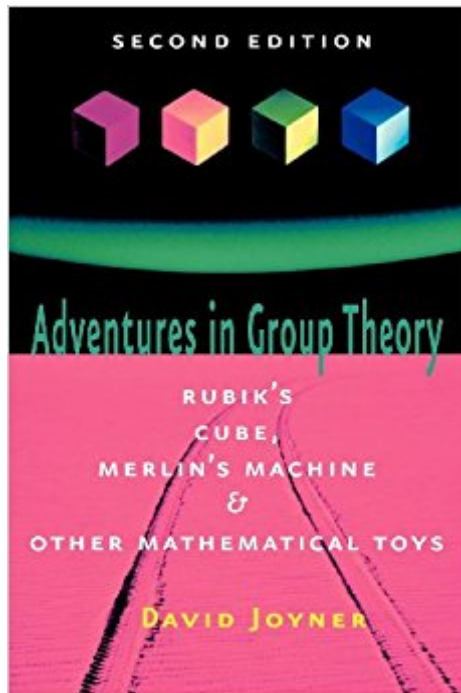# Adventures In Group Theory: Rubik's Cube, Merlin's Machine, And Other Mathematical Toys

Synopsis

This updated and revised edition of David Joynerâ ™s entertaining "hands-on" tour of group theory and abstract algebra brings life, levity, and practicality to the topics through mathematical toys.Joyner uses permutation puzzles such as the Rubikâ ™s Cube and its variants, the 15 puzzle, the Rainbow Masterball, Merlinâ ™s Machine, the Pyraminx, and the Skewb to explain the basics of introductory algebra and group theory. Subjects covered include the Cayley graphs, symmetries, isomorphisms, wreath products, free groups, and finite fields of group theory, as well as algebraic matrices, combinatorics, and permutations.Featuring strategies for solving the puzzles and computations illustrated using the SAGE open-source computer algebra system, the second edition of Adventures in Group Theory is perfect for mathematics enthusiasts and for use as a supplementary textbook.

Book Information

Paperback: 328 pages

Publisher: Johns Hopkins University Press; 2nd edition (December 1, 2008)

Language: English

ISBN-10: 0801890136

ISBN-13: 978-0801890130

Product Dimensions: 6 x 0.7 x 9 inches

Shipping Weight: 15.2 ounces (View shipping rates and policies)

Average Customer Review: 3.3 out of 5 starsÂ Â See all reviewsÂ (3 customer reviews)

Best Sellers Rank: #1,041,818 in Books (See Top 100 in Books)   #149 inÂ Books > Science & Math > Mathematics > Pure Mathematics > Group Theory   #333 inÂ Books > Humor & Entertainment > Puzzles & Games > Math Games

Customer Reviews

I can't figure out who the intended audience is for this book. It's not a textbook; the subject is not developed in a systematic manner, nor are there useful problems sets. The reader exercises, referred to as 'Ponderables' in the book, can be extremely challenging and off-topic, beginning with the chess problems in the first chapter. It's also too technical to be a popularization, although it seems to be targeted as such. I was looking for friendly introduction to group theory, and the core concepts are there. However, a focus on the Rubik's cube and other similar games as primary examples of groups introduces a lot of complexity.The book is written in an entertaining fashion with many historical references, quotes, puns and quips. I often found them to be a distraction.The

SAGE programming code provides quite a few examples but it is often not decipherable to a reader unfamiliar with this relatively obscure language based on Python; a little explanation would have gone a long way. Frequently terminology and notation are used before they are defined. Apparently this second edition cleaned up some errors, but there are still a number of typos and statements which are simply wrong. Theorems are stated imprecisely, and the proofs in the book are often hand-waving exercises rather than actual proofs. Important results are presented without justification or the proof left to the reader.I don't intend to imply there is no value here. Parts of the book provide a relatively accessible introduction to group theory, but the reading experience can be very frustrating.

Good for learning Group Theory terminology, extremely confusing at best to know how to apply it, especially to solving the Rubik's Cube, which the author is both fascinated by and teases with a promise to understand the solution to many puzzles, especially to the 3 x 3 Rubik's cube, but it very poorly delivers. The book gives no practical way of a non-mathematician to understand how any of this leads anywhere for any of the games mentioned, it simply seems that it shows how to describe math games in terms of group theory, without any ramifications as to what this is good for!

This book is good, mathematical point of view , connections between rubic cube and other similar puzzles with the group theory, the seller is fine , I can recommend it.

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