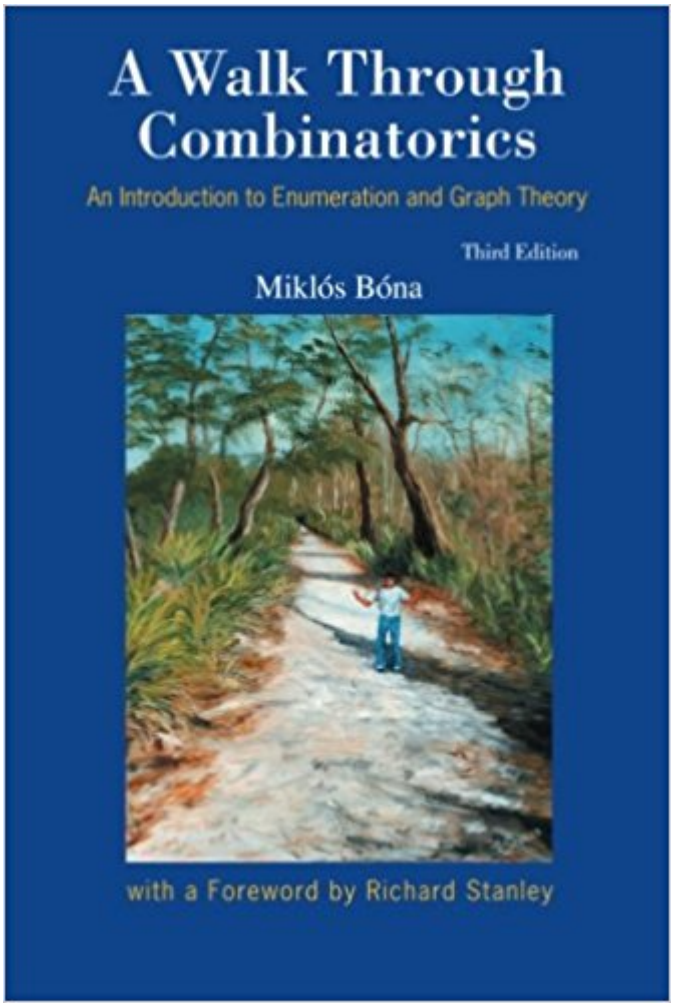
A Walk Through Combinatorics: An Introduction To Enumeration And Graph Theory (Third Edition)



Synopsis

This is a textbook for an introductory combinatorics course lasting one or two semesters. An extensive list of problems, ranging from routine exercises to research questions, is included. In each section, there are also exercises that contain material not explicitly discussed in the preceding text, so as to provide instructors with extra choices if they want to shift the emphasis of their course. Just as with the first two editions, the new edition walks the reader through the classic parts of combinatorial enumeration and graph theory, while also discussing some recent progress in the area: on the one hand, providing material that will help students learn the basic techniques, and on the other hand, showing that some questions at the forefront of research are comprehensible and accessible to the talented and hardworking undergraduate. The basic topics discussed are: the twelvefold way, cycles in permutations, the formula of inclusion and exclusion, the notion of graphs and trees, matchings, Eulerian and Hamiltonian cycles, and planar graphs. The selected advanced topics are: Ramsey theory, pattern avoidance, the probabilistic method, partially ordered sets, the theory of designs (new to this edition), enumeration under group action (new to this edition), generating functions of labeled and unlabeled structures and algorithms and complexity. As the goal of the book is to encourage students to learn more combinatorics, every effort has been made to provide them with a not only useful, but also enjoyable and engaging reading.

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Customer Reviews

...A very inviting style of exposition, in which developments are always well motivated and illustrated

by numerous examples. -- Zentralblatt MATH --This text refers to an alternate Paperback edition.

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I love this book. It’s very interesting through out the book. Each section goes from very basic stuff to advance stuff which makes it’s easy for you to follow.Each chapter of the book, there are about 20+ problems with detail solutions in the book (Yes, I am not kidding-SOLUTION). It’s perfect for people who want to practice and check their work or finding some hint when you are stuck.It’s a great way to learn how to solve combinatoric problems.Moreover, it also have the supplementary problems (this one with no solution), for people who want to challenge themselves more.It’s a great book for those who are new to combinatoric and want to find their way in. And it has so many difficult levels that you won’t be bored. Recommended!!!

A great book for self-study. It is a bit more time consuming though and around senior junior undergraduate level. Nice examples given throughout the text. Combinatorics is an important field in theoretical CS and discrete math.

If looking to improve your combinatorial problem solving or better grasp the scope of the field, "A

Walk Through Combinatorics" is a slim, suitable solution. It is not, however, a full primer. Although it acquaints the reader with several topics, it seems little concerned with their unified development. For example, partitions and generating functions share an important connection not discussed. Induction is presented without elucidating strong induction or the well-ordered principle.The book does not use a sequential approach, equally to its credit as its criticism as a learning tool. Of course, some chapters cohere out of necessity (e.g. binomial identities and compositions come after counting principles) but you can largely jump in wherever you wish, which is good for quickly gaining a working definition with an sample application or two. But there are also numerous unexpected forward references, which is hard to forgive in a mathematics textbook. The closing chapter section on computability however, is an appreciated capstone.Practice problems lie mostly at what the intended audience would probably call the "challenging" level. This is fine, because Bona has meticulously worked out solutions for many of the problems in each chapter. I have not taken a precise count (ironically) but solutions appear to comprise at least half of the book’s pages. If you can understand the explanatory parts of the chapter and the brief examples given, taking the time to work through the practice sets will reinforce the foundation well.One thing I will never understand is why discrete math textbooks insist on a probability unit, Bayesian or otherwise.Take the title seriously. This is a "walk" through the subject, and you don’t get a chance to sit and analyze in one spot on a gentle pedestrian stroll: the major landmarks are tagged with introductory information, and you get to see a lot of them.

I bought this paper book(3rd) because MIT OCW recommends it, but after read several chapters, I find it is not as good as comments. at least for the beginner. I really recommend Richar Brunaldi’s Introductory Combinatorics.

it is very good.fast and excellent

Just for disclosure, I’m a senior undergraduate in mathematics. This will suggest something about my background, which is always an important factor in how a work is received.It seems to be a general trend that participants in Olympiads write texts with a lot of problems -- as opposed to none or just exercises. This is the kind of text Bona has written. There are hundreds of problems and they range in technique and difficulty. Personally, I think these are the best kinds of textbooks because they ask you to spend a lot of time on a few problems and this really helps you get in there and see what’s happening at a deeper level.But one thing unique about Bona’s text that is especially nice is

the inclusion of detailed solutions to all of the problems not given in the supplementary sections. Writing a clear and instructive textbook is a great skill. But writing solutions to difficult problems is probably a more difficult skill to develop, yet Bona has it. All of the material here is very helpful for developing a strong base for future work in combinatorics.Another additional topic that I'm very happy he included is the section on complexity. Historically, combinatorics and complexity have been closely related, which is something that has only increased in recent decades. But Bona's text is the only one I've seen that is introductory and includes a discussion of computational complexity. This is a wonderful feature to an already outstanding textbook.I've given the text four stars because I've read just three or four chapters. They've all been great, but this is less than half of the textbook.

I am a math major who is using this book for my combinatorics class. This book covers a lot of topics and I enjoy the author's use of math in the real world for his examples and exercises. However, the only thing I dislike about the book are his proofs. I don't enjoy reading his proofs because most of them seem too informal. He mixes in real life examples for his proofs of theorems. For example, Theorem 4.6 in the book. Overall, I don't like the dialogue he uses in his proofs. It doesn't feel like he's instructing me. It feels too casual, too informal, as if we're having a cup of coffee over the theorems and I continue to agree with everything he says and nod to him every minute. I understand as a math major I need to fill in the gaps he leaves behind because a proof DOES NOT have to provide reasoning. A proof only has to provide justification for each step.

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