The Gen X Series

MATHS OLYMPIAD 3

Useful for Maths Olympiads Conducted at School, National & International Levels

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Strictly According to the Latest Syllabus of Maths Olympiad

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The New Edition of this Maths Olympiad Class 3 is written in a Guide like pattern with images and illustrations at every step & is divided into different sections. Each chapter comes with Basic Theory and Solved Examples. Multiple Choice Questions with their Answer Keys and Solutions are liberally included. In order to help students become aware of and to simulate the actual exam conditions, a bunch of OMR Sheets have been enclosed with the book as well.

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P.S. While every care has been taken to ensure correctness of content, if you come across any error, howsoever minor, anywhere in the book, do not hesitate to discuss with your teachers while pointing that out to us in no uncertain terms.

We wish you All The Best!

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SECTION 1
MATHEMATICAL REASONING

Number System

1

Learning Objectives: In this chapter, students will learn about:

- Numerals and Number Sense (4-Digit Numbers)
- Face Value and Place Value
- Expanded Form and Number Name
- Ascending and Descending Order
- Even and Odd Numbers
- Regional Numerals

Numerals

The digits 0, 1, 2, 3, 4, 5, 6, 7, 8 and 9 are used to form numbers or numerals. There digits are called ones. The numerals formed by the digits 1, 2, 3, 4, 5, 6, 7, 8 and 9 are known as Hindu Arabic numbers.

Face Value

Face value of a digit in a given number is the digit itself. In the number 452, the face value of 4 is 4, the face value of 5 is 5 and the face value of 2 is 2.

Place Value

The place value of a digit in a given number is the digit multiplied by its place.

Example: Write place value of digit in 264.

Solution: Hundreds Tens Ones

↓ ↓ ↓

2 6 4

Place value of $2 = 2 \times 100 = 200$

Place value of $6 = 6 \times 10 = 60$

Place value of $4 = 4 \times 1 = 4$

Expanded Form

If a number is written as the sum of the place value of its digits, then it is said to be in expanded form.

Example: Write the expanded form of 356.

Solution: $356 = 3$ hundreds $+ 5$ tens $+ 6$ ones

$= 3 \times 100 + 5 \times 10 + 6 \times 1$

$= 300 + 50 + 6$

Number Names

Number	Number Names
10	Ten
20	Twenty
50	Fifty
100	Hundred
500	Five Hundred
1000	One Thousand
5000	Five Thousand
10,000	Ten Thousand

Ascending Order

Arranging the given numbers from the smallest to the greatest is called ascending or increasing order.

Descending Order

Arranging the given numbers from the greatest to the smallest is called descending or decreasing order.

Example: Arrange the following numbers in descending order and ascending order.

475 576 311 999 78

Solution: 999 > 576 > 475 > 311 > 78

Decreasing order is 999, 576, 475, 311, 78.

Ascending order is 78 , 311, 475, 576, 999.

Number Sense (4-Digit Numbers)

We know that there are ten digits: 0, 1, 2, 3, 4, 5, 6, 7, 8 and 9. Numbers are written using these digits. These digits are called ones.

The greatest 3-digit number is 999. It can be written as:

999 = 900 + 90 + 9

= 9 hundreds + 9 tens + 9 ones

Add 1 to 999 to make a 4-digit number, 1 + 999 = 1000

It is the smallest number of four digits. 1000 is the successor of 999.

Even and Odd Numbers

Even numbers

The numbers having 0, 2, 4, 6 ..... at ones place are called even numbers .

Examples of even numbers – 12, 20, 30, 36

Odd numbers

The numbers having 1, 3, 5, 7 ..... at ones place are called odd numbers.

Examples of odd numbers – 11, 13, 15, 19, 23

Properties of odd and even numbers

(i) When we add an even number to an odd number, the answer is always an odd number.

For example: 2 + 3 = 5

Even Odd Odd

(ii) When we add an odd number to an odd number the answer is always an even number.

For example: 3 + 5 = 8

odd odd even

(iii) When we add two even numbers, the answer is always an even number.

For example: 2 + 4 = 6

Even even even

Regional Numerals

Numbers can be written by using different symbols. The numbers represented by particular symbols are known as the digits of the system.

Multiple Choice Questions

1. Which one of the following is the smallest number?
   (a) 3116 (b) 3316
   (c) 3211 (d) 3361
2. The place value of 8 in 8353 is _____.
   (a) 8000 (b) 800
   (c) 80 (d) 8
3. Which one of the following is correct?
   (a) 425 < 238 (b) 9467 > 853
   (c) 750 < 915 (d) 525 < 425
4. The sum of two even numbers is _____.
   (a) an even number
   (b) an odd number
   (c) both (i) and (ii)
   (d) none of these
5. Which place value is used to prove that 5487 is less than 5874?
   (a) Ones place
   (b) Tens place
   (c) Hundreds place
   (d) Thousand place
6. Which one of the following is an even number?
   (a) 733 (b) 550
   (c) 241 (d) 89
7. Match the columns.

Column I	Column II
(1) 7000 + 400 + 20 + 6	(i) 7067
(2) 7000 + 400 + 0 + 6 + 0	(ii) 766
(3) 700 + 60 + 6	(iii) 7406
(4) 7000 + 0 + 60 + 6 + 7	(iv) 7426

   (a) 1 – i, 2 – ii, 3 – iii, 4 – iv
   (b) 1 – ii, 2 – iii, 3 – i, 4 – iv
   (c) 1 – iv, 2 – iii, 3 – ii, – 4 i
   (d) 1 – ii, 2 – iv, 3 – iii, 4 – i
8. The largest 3-digit number is _____.
   (a) 999 (b) 899
   (c) 889 (d) 988
9. Find the odd one out.
   14, 2, 12, 5, 10
   (a) 2 (b) 5
   (c) 10 (d) 14
10. The largest 3-digit number which is even is _____.
    (a) 998 (b) 102
    (c) 888 (d) 999
11. The sum of numbers from 1 to 12 is ____.
    (a) 78 (b) 59
    (c) 73 (d) 71
12. What is the face value of the underlined digit in the number given below:
    38455
    (a) 4 (b) 5 (c) 3 (d) 8
13. What is the expanded form of given number 12,554?
    (a) 12 + 5 + 5 + 4
    (b) 12,000 + 500 + 50 + 4
    (c) 1200 + 54 + 5
    (d) 1200 + 50 + 45
14. Find the greatest 3-digit number from the following:
    341, 199, 111, 627, 245
    (a) 341 (b) 627
    (c) 199 (d) 245
15. Find the smallest 3-digit number from the following:
    341, 199, 111, 627, 245
    (a) 627 (b) 111
    (c) 245 (d) 199
16. Choose the correct option.
    (a) 371 > 231 (b) 591 < 326
    (c) 140 > 200 (d) 529 = 226

Direction (17-18): Consider the following numbers to answer the questions:

4 17 9 45 22 19 12 34

17. If numbers are to be selected from the above list such that odd numbers are to be picked in ascending order, then what would be the sequence of numbers?
    (a) 4, 12, 22, 34
    (b) 9, 17, 19, 45
    (c) 34, 22, 12, 4
    (d) 45, 19, 17, 9

18. If numbers are to be selected from the above list such that even numbers are to be picked in descending order, then what would be the sequence of numbers?
    (a) 4, 12, 22, 34
    (b) 9, 17, 19, 45
    (c) 34, 22, 12, 4
    (d) 45, 19, 17, 9

19. The smallest 4-digit number formed by the digits 5, 6, 0, 7 is _____.
    (a) 0567 (b) 5067
    (c) 6057 (d) 5076

20. What is the successor of largest 3-digit number?
    (a) 998 (b) 1000
    (c) 999 (d) None of these

21. Rahul has 961 coins with him. Write 961 in words.
    (a) Seven hundred ninety-six
    (b) Seven hundred sixty-nine
    (c) Nine hundred seventy-one
    (d) Nine hundred sixty-one

22. The following table shows the money each child have.

Children	Money (₹)
Naina	20 hundreds
Tanu	3 hundreds 5 ones
Sona	56 tens
Shiv	9 hundreds

Which of the following statements is incorrect?
    (a) Naina has maximum money.
    (b) Sona has minimum money.
    (c) Shiv has ₹900.
    (d) Sona has ₹5600.

23. Rohan has following cards:

4	9	7	6

Which is the least possible 4-digit number that Rohan can form by using above cards?
    (a) 4679 (b) 9647
    (c) 4697 (d) 4967

24. Tanya has a book that contains 4579 pages. Sapna has a book that contains 4673 pages. Kapil has a book that contains 7463 pages. Whose book has maximum number of pages?
    (a) Tanya
    (b) Sapna
    (c) Kapil
    (d) Both Sapna and Kapil

25. Jyoti has ₹9 thousands 2 hundreds 61 ones. Write this in numeral form.
    (a) ₹9261 (b) ₹92610
    (c) ₹926 (d) ₹2619



Addition

2

Learning Objectives: In this chapter students, will learn about:

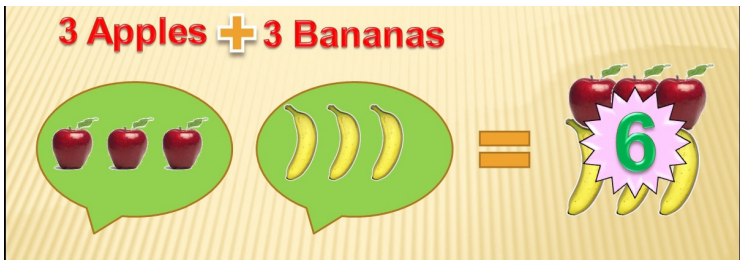
- Addition of Four-Digit Numbers
- Properties of Addition

Putting things together is called addition.

The numbers that are added are called addends. The result of addition is called the sum. It's sign is '+'.

Example:

$$\underset{\text{Addends}}{15} + \underset{\text{Addends}}{17} = \underset{\text{Sum}}{32}$$



Addition of Four-Digit Numbers

Example: Add 3425 and 2246.

Solution: Arranging the digits of the numbers 3425 and 2246 in column form.

Thousands	Hundreds	Tens	Ones
3	4	2	5
+ 2	2	4	4
5	6	6	9

Adding ones: 5 + 4 = 9 ones

Adding tens: 2 + 4 = 6 tens

Adding hundreds: 4 + 2 = 6 hundreds

Adding thousands: 3 + 2 = 5 thousands

Hence, 3425 + 2244 = 5669

Note: Put the given numbers at their correct places and always start adding from ones digits.

Properties of Addition

(i) If we change the order of numbers then the sum remains the same.
For example, 15 + 17 = 32 = 17 + 15

(ii) When we add 0 to any number the sum is the number itself.
For example, 20 + 0 = 20

(iii) The sum of three numbers is the same even if we change the grouping of the numbers.
For example, (95 + 50) + 32 = 95 + (50 + 32)

Multiple Choice Questions

1. Find the missing number.
   440 + _____ = 766
   (a) 321 (B) 322
   (C) 320 (D) 326
2. Find the missing digit.
   349 + 4 * 6 = 805
   (a) 2 (b) 3
   (c) 5 (d) 6
3. Find the missing number.
   392 + 0 = _____
   (a) 380 (b) 390
   (C) 392 (d) 381
4. Find the next number.
   344, 351, 358, ____
   (A) 366 (B) 365
   (C) 36 (D) 364
5. Which number makes the statement equal?
   ? + 1323 =1223 + 1223
   (a) 1223 (b) 1123
   (c) 1213 (d) 1133
6. Which number makes the statement true?
   1508 + 125 = 2407 + ?
   (a) 226 (b) 774
   (c) 126 (d) – 774
7. Which options complete the pattern?
   4 + 5 = _____
   40 +50 = _____
   400+ 500 = _____
   (a) 9, 90, 900 (b) 9, 99,990
   (c) 9,90, 990 (d) 9, 99, 900
8. Which numbers complete the pattern?
   _____ + 6 = 9
   _____ + 60= 90
   _____ + 600 = 900
   (a) 2, 22, 200 (b) 2, 20, 220
   (c) 2, 22, 220 (d) 3, 30, 300
9. Look at the table below. What is rule for the table?

Input	Output
623	636
544	557
388	401
279	292

   (a) Add 22 (b) Add 23
   (c) Add 13 (d) Add 12
10. State whether the following statements are true or false.
    i. 5746 + 2222 is as same as 3984 + 3984.
    ii. If we add 777 to 7777 we will get 8554.
    iii. If we add 89 to 6789 we will get 6879.
    iv. 3000 + 175 is more than 2981 + 179.
    (a) TTFT (b) FFTT
    (c) TFTF (d) FTFT
11. State whether the following statements are true or false.
    i. 6896 +3583 = 10478
    ii. If we add 333 +4444 we will get 5777
    iii. If we add 5432 and 1234 we will get 5555
    iv. 2222 + 1357 = 3579
    (a) TTFF (b) FTFT
    (c) FFFT (d) TFTF
12. Find the sum of the greatest and the smallest numbers from the following numbers.
    4789, 9999, 9988, 7432
    (a) 13788 (b) 14788
    (c) 1478 (d) 14700

13. Which number makes this sentence true?
7345 < 2345 + _____
(a) 5000 (b) 4000
(c) 1 (d) 7345

14. 5454 + 0 = 0 + _____ = _____
(a) 5454, 5454 (b) 5454, 0
(c) 1, 5454 (d) None of these

15. 5 thousands + 47 hundreds = _____
(a) 97 tens (b) 97 hundreds
(c) 9 hundreds (d) None of these

16. The sum of face value of 6 in 7362, 9362 and 2376 is _____.
(a) 12 (b) 18
(c) 6 (d) 0

17. Which option shows the sum of following numbers?
500, 50, 0, 5000
(a) Five thousand fifty
(b) Five thousand five hundreds
(c) Five thousand five
(d) Five thousand five hundred fifty

18. Out of the following, find the sum greater than 9999.
4400 + 400, 3030 + 103, 4502 + 4000, 5000 + 5000
(a) 4400 + 400 (b) 3030 + 103
(c) 5000 + 5000 (d) 4502 + 4000

19. I am more than 5000. I have 9 at my hundreds and 2 at my ones. Who I am from the following.
(a) 5902 (b) 5092
(c) 5002 (d) 5209

20. If Δ + O = 5000 and Δ = 2500, then the value of O is _____.
(a) 500 (b) 2500
(c) 2000 (d) 1000

21. There are 1639 men, 1884 women, and 4230 children in a village. What is the total population of the village?
(a) 7753 (b) 7700
(c) 7736 (d) 7100

22. A factory makes 3638, 3709 and 2185 soap – cakes in three days. How many soap – cakes does the factory makes in three days?
(a) 9500 (b) 9532
(c) 9541 (d) 3700

23. There are 2592 goats, 1789 cows, and 3889 buffaloes in a town. How many cattle are there in town?
(a) 8270 (b) 8200
(c) 8250 (d) 8300

24. There are 4879 male and 4729 female primary teachers in a state. What is the total number of teachers in the state?
(a) 6900 (b) 9608
(c) 9500 (d) 8800

25. The cost of a cooler is 3450 rupees and the cost of a almirah is 1875 rupees more than that of the cooler. Find the cost of the almirah.
(a) ₹5325 (b) ₹5300
(c) ₹5200 (d) ₹5250

