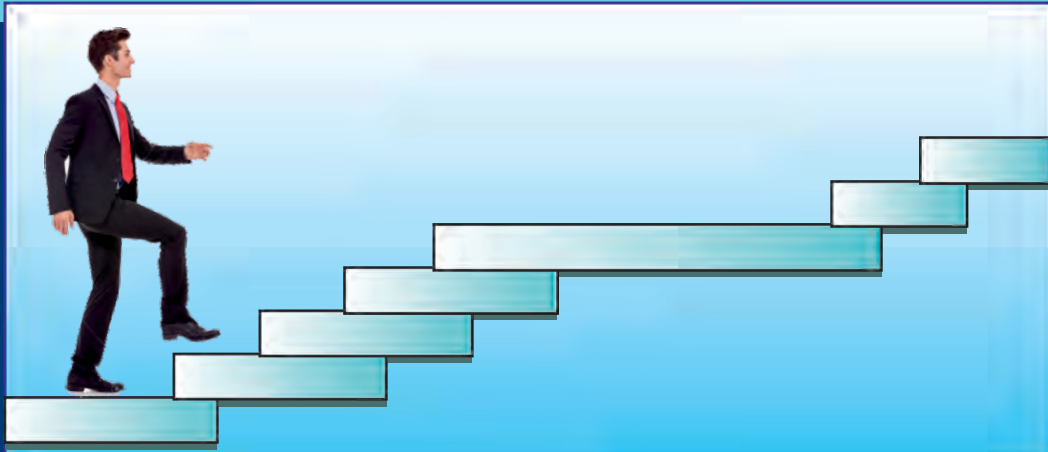


Standard XI



Mathematics & Statistics

Commerce Part 2



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
20.06.2019 and it has been decided to implement it from the educational year 2019-20.

Mathematics And Statistics

(Commerce)

Part-II

STANDARD ELEVEN



2019

**Maharashtra State Bureau of Textbook Production and Curriculum Research,
Pune - 411 004**



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Shri. Sandip Koli, Artist, Mumbai

Typesetter

Baladev Computers

Co-ordinator

Ujjwala Shrikant Godbole
I/C Special Officer for Mathematics

Production

Sachchitanand Aphale

Chief Production Officer

Sanjay Kamble

Production Officer

Prashant Harne

Asst. Production Officer

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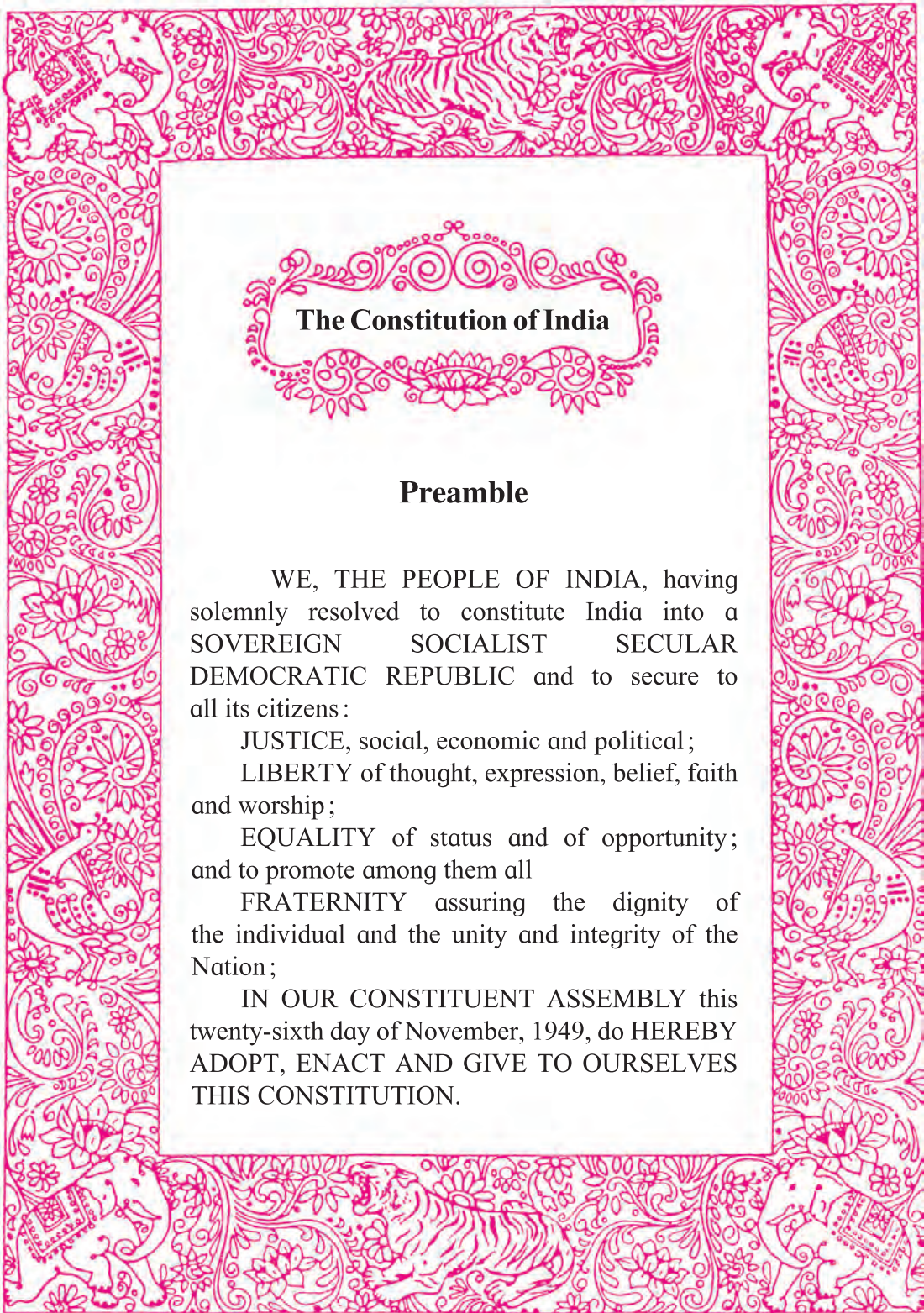
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The Constitution of India

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

Dear Students,

Welcome to the eleventh standard!

You have successfully completed your secondary education and have entered the higher secondary level. You will now need to learn certain mathematical concepts and acquire some statistical skills to add accuracy and precision to your work. Maharashtra State Bureau of Text Book Production and Curriculum Research has modified and restructured the curriculum in Mathematics and Statistics for the Commerce stream in accordance with changing needs of the society.

The curriculum of Mathematics and Statistics is divided in two parts. Part-1 covers topics in Algebra, Co-ordinate Geometry, Complex Numbers, Sets and Relations, functions and Calculus. Part-2 covers Combinatorics and Statistics. There is a special emphasis on applications. Activities are added at the end of every chapter for creative thinking. Some material will be made available on E-balbhharati website (ebalbhharati. in). It contains a list of specimen practical problems on each chapter. Students should complete the practical exercises under the guidance of their teachers. Journals are to be maintained by students and assessed by teachers.

You are encouraged to use modern technology in your studies. Explore the Internet for more recent information on topics in the curriculum. Get more examples and practice - problems from the Internet. You will enjoy learning if you follow three simple principles: a thorough study of the textbook, learning based on activities, and continuous practice of solving problems.

This textbook is prepared by mathematics subject committee and study group. This book has also been reviewed by senior teachers and eminent scholars. The Bureau would like to thank all of them for their contribution in the form of creative writing, constructive criticism, and valuable suggestions in making this book useful. Also the Bureau is grateful to members of the mathematics subject committee, study group and reviewers for sparing their valuable time in preparing this book. The Bureau hopes that the textbook will be received well by all users in the right spirit.

You are now ready to study. Best wishes for a happy learning experience.



(Dr. Sunil Magar)
Director

Pune

Date : 20 June 2019,

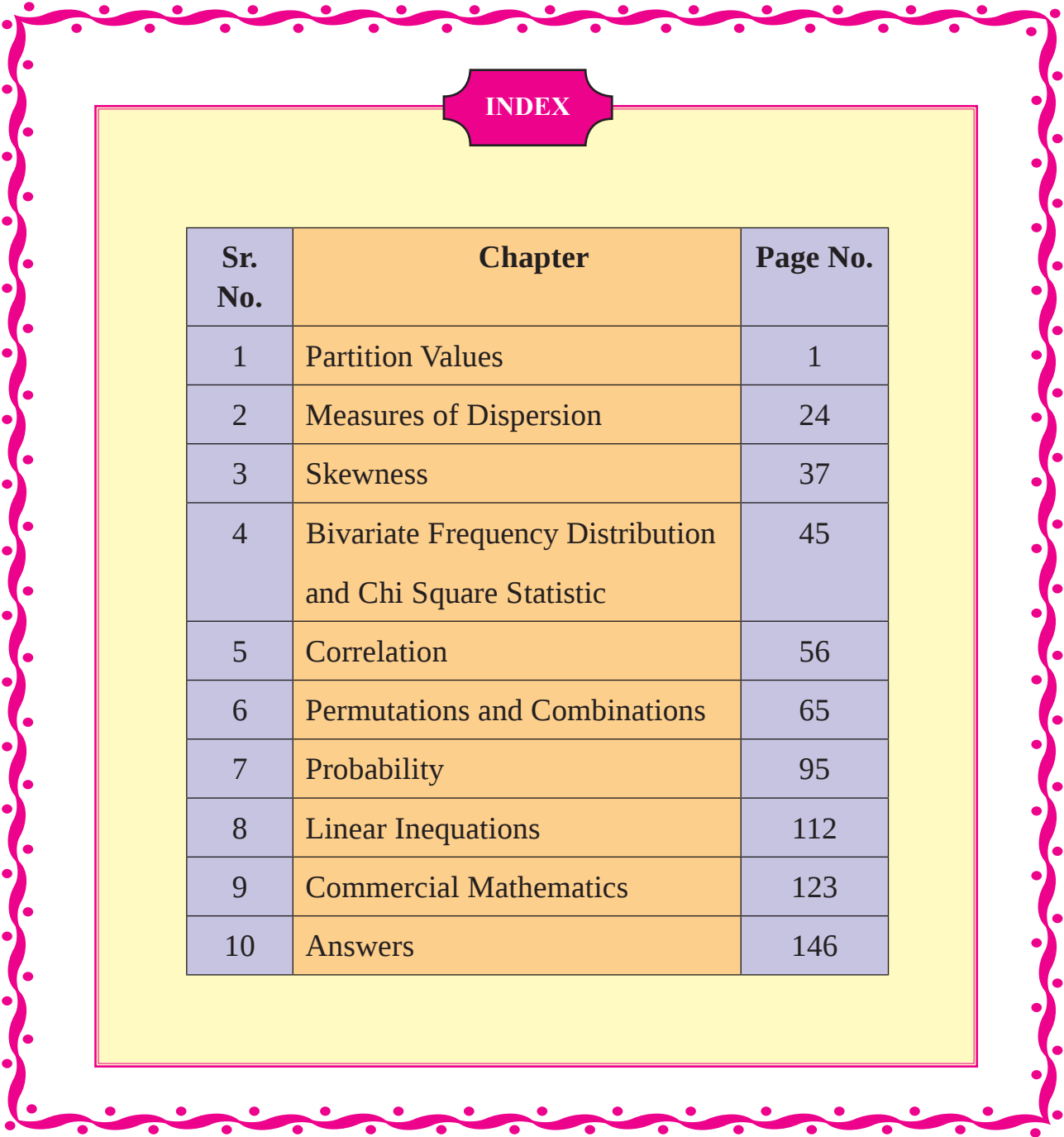
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Competency statements

Sr. No	Area	Topic	Competency Statement
1	Partition Values	Partition Values	The student will be able to - calculate specified partition values for given ungrouped data - calculate specified partition values for grouped data (using formulae and graphs)
2	Measures of Dispersion	Measures of Dispersion	- calculate range, quartiles and quartile deviation for given data - calculate variance and standard deviation from given data - calculate measures of dispersion for grouped data
3	Skewness	Skewness	- decide if the given frequency distribution is symmetric - calculate Pearson's coefficient of skewness - calculate Bowley's coefficient of skewness
4	Bivariate Frquency Distribution	Bivariate Frequency Distribution	- construct a bivariate frequency distribution for given raw data - find marginal and conditional frequency distributions from given bivariate frequency distribution. - find χ^2 statistic.
5	Correlation	Correlation	- compute correlation coefficient for given bivariate data - compute correlation coefficient for a bivariate frequency table.
6	Permutation and combination	Permutation and combination	- count the number of arrangements of given objects satisfying specified conditions - count the number of possible selections of objects satisfying specified conditions

7	Probability	Probability	- calculate probabilities of events in a random experiment - calculate probability of an event using description of an experiment - calculate probabilities of events obtained using algebra of events.
8	Linear Inequations	Linear Inequations	- identify sets of numbers satisfying given in - equations - solve a given set of in equations graphically
9	Commercial Mathematics	Percentage	- calculate percentages from given information - compare quantities in terms of percentages
		Profit and Loss	- calculate profit/loss from descriptions of a commercial activity/transaction - express profit/loss in terms of percentages
		Interest	- calculate simple interest - calculate compound interest
		GST	- calculate CGST, SGST and UTGST - calculate input tax and output tax - calculate input tax credit at different stages of trade
		Shares	- calculate dividend on shares - understand concepts of face value, market value, nominal value and par value of shares - calculate brokerage in a given transaction
		Partnership	- understand types of partnerships - understand levels of involvement of partners in a specified business
		Depreciation	- calculate depreciation using the initial value, period and duration of use of an asset - calculate present value from initial value for a given rate of depreciation and a specified duration after purchase of an asset



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