

# **fx-83/85GT CW Interactive Manual**

Scientific ClassWiz

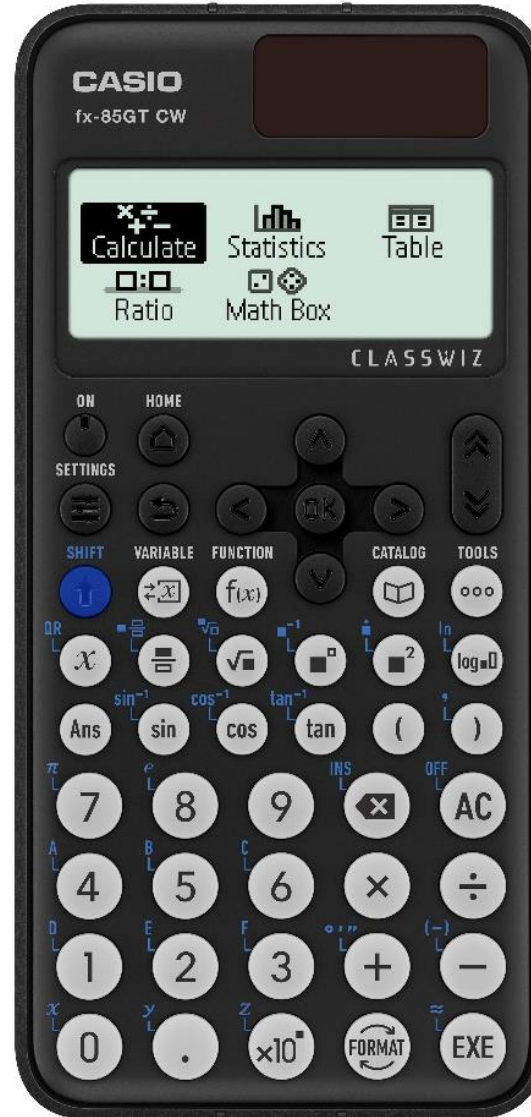
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- [Training video](#)
  - This is a recording from a live training webinar.
  - The video introduces the key features of the fx-83GT CW and fx-85GT CW ClassWiz calculators.
  - If you're new to using one of these calculators, you've come to the right place!
- ClassWiz Practice (worksheets/teaching slides)
  - [Revision Mat](#) - fx-83GT CW and fx-85GT CW teaching resources for KS3 and Foundation GCSE.
  - [Cross Number Puzzles](#) - teaching resources focusing on Cross Number for fx-83GT CW and fx-85GT CW calculators (KS3 and Foundation GCSE)
  - [Teaching Resources page](#) – general resources page including skills videos.

# How to navigate around the manual

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- Open the slideshow
- Press any key/label on the handset to access the user guide
- Use the mini calculator icon to return to the handset



*Use the mini  
calculator icon to  
return*



[Online User Guide Video](#)

## The most important key

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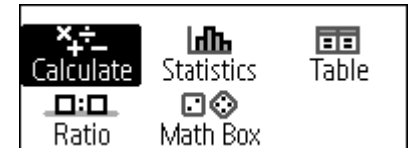


**ON**

Turn the handset on. Defaults to the last used application/menu screen.



**Example:** Always useful before attempting a calculation.



*Notice the slight recess, so that if placed face down without the cover the handset will not turn on.*

*Want a decimal value for a calculation?*

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## Decimal Approximation

Evaluate a decimal from a calculation instead of using FORMAT.



**Example:**

From the default settings, find the decimal value  $\frac{1}{12} + \frac{1}{3}$

$$\frac{1}{12} + \frac{1}{3} \quad \text{↑} \quad \text{EXE}$$

$$\frac{1}{12} + \frac{1}{3}$$

0.416666667

*Make sure to press SHIFT first.*

*Using decimal approximation after calculating a value with EXE performs another calculation, so be careful when using (Ans).*

## **((-)) Negative**

Negate a number in a calculation, list or table.



**Example:** Evaluate  $-3^2$

( (↑) (-) 3 ) (x²) (EXE)

$(-3)^2$   
9

*Be careful to interpret the question correctly, this isn't the negative of three squared, hence parentheses. Notice that the screen character is shorter than subtract.*



**X**

The default key to enter the variable  $x$ .



**Example:**

Define  $g(x) = x^2 - 2x - 3$

$\text{f(x)}$   $\text{v}$  three times  $\text{OK}$   $x$   $\text{x}^2$   $-2$   $x$   $-3$   $\text{OK}$

$g(x) = x^2 - 2x - 3$

The variable  $x$  can also be entered using  $\text{↑}$   $0$ .

## How to get one over

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**( $\square^{-1}$ ) Reciprocal**  
Equivalent to “one over” your entry.



**Example:** (a) Take the reciprocal of the calculation  $2 \times 3^2$  (b) Enter  $\frac{1}{5}$

(a)  $(2 \times 3 \square^2) \uparrow \square^{-1} \text{EXE}$

(b)  $5 \uparrow \square^{-1} \text{EXE}$

Calculator screen showing the calculation  $(2 \times 3^2)^{-1}$  resulting in  $\frac{1}{18}$ .

Calculator screen showing the calculation  $5^{-1}$  resulting in  $\frac{1}{5}$ .

*Use parentheses to take the reciprocal of the whole calculation.*

*Remember  $x^{-1} = \frac{1}{x}$ .*





## Logarithm

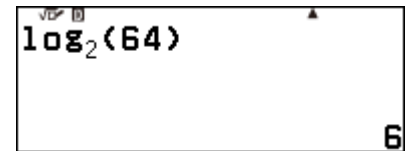
Take a logarithm with a defined base.



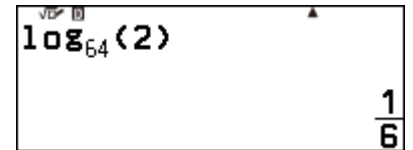
**Example:** Find (a)  $\log_2 64$  (b)  $\log_{64} 2$

(a)  $\log_2 64$

(b)  $\log_{64} 2$



108<sub>2</sub>(64)  
6



108<sub>64</sub>(2)  
1/6

*Taking logarithms is the opposite of raising something to a power.*



## Fraction template

Easily enter a fraction.



**Example:** Find (a)  $\frac{7}{12} \div \frac{2}{3}$  (b)  $\frac{1.3 \times 4.7}{3}$

(a)  $7 \text{ [Frac] } 12 \text{ [>] } \div 2 \text{ [Frac] } 3 \text{ [EXE]}$

(b)  $(1.3 \times 4.7) \text{ [Frac] } 3 \text{ [EXE]}$

$$\frac{7}{12} \div \frac{2}{3} = \frac{7}{8}$$

$$\frac{(1.3 \times 4.7)}{3} = \frac{6.11}{3} = \frac{611}{300}$$

*Be careful to scroll away from the first denominator, otherwise*

*Use parentheses to define the numerator.*

$$\frac{7}{12 \div \frac{2}{3}} = \frac{7}{18}$$

[Using FRACTIONS video](#)



## Square Root

Find the square root of a value or a calculation.



**Example:** Find (a)  $\sqrt{5.6}$  (b)  $\sqrt{12^2 + 7^2}$

(a)  $\sqrt{\square} 5.6 \text{ EXE}$

(b)  $\sqrt{\square} 12 \square^2 + 7 \square^2 \text{ EXE}$

$\sqrt{5.6}$   
 $2\sqrt{35}$   
5

$\sqrt{12^2 + 7^2}$   
 $\sqrt{193}$

*Only the positive root is given.*

*Notice the surd answers, use  $\approx$  or  $\text{FORMAT}$  for decimal values.*

### Nth Root



Find the nth root of a value or a calculation.



**Example:**

Find  $\sqrt[3]{\frac{29}{113}}$

  3  29  113 

 3   $\frac{29}{113}$   
0.6354867767

*Notice that  $n$  can also be negative.*



## Index

Enter an exponent for an expression or value.



**Example:** Find (a)  $1.75^5$  (b)  $(1.6 \times 4.3)^{-3}$

(a)  $1.75 \text{ [x] } ^{\square} 5 \text{ [EXE]}$

(b)  $\text{[x]} (1.6 \times 4.3) \text{ [)] } ^{\square} 3 \text{ [EXE]}$

$1.75^5$   
16.41308594

$(1.6 \times 4.3)^{-3}$   
0.00307068088

*Use this key either before or after entering the base value.  
Useful for entering fractional and negative exponentials.*

*Why not call it timber?*

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(ln)

## Natural logarithm

Evaluate a logarithm with base **e** (Euler's constant).



**Example:**

Find  $\ln 3.4$

$\uparrow$  (log<sub>e</sub>) 3.4) (EXE)

$\ln(3.4)$   
1.223775432

*It's good practice to close the parentheses, but not necessary.*

## Why so irrational?

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( $\pi$ ) Irrational constants

( $e$ ) evaluate a logarithm with base  $e$  (Euler's constant).



**Example:** Find (a)  $4+\pi$  (b)  $e^2$

(a)  $4+ \uparrow 7 \text{ EXE}$

(b)  $\uparrow 8 \square^2 \text{ EXE}$

$4+\pi$   
7.141592654

$e^2$   
7.389056099

*Although irrational, both of these values are used in calculations to 22 d.p accuracy.*



## Hours:Minutes:Seconds

Enter decimal time and angles and convert to sexagesimal.



**Example:**

Express (a) 2.4 hrs as H:M:S

(b) 3hrs 54 mins 36 secs as a decimal

(a) 2.4  $\uparrow$   $+$   $\text{EXE}$

(b) 3  $(\circ, \prime, \prime\prime)$  54  $(\circ, \prime, \prime\prime)$  36  $(\circ, \prime, \prime\prime)$   $\uparrow$   $\text{EXE}$

2.4  $\square$   
2° 24' 0"

3° 54' 36"  
3.91

*Always enter a value for H:M even if it is zero.*



*Are you missing a side?*

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sin

cos

tan

## Trigonometric ratios

Evaluate ratios for given angles.



**Example:** Find (a)  $\sin 75$  (b)  $3\cos 45$

(a)  $\sin 75$   $\text{EXE}$

(b)  $3 \cos 45$   $\text{EXE}$

$$\sin(75)$$
$$\frac{\sqrt{6} + \sqrt{2}}{4}$$

$$3\cos(45)$$
$$\frac{3\sqrt{2}}{2}$$

*It's good practice to close the parentheses, but not necessary.*

*For multiple calculations, it may be more useful to have decimal values, so change  $\text{MODE}$  to MathI/DecimalO.*



## Parentheses (brackets)

Essential to ensure correct BIDMAS operation order.



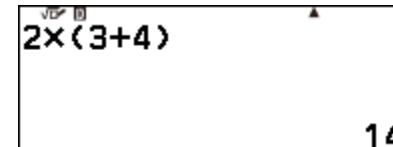
**Example:**

Find (a)  $2 \times (3 + 4)$

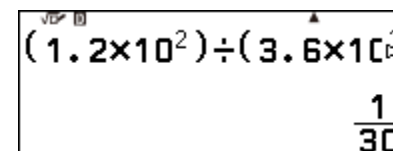
(b)  $1.2 \times 10^2 \div 3.6 \times 10^3$

(a)  $2 \times (3 + 4)$   $\text{EXE}$

(b)  $(1.2 \times 10^2) \div (3.6 \times 10^3)$   $\text{EXE}$



2x(3+4)  
14



$(1.2 \times 10^2) \div (3.6 \times 10^3)$   
 $\frac{1}{30}$

*The calculator follows BIDMAS strictly, so inserting parentheses is key for correct calculations.  
Make sure to scroll after entering the exponent.*

## ABCDEF Stored Variables A-F, $x$ , $y$ and $z$

(x) (y) (z) Store calculations and values for later recall and manipulation.



**Example:** (a) Evaluate  $\tan 35$  and store as B (b) Evaluate  $5.2 \times \tan 35$

(a)  $\tan(35)$  EXE  $\rightarrow$  B OK twice

(b)  $5.2 \times$  B EXE

$\tan(35)$   
0.7002075382

$5.2 \times B$   
3.641079199

Manipulate stored variables using normal rules of arithmetic.  
Press  $\rightarrow$  to see the values of all stored variables.

*Pause a second*

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## Comma

Use to separate entries.




**Example:** Find LCM of 27 and 15

      27   15  

LCM(27, 15)  
135

*Can also be used when generating random numbers, GCD etc.*

 **Mixed number template**  
Use to enter a mixed number.



**Example:** Enter  $3\frac{1}{6}$

3   1  6 

$3\frac{1}{6}$   $\frac{19}{6}$

Use  to change the appearance of the final value.



## Exponent

Use when entering standard form.



**Example:**

Find (a)  $3.65 \times 10^4$

(b)  $1.2 \times 10^3 \div 2.7 \times 10^{-2} + 4$

(a) 3.65  $\times 10^{\square}$  4  $\text{EXE}$

(b)  $\frac{\square}{\square}$  1.2  $\times 10^{\square}$  3  $\div$  2.7  $\times 10^{\square}$   $\uparrow$  - 2  $\div$   $\div$  + 4

3.65 $\times 10^4$   
36 500

$\frac{1.2 \times 10^3}{2.7 \times 10^{-2}} + 4$   
400 036  
9

*The fraction template avoids the need to use parentheses.*

[Using STANDARD FORM video](#)

What was the answer?

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## (Ans) Answer memory

Recall and manipulate the previously calculated value.



**Example:** (a) multiply  $\sin 60 + 4$  by 3.2 (b) find  $x_4$  for the iteration  $x_{n+1} = 1 + \frac{1}{x_n}$ ,  $x_1 = 2$

(a)  $\sin 60 + 4 \times 3.2$

(b)  $2 + \frac{1}{2 + \frac{1}{2 + \frac{1}{2 + \frac{1}{2}}}}$

Ans x 3.2  
 $\frac{64 + 8\sqrt{3}}{5}$

$1 + \text{Ans}^{-1}$   
 $\frac{8}{5}$

Notice that (Ans) doesn't actually need pressing in the first example.  
A very useful method for approximating solutions to equations.



## HOME

Displays the app screen, where applications can be selected.

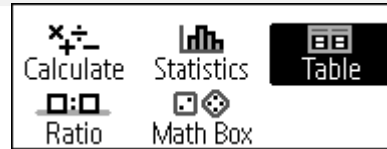


Normal calculation e.g. addition, multiplication, square roots etc.

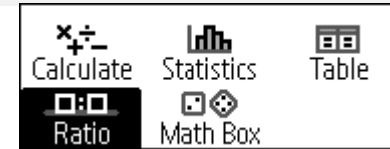
*You will use this the most.*



Calculate using data and frequency tables. Find the mean, standard deviations, quartiles etc. Perform regression analysis to find the equation of regression lines (lines of best fit).



Create a table of values for one or two functions. Specify your own range and step interval.



Find a missing variable value from 2 equivalent ratios e.g.  $\frac{A}{B} = \frac{x}{D}$



Simulate dice rolls and coin tosses. Investigate up to three number lines. Examine angles and corresponding trigonometric values.

*These 4 apps should be familiar, but Math Box is brand new. Why not have a play?*





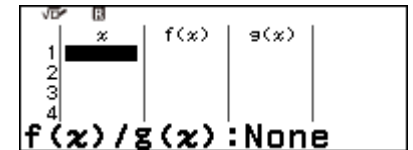
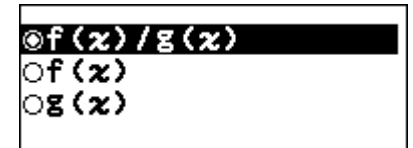
## BACK

Move back or return up a menu level.



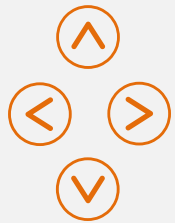
**Example:** Return from setting the Table Type in Table.

 twice



*Also useful for returning the cursor to the end of the input line after a calculation to edit or replay.*

See  for how to set the Table Type.



## Scroll

Navigate through menus, check calculation history and move the cursor.



**Example:**

(a) change  $2 \times 13$  to  $21 \times 3$

(b) navigate to LCM in Calculate

(a)  $2 \times 13$  1

(b)

21×3

LCM<

Press after a calculation to move the cursor to the end of the input line, to edit or replay.

Press to scroll through the calculation history on screen.

*Are you sure?*

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**OK**

Confirm data entry, a menu choice or perform a calculation.



**Example:**

Find 5!

5

5!  
120

and are interchangeable.



## Page Scroll

Use when a scroll bar appears, to scroll a page at a time.



**Example:** Scroll through  to find Degrees.



*If there are too many menu options to fit on the screen, a scroll bar appears to the right.*



## SHIFT

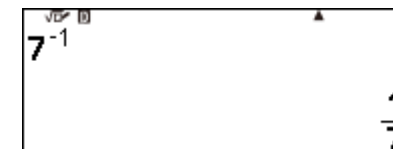
Use to access the modifying key labels.



**Example:** (a) Enter the reciprocal  $\frac{1}{7}$  (b) Turn the calculator off

(a)   7 

(b)  



Notice the  indicator at the top of the screen, before pressing the modified key.

*If it's not constant, it's variable.*

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## Variable

Access and edit stored variables.



**Example:**

(a) Store  $3.5^3$  as **A**

(b) Change the value of **A** to 43

(a)  $\boxed{\rightarrow\leftarrow}\boxed{x}\boxed{OK}\boxed{\vee}\boxed{OK}3.5\boxed{\square}\boxed{3}\boxed{OK}$

(b) 43  $\boxed{EXE}\boxed{\rightarrow\leftarrow}\boxed{OK}$  twice

A=42.875	B=0
C=0	D=0
E=0	F=0
x=0	y=0
z=0	

43	43
----	----

See [Stored Variables](#).

The values are shown in Norm1 format.

[Using MEMORY video](#)



## Square

Easily square expressions and values.



**Example:** Find (a)  $2.675^2$  (b)  $(3.27 + 1.49)^2$

(a)  $2.675 \square^2 \text{EXE}$

(b)  $(3.27+1.49) \square^2 \text{EXE}$

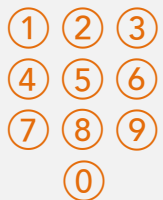
$2.675^2$   
7.155625

$(3.27+1.49)^2$   
23.44

See  to enter other exponentials including negatives and fractions.

*Think of a number*

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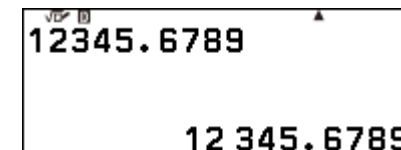
## Number digits

Enter numbers, obviously.



**Example:** Enter 12345.6789

12345.6789 



*Notice the digit separation, change  to turn off.*



*Oh no, I've made a mistake*

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## Backspace

Delete entries.



**Example:** Enter 513 and then edit it to 523

512  twice 23 



Compare with  for undoing the last key press.



## All Clear

Close a selected menu or clear the screen.



**Example:**

(a) Clear the Calculate screen



(b) Close      menus

(a)



(b)



Calculation history is still available by pressing . Closing a menu, returns to the previously displayed screen.  
Alternatively press  repeatedly to return back through the menus.  
Also used to turn the calculator OFF.

## The usual suspects

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⊗ ⊘ **Addition, multiplication, subtraction and division.**

⊕ ⊖ Add, multiply, subtract and divide, obviously.



**Example:** Find  $1 + 2 \times 3 - 4 \div 5$

$1+2\times 3-4\div 5$  **EXE**

$1+2\times 3-4\div 5$   
 $\frac{31}{5}$

*Notice the order of operations is not left to right and follows BIDMAS.*



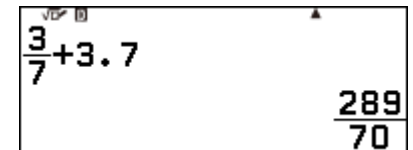
## Decimal point.

For when you absolutely must utilise all of the decimal number system.



**Example:** Find  $\frac{3}{7} + 3.7$

3  7  + 3.7 



$\frac{3}{7} + 3.7$   
 $\frac{289}{70}$

Change  for a comma decimal mark.

*If you want something done ...*

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## Execute

Perform calculations or confirm data entry.



**Example:** Find (a)  $\sqrt[3]{27 \times 10^3}$  (b)  $\log 512$

(a)  $\uparrow \sqrt[3]{\square} 3 > 27 \times 10^3 \text{ EXE}$

(b)  $\square \text{ OK } \vee \text{ OK } 512) \text{ EXE}$

$\sqrt[3]{27 \times 10^3}$   
30

$\log(512)$   
2.709269961

See  $\text{OK}$  as they are interchangeable with each other.

See also  $\approx$ .

## QR Quick Read

Create a QR code from a calculation or Table.



**Example:** (a) Create a QR code from  $\sqrt{25.9}$  (b) Create a QR code from a Table of  $f(x) = x^2$   $1 \leq x \leq 5$

(a)  $\sqrt{\square}$  25.9  $\text{EXE}$   $\uparrow$   $\mathcal{X}$

(b)  $\circ\circ\circ$   $\vee$   $\text{OK}$  twice  $\mathcal{X}$   $\square^2$   $\text{OK}$   $\circ\circ\circ$   $\text{OK}$   $\vee$  three times  $\text{OK}$   $\uparrow$   $\mathcal{X}$



Scan the QR code on the calculator screen with a smart device. This can then take you to [ClassPad.net](https://www.classpad.net).  
Click the QR codes above to simulate scanning.



## Recurring decimal

Enter recurring decimals of various formats.



**Example:** Enter (a)  $0.\dot{3}$  (b)  $0.\dot{4}1\dot{6}$

(a)  $0.$   $\uparrow$   $\square^2$   $3$   $\text{EXE}$

(b)  $0.$   $\uparrow$   $\square^2$   $416$   $\text{EXE}$

$0.\dot{3}$   
 $\frac{1}{3}$

$0.\dot{4}1\dot{6}$   
 $\frac{416}{999}$

Compare using  $\text{FORMAT}$  to convert between fractions and decimals.

[Using Recurring Decimals video](#)

## What's the inverse?

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( $\sin^{-1}$ ) **Inverse trigonometric function**

( $\cos^{-1}$ ) Find an angle from a value.

( $\tan^{-1}$ )



**Example:**

Find (a)  $\sin^{-1} 0.75$

(b)  $\tan^{-1} -35$

(a)  $\uparrow$  (sin) 0.75) (EXE

(b)  $\uparrow$  (tan)  $\uparrow$  (-) 35) (EXE

$\sin^{-1}(0.75)$   
48.59037789

$\tan^{-1}(-35)$   
-88.36342296

Notice that only a single value is given, in the range  $-90^\circ \leq x \leq 90^\circ$ .



## INS Insert

Edit calculations using existing arguments.



**Example:** Edit  $1 + \frac{1}{9}$  to  $1 + \sqrt{\frac{1}{9}}$

1+1 9 < twice

$1 + \sqrt{\frac{1}{9}}$   $\frac{4}{3}$

Notice the INS cursor changes to ►.  
This saves deleting and re-entering parts of the calculation.

*This is the end*

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**OFF** Off  
When you have had enough ...



**Example:** Turn the calculator off



*That's all folks ...*



## Function

Define and evaluate 2 functions and use in calculations.



**Example:** (a) Define  $f(x) = x^2 - 2x - 3$  and  $g(x) = f(2x) + 4$  (b) Evaluate  $4g(2)$

(a)  $f(x)$   $\nabla$  twice  $\text{OK}$   $x$   $\square^2$   $-2$   $x$   $-3$   $\text{OK}$

$f(x)$   $\nabla$  three times  $\text{OK}$   $f(x)$   $\text{OK}$   $2$   $x$   $) + 4$   $\text{OK}$

(b)  $4$   $f(x)$   $\nabla$   $\text{OK}$   $2$   $)$   $\text{EXE}$

$g(x) = f(2x) + 4$

$4g(2)$

36

Compare to using  $\text{ooo}$  for defining functions in Table.

[Using FUNCTION video](#)

# What's the best look?

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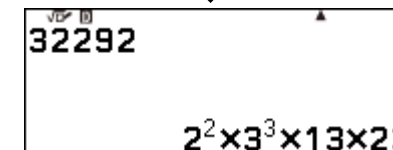
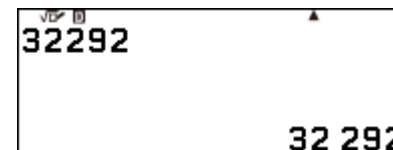
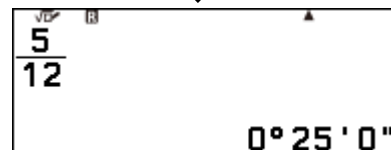
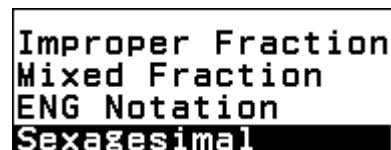
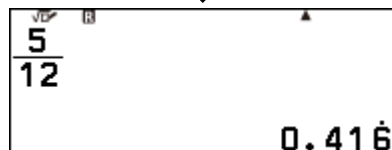
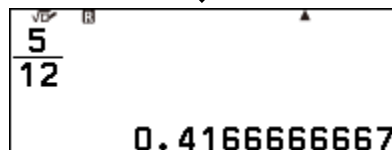


## Format

Display the most appropriate value format.



**Example:** Enter (a)  $\frac{5}{12}$  (b) 32292 then press  and choose a format.



Use  to swap between different representations of the same value, the default is Standard.

Notice how the menu changes depending on the input.

Useful for individual calculations, change  to always get decimals or mixed fractions. [Using FORMAT video](#)

Want to make it yours?

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## SETTINGS

Change the calculator settings or RESET.



Calc Settings ▶  
System Settings ▶  
Reset ▶  
Get Started ▶

Input/Output ▶  
Angle Unit ▶  
Number Format ▶  
Fraction Result ▶

◉MathI/MathO  
○MathI/DecimalO  
○LineI/LineO  
○LineI/DecimalO

*Change to always decimal output*

Input/Output ▶  
Angle Unit ▶  
Number Format ▶  
Fraction Result ▶

◉Degree  
○Radian  
○Gradian

*Change angle measure*

Input/Output ▶  
Angle Unit ▶  
Number Format ▶  
Fraction Result ▶

○Fix ▶  
○Sci ▶  
◉Norm :2 ▶

*Change output decimal places, sig figs etc.*

Input/Output ▶  
Angle Unit ▶  
Number Format ▶  
Fraction Result ▶

◉Mixed Fraction  
◉Improp Fraction

*Change fraction output format*

Calc Settings ▶  
System Settings ▶  
Reset ▶  
Get Started ▶

Contrast ▶  
Auto Power Off ▶  
MultiLine Font ▶  
QR Code ▶

*Change screen contrast, power-off timer, font size etc.*

Calc Settings ▶  
System Settings ▶  
Reset ▶  
Get Started ▶

Settings & Data ▶  
Variable Memory ▶  
Initialize All ▶

*Reset data. Variable memory or everything.*

Note the default [settings](#) may not display decimals, see [FORMAT](#) or [\(≈\)](#).

Want to find something?

CASIO®



## CATALOG

Find duplicate and further functionality.



Func Analysis ▶  
Probability ▶  
Numeric Calc ▶  
Angle/Coord/Sexa ▶

→ Logarithm(logab)  
Logarithm(log)  
Natural Logarithm

Select different  
logarithms.

Numeric Calc ▶  
Angle/Coord/Sexa ▶  
Hyperbolic/Trig ▶  
Other ▶

→ sinh  
cosh  
tanh  
sinh<sup>-1</sup>

Hyperbolic functions  
and their inverses.

Func Analysis ▶  
Probability ▶  
Numeric Calc ▶  
Angle/Coord/Sexa ▶

→ %  
Factorial(!)  
Permutation(P)  
Combination(C)

%, factorials, nPr,  
nCr and random  
numbers.

Numeric Calc ▶  
Angle/Coord/Sexa ▶  
Hyperbolic/Trig ▶  
Other ▶

→ Ans    π  
e    √(  
x√(  
2    ^(  
-1

Duplicate functionality.

Func Analysis ▶  
Probability ▶  
Numeric Calc ▶  
Angle/Coord/Sexa ▶

→ GCD  
LCM  
Absolute Value  
Recurring Decimal

HCF, LCM, modulus  
and recurring  
decimal input.

Statistics ▶  
Func Analysis ▶  
Probability ▶  
Numeric Calc ▶



→ Summation  
Mean/Var/Dev...  
Min/Max/Quartile  
Norm Dist

Adapted menu with  
additional functionality.

Func Analysis ▶  
Probability ▶  
Numeric Calc ▶  
Angle/Coord/Sexa ▶

→ Degrees  
Radians  
Gradians  
Rect to Polar

Use correct angle  
format without  
changing settings.

Note that duplicate functionality opens the same templates as the direct key press e.g. .  
The  menu changes for different apps. e.g. Statistics, with additional functionality listed first.

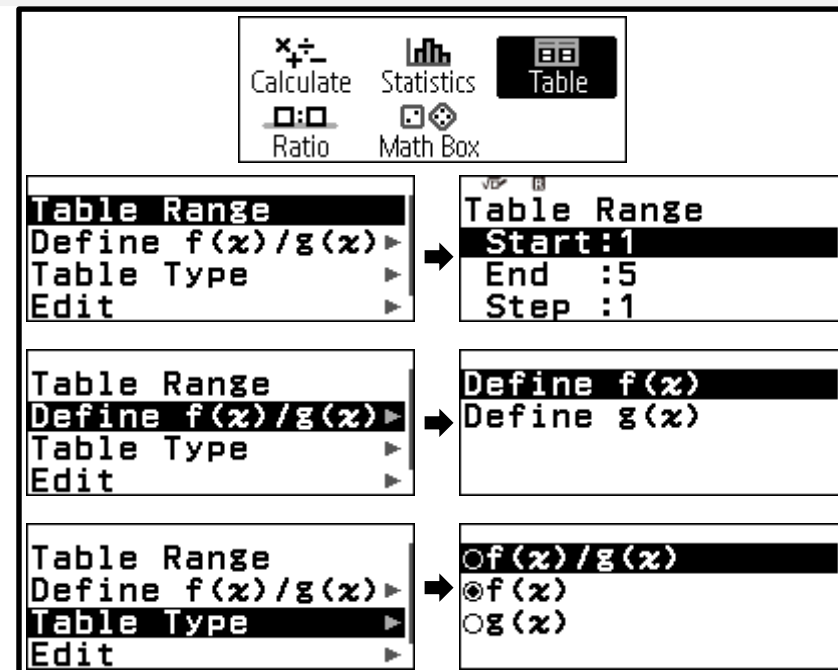
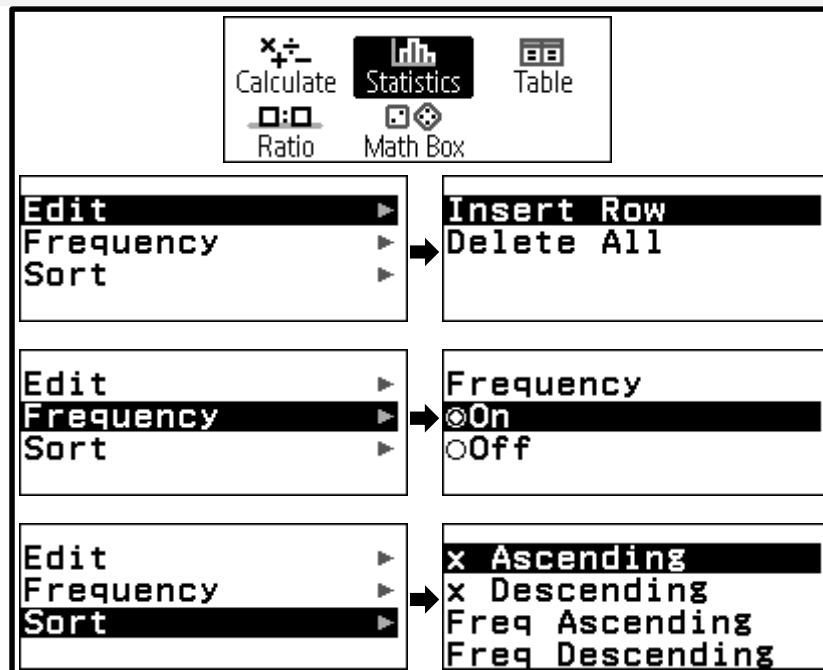
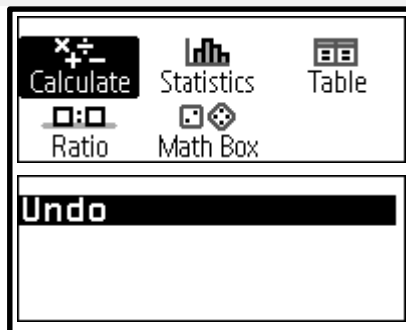
Want something useful?


CASIO®



## TOOLS

Additional tools for different apps or UNDO.



 responds according to the different apps, allowing additional settings to be changed.