

## Calculator App, 12-20-2020

---

*Note: This discussion is based on macOS, 10.14.6 (Mojave). Some illustrations may differ when using other versions of macOS or OS X. Most illustrations are from screenshots on my iMac.*

You're probably aware that there's a simple calculator app on every Mac, but are you aware of the many capabilities it has? If not, this presentation should help you learn more about the **Calculator App**. You'll find it in the **Applications folder**, or just use the **Spotlight** app and type in the first few letters (c-a-l-c will probably be enough) to locate and open it.

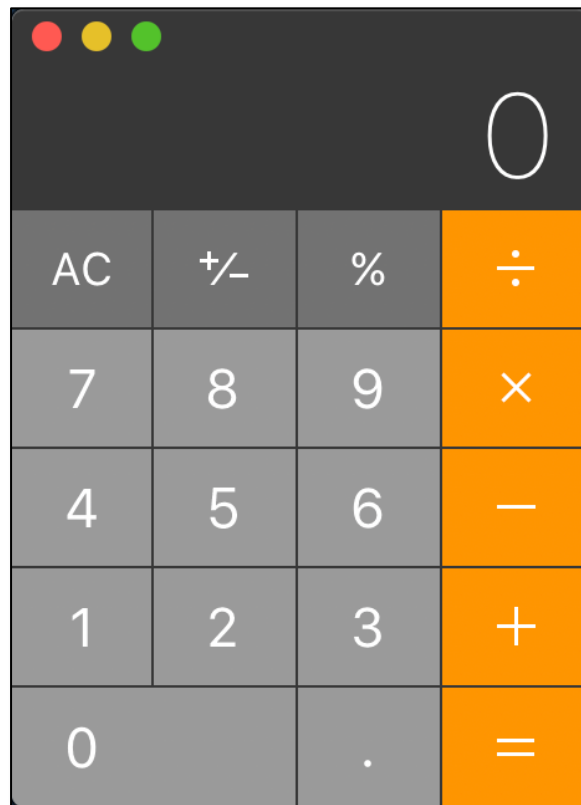
In its most basic form, the app looks like a simple 4-function calculator, just like the ones that you used to buy. However, it has two additional modes: **Scientific** and **Programmable**.

Like most other apps, you can copy and paste both into and from the Calculator app.

Credit: Much of this presentation is based on a post in The Rocket Yard, a blog at the website for Other World Computing. Here's the URL (also found in the credits at the end of the presentation): <https://eshop.macsales.com/blog/64388-how-to-become-a-macos-calculator-app-power-user/>.

### The Basic Calculator

When you first open the Calculator app, it will probably be displayed in its basic 4-function mode:



**Calculator App (Basic, 4 Function Mode)**

### Features

- On the right side are 5 orange-colored operator buttons ( $\div$ ,  $\times$ ,  $-$ ,  $+$  and  $=$ ). Use these to divide, multiply, subtract, or add numbers, and then get the result.

## Calculator App, 12-20-2020

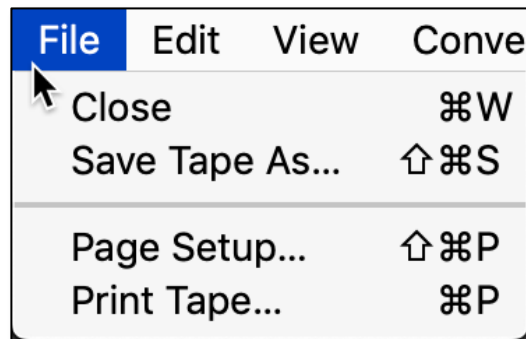
---

- An 8-key pad (light gray color) for numbers **0** – **9** and a decimal point (.).
- Immediately above these keys are three more keys (dark gray color): a **+/-** button to change a number's sign, a **%** button for percentage calculations, and an **AC** button for **All Clear**. Depending on what's being calculated, this button may also be labeled **C** for **Clear**.
- While you can click on the buttons in the Calculator, don't forget that you can also use the number and function keys on your keyboard. If you use an extended keyboard, you can also use the number and function keys located in the keypad at the right end.

### Calculator Menu

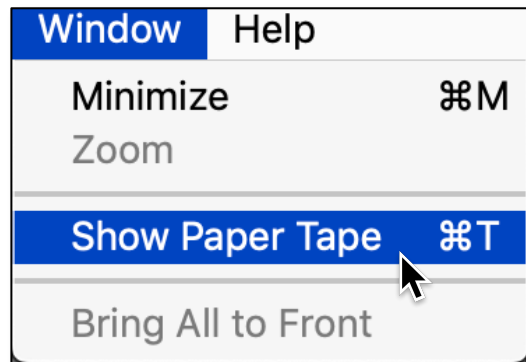
Given our past use with calculators, you probably wouldn't think to check the Calculator app's menu bar. However, there's a lot of capability located here.

**File Menu.** Here there are several helpful features: **Save Tape As...**, **Page Setup**, and **Print Tape...**. If you recall, there was a time when calculators that had a built-in paper tape printer. Each of the entries and results would be printed on the tape to provide a record in case something needed to be verified (like, perhaps making sure that nothing was mistyped).



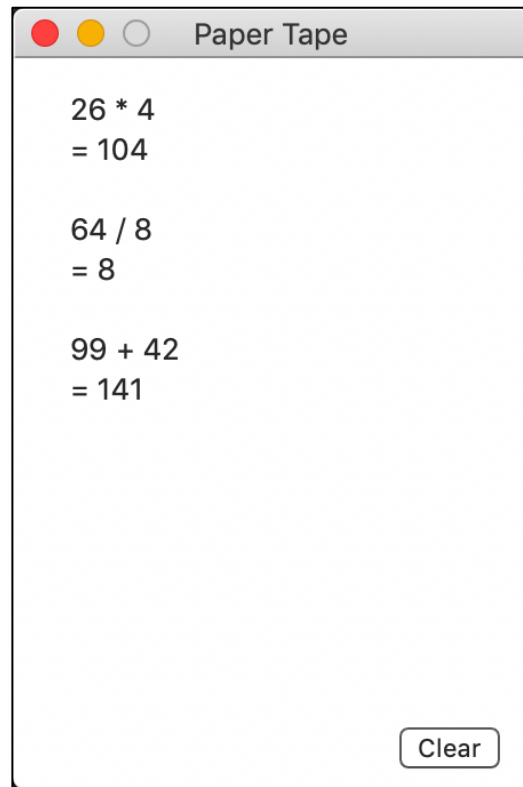
**File Menu**

To enable the paper tape, go to the **Window menu**, and select **Show Paper Tape** (keyboard shortcut: **Command-T**).



**Window Menu (Show Paper Tape)**

A tiny window will appear. Start making calculations and you see something like the image on the next page.

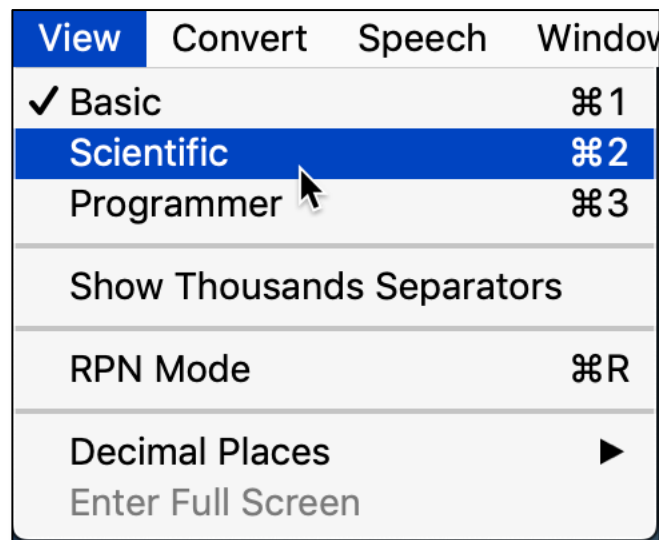


**Paper Tape**

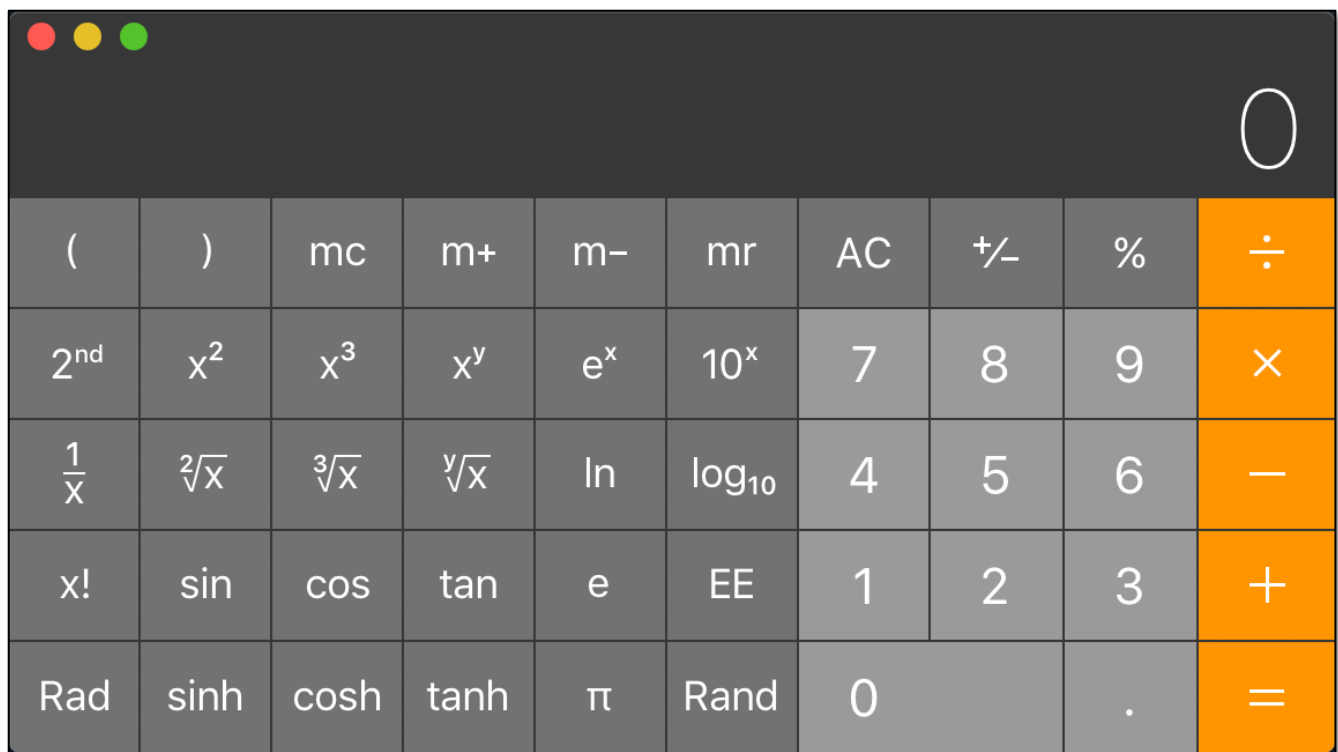
There's more capability found in the Calculator's menu that will be discussed later.

### Scientific Calculator

The **View** menu is where you choose among the Calculator's three modes (**Basic**, **Scientific** and **Programmer**). Select **Scientific** (keyboard shortcut: **Command-2**) for the Scientific calculator mode:



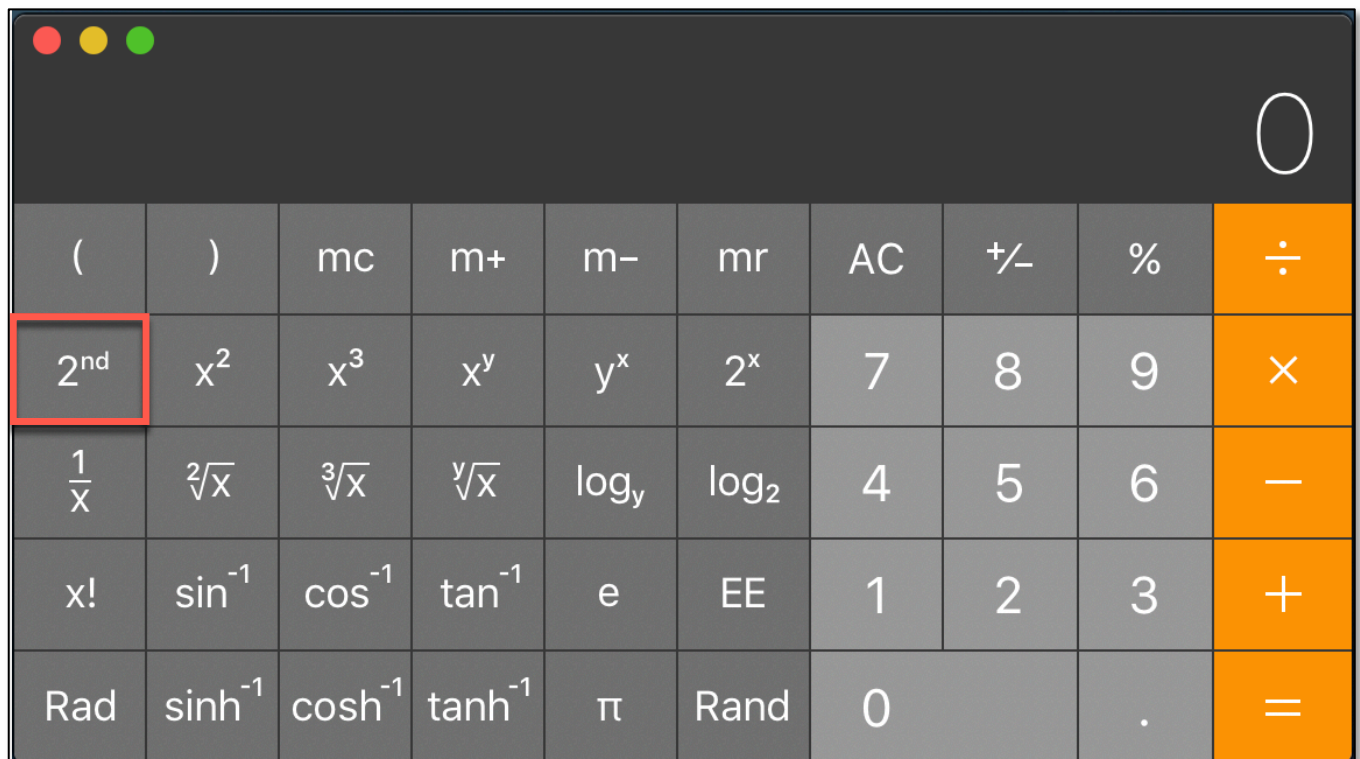
**View Menu (Scientific Mode Selected)**



### Scientific Calculator

In Scientific mode, a whole host of special functions become available including **logarithmic**, **exponential**, and **trigonometric**.

**More Functions.** There are even more functions available, but they're initially hidden. Click the **2<sup>nd</sup>** button on the left to reveal them:



### Scientific Calculator (2<sup>nd</sup> Button Pressed)

## Calculator App, 12-20-2020

---

Now you have access to **inverse trigonometric** and **hyperbolic trigonometric** functions, and also several different **logarithmic** and **power** functions.

In Scientific mode, the Calculator app also has memory functions: **memory clear** (**mc**), **add and subtract from memory** (**m+** and **m-**), and **memory recall** (**mr**). For ordering your calculations properly, parentheses are also available.

**Other Functions.** The **View** menu has several other functions, including **Show Thousands Separators**, which adds commas or periods after every thousands place depending on your country. It also has **Decimal Places**, which truncates to a specified number of places (0 to 15) after the decimal point.

**RPN Mode.** You might have noticed on the **View** menu an item labeled **RPN Mode**. Some of you may remember that decades ago when calculators with scientific capability began to show up on the market, there was a battle between Hewlett-Packard whose calculators used something called Reverse Polish Notation (RPN) and most other competitors such as Texas Instruments and their use of algebraic notation.

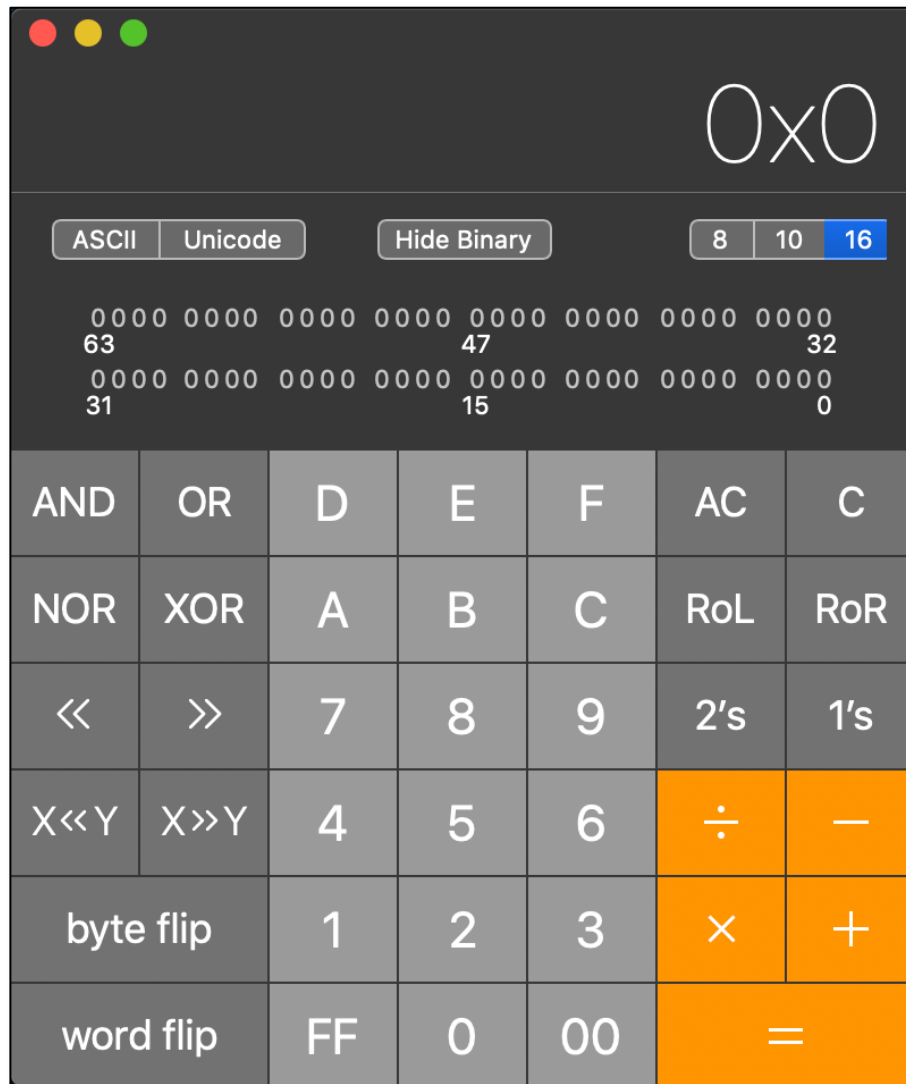
Without dipping too far into history, RPN is a method for representing expressions in which the operator symbol is placed after the arguments being operated on. For example: to add 3 and 4, you would write **3 4 +** rather than  $3 + 4$ . If by some remote chance, you're still comfortable using RPN, you'll be happy to know that it's available in the Calculator app.

## Programmable Calculator

The **View** menu has a third calculator capability: **Programmer** mode (keyboard shortcut: **Command-3**).

I haven't programmed since university so many years ago, so I won't even try to explain all that the Programmer Calculator can do. All you need to know is that if you need them, you have access to **Base 10**, **Binary**, **Octal**, and **Hexadecimal calculations**, **Boolean operations**, **byte and word flips**, and more.

(See the image of the Programmable Calculator on the next page.)



**Programmable Calculator**

### Calculator Shortcuts

The Calculator app has a considerable number of keyboard shortcuts so that you can perform quick calculations like addition and subtraction or clear the calculator to start a new one.

#### Basic Calculator Shortcuts

- Clear: Escape or C
- Clear all: Option + Escape
- Delete the last digit: Delete
- Add: Plus Sign (+)
- Subtract: Hyphen (-)
- Multiply: Asterisk (\*)
- Divide: Forward Slash (/)
- Equal: Equal Sign (=)
- Negate the value: Option + Hyphen (-)

## Calculator App, 12-20-2020

---

### Scientific Calculator Shortcuts

- Exponential notation: Shift + E
- Calculate the factorial of the value: Exclamation Point (!)
- Calculate the logarithm of the value: E
- Raise the value to the power of the next entered value: Caret (^)

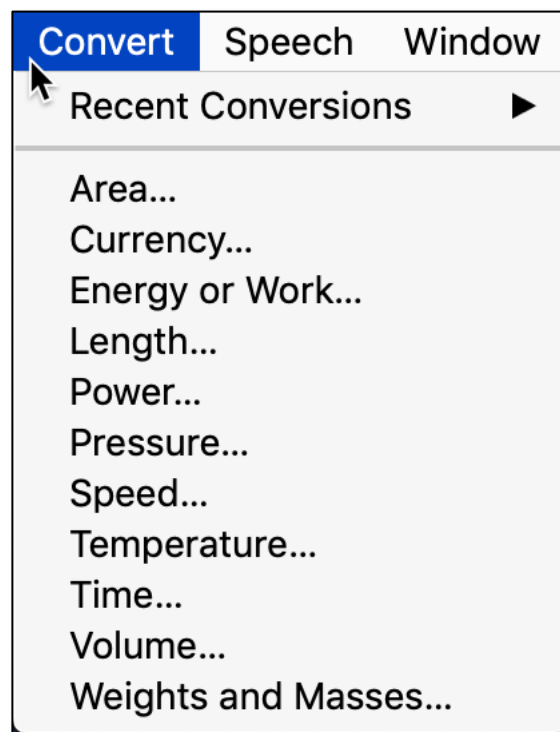
### Conversions

The Calculator app also has a handy feature: the ability to do unit conversions. In order to do conversions, you need to be in either the **Basic** or **Scientific** calculator mode.

As you can see from the screenshot below, there are 11 different categories of conversions to choose from.

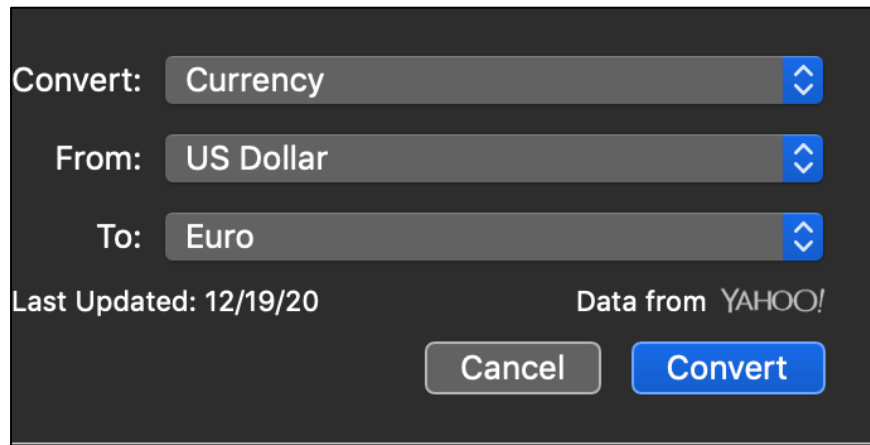
Currency exchange rates are updated daily, so you can expect that the calculations are usually quite accurate.

All of the conversion calculations use a similar format: Enter the number, select the type of conversion, select the units, and click **Convert**.



**Convert Menu**

**Example:** Let's say that we want to convert US dollars to Euros. First, enter the dollar amount (let's say \$1,000) into the calculator. Then, select **Convert > Currency** from the menu bar. The Convert pop-up menu appears for you to enter your conversion selections. Choose US dollars as the "From" currency and Euros as the "To" currency.



Convert: Currency

From: US Dollar

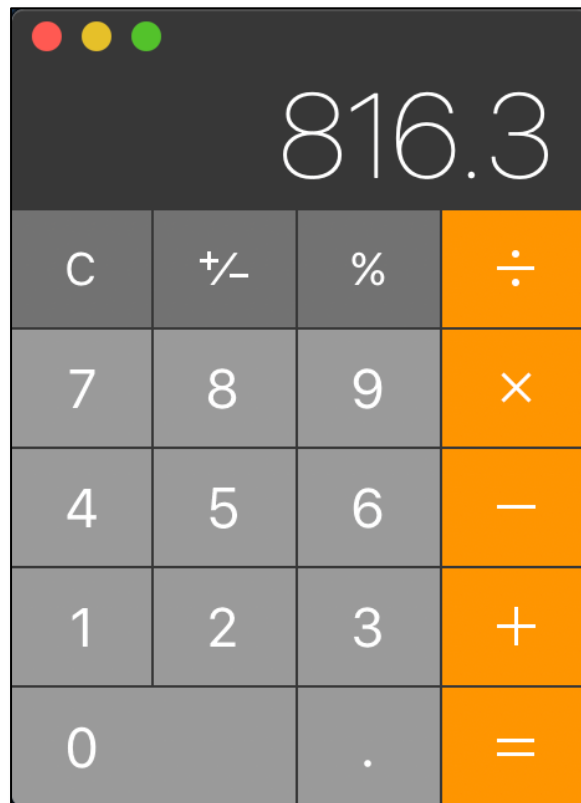
To: Euro

Last Updated: 12/19/20 Data from YAHOO!

Cancel Convert

### Convert Menu

Click the **Convert** button, and our result appears (€816.3) as shown on the Calculator image below:

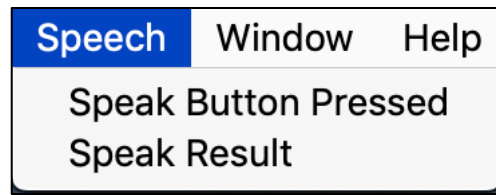


### Conversion Result



### Speech

The Calculator even speaks, which can be an aid for those who are sight-impaired.



**Speech Menu**

Select the **Speech** menu. When the **Speak Button Pressed** menu item (toggles on and off) is selected, "Speech Enabled" is announced. Afterward, each key pressed will be announced. Select the **Speak Result** menu item (also toggles on and off) for an announcement of the result of a calculation. Select both menu items for announcement of each button pressed and the calculation result.

### Summary

There's a lot of capability in the Calculator app ranging from simple math calculations to scientific calculations and even programming. The built-in ability to make various conversions is a plus.

### Next Presentation

For the next presentation, we'll take a look another macOS feature.

Have a favorite Mac Tip or utility? Please feel free to pass it along, and I'll see if I can work it into a future presentation.

If you have any suggestions for presentation topics, including macOS utilities, please contact me at [slp4668@gmail.com](mailto:slp4668@gmail.com).

*–Steve Parker*

### Credits & Reference:

- Become a macOS Calculator App Power User (macsales.com Blog 64388)  
(<https://eshop.macsales.com/blog/64388-how-to-become-a-macos-calculator-app-power-user/>)
- Keyboard shortcuts for the Calculator on Mac (idownloadblog)  
(<https://www.idownloadblog.com/2020/05/07/keyboard-shortcuts-calculator-mac/>)