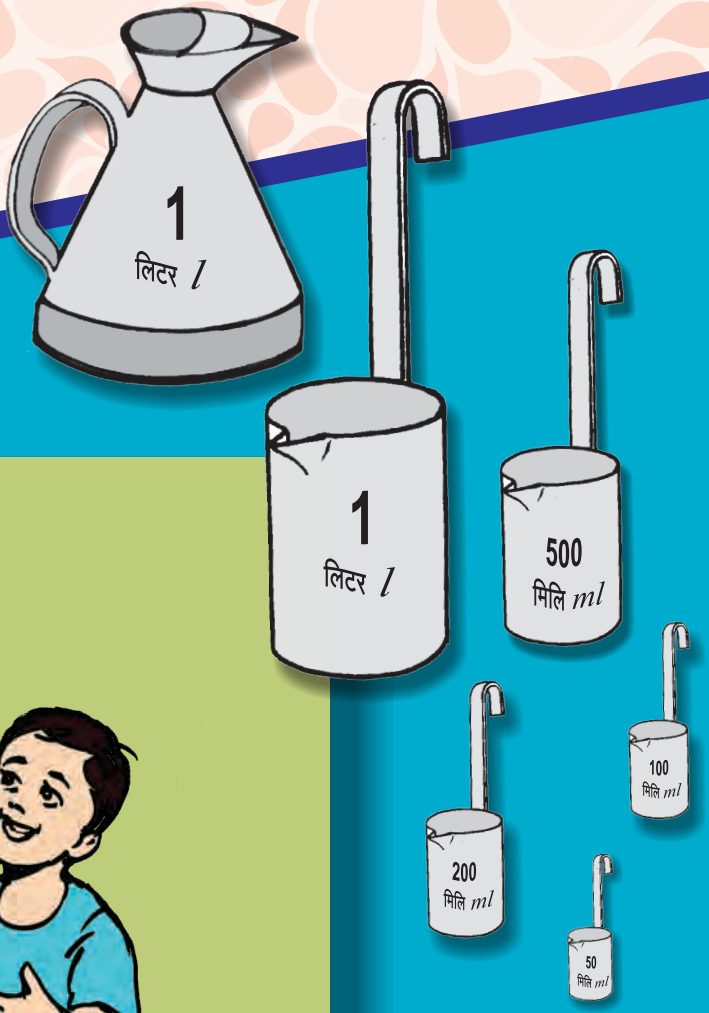
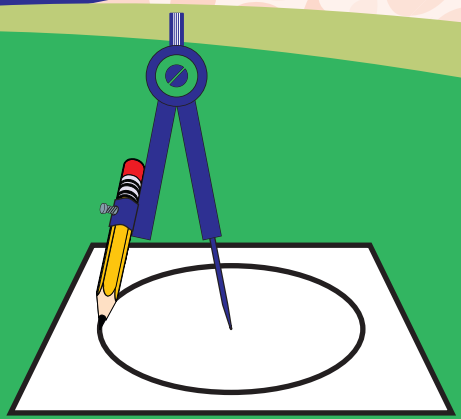
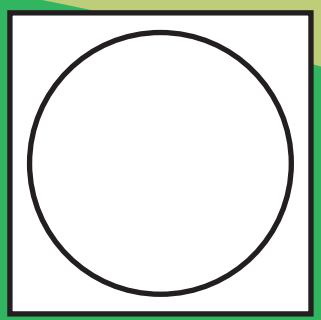
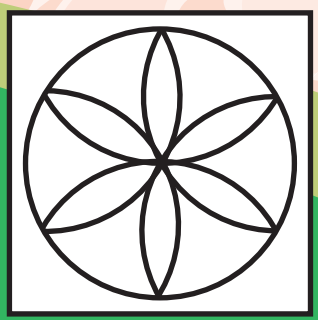
MATHEMATICS

STANDARD FOUR









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.

Education Department's Sanction Number :
Pra-Shi-Sa/2014-15/2101/Manjuri/D-505/754, Date 4/2/2014

MATHEMATICS

STANDARD FOUR

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.

MAHARASHTRA STATE BUREAU OF TEXTBOOK PRODUCTION
AND CURRICULUM RESEARCH, PUNE.

First Edition : 2014
Seventh Reprint : 2021

Cover and Illustrations :
Shri Vijaykumar Shinde, Ichalkaranji
Sandeep Koli, Mumbai

Co-ordination :
Vasant N. Shevale
Academic Secretary (Non-Language)
Ujjwala S. Godbole
Subject Assistant, Mathematics

Translation :
Neena Abhyankar

Scrutiny :
Smt. Mrinalini Desai

Co-ordination :
Dhanavanti Hardikar
Academic Secretary (Languages)
Santosh J. Pawar
Assistant Special Officer, English

Production :
Sachchitanand Aphale
Chief Production Officer
Sanjay Kamble, Production Officer
Prashant Harne, Assistant Production Officer

Typesetting :
DTP Section (Languages) Textbook Bureau, Pune.

Paper : 70 GSM Cream wove

Printer : UNITED MULTICOLOUR PRINTERS PVT. LTD., PUNE

Print Order No. : N/PB/2021-22/50,000

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

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 for Stds I to VIII from the academic year 2013-2014. We are happy to place this textbook of Standard Four 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 have a natural liking for pictures and constantly try to 'do' things on their own. Considering these factors, we have tried to make this book pictorial and activity-oriented. As far as possible, expressive illustrations have been used which will lead to a clearer understanding of mathematical concepts.

Graded exercises 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 the exercises on their own. We have tried to provide a variety of exercises to make it 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 under the heading 'Remember' in the boxes at the bottom of some pages. The instructions and the activities aim at making teaching more activity-oriented.

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 as also reviews in newspapers have been taken into account while preparing this textbook. The Bureau is grateful to all of them for their co-operation. Their comments and suggestions have been duly considered by the Mathematics Subject Committee while finalising the book.

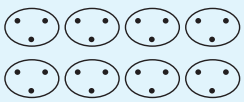
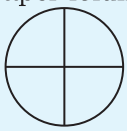
The Mathematics Subject Committee of the Bureau, the Panel, Shri. V. D. Godbole (Invitee) and the artists have taken great pains to prepare this book. The Bureau is thankful to all of them.

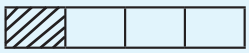
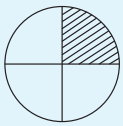
We hope that this book will receive a warm welcome from students, teachers and parents.

(C. R. Borkar)
Director
Maharashtra State Bureau of Textbook
Production and Curriculum Research, Pune.

Pune
Date : February 3, 2014
Magh 14, 1935

English Mathematics- Standard Four-Learning Outcomes

Suggested Pedagogical Processes	Learning Outcomes
The learners may be provided opportunities in pairs/groups/ individually and encouraged to — • classify the numbers as even or odd according to their properties. • explore and write multiplication facts through various ways like skip counting, extending patterns, etc. For example, for developing multiplication table of 3, children could use either skip counting or repetitive addition or pattern as shown below: 1 2 3 4 5 6 7 8 9 10 11 12 - - - - - - - - - • expand the two-digit number and multiply, for example, 23 multiplied by 6 could be solved as follows: • $23 \times 6 = (20 + 3) \times 6 = 20 \times 6 + 3 \times 6$ $= 120 + 18 = 138$ • solve and create daily life problems/situations using multiplication like, if a pen costs Rs. 35, what will be the cost of 7 pens? • discuss and evolve standard algorithm for multiplication. • make groups for division, for example, 24÷3 means, for example, to find how many groups of 3 can be there in 24 or how many 3's make 24?  • create contextual questions based on mathematical statements. • for example, the statement 25 – 10 =15 may trigger different questions from different students. A student may create: "I had 25 apples. Ten were eaten. How many apples are still left?" • create contextual problem through group activity such as dividing the class in two groups where one group solves the problem given by the other group by using different operations and the vice-versa. • to discuss and correlate fractional numbers like half $\frac{1}{2}$ one-fourth $\frac{1}{4}$ three-fourths $\frac{3}{4}$ with daily life • represent the fractional numbers through activities related to pictures/paper folding • For example – shade half $\frac{1}{2}$ the picture 	**The learner —** 04.71.01 applies operations on numbers in daily life. 04.71.02 classifies the numbers as even or odd. 04.71.03 multiplies 2 and 3-digit numbers. 04.71.04 divides a number by another number using different methods like – pictorially (by drawing dots), equal grouping or repeated subtraction and by using inter-relationship between division and multiplication. 04.71.05 creates and solves simple real life situations/ problems including coins, notes, length, mass and capacity by using the four operations. 04.71.06 works with fractions. - identifies half, one-fourth, three-fourths of a whole in a given picture by paper folding and also in a collection of objects. - represents the fractions as half $\frac{1}{2}$, one-fourth $\frac{1}{4}$ and three-fourths $\frac{3}{4}$ by using numbers/ numerals - shows the equivalence of a fraction $\frac{1}{2}$ and $\frac{2}{4}$ with other fractions. 04.71.07 acquires understanding about shapes around her/him. 04.71.08 identifies the centre, radius and diameter of the circle. 04.71.09 finds out shapes that can be used for tiling. 04.71.10 makes cube/cuboids using the given nets. 04.71.11 draws top view, front view and side view of simple objects. 04.71.12 explores the area and perimeter of simple geometrical shapes (triangle, rectangle, square) in terms of given shape as a unit. For example, the number of books that can completely fill the top of a table.

Suggested Pedagogical Processes	Learning Outcomes
• Shaded part of which of the following pictures do not represent one fourth ($\frac{1}{4}$) (i)  (ii)  • draw circles with various lengths of radius, compasses and explores various designs with the shape. • discuss observation on tiling (of different shapes) which they see in their homes/ on footpaths / floors of various buildings • make their own tiles and verify whether the tiles they created tessellate or not • look at various objects in the classroom from different viewpoints and make a deep drawing of the view. For example, a glass may look differently from the front. Questions like, 'But how it would look like from the top?' Or 'how it would look like from below?' may be raised • convert rupees into *paisa*, for example, how may 50 *paisa* coins you will get in exchange of 20 rupees? • make bills so that the students while making bills will use the four operations of addition/ subtraction/ multiplication/ division • estimate the length of an object/ distance first and then verify them by actually measuring them. For example, estimating the length of their bed or distance between the school gate and the classroom and verifying it by measuring them • make a balance and weigh things with standard weights. In case standard weights are not available, packages with standard weights may be used like packets of $\frac{1}{2}$ kg *dal*, 200 gm pack of salt, 100 gm pack of biscuits • innovate use of weights like using two 250 gm packets instead of 500gm packet (or by using stones of equivalent weights, etc.) • make their own measuring vessel to measure capacities of other vessels. For example, a bottle may have capacity for 200 ml and can be used as a measurement unit to know the amount of water in a jug or in a container • observe and study the calendar and come up with the number of weeks in a month/ in a year. Let children explore the pattern in the number of days in each month and how days are associated with dates in a month, etc. • utilise their experiences inside/outside the class having exposure to telling time/ reading clock in hours and minutes, alongwith peers • discover the time lapsed in an event by counting forward or using subtraction/ addition • explore patterns/designs in their environment/ surroundings (using shapes and numbers) and make such patterns and extend them • collect information and draw meaningful results/ inferences in their daily life. Using these experiences, the children may be involved in activities focusing on data handling	04.71.13 converts metre into centimetre and centimetre into metre. 04.71.14 estimates the length of an object/distance between two locations, weight of various objects, volume of liquid, etc., and verifies them by actual measurement. 04.71.15 solves problem involving daily life situations related to length, distance, weight, volume and time involving four basic arithmetic operations. 04.71.16 reads clock time in hour and minutes and expresses the time in a.m. and p.m. 04.71.17 relates to 24 hr clock with respect to 12 hr clock. 04.71.18 calculates time intervals / duration of familiar daily life events by using forward or backward counting / addition and subtraction. 04.71.19 identifies the pattern in multiplication and division. (up to multiple of 9) 04.71.20 represents the collected information in tables and bar graphs and draws inferences from these.

Contents

Part One

Part Two

English Mathematics- Standard Four

❖ To the Teacher ❖

At this stage, the textbook is a very important tool of the teaching-learning process. This textbook has been designed to help teachers base their teaching of mathematics on their own and their pupils' varied experiences and surroundings. We urge you to make full use of the following special features of this textbook.

- The games, demonstrations, practical work and activities included for explaining mathematical ideas and concepts.
- Encouraging students to learn on their own, making use of the knowledge they already have. For this purpose, we can use learning aids such as number cards, picture cards, beads and strings.
- Give learning experiences based on the content of one page every day.
- Tell the students to talk to others in the group to get help if necessary.
- As the children carry out an activity, move amongst the groups to observe what they are doing. Give guidance if necessary.
- From time to time, ask thought-provoking questions based on previous lessons and encourage the children to find the answers on their own.
- Encourage children to ask questions about their difficulties. In fact, help them develop the habit of asking questions.