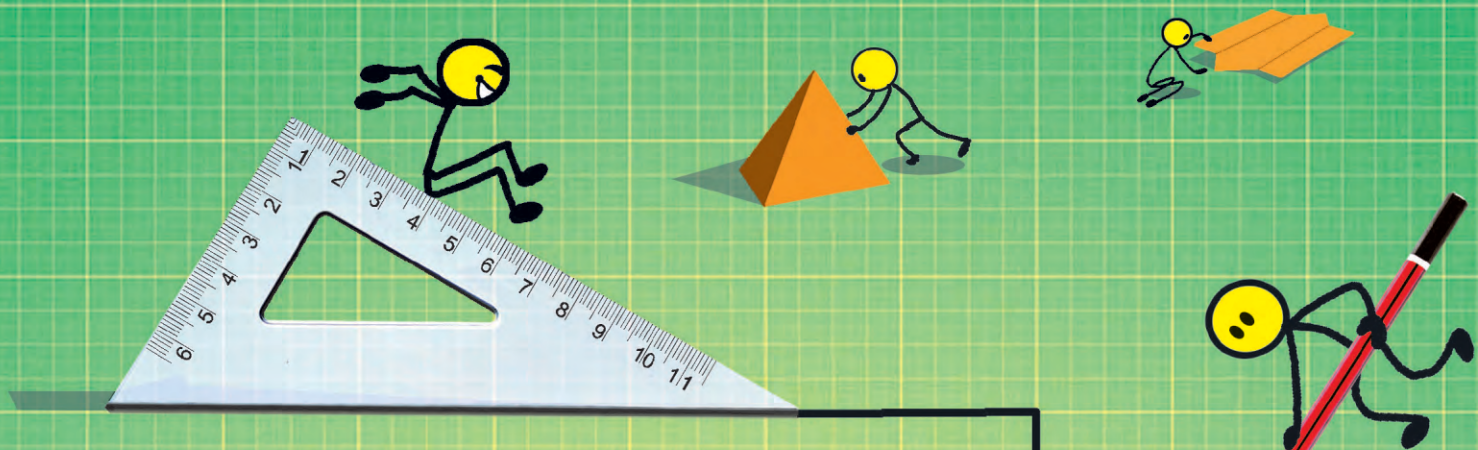
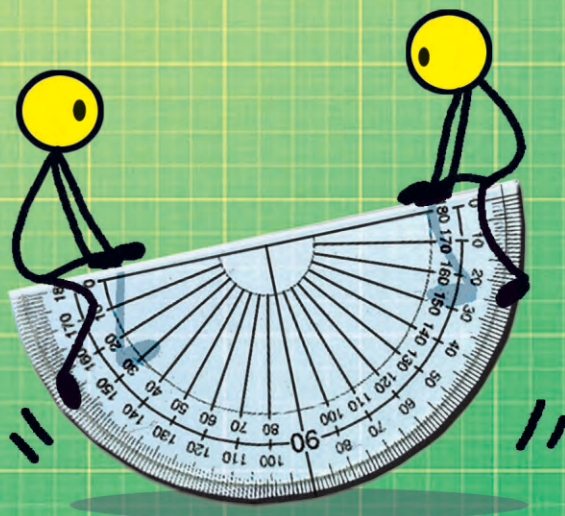
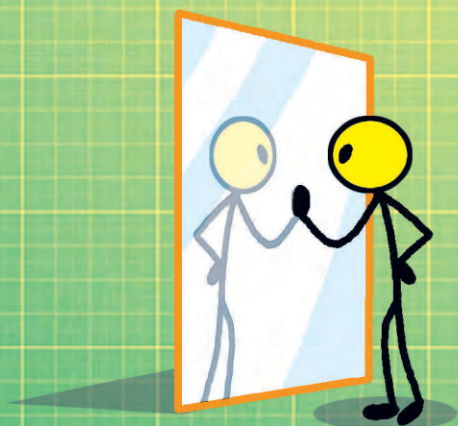
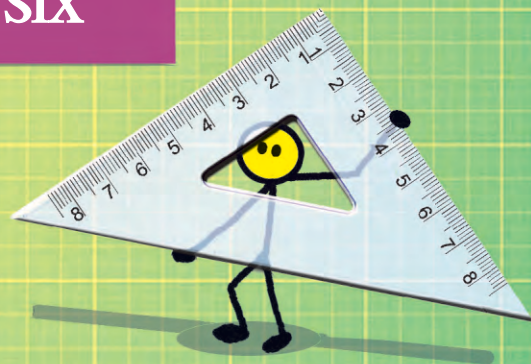




MATHEMATICS

STANDARD SIX



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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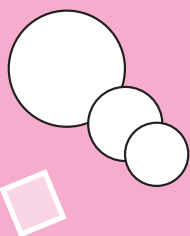


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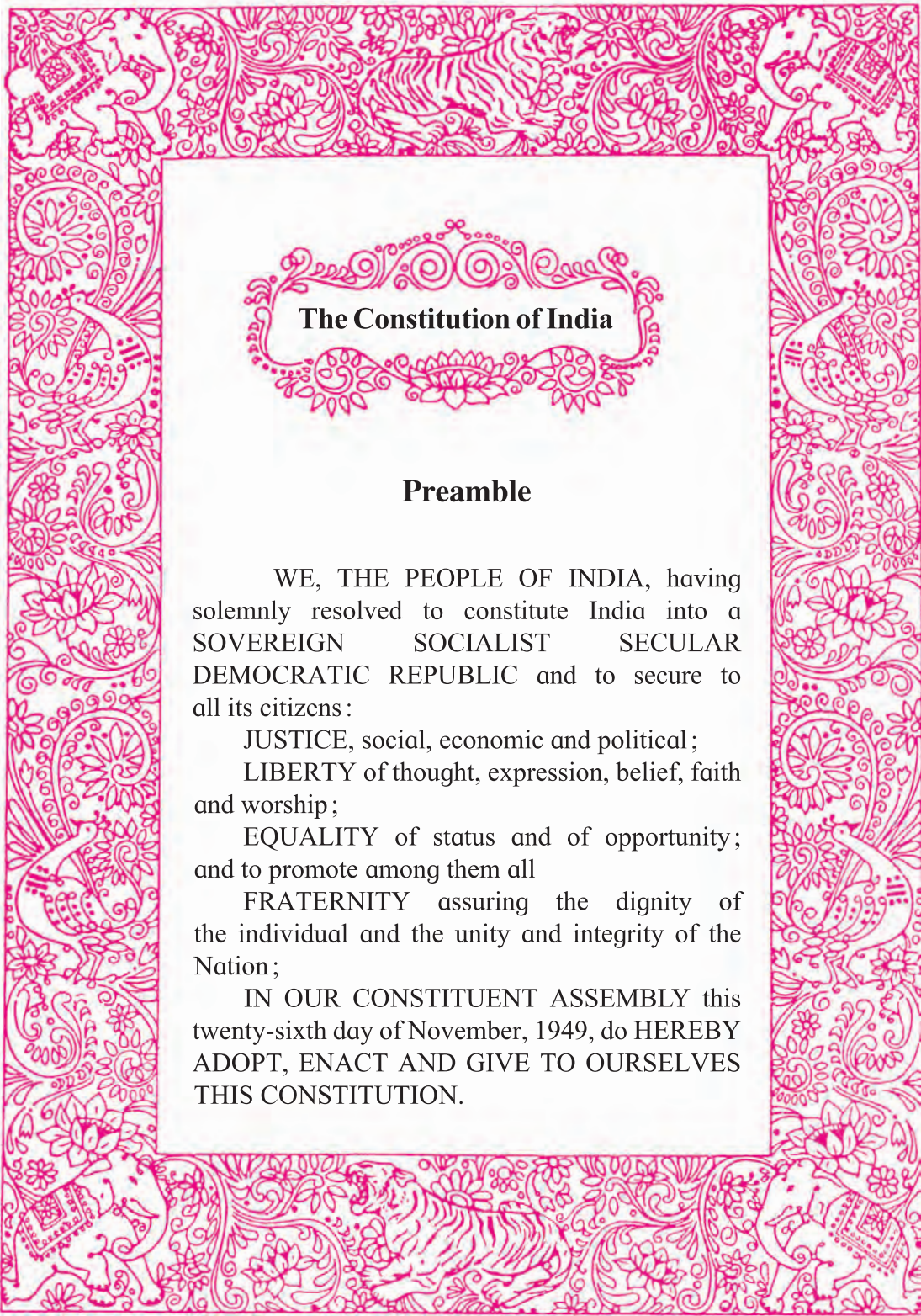
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The Constitution of India

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. Mathematics textbooks for Std I to Std V based on this syllabus have already been published. Now, we are happy to place this textbook for Std VI in this series in your hands.

During the teaching-learning process, there should be clarity about the specific competencies that students are expected to learn at the upper-primary level. With that in mind, in this textbook, the mathematical competencies which students are expected to learn have been spelt out in the beginning, and in accordance with those competencies an innovative presentation has been made of the content of the textbook. In order to point out that we come across mathematics in many places in our surroundings and that we use it all the time, some learning experiences have been provided under the title 'Maths my friend ...'. Questions based on experiences of daily life have been asked under the title 'Can you tell?'. Activities suggested under the title 'Try this' will help children to learn certain concepts. Sections such as 'Think about this', 'A Mathematical Riddle', 'Maths is fun!' and some games have been added to help make the subject of mathematics enjoyable.

Our approach while designing this textbook was that the entire teaching-learning process should be child-centred, that emphasis should be on self-learning and that the process of education should become enjoyable and interesting. The concepts included in the areas – Geometry, Number Work, Number Systems, Fractions, Algebra, Commercial Mathematics and Management of Data are explained in simple language. Practice Sets have been provided at the end of every teaching unit. The answers to the problems in the Practice Sets have been given at the end of the textbook. Some 'ICT Tools' have been suggested which will help to make teaching and learning effective.

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

The Mathematics Subject Committee and The Study Group of the Textbook Bureau 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

Pune

Date : 8 April 2016

Indian Solar Year :

Chaitra 19, 1938

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

English Mathematics - Standard VI

Learning Outcomes

Suggested Pedagogical Processes	Learning Outcomes
The learner may be provided opportunities in pairs/groups/ individually and encouraged to — - observe patterns that lead to divisibility by 2,3,4,5,6,8,10 and 11. - create number patterns through which HCF and LCM can be discussed - explore daily life situations to involve the use of HCF and LCM - create and discuss daily life situations involving the use of negative numbers - observe situations that require the representation by fractions and decimals - use different contexts in Mathematics to appreciate the necessity of representing unknown by variables (alphabet) - explore and generalise the need of using variables alphabet - describe situations involving the need for comparing quantities by taking ratio - discuss and solve word problems that use ratios and unitary method - explore various shapes through concrete models and pictures of different geometrical shapes like triangles and quadrilaterals, etc. - identify various geometrical figures and observe their characteristics in and outside the classroom environment either individually or in groups - make different shapes with the help of available materials like sticks, paper cutting, etc. - observe various models and nets of 3-Dimensional (3-D) shapes like cuboid, cylinder, etc. and discuss about the elements of 3-D figures such as faces, edges and vertices. - share the concept of angles through some examples like opening the door, opening the pencil box, etc. Students can be asked to give more such examples from the surroundings - classify angles based on the amount of rotation. - discuss and draw 60° angle using compasses, the construction of other angles like 30°, 120°, etc. can be discussed with the children.	The learner — 06.71.01 applies HCF or LCM in a particular situation. 06.71.02 solves problems involving addition and subtraction of integers. 06.71.03 uses fractions and decimals in different situations which involve money, length, temperature etc. For example, $7\frac{1}{2}$ metres of cloth, distance between two places is 112.5 km etc. 06.71.04 solves problems on daily life situations involving addition and subtraction of fractions / decimals. 06.71.05 uses variable with different operations to generalise a given situation. For example, perimeter of a rectangle with sides x units and 3 units is $2(x+3)$ units. 06.71.06 compares quantities using ratios in different situations. For example, the ratio of girls to boys in a particular class in 3:2. 06.71.07 uses unitary method in solving various word problems. For example, if the cost of a dozen notebooks is given she/he finds the cost of 7 notebooks by first finding the cost of 1 notebook. 06.71.08 describes geometrical ideas/terms/concepts like line, line segment, angle, triangle, quadrilateral, circle, etc., with the help of examples in surroundings. 06.71.09 demonstrates an understanding of angles. 06.71.10 identifies examples of angles in the surroundings, classifies angles according to their measure, estimates the measure of angles using 45°, 90°, and 180° as reference angles. 06.71.11 demonstrates an understanding of line-symmetry. 06.71.12 Identifies symmetrical 2-Dimensional (2-D) shapes which are symmetrical along one or more lines. 06.71.13 Creates symmetrical 2-D shapes. 06.71.14 describes the basic concepts for example, ray, plane and parallel lines. 06.71.15 identifies collinear points. 06.71.16 identifies point of concurrency. 06.71.17 constant angle bisector.

• observe the reflection symmetry of a shape by using mirror or folding a paper cut out of a shape along specific lines. • identify symmetrical shapes from surroundings like leaves, window, door, etc. • draw lines of symmetry when shapes are given. Group activity can be given, in which one group can complete the shape. • sort out the given set of quadrilaterals into different groups based on their shapes/size, etc. to explain the reason for the classification. • differentiate 2-D and 3-D objects by differentiate the shape of the top of the pencil box and the entire pencil box, to add more examples of this type from the surroundings. • discuss the various aspects of a 3-D object, like edges, vertices, and faces. • develop the concept of areas through measurement of region inside a shape by dividing in into square units. • explain the importance of arranging information in daily life situations involving numbers such as cricket scores in different cricket matches, number of family members in different families. • explore his/her own ways/methods of organising data in pictorial form.	06.71.18 applies multiplication and division on fraction. 06.71.19 computes percent profit and loss in daily life examples. 06.71.20 classifies triangles into different groups/types on the basis of their angles and sides. For example- scalene, isosceles or equilateral on the basis of sides, etc. 06.71.21 identifies various (3-D) objects like sphere, cube, cuboid, cylinder, cone in the surroundings. 06.71.22 describes and provides examples of edges, vertices and faces of 3-D objects. 06.71.23 shows through paper folding/paper cutting, ink blots etc, the concept of symmetry by reflector. 06.71.24 arranges given/collected information such as expenditure on different items in a family in the last six months, in the form of table, pictograph and bar graph and interprets them. 06.71.25 performs some basic constructions. 06.71.26 identifies polygon. 06.71.27 understands some bank transactions and calculates simple interest. 06.71.28 identifies sides and angles of quadrilateral. 06.71.29 tells some properties of triangles. 06.71.30 solves simple equations in one variable. 06.71.31 tells the tests of divisibility.
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