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praise of inequalities -- 21. The fundamental theorem of algebra -- 22. One square and an odd number of triangles -- 23. A theorem of Pólya on polynomials -- 24. On a lemma of Littlewood and Offord -- 25. Cotangent and the Herglotz trick -- 26. Buffon's needle problem -- Combinatorics: 27. Pigeon-hole and double counting -- 28. Tiling rectangles -- 29. Three famous theorems on finite sets -- 30. Shuffling cards -- 31. Lattice paths and determinants -- 32. Cayley's formula for the number of trees -- 33. Identities versus bijections -- 34. The finite Kakeya problem -- 35. Completing Latin squares -- Graph Theory: 36. The Dinitz problem -- 37. Permanents and the po wer of entropy -- 38. Five-coloring plane graphs -- 39. How to guard a museum -- 40. Turán's graph theorem -- 41. Communicating without errors -- 42. The chromatic number of Kneser graphs -- 43. Of friends and politicians -- 44. Probability makes counting (sometimes) easy -- About the Illustrations -- Index.

Sommario/riassunto

This revised and enlarged fifth edition features four new chapters, which contain highly original and delightful proofs for classics such as the spectral theorem from linear algebra, some more recent jewels like the non-existence of the Borromean rings and other surprises. From the Reviews "... Inside PFTB (Proofs from The Book) is indeed a glimpse of mathematical heaven, where clever insights and beautiful ideas combine in astonishing and glorious ways. There is vast wealth within its pages, one gem after another. ... Aigner and Ziegler... write: "... all we offer is the examples that we have selected, hoping that our readers will share our enthusiasm about brilliant ideas, clever insights and wonderful observations." I do. ... " Notices of the AMS, August 1999 "... This book is a pleasure to hold and to look at: ample margins, nice photos, instructive pictures, and beautiful drawings ... It is a pleasure to read as well: the style is clear and entertaining, the level is close to elementary, the necessary background is given separately, and the proofs are brilliant. ..." LMS Newsletter, January 1999 "Martin Aigner and Günter Ziegler succeeded admirably in putting together a broad collection of theorems and their proofs that would undoubtedly be in the Book of Erdös. The theorems are so fundamental, their proofs so elegant, and the remaining open questions so intriguing that every ma thematician, regardless of speciality, can benefit from reading this book. ... " SIGACT News, December 2011.