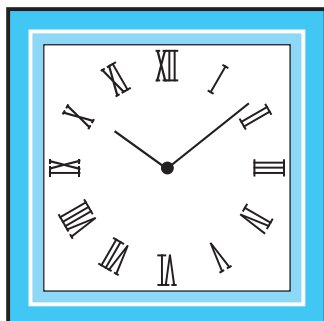


Part One

1. Roman Numerals



Geeta : This clock doesn't have numbers. It has some symbols instead.

Teacher : Yes, Geeta ! These are Roman numerals. In Europe, in the old times, Roman capital letters were used to write numbers. That is why, they were called Roman numerals. The letter 'I' was the symbol used for 1, 'V' for 5, and 'X' for 10.

In this method, there was no symbol for zero. Also, the value of a symbol did not change with its place. There are certain rules for writing numbers using the Roman numerals. Let us see how to write 1 to 20 using these rules and the symbols I, V and X.

Rule 1 : If either of the symbols I or X is written consecutively two or three times, their sum total is the number they make.

Examples : $II = 1 + 1 = 2$ $XX = 10 + 10 = 20$ $III = 1 + 1 + 1 = 3$

Rule 2 : The symbols I or X can be repeated consecutively for a maximum of three times. The numeral V is never repeated consecutively.

Rule 3 : When either I or V is written on the right of the symbol of a bigger number, its value is added to the value of the bigger number.

Examples : $VI = 5 + 1 = 6$ $XI = 10 + 1 = 11$ $XV = 10 + 5 = 15$
 $VII = 5 + 2 = 7$ $XII = 10 + 2 = 12$ $XVI = 10 + 5 + 1 = 16$
 $VIII = 5 + 3 = 8$ $XIII = 10 + 3 = 13$

Rule 4 : When I is written on the left of V or X, then its value is subtracted from the value of V or X. However, the symbol I is not written more than once before V or X.

Examples : $IV = 5 - 1 = 4$, $IX = 10 - 1 = 9$. But, the number 8 is not written as IIX.

We have to think a little differently to write the numbers 14 and 19.

$14 = 10 + 1 + 1 + 1 + 1$. However, we do not use the symbol I consecutively more than 3 times. Hence, we shall think of the number 14 as $10 + 4$, instead. Then, using the symbol IV for 4, we write 14 as XIV. Similarly, we shall think of the number 19 as $10 + 9$ and write it as XIX.

Thus, to write the numbers from 1 to 20 in Roman numerals, we first distribute a given number into groups of 10, 5 and 1 and then apply the rules given above.

Thus, $12 = 10 + 1 + 1 = XII$, $7 = 5 + 1 + 1 = VII$, $18 = 10 + 5 + 3 = XVIII$

Problem Set 1

1. Write all the numbers from 1 to 20 using Roman numerals.

2. Write the following numbers using international numerals.

(1) V (2) VII (3) X (4) XIII (5) XIV (6) XVI (7) XVIII (8) IX

3. Fill in the empty boxes.

Number	Three		Six		Fifteen	
Roman numerals		VIII		XII		XIX

4. Write the numbers using Roman numerals.

(1) 9 (2) 2 (3) 17
 (4) 4 (5) 11 (6) 18

5. In the table below, each given number is written in international numerals and then again in Roman numerals. If it is written correctly in Roman numerals, put '✓' in the box under it. If not, put '✗' and correct it.

International numerals	4	6	8	16	15
Roman numerals	IIII	VI	IIX	XVI	VVV
Right / Wrong (If wrong, correct the numeral.)					

Something more : L, C, D and M are also used as Roman numerals.

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

Activity : Apart from clocks and watches, where else do we see Roman numerals?

The decimal system of writing numbers

It is not easy to read or write numbers using Roman numerals. It also makes calculations difficult. You have learnt to write numbers using the ten digits, 0 to 9. In that system, the value of a digit depends upon its place in the number. This system of writing numbers is called the 'decimal system'.

Mathematicians of ancient India invented the decimal system of writing numbers and began to use it. Later, this system was accepted in all parts of the world because it was simple and convenient.

