

1. Record Nr.	UNINA9910820402203321
Autore	Nahin Paul J.
Titolo	Digital Dice : Computational Solutions to Practical Probability Problems // Paul J. Nahin
Pubbl/distr/stampa	Princeton, NJ : , : Princeton University Press, , [2013] ©2013
ISBN	1-4008-4611-0 1-299-13927-2
Edizione	[With a New preface by the author]
Descrizione fisica	1 online resource (289 p.)
Collana	Princeton Puzzlers
Disciplina	519.2076
Soggetti	Mathematics Physical Sciences & Mathematics Mathematical Statistics
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Frontmatter -- Contents -- Preface to the Paperback Edition -- Introduction -- The Problems -- 1. The Clumsy Dishwasher Problem -- 2. Will Lil and Bill Meet at the Malt Shop? -- 3. A Parallel Parking Question -- 4. A Curious Coin-Flipping Game -- 5. The Gamow-Stern Elevator Puzzle -- 6. Steve's Elevator Problem -- 7. The Pipe Smoker's Discovery -- 8. A Toilet Paper Dilemma -- 9. The Forgetful Burglar Problem -- 10. The Umbrella Quandary -- 11. The Case of the Missing Senators -- 12. How Many Runners in a Marathon? -- 13. A Police Patrol Problem -- 14. Parrondo's Paradox -- 15. How Long Is the Wait to Get the Potato Salad? -- 16. The Appeals Court Paradox -- 17. Waiting for Buses -- 18. Waiting for Stoplights -- 19. Electing Emperors and Popes -- 20. An Optimal Stopping Problem -- 21. Chain Reactions, Branching Processes, and Baby Boys -- The Solutions -- 1. The Clumsy Dishwasher Problem -- 2. Will Lil and Bill Meet at the Malt Shop? -- 3. A Parallel Parking Question -- 4. A Curious Coin-Flipping Game -- 5. The Gamow-Stern Elevator Puzzle -- 6. Steve's Elevator Problem -- 7. The Pipe Smoker's Discovery -- 8. A Toilet Paper Dilemma -- 9. The Forgetful Burglar Problem -- 10. The Umbrella Quandary -- 11. The Case of the Missing Senators -- 12. How Many Runners in a Marathon?

-- 13. A Police Patrol Problem -- 14. Parrondo's Paradox -- 15. How Long Is the Wait to Get the Potato Salad? -- 16. The Appeals Court Paradox -- 17. Waiting for Buses -- 18. Waiting for Stoplights -- 19. Electing Emperors and Popes -- 20. An Optimal Stopping Problem -- 21. Chain Reactions, Branching Processes, and Baby Boys -- Appendix 1. One Way to Guess on a Test -- Appendix 2. An Example of Variance Reduction in the Monte Carlo Method -- Appendix 3. Random Harmonic Series -- Appendix 4. Solving Montmort's Problem by Recursion -- Appendix 5. An Illustration of the Inclusion-Exclusion Principle -- Appendix 6. Solutions to the Spin Game -- Appendix 7. How to Simulate Kelvin's Fair Coin with a Biased Coin -- Appendix 8. How to Simulate an Exponential Random Variable -- Appendix 9. Author-Created MATLAB m-files and Their Location in the Book -- Glossary -- Acknowledgments -- Index -- Also by Paul J. Nahin

---

## Sommario/riassunto

Some probability problems are so difficult that they stump the smartest mathematicians. But even the hardest of these problems can often be solved with a computer and a Monte Carlo simulation, in which a random-number generator simulates a physical process, such as a million rolls of a pair of dice. This is what Digital Dice is all about: how to get numerical answers to difficult probability problems without having to solve complicated mathematical equations. Popular-math writer Paul Nahin challenges readers to solve twenty-one difficult but fun problems, from determining the odds of coin-flipping games to figuring out the behavior of elevators. Problems build from relatively easy (deciding whether a dishwasher who breaks most of the dishes at a restaurant during a given week is clumsy or just the victim of randomness) to the very difficult (tackling branching processes of the kind that had to be solved by Manhattan Project mathematician Stanislaw Ulam). In his characteristic style, Nahin brings the problems to life with interesting and odd historical anecdotes. Readers learn, for example, not just how to determine the optimal stopping point in any selection process but that astronomer Johannes Kepler selected his second wife by interviewing eleven women. The book shows readers how to write elementary computer codes using any common programming language, and provides solutions and line-by-line walk-throughs of a MATLAB code for each problem. Digital Dice will appeal to anyone who enjoys popular math or computer science. In a new preface, Nahin wittily addresses some of the responses he received to the first edition.

---