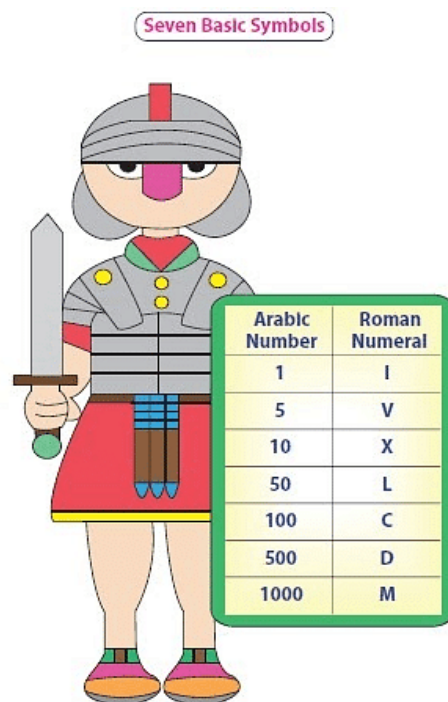


Roman Numerals

What are Roman Numerals?

Romans developed a different system of numeration about 2000 years ago known as Roman numerals.

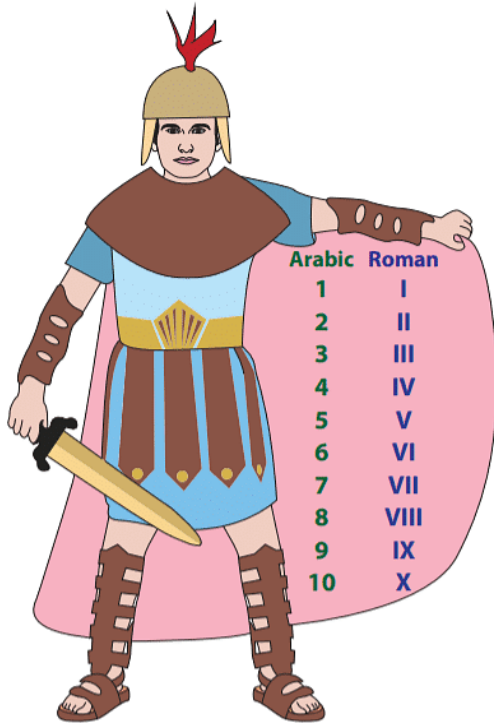
- There are seven basic Roman numerals.
- These numerals and their corresponding Hindu-Arabic numerals are given below.



How to Write Numbers in Roman Numerals?

- You already know about the numerals I, V, and X and the method to write numbers up to 39.

Roman Numerals Chart - 1 to 10



- Here, we will learn how to write larger numbers using Roman numerals.

Tips: There is no symbol for zero in Roman system.

Rule Number 1

When a letter is used more than once, we add its value each time to get the number.

Examples: II = 1 + 1 = 2

XXX = 10 + 10 + 10 = 30

CCC = 100 + 100 + 100 = 300

MM = 1000 + 1000 = 2000

MMM = 1000 + 1000 + 1000 = 3000

Tips:

- The same symbol cannot be repeated more than 3 times together.
- The symbols V, L and D are never repeated.



Check out the correct way of writing 45 in Roman Numerals!

Rule Number 2

When a symbol of smaller value is written to the right of a symbol of larger value, add the two values

Examples: VII = 5 + 1 + 1 = 7

XII = 10 + 1 + 1 = 12

XXVII = 10 + 10 + 5 + 1 + 1 = 27

LVII = 50 + 5 + 1 + 1 = 57

LXVI = 50 + 10 + 5 + 1 = 66

CVII = 100 + 5 + 1 + 1 = 107

CLXV = 100 + 50 + 10 + 5 = 165

DC = 500 + 100 = 600

MDCXVIII = 1000 + 500 + 100 + 10 + 5 + 1 + 1 + 1 = 1618

Rule Number 3

When a symbol of a smaller value is written to the left of a symbol of a larger value, the smaller value is subtracted from the larger value.

Examples: IV = 5 - 1 = 4

IX = 10 - 1 = 9

XL = 50 - 10 = 40

XC = 100 - 10 = 90

CD = 500 - 100 = 400

CM = 1000 - 100 = 900

Tips:

- V, L and D are never subtracted.
- I can be subtracted from V and X only once. X can be subtracted from L and C only once. C can be subtracted from D and M only once. Thus, I or V is never written to the left of L or C. L is never written to the left of C.

Large Roman Numerals

With the help of the chart given below, you can write large numbers in Roman numerals.

| | | | | | | | | | |
|----------|-----|-----|-----|-----|-----|-----|-----|------|-----|
| Ones | I | II | III | IV | V | VI | VII | VIII | IX |
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| Tens | X | XX | XXX | XL | L | LX | LXX | LXXX | XC |
| | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 |
| Hundreds | C | CC | CCC | CD | D | DC | DCC | DCCC | CM |
| | 100 | 200 | 300 | 400 | 500 | 600 | 700 | 800 | 900 |

Chart of Roman Numerals from 1 to 10,000

Roman Numerals Chart: 1 to 10,000

| | | | |
|--------|----------|---------|-----------|
| 1 I | 11 XI | 30 XX | 500 D |
| 2 II | 12 XII | 40 XL | 600 DC |
| 3 III | 13 XIII | 50 L | 700 DCC |
| 4 IV | 14 XIV | 60 LX | 800 DCCC |
| 5 V | 15 XV | 70 LXX | 900 CM |
| 6 VI | 16 XVI | 80 LXXX | 1,000 M |
| 7 VII | 17 XVII | 90 LC | 2,000 MM |
| 8 VIII | 18 XVIII | 100 C | 3,000 MMM |
| 9 IX | 19 XIX | 200 CC | 4,000 M̄ |
| 10 X | 20 XX | 300 CCC | 5,000 V̄ |
| | | 400 CD | 10,000 X̄ |

Example 1: Write the following in Roman numerals.

- (a) 45
- (b) 99
- (c) 92
- (d) 78
- (e) 181

(a) $45 = 40 + 5 = XL + V = \mathbf{XLV}$

(b) $99 = 90 + 9 = XC + IX = \mathbf{XCIX}$

(c) $92 = 90 + 2 = XC + II = \mathbf{XCII}$

(d) $78 = 50 + 20 + 5 + 3 = L + XX + V + III = \mathbf{LXXVIII}$

(e) $181 = 100 + 80 + 1 = C + LXXX + I = \mathbf{CLXXXI}$

Example 2: Write the following in Hindu-Arabic numeral.

- (a) LXV
- (b) LIII
- (c) CDXCIX

(a) $LXV = L + X + V = 50 + 10 + 5 = \mathbf{65}$

(b) $LIII = L + III = 50 + 3 = \mathbf{53}$

(c) $CDXCIX = CD + XC + IX = 400 + 90 + 9 = \mathbf{499}$