1 KNOWING OUR NUMBERS

Aryabhata was one of the first major mathematicians and astronomers from the classical age of Indian mathematics and Indian astronomy. His works include the Aryabhatiya (499 CE, when he was 23 years old) and the Arya-siddhanta. Aryabhata was the author of several treatises on mathematics and astronomy, some of which are lost. His major work, Aryabhatiya, a compendium of mathematics and astronomy, was extensively referred to in the Indian mathematical literature and has survived to modern times.

CONCEPT MAP

KNOWING OUR NUMBERS

- Natural Numbers N
  - Arranging the numbers
    - Greatest number
    - Smallest number
    - Ascending order smallest to greatest 13<23<45<67<99
    - Descending order greatest to smallest 99<67<45<23<13
  - Forming a number using given digits
    - Without repetition for ex - make a smallest 4 digit number using 3, 8, 2, 0 ans - 2038
    - With repetition for ex - make a greatest 5 digit number using 4, 6, 7, 8 repeating 8 twice ans - 88764
  - Roman numerals VI, VII, C, L, X, IX, XXIX etc.
  - Rounding off numbers
    - Nearest 10 Ex - 246 to Nearest 10 = 250
    - Nearest 100 Ex - 2365 to Nearest 100 = 2400
    - Nearest 1000 Ex - 23456 to Nearest 1000 = 23000
  - Use of brackets $2 \times (13+14) = (2 \times 13) + (2 \times 14) = 26 + 28 = 54$
  - Writing words in numbers

Indian Place - Value Chart

Crores		Lakhs		Thousands		Ones		
Ten crores (TC)	Crores (C)	Ten Lakhs (TL)	Lakhs (L)	Ten Thousands (TTh)	Thousands (Th)	Hundreds (H)	Tens (T)	Ones (O)

International Place - Value Chart

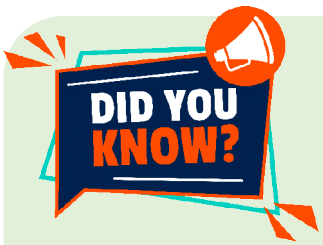
Millions		Thousands				Ones		
Hundred millions (HM)	Ten Millions (TM)	Million (M)	Hundred Thousands (HTh)	Ten Thousands (TTh)	Thousands (Th)	Hundreds (H)	Tens (T)	Ones (O)

1,00,000 - One hundred thousand
10,00,000 - One million
1,00,00,000 - Ten million
10,00,00,000 - One hundred million

Concept 1

Natural Numbers : Counting numbers 1, 2, 3, 4, etc. are called Natural numbers. The smallest natural number is 1 and there is no largest natural number.

Digits : Numbers are formed using the ten symbols 0, 1, 2, 3, 4, 5, 6, 7, 8 and 9. These symbols are called digits or figures.
Every digit has two values. They are the face value and the place value.



The concept of zero as a number was first used by ancient Indian mathematicians like Aryabhata and Brahmagupta!

Face Value:

Face value of a digit is the number of objects that it always shows irrespective of its place in a number.
Example: The face value of 5 in 75396 is 5.

Place Value:

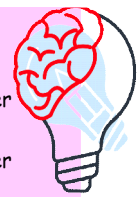
Place value of a digit depends on the place it occupies in a number.
Thus, place value of a digit = (Face value of the digit) x (Value of the place)
Example: The place value of 5 in 75396 is 5 x 1000 = 5000.

Comparison of Numbers : If two numbers have an unequal number of digits, then the number with the greater number of digits is greater. If two numbers have equal number of digits then, the number with greater valued digit on the extreme left is greater. If the digits on extreme left of the numbers are equal then the digits to the right of the extreme left digits are compared and so on.

Smallest and Greatest Numbers :

Number	Smallest	Greatest
Single-digit number	1	9
Two-digit number	10	99
Three-digit number	100	999
Four-digit number	1000	9999
Five-digit number	10000	99999
Six-digit number	100000	999999
Seven-digit number	1000000	9999999
Eight-digit number	10000000	99999999

Knowledge Box



1. The smallest n-digit number is 10^{n-1}.
2. The greatest n-digit number is $10^n - 1$.

Example: For 3 digits, smallest = 100, greatest = 999.

Indian System of Numeration :

Values of the places in the Indian system of numeration are Ones, Tens, Hundreds, Thousands, Ten thousands, Lakhs, Ten Lakhs, Crores and so on.

International System of Numeration : Values of the places in the International system of numeration are Ones, Tens, Hundreds, Thousands, Ten thousands, Hundred thousands, Millions, Ten millions and so on.

1 million = 1000 thousands 1 billion = 1000 millions

Commas in Indian System of Numeration :

Commas are placed to the numbers to help us read and write large numbers easily. As per Indian system of numeration, the first comma is placed after the hundreds place. Commas are then placed after every two digits.

Example: 38,64,953

Commas in International System of Numeration :

As per International numeration system, the first comma is placed after the hundreds place. Commas are then placed after every three digits.

Example: 95,638,709

Ascending Order :

The arrangement of numbers from the smallest to the greatest is called ascending order.

Example: 69, 100, 75, 200, 35

Ascending order : 35, 69, 75, 100, 200

Descending Order :

The arrangement of numbers from greatest to the smallest is cal descending order.

Example: 69, 100, 75, 200, 35

Descending order : 200, 100, 75, 69, 35

Misconception :

Misconception : A number with more digits is always greater.

Correction : While this is generally true, the rule doesn't apply if leading zeros are included (e.g., 007 = 7).

Formation of Numbers :

Numbers can be formed using the given digits with or without repetition of digits.

Example: 3, 8, 4, 9, 6 are digits;Number : 49683, 36849, ...

Conversion of Units of Measurement :

Units of length:

1 kilometre = 1000 metres
1 metre = 100 centimetres
1 centimetre = 10 millimetres

Units of weight :

1 kilogram = 1000 grams
1 gram = 1000 milligrams

Units of capacity :

1 kilolitre = 1000 litres
1 litre = 1000 millilitres

Estimation :

The estimation of a number is a reasonable guess of the actual value. Estimation means approximating a quantity to the accuracy required. This is done by rounding off the numbers involved and getting a quick and rough answer.

Rounding Off a Number to the Nearest Tens The numbers 1, 2, 3 and 4 are nearer to 0. So, these numbers are rounded off to the lower ten. The numbers 6, 7, 8 and 9 are nearer to 10. So, these numbers are rounded off to the higher ten. The number 5 is equidistant from both 0 and 10, so it is rounded off to the higher ten.

Rounding Off a Number to the Nearest Hundreds The numbers 201 to 249 are closer to 200. So, these numbers are rounded off to the nearest hundred i.e. 200. The numbers 251 to 299 are closer to 300. So, these numbers are rounded off to the higher hundred i.e. 300. The number 250 is rounded off to the higher hundred.

CLASSROOM DISCUSSION QUESTIONS CDQ 01

1. What is the smallest natural number?

(A) 0

(B) 1

(C) 2

(D) 3

2. How many symbols (digits) are used to form numbers?

(A) 5

(B) 8

(C) 10

(D) Depends upon the numerical system

3. What is the face value of the digit 4 in the number 5467?

(A) 4

(B) 40

(C) 400

(D) 4000

4. What is the place value of the digit 5 in the number 5234?

(A) 5

(B) 50

(C) 500

(D) 5000

5. According to the Indian system of numeration, what is the place value immediately to the left of the thousands place?

(A) Hundreds

(B) Ten thousands

(C) Lakhs

(D) Ten Lakhs

6. According to the International system of numeration, what comes after the hundred thousands place?

(A) Ten thousands

(B) Million

(C) Ten millions

(D) Thousands

7. What is the greatest three-digit number?

(A) 100

(B) 999

(C) 9999

(D) 99999

8. How many ten thousands make a million?

(A) 10 (B) 100

(C) 1000 (D) 10000

MARK YOUR ANSWERS WITH PEN ONLY. Time Taken ☐ Minutes

1 Ⓐ Ⓑ Ⓒ Ⓓ	2 Ⓐ Ⓑ Ⓒ Ⓓ	3 Ⓐ Ⓑ Ⓒ Ⓓ	4 Ⓐ Ⓑ Ⓒ Ⓓ	5 Ⓐ Ⓑ Ⓒ Ⓓ
6 Ⓐ Ⓑ Ⓒ Ⓓ	7 Ⓐ Ⓑ Ⓒ Ⓓ	8 Ⓐ Ⓑ Ⓒ Ⓓ	9 Ⓐ Ⓑ Ⓒ Ⓓ	10 Ⓐ Ⓑ Ⓒ Ⓓ

Concept 2

Estimating Sums :

In many practical calculations, only an approximation is required rather than an exact answer. To do this, numbers are rounded off to a given place value of ten, hundred, thousand ... and so on.

Problems on Estimating Sums :

1. There are 74 coconut cookies and 48 chocolate cookies in a jar. Estimate the total number of cookies.

Round the numbers to the nearest ten and add.

Rounded to TENS :

Actual	Estimation
74	70
+ 48	+ 50
122	120

There are approximately 120 cookies.
The actual number of cookies is 122.
The estimation differs from the actual by 2.

Knowledge Box

To estimate a sum: 1. Round off each number to the nearest 10, 100, or 1000. 2. Add the rounded numbers. Example: 346 + 578 ≈ 350 + 580 = 930.

2. There are 275 students in class IV and 238 students in class V. Estimate the total number of students in the two classes.

We can round of the numbers either to the nearest ten or the nearest hundred and add to get an estimation number.

Rounded to TENS :

Actual	Estimation
275	280
+ 238	+ 240
513	520

There are approximately 520 students.
The estimation differs from the actual by 7.

Fun Facts

Estimation is like guessing with rules—it's close enough but not exact!

Rounded to HUNDREDS :

Actual	Estimation
275	300
+ 238	+ 200
513	500

There are approximately 500 students.
The estimation differs from the actual by 13.

Estimating Difference :

Problems on Estimating Difference:

1. The school library has 284 science books and 268 social sciences books. Estimate the difference in the number of books.

Rounded to TENS :

Actual		Estimation
284	284	280
− 268	268	− 270
16		10

The difference is approximately 20 books.

The estimate differs from the actual number by 6.

Rounded to HUNDREDS :

Actual		Estimation
284	284	300
− 268	268	− 300
16		0

In this case, rounding number to hundreds will not be meaningful as the difference will be 0.

2. There are 216 pages in the mathematics book of Class VI and 196 pages in the English book of the same class. Estimate the difference in the number of pages of the two books.

Solution:

We use the rounded numbers for estimation.

Rounded to TENS :

Actual		Estimation
216	216	220
− 196	196	− 200
20		20

The estimated difference in number of pages is 20.

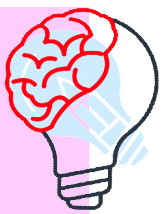
The actual difference is also 20.

Rounded to HUNDREDS :

Actual		Estimation
216	216	200
− 196	196	− 200
20		0

In this case, rounding number to hundreds will not be meaningful as the difference will be 0.

Knowledge Box



To estimate a difference:
1. Round off each number to the nearest 10, 100, or 1000.
2. Subtract the rounded numbers. Example: 758 − 421 ≈ 760 − 420 = 340.

CLASSROOM DISCUSSION QUESTIONS CDQ 02

1. What is the main purpose of rounding numbers when estimating sums or differences?

(A) To get an exact answer

(B) To make calculations easier and quicker

(C) To change the value of the numbers

(D) To compare two numbers

2. If you have 87 apples and 65 oranges, what is the estimated total number of fruits when rounded to the nearest ten?

(A) 150 (B) 160

(C) 140 (D) 170

3. You have 435 blue marbles and 378 red marbles. What is the estimated total number of marbles when rounded to the nearest hundred?

(A) 800 (B) 700

(C) 900 (D) 600

4. When rounding 467 to the nearest ten, what is the result?

(A) 460 (B) 470

(C) 450 (D) 480

5. If there are 391 birds in one tree and 284 birds in another tree, what is the estimated total number of birds when rounded to the nearest hundred?

(A) 700 (B) 600

(C) 500 (D) 800

6. You have 528 candies and give away 273 candies. What is the estimated number of candies left when rounded to the nearest ten?

(A) 250 (B) 260

(C) 240 (D) 270

7. What is the estimated difference in weight between a 375 kg object and a 298 kg object when rounded to the nearest hundred?

(A) 100 (B) 50

(C) 200 (D) 150

8. If a company sold 1,749 units in January and 1,687 units in February, what is the estimated total sales when rounded to the nearest hundred?

(A) 3400 (B) 3300

(C) 3200 (D) 3100

MARK YOUR ANSWERS WITH PEN ONLY. Time Taken ☐ Minutes

1 Ⓐ Ⓑ Ⓒ Ⓓ	2 Ⓐ Ⓑ Ⓒ Ⓓ	3 Ⓐ Ⓑ Ⓒ Ⓓ	4 Ⓐ Ⓑ Ⓒ Ⓓ	5 Ⓐ Ⓑ Ⓒ Ⓓ
6 Ⓐ Ⓑ Ⓒ Ⓓ	7 Ⓐ Ⓑ Ⓒ Ⓓ	8 Ⓐ Ⓑ Ⓒ Ⓓ	9 Ⓐ Ⓑ Ⓒ Ⓓ	10 Ⓐ Ⓑ Ⓒ Ⓓ

Concept 3

Estimating the Products :

In order to estimate products, we round the given factors to the required place value. Estimating products help us to check the reasonableness of an answer.

We First round the given numbers to the nearest tens, hundreds or thousands and then we find the estimated product.

Look at the following table :

Rounding to	Multiplication problem	Rounded numbers	Estimated product	Actual product	Difference
Nearest Ten	87×43	90×40	3600	3741	141
	627×9	630×10	6300	5643	657
Nearest Hundred	192×326	200×300	60000	62592	2592

Examples :

1. Estimate the products of 34 and 86 nearest to 10's.

Solution:

34 ⇒ 30 (34 is rounded down to 30)

86 ⇒ 90 (86 rounded up to 90)

Calculate mentally 30 × 90 = 2700

The estimated product is 2700.

Knowledge Box

To estimate a product:
1. Round off each number to the nearest 10, 100, or 1000.
2. Multiply the rounded numbers. Example: 48 × 23 ≈ 50 × 20 = 1000

2. Estimate the product: 358 × 326 nearest to 100's.

Solution:

One number is rounded up and the other is rounded down. Here 358 is rounded up to the nearest hundred, i.e., 400 while 326 is rounded down to the nearest hundred, i.e., 300.

3 5 8 × 3 2 6 (358 is rounded up to 400)

| |

4 0 0 × 3 0 0 (326 is rounded down to 300)

= 1 2 0 0 0 0

120000 is the estimated product.

We observe that rounding off the numbers to the nearest tens gives a better estimation.

Estimating the Quotients :

First round of the numbers to the nearest tens, hundreds or thousands and then find the estimated quotient.

Look at the following table :

Rounding to	Division problem	Rounded numbers	Estimated quotient	Actual quotient	Difference
Nearest Tens	95 ÷ 19	100 ÷ 20	5	5	0
	325 ÷ 25	330 ÷ 30	11	13	2

Examples :

1. Rekha is a marketing executive, She often travels while doing her job. Last week she drove 548 km in 7 days. About how many kilometres did she drive each day?

Solution :

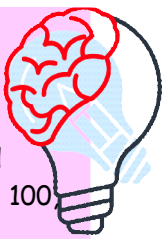
You can answer the question by estimating the quotient. If you round to the greater place value, estimating the quotient mentally may be difficult. In this case, it estimate the quotient by using compatible numbers, that is, numbers that you can divide easily, Choose a number close to 548 that is easily divisible by 7.

Instead of $7\overline{)548}$ consider

$$\begin{array}{r} 80 \\ 7\overline{)560} \\ 560 \\ \hline 0 \end{array}$$

She drove about 80 km each day.

Knowledge Box



To estimate a quotient:

1. Round off the dividend and divisor to the nearest 10, 100 or 1000.
2. Divide the rounded numbers.

Example: 982 ÷ 23 ≈ 1000 ÷ 20 = 50.

2. Our library has a total of 34,385 books arranged in 34 book shelves. Around how many books are in each book shelf?

Solution :

Let's find the answer this way :

34385 round off to 30000

30000 ÷ 30 = 1000

There are around 1000 books in each book shelf.

Focus :When estimating quotients, round off the divisor and the dividend, then divide.

CLASSROOM DISCUSSION QUESTIONS CDQ 03

1. **If you need to estimate the product of 47 and 59, what is the rounded product to the nearest ten?**

   (A) 2400 (B) 2800

   (C) 2700 (D) 3000

2. **Estimate the product of 123 and 87 by rounding to the nearest hundred.**

   (A) 9000 (B) 11000

   (C) 10000 (D) 12000

3. **When estimating the product of 57 and 84, which rounded numbers would you use?**

   (A) 50 and 80

   (B) 60 and 90

   (C) 50 and 90

   (D) 60 and 80

4. **What is the estimated product of 213 and 34 when rounded to the nearest ten?**

   (A) 7200

   (B) 8100

   (C) 6300

   (D) 7500

5. **How would you estimate the quotient of 938 ÷ 47 by rounding to the nearest ten?**

   (A) 20 (B) 30

   (C) 25 (D) 15

6. **Estimate the product of 364 and 295 by rounding to the nearest hundred.**

   (A) 110000

   (B) 100000

   (C) 90000

   (D) 120000

7. **To estimate the quotient of 6842 ÷ 68, which rounded numbers would you use?**

   (A) 7000 ÷ 70

   (B) 6800 ÷ 70

   (C) 6800 ÷ 60

   (D) 6900 ÷ 70

8. **The product of 34 x 20 = 680 whose nearest hundred is _____**

   (A) 600

   (B) 700

   (C) 650

   (D) 780

MARK YOUR ANSWERS WITH PEN ONLY. Time Taken ☐ Minutes

1 Ⓐ Ⓑ Ⓒ Ⓓ	2 Ⓐ Ⓑ Ⓒ Ⓓ	3 Ⓐ Ⓑ Ⓒ Ⓓ	4 Ⓐ Ⓑ Ⓒ Ⓓ	5 Ⓐ Ⓑ Ⓒ Ⓓ
6 Ⓐ Ⓑ Ⓒ Ⓓ	7 Ⓐ Ⓑ Ⓒ Ⓓ	8 Ⓐ Ⓑ Ⓒ Ⓓ	9 Ⓐ Ⓑ Ⓒ Ⓓ	10 Ⓐ Ⓑ Ⓒ Ⓓ

Concept 4

Roman Numerals :

1. Like out Hindu-Arabic system of numeration another ancient system of numeration is the Roman system.
2. The Romans used a different set of symbols as their numerals. The following drawings show how the Romans, might have developed their number symbols
3. There are seven basic Roman symbols for Numerals.

Roman Symbol	I	V	X	L	C	D	M
Numeral	1	5	10	50	100	500	1000

4. There is no symbol for zero in the Roman system and also it does not use the concept of place value.
5. These days the letter 'K' is used as a symbol for 1000. Thus, 5K denotes the number 5000.
6. The following rules are observed in writing numbers in Roman numerals.

Knowledge Box

Roman numerals use letters to represent numbers: I = 1, V = 5, X = 10, L = 50, C = 100, D = 500, M = 1000 Rules: 1. Smaller values before larger subtract (IV = 4). 2. Smaller values after larger add (V I = 6).

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

III = 1 + 1 + 1 = 3
XXX = 10 + 10 + 10 = 30
CCC = 100 + 100 + 100 = 300
MM = 1000 + 1000 = 2000

Note

1. The same symbol is not repeated more than 3 times together.
2. The symbol V, L and D are never repeated.

ii) When a symbol of smaller value is written to the right of a symbol of larger value, its value gets added to the value of the larger symbol.

VI = 5 + 1 = 6
XI = 10 + 1 = 11
XXXVII = 10 + 10 + 10 + 5 + 1 + 1 = 37
LXVI = 50 + 10 + 5 + 1 = 66

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

IV = 5 - 1 = 4
IX = 10 - 1 = 9
XL = 50 - 10 = 40
XC = 100 - 10 = 90
CD = 500 - 100 = 400
CM = 1000 - 100 = 900

Note :

49 = 50 - 1 = I L is wrong as I cannot be written to the left of L.

Caution :

1. V, L and D are never be subtracted.
2. I can be subtracted from V and X once only. X can be subtracted from L and C once only. C can be subtracted from D and M once only.
3. With the help of the symbols I, V, X, L, C we can write numbers upto 399.

   Thus, we have

Ones in Roman Numerals :

Hindu – Arabic System	1	2	3	4	5	6	7	8	9
Roman System	I	II	III	IV	V	VI	VII	VIII	IX

Tens in Roman Numerals :

Hindu-Arabic System	10	20	30	40	50	60	70	80	90	100
Roman System	X	XX	XXX	XL	L	LX	LXX	LXXX	XC	C

Examples :

1. Write the following In Roman numerals :

(i) 52 (ii) 44 (iii) 85 (iv) 49 (v) 99

Sol. (i) 52 = 50+2 = L +II = LII

(ii) 40 = 40 + 4 = XL + IV = XLIV

(iii) 85 = 80+5 = LXXX + V = LXXXV

(iv) 49 = 40+9 = XL+IX = XLIX

(v) 99 = 90+9 = XC+IX = XCIX

2. Write the following in Hindu - Arabic numerals :

(i) XLV (ii) LXIII (iii) LXXVI (iv) XCII (v) XXXVIII

Sol. (i) XLV = XL+V = 40+5 = 45 or (50-10)+5 = 45

(ii) LXIII = L+X+III = 50+10+3 = 63

(iii) LXXVI = L+XX+VI = 50+(2×10)+6 = 76

(iv) XCII = XC+II = 90+2 = 92 or (100-10)+2=92

(v) XXXVIII = XXX+VIII = (3×10)+8 = 30+8 = 38

CLASSROOM DISCUSSION QUESTIONS CDQ 04

1. **What is the Roman numeral for the Hindu-Arabic number 37?**
   (A) XXXV
   (B) XXXVII
   (C) XXXVIII
   (D) XXXIX
2. **How is the number 49 represented in Roman numerals?**
   (A) XLV
   (B) XLIX
   (C) XLIV
   (D) XLII
3. **Convert the Roman numeral LXII to the Hindu-Arabic system.**
   (A) 62
   (B) 63
   (C) 64
   (D) 61
4. **Write the Hindu-Arabic number for the Roman numeral XCIV.**
   (A) 84
   (B) 94
   (C) 104
   (D) 74
5. **Convert the Hindu-Arabic number 82 to Roman numerals.**
   (A) LXXX
   (B) LXXII
   (C) LXXXII
   (D) XCII
6. **What is the Roman numeral for the number 99?**
   (A) LXXXIX
   (B) XCIX
   (C) XCVIII
   (D) XCIV
7. **What is the Hindu-Arabic number equivalent of the Roman numeral CDXLIV?**
   (A) 444
   (B) 344
   (C) 544
   (D) 4440

MARK YOUR ANSWERS WITH PEN ONLY. Time Taken ☐ Minutes

1 Ⓐ Ⓑ Ⓒ Ⓓ	2 Ⓐ Ⓑ Ⓒ Ⓓ	3 Ⓐ Ⓑ Ⓒ Ⓓ	4 Ⓐ Ⓑ Ⓒ Ⓓ	5 Ⓐ Ⓑ Ⓒ Ⓓ
6 Ⓐ Ⓑ Ⓒ Ⓓ	7 Ⓐ Ⓑ Ⓒ Ⓓ	8 Ⓐ Ⓑ Ⓒ Ⓓ	9 Ⓐ Ⓑ Ⓒ Ⓓ	10 Ⓐ Ⓑ Ⓒ Ⓓ

C.D.F. (Concepts, Definitions and Formulae)

1. **Estimation :** The estimation of a number is a reasonable guess of the actual value. Estimation means approximating a quantity to the accuracy required. This is done by rounding off the numbers involved and getting a quick and rough answer.
2. **Rounding Off a Number to the Nearest Thousands :** Similarly, 1001 to 1499 are rounded off to the lower thousand i.e.1000, and 1501 to 1999 to the higher thousand i.e. 2000. The number 1500 is equidistant from both 0 and 1000, and so it is rounded off to the higher thousand i.e.2000.
3. **Estimation of the Sum :** A quick way to estimate the sum of two numbers is to round off each number and then add the rounded numbers. This probably won't be the exact answer but it may be close enough for some purposes.
4. **Estimation of the Difference :** A quick way to estimate the difference between two numbers is to round each number and then subtract the rounded numbers. This probably won't be the exact answer but it may be close enough for some purposes.
5. **Estimation of the Product :** To estimate the product, round off each factor to its greatest place, then multiply the rounded off factors.
6. **Estimation of the Quotient :** In a division sum, when the divisor is made up of 2 digits or more than 2 digits, it helps if we first estimate the quotient and then try to find the actual number.
7. **Roman Numerals :**

Hindu Arabic Numerals	1	5	10	50	100	500	1000
Roman Numerals	I	V	X	L	C	D	M

Rules	Roman Numeral	Hindu Arabic Number
Numeral is repeated, its value is added as many times as it occurs	XX	10+10 = 20
Smaller numeral is to the right of a bigger numeral, add the two numbers	LX	50+10 = 60
Smaller numeral is to the left of a bigger numeral, subtract it from the bigger numeral	IX	10–1=9
Smaller numeral is in between two numerals of greater value, subtract the numeral from the greater numeral to the right	XIV	10+(5–1) = 14
Numerals V, L and D are never written to left of greater numeral, they are never subtracted	VX Not possible	10–5 = 5
A bar is placed over a numeral, multiply it by 1000	$\bar{X}$	10×1000 = 10000

Advanced Worksheet

LEVEL 1

Single Correct Answer Type (S.C.A.T.)

1. Read the number 500428 according to Hindu-Arabic system :

(A) Five crore four hundred thirty eight

(B) Fifty lakh four hundred twenty eight

(C) Five lakh four hundred twenty eight

(D) Five lakh four hundred eight

2. Write the numeral for the number Nine crore five lakh forty one :

(A) 9, 50,00, 041

(B) 9,05,00,041

(C) 9, 05, 041

(D) 9,500,041

3. Insert commas suitably according to International system of numeration in 99985102 :

(A) 999,851,02

(B) 9,99851,02

(C) 99,985,102

(D) 99,98510,2

4. International system of numeration of Rs.1crore = ___.

(A) 1 million

(B) 10million

(C) 100million

(D) One billion

5. What is the numeral for ninety million ninety thousand ninety?

(A) 9, 090, 090

(B) 90, 090, 090

(C) 90, 90, 90

(D) 90, 900, 90

6. Which pair has same digits at tens place ?

(A) 4232, 4331

(B) 2334, 2340

(C) 6524, 7823

(D) Both (A) & (C)

7. Which pair has same digits at hundreds place ?

(A) 4232, 4331

(B) 2334, 2340

(C) 6524, 7823

(D) 5432, 6922

8. The place value of '6' in 53694 = _____.

(A) 60

(B) 6

(C) 6000

(D) 600

9. If 1787 is rounded off to nearest tens , we get :

(A) 1790

(B) 1780

(C) 1700

(D)1800

10. If we round off 8074 to nearest hundred, we get :

(A) 8000

(B) 8100

(C) 8200

(D) 7900

11. If we round off 26019 to nearest thousand, we get :

(A) 24000

(B) 25000

(C) 26000

(D) 27000

12. Sum of the greatest 8 digit number and the smallest 9 digit number is :

(A) 199999999

(B) 999999991

(C) 1999999999

(D) 10000999

13. Which of the following can never be subtracted ?

(A) X

(B) I

(C) V

(D) None

14. Write the Hindu-Arabic numeral of $\overline{V}$.

(A) 500

(B) 5000

(C) 50

(D) None

15. Estimation of the quotient 86÷9 to nearest 10 :

(A) 90

(B) 10

(C) 80

(D) none of these

16. Estimation of 5,673-4364 to the nearest hundred :

(A) 1300

(B) 1400

(C) 1500

(D) 2000

17. Give a rough estimate of the sum 519+411+6289 by rounding off each number to its nearest hundred.

(A) 6900

(B) 7100

(C) 7200

(D) 7220

18. Estimate the product 5981×4428 by rounding off each number to the nearest ten's:

(A) 26491400

(B) 26492400

(C) 26492500

(D) 26492600

19. The symbol M in roman numeral stands for :

(A) 100

(B) 500

(C) 1000

(D) 50

20. How many times does the digit 3 appear in numbers from 1 to 100 ?

(A) 18

(B) 19

(C) 20

(D) 21

21. The value of LXXVI in Hindu-Arabic numeral :

(A) 56

(B) 86

(C) 76

(D) 46

22. The value of XXXX in Hindu-Arabic numeral :

(A) 40

(B) 10000

(C) 1000

(D) Cannot be written

23. The value of XLV :

(A) 55

(B) 45

(C) 65

(D) 75

24. Choose the correct ascending order of 6411, 6144, 6344, 6744.

(A) 6144,6344,6411,6744

(B) 6744,6411,6344,6144

(C) 6344,6411,6144,6744

(D) 6144,6411,6744,6344

25. Write the Hindu-Arabic numeral of CD.

(A) 300

(B) 400

(C) 350

(D) 450

26. Which of the following is meaning less ?

(A) XIII

(B) XIX

(C) XVV

(D) XL

27. The value of (XXX+XV)+(XX+XV) in Hindu Arabic system is :

(A) 50

(B) 60

(C) 70

(D) 80

28. Which Roman numeral corresponds to the product obtained when 13 is multiplied by 7 ?

(A) XXCI

(B) LXI

(C) XCI

(D) CI

29. Which of the following is/are meaningless ?

(A) VX

(B) IXIV

(C) XIIV

(D) All the above

30. Which of the following is the Roman numeral for the greatest three digit number ?

(A) IXIXIX

(B) CMIXIX

(C) CMXCIX

(D) CMIIC

31. What are the numerals that cannot be subtracted in Roman System ?

(A) V, L and D

(B) I and X

(C) C and X

(D) M and C

32. What is the Roman numeral for the difference of 500 and 200?

(A) C

(B) CCC

(C) MMM

(D) D

33. Bobby's date of birth is 19th September. How is Bobby's date of birth represented in Roman System ?

(A) XXI

(B) XIXX

(C) IIX

(D) XIX

Multi Correct Answer Type (M.C.A.T.)

34. Which of the following is true?

(A) The face value of a digit does not depend on its position in the numeral

(B) The place value of a digit does not depend on its position in the numeral

(C) The greatest 3-digit number is 999

(D) The least 2-digit number is 99

35. Which of the following is true?

(A) The face value of zero in 760 is zero

(B) The face value of '1' in 761 is one

(C) The face value of 8 in 888 is 8

(D) The face value of 9 in 983 is 3

36. 1 metre = _____.

(A) 100 centimetres

(B) 10 centimetres

(C) 1000 millimetres

(D) 100 millimetres

37. The Hindu-Arabic numeral corresponding to XCII is greater than.

(A) 100

(B) 91

(C) 99

(D) 89

38. Which of the following numbers written in the Roman numerals system is/are not correct ?

(A) DX

(B) DXX

(C) DDX

(D) VVX

39. Which of the following Roman symbol can be repeated ?

(A) I

(B) V

(C) X

(D) C

40. Which of the following Roman numerals is incorrect ?

(A) XC

(B) XD

(C) DM

(D) VL

41. Which of the following is/are meaningful ?

(A) VX

(B) XV

(C) XXV

(D) XXXV

42. Which of the following is/are meaningful ?

(A) CI

(B) CII

(C) IC

(D) XC

43. Which of the following is/are meaningful ?

(A) XIV

(B) XVV

(C) XIII

(D) XXII

44. A medicine box contains 1,00,000 tablets, each weighing 20 mg. The weight of all the tablets in the box is :

(A) 2000000 mg

(B) 2 kg

(C) 20 kg

(D) 200 kg

45. A petrol tanker contains 20,000 litres of petrol. We can express the quantity of petrol in :

(A) 2 kl

(B) 20 kl

(C) 2 x 10^7 ml

(D) 2,000 l

Comprehension Passage Type (C.P.T.)

PASSAGE - I

Priya read 38 pages of her story book on Monday. She read 27 pages more on Tuesday than on Monday. She found that there were still another 220 pages left.

46. How many pages did Priya read on Tuesday ?

(A) 56

(B) 65

(C) 55

(D) 66

47. How many pages were there in the story book ?

(A) 319

(B) 332

(C) 323

(D) 285

48. How many pages priya read on Monday and Tuesday ?

(A) 27

(B) 38

(C) 65

(D) 103

PASSAGE - II

Large numbers are used immensely in our everyday life, such as measuring the length of a big object as train, the distance between two given places; the weight of a rice bag, the weight of a ship, the amount of juice in a glass.

49. Tendulker is a famous cricket player. He has so far scored 15,030 runs in test matches and 18,111 runs in one day cricket. The total number of runs scored by him is _____.

(A) 33,041

(B) 3,080

(C) 33,141

(D) 25,121

50. A hotel has 15 litres milk. 25ml of milk is required to prepare a cup of coffee, then total number of cups of coffee can be made with the milk is _____.

(A) 600 cups

(B) 60 cups

(C) 400 cups

(D) 550 cups

51. The total weight of a box which contains 5 biscuit packets of same size is 8kg.400 grams, then the weight of each packet is ____.

(A) 1860 gm

(B) 1kg 680gm

(C) 1680 gm

(D) Both (B) & (C)

PASSAGE - III

Estimate to nearest 100 or 1000.

52. Estimate the sum :

1314 + 272

(A) 1586

(B) 1600

(C) 1700

(D) 1580

53. Estimate the difference of 8001 and 457 :

(A) 7356

(B) 7544

(C) 9500

(D) 7500

54. Estimate the difference of 6995 and 3068 :

(A) 3927

(B) 1927

(C) 2927

(D) 4000

Matrix Matching Type (M.M.T.)

SET I

Column - I

55. LXXXV

56. XLIX

57. XXXVIII

58. XII

Column –II

(A) 12

(B) 38

(C) 49

(D) 85

SET II

Column - I

Round off to nearest ten

59. Estimate the product : 45×67

60. Estimate the difference : $73 - 41$

61. Estimate the sum : $1314 + 272$

62. Estimate the quotient : $2308 \div 65$

Column - II

(A) 30

(B) 1580

(C) 3500

(D) 33

(E) 4 digit number

Statement Type (S.T.)

(A) Both statements are true.

(B) Both statements are false.

(C) Statement I is true, statement II is false

(D) Statement I is false, statement II is true.

63. Statement I : The estimation of the difference (673-258) to the nearest hundred is 400.

Statement II : The estimated quotient for $623 \div 23$ is 31.

64. Statement-I : When a symbol of smaller value is written to the left of a symbol of larger value; the smaller value is subtracted from the larger value.

Statement-II : The value of LD in Hindu Arabic system is 350.

65. Statement - I : When a letter is used more than once in roman system we add its value each time to get the number.

Statement - II : In roman numeral the numeral CCC can be converted into Hindu Arabic as 300.

Integer Type Questions (I.T.Q.)

66. The unit digit of Hindu-Arabic numeral of CCCXLIII is _____.

67. The unit digit of the value of IX+XV+XX = _____.

68. The unit digit of the value of DXXX in Hindu Arabic system is _____.

69. How many number of zeroes that come after 1 in 10 crores _____.

Assertion Reason Type : (A.R.T.)

(A) Both Assertion and Reason are correct and reason is the correct explanation of assertion.

(B) Both Assertion and Reason are correct but reason is not the correct explanation of assertion.

(C) Assertion is correct but Reason is incorrect.

(D) Assertion is incorrect but Reason is correct.

70. Assertion : In the Indian system of numeration, the place value of 5 in 5,62,348 is five lakhs.

Reason : In the Indian numeration system, the order of place values is Ones, Tens, Hundreds, Thousands, Ten Thousands, Lakhs, Ten Lakhs, Crores, and so on.

71. Assertion : The number 40,000 is greater than 39,999.

Reason : If two numbers have different numbers of digits, the one with more digits is always greater.

Objective To find out the place value of a five-digit number through abacus.

Aim (i) To show and represent 24361, a five-digit number on the abacus.

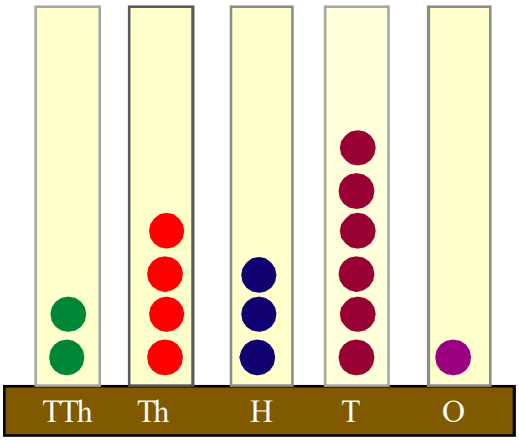
(ii) To find out the place value of each digit on the abacus.

Materials Required

1. Drawing sheets 2. Coloured tapes 3. Sticker bindis

Steps for the Activity

1. Take a drawing sheet and paste five coloured tapes at equal intervals having equal lengths.
2. Mark the five coloured tapes as different place value, i.e., Ones, Tens, etc.
3. Now put 1 bindi at the ones tape, 6 at the tens, 3 at the hundreds, 4 at the thousands, and 2 at the ten thousands tape as shown in figure.
4. Thus, from the abacus made here, we can find the place values of the different digits of the number 24361.



Observations

From the abacus, we observe that :

1. Place value of 1 is 1.
2. Place value of 6 is 60.
3. Place value of 3 is 300.
4. Place value of 4 is 4,000.
5. Place value of 2 is 20,000.

Remarks

Students should know that the place values of digits may vary from place to place, but the face value does not change.

Suggested Activity

Student may perform the above activity for a six-digit number.