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KEY=OF - PHELPS KEENAN

THE TOWER OF HANOI – MYTHS AND MATHS

Springer Science & Business Media **This is the first comprehensive monograph on the mathematical theory of the solitaire game "The Tower of Hanoi" which was invented in the 19th century by the French number theorist Édouard Lucas. The book comprises a survey of the historical development from the game's predecessors up to recent research in mathematics and applications in computer science and psychology. Apart from long-standing myths it contains a thorough, largely self-contained presentation of the essential mathematical facts with complete proofs, including also unpublished material. The main objects of research today are the so-called Hanoi graphs and the related Sierpiński graphs. Acknowledging the great popularity of the topic in computer science, algorithms and their correctness proofs form an essential part of the book. In view of the most important practical applications of the Tower of Hanoi and its variants, namely in physics, network theory, and cognitive (neuro)psychology, other related structures and puzzles like, e.g., the "Tower of London", are addressed. Numerous captivating integer sequences arise along the way, but also many open questions impose themselves. Central among these is the famed Frame-Stewart conjecture. Despite many attempts to decide it and large-scale numerical experiments supporting its truth, it remains unsettled after more than 70 years and thus demonstrates the timeliness of the topic. Enriched with elaborate illustrations, connections to other puzzles and challenges for the reader in the form of (solved) exercises as well as problems for further exploration, this book is enjoyable reading for students, educators, game enthusiasts and researchers alike.**

THE TOWER OF HANOI – MYTHS AND MATHS

Birkhäuser **The solitaire game "The Tower of Hanoi" was invented in the 19th century by the French number theorist Édouard Lucas. The book presents its mathematical theory and offers a survey of the historical development from predecessors up to recent research. In addition to long-standing myths, it provides a detailed overview of the essential mathematical facts with complete proofs, and also includes unpublished material, e.g., on some captivating integer sequences. The main objects of research today are the so-called Hanoi graphs and the related Sierpiński graphs. Acknowledging the great popularity of the topic in computer science, algorithms, together with their correctness proofs, form an essential part of the book. In view of the most important practical applications, namely in physics, network theory and cognitive (neuro)psychology, the book also addresses other structures related to the Tower of Hanoi and its variants. The updated second edition includes, for the first time in English, the breakthrough reached with the solution of the "The Reve's Puzzle" in 2014. This is a special case of the famed Frame-Stewart conjecture which is still open after more than 75 years. Enriched with elaborate illustrations, connections to other puzzles and challenges for the reader in the form of (solved) exercises as well as problems for further exploration, this book is enjoyable reading for students, educators, game enthusiasts and researchers alike. Excerpts from reviews of the first edition: "The book is an unusual, but very welcome, form of mathematical writing: recreational mathematics taken seriously and serious mathematics treated historically. I don't hesitate to recommend this book to students, professional research mathematicians, teachers, and to readers of popular mathematics who enjoy more technical expository detail." Chris Sangwin, The Mathematical Intelligencer 37(4) (2015) 87f. "The book demonstrates that the Tower of Hanoi has a very rich mathematical structure, and as soon as we tweak the parameters we surprisingly quickly find ourselves in the realm of open problems." László Kozma, ACM SIGACT News 45(3) (2014) 34ff. "Each time I open the book I discover a renewed interest in the Tower of Hanoi. I am sure that this will be the case for all readers." Jean-Paul Allouche, Newsletter of the European Mathematical Society 93 (2014) 56.**

THE MATHEMATICS ENTHUSIAST

VOLUME 11 #3

IAP **The Mathematics Enthusiast (TME) is an eclectic internationally circulated peer reviewed journal which focuses on mathematics content, mathematics education research, innovation, interdisciplinary issues and pedagogy. The journal exists as an independent entity. It is published on a print?on?demand basis by Information Age Publishing and the electronic version is hosted by the Department of Mathematical Sciences? University of Montana. The journal is not affiliated to nor subsidized by any professional organizations but supports PMENA [Psychology of Mathematics Education? North America] through special issues on various research topics.**

MATH FROM THREE TO SEVEN

THE STORY OF A MATHEMATICAL CIRCLE FOR PRESCHOOLERS

American Mathematical Soc. **This book is a captivating account of a professional mathematician's experiences conducting a math circle for preschoolers in his apartment in Moscow in the 1980s. As anyone who has taught or raised young children knows, mathematical education for little kids is a real mystery. What are they capable of? What should they learn first? How hard should they work? Should they even "work" at all? Should we push them, or just let them be? There are no correct answers to these questions, and the author deals with them in classic math-circle style: he doesn't ask and then answer a question, but shows us a problem--be it mathematical or pedagogical--and describes to us what happened. His book is a narrative about what he did, what he tried, what worked, what failed, but most important, what the kids experienced. This book does not purport to show you how to create precocious high achievers. It is just one person's story about things he tried with a half-dozen young children. Mathematicians, psychologists, educators, parents, and everybody interested in the intellectual development in young children will find this book to be an invaluable, inspiring resource. In the interest of fostering a greater awareness and appreciation of mathematics and its connections to other disciplines and everyday life, MSRI and the AMS are publishing books in the Mathematical Circles Library series as a service to young people, their parents and teachers, and the mathematics profession. Titles in this series are co-published with the Mathematical Sciences Research Institute (MSRI).**

A HANDBOOK OF MATHEMATICAL DISCOURSE

Infinity Publishing

DISCRETE ENCOUNTERS

CRC Press **Eschewing the standard dry and static writing style of traditional textbooks, Discrete Explorations provides a refreshing approach to discrete mathematics. The author combines traditional course topics with popular culture, applications, and various historical examples. This book focuses on the historical development of the subject and provides details on the people behind mathematics and their motivations, which will deepen readers' appreciation of mathematics. With its unique style, the book covers many of the same topics found in other texts but done in an alternative, entertaining style that better captures readers' attention. Defining discrete mathematics, the author also covers many different topics. These include combinatorics, fractals, permutations, difference equations, graph theory, trees and financial mathematics. Not only will readers gain a greater impression of mathematics, but they'll be encouraged to further explore the subject. Highlights: Features fascinating historical references to motivate readers Text includes numerous**

pop culture references throughout to provide a more engaging reading experience Its unique topic structure presents a fresh approach The text's narrative style reads more like a popular book instead of a dry textbook Covers many topics from combinatorics, as well as discrete mathematics

HEURISTIC SEARCH

THEORY AND APPLICATIONS

Elsevier **Search has been vital to artificial intelligence from the very beginning as a core technique in problem solving. The authors present a thorough overview of heuristic search with a balance of discussion between theoretical analysis and efficient implementation and application to real-world problems. Current developments in search such as pattern databases and search with efficient use of external memory and parallel processing units on main boards and graphics cards are detailed. Heuristic search as a problem solving tool is demonstrated in applications for puzzle solving, game playing, constraint satisfaction and machine learning. While no previous familiarity with heuristic search is necessary the reader should have a basic knowledge of algorithms, data structures, and calculus. Real-world case studies and chapter ending exercises help to create a full and realized picture of how search fits into the world of artificial intelligence and the one around us. Provides real-world success stories and case studies for heuristic search algorithms Includes many AI developments not yet covered in textbooks such as pattern databases, symbolic search, and parallel processing units**

RE-THINKING E-LEARNING RESEARCH

FOUNDATIONS, METHODS, AND PRACTICES

Peter Lang **In the rapidly-changing world of the Internet and the Web, theory and research struggle to keep up with technological, social, and economic developments. In education in particular, a proliferation of novel practices, applications, and forms - from bulletin boards to Webcasts, from online educational games to open educational resources - have come to be addressed under the rubric of «e-learning». In response to these phenomena, Re-thinking E-Learning Research introduces a number of research frameworks and methodologies relevant to e-learning. The book outlines methods for the analysis of content, narrative, genre, discourse, hermeneutic-phenomenological investigation, and critical and historical inquiry. It provides examples of pairings of method and subject matter that include narrative research into the adaptation of blogs in a classroom setting; the discursive-psychological analysis of student conversations with artificially intelligent agents; a genre analysis of an online discussion; and a phenomenological study of online mathematics puzzles. Introducing practical applications and spanning a wide range of the possibilities for e-learning, this book will be useful for students, teachers, and researchers in e-learning.**

STEAL THIS BOOK

CreateSpace **Steal this book**

SCIENTIFIC PROGRAMMING AND COMPUTER ARCHITECTURE

MIT Press **A variety of programming models relevant to scientists explained, with an emphasis on how programming constructs map to parts of the computer. What makes computer programs fast or slow? To answer this question, we have to get behind the abstractions of programming languages and look at how a computer really works. This book examines and explains a variety of scientific programming models (programming models relevant to scientists) with an emphasis on how programming constructs map to different parts of the computer's architecture. Two themes emerge: program speed and program modularity. Throughout this book, the premise is to "get under the hood," and the discussion is tied to specific programs. The book digs into linkers, compilers, operating systems, and computer architecture to understand how the different parts of the computer interact with programs. It begins with a review of C/C++ and explanations of how libraries, linkers, and Makefiles work. Programming models covered include Pthreads, OpenMP, MPI, TCP/IP, and CUDA.The emphasis on how computers work leads the reader into computer architecture and occasionally into the operating system kernel. The operating system studied is Linux, the preferred platform for scientific computing. Linux is also open source, which allows users to peer into its inner workings. A brief appendix provides a useful table of machines used to time programs. The book's website (https://github.com/divakarvi/bk-spca) has all the programs described in the book as well as a link to the html text.**

PROBLEM SOLVING WITH ALGORITHMS AND DATA STRUCTURES USING PYTHON

Franklin Beedle & Assoc **THIS TEXTBOOK is about computer science. It is also about Python. However, there is much more. The study of algorithms and data structures is central to understanding what computer science is all about. Learning computer science is not unlike learning any other type of difficult subject matter. The only way to be successful is through deliberate and incremental exposure to the fundamental ideas. A beginning computer scientist needs practice so that there is a thorough understanding before continuing on to the more complex parts of the curriculum. In addition, a beginner needs to be given the opportunity to be successful and gain confidence. This textbook is designed to serve as a text for a first course on data structures and algorithms, typically taught as the second course in the computer science curriculum. Even though the second course is considered more advanced than the first course, this book assumes you are beginners at this level. You may still be struggling with some of the basic ideas and skills from a first computer science course and yet be ready to further explore the discipline and continue to practice problem solving. We cover abstract data types and data structures, writing algorithms, and solving problems. We look at a number of data structures and solve classic problems that arise. The tools and techniques that you learn here will be applied over and over as you continue your study of computer science.**

TOOLS AND MATHEMATICS

Springer **This book is an exploration of tools and mathematics and issues in mathematics education related to tool use. The book has five parts. The first part reflects on doing a mathematical task with different tools, followed by a mathematician's account of tool use in his work. The second considers prehistory and history: tools in the development from ape to human; tools and mathematics in the ancient world; tools for calculating; and tools in mathematics instruction. The third part opens with a broad review of technology and intellectual trends, circa 1970, and continues with three case studies of approaches in mathematics education and the place of tools in these approaches. The fourth part considers issues related to mathematics instructions: curriculum, assessment and policy; the calculator debate; mathematics in the real world; and teachers' use of technology. The final part looks to the future: task and tool design and new forms of activity via connectivity and computer games.**

TOPICS IN GRAPH THEORY

GRAPHS AND THEIR CARTESIAN PRODUCT

CRC Press **From specialists in the field, you will learn about interesting connections and recent developments in the field of graph theory by looking in particular at Cartesian products-arguably the most important of the four standard graph products. Many new results in this area appear for the first time in print in this book. Written in an accessible way,**

AHMES' LEGACY

PUZZLES AND THE MATHEMATICAL MIND

Springer **This book looks at classic puzzles from the perspective of their structures and what they tell us about the brain. It uses the work on the neuroscience of mathematics from Dehaene, Butterworth, Lakoff, Núñez, and many others as a lens to understand the ways in which puzzles reflect imaginative processes blended with rational ones. The book is not about recreational or puzzle-based mathematics in and of itself but rather about what the classic puzzles tell us about the mathematical imagination and its impact on the**

discipline. It delves into the history of classic math puzzles, deconstructing their raison d'être and describing their psychological features, so that their nature can be fleshed out in order to help understand the mathematical mind. This volume is the first monographic treatment of the psychological nature of puzzles in mathematics. With its user-friendly technical level of discussion, it is of interest to both general readers and those who engage in the disciplines of mathematics, psychology, neuroscience, and/or anthropology. It is also ideal as a textbook source for courses in recreational mathematics, or as reference material in introductory college math courses.

THE ART OF PROLOG, SECOND EDITION

ADVANCED PROGRAMMING TECHNIQUES

MIT Press **This new edition of The Art of Prolog contains a number of important changes. Most background sections at the end of each chapter have been updated to take account of important recent research results, the references have been greatly expanded, and more advanced exercises have been added which have been used successfully in teaching the course. Part II, The Prolog Language, has been modified to be compatible with the new Prolog standard, and the chapter on program development has been significantly altered: the predicates defined have been moved to more appropriate chapters, the section on efficiency has been moved to the considerably expanded chapter on cuts and negation, and a new section has been added on stepwise enhancement—a systematic way of constructing Prolog programs developed by Leon Sterling. All but one of the chapters in Part III, Advanced Prolog Programming Techniques, have been substantially changed, with some major rearrangements. A new chapter on interpreters describes a rule language and interpreter for expert systems, which better illustrates how Prolog should be used to construct expert systems. The chapter on program transformation is completely new and the chapter on logic grammars adds new material for recognizing simple languages, showing how grammars apply to more computer science examples.**

THE CHEMISTRY MATHS BOOK

The Chemistry Maths Book is a comprehensive textbook of mathematics for undergraduate students of chemistry. Such students often find themselves unprepared and ill-equipped to deal with the mathematical content of their chemistry courses. Textbooks designed to overcome this problem have so far been too basic for complete undergraduate courses and have been unpopular with students. However, this modern textbook provides a complete and up-to-date course companion suitable for all levels of undergraduate chemistry courses. All the most useful and important topics are covered with numerous examples of applications in chemistry and some in physics. The subject is developed in a logical and consistent way with few assumptions of prior knowledge of mathematics. This text is sure to become a widely adopted text and will be highly recommended for all chemistry courses.

50 VISIONS OF MATHEMATICS

Oxford University Press **To celebrate the 50th anniversary of the founding of the Institute of Mathematics and its Applications (IMA), this book is designed to showcase the beauty of mathematics - including images inspired by mathematical problems - together with its unreasonable effectiveness and applicability, without frying your brain.**

THE ART OF SOUTH AND SOUTHEAST ASIA

A RESOURCE FOR EDUCATORS

Metropolitan Museum of Art **Presents works of art selected from the South and Southeast Asian and Islamic collection of The Metropolitan Museum of Art, lessons plans, and classroom activities.**

COGNITION AND MOTIVATION

FORGING AN INTERDISCIPLINARY PERSPECTIVE

Cambridge University Press **This collection examines the many internal and external factors affecting cognitive processes. Editor Shulamith Kreitler brings together a wide range of international contributors to produce an outstanding assessment of recent research in the field. These contributions go beyond the standard approach of examining the effects of motivation and emotion to consider the contextual factors that may influence cognition. These broad and varied factors include personality, genetics, mental health, biological evolution, culture, and social context. By contextualizing cognition, this volume draws out the practical applications of theoretical cognitive research while bringing separate areas of scholarship into meaningful dialogue.**

LEARNING TO SOLVE COMPLEX SCIENTIFIC PROBLEMS

Routledge **Problem solving is implicit in the very nature of all science, and virtually all scientists are hired, retained, and rewarded for solving problems. Although the need for skilled problem solvers has never been greater, there is a growing disconnect between the need for problem solvers and the educational capacity to prepare them. Learning to Solve Complex Scientific Problems is an immensely useful read offering the insights of cognitive scientists, engineers and science educators who explain methods for helping students solve the complexities of everyday, scientific problems. Important features of this volume include discussions on: *how problems are represented by the problem solvers and how perception, attention, memory, and various forms of reasoning impact the management of information and the search for solutions; *how academics have applied lessons from cognitive science to better prepare students to solve complex scientific problems; *gender issues in science and engineering classrooms; and *questions to guide future problem-solving research. The innovative methods explored in this practical volume will be of significant value to science and engineering educators and researchers, as well as to instructional designers.**

THE SECOND MACHINE AGE: WORK, PROGRESS, AND PROSPERITY IN A TIME OF BRILLIANT TECHNOLOGIES

W. W. Norton & Company **A pair of technology experts describe how humans will have to keep pace with machines in order to become prosperous in the future and identify strategies and policies for business and individuals to use to combine digital processing power with human ingenuity.**

AUTOMATIC SEQUENCES

THEORY, APPLICATIONS, GENERALIZATIONS

Cambridge University Press **This book is the first integrated treatment of sequences generated by finite automata and their generalizations.**

EXPANDED CINEMA

FIFTIETH ANNIVERSARY EDITION

Fordham University Press **Fiftieth anniversary reissue of the founding media studies book that helped establish media art as a cultural category. First published in 1970, Gene Youngblood's influential Expanded Cinema was the first serious treatment of video, computers, and holography as cinematic technologies. Long considered the bible for media artists, Youngblood's insider account of 1960s counterculture and the birth of cybernetics remains a mainstay reference in today's hypermediated digital world. This fiftieth anniversary**

edition includes a new Introduction by the author that offers conceptual tools for understanding the sociocultural and sociopolitical realities of our present world. A unique eyewitness account of burgeoning experimental film and the birth of video art in the late 1960s, this far- ranging study traces the evolution of cinematic language to the end of fiction, drama, and realism. Vast in scope, its prescient formulations include "the paleocybernetic age," "intermedia," the "artist as design scientist," the "artist as ecologist," "synaesthetics and kinesthetics," and "the technosphere: man/machine symbiosis." Outstanding works are analyzed in detail. Methods of production are meticulously described, including interviews with artists and technologists of the period, such as Nam June Paik, Jordan Belson, Andy Warhol, Stan Brakhage, Carolee Schneemann, Stan VanDerBeek, Les Levine, and Frank Gillette. An inspiring Introduction by the celebrated polymath and designer R. Buckminster Fuller—a perfectly cut gem of countercultural thinking in itself—places Youngblood's radical observations in comprehensive perspective. Providing an unparalleled historical documentation, Expanded Cinema clarifies a chapter of countercultural history that is still not fully represented in the arthistorical record half a century later. The book will also inspire the current generation of artists working in ever-newer expansions of the cinematic environment and will prove invaluable to all who are concerned with the technologies that are reshaping the nature of human communication.

THE MATHEMATICS OF VARIOUS ENTERTAINING SUBJECTS

RESEARCH IN GAMES, GRAPHS, COUNTING, AND COMPLEXITY

Princeton University Press The history of mathematics is filled with major breakthroughs resulting from solutions to recreational problems. Problems of interest to gamblers led to the modern theory of probability, for example, and surreal numbers were inspired by the game of Go. Yet even with such groundbreaking findings and a wealth of popular-level books, research in recreational mathematics has often been neglected. The Mathematics of Various Entertaining Subjects now returns with a brand-new compilation of fascinating problems and solutions in recreational mathematics. This latest volume gathers together the top experts in recreational math and presents a compelling look at board games, card games, dice, toys, computer games, and much more. The book is divided into five parts: puzzles and brainteasers, geometry and topology, graph theory, games of chance, and computational complexity. Readers will discover what origami, roulette wheels, and even the game of Trouble can teach about math. Essays contain new results, and the contributors include short expositions on their topic's background, providing a framework for understanding the relationship between serious mathematics and recreational games. Mathematical areas explored include combinatorics, logic, graph theory, linear algebra, geometry, topology, computer science, operations research, probability, game theory, and music theory. Investigating an eclectic mix of games and puzzles, The Mathematics of Various Entertaining Subjects is sure to entertain, challenge, and inspire academic mathematicians and avid math enthusiasts alike.

WRITING FOR WALLY

MY LIFE WITH A BRILLIANT IDEA

CreateSpace One of the most prolific authors in the history of history's most widely read magazine, The Reader's Digest, award winning Roving Editor John G. Hubbell, recalls the adventures and thrills of four exciting decades of writing for an immense worldwide audience. One of the greatest thrills, he says, was hearing the founding Editor-in-Chief, the legendary DeWitt Wallace, instruct him on the day he brought him aboard to go wherever he had to go to find the information he needed for a story; "if you have to go to Timbuktu to get a paragraph to make a story right, you don't have to ask anyone's permission. Just be sure that when you bring in a story that it is definitive, that it contains everything that is worth knowing about the subject."Armed with that charge, Hubbell takes his reader where no reporter had gone before:*Through the Strategic Air Command's survival training program in the Sierra Nevada Mountains.*Through the training tank at the U.S. Navy's Submarine Training School, a ten-story-high silo filled with a quarter million gallons of water in which hopeful undersea warriors must prove they are not claustrophobic, and learn how to avoid a lung-destroying pulmonary embolism while escaping a downed boat.*On a realistic orbital flight around the world on NASA's fantastic space flight simulator.*On an exciting ride on the Navy's first nuclear-powered attack submarine.*To the discovery of a newly developing U.S. Army group called "Special Forces," which the world will soon come to know as "The Green Berets."*To the discovery of an until-then supersecret six-year-old Navy group called SEALs.*Through an objectively detailed investigation of the Kennedy Administration's behavior during the Cuban Missile Crisis.*To southeastern Spain to find the facts when the U.S. loses a hydrogen bomb.*To the facts about the Johnson Administration's conduct of the Vietnam War.*To the facts about the alleged "peace" that has obtained in Korea since the end of the Korean War, and about the North Korean seizure of the U.S.S. Pueblo and the Court of Inquiry that followed.*To the details of the American Prisoner of War Experience in Vietnam, in a work that the Washington Post characterized as "the standard book on the subject."If you were one of the millions who valued DeWitt Wallace's Reader's Digest, you'll love "Writing for Wally."

THE UNIX-HATERS HANDBOOK

John Wiley & Sons Incorporated This book is for all people who are forced to use UNIX. It is a humorous book--pure entertainment--that maintains that UNIX is a computer virus with a user interface. It features letters from the thousands posted on the Internet's "UNIX-Haters" mailing list. It is not a computer handbook, tutorial, or reference. It is a self-help book that will let readers know they are not alone.

HISTORY OF CONCEPTS

COMPARATIVE PERSPECTIVES

Amsterdam University Press Hoewel enorm invloedrijk in Duitstalig Europa, heeft de conceptuele geschiedschrijving (Begriffsgeschichte) tot nu toe weinig aandacht in het Engels gekregen. Dit genre van intellectuele geschiedschrijving verschilt van zowel de Franse geschiedschrijving van mentalités als de Engelstalige geschiedschrijving van verhandelingen door het concept. Aan de hand van practische voorbeelden in de geschiedschrijving wordt deze vorm toegelicht door Bram Kempers, Eddy de Jongh en Rolf Reichardt.

ONCE UPON A MULBERRY FIELD

A NOVEL

Roger Connors, a widower with no children, is pondering whether to pursue aggressive treatment for his cancer when a cryptic note arrives from a long-lost USAF buddy announcing the visit of an acquaintance from Vietnam. Faced with ghosts of fallen comrades and haunting memories of the great love he once knew, Connors receives revelations from his visitor that uncover a missing part of his life. As he delves into a decades-old secret in search of answers and traces of a passion unfulfilled, on a journey from the jungles of Vietnam through the minefields of the heart, Connors is on a journey fraught with disillusionment and despair but ultimately redeemed by the power of love.

PROOF AND PROVING IN MATHEMATICS EDUCATION

THE 19TH ICMI STUDY

Springer Science & Business Media *THIS BOOK IS AVAILABLE AS OPEN ACCESS BOOK ON SPRINGERLINK* One of the most significant tasks facing mathematics educators is to understand the role of mathematical reasoning and proving in mathematics teaching, so that its presence in instruction can be enhanced. This challenge has been given even greater importance by the assignment to proof of a more prominent place in the mathematics curriculum at all levels. Along with this renewed emphasis, there has been an upsurge in research on the teaching and learning of proof at all grade levels, leading to a re-examination of the role of proof in the curriculum and of its relation to other forms of explanation, illustration and justification. This book, resulting from the 19th ICMI Study, brings together a variety of viewpoints on issues such as: The potential role of reasoning and proof in deepening mathematical understanding in the classroom as it does in mathematical practice. The developmental nature of mathematical reasoning and proof in teaching and learning from the earliest grades. The development of suitable curriculum materials and teacher education programs to support the teaching of proof and proving. The book considers proof and proving as complex but foundational in mathematics. Through the systematic examination of recent research this volume offers new ideas aimed at enhancing the place of proof and proving in our classrooms.

GAMES OF NO CHANCE 5

Cambridge University Press **This book surveys the state-of-the-art in combinatorial game theory, that is games not involving chance or hidden information. Topics include scoring, bidding chess, Wythoff Nim, misère play, partizan bidding, loopy games, and placement games, along with a survey of temperature theory by Elwyn Berlekamp a list of unsolved problems.**

A RICHER PICTURE OF MATHEMATICS

THE GÖTTINGEN TRADITION AND BEYOND

Springer **Historian David E. Rowe captures the rich tapestry of mathematical creativity in this collection of essays from the "Years Ago" column of The Mathematical Intelligencer. With topics ranging from ancient Greek mathematics to modern relativistic cosmology, this collection conveys the impetus and spirit of Rowe's various and many-faceted contributions to the history of mathematics. Centered on the Göttingen mathematical tradition, these stories illuminate important facets of mathematical activity often overlooked in other accounts. Six sections place the essays in chronological and thematic order, beginning with new introductions that contextualize each section. The essays that follow recount episodes relating to the section's overall theme. All of the essays in this collection, with the exception of two, appeared over the course of more than 30 years in The Mathematical Intelligencer. Based largely on archival and primary sources, these vignettes offer unusual insights into behind-the-scenes events. Taken together, they aim to show how Göttingen managed to attract an extraordinary array of talented individuals, several of whom contributed to the development of a new mathematical culture during the first decades of the twentieth century.**

UNCONVENTIONAL COMPUTATION AND NATURAL COMPUTATION

15TH INTERNATIONAL CONFERENCE, UCNC 2016, MANCHESTER, UK, JULY 11-15, 2016, PROCEEDINGS

Springer **This book constitutes the refereed proceedings of the 15th International Conference on Unconventional Computation and Natural Computation, UCNC 2016, held in Manchester, UK, in July 2016. The 15 revised full papers presented together with 5 invited papers were carefully reviewed and selected from 30 submissions. The papers cover a wide range of topics including molecular, cellular, quantum, optical and chaos computing; cellular automata; neural and evolutionary computation; artificial immune systems; Ant algorithms and swarm intelligence; amorphous computing; membrane computing; computational systems biology and computational neuroscience; and synthetic biology.**

PYTHON WITHOUT FEAR

Addison-Wesley Professional **Praise for this book, Python Without Fear "This is really a great book. I wish I'd had it when I was learning Python." –John M. Wargo, author of Apache Cordova 4 Programming Praise for the previous book in the series, C++ Without Fear "I'm in love with your C++ Without Fear book. It keeps me awake for hours during the night. Thanks to you, I got most of the idea in just a few hours." –Laura Viral, graduate physics student at CERN and Istanbul, Turkey "It's hard to tell where I began and ended with your book. I felt like I woke up and literally knew how to write C++ code. I can't overstate the confidence you gave me." – Danny Grady, senior programmer/analyst at a Fortune 500 Company Whether you're new to programming or moving from another language, Python Without Fear will quickly make you productive! Brian Overland's unique approach to Python includes: Taking you by the hand while teaching topics from the very basics to intermediate and advanced features of Python Teaching by examples that are explained line by line Heavy emphasis on examples that are fun and useful, including games, graphics, database applications, file storage, puzzles, and more! How to think "Pythonically" and avoid common "gotchas" Register your product at informit.com/register for convenient access to downloads, updates, and/or corrections as they become available.**

THE PSYCHOLOGY OF PROBLEM SOLVING

Cambridge University Press **Table of contents**

THE ZEROTH BOOK OF GRAPH THEORY

AN ANNOTATED TRANSLATION OF LES RÉSEAUX (OU GRAPHES)—ANDRÉ SAINTE-LAGUË (1926)

Springer Nature **Marking 94 years since its first appearance, this book provides an annotated translation of Sainte-Laguë's seminal monograph Les réseaux (ou graphes), drawing attention to its fundamental principles and ideas. Sainte-Laguë's 1926 monograph appeared only in French, but in the 1990s H. Gropp published a number of English papers describing several aspects of the book. He expressed his hope that an English translation might sometime be available to the mathematics community. In the 10 years following the appearance of Les réseaux (ou graphes), the development of graph theory continued, culminating in the publication of the first full book on the theory of finite and infinite graphs in 1936 by Dénes König. This remained the only well-known text until Claude Berge's 1958 book on the theory and applications of graphs. By 1960, graph theory had emerged as a significant mathematical discipline of its own. This book will be of interest to graph theorists and mathematical historians.**

THE BRIGHTEST STARS

DISCOVERING THE UNIVERSE THROUGH THE SKY'S MOST BRILLIANT STARS

Wiley **"Fred Schaaf is one of the most experienced astronomical observers of our time. For more than two decades, his view of the sky-what will be visible, when it will be visible, and what it will look like-has encouraged tens of thousands of people to turn their eyes skyward." —David H. Levy, Science Editor, Parade magazine, discoverer of twenty-one comets, and author of Starry Night and Cosmic Discoveries "Fred Schaaf is a poet of the stars. He brings the sky into people's lives in a way that is compelling and his descriptions have all the impact of witnessing the stars on a crystal-clear dark night." —William Sheehan, coauthor of Mars: The Lure of the Red Planet and The Transits of Venus In this book, you'll meet the twenty-one brightest stars visible from Earth. You'll learn how to find these stars and discover the best ways to see them. Each star is profiled in a separate chapter, with detailed guidance on what to look for while observing it. Suitable for beginners as well as experienced amateur astronomers, the book shares fascinating information about the lore and legends connected with each star through history, as well as what the science of astronomy has to teach us about the star's physical nature.**

THE BEST WRITING ON MATHEMATICS 2014

Princeton University Press **This annual anthology brings together the year's finest mathematics writing from around the world. Featuring promising new voices alongside some of the foremost names in the field, The Best Writing on Mathematics 2014 makes available to a wide audience many articles not easily found anywhere else—and you don't need to be a mathematician to enjoy them. These writings offer surprising insights into the nature, meaning, and practice of mathematics today. They delve into the history, philosophy, teaching, and everyday occurrences of math, and take readers behind the scenes of today's hottest mathematical debates. Here John Conway presents examples of arithmetical statements that are almost certainly true but likely unprovable; Carlo Séquin explores, compares, and illustrates distinct types of one-sided surfaces known as Klein bottles; Keith Devlin asks what makes a video game good for learning mathematics and shows why many games fall short of that goal; Jordan Ellenberg reports on a recent breakthrough in the study of prime numbers; Stephen Pollard argues that mathematical practice, thinking, and experience transcend the utilitarian value of mathematics; and much, much more. In addition to presenting the year's most memorable writings on mathematics, this must-have anthology includes an introduction by editor Mircea Pitici. This book belongs on the shelf of anyone interested in where math has taken us—and where it is headed.**

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<u>Houghton Mifflin College Division</u> **This book, offered here in its first open-access edition, addresses a wide range of writing activites and genres, from summarizing and responding to sources to writing the research paper and writing about literature. This edition of the book has been adapted from the fifth edition, published in 1995 by Houghton Mifflin. Copyrighted materials—primarily examples within the text—have been removed from this edition.**

GRAPH AND NETWORK THEORY

AN APPLIED APPROACH USING MATHEMATICA (R).

<u>Springer Nature</u> **This textbook covers a diversity of topics in graph and network theory, both from a theoretical standpoint, and from an applied modelling point of view. Mathematica is used to demonstrate much of the modelling aspects. Graph theory and model building tools are developed in tandem with effective techniques for solving practical problems via computer implementation. The book is designed with three primary readerships in mind. Individual syllabi or suggested sequences for study are provided for each of three student audiences: mathematics, applied mathematics/operations research, and computer science. In addition to the visual appeal of each page, the text contains an abundance of gems. Most chapters open with real-life problem descriptions which serve as motivation for the theoretical development of the subject matter. Each chapter concludes with three different sets of exercises. The first set of exercises are standard and geared toward the more mathematically inclined reader. Many of these are routine exercises, designed to test understanding of the material in the text, but some are more challenging. The second set of exercises is earmarked for the computer technologically savvy reader and offer computer exercises using Mathematica. The final set consists of larger projects aimed at equipping those readers with backgrounds in the applied sciences to apply the necessary skills learned in the chapter in the context of real-world problem solving. Additionally, each chapter offers biographical notes as well as pictures of graph theorists and mathematicians who have contributed significantly to the development of the results documented in the chapter. These notes are meant to bring the topics covered to life, allowing the reader to associate faces with some of the important discoveries and results presented. In total, approximately 100 biographical notes are presented throughout the book. The material in this book has been organized into three distinct parts, each with a different focus. The first part is devoted to topics in network optimization, with a focus on basic notions in algorithmic complexity and the computation of optimal paths, shortest spanning trees, maximum flows and minimum-cost flows in networks, as well as the solution of network location problems. The second part is devoted to a variety of classical problems in graph theory, including problems related to matchings, edge and vertex traversal, connectivity, planarity, edge and vertex coloring, and orientations of graphs. Finally, the focus in the third part is on modern areas of study in graph theory, covering graph domination, Ramsey theory, extremal graph theory, graph enumeration, and application of the probabilistic method.**

METAPHORS WE LIVE BY

<u>University of Chicago Press</u> **The now-classic Metaphors We Live By changed our understanding of metaphor and its role in language and the mind. Metaphor, the authors explain, is a fundamental mechanism of mind, one that allows us to use what we know about our physical and social experience to provide understanding of countless other subjects. Because such metaphors structure our most basic understandings of our experience, they are "metaphors we live by"—metaphors that can shape our perceptions and actions without our ever noticing them. In this updated edition of Lakoff and Johnson's influential book, the authors supply an afterword surveying how their theory of metaphor has developed within the cognitive sciences to become central to the contemporary understanding of how we think and how we express our thoughts in language.**