USER GUIDE · HUBZILLACALC

A CALCULATOR APP BUILT FOR TEACHERS

How to drive it, what lives above the keys, and the handful of things it does that a real calculator can't.

HubzillaCalc is an on-screen scientific calculator that behaves like the one your students already have on their desks: the same keys in the same places, the same natural display, the same answers. It is two calculators in one. **Classic** has square keys and a MODE menu; **Modern** is the newer round-key design with a HOME screen. Pick the one your class uses. If you can use that, you can use this, and this guide is only here for the parts that are new.

GETTING STARTED

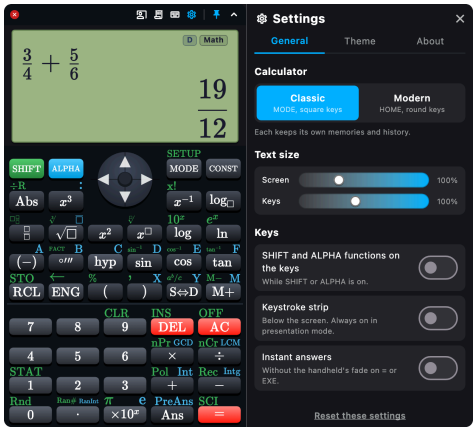
1 Install it and open it

It runs on **macOS**, **Windows**, **iPhone** and **iPad**. Every version is free, with every feature unlocked. There is no account to create, nothing to sign in to and no setup screen: it opens straight to the keypad, and it works entirely offline.

Your settings, your theme and your stored memories survive quitting the app, in the same way a real calculator keeps them when you switch it off.

2 Choose your calculator

The gear in the title bar opens **Settings**. Under **General**, choose **Classic** or **Modern**. A new install starts on Classic.



The two are kept apart like two calculators in a drawer: each has its own memories, history and setup, so switching back finds the other just as you left it.

The rest of this part of the guide uses Classic's keys. Modern has its own chapter, The Modern calculator.

3 Type it the way you would write it

The display is a **natural** one, so a fraction is stacked, a power sits up in the corner and a root has a proper roof over it. Press □/□ for a fraction or √□ for a root, and the cursor drops into the empty box waiting to be filled. The arrow keys move between the boxes, so you can climb into a numerator and back out again.

DEL	Deletes the character before the cursor.
AC	Clears the whole entry. It does not touch your stored memories.
◀ ▶	After an answer, either arrow brings the calculation back for editing rather than making you retype it. It is the fastest way to change one number and press = again.
▲ ▼	Step back and forward through the calculations you have already done.

4 Exact answers, and how to get a decimal

Answers come back in exact form wherever there is one: fractions stay fractions, roots stay roots, and multiples of π stay multiples of π. Press S⇔D to flip between the exact form and the decimal, and press it again to flip back.

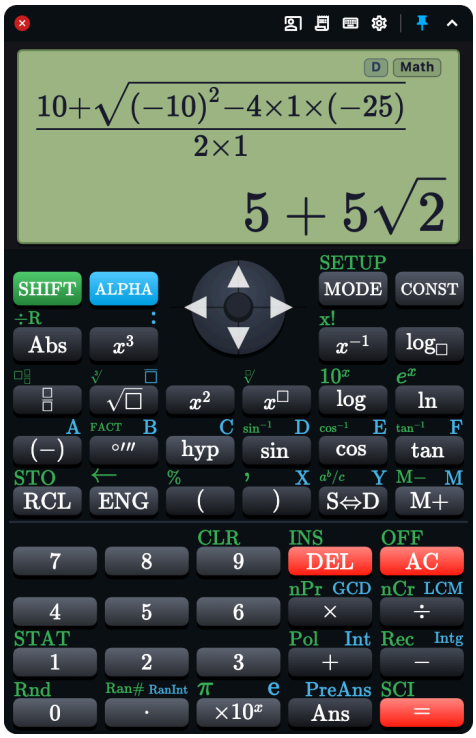
When you press =, the screen fades out and the answer fades in, as the handheld's does while it works the answer out. To have answers straight away, switch on **Instant answers** in Settings, under **General**.



√50 gives 5√2, not 7.071067812. **D** and **Math** in the corner are the current angle unit and display mode.

> **WORTH KNOWING AT THE BOARD**
> Because the exact form is the default, the calculator will not quietly turn a surd into a decimal behind you. If a class is working in exact form, so is the screen.

AROUND THE WINDOW



The display	Your entry on top, the answer below it, and indicators in the corner: `D` or `R` for the angle unit, `Math` for the natural display, `M` when independent memory holds something. **Click the `D` to switch straight to radians**, and click it again to come back, without going near the SETUP menu.
`SHIFT` `ALPHA`	Each reaches the function printed above a key in its own colour. ALPHA is also how you type the variables A–F, X, Y and M.
`MODE`	Switches between COMP, STAT and TABLE. `SHIFT` + `MODE` opens SETUP.
`CONST`	The library of scientific constants. Nothing like it on a real one.
The title bar	Presentation mode, History, the Keys panel and Settings, then pin-on-top and roll-up, which are the window's own. History is Classic's only.

BUILT FOR THE FRONT OF THE ROOM

Pinning, rolling up and resizing are for a computer at the front of the room. Presentation mode, the keys' SHIFT faces, history and themes work everywhere. Everything in this section works on both calculators, apart from history, which is Classic's.

1. **Pin it above everything else**

   The pin in the title bar, or `⌘T` on a Mac and `Ctrl` + `T` on Windows, keeps the calculator floating above your whiteboard software, your slides and your browser. Click back into the lesson and it is still there. The pin turns your theme's accent colour while it is on.

2 Roll it up when you want the board back

The chevron at the right-hand end of the title bar, or just pressing `R`, collapses the whole calculator into a slim bar. Your working is not cleared: roll it back down and the entry, the answer and the cursor are exactly where you left them.



Rolled up. Drag it into a corner and roll it down when the next calculation comes.

3 Make it the size the room needs

Drag any edge or corner. Everything scales together, including the display, the key labels and the small print above the keys, so it reads from the back row when it is big and still works tucked in a corner when it is small.

The text can grow on its own, too. **Settings**, under **General**, has one slider for the screen and one for the keys, and `⌘+` and `⌘−` (`Ctrl` on Windows) move both together. `⌘0` puts them back.

4 Presentation mode

The first button in the title bar, or `⌘⇧P` (`Ctrl` + `Shift` + `P` on Windows). The calculator pins itself on top, and every key you press lights up bigger and for longer, so it can be caught from the back of the room.

A strip below the screen shows the keys you have just pressed. A shifted press shows both halves and what they did, **SHIFT 1 → STAT**, so a student who looked up late can still copy the sequence. `AC` starts the strip afresh.

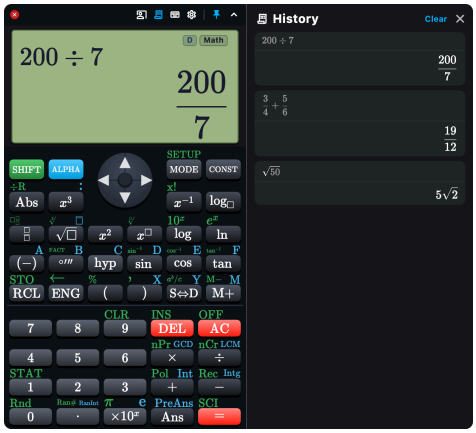
Press the button again to stop. The pin goes back to how it was. To keep the strip without the rest, switch on **Keystroke strip** in Settings, under **General**.



5 Show what SHIFT does on the keys

Switch on **SHIFT and ALPHA functions on the keys** in Settings, under **General**. Then, while SHIFT or ALPHA is waiting, each key's face shows what it will do next, so **sin** turns into **sin⁻¹** where the room can see it, and keys with nothing on that layer dim. It is off to start with, because the real calculator's keys never change.

6 Go back to an earlier calculation



On Classic, the History button, or H, opens everything you have worked out in a panel down the side, newest first. It is kept when you quit.

Tap a calculation to load it back for editing. Tap its answer to drop that number into whatever you are typing now. **Clear** empties it.

Modern has no History button. Like the handheld, it keeps its history on the calculator: ▲ on a result steps back through it.

7 Pick a look, or build your own

Settings, under **Theme**, has **sixteen presets**, light and dark. **Projector** is black keys on white, for projectors and whiteboards that wash colours out. Switch on **Follow light and dark mode** and you choose one theme for each, and the calculator changes when your computer does.

Customise colours opens a live editor where every colour on the calculator is a separate control, from the LCD panel and the LCD text to each of the key families and the SHIFT and ALPHA labels. The calculator re-skins as you drag, so you can match a school colour. **Save as...** keeps it beside the presets under a name of your own.



Default | Tokyo Night | Heisei | Bubblegum | Mint

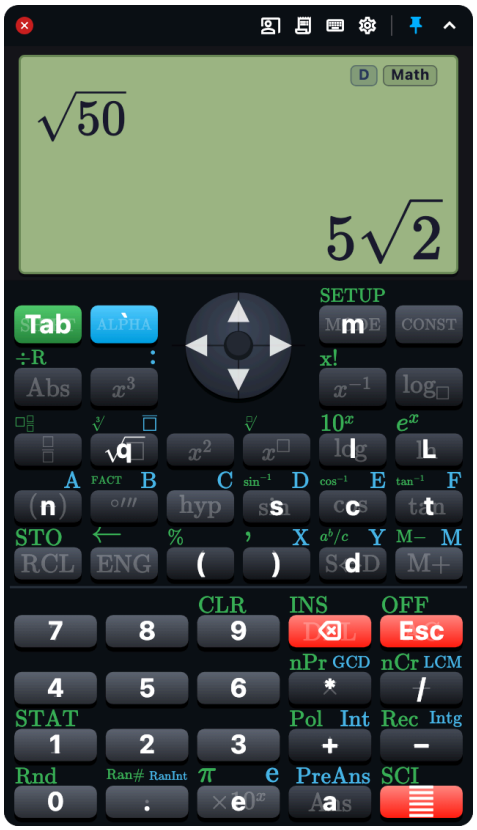
Five of the sixteen. The preset called **Classic** is the familiar green-LCD look if you would rather the screen matched the desks exactly. Every theme works on both calculators.

DRIVING IT FROM THE KEYBOARD

Hunting for keys with a mouse while thirty people watch is the worst part of demonstrating a calculator, so the whole thing can be touch-typed. Every shortcut also lights up its key on screen as

you press it, which means the class sees the keypress even though you never touched the keypad.

Two things make it learnable. On Classic, press `?` and the shortcut letters appear *on* the keys themselves, so you can find one without looking anything up. Press `K` and the full reference slides out beside the calculator, themed to match, with the keys for whichever calculator is showing.



Press **?** and the shortcuts land on the keys.

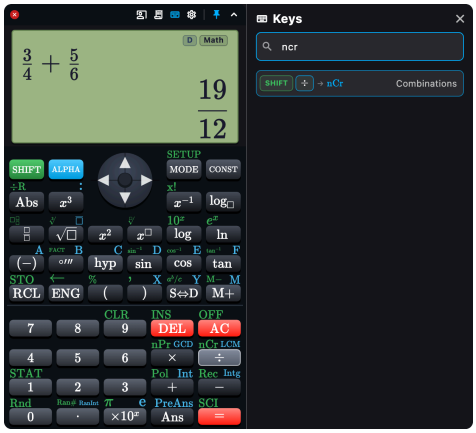
Editing	`Enter` evaluates · `Backspace` deletes · `Esc` is AC · arrow keys move the cursor
Numbers	`0` – `9`, `.`, `+`, `-`, `*`, `/`, `(`, `)`, and `^` for a power
Functions	`s` `c` `t` for sin, cos, tan, with capitals for the inverses · `l` log, `L` ln · `f` fraction · `q` root · `p` π · `e` ×10^x · `n` the negative sign · `a` Ans · `d` S⇔D
Modifiers	`Tab` is SHIFT · `` ` `` is ALPHA · `m` is MODE
The window	`⌘T` / `Ctrl`+`T` pin · `R` roll up · `K` this reference · `?` the on-key hints · `H` history · `⌘F` find a function · `⌘⇧P` presentation mode
Copy and paste	`⌘C` copies the answer · `⌘⇧C` the whole line · `⌘V` reads an expression back in. On Windows, Ctrl for ⌘.



Press **K** for the full reference. It docks beside the calculator on a desktop and takes the whole window on a phone.

Find a function

⌘F (Ctrl + F on Windows) opens the same panel with the cursor in its search box. Type what you are after, such as **nCr**, **round** or **factorial**. It knows the classroom names as well, so **hcf** finds GCD.



Choose one and the calculator lights up SHIFT, then the key, in the order they are pressed, so the class sees where it lives. Nothing is typed into your calculation. On Modern, a function that lives in CATALOG shows where, such as Probability › Combination(C), and CATALOG lights up.

CLASSIC: MEMORY, AND WHAT IS HIDING ABOVE THE KEYS

The next five sections are Classic's. Modern's keys and menus are in their own chapter.

Everything printed above a key in the SHIFT colour is reached with SHIFT first; everything in the ALPHA colour with ALPHA first. The ones worth knowing:

Store and recall	SHIFT + RCL then a variable key stores the answer in **A–F**, **X**, **Y** or **M**; RCL then the same key brings it back. Type a variable into a calculation with ALPHA and its key.
Running total	M+ adds the answer to independent memory and SHIFT + M+ subtracts it. The M indicator shows while it holds anything.
The last two answers	Ans is the previous answer and ALPHA + Ans is the one before that, which is enough to run a recurrence by pressing = over and over.
Prime factorisation	Get a whole number on screen, then SHIFT + °′″ (FACT) splits it into primes.
Whole-number tools	ALPHA + × GCD · ALPHA + ÷ LCM · SHIFT + × nPr · SHIFT + ÷ nCr · SHIFT + x^{-1} factorial · SHIFT + Abs division with a remainder
Degrees and minutes	°′″ types a sexagesimal value, cycling ° → ′ → ″ as you press it. With an answer on screen it converts between the decimal and the degrees-minutes-seconds form.
Engineering notation	ENG shifts the answer to the next power of a thousand, and SHIFT + ENG shifts it back.
Coordinates and randoms	SHIFT + + Pol and SHIFT + − Rec convert between polar and rectangular; SHIFT + · is a random decimal and ALPHA + · a random integer over a range you give it.

CLASSIC: CONSTANTS

The CONST key is the one thing here with no counterpart on a real classroom calculator, and Classic is the only one of the two with it. It opens a short list of categories, covering physics, chemistry, astronomy and a small maths pack, and picking a constant drops its value into your calculation, so g and N_A stop being things you have to remember or look up mid-question.

IT IS YOURS TO EDIT

SHIFT + MODE then 5 opens the constants editor. Switch whole packs on and off, hide the constants you never use, reorder the ones you do, and override a value. That last one is useful when a syllabus rounds differently from the textbook and you want the screen to agree with the data booklet in front of the class.

CLASSIC: STATISTICS MODE

MODE 2 asks which sort of calculation you want. **1-VAR** is one-variable statistics; the other seven are regression models: linear, quadratic, logarithmic, two exponentials, power and inverse.

1. **Type the data in**

   You land in the editor with a column for *x*, and one for *y* if the model needs it. = moves down the column, the arrows move anywhere, and DEL removes a value or, on an empty cell, the whole row. If you want a **FREQ** column for repeated values, turn it on in SETUP first.

2. **Ask it for a result**

   Press AC to leave the editor, then SHIFT + 1 for the statistics menu:

1 : Type	Change the model without losing the data.
2 : Data	Back to the editor.
3 : Sum	Σx, Σx^2, and for paired data Σy, Σy^2, Σxy, Σx^3, Σx^2y, Σx^4.
4 : Var	n, $\bar{x}$, σx, sx, plus $\bar{y}$, σy, sy when there is a y column.
5 : Reg	The coefficients A, B (and C), r, and the estimates $\hat{x}$ and $\hat{y}$. Paired data only.
MinMax	minX, maxX and, for one-variable data, the quartiles and the median.

   Picking one puts it on screen as part of a calculation, so you can carry straight on: $\bar{x}$ + 2 × σx works exactly as you would hope.

CLASSIC: TABLE MODE

MODE 3 generates a table of values. It asks for the function, then the range, one prompt at a time, and = moves to the next:

f(X) =	Your function. Type the X with ALPHA +).

g(X) =	A second function, tabulated alongside the first. Turn this column off in SETUP if you only want one.
Start? End? Step?	The range and the interval between rows.

The table appears with the arrow keys scrolling it, and AC takes you back to the function to change it. Two functions side by side is the quick way to show a class where two graphs meet, or what a transformation actually did to the numbers.

CLASSIC: SETUP, AND STARTING AGAIN

SHIFT + MODE opens SETUP, which is two screens; ▼ and ▲ move between them. Pick an option by its number.

Screen 1	**MthIO** and **LineIO** switch between the natural display and the old-fashioned linear one · **Deg** and **Rad** set the angle unit · **Const** opens the constants editor · **Fix**, **Sci** and **Norm** set how an answer is rounded and shown.
Screen 2	**ab/c** or **d/c** chooses mixed numbers or improper fractions · **STAT** turns the FREQ column on and off · **TABLE** chooses f(x) alone or f(x) and g(x) · **Rdec** controls recurring decimals · **Disp** switches the decimal point between a dot and a comma.

Fix, Sci and Norm in detail

These three are the ones worth understanding properly, because they are the usual reason an answer looks wrong. They control how many figures you get, and whether the calculator is allowed to fall back on scientific notation.

Fix 0 to 9	A **fixed number of decimal places**, however big or small the number is. In Fix 2, 200 ÷ 7 shows as `28.57` and 0.004 shows as `0.00`. Money and measurements are the obvious use, and rounding a whole class to the same number of decimals settles a lot of arguments.
Sci 1 to 9	**Scientific notation with that many significant figures**, always, even for a number that would fit comfortably as a decimal. In Sci 3, 200 ÷ 7 shows as `2.86×10¹`. This is the setting to reach for when a science class needs everything to three significant figures. Choosing 0 gives ten.
Norm 1	**Automatic, and quick to give up on decimals.** Anything below 0.01 is shown in scientific notation, so 1 ÷ 1000 comes out as `1×10⁻³` rather than 0.001. This is the factory setting.

Norm 2	**Automatic, and much more patient.** It stays with ordinary decimals down to 0.000000001, so the same 1 ÷ 1000 shows as `0.001`. If a class keeps meeting powers of ten they have not been taught yet, this is the one to switch to. Both Norms show up to ten significant figures, and both give up and go scientific at 10^{10} and above.

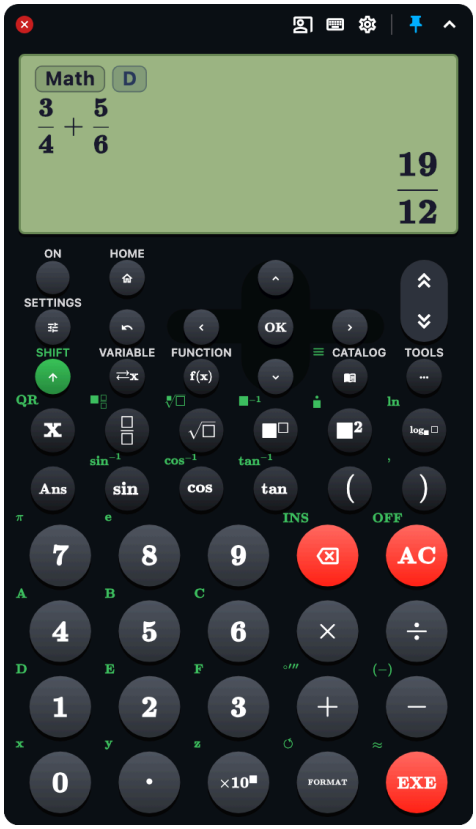
FIX AND SCI OVERRIDE EXACT ANSWERS

Setting either one forces every result to a decimal, so $\sqrt{50}$ stops showing as $5\sqrt{2}$ and starts showing as 7.07. That is the real calculator's behaviour too, and it catches people out: if exact forms have stopped appearing, Fix or Sci is almost always why. The `FIX` or `SCI` indicator in the corner of the display is the tell. Set Norm 1 or Norm 2 to get exact answers back.

`SHIFT` + `9` is the CLR menu: **1 Setup** resets everything on both SETUP screens, **2 Memory** empties the variables, and **3 All** does both. Each one asks first, with `=` to confirm and `AC` to back out. Worth knowing before a lesson, in case the last thing you did left it in radians.

THE MODERN CALCULATOR

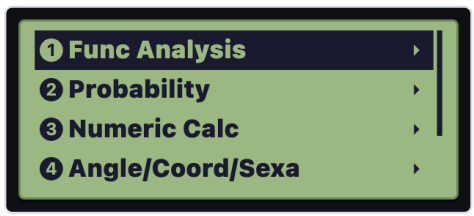
Modern copies the newer round-key design that many students now buy. It works as the handheld does, key for key, with a HOME screen, menus you move round with the arrow pad and OK, and three apps: **Calculate**, **Statistics** and **Table**. Choose it in Settings, under **General**. Presentation mode, Find a function, the keys' SHIFT faces and every theme work on it just as they do on Classic.



SHIFT	Reaches everything printed above a key. There is no ALPHA: the variables A–F (SHIFT + 4 is A), x, y and z, π (SHIFT + 7) and e (SHIFT + 8) are all on SHIFT.
HOME	The three apps. Move to one and press OK, or press its number.
OK BACK	OK opens or chooses, and BACK goes back a step. The arrows move round menus, the page keys a screen at a time.
EXE	Works it out, like = on Classic. SHIFT + EXE gives the answer as a decimal (≈).
FORMAT	Flips an answer between its exact form and a decimal, like S⇔D.
CATALOG TOOLS	Every function by category, and the tools for the screen you are on.
VARIABLE FUNCTION	Stored values, and f(x) and g(x).
SETTINGS	The calculator's own setup, and its resets.

Menus

Every menu numbers its lines. Press a number to pick a line straight away, or move to it with ▲ ▼ and press OK. A line with ▸ opens another menu; BACK or ◀ goes up a level, and AC closes the menu.

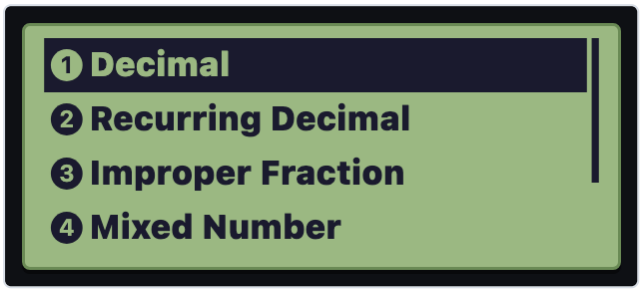


CATALOG, the first screen of categories.

Calculate

1 Answers in the form you want

FORMAT flips an answer between its exact form and a decimal. SHIFT + FORMAT opens the FORMAT menu, which offers only what suits the answer on screen: Standard, Decimal, Prime Factor, Recurring Decimal, Improper Fraction, Mixed Number, Standard Form ($a\times10^n$) and Sexagesimal. To make the FORMAT key itself open the menu, change **FORMAT Key** in SETTINGS.



The FORMAT menu for $19\frac{1}{2}$.

A recurring decimal is shown with dots over its first and last repeating digits, as on the handheld, and SHIFT + $\square^2$ types one in.

2 Earlier calculations

With an answer on screen, ▲ steps back through the calculations you have done and ▼ forward again. TOOLS ▸ **Undo** takes back the last change to what you are typing. Going HOME, or changing Input/Output, clears the history, as on the handheld.

3 Variables

VARIABLE lists A–F, x, y and z with their values. Pick one to **Store** the last answer in it, **Recall** it into your calculation, or **Edit** its value. Typing a number on the list starts editing the highlighted one. To type a variable into a calculation, use SHIFT and its key.



4 f(x) and g(x)

FUNCTION defines f(x) and g(x), and puts them into a calculation: f(3) works it out at 3. Table uses the same two functions.

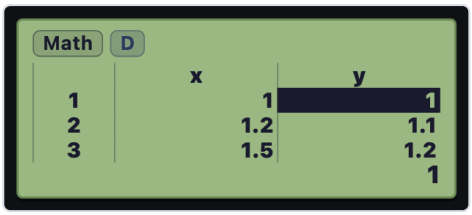
5 CATALOG

CATALOG holds every function by category: logs, probability (factorial, nPr, nCr, random numbers), numeric (GCD, LCM, Abs, round off), angles and coordinates (Pol, Rec, degrees-minutes-seconds), trigonometry and the rest. SHIFT + CATALOG is the CATALOG list, fifteen symbols to a screen, each picked with the digit or operator key shown beside it.

Statistics

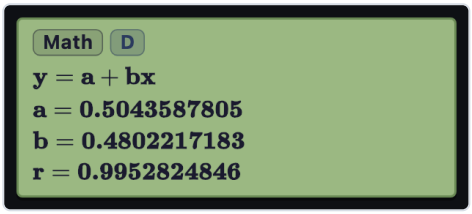
1 Type the data in

HOME then 2, and choose **1-Variable** or **2-Variable**. In the editor, EXE enters a value and moves down, and DEL deletes a row. The Freq column is on to start with. TOOLS turns it off, inserts a row, deletes all and sorts a column.



2 See the results

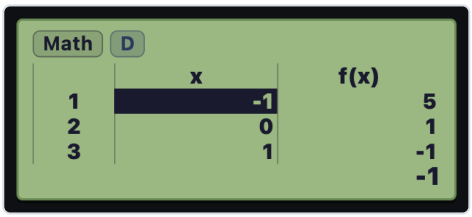
Press OK in the editor. One-variable data offers **1-Var Results**; paired data offers **2-Var Results** and **Reg Results** for any of the seven regressions. The results list scrolls with ▲ ▼, and BACK returns to the data.



Statistics Calc is a calculation screen with the data's values to hand: CATALOG gains a Statistics category, and TOOLS has the results, the regression type and the way back to the editor.

Table

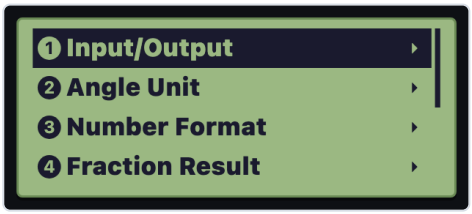
HOME then 3. TOOLS has **Define f(x)/g(x)** for the functions, **Table Range** for Start, End and Step (then **Execute**), and **Table Type** for f(x), g(x) or both. A table holds 45 rows, or 30 with both functions.



Type a new x into any row and its values are worked out again; + or – steps it on from the row above. TOOLS ▸ Edit inserts a row or deletes all.

SETTINGS, and starting again

SETTINGS has three parts. **Calc Settings**: Input/Output (MathI/MathO, MathI/DecimalO, LineI/LineO, LineI/DecimalO), the angle unit, Number Format (Fix, Sci, Norm), mixed numbers or improper fractions, the decimal mark, the digit separator, what the ×10■ key types and what FORMAT does. **System Settings**: the font size and whether menus show their numbers. **Reset**: settings and data, the variables, or everything, each after a Yes.



Modern starts on **Norm 2** with digits grouped, as the handheld does, where Classic starts on Norm 1.

From the keyboard

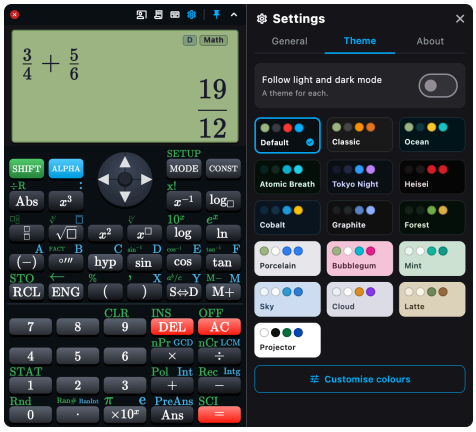
Modern's keys are Classic's where the two match: digits, operators, s, c, t, l, f, q, a, n, e and p. Tab is SHIFT, Enter is EXE, Esc is AC and Backspace is DEL. Then Home,

Page Up and Page Down for those keys, o OK, v VARIABLE, x x and d FORMAT. Press K for the full list.

> CLASSIC ONLY
> CONST, the history panel, the ? key hints and copy and paste are Classic's. Modern has no counterpart to CONST, and keeps its history on the calculator.

SETTINGS

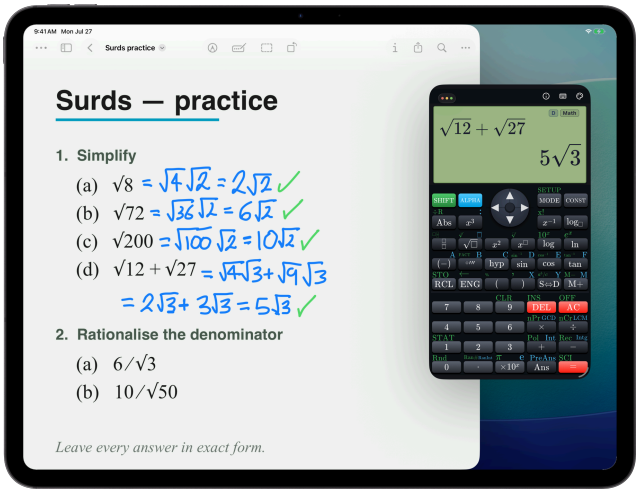
The gear in the title bar opens Settings beside the calculator, or under it on a phone. It has three tabs.

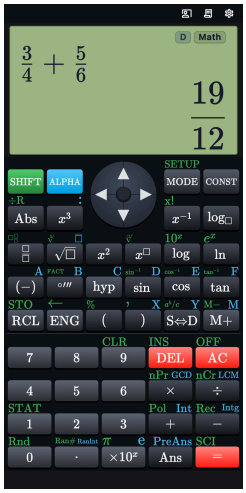


General	Classic or Modern · text size for the screen and the keys · SHIFT and ALPHA functions on the keys · the keystroke strip · on iPhone and iPad, a vibration when a key is tapped · instant answers, without the handheld's fade. **Reset these settings** puts these and the theme back as they started, after asking. Saved themes, the memories and the history stay.
Theme	The sixteen presets and your saved themes · following light and dark mode · Customise colours.
About	The version and what is new in it · the address for feedback (tap it to copy) · the privacy policy, the terms of use and the licences.

ON IPHONE AND IPAD

The calculators are identical: the same keys, the same apps, the same answers. What changes is the window, because pinning on top and rolling up mean nothing on iOS. In their place there is a slim bar with **presentation mode**, **history** (on Classic), on iPad the **Keys** panel, and **Settings**, where a switch makes the keys vibrate when tapped. Pair a keyboard with an iPad and every shortcut in this guide works, including ? for the on-key hints.





On an iPad it floats over a worksheet, a textbook or your notes, there when you need it without leaving the page you are on. On a phone it is the whole screen, and the same calculator.

> **SOMETHING LOOKS WRONG?**
>
> The app is checked key by key against the published behaviour of the calculator it replicates, so if an answer here differs from the one on the desks, that is a bug and worth reporting. The address is in **Settings**, under **About**.
>
> Anything else, whether it is a function you want, a theme colour that will not behave or an idea for a lesson it could support, goes to the same place: jamie@hubzillamaths.com.

HubzillaCalc is made by Jamie Hubball at Hubzilla Maths. It is free on every platform, with no advertising, no accounts and no tracking of any kind: nothing you type leaves the device. See hubzillamaths.com/calc/privacy.