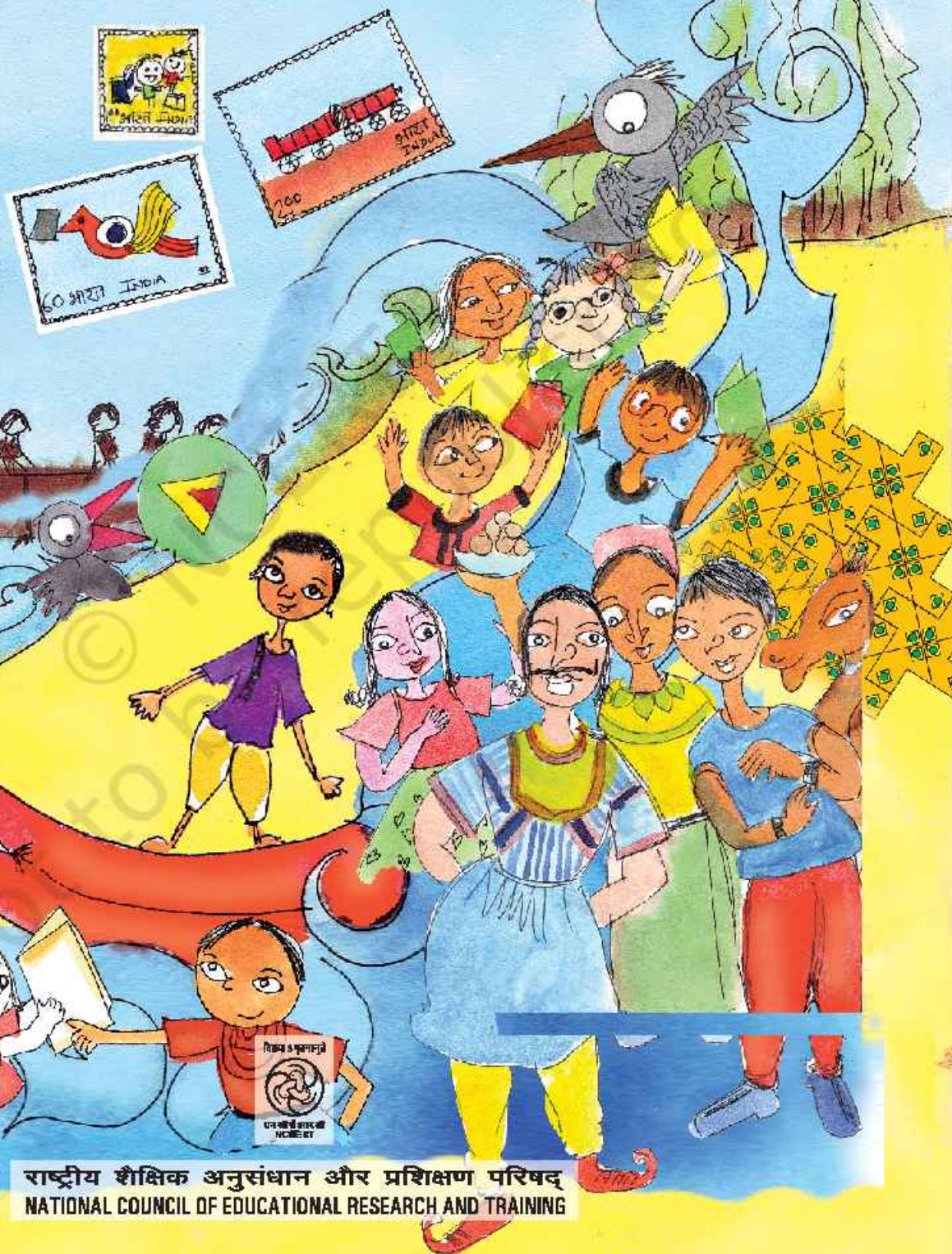


# MATH - MAGIC

Book 5

Textbook in Mathematics for Class V



राष्ट्रीय शैक्षिक अनुसंधान और प्रशिक्षण परिषद्  
NATIONAL COUNCIL OF EDUCATIONAL RESEARCH AND TRAINING



**First Edition**

March 2008 Phalguna 1929

**Reprinted**

January 2009 Magha 1930

January 2010 Magha 1931

January 2011 Magha 1932

December 2011 Agrahayana 1933

December 2012 Agrahayana 1934

December 2013 Agrahayana 1935

December 2014 Pausa 1936

November 2017 Agrahayana 1939

**PD 325T RPS**

© National Council of Educational  
Research and Training, 2008

₹ 55.00

Printed on 80 GSM paper with NCERT  
watermark

Published at the Publication Division by  
the Secretary, National Council of  
Educational Research and Training, Sri  
Aurobindo Marg, New Delhi 110 016 and  
printed at Veer Printo Graph, 64,  
Mohkampur Industrial Complex, Phase-I,  
Delhi Road, Meerut (U.P.) 250 002

**ISBN 978-81-7450-828-7**

**ALL RIGHTS RESERVED**

- ❑ No part of this publication may be reproduced, stored in a retrieval system or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording or otherwise without the prior permission of the publisher.
- ❑ This book is sold subject to the condition that it shall not, by way of trade, be lent, re-sold, hired out or otherwise disposed of without the publisher's consent, in any form of binding or cover other than that in which it is published.
- ❑ The correct price of this publication is the price printed on this page. Any revised price indicated by a rubber stamp or by a sticker or by any other means is incorrect and should be unacceptable.

**OFFICES OF THE PUBLICATION  
DIVISION, NCERT**

NCERT Campus  
Sri Aurobindo Marg  
New Delhi 110 016

Phone : 011-26562708

108, 100 Feet Road  
Hosdakere Halli Extension  
Banashankari III Stage  
Bangalore 560 085

Phone : 080-26725740

Navivan Trust Building  
P.O. Navivan  
Ahmedabad 380 014

Phone : 079-27541446

CWC Campus  
Opp. Dhankal Bus Stop  
Panihati  
Kolkata 700 114

Phone : 033-25530454

CWC Complex  
Mellgaon  
Guwahati 781 021

Phone : 0361-2674869

**Publication Team**

Head, Publication Division : M. Siraj Anwar

Chief Editor : Shveta Uppal

Chief Business Manager : Gautam Ganguly

Chief Production Officer (In-charge) : Arun Chitkara

Editor : Bijnan Sutar

Production Assistant : Deepak Jaiswal



## FOREWORD

The National Curriculum Framework (NCF), 2005, recommends that children's life at school must be linked to their life outside the school. This principle marks a departure from the legacy of bookish learning which continues to shape our system and causes a gap between the school, home and community. The syllabi and textbooks developed on the basis of NCF signify an attempt to implement this basic idea. They also attempt to discourage rote learning and the maintenance of sharp boundaries between different subject areas. We hope these measures will take us significantly further in the direction of a child-centred system of education outlined in the National Policy on Education (1986).

The success of this effort depends on the steps that school principals and teachers will take to encourage children to reflect on their own learning and to pursue imaginative activities and questions. We must recognise that given space, time and freedom, children generate new knowledge by engaging with the information passed on to them by adults. Treating the prescribed textbook as the sole basis of examination is one of the key reasons why other resources and sites of learning are ignored. Inculcating creativity and initiative is possible if we perceive and treat children as participants in learning, not as receivers of a fixed body of knowledge.

These aims imply considerable change in school routines and mode of functioning. Flexibility in the daily time-table is as necessary as rigour in implementing the annual calendar so that the required number of teaching days are actually devoted to teaching. The methods used for teaching and evaluation will also determine how effective this textbook proves for making children's life at school a happy experience, rather than a source of stress or boredom. Syllabus designers have tried to address the problem of curricular burden by restructuring and reorienting knowledge at different stages with greater consideration for child psychology and the time available for teaching. The textbook attempts to enhance this endeavour by giving higher priority and space to opportunities for contemplation and wondering, discussion in small groups, and activities requiring hands-on experience.

National Council of Educational Research and Training (NCERT) appreciates the hard work done by the Textbook Development Committee responsible for this book. We wish to thank the Chairperson of the Advisory Committee, Professor Anita Rampal and the Chief Advisor for this book, Professor Amitabha Mukherjee for guiding the work of this committee. Several teachers contributed to the development of this textbook; we are grateful to their principals for making this possible. We are indebted to the institutions and organisations which have generously permitted us to draw upon their resources, material and personnel. We are especially grateful to the members of the National Monitoring Committee, appointed by the Department of Secondary and Higher Education, Ministry of Human Resource Development under the Chairpersonship of Professor Mrinal Miri and Professor G.P. Deshpande, for their valuable time and contribution. As an organisation committed to the systemic reform and continuous improvement in the quality of its products, NCERT welcomes comments and suggestions which will enable us to undertake further revision and refinement.

New Delhi  
30 November 2007

Director  
National Council of Educational  
Research and Training





## TEXTBOOK DEVELOPMENT COMMITTEE

### CHAIRPERSON, ADVISORY COMMITTEE FOR TEXTBOOKS AT THE PRIMARY LEVEL

Anita Rampal, *Professor*, Department of Education, Delhi University, Delhi

### CHIEF ADVISOR

Amitabha Mukherjee, *Director*, Centre for Science Education and Communication (CSEC), Delhi University, Delhi

### MEMBERS

Anita Rampal, *Professor*, Department of Education, Delhi University, Delhi

Asmita Varma, *Primary Teacher*, Navyug School, Lodhi Road, New Delhi

Bhavna, *Lecturer*, DEE, Gargi College, New Delhi

Dharam Parkash, *Professor*, DESM, NCERT, New Delhi

Hema Batra, *Primary Teacher*, CRPF Public School, Rohini, Delhi

Jyoti Sethi, *Primary Teacher*, Sarvodaya Kanya Vidyalaya, Ashok Vihar, Phase II, Delhi

Kanika Sharma, *Primary Teacher*, Kulachi Hansraj Model School, Ashok Vihar, Delhi

Prakasan V.K., *Lecturer*, DIET, Malappuram, Tirur, Kerala

Preeti Chadha Sadh, *Primary Teacher*, Basic School, CIE, Delhi University, Delhi

Suneeta Mishra, *Primary Teacher*, N.P. Primary School, Sarojini Nagar, New Delhi

### MEMBER-COORDINATOR

Inder Kumar Bansal, *Professor*, DEE, NCERT, New Delhi

### ILLUSTRATIONS AND DESIGN TEAM

Srivi Kalyan, New Delhi

Nancy Raj, Chennai

Anita Varma, Bangkok

Taposhi Ghoshal, New Delhi

Sougata Guha, The Srijan School, Model Town, Delhi

**Cover Design:** Srivi Kalyan

*Layout and design support*

Anita Rampal, Sadiq Saeed





## ACKNOWLEDGEMENTS

National Council of Educational Research and Training (NCERT) thanks the following persons and institutions for their contribution towards this textbook. Special thanks are due to the Centre for Science Education and Communication (CSEC), Delhi University, for providing academic support and hosting all the textbook development workshops. The teams were fully supported by the staff, who put in tremendous effort through long working hours even on holidays.

The Council gratefully acknowledges the contributions of Sadiq Saeed (*DTP Operator*), Inderjeet Jairath (*Proof Reader*) and Shakamber Dutt (*Computer Station Incharge*) in shaping this book.

The Council also acknowledges the support of Mr. Venugopal and the International Collective in Support of Fishworkers (ICSF), Chennai, in providing detailed information and photographs about boats and fishworkers. The stories of the farmers in Vidarbha are adapted from reports by P. Sainath and Jaideep Hardikar. The support offered by K.K. Vashishtha, *Head*, Department of Elementary Education, NCERT is also gratefully acknowledged. The Council acknowledges the support of Eklavya, Bhopal for the children's drawings and some mathematical puzzles.

For the photographs the Council gratefully acknowledges the contribution of the following:

- Chapter 1* — MPEDA, (Marine Products Exports Development Authority) Kerala, ICSF (International Collective in Support of Fishworkers), Chennai, and Prakasan V.K.
- Chapter 2* — R.C. Das, CIET
- Chapter 8* — Raghu Rai and Delhi Tourism Development Corporation, Karnail Singh, Bhavna
- Chapter 9* — Anita Rampal, Bhavna, Preeti Chadha Sadh
- Chapter 10* — Nan Moore, Tad Arensmeier
- Chapter 11* — Bhavna, Hema Batra
- Chapter 14* — Bhavna, Kalyani Raghunathan

### The following are applicable to all the maps of India used in this book

© Government of India, Copyright 2006

1. The responsibility for the correctness of internal details rests with the publisher.
2. The territorial waters of India extend into the sea to a distance of twelve nautical miles measured from the appropriate base line.
3. The administrative headquarters of Chandigarh, Haryana and Punjab are at Chandigarh.
4. The interstate boundaries amongst Arunachal Pradesh, Assam and Meghalaya shown on this map are as interpreted from the "North-Eastern Areas (Reorganisation) Act, 1971," but have yet to be verified.
5. The external boundaries and coastlines of India agree with the Record/Master Copy certified by Survey of India.
6. The state boundaries between Uttarakhand & Uttar Pradesh, Bihar & Jharkhand and Chhattisgarh & Madhya Pradesh have not been verified by the Governments concerned.
7. The spellings of names in this map, have been taken from various sources.







## MATH-MAGIC

*What is inside this book?*

- |  |     |
|--|-----|
| 1. The Fish Tale                       | 1   |
| 2. Shapes and Angles                   | 16  |
| 3. How Many Squares?                   | 34  |
| 4. Parts and Wholes                    | 50  |
| 5. Does it Look the Same?              | 71  |
| 6. Be My Multiple, I'll be Your Factor | 87  |
| 7. Can You See the Pattern?            | 99  |
| 8. Mapping Your Way                    | 112 |
| 9. Boxes and Sketches                  | 126 |
| 10. Tenths and Hundredths              | 134 |
| 11. Area and its Boundary              | 146 |
| 12. Smart Charts                       | 159 |
| 13. Ways to Multiply and Divide        | 170 |
| 14. How Big? How Heavy?                | 187 |