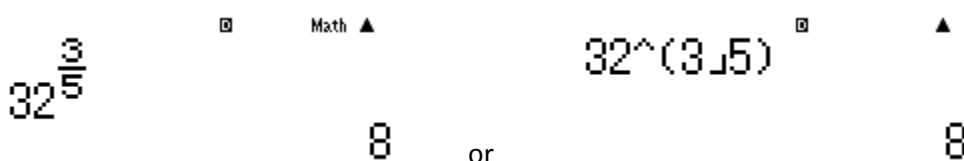
Reciprocals

The x^{-1} button will display a fraction's reciprocal. To display the reciprocal of 1⅔ enter the fraction and press ▣ followed by x^{-1} ▣.

$$1\frac{2}{3}$$

$$\frac{5}{3}$$

Then

Ans^{-1}

$$\frac{3}{5}$$

Fractional indices

The fraction button can be used as an index.
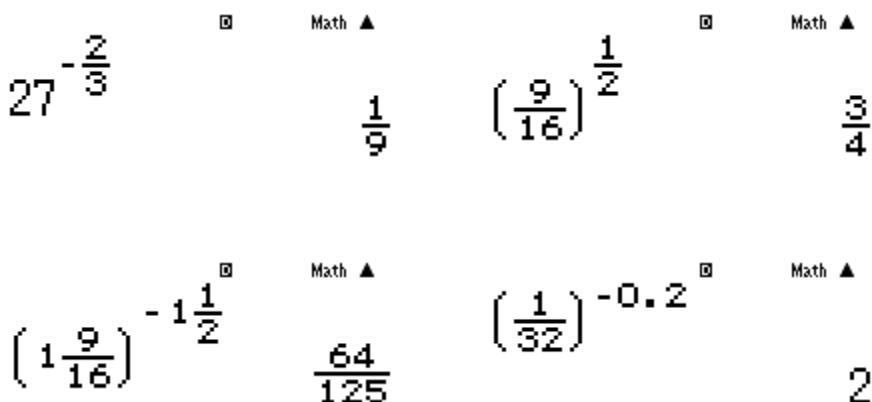
$$32^{\frac{3}{5}}$$

$$8$$

or

$$32^{\wedge}(3 \lrcorner 5)$$

$$8$$

In the MthIO mode the button sequence is 3 2 $x^{\blacksquare}$ 🔳 3 ▼ 5 ▶ ▣.

In the LineIO mode the sequence is 3 2 $x^{\blacksquare}$ 3 🔳 5) ▣. Note that the calculator supplies the first bracket and the second bracket can be omitted if it is the last entry before the ▣ button.

Negative fractional indices

The calculator can execute an impressive range of calculations with negative and positive fractional indices. Some examples include:

$$27^{-\frac{2}{3}}$$

$$\frac{1}{9}$$

$$\left(\frac{9}{16}\right)^{\frac{1}{2}}$$

$$\frac{3}{4}$$

$$\left(1\frac{9}{16}\right)^{-1\frac{1}{2}}$$

$$\frac{64}{125}$$

$$\left(\frac{1}{32}\right)^{-0.2}$$

$$2$$

Naturally each of the above examples can be completed in the LineIO mode.

Square and other roots

The calculator has inbuilt buttons for square and cube root as well as a button for any root.

Examples

The button sequence [√■] [5] [=] determines the value of √5.

√5

2.236067977

The button sequence to calculate the 5th root of 20 is [SHIFT] (■√☐) [5] [▶] [2] [0] [=].

$$\sqrt[5]{20}$$

1.820564203

Greatest common devisor and Lowest common multiple

Mode: 1 Computation or 2 statistics

Method: Access GCD or LCM then enter the pair of numbers separated by a comma.

Example

The greatest common devisor is also called the highest common factor. To calculate the greatest common devisor of 45 and 80 press [ALPHA] [×] [4] [5] [SHIFT] [)] [8] [0] [)] [=].

GCD(45,80)

5

To calculate the lowest common multiple of 12 and 9 press [ALPHA] [÷] [1] [2] [SHIFT] [)] [9] [)] [=].

LCM(12,9)

36

Prime factorization

Mode: 1 Computation

Method: Two steps are required. Enter the number to be factorized and press equals. Then activate factor.

Example

To express 6480 as a product of its prime factors press ⑥ ④ ⑧ ⓪ ⊟ [SHIFT] [°'''].

6480   ⓓ   Math ▲   6480   ⓓ   Math ▲

6480 $2^4 \times 3^4 \times 5$

Trigonometry

Mode: 1 Computation

Always check the setting for angles before you start any calculations involving trigonometry. There will be a small letter at the top of the screen. A small D indicates that the calculator is set to degrees, a small R indicates radians and a small G, gradients.

       Set to degrees   Set to radians

    ⓓ   Math ▲   ⓡ   Math ▲

The method for changing from degrees to radians is on page 3.

Entering trigonometric expressions

The button sequence to enter $4.5\sin71^{\circ}$ with the calculator set in degrees is ④ ⊡ ⑤ [sin] ⑦ ① ⊟

4.5sin(71   ⓓ   Math ▲

        4.25483359

A [✕] is not required between the ⑤ and [sin]. Neither is the closing bracket required at the end.

Degrees, minutes and seconds

The ⌈°'''⌉ button is used to enter degrees, minutes and seconds. To enter 52° 36' 12" press

⌈5⌉⌈2⌉⌈°'''⌉⌈3⌉⌈6⌉⌈°'''⌉⌈1⌉⌈2⌉⌈°'''⌉

52°36°12°   Math ▲

52°36'12"

Expressing a decimal in degrees, minutes and seconds

This process is slightly different to the process on previous calculators. Press
⌈5⌉⌈7⌉⌈·⌉⌈3⌉⌈3⌉⌈9⌉⌈0⌉⌈8⌉⌈7⌉⌈2⌉⌈8⌉⌈°'''⌉⌈=⌉ to express 57.33908728 in degrees, minutes and seconds.

57.33908728°   Math ▲

57°20'20.71"

Using an inverse trigonometric function

The button sequence ⌈SHIFT⌉ ⌈tan⌉ ⌈1⌉ ⌈·⌉ ⌈5⌉ ⌈6⌉ ⌈=⌉ is required to solve the equation $\tan\phi = 1.56$.

tan⁻¹(1.56   Math ▲

57.33908728

If you press ⌈°'''⌉ at the end of ⌈SHIFT⌉ ⌈tan⌉ ⌈1⌉ ⌈·⌉ ⌈5⌉ ⌈6⌉ ⌈=⌉ the calculator will display the answer in degrees, minutes and seconds. This process is slightly different to the process on previous calculators.

tan⁻¹(1.56   Math ▲

57°20'20.71"

Converting between degrees and radians

When you are converting angle types you MUST have the calculator set to the type of angle you are converting INTO.

Example

Change 1.2 radians into degrees.

Set the calculator to degrees then press ⑴ ⦁ ⑵ SHIFT Ans ⑵ ⟵ .

1.2ʳ

68.75493542

Example

Convert 50° to radians.

Set the calculator to radians then press ⑸ ⓪ SHIFT Ans ⑴ ⟵.

50°

0.872664626

The statistics menu

Mode: 2 STAT (fx-82AU PLUS II) 3 STAT (fx-100AU PLUS)

After you have selected the mode for statistics the following screen will be displayed.

```
1:1-VAR 2:A+BX
3:_+cX² 4:ln X
5:e^X   6:A·B^X
7:A·X^B 8:1/X
```

Menu 1 is for 1 variable statistics. The remaining menus are for regression. When you press ① for 1 variable statistics one of two screens will appear, depending on whether a frequency column was 'on' or 'off' the last time the calculator was used in the statistics menu.

Frequency ON   Frequency OFF

When the frequency is 'on' you can enter scores and their frequencies. With frequencies 'OFF' scores are entered one after the other in the STAT column.

Turning frequency on or off

In the STAT menu press [SHIFT] [MODE] for setup and the following options will be displayed:

```
1:MthIO 2:LineIO
3:Deg   4:Rad
5:Gra   6:Fix
7:Sci   8:Norm
```

The little black arrow head above 2: LineIO indicates that there are more options below. Press ⊙ to bring up the more options.

```
1:ab/c  2:d/c
3:STAT  4:Disp
5:◄CONT►
```

The options for statistics are in ③ . Press ③ to view the statistics options. The screen shot for this step is on the next page.

```
Frequency?
1:ON     2:OFF
```

Press ☐1☐ to turn a frequency column ON or ☐2☐ to turn the frequency column OFF.

Example

Find the summary statistics for the following set of scores:

4, 6, 2, 8, 3, 9, 12, 6, 4 and 5.

Step 1

Set the calculator to the STAT mode and press ☐1☐ for 1-variable statistics. IF necessary follow the preceding instructions to turn off the frequency column.

Step 2

Press ☐4☐ followed by ☐=☐, ☐6☐☐=☐☐2☐☐=☐ and so on until you have pressed ☐5☐ ☐=☐. If you make a mistake, don't worry. Simply scroll up to the incorrect value and type over it. If you've left out a score just put it at the end. If you've put in an additional score, highlight the score and press ☐DEL☐. The incorrect score will be removed and all the following scores will be moved up one position.

Step 3

When you have finished entering the scores press AC to indicate that you have completed the data entry stage. Do NOT panic when the scores disappear! The data entry screen will disappear but it can be brought back if required.

Step 4

The summary statistics are the second function on the number ☐1☐. Press ☐SHIFT☐ ☐1☐.

Fx-82AU PLUS II   **fx-100AU PLUS**

```
1:Type   2:Data            1:Type   2:Data
3:Sum    4:Var             3:Sum    4:Var
5:MinMax                   5:Distr  6:MinMax
```

Type: returns you to the initial screen which is illustrated at the top of page 10

Data: Returns you to the data entry screen

Sum: provides the sum of the scores and the sum of the squares of the scores

Var: provides information about the number of scores, mean, standard and sample standard deviation

Minmax: provides information about the minimum and maximum scores, the median as well as the upper and lower quartiles.

Pressing [SHIFT] [1] allows you to move backwards and forwards through the options.

Continuing the previous example

To calculate the mean press [SHIFT] [1] [4] [2] (for mean) then you MUST press [=] to bring up the value.

To calculate the standard deviation press [SHIFT] [1] [4] [3] (for standard deviation) then you MUST press [=] to display the value.

In this example the mean is 5.9 and the standard deviation is 2.8792 to 4 decimal places.

Entering scores with their frequencies

Press [MODE] and select statistics then press [1] for 1-variable statistics. If there is no frequency column press [SHIFT] [MODE] then arrow down and choose STAT then [1] to turn the frequency on.

Example

Scores	Frequency
4	9
5	12
6	5
7	2
8	1

Enter all the scores by pressing the value followed by [=]. The calculator automatically makes the frequencies 1. Use the replay button to move to the frequency column. Highlight each frequency, one at a time, then type the appropriate number followed by [=].
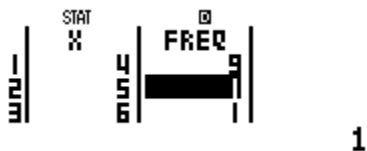
Press AC when you have completed the data entry stage. The process for finding the summary statistics is the same as that for finding statistics with frequency turned off. In this example the mean is 5.1 and the standard deviation is 1.03.

Using the memories

The calculator has an independent memory that can store the result of a calculation. In addition the fx82AU PLUS II has six pronumerals A, B, C, D X and Y which may be assigned values. The fx100AU PLUS has eight pronumerals A through F as well as X and Y which may be assigned values.

The independent memory M

Store the result of a calculation by pressing $\boxed{M+}$. When a non-zero amount is stored in the memory an M is displayed at the top left of the screen.

$$12+M$$

$$27$$

In the above screen, 15 is stored in the M memory. The button sequence to add the memory value to 12 is: $\boxed{1}\;\boxed{2}\;\boxed{+}\;\boxed{RCL}\;\boxed{M+}\;\boxed{=}$.
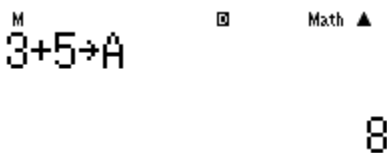
Storing values in other memories
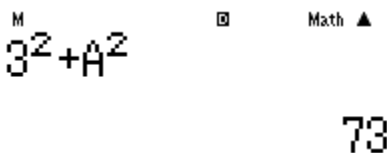
$$3+5\rightarrow A$$

$$8$$

In the above screen the result of 3 + 5 is being stored in A. The button sequence is $\boxed{3}\;\boxed{+}\;\boxed{5}\;\boxed{SHIFT}\;\boxed{RCL}\;\boxed{(-)}$. The following button sequence stores the result of 3 + 5 in other memories:

Store in memory B: $\boxed{3}\;\boxed{+}\;\boxed{5}\;\boxed{SHIFT}\;\boxed{RCL}\;\boxed{\circ\,,\,,}$

Store in memory C: $\boxed{3}\;\boxed{+}\;\boxed{5}\;\boxed{SHIFT}\;\boxed{RCL}\;\boxed{hyp}$ and so on.

Using values stored in A, B, etc

$$3^2+A^2$$

$$73$$

The stored value for A is 8. The button sequence for the above screen is $\boxed{3}\;\boxed{x^2}\;\boxed{+}\;\boxed{RCL}\;\boxed{(-)}\;\boxed{x^2}\;\boxed{=}$.

Clearing the contents of all the memories

The calculator remembers stored values even after it has been turned off for a long time. Use the button sequence $\boxed{SHIFT}\;\boxed{9}$ then follow the screen directions to clear data.

Verify Mode

The verify mode enables students to develop mathematical concepts, for example order of operations, manipulating inequalities and checking exact trigonometric values. This use of this mode is further illustrated in the accompanying teaching and learning activities.

Mode: 3 VERIF

Method: Input the left hand side of the expression then use the 'verify' button to enter an equal or inequality sign. Enter the right hand side of the statement and press equal. The calculator will display either TRUE or FALSE.

Example

To assess the validity of the statement 5 + 2 × 3 = 21 press [5] [+] [2] [×] [3] [SHIFT] [6] [1] [2] [1] [=].

$$5+2\times3=21 \quad \text{Math} \blacktriangle$$
$$\text{FALSE}$$

Other VERIF examples include:

$$\sin(60)=\frac{\sqrt{3}}{2} \quad \text{Math} \blacktriangle$$
$$\text{TRUE}$$

$$8\times-2>4\times-2 \quad \text{Math} \blacktriangle$$
$$\text{FALSE}$$

$$\sin^{-1}(\sin(150)=1\triangleright$$
$$\text{FALSE}$$

$$\cos^{-1}(-0.5)=\frac{4\pi}{3} \quad \text{Math} \blacktriangle$$
$$\text{FALSE}$$

$$\frac{12}{20}=\frac{12-4}{20-4} \quad \text{Math} \blacktriangle$$
$$\text{FALSE}$$

$$\ln\left(\frac{1}{e^2}\right)=-2 \quad \text{Math} \blacktriangle$$
$$\text{TRUE}$$

Converting between polar and rectangular coordinates

Mode: Computation

Method: Press the button for how you would like the point expressed, not the form it is currently. That is, press polar (pol) or rectangular (rec). Enter the two values separated by a comma and press equal. Entering the last bracket is optional.

Example

The button sequence to convert the rectangular coordinates ($\sqrt{2}$, $\sqrt{2}$) to polar coordinates press
[SHIFT] [+] [√■] [2] [▶] [SHIFT] [)] [√■] [2] [=]. Moving out of the second square root and typing the closing bracket is optional.

$$\text{Pol}(\sqrt{2}, \sqrt{2})$$
$$r = 2, \theta = 45$$

To convert the polar coordinates ($\sqrt{2}$, $45°$) to rectangular coordinates, make sure the calculator is set to degrees then press [SHIFT] [−] [√■] [2] [▶] [SHIFT] [)] [4] [5] [=]. The last bracket is optional.

$$\text{Rec}(\sqrt{2}, 45)$$
$$X = 1, Y = 1$$

Combinations and permutations

Mode: Computation

Method: Enter the first number followed by either nPr or nCr and equals.

Example

To calculate the value of $^5P_2$ press [5] [SHIFT] [×] [2] [=].

$$5P2$$
$$20$$

Using the last answer

Mode: Computation

Method: When the [Ans] button is pressed the calculator inserts the value of the previous answer.

Example

The two following screen shots show the result of the button sequence;

[1] [5] [x^2] [−] [8] [x^2] [=] [√■] [Ans] [=]

$15^2 - 8^2$

161

$\sqrt{Ans}$

12.68857754

Multi-statements

The colon character (:) connects two or more expressions and executes them in order from left to right.

Mode: Computation

Method: Enter each expression separated by a colon. Press [=] at the end and the result of the first calculation will be displayed. Each time the [=] button is pressed the calculator will display the next calculation and answer in the series.

Example

Enter then execute the calculation sequence $10\sin60°$ followed by 4! then $\ln e^3$.

Check the calculator is set in degrees then press
[1] [0] [sin] [6] [0] [)] [ALPHA] [x^3] [4] [$x!$] [ALPHA] [x^3] [ln] [ALPHA] [x10^x] [$x^■$] [3] [=] [=] [=]

$10\sin(60):4!\ \ln$

$10\sin(60)$

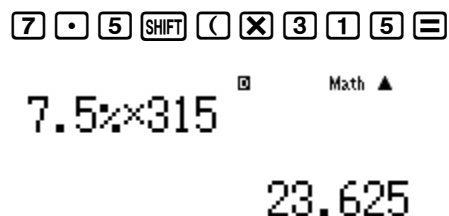8.660254038

4!

24

$\ln(e^3$

3

The percentage key

Mode: Computation

Method: To enter a percentage, for example 7.5% enter 7.5 followed by the percent key.

Example

Calculate 7.5% of 315.

[7] [·] [5] [SHIFT] [(] [×] [3] [1] [5] [=]

7.5%×315

23.625

Random number simulations

Random number simulations are useful for exploring chance situations, for example rolling a die or tossing a coin.

Mode: 1 Computation

Method: Press [ALPHA] [·] then enter the lower and upper number required separated by a comma. Every time you press [=] the calculator will display another random number in the specified range.

The following screen shows the calculator set to simulate rolls of a normal 6-sided die.

RanInt#(1,6)

5
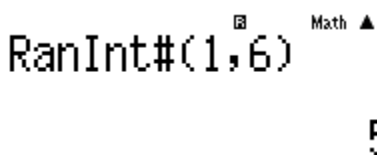
The button sequence to simulate a 6-sided die is [ALPHA] [·] [1] [SHIFT] [)] [6] [=]. Every time you press the = button the calculator will display another simulation.

Using the Ran# function

When the calculator is set to display answers in LineIO mode the Ran#function displays a random decimal between 0 and 1. When the setting is MthIO Ran# displays a random fraction between 0 and 1. In either setting the required button sequence is [SHIFT] [·] [=].

Features unique to the fx-100AU PLUS

Vectors

Mode: 6 Vector

The vector menu performs calculations with two and three dimensional vectors.

Method: The vector menu involves two stages. First enter the details of up to three vectors. Then press the [AC] to indicate the vector information is complete. Only after these two steps are complete will the vector key operate correctly.

Example

Multiply the vectors represented by [3, 5] and [0, 6].

Press MODE [6] followed by [1], select [2] for two dimensions. Press [3] [=] [5] [=].

Press MODE [6] followed by [2], [2] then enter [0] [=] [6] [=].

Press [AC]. This completes centering the vector information.

[SHIFT] [5] [3] [X] [SHIFT] [5] [4] [=].

Calculations in different bases

Mode: 4 for Base-n

Method: Press the key corresponding to the base. Simply perform calculations in the base by entering values in the specified base and the answer will be in the same base.

Example

In binary (base 2) calculate 1101 + 101.

Press the ⌊log⌋ button for binary. Enter ①①⓪①⊞①⓪①═

```
                     ▲
1101+101
                Bin
000000000010010
```

Example

Express the binary number 10010 as a decimal number.

In the base-n mode press the ⌊log⌋ button for binary. Then press ①⓪⓪①⓪═x^2.

```
                     ▲
1101+101
                Dec
                 18
```

Example

Express the decimal number 29 in base 8.

In the base-n mode press d for base 10, then ②⑨═⌊ln⌋

```
                     ▲
29
                Oct
       00000000035
```

Metric Conversions

The metric conversion function converts between metric and non-metric units of measure.

Mode: All modes except Base-n.

Method: Press AC. Enter the size of the unit to be converted. Access the conversion menu by pressing [SHIFT] [8], then enter the code for the units followed by [=].

The conversion codes are:

01: in→cm	02: cm→in	03: ft→m	04: m→ft	05: yd→m	06: m→yd
07: mile→km	08: km→mile	09: n mile→m	10: m→n mile	11: acre→m^2	12: m^2→acre
13: gal(US)→L	14: L→gal(US)	15: gal(UK)→L	16: L→gal(UK)	17: pc→km	18: km→pc
19: km/h→m/s	20: m/s→km/h	21: oz→g	22: g→oz	23: lb→kg	24: kg→lb
25: atm→Pa	26: Pa→atm	27: mmHg→Pa	28: Pa→mmHg	29: hp→kW	30: kW→hp
31: kgf/cm^2→Pa	32: Pa→kgf/cm^2	33: kgf·m→J	34: J→kgf·m		
35: lbf/in^2→kPa	36: kPa→lbf/in^2	37: ^{o}F→^{o}C	38: ^{o}C→^{o}F	39: J→cal	40: cal→J

Example

Convert 45 m/s to a speed in km/h.

AC [4] [5] [SHIFT] [8] [2] [0] [=]

$45m/s \blacktriangleright km/h$ Math ▲

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Complex numbers

Mode: 2 CMPLX

Method: Press [SHIFT] [ENG] to enter i.

Examples

CMPLX   Math ▲
$\sqrt{-16}$

$4i$

CMPLX   Math ▲
$(5+2i)^2$

$21+20i$

> The button sequence for these calculations is intuitive.

The screen below shows other possibilities in the complex number mode

```
1:arg     2:Conjg
3:▶r∠θ    4:▶a+bi
```

Calculating the argument of a complex number

CMPLX   Math ▲
$\arg(5+2i)$

0.3805063771

> The button sequence for determining the argument of 5 + 2i is
> [SHIFT] [2] [1] [5] [+] [2] [SHIFT] [ENG] [=].

Expressing a number in a + ib form in mod-arg form

CMPLX   Math ▲
$5+2i▶r∠θ$

$5.38516480∠0.3▶$

> The button sequence for expressing 5 + 2i in mod-arg form is
> [5] [+] [2] [SHIFT] [ENG] [SHIFT] [2] [3] [=].

The button sequence for expressing 5 + 2i in mod-arg form is [5] [+] [2] [SHIFT] [ENG] [SHIFT] [2] [3] [=].

Expressing a number in mod-arg form in the form of a + ib.

CMPLX   Math ▲
$5∠\frac{\pi}{4}▶a+bi$

$3.535533906+3.5▶$
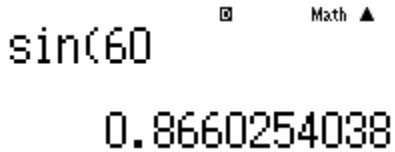
> The button sequence for expressing 5cis(pi/4) in the form a + ib is
> [5] [SHIFT] [(−)] [▤] [SHIFT] [x10ˣ] [▼] [4] [▶] [SHIFT] [2] [4] [=]

Tips and hints!
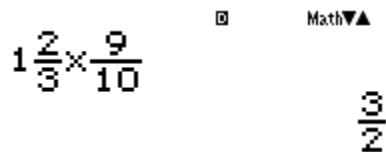
Using brackets

It is not necessary to enter the final bracket.

sin(60

0.8660254038

Scrolling through previous entries

$1\frac{2}{3}\times\frac{9}{10}$

$\frac{3}{2}$

When there is a small up ⊕ or down ⊖ arrow displayed in the window you can review previous entries and answers by scrolling up or down using the top or the bottom of the replay button.

Editing a calculation

Use the left or right side of the replay button to position the cursor. Pressing the [DEL] key will delete the entry immediately to the left of the cursor, then you can type the item you require. An 'insert' function is available as the second function on the [DEL] key should it be required.

Trouble shooting

The calculator is displaying a comma instead of a decimal point

Solution: In 'display' "comma" has been selected instead of "dot". In the computation mode press [SHIFT] [MODE] ⊙ then select Disp which is [4] on the fx82AU PLUS II or [5] on the fx100AU PLUS, then select 'Dot'.

```
1:ab/c  2:d/c  ▲      Decimal Point?
3:CMPLX 4:STAT        1:Dot   2:Comma
5:Disp  6:◄CONT►
```

Answers to fraction calculations are improper fractions

There are several ways to deal with this problem. You can set the calculator to always display answers as a mixed numeral (see the following instructions) or you can make use of the $\left(a\frac{b}{c} \leftrightarrow \frac{d}{c}\right)$ function which is the second function on the [S⇔D] button to toggle between mixed numerals and improper fractions. The [S⇔D] button will display the value as a decimal.

The calculator is set in the MthIO mode but the fractions show in the old way

You are working in the statistics menu rather than the computation menu. Press [MODE] [1].

The calculator gives the wrong answer for calculations involving trigonometry

Most likely the calculator is set to radians or gradients and the input is intended to be degrees. See instructions on page 3 for setting the calculator to degrees.

In statistics the calculator is pasting the value of the mean in place of a score in the data list

You haven't pressed AC to indicate that you have finished entering the scores. The calculator is treating the mean as a score.