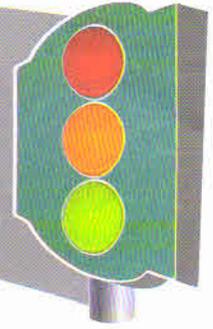


1 Roman Numerals



Route Map

Mike has some Roman numbers on his mind. Help him fill the boxes with the correct symbols to represent the given numbers.

a. = 4

b. = 12

= 6

= 20

= 27



X I L
V D

Priya and Ishita have travelled to Rome. They have to call their hotel but they do not recognise the numbers. Help them read the phone number on the visiting card.

The Rome Hotel

Call : V V VIII IX II IV I II

Priya and Ishita should dial the number _____.

Road Ahead

You will learn about:

- ◆ revising Roman numbers up to 100
- ◆ simple calculations involving Roman numbers.

Thousands of years ago, Romans developed their own number system. This number system is called the Roman number system. We have learnt about it in the previous classes.

In this class, we will revise Roman numbers up to 100 and do some simple calculations involving Roman numbers.

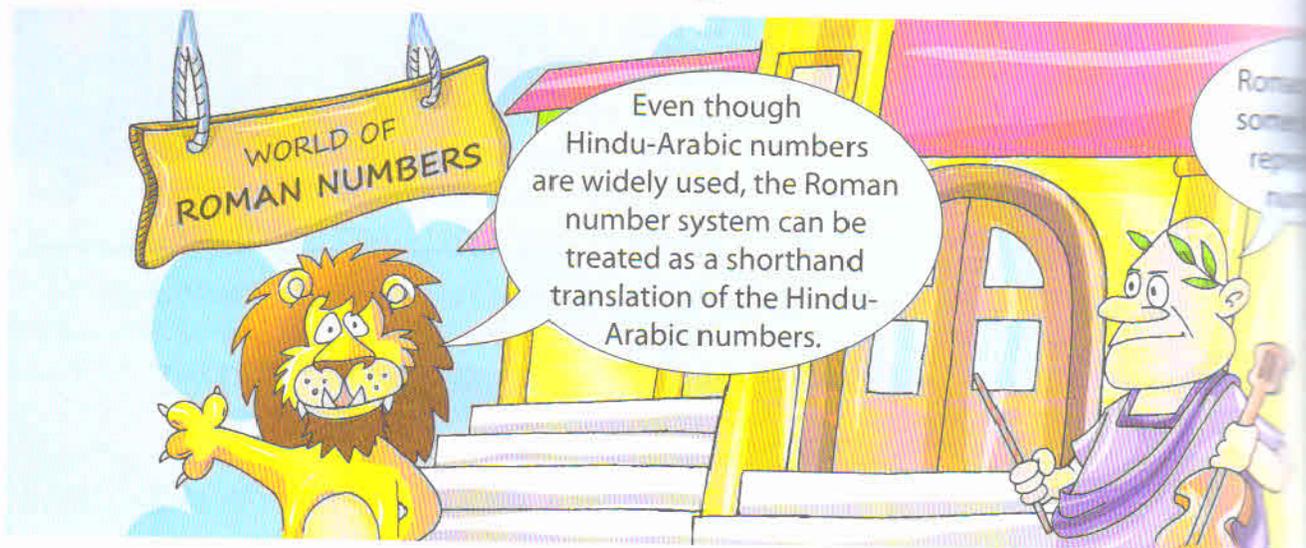
The Roman number system is based on seven letters of the English alphabet.



Roman numeral	I	V	X	L	C	D	M
Value (Hindu-Arabic numeral)	1	5	10	50	100	500	1000



Revising Roman Numbers up to 100



There are some simple rules to be followed while writing Roman numbers.

Rule 1: When a symbol is used more than once, its value is added each time to get the number.

For example, $II = 1 + 1 = 2$ $XX = 10 + 10 = 20$ $CCC = 100 + 100 + 100 = 300$

However, I, X, C and M can only be repeated thrice. V, L and D are never repeated.

Rule 2: Values are added if, a symbol or symbols are placed after the symbol of a greater value.

For example, in VI, I is written after V.

So, value of VI = $5 + 1 = 6$

LX = $50 + 10 = 60$

Rule 3: A symbol placed before the symbol of a greater value is subtracted from it.

For example, in IV, I is written before V.

So, value of IV = $5 - 1 = 4$

XL = $50 - 10 = 40$

Rule 4: A sign $\bar{\quad}$ over a symbol signifies multiplication of its value by 1000.

For example, $\bar{X} = 10 \times 1000 = 10000$

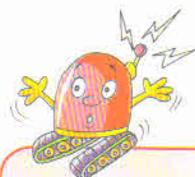
$\bar{V} = 5 \times 1000 = 5000$

$\bar{C} = 100 \times 1000 = 100000$



Maths Boost

The Roman number system does not use the concept of place value.



Alert!

XXL is not $50 - 20 = 30$ as 30 is represented using XXX.

'C' in Roman number system stands for *centum*, meaning 'hundred.'

Fact-o-Meter

Let us revise Roman numbers from 1 to 100 before moving ahead.

There is no symbol for zero in the Roman number system.



1	2	3	4	5	6	7	8	9	10
I	II	III	IV	V	VI	VII	VIII	IX	X
11	12	13	14	15	16	17	18	19	20
XI	XII	XIII	XIV	XV	XVI	XVII	XVIII	XIX	XX
21	22	23	24	25	26	27	28	29	30
XXI	XXII	XXIII	XXIV	XXV	XXVI	XXVII	XXVIII	XXIX	XXX
31	32	33	34	35	36	37	38	39	40
XXXI	XXXII	XXXIII	XXXIV	XXXV	XXXVI	XXXVII	XXXVIII	XXXIX	XL
41	42	43	44	45	46	47	48	49	50
XLI	XLII	XLIII	XLIV	XLV	XLVI	XLVII	XLVIII	XLIX	L
51	52	53	54	55	56	57	58	59	60
LI	LII	LIII	LIV	LV	LVI	LVII	LVIII	LIX	LX
61	62	63	64	65	66	67	68	69	70
LXI	LXII	LXIII	LXIV	LXV	LXVI	LXVII	LXVIII	LXIX	LXX
71	72	73	74	75	76	77	78	79	80
LXXI	LXXII	LXXIII	LXXIV	LXXV	LXXVI	LXXVII	LXXVIII	LXXIX	LXXX
81	82	83	84	85	86	87	88	89	90
LXXXI	LXXXII	LXXXIII	LXXXIV	LXXXV	LXXXVI	LXXXVII	LXXXVIII	LXXXIX	XC
91	92	93	94	95	96	97	98	99	100
XCI	XCII	XCIII	XCIV	XCV	XCVI	XCVII	XCVIII	XCIX	C
100	200	300	400	500	600	700	800	900	1000
C	CC	CCC	CD	D	DC	DCC	DCCC	CM	M



Mental Maths

Write the corresponding Roman numbers for the given Hindu-Arabic numbers.

- | | |
|---------------|----------------|
| a. 73 = _____ | b. 99 = _____ |
| c. 54 = _____ | d. 81 = _____ |
| e. 89 = _____ | f. 20 = _____ |
| g. 18 = _____ | h. 13 = _____ |
| i. 23 = _____ | j. 46 = _____ |
| k. 65 = _____ | l. 37 = _____ |
| m. 9 = _____ | n. 25 = _____ |
| o. 56 = _____ | p. 11 = _____ |
| q. 88 = _____ | r. 95 = _____ |
| s. 49 = _____ | u. 100 = _____ |

Example: Write the values of these Roman numbers in the Hindu-Arabic number system.

- | | | |
|---------|---------|----------|
| a. CCCV | b. LXXX | c. MDCIX |
| d. DXIV | e. CDX | f. MCXL |

Solution:

- a. $CCCV = 100 + 100 + 100 + 5 = 305$
 b. $LXXX = 50 + 10 + 10 + 10 = 80$
 c. $MDCIX = 1000 + 500 + 100 + 9 = 1609$
 d. $DXIV = 500 + 10 + 4 = 514$
 e. $CDX = (500 - 100) + 10 = 400 + 10 = 410$
 f. $MCXL = 1000 + 100 + (50 - 10) = 1100 + 40 = 1140$



Maths Boos

- I can be subtracted from V and X
- X can be subtracted from L and C
- C can be subtracted from D and M
- V, L and D are never subtracted

Exercise 1.1

1. Complete the sequence.

- a. I, II, III, IV, _____, _____, _____, _____
 b. XXII, XXIII, XXIV, XXV, _____, _____, _____, _____
 c. LII, LIII, LIV, LV, _____, _____, _____, _____

d. XCI, XCII, XCIII, XCIV, _____, _____, _____, _____

e. LXVII, LXVIII, LXIX, LXX, _____, _____, _____, _____

2. Write the corresponding Hindu-Arabic numbers for these Roman numbers.

a.

XXIII	XXVI	XXIX	XXXII

b.

LXIX	LXXIX	LXXXIX	XCIX

c.

LXV	LX	LV	L

d.

C	D	CM	CD

3. Write the corresponding Roman numbers.

a. 1076

b. 1985

c. 228

d. 749

4. Write the corresponding Hindu-Arabic numbers.

a. MLXXX

b. CDLVIII

c. CMLII

d. CMXXIV

Simple Calculations Involving Roman Numbers

We can carry out simple calculations involving Roman numerals.

Example: LXII + XIV

$$= 62 + 14$$

$$= 76$$

$$= \text{LXXVI}$$



Maths Boost

Convert the Roman number into a Hindu-Arabic number and then carry out the calculation.

Exercise 1.2

Fill in the blanks with the correct Roman number.

a. XXII + IV =

b. XCIII - = LXXXVI

c. XXXV + LXIV =

d. M - C =

e. - XL = III

f. C + = DC

Milestones Achieved



- The Roman number system is based on seven letters of the English alphabet.
- In the Roman number system, a symbol can only be repeated thrice.
- There are a set of specified rules to be followed while writing Roman numbers doing calculations.
- There is no symbol for zero in the Roman number system.
- The concept of place value is not used in the Roman number system.

EXERCISE

1. Match the columns by colouring them alike.

Column A	Column B
143	CCCV
642	DCXLII
305	CXLIII
256	CL
150	CCLVI

2. Arrange the numbers in ascending order.

a. XXXIX, XV, XLIII, XXVI, LXI, XCI

b. LXXXIV, XCIV, XLVIII, CXVII, LXXV, XV

3. Arrange the numbers in descending order.

a. LXXVIII, XCII, LXVII, XXXVIII, XVIII, XCIV

b. CXXIV, XV, LXV, CXIX, XCII, CCIX

4. Complete the sequence.

a. LXXVII, LXXVIII, LXXIX, LXXX, _____, _____, _____

b. XCI, XCII, _____, XCIV, XCV, _____, _____

5. Complete the table.

Roman number	Hindu-Arabic number	Expanded form
DCCCLXIII		
	459	
		1000 + 500 + (100 - 30)
MMCXVI		

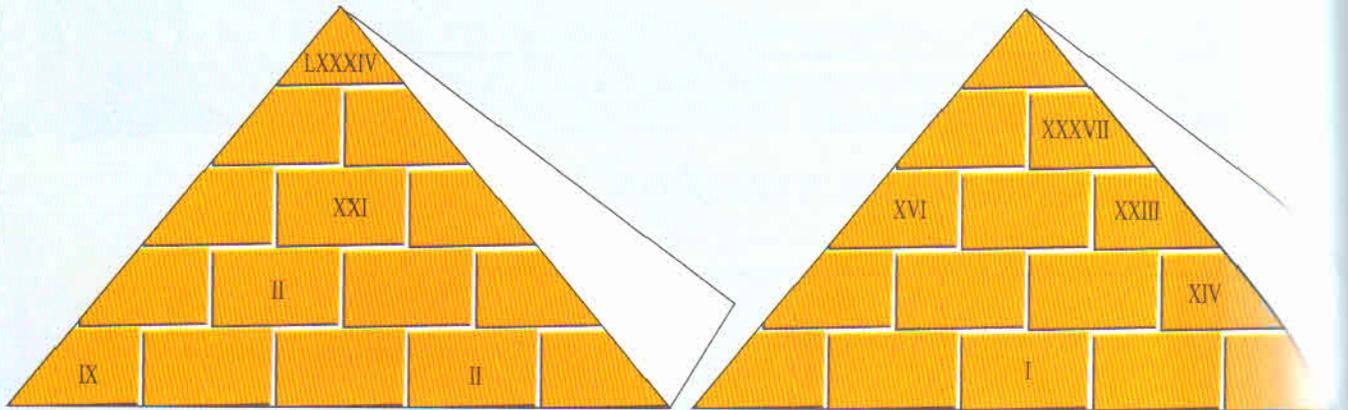


Detective Maths

FA

Puzzle Pyramids

All bricks are numbered in such a way that the number on each brick is the sum of the numbers on two bricks on which it stands. Find the numbers on the remaining bricks.



PSA Corner

Choose the correct option.

- Roman number for the greatest 2-digit number is _____
 i. CXIX ii. XCIX iii. IXCX
- The number one less than the greatest 3-digit number is represented as _____
 i. CMXCVIII ii. CMCVIII iii. CMXCIX
- $377 = \boxed{\quad ? \quad}$
 i. CCLXVII ii. CCDXVII iii. CCCLXXVII
- Which of these is not a valid number?
 i. CDXCVIII ii. CMXCIX iii. ICC

HOLY TRINITY INTERNATIONAL SCHOOL

Mathematics

Grade: V

Roman Numerals

I. Fill in the blanks

- I, II, III,,,
- $XXII + IV = \dots\dots\dots$
- There is no symbol for zero in the system.
- I can be subtracted from V and
- V, L and D are never
- Romans used some rules to represent a
- C stands for
- Centum meaning is
- The Roman number system does not use the concept of
- The symbol of zero in Roman number system is
- X can be subtracted from L and

II. Choose the correct answer

- What is the Roman letter for 73
a. LXXIII b. XIII c. XCV d. XX
- What is the Hindu Arabic number for CCCV
a. 305 b. 465 c. 678 d. 234
- can be subtracted from D and M only.
a. C b. G c. V d. A
- $C + \dots\dots\dots = DC$
a. D b. G c. A d. R
- A sign over a symbol signifies multiplication of its value by
a. 1000 b. 500 c. 600 d. 10000
- The value of M is
a. 1000 b. 500 c. 100 d. 300
- $228 = \dots\dots\dots$
a. CCXXVIII b. CCXVII c. CCXXVI d. CXXVII
- $CDLIX = \dots\dots\dots$
a. 459 b. 453 c. 549 d. 594
- Which of these is not a valid number?
a. CDXCVIII b. CMXCIX c. ICC d. CDXCIII

10. The number one less than the greatest 3-digit number is represented as.....

- a. CMXCVIII b. CMXCIX c. CMCVIII d. CMXCVII

III. Match the following

Column A	Column B
143	CCCV
642	DCXLII
305	CXLIII
256	CL
150	CCLVI
700	CD
800	DCCC
400	M
1000	DCC

IV. TRUE or FALSE

1. Romans developed their own number system. This system is called the Roman number system.
2. Roman system is based on ten letters of the English alphabet.
3. M=1000
4. XL=50-10=40
5. 30 is represented using LLL.
6. 95=XCV
7. V, L and D are never subtracted.
8. XXXV+LXIV=XCIV
9. The concept of place value is used in the Roman number system.
10. There is no symbol for zero in the Roman number system.

V. Answer the following questions as directed.

1. Complete the following sequences

1. LXVII, LXVIII, LXIX,,,

- 2 . XCI , XCII , XCIII , ,
- 3 . LII, LIII, LIV, LV,,
- 4 XCI, XCII, XCIII, XCIV,,
- 5 LXVII, LXVIII, LXIX, LXX,,

2. Write the corresponding Hindu Arabic numbers for these Roman numbers:

- a. XXII =
- b. LX =
- c. CDLVIII =
- d. CM =
- e. D =
- f. LXIX =
- g. LXXXIX =
- h. XCIV =
- i. XCIX =
- j. XXXVIII =
- k. LVIII =

3. Write the corresponding Roman numbers

- a. 1076 =
- b. 1985 =
- c. 228 =
- d. 300 = ...
- e. 83 =
- f. 749 =
- g. 458 =
- h. 942 =
- i. 924 =
- j. 1140 =
- k. 410 =
- l. 1609 =
- m. 1080 =

4. Arrange the numbers in ascending and descending order

- a. XXXIX , XV , XLIII , XXVI , XCI.
- b. XXII, XXV, XXVIII , XXVI , XXIX , XXIII , XXX.
- c. LXVIII, LXVI, LXXIV, LXXVI, LXXX, LXXX
- d. LXXVIII , XCII , LXVII , XXXVIII , XVIII , XCIV .
- e. XXIII, XXXII, XXIX , XXVI.
- f. LXIX, LXXXIX, XCIX, LXXIX
- g. C , CM , CD , D.
- h. LX , LXV , L , LV.

5. Fill in the blanks with the correct Roman number:

a. $.XXII+IV = \dots\dots\dots$

b. $XCIII - \dots\dots\dots = LXXXVI$

c. $M-C = \dots\dots\dots$

d. $XXXV+LXIV = \dots\dots\dots$

e. $C + \dots\dots\dots = DC$

f. $\dots\dots - XL = III$

6. Write the values of these Roman numbers in the Hindu Arabic number system:

a. CCCV

b. LXXX

c. MDCIX

d. DXIV

e. CDX

f. MCXL