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Beeler, Robert A.

How to count. An introduction to combinatorics and its applications.

Cham: Springer (ISBN 978-3-319-13843-5/hbk; 978-3-319-35508-5/pbk; 978-3-319-13844-2/ebook). xv, 361 p. (2015).

The book is an excellent introduction to combinatorics. In the first part, basics concepts, methods and tools are presented. This covers fundamental counting principles, distribution problems, generating functions, and recurrences as well as advanced techniques such as inclusion-exclusion principle and Pólya theory. The second part introduces classical fields of application such as probability, graph theory, and combinatorial designs. The author uses a clear language and often provides an easy intuitive access to abstract subjects. The presentation is well motivated, the explanations are transparent and illustrated by carefully selected examples. Each section ends with a list of well formulated exercises which make the book ideally suited for self-instruction.

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Classification: K25

Keywords: inclusion-exclusion principle; Pólya theory; combinatorial designs

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