



## Numerare – Count and compute as a Roman

Convert numbers to Roman numbers and vice versa, up to 40 million, read the numbers with the camera, compute with abacus.

Numerare is available in 4 languages : English, French, Spanish, Italian, and even Latin for enthusiasts and adapts automatically to your iPhone or iPad setting.

Numerare works at best with IOS 13 or over, on iPhone and iPad. It works, with some limitation with iOS 11 and iOS 12.

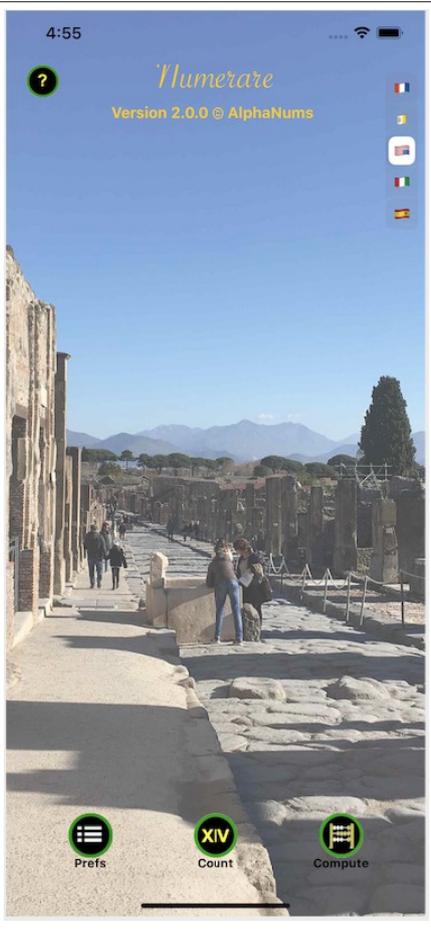
### What can Numerare do for you ?

Are you traveling and seeing an inscription with Roman numerals like MDCLXXII and wondering what date is that? With Numerare, enter this number and instantly get the value, as well as how to write it in Latin. Or even, use the camera to capture the text.

Answer: 1672 - mille sescenti septuaginta duo

You will also learn how to do operations (additions and subtractions) with the abacus.

The home screen gives access to the functions.

<p> : quick online help.</p> <p>Tap Numerare to find the version number. Tap the version number to hide it.</p>		<p>The flag reminds you of the current Numerare language. To change it, tap the flag and choose between French, Latin, English, Italian, Spanish.</p> <p>- 3 buttons to access all functions: - preferences setting on the left - Count and convert numbers between numeric and roman - Calculate the abacus</p>
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## Convert Roman numerals...

On the home screen, tap on 'Count' ...

The screen that appears includes several objects.

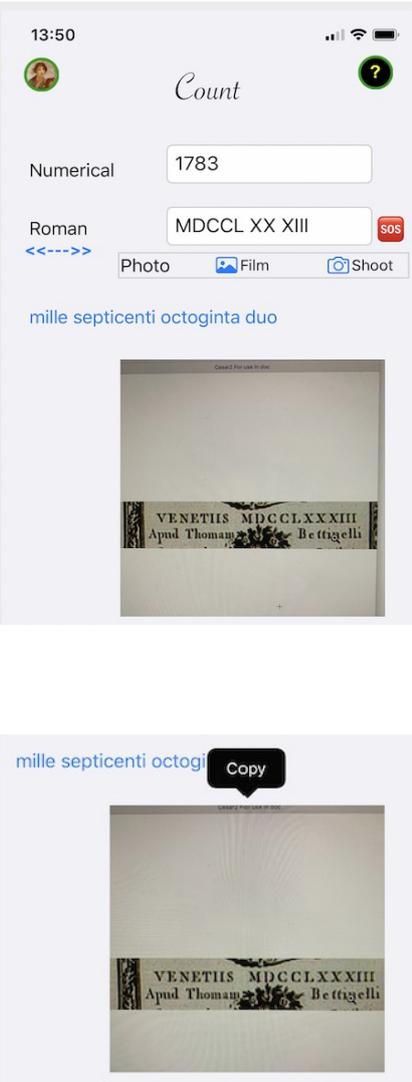
 <b>Numerare icon</b> , to return to the home screen		A digital number. You can enter a number here on the keyboard (e.g. 940), it will be translated into Roman numerals CMXL
 <b>Help button</b> for on screen explanation		Or a number in Roman, on the keyboard, it will be translated into numeric.
		To better visualize the figures, tap on '<---->'. The Roman numeral then appears as 'CM XL'
		If you want to scan text, use the photo (see below).
		To make it easier to enter Roman numerals, an intelligent keyboard is available (if it is not displayed, the  button displays it.
		On this keyboard, all the existing Roman numerals. Tap on 'CM' (if you want to type 900) CM appears in the Roman numeral, and all the numbers that can no longer be typed (like the M of a thousand) are grayed out. Then type XL for 40. You see that X is grayed out, because you cannot type 10 after 40.
		Close this keyboard with the  button

## Scan text

You see a figure on a monument, in a book ... Rather than typing for it, enter it with the camera. Or grab it from one of your albums.

NOTE: this only works with iOS 13 and above.



<p> <b>Numerare icon</b>, to return to the home screen</p> <p> <b>Help button</b> for on screen explanation</p>	<p style="text-align: center;"><b>Scan a number</b></p> 	<p>Tap  <b>Shoot</b> to take a photo with the camera, or tap  <b>Film</b> to play an image saved in your iPhone or iPad.</p> <p>Take or choose the photo in the usual way, tap 'Use'.</p> <p>The photo is displayed on the screen and the character recognition starts immediately. Here a figure was identified (MDCCLXXIII) immediately translated in 1783 and said in Latin.</p> <p>To hide the photo, make a short tap on it.</p> <p>To redisplay it, tap on '<b>Photo</b>'</p> <p>If no number has been recognized, a '<b>+?</b>' Button is displayed, to launch a further analysis. Several figures may then be identified in the image. An alert will ask you to choose which one to process.</p> <p>If you want to save or send this image by email, long press on the image and choose '<b>Copy</b>'</p>
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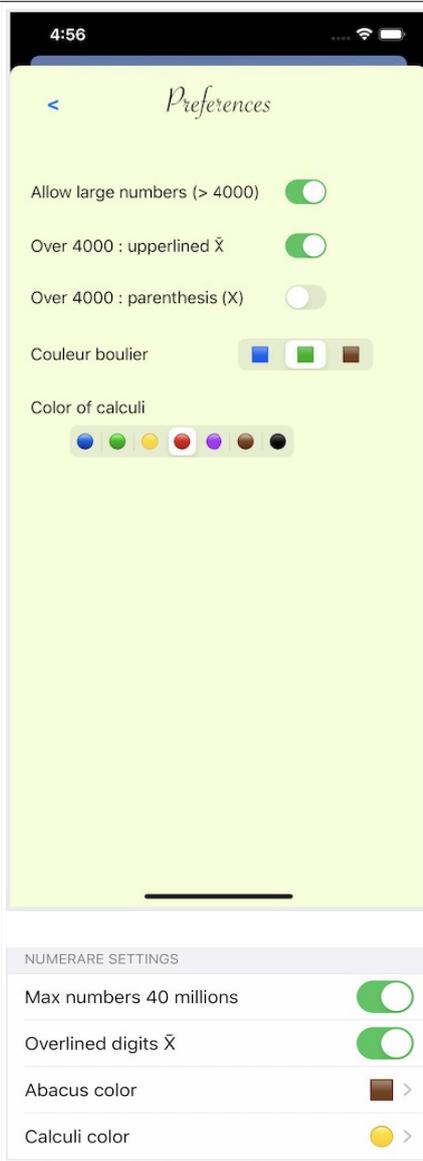
## Numerare Settings

You can adjust certain Numerare parameters and save them in your preferences (they will be reused when you open the app again, when you download a new version). They are only deleted if you delete the app.

These preferences are also accessible in the iPhone or iPad settings, in the Numerare section.

Tap the Prefs icon at the bottom left of the home screen.

<: Return to the home screen with automatic saving of preferences.



Numerare can process numbers up to 40,000,000. If you do not have such a need, you can limit the numbers to 4,000, which are the most common. To do this, deactivate the selection.

This change will limit the number of keys in the smart keyboard and reduce the number of columns in the abacus (see below).

If you chose the big numbers, the writing conventions in Rome were multiple. For example, to write 10,000 (1000 times 10), you could use an X highlighted  $\bar{X}$  or an X in parentheses (X). To write 1 million (1000 times a thousand) M, or (M). Of course, to enter these numbers, the smart keyboard is essential.

Finally, choose the color of the abacus pebbles and the background color of the abacus.

These same settings are accessible in the Numerare settings of iOS.

## Compute with abacus...

To make operations, the Romans had neither methods to make additions and subtractions as we put them, by writing the figures aligned one under the other and by adding or subtracting column by column with deductions.

The way of writing the numbers did not lend itself anyway at all.

But they did it with abacuses. More fun and in fact, they were not that far from our practice.

Many articles explain in detail the use of the abacus (in french):

<https://archimede.mat.ulaval.ca/amq/bulletins/dec06/boulier.pdf>

And to go into detail:

<https://www.wikihow.com/Use-an-Abacus>

## On the home screen, tap on 'Calculate' ...

The screen that appears with two abacuses. They will have to be used to make additions (add the second number to the first) or subtractions (subtract the second number from the first). And just by handling the 'calculi'.



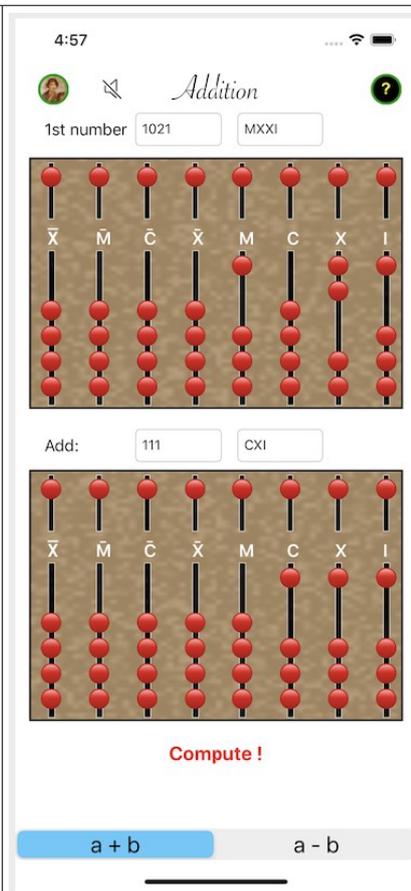
**Numerare icon**, to return to the home screen



Disable or enable bips when moving calculi.



**Help** button for on screen explanation



### The 2 abacuses

Above, the translation into figures of the position of the stones.

An abacus has 8 columns (4 only if you have limited the maximum value of the figures); divided into 2 parts:

- above, the 'quinary values): 5, 50, 500...

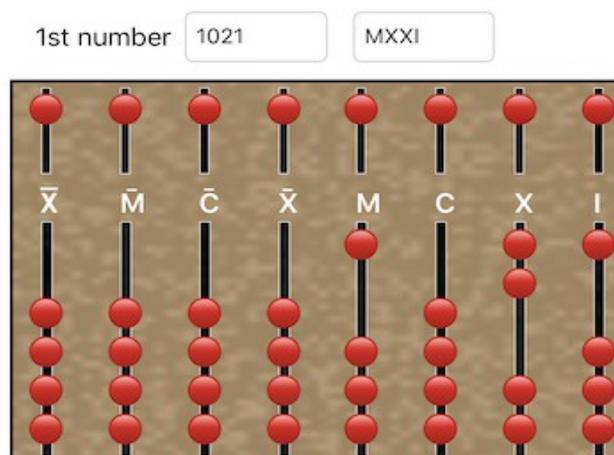
- at the bottom the pebbles representing unit values (1, 10, 100...)

- The pebbles which are close to the separation are to be counted: here 1 unary pebble in the first column and 2 unary pebbles in the second tens: which makes a value of  $1 * 2 * 10 = 21$ .

You change the value of an abacus by dragging the pebbles (see below)

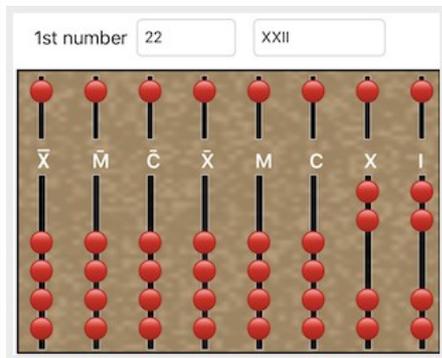
When you have entered the values in the abacus (you can also do it via the input fields, but it is a bit cheating), choose the type of operation at the bottom and proceed to the calculation.

Before computing, let's first explain how to use abacus in Numerare.

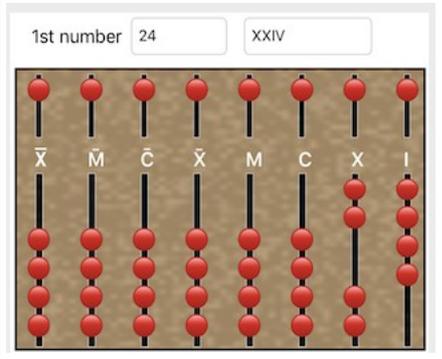


To move a calculus (pebble), put your finger on it, a little on the right to see where you put it, and drag. Or double tap (double tap) on the chosen pebble to make it change position.

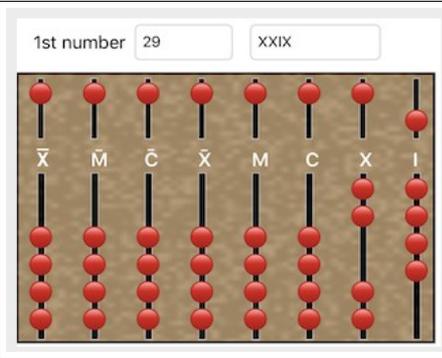
Here for instance, drag the pebble on the right (3rd from the bottom) upwards: this adds 1 to the number which is now 22.



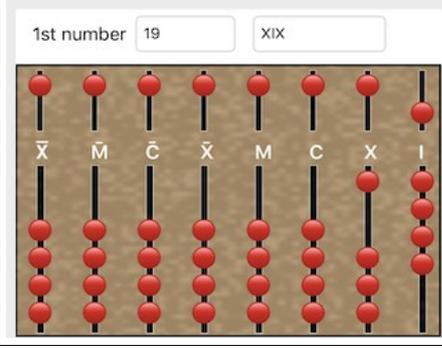
If you want to move more than one pebble at a time, for example, grab the pebble at the bottom right and drag it. The 2 stones will slide at the same time. The abacus is now worth 24 (the 4 stones are at the top)



Now bring the pebble down from the top of the right column by tapping twice on it: this adds 5, the abacus is worth 29.



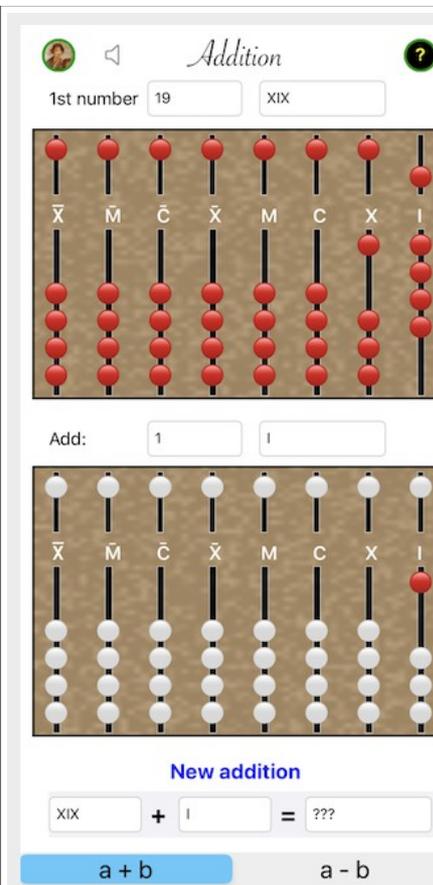
Remove 10, by sliding the pebble in second position at the top of the tens column, down. The abacus is now worth 19.



So get started now in an addition: tap on Addition.

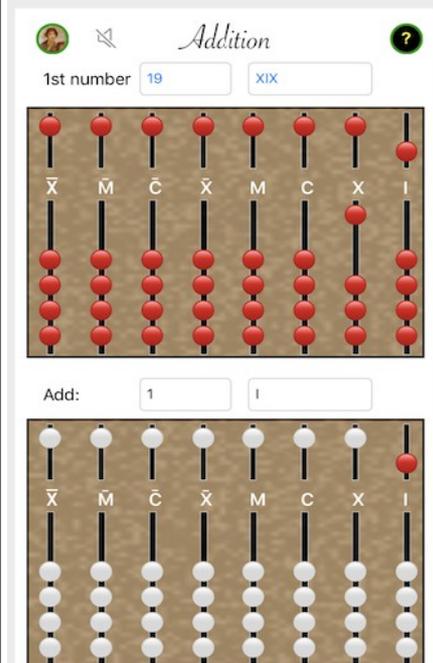
Note: if the operation is impossible, or does not make sense, the 'Calculate!' Button is disabled. For example if the second number is zero, or for subtraction if the number to be subtracted is greater than the first number (the Romans did not know the negative numbers).

You note that the stones of the bottom abacus have changed color: only those which are to be added are colored, the others are light gray. And you can no longer move the stones from the bottom abacus.



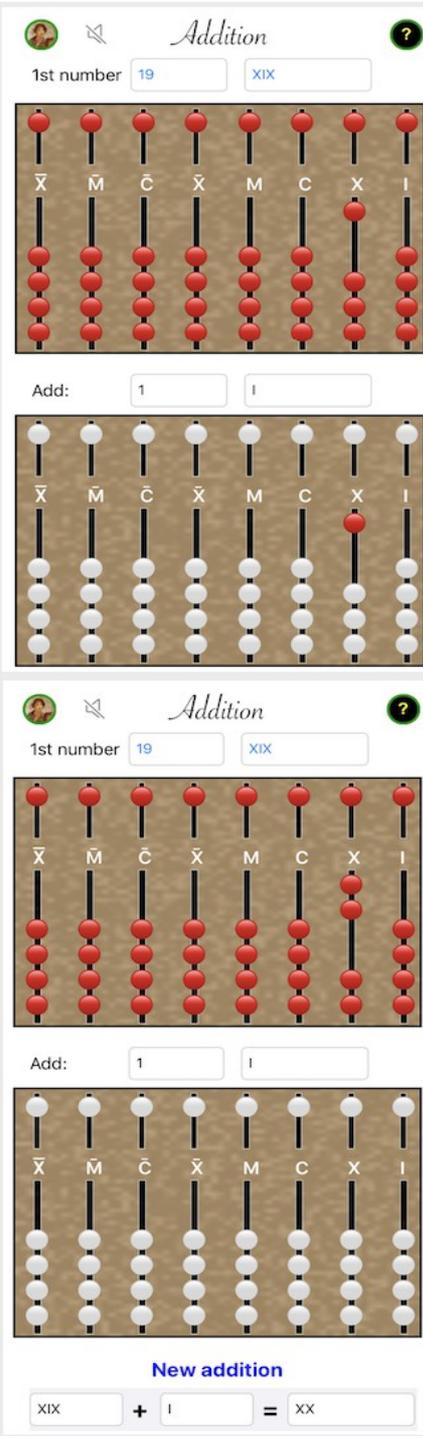
To add 1 to the top abacus, you would have to move a pebble from the right column upwards. But it's impossible, there is none.

Note that the values in the text boxes no longer change, these are the values of the operation to be performed).



It is then necessary to move down the 4 pebbles of the first abacus: they reappear as desired in the abacus at the bottom, which will be worth 5: it is therefore the pebble at the top 'quinary' which move.

And now you have to add this 5 to the 1st abacus. But the 5 is already in use !

	 <p>The screenshot shows the Numerare app interface for addition. At the top, it says "Addition" and "1st number" with input fields for "19" and "XIX". Below are two abaci. The top abacus (red beads) represents 19: one ten (X) and nine ones (I). The bottom abacus (white beads) represents 1: one one (I). Below the abaci are input fields for "Add:" with "1" and "I". At the bottom, a "New addition" button and a display showing "XIX + I = XX" are visible.</p>	<p>Solution: first remove 5 in the 1st abacus, which are transferred further down.</p> <p>There is now a 10-value pebble in the bottom abacus.</p> <p>Let's move a 10 up in the 1st abacus.</p> <p>All the stones of the second abacus are light gray</p> <p>the result of the operation is displayed. You can start a new operation.</p>
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You can start a new addition, or better, will you dare try a subtraction ?

## **IMPORTANT NOTICE**

Numerare is made to teach and entertain you. The use of its results remains your sole responsibility. In the event of a problem noted, Alphanums should be informed using the contact methods indicated in the Appstore or write directly to support@alphanumsoft.com.

## **PRIVATE DATA PROTECTION**

Numerare does not collect any user data. Everything remains only in the personal environment of your iPhone or iPad.