# Discrete Mathematics: Proofs, Structures and Applications, Third Edition

*By Rowan Garnier, John Taylor*
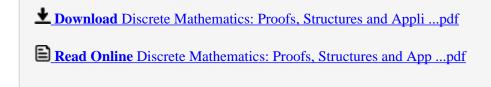
**Discrete Mathematics: Proofs, Structures and Applications, Third Edition**
By Rowan Garnier, John Taylor

Taking an approach to the subject that is suitable for a broad readership, **Discrete Mathematics: Proofs, Structures, and Applications, Third Edition** provides a rigorous yet accessible exposition of discrete mathematics, including the core mathematical foundation of computer science. The approach is comprehensive yet maintains an easy-to-follow progression from the basic mathematical ideas to the more sophisticated concepts examined later in the book. This edition preserves the philosophy of its predecessors while updating and revising some of the content.

**New to the Third Edition**
In the expanded first chapter, the text includes a new section on the formal proof of the validity of arguments in propositional logic before moving on to predicate logic. This edition also contains a new chapter on elementary number theory and congruences. This chapter explores groups that arise in modular arithmetic and RSA encryption, a widely used public key encryption scheme that enables practical and secure means of encrypting data. This third edition also offers a detailed solutions manual for qualifying instructors.

Exploring the relationship between mathematics and computer science, this text continues to provide a secure grounding in the theory of discrete mathematics and to augment the theoretical foundation with salient applications. It is designed to help readers develop the rigorous logical thinking required to adapt to the demands of the ever-evolving discipline of computer science.

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## Editorial Review

Review

The authors' diligent attempt to present, analyse and thoroughly demonstrate the subject of DMths is noteworthy. In keeping with the textbook character of their book, they also cite many examples. The book is an integrated textbook of DMths, adequate for undergraduate computer scientists, featuring a synoptic and vital presentation of this important, useful and interesting field. Of course, it is also interesting and useful for students of mathematics, as well as for those who work with informatics in general. It is a classic textbook, well structured and sufficiently complete within the framework established by similar textbooks. The work does a good job keeping a balance between conciseness and in-depth examinations … .
?*Contemporary Physics*, Vol. 52, No. 2, March-April 2011

This is a textbook on discrete mathematics for undergraduate students in computer science and mathematics. The choice of the topics covered in this text is largely suggested by the needs of computer science. It contains chapters on set theory, logic, algebra (matrix algebra and Boolean algebra), and graph theory with applications. … The style of exposition is very clear, step by step and the level is well adapted to undergraduates in computer science. The treatment is mathematically rigorous; therefore it is also suitable for mathematics students. Besides the theory there are many concrete examples and exercises (with solutions!) to develop the routine of the student. So I can recommend warmly this book as a textbook for a course. It looks very attractive and has a nice typography. … Although I haven't used this book in class (up to now), I think it is an excellent textbook.
?H.G.J. Pijls, University of Amsterdam, The Netherlands

**Praise for Previous Editions**
Garnier and Taylor offer a work on discrete mathematics sufficiently comprehensive to be used as a resource work in a variety of courses … Now in its second edition, it would also make an excellent general reference book on these areas … a fine undergraduate book.
?R.L. Pour, Emory & Henry College, *CHOICE*

Provides an accessible introduction to discrete mathematics, including the core mathematics requirements for undergraduate computer science students.
?*SciTech Book News*, Vol. 122

This is the second edition of this accessible yet rigorous introduction to discrete mathematics. As in the first edition, the theory is illustrated by a large number of solved exercises. In this edition further exercises have been added, in particular, at the routine level. In addition, some new material on typed set theory is included.
?S. Teschl

The book is designed for students of computer science. It contains main mathematical topics needed in their undergraduate study. In the second edition, the authors added a lot of new exercises and examples, illustrating discussed concepts. The book contains a lot of well-ordered and nicely illustrated material.
?Vladimir Soucek, *European Mathematical Society Newsletter*, June 2004

About the Author

**Rowan Garnier** was a professor of mathematics at Richmond, the American International University in London, where she served ten years as Chair of the Division of Mathematics, Science and Computer Science.

**John Taylor** is Head of the School of Computing, Mathematical and Information Sciences at the University of Brighton, UK. He has published widely on the applications of diagrammatic logic systems to computer science.

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