

Martin Gardner Logical Puzzle

Compiled by a prominent educator and author, this volume presents an intriguing mix of mathematical paradoxes — phenomena with surprising outcomes that can be resolved mathematically. Students and puzzle enthusiasts will get plenty of enjoyment mixed with a bit of painless mathematical instruction from 30 conundrums, including The Birthday Paradox, Aristotle's Magic Wheel, and A Greek Tragedy.

Seventy-two different puzzles in which players must circle groups of letters — vertically, horizontally, diagonally, more — that spell words from specific categories: flowers, states, languages, more.

This original anthology collects 10 of Weyl's less-technical writings that address the broader scope and implications of mathematics. Most have been long unavailable or not previously published in book form. Subjects include logic, topology, abstract algebra, relativity theory, and reflections on the work of Weyl's mentor, David Hilbert. 2012 edition.

Unusual collection of 36 computer-generated mazes, loosely based on themes from Lewis Carroll's Alice's Adventures in Wonderland. Instructions and solutions for puzzles which range from simple to difficult.

These logic puzzles provide entertaining variations on Gödel's incompleteness theorems, offering ingenious challenges related to infinity, truth and provability, undecidability, and other concepts. No background in formal logic necessary.

Classic, lively explanation of one of the byways of mathematics. Klein bottles, Moebius strips, projective planes, map coloring, problem of the Königsberg bridges, much more, described with clarity and wit.

Classic of science reports how Harvey's theory of the circulation of the blood came into being. Reproduces the English translation made during Harvey's lifetime.

The noted expert selects 70 of his favorite "short" puzzles, including such mind-bogglers as The Returning Explorer, The Mutilated Chessboard, Scrambled Box Tops, and dozens more involving logic and basic math. Solutions included.

300 games by the greatest player of all time: 54 against such masters as Anderssen, Harrwitz, Mongredien, Bird, Paulsen, and others; 52 of the best blindfold games; 52 games at odds; and 142 in consultation, informally.

Der Begriff des Spieles, der die Unterhaltungs mathematik erst unterhaltsam gestaltet, äußert sich in vielen Formen: ein Rätsel, das gelöst werden soll, ein Zweipersonenspiel, ein magischer Trick, ein Paradoxon, Trugschlüsse oder ganz einfach Mathematik mit überraschenden und amüsanten Beigaben. Gehören diese Beispiele nun zur reinen oder angewandten Mathematik? Es ist schwer zu sagen. Einerseits ist Unterhaltungsmathematik reine Mathematik, unbeeinflusst von der Frage nach den Anwendungsmöglichkeiten. Andererseits ist sie aber auch angewandte Mathematik, denn sie entstand aus dem allgemeinen menschlichen Hang zum Spiel. Vielleicht steht dieser Hang zum Spiel aber auch hinter der reinen Mathematik. Besteht doch kein wesentlicher Unterschied zwischen dem Triumph eines Laien, der eine "harte Nuß geknackt hat" und der Befriedigung, die ein Mathematiker empfindet, wenn er ein höheres Problem gelöst hat. Beide blicken auf die reine Schönheit - diese klare, exakt definiert, geheimnisvolle und überwältigende Ordnung, die jeder Struktur zugrunde liegt. Es ist daher nicht verwunderlich, daß es oft äußerst schwierig ist, die reine Mathematik von der Unterhaltungsmathematik zu unterscheiden. Das Vierfarbenproblem) beispielsweise ist ein wichtiges bisher ungelöstes Problem der Topologie und doch findet man Diskussionen über dieses Problem in vielen Unterhaltungsmathematischen Büchern.

This classic undergraduate treatment examines the deductive method in its first part and explores applications of logic and methodology in constructing mathematical theories in its second part. Exercises appear throughout.

This classic of advanced statistics is geared toward graduate-level readers and uses the concepts of gambling to develop important ideas in probability theory. The authors have distilled the essence of many years' research into a dozen concise chapters. "Strongly recommended" by the Journal of the American Statistical Association upon its initial publication, this revised and updated edition features contributions from two well-known statisticians that include a new Preface, updated references, and findings from recent research. Following an introductory chapter, the book formulates the gambler's problem and discusses gambling strategies. Succeeding chapters explore the properties associated with casinos and certain measures of subfairness. Concluding chapters relate the scope of the gambler's problems to more general mathematical ideas, including dynamic programming, Bayesian statistics, and stochastic processes. Dover (2014) revised and updated republication of the 1976 Dover edition entitled Inequalities for Stochastic Processes. See every Dover book in print at www.doverpublications.com

This book discusses how to design "good" geometric puzzles: two-dimensional dissection puzzles, polyhedral dissections, and burrs. It outlines major categories of geometric puzzles and provides examples, sometimes going into the history and philosophy of those examples. The author presents challenges and thoughtful questions, as well as practical d

Challenging collection includes some of the world's most perplexing brain-teasers by such masters as Sam Loyd, Johnny Eck and Henry Dudeney. Also, the stories behind the creation of the puzzles, the world's earliest riddles, the birth of the crossword puzzle, much more. Introduction. 146 illus.

160 math teasers and 40 alphametics will provide hours of mind-stretching entertainment. Accessible to high school students. Solutions. Four Appendices.

Starting with the useful concept of an elementary integral defined (axiomatically) on a family of elementary functions, this treatment examines the general theory of the integral, Lebesgue integral in n space, the Riemann-Stieltjes integral, and more. "The exposition is fresh and sophisticated, and will engage the interest of accomplished mathematicians." — Sci-Tech Book News. 1966 edition.

Loaded with hypnotic designs, these 48 challenging circular mazes feature an extra dimension of fun: Each puzzle contains multiple entrances, but only one path leads all the way to the center! Solutions.

This classic exposition explores the origins of chemistry, alchemy, early medical chemistry, nature of atmosphere, theory of valency, laws and structure of atomic theory, and much more. When is a car not a car? When it turns into a driveway. Why was the math book so sad? It had too many problems. 61 zany teeth-gritters. Amusing illustrations by Larry Daste.

A unified treatment of the most important results in the study of fractional graph concepts, this volume explores the various ways in which integer-valued concepts can be modified to derive nonintegral values. It begins with the general fractional theory of hypergraphs and presents in-depth coverage of fundamental and advanced topics. Subjects include fractional matching, fractional coloring, fractional edge coloring, fractional arboricity via matroid methods, and fractional isomorphism. The final chapter examines additional topics such as fractional domination, fractional intersection numbers, and fractional aspects of partially ordered sets. Challenging exercises reinforce the contents of each chapter, and the authors provide substantial references and bibliographic materials. A comprehensive reference for researchers, this volume also constitutes an excellent graduate-level text for students of graph theory and linear programming. Highly accessible treatment covers cons cell structures, evaluation rules, programs as data, recursive and applicable programming styles. Nearly 400 illustrations, answers to exercises, "toolkit" sections, and a variety of complete programs. 1990 edition.

This classic work offers scores of stimulating, mind-expanding games and puzzles: arithmetical and geometrical problems, chessboard recreations, magic squares, map-coloring problems, cryptography and cryptanalysis, much more. "A must to add to your mathematics library" ? The Mathematics Teacher. Index. References for Further Study. Includes 150 black-and-white line illustrations.

Combines two previously published works, resulting in ninety-three brain-teasing puzzles, riddles, and questions with an emphasis on humor.

My Best Mathematical and Logic Puzzles Courier Corporation

This challenging collection of 42 mathematical mind-benders, compiled by a noted Lewis Carroll scholar, includes Castle Croquet, A Sticky but Polished Riddle, Who's Coming to Dinner?, A New Way to Pay Old Debts, Eligible Apartments, Predicting the Total, and more. Includes complete solutions and drawings by John Tenniel, the original illustrator of Alice's Adventures in Wonderland.

A high school course in geometry and interest in the subject are the only prerequisites for this recreational math book. Includes relevant theorems, worked examples, and problems for readers to solve. Solutions included.

Originally published: New York: Holt, Rinehart and Winston, 1961.

Look for a garbage can with a layer cake for a lid and a crocodile with a mushroom in his snout! Thirty-eight pages of seek-and-find activities depict cute little animals in wacky, fun-to-color scenes.

Find groups of letters that spell the names of waterways, airports, landmarks, royal residences, and more of such cities as Rome, Mecca, Oslo, Montreal, Hong Kong, Istanbul, Athens, and New York. 50 puzzles.

Orig. pub.: New York: Simon & Schuster, c1978.

This concise introductory treatment consists of three chapters: The Geometry of Hilbert Space, The Algebra of Operators, and The Analysis of Spectral Measures. Author Paul R. Halmos notes in the Preface that his motivation in writing this text was to make available to a wider audience the results of the third chapter, the so-called multiplicity theory. The theory as he presents it deals with arbitrary spectral measures, including the multiplicity theory of normal operators on a not necessarily separable Hilbert space. His explication covers, as another useful special case, the multiplicity theory of unitary representations of locally compact abelian groups. Suitable for advanced undergraduates and graduate students in mathematics, this volume's sole prerequisite is a background in measure theory. The distinguished mathematician E. R. Lorch praised the book in the Bulletin of the American Mathematical Society as "an exposition which is always fresh, proofs which are sophisticated, and a choice of subject matter which is certainly timely."

Written by a renowned professor of physics, this introductory text is geared toward graduate students taking a year-long course in quantum mechanics in which the third quarter is devoted to relativistic wave equations and field theory. Difficult concepts are introduced gradually, and the theory is applied to physically interesting problems. After an introductory chapter on the formation of quantum mechanics, the treatment advances to examinations of the quantum theory of the free electromagnetic field, the interaction of radiation and matter, second quantization, the interaction of quantized fields, and quantum electrodynamics. Additional topics include the theory of beta decay, particles that interact among themselves, quasi particles in plasmas and metals, and the problem of infinities in quantum electrodynamics. The Appendix contains selected answers to problems that appear throughout the text.

This advanced text for undergraduate and graduate students introduces mathematical logic with an emphasis on proof theory and procedures for algorithmic construction of formal proofs. The self-contained treatment is also useful for computer scientists and mathematically inclined readers interested in the formalization of proofs and basics of

automatic theorem proving. Topics include propositional logic and its resolution, first-order logic, Gentzen's cut elimination theorem and applications, and Gentzen's sharpened Hauptsatz and Herbrand's theorem. Additional subjects include resolution in first-order logic; SLD-resolution, logic programming, and the foundations of PROLOG; and many-sorted first-order logic. Numerous problems appear throughout the book, and two Appendixes provide practical background information.

Appropriate for upper-level undergraduates and graduate students, this volume addresses the fundamental concepts of martingales, stochastic integrals, and estimation. Written by an engineer for engineers, it emphasizes applications.

An early but still useful and frequently cited contribution to the science of mathematical economics, this volume is geared toward graduate students in the field. Prerequisites include familiarity with the basic theory of matrices and linear transformations and with elementary calculus. Author Jacob T. Schwartz begins his treatment with an exploration of the Leontief input-output model, which forms a general framework for subsequent material. An introductory treatment of price theory in the Leontief model is followed by an examination of the business-cycle theory, following ideas pioneered by Lloyd Metzler and John Maynard Keynes. In the final section, Schwartz applies the teachings of previous chapters to a critique of the general equilibrium approach devised by Léon Walras as the theory of supply and demand, and he synthesizes the notions of Walras and Keynes. 1961 edition.

There are three loops in a tangle of rope. How many are independent, and how many are interlocked? Two knights stand on a chessboard. How many other knights must you add so that each square is occupied or threatened by a knight? Among six seemingly identical drawings of mandalas, each rotated by multiples of 60 degrees, one is different. Which is it, and why? Challenge yourself with these mind-benders, brainteasers, and puzzles. Each of them has been carefully selected so that none will be too tough for anyone without a math background ? but they're not too easy. Some are original, and all are clearly and accurately answered at the back of the book.

Erinnern wir uns nicht alle mit Schrecken an die ratlosen Momente vor der Tafel im Matheunterricht? Mit Kurvendiskussionen und Dreisatz dürften jedenfalls nur wenige Spaß und Spannung verbinden... Bis jetzt! Denn nun wagt sich Alex Bellos in den Kaninchenbau der Mathematik: in das Reich von Geometrie und Algebra, von Wahrscheinlichkeitsrechnung, Statistik und logischen Paradoxa. Auf der anderen Seite des Erdballs, am Amazonas, zählen die Mitglieder des Indianerstammes der Munduruku nur bis fünf und halten die Vorstellung, dass dies nicht genügen solle, für reichlich lächerlich. Bei uns in Deutschland dagegen finden jährlich die Meisterschaften der besten Kopfrechner der Welt statt - 2010 wurde in Magdeburg eine elfjährige Inderin zur Nummer eins unter den "Mathleten" gekürt. Die Mathe-Weltmeisterin unter den Tieren ist hingegen die Schimpansin Ai, die Alex Bellos im japanischen Inuyama aufspürt und über deren Rechenkünste er nur staunen kann. Auch wenn er von den bahnbrechenden Überlegungen Euklids erzählt oder erklärt, warum man in Japan seine Visitenkarten keinesfalls zu Dodekaedern falten sollte - Bellos führt uns durch das wahrhaft erstaunliche Reich der Zahlen und bringt uns eine komplexe Wissenschaft spielerisch nahe. Mit seiner Mischung aus spannender Reportage, Wissenschaftsgeschichte und mathematischen Kabinettstückchen erbringt er souverän den Beweis, dass die Gleichung Mathematik = Langeweile eindeutig nicht wahr ist. Quod erat demonstrandum.

An unusual problem book that focuses on the method of solution, this collection spotlights 52 problems, each with several approaches to situations involving measurement of geometrical spaces, probabilities, distances, relative motion, more.

Playing with mathematical riddles can be an intriguing and fun-filled pastime — as popular science writer Martin Gardner proves in this entertaining collection. Puzzlists need only an elementary knowledge of math and a will to resist looking up the answer before trying to solve a problem. Written in a light and witty style, Entertaining Mathematical Puzzles is a mixture of old and new riddles, grouped into sections that cover a variety of mathematical topics: money, speed, plane and solid geometry, probability, topology, tricky puzzles, and more. The probability section, for example, points out that everything we do, everything that happens around us, obeys the laws of probability; geometry puzzles test our ability to think pictorially and often, in more than one dimension; while topology, among the "youngest and rowdiest branches of modern geometry," offers a glimpse into a strange dimension where properties remain unchanged, no matter how a figure is twisted, stretched, or compressed. Clear and concise comments at the beginning of each section explain the nature and importance of the math needed to solve each puzzle. A carefully explained solution follows each problem. In many cases, all that is needed to solve a puzzle is the ability to think logically and clearly, to be "on the alert for surprising, off-beat angles...that strange hidden factor that everyone else had overlooked." Fully illustrated, this engaging collection will appeal to parents and children, amateur mathematicians, scientists, and students alike, and may, as the author writes, make the reader "want to study the subject in earnest" and explains "some of the inviting paths that wind away from the problems into lush areas of the mathematical jungle." 65 black-and-white illustrations.

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