

## Roman Numerals

➡ Long ago, the Romans used seven letters of the English alphabet to represent numbers. They named them Roman numerals. These Roman numerals are mainly used because of their historic importance.

The Roman numerals do not use the concept of place value. There is no Roman numeral for zero.

➡ The basic symbols used the Romans to write the numerals and their values in the Hindu-Arabic numerals are:

Basic symbols in Roman Numeration	I	V	X	L	C	D	M
Hindu-Arabic Numerals	1	5	10	50	100	500	1,000

➡ The first ten Roman numerals (for 1 to 10) are: I, II, III, IV, V, VI, VII, VIII, IX and X. We write the Roman numerals for 10, 20, 30, ....., 90 and 100, 200 ....., 500 follows:

Hindu-Arabic Numerals	Roman Numerals
10	X
20	XX
30	XXX
40	XL
50	L
60	LX
70	LXX

Hindu-Arabic Numerals	Roman Numerals
80	LXXX
90	XC
100	C
200	CC
300	CCC
400	CD
500	D

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## Rules for Forming Roman Numerals

**Rule 1:** Repetition of a Roman numeral means addition.

(a) Only I, X, C and M may be repeated, but not more than three times.

(b) We cannot repeat V, L and D repeat.

**Example:** III =  $1 + 1 + 1 = 3$

XXX =  $10 + 10 + 10 = 30$

CC =  $100 + 100 = 200$

MMM =  $1000 + 1000 + 1000 = 3000$

**Rule 2:** A smaller numeral to the right of a larger numeral is added to the value of larger numeral.

**Example:** VIII =  $5 + 1 + 1 + 1 = 8$

XIII =  $10 + 1 + 1 + 1 = 13$

CV =  $100 + 5 = 105$

CXXX =  $100 + 10 + 10 + 10 = 130$

**Rule 3:** A smaller numeral to the left of a larger numeral is subtracted from the value of the larger numeral. V, L and D are not subtracted.

**Example:** IV =  $5 - 1 = 4$

IX =  $10 - 1 = 9$

XXIX =  $60 - 10 = 50$

**Rule 4:** When we write numerals in a way that a numeral of the smaller value lies between the numerals of the greater value, the smaller value is subtracted from the greater value after it.

**Example:** LIV =  $50 + (5 - 1)$

=  $50 + 4$

= 54

DXC =  $500 + (100 - 10)$

=  $500 + 90$

= 590

MMM =  $1000 + 1000 + 1000 = 3000$