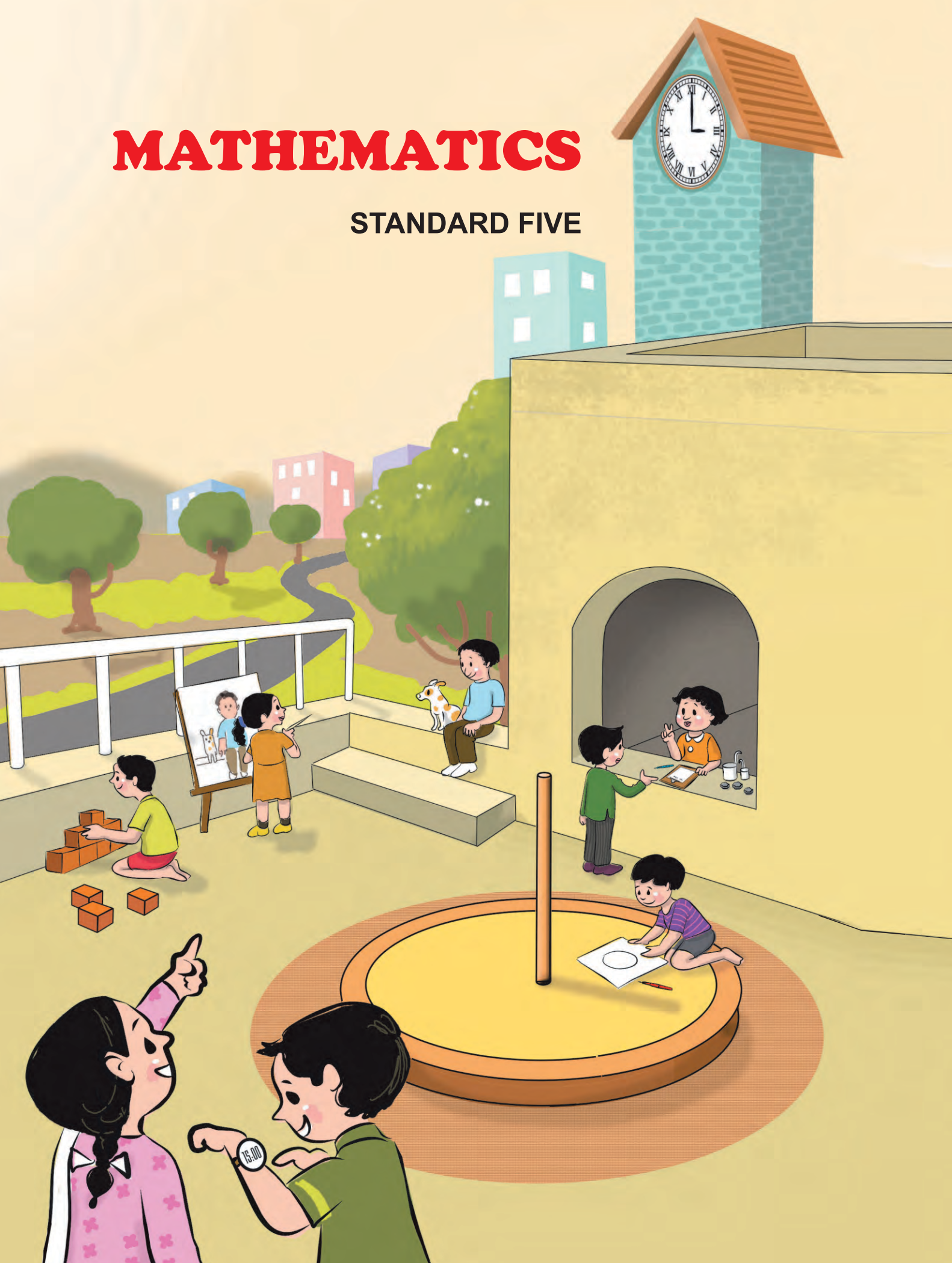


MATHEMATICS

STANDARD FIVE



The Constitution of India

Chapter IV A

Fundamental Duties

ARTICLE 51A

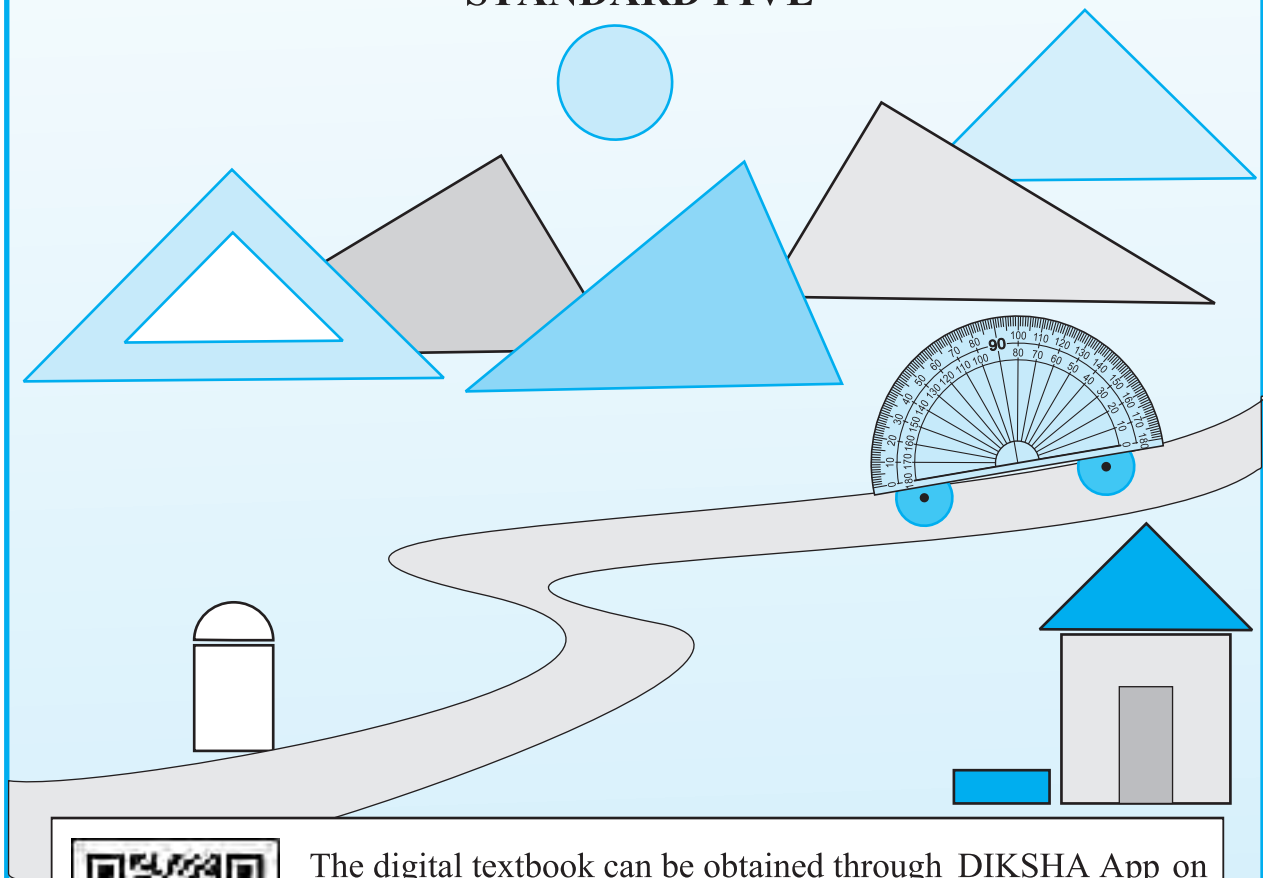
Fundamental Duties- It shall be the duty of every citizen of India—

- (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.

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Pra-Shi-Sa/2014-15/149/Manjuri/D-505/344, Date 14/1/2015

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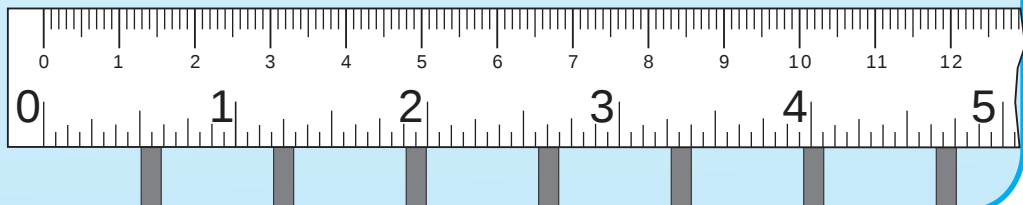
STANDARD FIVE



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.



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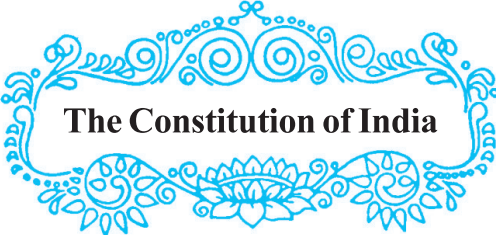
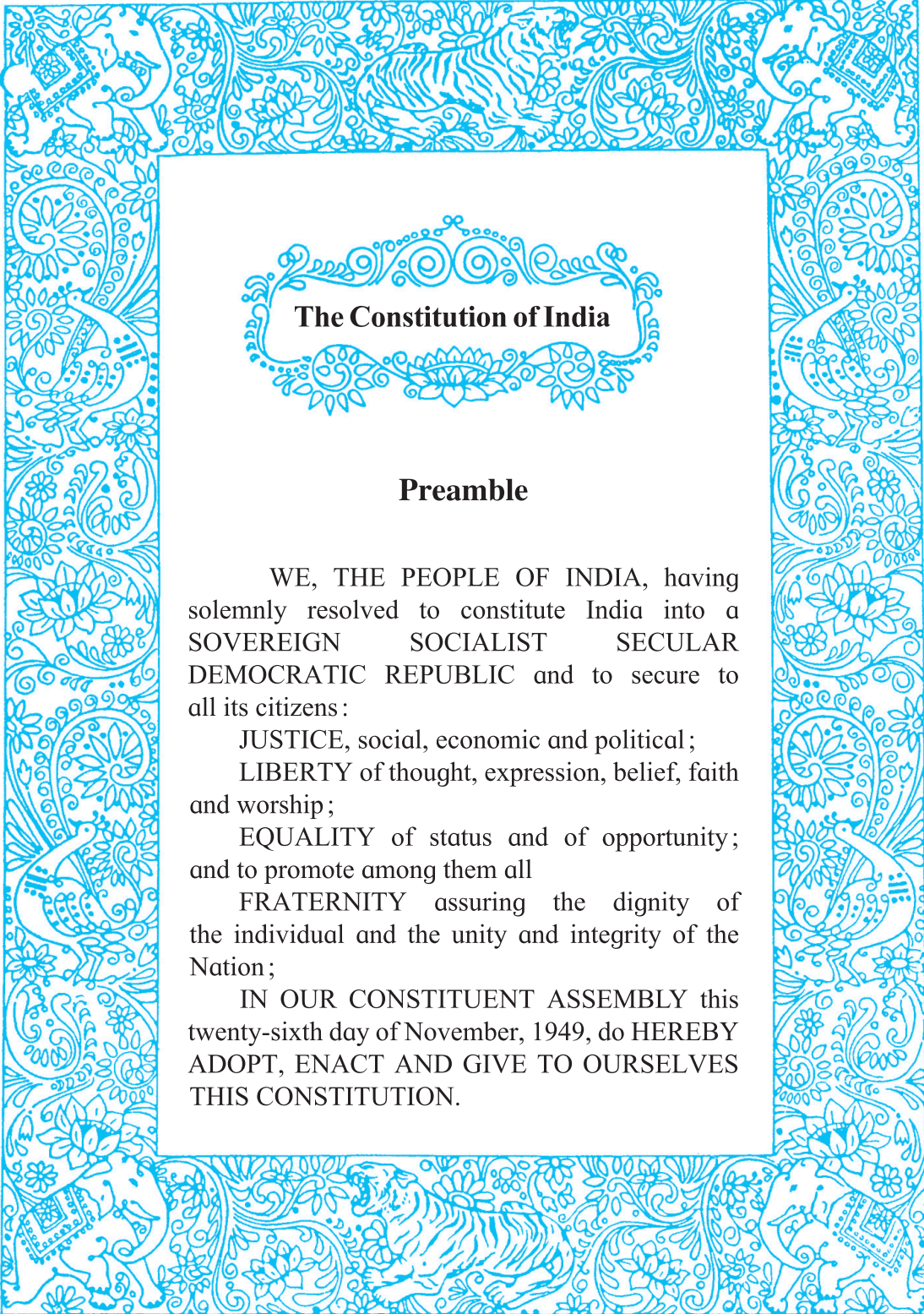
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The Constitution of India

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

The 'Primary Education Curriculum - 2012' was prepared in the State of Maharashtra following the 'Right of Children to Free and Compulsory Education Act, 2009' and the 'National Curriculum Framework 2005'. The Textbook Bureau has launched a new series of Mathematics textbooks based on this syllabus approved by the State Government from the academic year 2013-2014. We are happy to place this textbook of Standard Five in this series in your hands.

Our approach while designing this textbook was that the entire teaching-learning process should be child-centred, emphasis should be given on active learning and constructivism and at the end of Primary Education the students should have attained the desired competencies and that the process of education should become enjoyable and interesting.

Children constantly try to 'do' things on their own. Considering this factor, we have tried to make this book activity-oriented. For this, instructions and many activities have been given. Illustrations and diagrams have been used in the textbook to lead to a clearer understanding of mathematics.

Graded problem sets have been included in order to ensure revision and reinforcement of mathematical concepts and to facilitate self-learning. It is expected that the children will solve the questions in these problem sets on their own. Activity-oriented and open ended questions have also been included in the problem sets. We have tried to provide a variety of exercises to make them interesting for the students.

The language of presentation that the teacher is expected to use has been provided in the form of dialogues in the textbook. Some properties and rules that students need to use again and again while studying mathematics have been given in boxes. We have tried to make the subject lively with games, puzzles, etc.

This book was scrutinized by teachers, educationists and experts in the field of mathematics at all levels and from all parts of the State to make it as flawless and useful as possible. Letters from teachers and parents have been taken into account and their comments and suggestions have been duly considered by the Mathematics Subject Committee while finalising the book.

The Mathematics Subject Committee and Panel of the Textbook Bureau, Shri. V.D. Godbole (Invitee) and the artist have taken great pains to prepare this book. The Bureau is thankful to all of them.

We hope that this book will receive a warm welcome from students, teachers and parents.



(C. R. Borkar)

Director

Pune

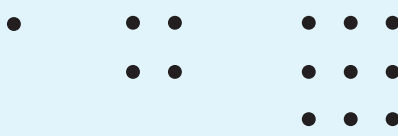
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English Mathematics - Standard V-Learning Outcomes

Suggested Pedagogical Processes	Learning Outcomes
The learners may be provided opportunities in pairs/groups/ individually and encouraged to — - discuss on contexts/situations in which a need arises to go beyond the number 1000 so that extension of number system occurs naturally. For example, number of grams in 10 kg, number of metres in 20 km, etc. - represents numbers beyond 1000 (up to 100000) using place value system, like extend learning of numbers beyond 9 thousand, how to write number one more than 9999 - operate (addition and subtractions) large numbers using standard algorithm. This may be identified as extension of algorithm for one more place - use a variety of ways to divide numbers like equal distribution and inverse process of multiplication - develop the idea of multiples of a number through its multiplication facts, skip counting on a number-line and number grid - develop the concept of factors through division of numbers and multiples - estimate the results of number operation through approximations and then verifies it - classify the numbers with properties, for example, prime numbers, co-prime numbers etc. - discuss and use contexts/ situations from daily life in activities to develop understanding about fractional part of the group like, how many bananas are there in half a dozen bananas? - compares fractions through various ways like paper folding, shading of diagram etc. - develop the idea of equivalence of fractions through various activities. For example, by paper folding and shading:  $\frac{1}{2}$ is the same as  $\frac{2}{4}$ - understand the idea of decimal fractions ($\frac{1}{10}$ th and $\frac{1}{100}$ th) - develop earlier understanding of angles and to describe it	The learner — 05.71.01 works with large numbers. - reads and writes numbers bigger than 1000 being used in her/his surroundings. - performs four basic arithmetic operations on numbers beyond 1000 by understanding of place value of numbers. - divides a given number by another number using standard algorithms. - estimates sum, difference, product and quotient of numbers and verifies the same using different strategies like using standard algorithms or breaking a number and then using operation. For example, to divide 9450 by 25, divide 9000 by 25, 400 by 25, and finally 50 by 25 and gets the answer by adding all these quotients. 05.71.02 Identifies the classification of prime numbers and coprime numbers. 05.71.03 acquires understanding about fractions. - finds the number corresponding to part of a collection. - identifies and forms equivalent fractions of a given fraction. - expresses a given fraction $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{5}$ in decimal notation and vice versa. For example, in using units of length and money— half of Rs. 10 is Rs.5. - converts fractions into decimals and vice versa. 05.71.04 explores idea of angles and shapes. Classifies angles into right angle, acute angle, obtuse angle and represents the same by drawing and tracing. 05.71.05 relates different commonly used larger and smaller units of length, weight and volume and converts larger units to smaller units and vice versa. 05.71.06 estimates the volume of a container in known units like volume of a bucket is about 20 times that of a mug.

Suggested Pedagogical Processes	Learning Outcomes
- observe angles in their surroundings and compare their measures. For example, whether the angle is smaller, bigger or equal to the corner of a book which is a right angle; further, classify the angles - introduce protractor as a tool for measuring angles and use it to measure and draw angles - plan their shopping— to make estimates of money (in different denominations) and the balance money one would get - conducts role play of shopkeepers/ buyers in which students create bills - measure length of different objects using a tape/ metre scale - appreciates the need of converting bigger units to smaller units - discuss experiences on units of capacity printed on water bottle, soft drink pack, etc. - fill a given space by using different solid shapes, cubes, cuboids, prisms, spheres, etc. and encourage students to decide which solid shape is more appropriate - measure volume by counting the number of unit cubes that can fill a given space - explore patterns in numbers while doing various operations and to generalise them as patterns in square numbers  - triangular number as shown below also forms a pattern  - collect information and display it in a pictorial form. For example, heights of students from their class and represent it pictorially - introduce perimeter or rectangular shapes through blackboard, plane surface of table and books with explaining the concept of closed surface	05.71.07 makes cube and parallelopiped using nets designed for this purpose. 05.71.08 applies the four fundamental arithmetic operations in solving problems involving coins, notes, length, mass, capacity and time intervals. 05.71.09 identifies the pattern in triangular number and square number. 05.71.10 collects data related to various daily life situations, represents it in tabular form and as bar graphs and interprets it. 05.71.11 estimates the perimeter and area of the rectangular shapes in the surroundings. For example, the floor of the classroom, plane surface of chalk-stick box, etc. 05.71.12 uses four basic operations (addition, subtraction, multiplication and division) on large numbers.

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English Mathematics - Standard V

❖ To the Teacher ❖

The textbook is a very important tool of the teaching-learning process. This textbook has been designed to help you base your teaching of mathematics on your own and your pupils' varied experiences in the local surroundings. We urge you to make full use of the special features of the textbook.

- Explain the mathematical ideas and concepts with the help of the games, stories, practical work, activities and puzzles. Enact the students to dramatise the conversations in the textbook.
- Make the maximum use of practical work for teaching mathematics.
- Have a question-and-answer session based on the subject-content. Use teaching/ learning aids to give learning experience.
- As the children carry out an activity, move amongst the groups to observe what they are doing. Give guidance if necessary.
- Feel free to design activities or make educational materials in addition to the ones given here, and use them for teaching.
- Make consistent efforts to help students develop the ability to read and write numbers and to carry out calculations in their mind.
- Many of the interactions suggested in the syllabus have been included in this textbook. However, other interactions may also be considered.