

Duplicare™

Roman Numeral Calculator

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The Roman Numeral Calculator is designed to aid students in the study of Roman numerals. It provides an easy interface, and makes verifications of conversions between Roman and Arabic numbers a snap.

The difficulties apparent when you use Roman numerals for calculations are mindboggling. Just give it a try with pen and paper! Then look at the engineering works of the Roman Empire with even more amazement than you had before!

P.S. Don't forget to use the Reset item under Help on the menu bar after the calculator is covered by another window.

USAGE

SPECIAL KEYS AND MENU ITEMS

IMPLEMENTATION

AUTHOR

How to Use the Calculator

You may input numbers either by clicking on buttons with the mouse, or by using the keyboard. You may use the number keys on the keyboard for Arabic numeral entry. Also the capital letters I, V, X, L, C, D, M will input appropriately as Roman values.

You may also use +, -, *, and = from the keyboard.

Once you start a calculation with Arabic numerals, you must finish it with Arabic numerals. Similarly, if the first number is given in Roman numerals, you must input the second number in Roman form also.

Clicking on = will perform the calculation (if any) and return the result in both Arabic and Roman windows. Converting a series of numbers from Arabic to Roman, or vica versa, is conveniently done by entering a number, clicking =, entering the next and clicking =, etc.

You may use the Escape key as a Clear key, rubbing out the last number entered. Thus you can also convert a series of numbers by entering the number, hitting Escape, entering the next number, hitting escape, etc.

Negative numbers and zero did not exist in ancient number systems. Answers that result in negatives or zero get a warning.

Also, if you try to input a number bigger than about 32000, or if your result is much bigger than 32000, the calculation is halted and a warning is issued. Numbers that large are very difficult to read as Roman numerals.

Special Keys and Menu Items

The = key performs the calculation requested and clears internal registers. Output appears in both Arabic and Roman windows.

The <- key is the backspace key. It deletes the last digit that has been input. You can also delete digits by using the backspace and delete keys on the keyboard. Repeated use of backspace can clear all the digits of the last number you have input.

The Escape key **Esc** is equivalent to the Clear key **C** on other calculators. It will rub out the last number you have entered.

The **Transfer** key converts the calculation requested in one window to an equivalent calculation in the other window. The Roman equivalent of an Arabic number or expression will appear when the **Transfer** key is pressed. Similarly if the calculation is being performed in Roman numerals.

Pressing the capital letter T on the keyboard performs the same actions as the **Transfer** key.

If the calculator is covered by another application, even a Help window, click on the **Reset** menu item to recreate the screen with the last active calculation. Any completed calculation will be lost. If the calculator has been iconized with an active calculation, **Reset** will restore that too.

Author

Dr. Jesse Deutsch
PO Box 1626
Sterling, CO 80751

Implementation

Calculations that result in zero or negative numbers raise a warning flag and are cleared. Entering zero as the initial digit also results in a warning, and the digit is cleared.

In deference to modern concepts that require uniqueness of representation, only one variation of a Roman numeral is considered legitimate. These are called properly formed Roman numerals.

Strings of four or more of the same letter are improper, except for M. A letter can be used only once for subtraction.

IX is the proper form of 9

XCIV is the proper form of 94

IIX is improper

Only the following subtraction units are legitimate:

IV, IX, XL, XC, CD, CM

Subtraction units cannot be followed by letters of value larger than the value of the subtraction unit itself. Thus CCXC is the proper form of 290, but XCCC is not proper.

A bar on top of a letter meant 'multiply by 1000' in ancient times. The bar-on-top digits have not been implemented in this version, as the program is designed to be used at a number of grade levels.

Registration

You are free to use this program for 30 days. If you wish to use it longer than 30 days, registration is \$35 (\$28 for home users). This provides you with a copy of the program with the lesson in Help format, and without the reminder screen.

Please send check or money order in US funds payable on a US bank to:

Jesse Deutsch
the doss boss
PO Box 1626
Sterling, CO 80751

