

Contents

Foreword by Manjul Bhargava vii

Preface and Acknowledgments xv

PART I PUZZLES AND BRAINTEASERS

1 Probability in Your Head 3

Peter Winkler

2 Solving Puzzles Backward 11

Anany Levitin and Jason Rosenhouse

3 Spiral Galaxies Font 24

Walker Anderson, Erik D. Demaine, and Martin L. Demaine

4 Kings, Sages, Hats, and Codes 31

Steven T. Dougherty and Yusra Naqvi

5 How to Predict the Flip of a Coin 42

James D. Stein and Leonard M. Wapner

6 Coins and Logic 55

Tanya Khovanova

PART II GAMES

7 Bingo Paradoxes 77

*Barry A. Balof, Arthur T. Benjamin, Jay Cordes,
and Joseph Kisenwether*

8 Wiggly Games and Burnside's Lemma 91

David Molnar

9 Losing at Checkers Is Hard 103

*Jeffrey Bosboom, Spencer Congero, Erik D. Demaine,
Martin L. Demaine, and Jayson Lynch*

10 Chutes and Ladders without Chutes or Ladders 119

Darren B. Glass, Stephen K. Lucas, and Jonathan S. Needleman

11 Bugs, Braids, and Batching 139

Michael P. Allocca, Steven T. Dougherty, and Jennifer F. Vasquez

PART III ALGEBRA AND NUMBER THEORY

- 12** The Magic of Charles Sanders Peirce 161
Persi Diaconis and Ron Graham
- 13** Can You Win Khalou in Five Moves? 204
Brian Hopkins
- 14** On Partitions into Squares of Distinct Integers Whose
Reciprocals Sum to 1 213
Max A. Alekseyev
- 15** Puzzles, Parity Maps, and Plenty of Solutions 222
David Nacin

PART IV GEOMETRY AND TOPOLOGY

- 16** Should We Call Them Flexa-Bands? 249
Yossi Elran and Ann Schwartz
- 17** The Shortest Connection Problem on Triangular Grids 262
Jie Mei and Edmund A. Lamagna
- 18** Entropy of Lego Jumper Plates 287
David M. McClendon and Jonathon Wilson

About the Editors 313

About the Contributors 315

Index 323