MATHEMATICS Part - I

STANDARD NINE

The Constitution of India

Chapter IV A

Fundamental Duties

ARTICLE 51A

Fundamental Duties- It shall be the duty of every citizen of India–

(a) to abide by the Constitution and respect its ideals and institutions, the National Flag and the National Anthem;

(b) to cherish and follow the noble ideals which inspired our national struggle for freedom;

(c) to uphold and protect the sovereignty, unity and integrity of India;

(d) to defend the country and render national service when called upon to do so;

(e) to promote harmony and the spirit of common brotherhood amongst all the people of India transcending religious, linguistic and regional or sectional diversities, to renounce practices derogatory to the dignity of women;

(f) to value and preserve the rich heritage of our composite culture;

(g) to protect and improve the natural environment including forests, lakes, rivers and wild life and to have compassion for living creatures;

(h) to develop the scientific temper, humanism and the spirit of inquiry and reform;

(i) to safeguard public property and to abjure violence;

(j) to strive towards excellence in all spheres of individual and collective activity so that the nation constantly rises to higher levels of endeavour and achievement;

(k) who is a parent or guardian to provide opportunities for education to his child or, as the case may be, ward between the age of six and fourteen years.

The coordination committee formed by GR No. Abhyas - 2116/(Pra.Kra.43/16) SD - 4
Dated 25.4.2016 has given approval to prescribe this textbook in its meeting held on 3.3.2017

MATHEMATICS

Part - I

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Maharashtra State Bureau of Textbook Production and Curriculum Research, Pune.

The digital textbook can be obtained through DIKSHA App on a smartphone by using the Q. R. Code given on title page of the textbook and useful audio-visual teaching-learning material of the relevant lesson will be available through the Q. R. Code given in each lesson of this textbook.

First Edition : 2017
Reprint : 2021

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Shri. Sagar Sakude

Smt. Prajakti Gokhale (Invitee)
Shri. V. D. Godbole (Invitee)
Smt. Taruben Popat (Invitee)

Cover and Illustrations : Dhanashri Mokashi

Computer Drawings : Sandeep Koli, Mumbai

Co-ordination : Ujjwala Godbole
I/C Special Officer for Mathematics

Translation : Smt. Prajakti Gokhale
Smt. Taruben Popat
Smt. Mrinalini Desai

Scrutiny : Dr Jayashri Atre
Shri. V. D. Godbole

Co-ordination :
Dhanavanti Hardikar
Academic Secretary for Languages
Santosh Pawar
Assistant Special officer, English

Production :
Sachchitanand Aphale
Chief Production Officer
Sanjay Kamble, Production Officer
Prashant Harne, Asst. Production Officer

Typesetting : D.T.P Section
Textbook Bureau, Pune.

Paper : 70 GSM Cream wove

Printer : RUNA GRAPHICS, PUNE

Print Order No. : N/PB/2021-22/1,60,000

Publisher

Vivek Uttam Gosavi, Controller
Maharashtra State Textbook Bureau,
Prabhadevi, Mumbai - 400 025.

The Constitution of India

Preamble

WE, THE PEOPLE OF INDIA, having solemnly resolved to constitute India into a SOVEREIGN SOCIALIST SECULAR DEMOCRATIC REPUBLIC and to secure to all its citizens:

JUSTICE, social, economic and political;

LIBERTY of thought, expression, belief, faith and worship;

EQUALITY of status and of opportunity; and to promote among them all

FRATERNITY assuring the dignity of the individual and the unity and integrity of the Nation;

IN OUR CONSTITUENT ASSEMBLY this twenty-sixth day of November, 1949, do HEREBY ADOPT, ENACT AND GIVE TO OURSELVES THIS CONSTITUTION.

NATIONAL ANTHEM

Jana-gana-mana-adhināyaka jaya hē
Bhārata-bhāgya-vidhātā,

Panjāba-Sindhu-Gujarāta-Marāthā
Drāvida-Utkala-Banga

Vindhya-Himāchala-Yamunā-Gangā
uchchala-jaladhi-taranga

Tava subha nāmē jāgē, tava subha āsisa māgē,
gāhē tava jaya-gāthā,

Jana-gana-mangala-dāyaka jaya hē
Bhārata-bhāgya-vidhātā,

Jaya hē, Jaya hē, Jaya hē,
Jaya jaya jaya, jaya hē.

PLEDGE

India is my country. All Indians are my brothers and sisters.

I love my country, and I am proud of its rich and varied heritage. I shall always strive to be worthy of it.

I shall give my parents, teachers and all elders respect, and treat everyone with courtesy.

To my country and my people, I pledge my devotion. In their well-being and prosperity alone lies my happiness.

Preface

Dear Students,

Welcome to the ninth standard!

You are now going to begin your studies at the secondary level after completing your primary education curriculum. You had only one Mathematics textbook up to the eighth standard, now you will use two textbooks – Mathematics Part-I and Mathematics Part-II.

In this Mathematics Part-I textbook, you will get acquainted with several topics in the areas of Numbers, Algebra, Commercial Mathematics and Data Handling. These topics are useful for all students in various fields. Algebra and Statistics will provide the foundation for higher studies.

Different activities are given in the textbook to help you understand the different concepts. Other activities have been provided for revision and additional practice. You are expected to do all these. You can also explore the internet to get more information regarding concepts in the textbook and to obtain more practice examples. We expect you to do the activities, solve the examples and draw inferences after discussing them with your friends. You will get through the course joyfully if you follow the three point plan of – a deep study of the textbook, activity-based learning and ample practice.

So come on! Let us study Mathematics in the company of our teachers, parents, friends and the internet. Best wishes to you for your studies!

(Dr Sunil Magar)
Director
Maharashtra State Bureau of Textbook
Production and Curriculum Research, Pune.

Pune
Date : 28 April, 2017
Akshaya Tritiya
Indian Solar Year :
8 Vaishakh 1939

It is expected that students will develop the following competencies after studying the syllabus of Mathematics Part I in Standard IX

Area	Topic	Competency statement
1. **Knowledge of Numbers**	1.1 Sets 1.2 Real numbers and quadratic surds	Students will be able to – • know the different sets of numbers in the number system. • determine the subset relation between pairs of sets. • identify finite and infinite sets. • use Venn diagrams to show relation between different sets. • construct examples on sets. • understand that every point on a number line is associated with a real number. • identify the surds of order two and perform mathematical operations on them.
2. **Algebra**	2.1 Polynomial 2.2 Linear equations in two variables	• identify polynomials and do operations on them. • solve word problems using two variables.
3. **Commercial Mathematics**	3.1 Financial planning 3.2 Ratio and proportion	• know about the tax system and compute taxes. • compute income tax for salaried persons. • use theorem on equal ratios. • solve word problems based on direct and inverse variation.
4. **Data handling (Statistics)**	4.1 Frequency distribution 4.2 Measures of central tendency	• prepare grouped and ungrouped frequency distribution tables. • prepare cumulative frequency tables. • find and make use of measures of central tendencies for the given data.

Instructions for teachers

The textbook 'Mathematics Part I' contains many fundamental concepts. Some concerts are developed according to the principle 'from concrete to abstract'. The book also contains concepts in Economics related to Mathematics and some extension of Mathematics of the area of statistics. Teachers are expected to study them in detail. It is also expected that a teacher should make use of activities, discussions, question-answers, group projects etc. while teaching the subject. The teacher should read the textbook thoroughly, note the activities given in the book and encourage the students to do them. The teacher should also try to invent new activities.

It is more important to understand basic concepts in Mathematics rather than the calculations. Many examples are included in the book which will develop student's logical thinking. The teachers are advised to construct such examples with the help of the students. In the textbook, some examples are star marked, which indicates that they require a little higher order of thinking. If students solve examples logically but with a different method, please do encourage them.

In the process of evaluation, it is advised to think of open ended questions and activity sheets. Teachers should endeavour to develop such methods of evaluation.

The list of practicals given in the textbook should be taken as a specimen. Teachers can frame different practicals of their own. Different activities in the textbook are included in the practicals. Encourage the students to do those activities also. We hope that the evaluation method based on them will be helpful to develop different competencies in further studies.

List of some practicals (specimen)

(1) Consider your class as a universal set and draw Venn diagrams for the set of students who play Kho-kho, Kabbadi or any other games.

(2) Represent $2 + \sqrt{3}$, $5 - \sqrt{2}$ etc. on the number line.

(3) Divide a polynomial of degree three or four by a linear polynomial using different methods of division and check whether the answers are unique.

(4) By using the given tables compute the income tax of a salaried person whose statements of income and investments are given.

(5) Prepare a group frequency distribution table for the given numerical data.

(6) Find the percentage of various components using an easily available strip of medical tablets.

(7) To solve some challenging problems based on Linear equations using two variables.

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