

ROMAN NUMERALS

by Bert Fristedt

December 29, 2003

Roman numerals are not mentioned in the K-12 mathematics standards and benchmarks which became official in Spring 2003. Of course, this does not mean that they should not be taught. For those schools and teachers which do choose to give attention to Roman numerals, I make some comments here which might possibly be useful.

It is important that students get some conception of the distinction between number and numeral. For instance, the fact that $4/10$ and $14/35$ are different fractions that represent the same rational number is a subtle concept that can give many students difficulty. Moreover, the difficulty is increased if we try to simplify by using fewer ‘new’ words—in particular, by avoiding the term ‘rational number’. For when we do this, we are apt to say in one sentence that $4/10$ and $14/35$ are the same number, and in another sentence, emphasize their differences (for instance, when comparing a basketball player who makes 4 out of 10 shots with one who makes 14 out of 35). Students are sometimes puzzled that they can get the same answer to addition problem whether they use the least common denominator or any common denominator—the puzzlement disappears once students understand that they are doing the very same addition in either case, just with different numerals.

Perhaps for some students, the distinction between Roman numerals and Arabic numerals is so sharp that the difference between numeral and number comes into sharper focus in that setting than it does when treating fractions. One might even find it useful to write equalities involving both kinds of numerals; for instance,

$$XXI = 21,$$

or even something like

$$XXI_{ROM} = 21_{ARB},$$

where the subscript advertises to the reader the numerical system being used.

Another useful feature of Roman numerals is that the activity of moving back and forth between them and Arabic numerals constitutes good practice in mental arithmetic.

If a school system spends some middle-school time on Roman numerals, it would be good if the high school social teachers know that. For instance, when investigating the flow of ideas among the Far East, Europe, and places in-between, it might be useful to know how the two systems of numerals interacted. More specifically, were Arabic numerals already in use in Europe at the time of Marco Polo, were they in use in the Far East, or was their use confined to South Asia and the Middle East?

Similarly, high school English teachers might find it useful to know if Roman numerals are treated in middle school. A rather short but difficult writing assignment might be to write rules for forming the Roman numeral that equals

ROMAN NUMERALS

an arbitrary specific Arabic numeral. It is not easy to write a general precise rule from which it follows that 95 should be written as *XCV* rather than *VC*, and also one from which it follows that 49 should be written as *XLIX*, not as *IL*.

The views and opinions expressed in this link are strictly those of the Bert Fristedt. The contents have been neither reviewed nor approved by the University of Minnesota.