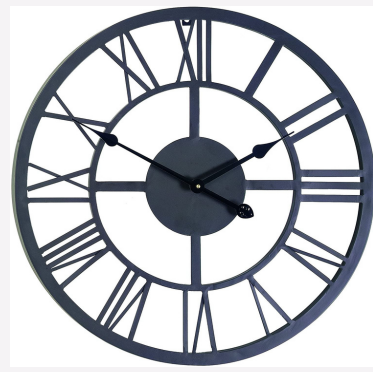


# Roman Numerals

You can guess from their name that Roman Numerals originated in ancient Rome. They were created as a simple means of counting in which certain letters are given values as numerals (a numeral is a written symbol referring to a number).



**Rule 1:** The roman digits I, X and C are repeated upto three times in succession to form the numbers.

(a) We know the value of I = 1, value of X is 10 and value of C is 100.

(b) The value of I, X and C are added as:

$$I = 1$$

$$II = 1 + 1 = 2$$

$$III = 1 + 1 + 1 = 3$$

$$X = 10$$

$$XX = 10 + 10 = 20$$

$$XXX = 10 + 10 + 10 = 30$$

$$C = 100$$

$$CC = 100 + 100 = 200$$

$$CCC = 100 + 100 + 100 = 300$$

(c) No digit is repeated in succession more than thrice, i.e., I, X and C cannot be repeated more than 3 times.

(d) The digits V, L and D are not repeated. The repetition of V, L and D is invalid in the formation of numbers.

**Rule 2 :** (a) When a digit of lower value is written to the right or after a digit of higher value, the values of all the digits are added. As:

$$VI = 5 + 1 = 6$$

$$VII = 5 + 1 + 1 = 7$$

$$VIII = 5 + 1 + 1 + 1 = 8$$

$$XI = 10 + 1 = 11$$

$$XII = 10 + 1 + 1 = 12$$

$$XV = 10 + 5 = 15$$

$$XVI = 10 + 5 + 1 = 16$$

$$LX = 50 + 10 = 60$$

$$LXV = 50 + 10 + 5 = 65$$

(b) Value of similar digits are also added as indicated in rule 1

$$III = 1 + 1 + 1 = 3$$

$$XXX = 10 + 10 + 10 = 30$$

$$XX = 10 + 10 = 20$$

**Rule 3:** When a digit of lower value is written to the left or before a digit of higher value, then the value of the lower digit is subtracted from the value of the digit of higher value. As:

$$IV = 5 - 1 = 4$$

$$IX = 10 - 1 = 9$$

$$XL = 50 - 10 = 40$$

$$XIV = 10 + (5 - 1) = 14$$

$$XIX = 10 + (10 - 1) = 19$$

$$XXIX = 10 + 10 + (10 - 1) = 29$$

$$XLV = (50 - 10) + 5 = 45$$

$$CLIX = 100 + 50 + (10 - 1) = 159$$

However, V is never written to the left of X.

Rule 4: (a) If we have to write the numbers beyond 10 we should write the number 10 or groups of number 10 and then number 1 or 5 as the case may be. Then these numbers are used to change to the corresponding Roman numerals. As:

$$12 = 10 + 2 = 10 + 1 + 1 = XII$$

$$20 = 10 + 10 = XX$$

$$22 = 10 + 10 + 1 + 1 = XXII$$

$$26 = 10 + 10 + 5 + 1 = XXVI$$

$$39 = 10 + 10 + 10 + (10 - 1) = XXXIX$$

$$37 = 10 + 10 + 10 + 5 + 1 + 1 = XXXVII$$

(b) According to this pattern, numbers higher than number 40 are also formed:

$$43 = (50 - 10) + 1 + 1 + 1 = XLIII$$

$$56 = 50 + 5 + 1 = LVI$$

$$59 = 100 + 50 + (10 - 1) = CLIX$$

$$1238 = 1000 + 100 + 100 + 10 + 10 + 10 + 5 + 1 + 1 + 1 = MCCXXXVIII$$

$$1 = I$$

$$2 = II$$

$$3 = III$$

$$4 = IV$$

$$5 = V$$

$$6 = VI$$

$$7 = VII$$

$$8 = VIII$$

$$9 = IX$$

$$10 = X$$

$$20 = XX$$

$$30 = XXX$$

$$40 = XL$$

$$50 = L$$

$$60 = LX$$

$$70 = LXX$$

$$80 = LXXX$$

$$90 = XC$$

$$100 = C$$

$$500 = D$$

$$1000 = M$$

For example:

1. Write the Roman numerals for the following numbers:

(i) 13 = XIII

(ii) 14 = XIV

(iii) 18 = XVIII

(iv) 26 = XXVI

(v) 39 = XXXIX

(vi) 42 = XLII

(vii) 61 = LXI

(viii) 545 = DXLV

(ix) 217 = CCXVII

2. Write the numbers for the following Roman numerals:

(i) VII = 7

(ii) XXXIV = 34

(iii) XXXVII = 37

(iv) XLIII = 43

(v) XLVIII = 48

(vi) LII = 52

(vii) CXL = 140

(viii) CXLV = 145