

subject matter to which statistics is to be applied. Fisher became an ecologist, evolutionary geneticist and agronomist all in one. He was a living example of interdisciplinary research. This book written by his daughter, Joan Fisher Box is inspiring reading for any budding scientist.

### Suggested Reading

- ◆ Fisher, R.A., 1925 (most recent edition, 1970). *Statistical Methods for Research Workers*. Oliver and Boyd, Edinburgh.
- ◆ Fisher, R.A., 1958. *The Genetical Theory of*

*Natural Selection*. Oxford University Press, Oxford.

- ◆ Fisher, R.A., 1935 (most recent edition, 1966). *The Design of Experiments*, Oliver and Boyd, Edinburgh.
- ◆ Fisher, R.A. and Yates, F. 1938 (most recent edition 1963). *Statistical Tables for Biological, Agricultural and Medical Research*, Oliver and Boyd, Edinburgh.
- ◆ Bennett, J.H. Ed. 1971-1974. *Collected Papers of R.A.Fisher*, Vol.1-5, The University of Adelaide.

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## Algebra, Volume I: Groups

A Good Text Book on Group Theory for Post Graduates

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*Algebra, Volume-I: Groups*

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The basic notions in various branches of modern algebra are analogous to those in group theory. So, it is important to make group theoretical concepts and ideas as clear as possible. This book is a successful attempt in this direction. The most concrete groups such as symmetric groups and matrix groups

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are used as main sources of examples. Various abstract concepts are explained through these examples, making it easy for the reader to grasp them. The exposition in the book is self-contained, in the sense that it includes proofs of several useful results which are often left as exercises to the readers or even overlooked in standard books on the subject. To mention a few such instances — results of section 6 on cardinal arithmetic in preliminaries, several explicit formulae concerning symmetric groups in chapter 2.

Each section is followed by a long list of exercises. Most of these are direct consequences of material developed in earlier sections.

The book is well written, easily understandable and covers syllabi of the group theory courses offered at the Master's level in most of the Indian universities.

The authors begin with the discussion of preliminaries on set theory, matrices, and cardinal arithmetic. Symmetries of plane configurations are discussed in chapter 1. This discussion, besides providing a motivation to the concept of a group, provides concrete examples of groups. Notions of semi groups, groups, group homomorphisms and symmetric groups are introduced in chapter 2. In chapter 3, subgroups and normal subgroups are considered. Material covered in these two chapters can be found in any standard book on the subject. General homomorphism theorems are proved for groups with operators in chapter 4 and these constitute a good part of this chapter. However, these results, in this generality, are not used elsewhere in the text in any essential manner. Rather than being helpful, a beginner may find the generality somewhat difficult to comprehend. Group actions, free groups and presentations of finite groups are also dealt

with in this chapter. One special feature of this chapter is a well presented account of the *Todd-Coxeter algorithm* for finding the index of a subgroup of a finite group. Chapters 5 to 8 cover standard material on direct, semi-direct products, Sylow's theorems, solvable groups, nilpotent groups, structure of finitely generated Abelian groups etc. The book concludes with the classification of finite rotation groups of the real Euclidean plane and 3-space.

In a nutshell, the book is well written, easily understandable and covers syllabi of the group theory courses offered at the Master's level in most of the Indian universities. Hence it can be profitably used as a text book at that level.

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In questions of science the authority of a thousand is not worth the humble reasonings of a single individual.

*Galileo*