

Fully Revised

Shraddha Singh

MATHS OLYMPIAD

International Mathematics Olympiad

Numbers

Subtraction

Time

Measurement

Money

Geometrical
Shapes

Series
Completion

Patterns

Strictly according
to the latest
syllabus of Maths
Olympiad

The
Gen X
Series

A SUCCESS PACKAGE FOR ASPIRANTS OF MATHS OLYMPIAD

IMO

INTERNATIONAL
MATHEMATICS
OLYMPIAD



V&S PUBLISHERS

Published by:



V&S PUBLISHERS

F-2/16, Ansari road, Daryaganj, New Delhi-110002

☎ 23240026, 23240027 • Fax: 011-23240028

Email: info@vspublishers.com • Website: www.vspublishers.com

Regional Office : Hyderabad

5-1-707/1, Brij Bhawan (Beside Central Bank of India Lane)

Bank Street, Koti, Hyderabad - 500 095

☎ 040-24737290

E-mail: vspublishershyd@gmail.com

Branch Office : Mumbai

Jaywant Industrial Estate, 1st Floor-108, Tardeo Road

Opposite Sobo Central Mall, Mumbai – 400 034

☎ 022-23510736

E-mail: vspublishersmum@gmail.com

Follow us on:



© Copyright: V&S PUBLISHERS

ISBN 978-93-505795-1-0

DISCLAIMER

While every attempt has been made to provide accurate and timely information in this book, neither the author nor the publisher assumes any responsibility for errors, unintended omissions or commissions detected therein. The author and publisher makes no representation or warranty with respect to the comprehensiveness or completeness of the contents provided.

All matters included have been simplified under professional guidance for general information only, without any warranty for applicability on an individual. Any mention of an organization or a website in the book, by way of citation or as a source of additional information, doesn't imply the endorsement of the content either by the author or the publisher. It is possible that websites cited may have changed or removed between the time of editing and publishing the book.

Results from using the expert opinion in this book will be totally dependent on individual circumstances and factors beyond the control of the author and the publisher.

It makes sense to elicit advice from well informed sources before implementing the ideas given in the book. The reader assumes full responsibility for the consequences arising out from reading this book.

For proper guidance, it is advisable to read the book under the watchful eyes of parents/guardian. The buyer of this book assumes all responsibility for the use of given materials and information.

The copyright of the entire content of this book rests with the author/publisher. Any infringement/transmission of the cover design, text or illustrations, in any form, by any means, by any entity will invite legal action and be responsible for consequences thereon.

PUBLISHER'S NOTE

V&S Publishers, after the grand success of a number of Academic and General books, is pleased to bring out a series of *Mathematics Olympiad books* under *The Gen X series – generating Xcellence in generation X* – which has been designed to focus the problems faced by students. In all books the concepts have been explained clearly through examples, illustrations and diagrams wherever required. The contents have been developed to meet specific needs of students who aspire to get distinctions in the field of mathematics and want to become Olympiad champs at national and international levels.

To go through Maths Olympiad, the students need to do thorough study of topics covered in the *Olympiad syllabus and those covered in the school syllabus as well*. The Olympiads not only tests subjective knowledge but Reasoning skills of students also. So students are required to comprehend the depth of concepts and problems and gain experience through practice. The Olympiad check efficiency of candidates in problem solving. These exams are conducted in different stages at regional, national, and international levels. At each stage of the test, the candidate should be fully prepared to go through the exam. Therefore, this test requires careful attention towards comprehension of concepts, thorough practice, and application of rules.

While other books in market focus selectively on questions or theory; V&S Maths Olympiad books are rather comprehensive. Each book of this series has been divided into four sections namely *Mathematics, Logical Reasoning, Achievers section, Model Papers*. The theory has been explained through solved examples. To enhance the problem solving skills of candidates, *Multiple Choice Questions (MCQs)* with detailed solutions are given at the end of each chapter. Two *Mock Test Papers* have been included to understand the pattern of exam. A CD containing Study Chart for systematic preparation, Tips & Tricks to crack Maths Olympiad, Pattern of exam, and links of Previous Years Papers is accompanied with this book. The books are also useful for various other competitive exams such as NTSE, NSTSE, and SLSTSE as well.

We wish you all success in the examination and a very bright future in the field of mathematics.

All the best

CONTENTS

SECTION 1 : MATHEMATICAL REASONING

1. Numbers	9
2. Addition	21
3. Subtraction	29
4. Measurement	37
5. Time	45
6. Money	52
7. Geometrical Shapes	59

SECTION 2 : LOGICAL REASONING

1. Patterns	67
2. Odd One Out	74
3. Series Completion	80
4. Analogy	85
5. Ranking Test	92
6. Problems Based on Figures	97

SECTION 3 : ACHIEVERS SECTION

◆ High Order Thinking Skills	109
------------------------------	-----

SECTION 4 : MODEL PAPERS

◆ Model Paper – 1	115
◆ Model Paper – 2	123



SECTION 1

MATHEMATICAL

REASONING



Unit- 1 : Numbers

Learning Objectives : In this unit, we will study:

- Numerals and Counting Numbers
- Formation of Greatest and Smallest Numbers
- Number Sense (Two-Digit Numbers)
- Number Names (Numbers upto 100)
- Ordinal Numbers

Numerals

The digits 0, 1, 2, 3, 4, 5, 6, 7, 8 and 9 are used to form numbers or numerals.

1 2 3 4 5
6 7 8 9 0

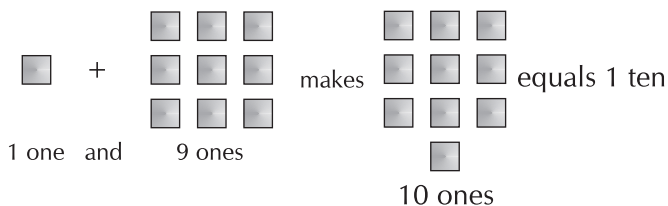
Counting Numbers

The numbers 1, 2, 3.... used to count things are called counting numbers.

One, two, three.....are called number names of 1, 2, 3....

1 one
2 two
3 three
4 four
5 five
6 six
7 seven
8 eight
9 nine

Ones and Tens



Note : 0 does not have any value on its own, but acts as a place holder.

Formation of Greatest and Smallest Numbers

Greatest Numbers

For forming the greatest 2 digit numbers, place the bigger digit at tens place and the smaller digits at ones place.

Example : Form greatest number using digits 7 and 9.

Greatest number = 97



Smallest Numbers

For forming the smallest 2 digit numbers place the smaller digit at tens and the bigger digit at ones place.

Example : Form smallest number using digits 5 and 7.

Smallest number = 57

Ordinal Numbers

Numbers such as 1st, 2nd, 3rd, 4th, 5th, 6th, 7th, 8th, 9th, and 10th specify the position of an object in an ordered collection. These numbers are called positional numbers or ordinal numbers.

First, Second, Third.... are the ordinal numbers for 1, 2, 3....



Number Sense (Two-Digit Numbers)

A two-digit number can be written in tens and ones. Example : 25 = 2 tens and 5 ones

Numbers upto 20 :

11	12	13	14	15	16	17	18	19	20
Eleven	Twelve	Thirteen	Fourteen	Fifteen	Sixteen	Seventeen	Eighteen	Nineteen	Twenty

Number Names (Numbers upto 100)

Number	Number Name	Number of ten
10	Ten	1
20	Twenty	2
30	Thirty	3
40	Forty	4
50	Fifty	5
60	Sixty	6
70	Seventy	7
80	Eighty	8
90	Ninety	9
100	Hundred	10

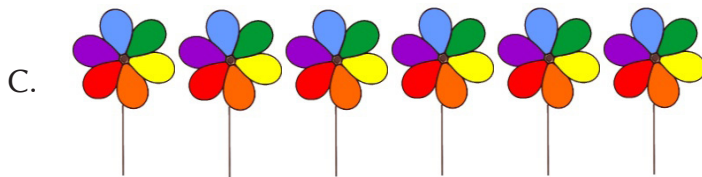
Important Points

- A one-digit number is smaller than a two-digit number.
- Smallest two-digit number is 1 more than largest one-digit number i.e. 10 is 1 more than 9
- 10 is the smallest and 99 is the largest two-digit numbers.
- Smallest three-digit number is 1 more than the largest two-digit number i.e. 100 is 1 more than 99.

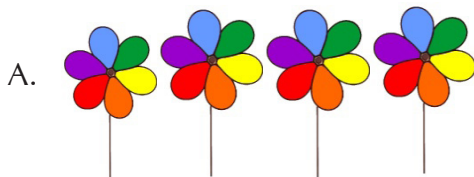
- 100 is the smallest three-digit number.
- Every number (except 0) is 1 more than its previous number and 1 less than its next number.
- All one digit numbers have only the ones place.
- 1 is the smallest and 9 is the greatest one-digit counting numbers.
- Two-digit numbers have two places – The ones place and the tens place. 10 is the smallest two digit counting number, written using the digits 0 and 1.

Multiple Choice Questions

1. Which of the following has 6 objects?



2. Which of the following has the number name three?



B.



C.



D.



3. Which of the following is 1 more than 4?

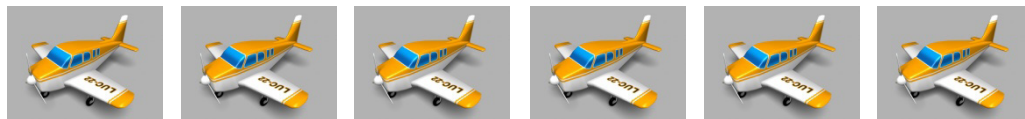
A.



B.



C.



4. What is the number name of the smallest two-digit number?

A. One

B. Zero

C. Ten

D. Nine

5. The greatest one-digit number is 9. What is its number name?

A. Ten

B. Nine

C. Five

D. Two

6. Which of the following is correct?

A. 7–Six

B. 6–Three

C. 5–Five

D. 9–Eight

7. Choose the one that is wrong.

A. Four – 4

B. Seven – 7

C. Nine – 9

D. One – 0

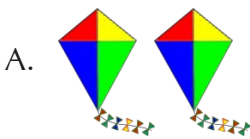
8. Which of the following is correct?

A.		7
B.		5
C.		3
D.		8



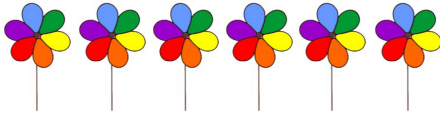

9. Which of the following has numbers in an order?

A.	4	2	0	6
B.	3	5	7	10
C.	7	9	2	3
D.	6	7	8	5

10. Chose the correct number of objects for "Four".



11. Which of the following is matched correctly?

A.		2
B.		8
C.		9
D.		3