



Learning Objectives

At the end of this lesson, students will be able to:

- Write Roman numbers upto 1000.
- Know the multiplication, addition and subtraction rules, for writing Roman Numbers.



Warm-Up

Priyank's teacher has given the task of completing the following table. She has filled some missing numbers but couldn't complete the table. Help her to complete the entire table.

Numbers	Roman Numbers
1	I
2	II
3	
4	IV
5	V
6	
7	VII
8	
9	IX
10	X

Numbers	Roman Numbers
11	XI
12	XII
13	
14	XIV
15	XV
16	XVI
	XVII
18	XVIII
19	XIX
20	XX

Numbers	Roman Numbers
	XXX
40	XL
50	
	LX
70	LXX
80	
90	XC
	C



Teacher's Note:

Assist the students in filling the missing numbers. Further, inform them not to forget that Roman numerals have no zeros.



As we know, there are seven distinct symbols used by Romans to form Roman Numbers.

These are given below:

Roman Symbols	I	V	X	L	C	D	M
Numbers	1	5	10	50	100	500	1000

In the class IV, we have studied about Roman numbers upto 100. Now, in this class, we shall extend our learning.

Writing Roman Numbers for Hindu-Arabic Numerals

Hindu-Arabic Numerals	Roman Numerals	Hindu-Arabic Numerals	Roman Numerals
1	I	100	C
5	V	101	CI
10	X	105	CV
20	XX	110	CX
30	XXX	150	CL
45	XLV	180	CLXXX
50	L	200	CC
60	LX	248	CCXLVIII
90	XC	400	CD
450	CDL	900	CM
500	D	1009	MIX
559	DLIX	1200	MCC
600	DC	1450	MCDL
740	DCCXL	3000	MMM



Facts to Know

While the fourth Roman numeral is written as IV, most clocks in the world have it IIII instead of IV. Among the most famous clocks, which depicted four as IIII, is the Clock Tower of the Washington's old post office.



Rules For Writing Roman Numbers

1. Multiplication Rule:

Repetition of roman numbers means addition.



Remember

- (i) Only symbols I, X, C and M can be repeated.
- (ii) Symbols V, L and D cannot be repeated.
- (iii) No symbol is repeated more than 3 times.

Examples	:	II	=	1×2	=	2
		III	=	1×3	=	3
		XX	=	10×2	=	20
		XXX	=	10×3	=	30
		CC	=	100×2	=	200
		CCC	=	100×3	=	300
		MM	=	1000×2	=	2000
		MMM	=	1000×3	=	3000

2. Addition Rule:

When a smaller number is written to the right of a larger number, then the smaller number is added to the larger number.

Examples	:	XII	=	$10 + 1 + 1$	=	12
		XVI	=	$10 + 5 + 1$	=	16
		CVIII	=	$100 + 5 + 1 + 1 + 1$	=	108
		CXX	=	$100 + 10 + 10$	=	120
		DXX	=	$500 + 10 + 10$	=	520



$$\text{DCCLXI} = 500 + 100 + 100 + 50 + 10 + 1 = 761$$

$$\text{MDCLXXIII} = 1000 + 500 + 100 + 50 + 10 + 10 + 1 + 1 + 1 = 1673$$

$$\text{MDC} = 1000 + 500 + 100 = 1600$$

3. Subtraction Rule:

When a smaller number is written to the left of a larger number, then the smaller number is subtracted from the larger number.



Quick Tip

- (i) Symbols V, L and D are never subtracted.
- (ii) Symbol I can only be subtracted once from V and X
- (iii) Symbol X can only be subtracted once from L and C.
- (iv) Symbol C can only be subtracted once from D and M.

Examples :

$$\begin{aligned} \text{IV} &= 5 - 1 = 4 \\ \text{IX} &= 10 - 1 = 9 \\ \text{XL} &= 50 - 10 = 40 \\ \text{XC} &= 100 - 10 = 90 \\ \text{CD} &= 500 - 100 = 400 \\ \text{CM} &= 1000 - 100 = 900 \end{aligned}$$



Solved Examples

Example 1 : Multiply the following.

- (i) $\text{VI} \times \text{V}$ (ii) $\text{II} \times \text{IV}$ (iii) $\text{VIII} \times \text{X}$ (iv) $\text{XII} \times \text{V}$ (v) $\text{XX} \times \text{C}$

Solution : (i) $\text{VI} \times \text{V}$

$$\text{Hindu-Arabic Numeral of VI} = 6$$

$$\text{Hindu-Arabic Numeral of V} = 5$$

$$\begin{aligned} \therefore \text{VI} \times \text{V} &= 6 \times 5 \\ &= 30 \end{aligned}$$

(ii) $\text{II} \times \text{IV}$

$$\text{Hindu-Arabic Numeral of II} = 2$$

$$\text{Hindu-Arabic Numeral of IV} = 4$$

$$\begin{aligned} \therefore \text{II} \times \text{IV} &= 2 \times 4 \\ &= 8 \end{aligned}$$



(iii) $VIII \times X$

Hindu-Arabic Numeral of $VIII = 8$

Hindu-Arabic Numeral of $X = 10$

$$\begin{aligned}\therefore VIII \times X &= 8 \times 10 \\ &= 80\end{aligned}$$

(iv) $XII \times V$

Hindu-Arabic Numeral of $XII = 12$

Hindu-Arabic Numeral of $V = 5$

$$\begin{aligned}\therefore XII \times V &= 12 \times 5 \\ &= 60\end{aligned}$$

(v) $XX \times C$

Hindu-Arabic Numeral of $XX = 20$

Hindu-Arabic Numeral of $C = 100$

$$\begin{aligned}\therefore XX \times C &= 20 \times 100 \\ &= 2000\end{aligned}$$



Exercise 2.1

1. Write the Roman numbers for the following numerals.

(a) 82

(b) 121

(c) 645

(d) 426

(e) 580

(f) 269

(g) 1302

(h) 2076

(i) 1045

(j) 1500

(k) 1872

(l) 2242

(m) 1400

(n) 3000

(o) 488

2. Write the Hindu-Arabic Numbers for the following Roman numerals.

(a) XXXVI

(b) XLVI

(c) XCVIII

(d) DCC

(e) MCXI

(f) DCX

(g) CDXLIX

(h) CCCXX

(i) MMMCC

(j) DLV

(k) LXIX

(l) MMCCC

(m) MCD

(n) CCC

(o) MX



3. Which of the following are meaningless?

- (a) IIC (b) CXL (c) DVLV
(d) CCC (e) MMVVII (f) MCDIV

4. Compare ($>$, $<$, $=$) the following Roman numbers.

- (a) XCIV  XCVI (b) CXL  CLX (c) DC  CD
(d) MCC  CML (e) CCXX  CXX (f) MC  CD

5. Multiply the following.

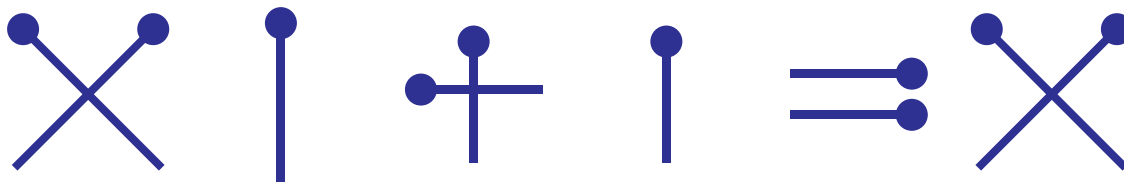
- (a) VII $\times$ X (b) IX $\times$ II (c) XXI $\times$ III
(d) XIX $\times$ V (e) XX $\times$ II (f) XV $\times$ D
(g) XXII $\times$ IX (h) CC $\times$ XII (i) XIX $\times$ XVII
(j) LX $\times$ XL



Think Wisely

Correct this Roman-number sentence in two ways.

- a. By moving one stick
b. By removing one stick



Mental Maths

Write T for True Statements and F for False Statements.

- (a) No roman symbol is repeated more than three times. ()
(b) The symbol V is always subtracted. ()
(c) 900 can also be written as CM. ()
(d) C can be repeated at most three times. ()
(e) The roman symbol for 500 is M. ()





Materials required: A blank Bingo card and a colour pencil.

Steps:

1. Each student takes out Bingo card.
2. Teacher asks the students to write any 25 Roman numerals (from 1 to 40) on the card.
3. Students can write Roman numerals of their own choice.

B	I	N	G	O
XXII	XIX	XLIV	XXXIX	IX
XLIII	XII	XXIV	IV	XVIII
XLVII	XXI	X	XXXII	XXVII
XXX	XLII	XXXVII	XXV	XL
XV	XXXIV	XXXVIII	XXXV	XXIX

4. The teacher reads out any 25 numbers in a random order with uniform interval.
5. The students then try to look for the number on their Bingo card. If they find it, they cross off that square.
6. The student with maximum number of crossed squares is the winner.

