

Table of Contents

- Foreword 7
- Hints for the reader 12
- I. Dedekind Triples: The Fundamental Gauge 13
- II. Finite Sets: The Basic Objects of Combinatorics 33
- III. Familiar Realizations of Dedekind Triples 55
- IV. Adding without a Carry: Ein Glasperlenspiel 71
- V. Rudiments of Universal Algebra 109
- VI. Embedding Commutative Semigroups into Groups:
Localization 125
- VII. The Revolving Door Algorithm 145
- VIII. Partitions of Finite Sets 166
- IX. Gray Codes: The General Case 204
- X. A Little Bit on Graphs 227
- XI. Operator Groups 238
- XII. The Symmetric Groups: Combinatorial Properties 246
- XIII. The Symmetric Groups: Algebraic Properties 283
- XIV. Lyndon Words 299
- XV. Galois Fields: Counting Irreducible Polynomials 326
- XVI. Ordered Sets 338
- XVII. The Axiom of Choice: Equivalent Principles and
Consequences 352
- XVIII. The Marriage Theorem 373
- XIX. Independence Structures 401
- XX. Free Constructions 407
- XXI. Symmetric Polynomials 427
- XXII. Lie Algebras 446
- XXIII. Ordered Groups 469
- XXIV. The Fundamental Theorem of Algebra:
A Final Highlight 476
- Bibliography 480
- Index of Algorithms and Procedures 515
- Index 518