

Y2 Halving Word Problems

The Book of R
 Discrete Mathematics for Computer Science
 The Trachtenberg Speed System of Basic Mathematics
 Programming for Computations - MATLAB/Octave
 Foundations of Data Science
 Counterexamples in Analysis
 Easy Mathematics Step-by-Step
 Introductory Mathematics Through Science Applications
 Part of the Party
 Computational Mathematics Driven by Industrial Problems
 Finite Element Analysis for Building Assessment
 Multiplication and Division
 Numerical Solution of Ordinary Differential Equations
 Multiplication Word Problems
 Concrete Mathematics: A Foundation for Computer Science
 High Technology
 Verification of Infinite-state Systems with Applications to Security
 Computational Topology
 Problems on Algorithms
 Understanding Machine Learning
 Chebyshev and Fourier Spectral Methods
 A Festive Feast
 Conceptual Mathematics
 A Primer on Scientific Programming with Python
 An Introduction to Optimization
 Math Toolkit for Real-Time Programming
 Information Theory, Inference and Learning Algorithms
 The Algorithmic Foundations of Differential Privacy
 Introduction to Numerical Methods for Variational Problems
 Subtracting Fractions
 Children's Errors in Mathematics
 Mathematics of Public Key Cryptography
 The R Book
 Calculus for Business, Economics, and the Social and Life Sciences
 The Arithmetica of Diophantus
 Official GRE Quantitative Reasoning Practice Questions
 Programming for Computations - Python
 How to Prove It
 Algorithmic Puzzles
 Mathematical Challenges for Able Pupils in Key Stages 1 and 2

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SASHA MCMAHON

The Book of R Taylor & Francis
 Combining concepts from topology and algorithms, this book delivers what its title promises: an introduction to the field of computational topology. Starting with motivating problems in both mathematics and computer science and building up from classic topics in geometric and algebraic topology, the third part of the text advances to persistent homology. This point of view is critically important in turning a mostly theoretical field of mathematics into one that is relevant to a multitude of disciplines in the sciences and engineering. The main approach is the discovery of topology through algorithms.

The book is ideal for teaching a graduate or advanced undergraduate course in computational topology, as it develops all the background of both the mathematical and algorithmic aspects of the subject from first principles. Thus the text could serve equally well in a course taught in a mathematics department or computer science department.

[Discrete Mathematics for Computer Science](#) Souvenir Press

150 REAL GRE Quantitative Reasoning questions--direct from the test maker! The best way to prepare for the Quantitative Reasoning measure of the GRE revised General Test is with real GRE test questions--and that is what you will find in this unique guide! Specially created for you by ETS, it offers 150 actual Quantitative Reasoning questions with complete explanations. Plus, this guide

includes a review of math topics likely to appear on the Quantitative Reasoning measure. Only ETS can show you exactly what to expect on the test. So for in-depth practice and accurate test preparation for the Quantitative Reasoning measure, this guide is your best choice! Look inside to find: Real GRE Quantitative Reasoning test questions arranged by content and question type--to help you build your test-taking skills. Plus, mixed practice sets. Answers and explanations for every question! GRE Math Review covering math topics you need to know for the test. ETS's own test-taking strategies: Valuable hints and tips to help you do your best on the test. Official information on the GRE Quantitative Reasoning measure: The facts about the test content, structure, scoring, and more--straight from ETS.

The Trachtenberg Speed System of

Basic Mathematics Taylor & Francis
One Christmas, things don't quite go to plan for Orla and her family. 'The screen went blank, the lights on the tree went out and the oven stopped humming.' Will Orla get the special Christmas that she has been hoping for? Download the full eBook and explore supporting teaching materials at www.twinkl.com/originals Join Twinkl Book Club to receive printed story books every half-term at www.twinkl.co.uk/book-club (UK only).

Programming for Computations - MATLAB/Octave Springer

The high-level language of R is recognized as one of the most powerful and flexible statistical software environments, and is rapidly becoming the standard setting for quantitative analysis, statistics and graphics. R provides free access to unrivalled coverage and cutting-edge applications, enabling the user to apply numerous statistical methods ranging from simple regression to time series or multivariate analysis. Building on the success of the author's bestselling *Statistics: An Introduction using R*, *The R Book* is packed with worked examples, providing an all inclusive guide to R, ideal for novice and more accomplished users alike. The book assumes no background in statistics or computing and introduces the advantages of the R environment, detailing its applications in a wide range of disciplines. Provides the first comprehensive reference manual for the R language, including practical guidance and full coverage of the graphics facilities. Introduces all the statistical models covered by R, beginning with simple classical tests such as chi-square and t-test. Proceeds to examine more advanced methods, from regression and analysis of variance, through to generalized linear models, generalized mixed models, time series, spatial statistics, multivariate statistics and much more. *The R Book* is aimed at undergraduates, postgraduates and professionals in science, engineering and medicine. It is also ideal for students and professionals in statistics, economics, geography and the social sciences.

Foundations of Data Science

Brooks/Cole Publishing Company

"The recent years have brought a number of advances in the development of infinite state verification, using techniques such as symbolic or parameterized representations, symmetry reductions, abstractions, constraint-based approaches, combinations of model checking and theorem proving. The active state of research on this topic provides a

good time-point to increase impact by bringing together leading scientists and practitioners from these individual approaches. This volume gives an overview of the current research directions and provides information for researchers interested in the development of mathematical techniques for the analysis of infinite state systems."

Counterexamples in Analysis Cambridge University Press

These counterexamples deal mostly with the part of analysis known as "real variables." Covers the real number system, functions and limits, differentiation, Riemann integration, sequences, infinite series, functions of 2 variables, plane sets, more. 1962 edition.

Easy Mathematics Step-by-Step John Wiley & Sons

The book serves as a first introduction to computer programming of scientific applications, using the high-level Python language. The exposition is example and problem-oriented, where the applications are taken from mathematics, numerical calculus, statistics, physics, biology and finance. The book teaches "Matlab-style" and procedural programming as well as object-oriented programming. High school mathematics is a required background and it is advantageous to study classical and numerical one-variable calculus in parallel with reading this book. Besides learning how to program computers, the reader will also learn how to solve mathematical problems, arising in various branches of science and engineering, with the aid of numerical methods and programming. By blending programming, mathematics and scientific applications, the book lays a solid foundation for practicing computational science. From the reviews: Langtangen ... does an excellent job of introducing programming as a set of skills in problem solving. He guides the reader into thinking properly about producing program logic and data structures for modeling real-world problems using objects and functions and embracing the object-oriented paradigm. ... Summing Up: Highly recommended. F. H. Wild III, *Choice*, Vol. 47 (8), April 2010 Those of us who have learned scientific programming in Python 'on the streets' could be a little jealous of students who have the opportunity to take a course out of Langtangen's Primer." John D. Cook, *The Mathematical Association of America*, September 2011 This book goes through Python in particular, and programming in general, via tasks that scientists will likely perform. It contains valuable information for students new to scientific computing and would be the perfect bridge between

an introduction to programming and an advanced course on numerical methods or computational science. Alex Small, *IEEE, CiSE* Vol. 14 (2), March /April 2012 "This fourth edition is a wonderful, inclusive textbook that covers pretty much everything one needs to know to go from zero to fairly sophisticated scientific programming in Python..." Joan Horvath, *Computing Reviews*, March 2015

Introductory Mathematics Through Science Applications Cambridge University Press

This truly elementary book on categories introduces retracts, graphs, and adjoints to students and scientists.

Part of the Party SAGE

Master the fundamentals of discrete mathematics with DISCRETE MATHEMATICS FOR COMPUTER SCIENCE with Student Solutions Manual CD-ROM!

An increasing number of computer scientists from diverse areas are using discrete mathematical structures to explain concepts and problems and this mathematics text shows you how to express precise ideas in clear mathematical language. Through a wealth of exercises and examples, you will learn how mastering discrete mathematics will help you develop important reasoning skills that will continue to be useful throughout your career.

Computational Mathematics Driven by Industrial Problems American Mathematical Society

Introduces machine learning and its algorithmic paradigms, explaining the principles behind automated learning approaches and the considerations underlying their usage.

Finite Element Analysis for Building Assessment Springer

Ever find yourself struggling to check a bill or tax on a payslip? The Trachtenberg Speed System provides a course in refining basic mathematics skills to tackle large sums before simplifying to increase concentration and ability in day-to-day arithmetic. The Trachtenberg system has been described as the 'shorthand of mathematics' and only requires the ability to count from one to eleven. Using a series of simplified keys, it allows anyone to master numbers and calculations giving greater speed, ease in handling numbers and increasing accuracy. Jakow Trachtenberg believed that everyone is born with phenomenal abilities to calculate. He devised a set of rules that allows every child to make multiplication, division, addition, subtraction and square-root calculations with unerring accuracy and at remarkable speed. A perfect entry into gaining confidence with numbers.

Multiplication and Division Springer Nature
Provides clear explanations for such common mathematical concepts as fractions, geometry, and probability, with focused exercises to enable learning.

Numerical Solution of Ordinary Differential Equations IOS Press

This volume offers an English translation of all ten extant books of Diophantus of Alexandria's *Arithmetica*, along with a comprehensive conceptual, historical, and mathematical commentary. Before his work became the inspiration for the emerging field of number theory in the seventeenth century, Diophantus (ca. 3rd c. CE) was known primarily as an algebraist. This volume explains how his method of solving arithmetical problems agrees both conceptually and procedurally with the premodern algebra later practiced in Arabic, Latin, and European vernaculars, and how this algebra differs radically from the modern algebra initiated by François Viète and René Descartes. It also discusses other surviving traces of ancient Greek algebra and follows the influence of the *Arithmetica* in medieval Islam, Byzantium, and the European Renaissance down to the 1621 publication of Claude-Gaspard Bachet's edition. After the English translation the book provides a problem-by-problem commentary explaining the solutions in a manner compatible with Diophantus's mode of thought. The *Arithmetica* of Diophantus provides an invaluable resource for historians of mathematics, science, and technology, as well as those studying ancient Greek, medieval Islamic and Byzantine, and Renaissance history. In addition, the volume is also suitable for mathematicians and mathematics educators.

Multiplication Word Problems John Wiley & Sons

Algorithmic puzzles are puzzles involving well-defined procedures for solving problems. This book will provide an enjoyable and accessible introduction to algorithmic puzzles that will develop the reader's algorithmic thinking. The first part of this book is a tutorial on algorithm design strategies and analysis techniques. Algorithm design strategies — exhaustive search, backtracking, divide-and-conquer and a few others — are general approaches to designing step-by-step instructions for solving problems. Analysis techniques are methods for investigating such procedures to answer questions about the ultimate result of the procedure or how many steps are executed before the procedure stops. The discussion is an elementary level, with puzzle examples, and requires neither programming nor

mathematics beyond a secondary school level. Thus, the tutorial provides a gentle and entertaining introduction to main ideas in high-level algorithmic problem solving. The second and main part of the book contains 150 puzzles, from centuries-old classics to newcomers often asked during job interviews at computing, engineering, and financial companies. The puzzles are divided into three groups by their difficulty levels. The first fifty puzzles in the Easier Puzzles section require only middle school mathematics. The sixty puzzle of average difficulty and forty harder puzzles require just high school mathematics plus a few topics such as binary numbers and simple recurrences, which are reviewed in the tutorial. All the puzzles are provided with hints, detailed solutions, and brief comments. The comments deal with the puzzle origins and design or analysis techniques used in the solution. The book should be of interest to puzzle lovers, students and teachers of algorithm courses, and persons expecting to be given puzzles during job interviews.

Concrete Mathematics: A Foundation for Computer Science McGraw Hill Professional

The problem of privacy-preserving data analysis has a long history spanning multiple disciplines. As electronic data about individuals becomes increasingly detailed, and as technology enables ever more powerful collection and curation of these data, the need increases for a robust, meaningful, and mathematically rigorous definition of privacy, together with a computationally rich class of algorithms that satisfy this definition. Differential Privacy is such a definition. The *Algorithmic Foundations of Differential Privacy* starts out by motivating and discussing the meaning of differential privacy, and proceeds to explore the fundamental techniques for achieving differential privacy, and the application of these techniques in creative combinations, using the query-release problem as an ongoing example. A key point is that, by rethinking the computational goal, one can often obtain far better results than would be achieved by methodically replacing each step of a non-private computation with a differentially private implementation. Despite some powerful computational limitations. Virtually all the algorithms discussed herein maintain differential privacy against adversaries of arbitrary computational power -- certain algorithms are computationally intensive, others are efficient. Computational complexity for the adversary and the algorithm are both discussed. The

monograph then turns from fundamentals to applications other than query-release, discussing differentially private methods for mechanism design and machine learning. The vast majority of the literature on differentially private algorithms considers a single, static, database that is subject to many analyses. Differential privacy in other models, including distributed databases and computations on data streams, is discussed. The *Algorithmic Foundations of Differential Privacy* is meant as a thorough introduction to the problems and techniques of differential privacy, and is an invaluable reference for anyone with an interest in the topic.

High Technology No Starch Press

This book presents computer programming as a key method for solving mathematical problems. There are two versions of the book, one for MATLAB and one for Python. The book was inspired by the Springer book *TCSE 6: A Primer on Scientific Programming with Python* (by Langtangen), but the style is more accessible and concise, in keeping with the needs of engineering students. The book outlines the shortest possible path from no previous experience with programming to a set of skills that allows the students to write simple programs for solving common mathematical problems with numerical methods in engineering and science courses. The emphasis is on generic algorithms, clean design of programs, use of functions, and automatic tests for verification.

Verification of Infinite-state Systems with Applications to Security Cambridge University Press

The *Book of R* is a comprehensive, beginner-friendly guide to R, the world's most popular programming language for statistical analysis. Even if you have no programming experience and little more than a grounding in the basics of mathematics, you'll find everything you need to begin using R effectively for statistical analysis. You'll start with the basics, like how to handle data and write simple programs, before moving on to more advanced topics, like producing statistical summaries of your data and performing statistical tests and modeling. You'll even learn how to create impressive data visualizations with R's basic graphics tools and contributed packages, like *ggplot2* and *ggvis*, as well as interactive 3D visualizations using the *rgl* package. Dozens of hands-on exercises (with downloadable solutions) take you from theory to practice, as you learn: -The fundamentals of programming in R, including how to write data frames, create

functions, and use variables, statements, and loops –Statistical concepts like exploratory data analysis, probabilities, hypothesis tests, and regression modeling, and how to execute them in R –How to access R's thousands of functions, libraries, and data sets –How to draw valid and useful conclusions from your data –How to create publication-quality graphics of your results Combining detailed explanations with real-world examples and exercises, this book will provide you with a solid understanding of both statistics and the depth of R's functionality. Make *The Book of R* your doorway into the growing world of data analysis.

Computational Topology John Wiley & Sons Information theory and inference, taught together in this exciting textbook, lie at the heart of many important areas of modern technology - communication, signal processing, data mining, machine learning, pattern recognition, computational neuroscience, bioinformatics and cryptography. The book introduces theory in tandem with applications. Information theory is taught alongside practical communication systems such as arithmetic coding for data compression and sparse-graph codes for error-correction. Inference techniques, including message-passing algorithms, Monte Carlo methods and variational approximations, are developed alongside applications to clustering, convolutional codes, independent component analysis,

and neural networks. Uniquely, the book covers state-of-the-art error-correcting codes, including low-density-parity-check codes, turbo codes, and digital fountain codes - the twenty-first-century standards for satellite communications, disk drives, and data broadcast. Richly illustrated, filled with worked examples and over 400 exercises, some with detailed solutions, the book is ideal for self-learning, and for undergraduate or graduate courses. It also provides an unparalleled entry point for professionals in areas as diverse as computational biology, financial engineering and machine learning.

Problems on Algorithms Twinkl A modern, up-to-date introduction to optimization theory and methods This authoritative book serves as an introductory text to optimization at the senior undergraduate and beginning graduate levels. With consistently accessible and elementary treatment of all topics, *An Introduction to Optimization, Second Edition* helps students build a solid working knowledge of the field, including unconstrained optimization, linear programming, and constrained optimization. Supplemented with more than one hundred tables and illustrations, an extensive bibliography, and numerous worked examples to illustrate both theory and algorithms, this book also provides: * A review of the required mathematical background material * A mathematical discussion at a level accessible to MBA and business students * A treatment of both linear and nonlinear

programming * An introduction to recent developments, including neural networks, genetic algorithms, and interior-point methods * A chapter on the use of descent algorithms for the training of feedforward neural networks * Exercise problems after every chapter, many new to this edition * MATLAB(r) exercises and examples * Accompanying Instructor's Solutions Manual available on request *An Introduction to Optimization, Second Edition* helps students prepare for the advanced topics and technological developments that lie ahead. It is also a useful book for researchers and professionals in mathematics, electrical engineering, economics, statistics, and business. An Instructor's Manual presenting detailed solutions to all the problems in the book is available from the Wiley editorial department.

Understanding Machine Learning Twinkl

Completely revised text focuses on use of spectral methods to solve boundary value, eigenvalue, and time-dependent problems, but also covers Hermite, Laguerre, rational Chebyshev, sinc, and spherical harmonic functions, as well as cardinal functions, linear eigenvalue problems, matrix-solving methods, coordinate transformations, methods for unbounded intervals, spherical and cylindrical geometry, and much more. 7 Appendices. Glossary. Bibliography. Index. Over 160 text figures.