

## The Mathematics Of Poker

Finishing third in the 2004 World Poker Tour Championship and winning over \$700,000, Matros pens this first-person narrative on how he changed from math geek to successful poker player.

The first and only poker book to thoroughly cover the mathematical concepts behind every hand of poker and to do it in an easily accessible manner, *Killer Poker By The Numbers* is sure to appeal to all poker fans, especially fans of the *Killer Poker* series—from amateurs to advanced players. At its root poker is a numbers game, and this latest installment in John Vorhaus's bestselling *Killer Poker* series completely demystifies the math used to make winning decisions, including: - How blind structures and table sizes can affect play - How to determine strategy and profitability for various table types - How to work with probability, expected value, pot odds, and variance *Killer Poker By The Numbers* will not only benefit from John Vorhaus's distinct brand and loyal group of readers, and but also because: - Guerrero is one of the leading experts on the mathematics of poker. His experience studying physics at Cal Tech, along with his experience as a math tutor, make him the perfect author for this book. - Guerrero contributed a chapter to John Vorhaus's recently published *Killer Poker Online 2* (Lyle Stuart, September 2006). - John Vorhaus will write the foreword, as well as market this book alongside all his other *Killer Poker* books. - *Killer Poker By The Numbers* will be promoted on [www.killerpokerbythenumbers.com](http://www.killerpokerbythenumbers.com).

A carefully written text, suitable as an introductory course for second or third year students. The main scope of the text guides students towards a critical understanding and handling of data sets together with the ensuing testing of hypotheses. This approach distinguishes it from many other texts using statistical decision theory as their underlying philosophy. This volume covers concepts from probability theory, backed by numerous problems with selected answers.

For decades, the highest level of poker have been dominated by players who have learned the game by playing it, 'road gamblers' who have cultivated intuition for the game and are adept at reading other players' hands from betting patterns and physical tells. Over the last five to ten years, a whole new breed has risen to prominence within the poker community. Applying the tools of computer science and mathematics to poker and sharing the information across the Internet, these players have challenged many of the assumptions that underlay traditional approaches to the game.

A complete probability guide of Hold'em Poker, this guide covers all possible gaming situations. The author focuses on the practical side of the presentation and use of the probabilities involved in Hold'em, while taking into account the subjective side of the probability-based criteria of each player's strategy.

Mastering Poker Math teaches the math in Texas No-Limit Hold'em and how to integrate it with other poker skills.

very great player knows that success in poker is part luck, part math, and part subterfuge. While the math of poker has been refined over the past 20 years, the ability to read other players and keep your own "tells" in check has mostly been learned by trial and error. But now, Joe Navarro, a former FBI counterintelligence officer specializing in nonverbal communication and behavior analysis—or, to put it simply, a man who can tell when someone's lying—offers foolproof techniques, illustrated with amazing examples from poker pro Phil Hellmuth, that will help you decode and interpret your opponents' body language and other silent tip-offs while concealing your own. You'll become a human lie detector, ready to call every bluff—and the most feared player in the room.

Winning big at hold'em requires practical math knowledge, which is precisely what this book will teach you. Both of the authors of this book graduated with degrees in Mathematics from Caltech. Collin Moshman is the best-selling author of *Sit 'n Go Strategy* and *Heads-Up No-Limit Hold'em*. Douglas Zare is a mathematician and poker coach famous for his in-depth analyses. The authors use their extensive math, poker, and coaching backgrounds to present the most important hold'em math concepts designed to immediately increase your winrate at the tables. You will learn to: Understand the fundamental probabilities and statistics underlying Hold'em Count hand combinations while playing Master expected value calculations Play optimally with game theory Seize full advantage of the latest software Utilize deductive logic to put your opponent on a specific hand range And more

Includes glossary and index

Meet Alex and Bobbie, who both like to play poker. Alex is a professional poker player who plays for a living and is a solid long-term winner. Bobbie is a recreational player who plays a decent enough game but mainly wants to have a good time. If you play poker regularly you will meet thousands of players like Bobbie in your games and very few like Alex. Of course one would expect that, in the long run, Alex will perform better than Bobbie. But have you ever wondered EXACTLY what it is that Alex understands better and does differently to Bobbie? This is a rather complex question that does not have a simple answer. In this book, UCLA maths professor Duncan Palamourdas addresses this question via a journey through human psychology, game theory, easy-to-understand mathematics and even philosophy. Topics include: \* Understanding the instinctive but unprofitable tendencies of inexperienced players. \* How to identify what a mistake actually is in poker – and how to exploit it. \* Why poker does not revolve around bluffing. \* The great impact of variance in poker and how to account for it. \* How to develop a consistent approach that allows you to play like Alex and not Bobbie. Introduction to Probability with Texas Hold'em Examples illustrates both standard and advanced probability topics using the popular poker game of Texas Hold'em, rather than the typical balls in urns. The author uses students' natural interest in poker to teach important concepts in probability.

Since its first publication in 1994, *Winning Low-Limit Hold'em*, by Lee Jones, has become the major reference on playing Texas Hold'em at the lower limits. However, poker has changed over the several years and Lee has continued to study the game. The result is this revised and expanded second edition.

Enfin traduit en français : le livre-culte de tous les champions mondiaux Vous tenez entre les mains un livre-légende ! Un livre que tous les grands champions du poker gagnant moderne ont lu et relu. Ses auteurs ont passé au crible les secrets les plus intimes du poker comme jeu d'opposition. La Théorie des Jeux à ses sommets Chen & Ankenman ont découvert les solutions optimales de plus de 60 simulations mathématiques du poker. Une gestion du risque optimale Gestion de capital-jeu, financement de joueurs, gestion de tournois, partage de dotation, alliances, choix des meilleures parties... Tous les sujets les plus pointus sont résolus ici. Chaque chapitre se termine par un résumé des concepts. Un livre concret sur le poker qui gagne vraiment. Libre à vous d'écouter les conseils évasifs ou non prouvés de certains auteurs et/ou champions. Les maths, elles, ne mentent pas. Si vous partez avec des hypothèses, que vous analysez la situation sans faire d'erreur, la solution SERA correcte. Quel niveau en maths requis pour le lire ? Les principaux résultats et les propriétés des outils mathématiques sont rappelés et expliqués : Bayes, logarithme, intégration, dérivation, inéquations sont des outils devenus courants. Au final, un niveau en maths de Première S suffit.

Poker is one of the oldest and most enduring games on the face of the earth and Texas Hold'em has been the most popular form of the game for nearly three decades. Millions of dollars change hands thanks to the game each year and if you want to earn your share then you are going to need to understand the math that goes into the game to ensure you can formulate a solid plan of action moving forward. If you are looking to stop just playing poker and are ready to start earning money by doing so, then *Poker Math: A Comprehensive Beginners' Guide to Learn and Understand Poker Math in Order to Win the Games of Poker*. Playing poker successfully is all about the numbers which means that if you don't know all the numbers, and also why you should care about them, you are going to inherently remain at a disadvantage each time you sit down at a table. To ensure you have the tools you need this book will break everything down for you including concepts like combinatorics, expected value, equity, pot odds, probability and more. So, what are you waiting for? Stop playing a game and start earning a living playing poker, buy this book today.

Contains six sections discussing probability, poker, blackjack, other casino games, sports betting, and general gambling concepts. This book contains some of the most sophisticated gambling ideas that have ever been put into print. Included is perhaps the best discussion of the basic mathematics of gambling, yet it is written so that even the most non-mathematical of readers can understand it. Many of the ideas discussed are those that the author himself has successfully used during his career. Topics include expectation, combinations, Baye's Theorem, the eight mistakes in poker, checking in the dark, playing tight, The Key Card Concept, casinos and their mistakes, crapless craps, betting sports, hedging and middling, knowing what's important, the Law of Averages and Other Fallacies, and much more. What are the odds of winning at poker if you don't know the odds in poker? *Practical Poker Math* provides a complete and easy-to-understand explanation of the basic odds, probabilities and expectations in Hold'em and Omaha. All the formulations are completely open and are demonstrated via easy-to-follow, colour-coded calculations. Pat Dittmar has aimed this book at beginning through semi-pro players who want to improve their results and who know that there is not much chance of improvement without a fundamental understanding of poker odds, probabilities, and expectations. Pat Dittmar is head of.

*Modern Poker Theory* is a comprehensive, rigorous guide to the most important aspects of No-Limit Hold'em. It is based around an in-depth examination of what is meant by game theory optimal play (GTO) and how it can be applied at the table. Understanding GTO is fundamental to being able to make accurate poker decisions and being able to exploit players who don't. *Modern Poker Theory* uses modern poker tools to develop a systematic approach to the analysis of GTO. It organizes the ideas and concepts in an intuitive manner that is totally focused to practical applications. Next time you are at a table some of the players will have studied *Modern Poker Theory* and some won't. The players who have studied *Modern Poker Theory* will, without doubt, have a better theoretical and practical understanding of No-Limit Hold'em. They will be the favourites in the game. Make sure you are one of them. Michael Acevedo, one of the world's leading poker theorists, is a game theory expert who is renowned for creating cutting-edge content for the world's leading players. The production of *Modern Poker Theory* is the culmination of many thousands of hours of his research work with the most advanced poker software tools available. It is poker theory for the 21st century.

"One part *The Da Vinci Code*, one part *The Name of the Rose* and one part *A Separate Peace* . . . a smart, swift, multitextured tale that both entertains and informs."—*San Francisco Chronicle* **NEW YORK TIMES BESTSELLER** Princeton. Good Friday, 1999. On the eve of graduation, two friends are a hairsbreadth from solving the mysteries of the *Hypnerotomachia Poliphili*, a Renaissance text that has baffled scholars for centuries. Famous for its hypnotic power over those who study it, the five-hundred-year-old *Hypnerotomachia* may finally reveal its secrets—to Tom Sullivan, whose father was obsessed with the book, and Paul Harris, whose future depends on it. As the deadline looms, research has stalled—until a vital clue is unearthed: a long-lost diary that may prove to be the key to deciphering the ancient text. But when a longtime student of the book is murdered just hours later, a chilling cycle of deaths and revelations begins—one that will force Tom and Paul into a fiery drama, spun from a book whose power and meaning have long been misunderstood. "Profoundly erudite . . . the ultimate puzzle-book."—*The New York Times Book Review*

Is must reading for anyone planning to play hold 'em. It was the first definitive work on hold'em poker and was originally published in 1976. Yet it is still one of the best-selling poker books available, and in 1997 it was expanded and updated to account for today's modern double blind structure. The text is designed for someone relatively new to the game, but it still contains much sophisticated material which all players should find beneficial. It is probably best known for the Sklansky Hand Rankings, which made the game much simpler to quantify and understand. Some of the topics include how Texas hold'em is played, the importance of position, the first two cards, the key flops, strategy before the flop, semibluffing, the free card, slowplaying, check raising, heads-up on fifth street, and how to read hands.

"Now, for the millions of poker players who know the basics, but do not fully understand the logic and principles of skillful play, here is a serious, comprehensive guide that shows how to think like a professional poker player"--Page 4 of cover.

Learning the math behind good poker has never been simpler. Owen's methods and shortcuts will have you applying the math at the poker table overnight.

Chris Moorman is the most successful online poker tournament player in history. \* Leads the industry with more than \$11 million in online cashes \* Excels on the tournament circuit with over \$4 million in live cashes \* Placed in the top three in online tournaments 651 times to date Many strong poker players have written books explaining their thought processes. However, players at the low- to mid-stakes who want to advance to the highest levels find the leap a daunting one. Chris, through years of hard work, has achieved this advance and now wants to help you do the same. Moorman's *Book of Poker* has a unique approach. Chris analyzes 80 tournament hand histories played by co-author Byron Jacobs – a typical mid-stakes player. The adoption of a coaching format allows Chris to explain in clear detail exactly what is needed to progress to the next level of expertise.

Explains how Billy Beene, the general manager of the Oakland Athletics, is using a new kind of thinking to build a successful and winning baseball team without spending enormous sums of money.

Think game theory is abstract and incomprehensible? Think again! *Play Optimal Poker* shatters the myth that game theory is only for elite poker players. Renowned poker pro and coach Andrew Brokos takes you step-by-step through the fundamentals, explaining core game theory principles and how to apply them in real poker situations. Whether you play small stakes or high stakes, cash games or tournaments, *Play Optimal Poker* provides powerful new tools to help you navigate tricky situations, hold your own against the toughest competition, and exploit common mistakes. Once you understand the fundamentals of game theory, you'll approach the poker table with the confidence to handle anything the game can throw at you. You will learn how to: Use powerful game theory concepts like equilibrium and indifference Apply game theory principles to everyday poker decisions Build polarized and condensed ranges Profit from both aggression and passivity Manipulate your ranges to exploit common mistakes Hold your own against world-class opponents Andrew Brokos has been a professional

poker player for more than fifteen years, with hundreds of thousands in cash game winnings, final tables in major online tournament series, and three Top 100 finishes in the World Series of Poker Main Event. As a coach and host of the popular Thinking Poker Podcast, Andrew is widely regarded for his ability to explain complex concepts in terms anyone can understand. "Working with Andrew instantly leveled up my game, but more importantly it gave me a great foundation on which to build my skills over time by learning to think about the game in the right way. As a rec player the work we did has really had a positive impact on my life because I just get a lot more joy out of poker now that I'm winning much more consistently and moving up the stakes." -Michael S., poker coaching student "There's just a ton of useful stuff here. I'm already starting to think... OK, every hand that I play, I need to be thinking about what hands out of my range am I bluffing here?" -Eric L., lawyer and "serious amateur" poker player

**Poker Math Is Easy to Learn** Poker math is a vitally important aspect to No Limit Holdem poker, but it is often overlooked or simply not used because many poker players fear it is too difficult to learn. I'm here to tell you it is not. In fact, fundamental poker math is very easy to learn. More importantly, it can yield you a lot more profits at the poker table. Without using simple math at the poker table, you are simply playing a guessing game. Use Simple Math at the Poker Table and Increase Your Winnings In this book I will teach you how to use simple arithmetic at the poker table to gain a huge skill advantage over your opponents that will allow you to win more and lose less. Poker players that don't use math are simply guessing and you'll learn to no longer guess and know the right mathematical move at the poker table. These simple mathematical concepts I will be teaching you will drastically help improve your poker game and allow you to make the most profitable decisions at the poker. **Contents and Overview** First you will be introduced to some fundamental overarching poker concepts that apply to poker mathematics. Then we will begin our journey into poker mathematics where you will learn about probabilities and odds, pot odds and implied odds, pot equity, and expected value. You will then learn how to quickly estimate your equity at the poker table using the Rule of 2 & 4. Moreover, you'll learn the steps involved in determining if calling with a drawing hand is profitable or not. We will also cover how to size your bets with the best hand and teach you how often bluffs and hero calls need to work to be profitable. Lastly, we will show you how to perform EV calculations and better understand card combinations. **Effectively Understand and Utilize Essential Poker Math** Develop a keen understanding of Probability and Odds Learn to quickly calculate Pot Odds & Implied Odds at the poker table Effectively use Pot Equity & The Rule of 2 & 4 to Determine the correct poker play Understand how to use Expected Value (EV) both on and off the table to analyze your plays Learn the important math behind Bluffs & Hero Calls to give you a skill advantage over your opponent Learn Card Combinations to further enhance your card reading abilities And Many More Amazing Topics... What You Will Get out of This Book Suitable for both beginning and experienced poker players alike you'll learn many essential fundamental poker mathematical concepts that will help you drastically improve your poker game. After reading this book, you will have mastered fundamental No Limit Holdem mathematics. You will have gained a huge skill advantage over your opponents and you will be able to quickly and effectively use math at the poker table to make are always the most profitable move. Most importantly, you will become a much better and profitable poker player! So what are you waiting for? Purchase this book today to start learning how to advance your poker game with simple poker math!

Like any variation of poker, draw poker (or classical poker) is also predisposed to probability-based decisions. The author presents the mathematics involved in this card game, with respect to the usage of the numerical results in players' strategies. The whole presentation is focused on the practical aspect of the application of probability theory in draw poker and all the sections are such structured to allow the direct usage of the numerical results. This is why every section is packed with tables, some of them filling dozens of pages. This is not a math book, even if the supporting mathematics is present thorough, but a guide addressed to poker players, who can skip the math parts at any time and pick the needed results from tables. For those interested, the complete methodology, the way probability theory is applied and a part of the calculations are shown, so it teaches the player how to calculate odds for any situation for every stage of the game, even the numerical results are already listed in the book. Want to evaluate the probability of one opponent bluffing? Want to know the probability of at least one opponent holding a card formation higher than yours, at any moment of the game? Want to know the probability of hitting the desired formation if discarding in a certain way? All this information is in the book and is fully mathematically grounded. All probability results from this guide are obtained through compact mathematical formulas and not partial simulations on computer. These formulas are the outcome of one year of study, math work and tests. The author found the right probability model in which to apply the theory and conveniently quantify the card distributions in order to work out the draw poker probability formulas. They were built with an enough large range of variables to cover all possible situations and were never worked out before. Their numerical returns were gathered in three main categories of odds presented in the book: - Initial probabilities of the first card distribution for your own hand; - Prediction probabilities after first card distribution and before the second for your own hand; - Prediction probabilities for opponents' hands. Every section ends with suggestive examples and there is also a special chapter with a lot of relevant gaming situations presented along with the odds of their associated events. Among author's previously published books on mathematics of gambling, Draw Poker Odds seems to be the most practical one and that is because the author presents the results of applied probability in a gambling-behavioral manner that can influence the balance between the subjective strategies and the real odds in player's favor.

The New York Times bestseller! A New York Times Notable Book "The tale of how Konnikova followed a story about poker players and wound up becoming a story herself will have you riveted, first as you learn about her big winnings, and then as she conveys the lessons she learned both about human nature and herself." —The Washington Post It's true that Maria Konnikova had never actually played poker before and didn't even know the rules when she approached Erik Seidel, Poker Hall of Fame inductee and winner of tens of millions of dollars in earnings, and convinced him to be her mentor. But she knew her man: a famously thoughtful and broad-minded player, he was intrigued by her pitch that she wasn't interested in making money so much as learning about life. She had faced a stretch of personal bad luck, and her reflections on the role of chance had led her to a giant of game theory, who pointed her to poker as the ultimate master class in learning to distinguish between what can be controlled and what can't. And she certainly brought something to the table, including a Ph.D. in psychology and an acclaimed and growing body of work on human behavior and how to hack it. So Seidel was in, and soon she was down the rabbit hole with him, into the wild, fiercely competitive, overwhelmingly masculine world of high-stakes Texas Hold'em, their initial end point the following year's World Series of Poker. But then something extraordinary happened. Under Seidel's guidance, Konnikova did have many epiphanies about life that derived from her new pursuit, including how to better read, not just her opponents but far more importantly herself; how to identify what tilted her into an emotional state that got in the way of good decisions; and how to get to a place where she could accept luck for what it was, and what it wasn't. But she also began to win. And win. In a little over a year, she began making earnest money from tournaments, ultimately totaling hundreds of thousands of dollars. She won a major title, got a sponsor, and got used to being on television, and to headlines like "How one writer's book deal turned her into a professional poker player." She even learned to like Las Vegas. But in the end, Maria Konnikova is a writer and student of human behavior, and ultimately the point was to render her incredible journey into a container for its invaluable lessons. The biggest bluff of all, she learned, is that skill is enough. Bad cards will come our way, but keeping our focus on how we play them and not on the outcome will keep us moving through many a dark patch, until the luck once again breaks our way.

How hard are you prepared to work to improve your No Limit Hold'em? The Education of a Modern Poker Player documents the efforts of a serious amateur as he pursues his ambition of rising through the stakes from NL10 (\$10 game) to NL100 (\$100 game) and beyond. John Billingham is an English maths professor, and a keen player of games. In the summer of 2009 he discovered online poker and was hooked. A year later he decided to trick a couple of impressionable young poker pros, Austrian Thomas Tiroch (TwiceT) and Romanian Emanuel Cinca

(EmanuelC16), into teaching him how to play poker on the promise of writing a book with them. Little did he know what he was letting himself in for. The Education of a Modern Poker Player is the product of JB's cunning plan, and documents his progress from being unable to beat NL10 to establishing himself on NL100. Over the course of this entertaining book, TT and Manu explain how to beat these small stakes games, aided and abetted by JB, and illustrate all the important concepts with real example hands. There is a particular focus on Fast Fold Games, such as Rush and Zoom, in which JB eventually became a specialist, and practical explanations of how to take advantage of weak players in this format. The Education of a Modern Poker Player includes: An extensive set of real example hands Practical advice on strategies to beat 6max No Limit Hold'em A basic strategy for Fixed Limit Five Card Draw Clear explanations of the Mathematics of No Limit Hold'em Specialist advice on Fast Fold Games (e.g. Rush and Zoom)

One of the ten greatest books written on poker, this must-have book should be in every player's library. If you're serious about winning, you'll realize that most of the profit comes from being able to read your opponents. Caro reveals the the secrets of interpreting tells-physical reactions that reveal information about a player's cards-such as shrugs, sighs, shaky hands, eye contact, and many more. Learn when opponents are bluffing, when they aren't and why-based solely on their mannerisms. Over 170 photos of players in action and play-by-play examples show the actual tells. These powerful ideas will give you the decisive edge.

In 2011, Grantland magazine gave novelist Coloson Whitehead \$10,000 to play at the World Series of Poker in Las Vegas. Whitehead brilliantly details his progress, both literal and existential, through the event's antes and turns, through its gritty moments of calculation, hope, and spectacle. -- back cover.

This book is like educational Sudoku for Poker Players. Perfect to brush up on the mental math of poker on the flight out to Las Vegas. The book starts by showing how to estimate your hand's value versus another. Then implied odds are worked on. Finally the idea of calculating your value versus an entire range of hands is taught. The book has hundreds of problems to practice on so that the mental math of poker becomes automatic and intuitive. Estimation techniques and shortcuts are taught so that you can do the right math at the table when you need it. The math is learned through repetition and this book has plenty of problems to practice on.

This poker workbook has one goal: to help you actually improve between sessions. By learning powerful concepts and drilling through exercises, your ability to calculate accurately and quickly at the tables improves. Your time at the tables shouldn't be spent trying to calculate pot odds of a call or the breakeven-% of your bluffs. Calculations like these should be automatic, giving you extra time and brainpower to find ways to optimize your edge during a hand. Now you can practice the math that underlies all aspects of your poker strategy. Drill through the technical side of your preflop playbook. And start putting a bigger gap between your winrate and the regs in your game. This workbook teaches you the formulas and lays out practice exercises for concepts like: Equity Range Building/Hand Reading Combos & Blockers Pot Odds Implied Odds Breakeven % & Auto-Profit Expected Value (EV) Open-Raising 3Betting & 4Betting Preflop All-Ins By learning these simple formulas and practicing them at your own pace, you'll find poker math getting far easier. You don't need an IQ of 175 to master poker math - you just need some guidance, some shortcuts, and some in-depth training. Complete just a few pages per day, and you'll see serious improvement in the next month. And the best news is that these concepts come into play in every single session, at every single level, and wherever you happen to play poker. So the examples in this book range from live cash games to online tournaments - without bogging you down with confusing variables that will never apply to the poker games you play. The Answer Key Based upon feedback from previous workbooks, there is an included answer key so you can double-check your answers at any point. There is a link on Page #246 so you can download the answer key OR use the online version that will get lifetime updates. This key also includes all of the range strands, making it easy to copy ranges from the workbook and paste them directly into your poker software. Is This Workbook For You? We all have to start somewhere, and no one is born with technical poker knowledge imprinted in their brain. So truthfully answer each of these: Can you look at a range and correctly estimate its %-form and number of combos? If not, then this book is for you. Do you know how often a player would fold if you 3bet or squeezed them? If not, this book is for you. Do you know how many combos of AQ a player can have on AQ4 when you hold AKs? If not, this book is for you. Do you know how much extra money you need to make when you have 15% equity and are getting 3:1 on a turn call? If not, then this book is for you. Do you know how often you can expect both the blinds to fold when you raise from the button? If not, this book is for you. Do you know how much equity AKs has against a range of QQ+/AK? If not, this book is for you. Are you 100% confident in your poker math skills yet? If not, then this book is for you. No more excuses. No more confusion when it comes to the core poker math. And no more reasons for skipping another study session. Pick up the Preflop & Math Poker Workbook and start seeing your strategy the right way. Good luck! The spiral design on the cover/back is purely decoration. Unfortunately, spiralbound printing is not an available option at this time.

The hazards of feeling lucky in gambling Why do so many gamblers risk it all when they know the odds of winning are against them? Why do they believe dice are "hot" in a winning streak? Why do we expect heads on a coin toss after several flips have turned up tails? What's Luck Got to Do with It? takes a lively and eye-opening look at the mathematics, history, and psychology of gambling to reveal the most widely held misconceptions about luck. It exposes the hazards of feeling lucky, and uses the mathematics of predictable outcomes to show when our chances of winning are actually good. Mathematician Joseph Mazur traces the history of gambling from the earliest known archaeological evidence of dice playing among Neolithic peoples to the first systematic mathematical studies of games of chance during the Renaissance, from government-administered lotteries to the glittering seductions of grand casinos, and on to the global economic crisis brought on by financiers' trillion-dollar bets. Using plenty of engaging anecdotes, Mazur explains the mathematics behind gambling—including the laws of probability, statistics, betting against expectations, and the law of large numbers—and describes the psychological and emotional factors that entice people to put their faith in winning that ever-elusive jackpot despite its mathematical improbability. As entertaining as it is informative, What's Luck Got to Do with It? demonstrates the pervasive nature of our belief in luck and the deceptive psychology of winning and losing. Some images inside the book are unavailable due to digital copyright restrictions.

Over the past two decades, gamblers have begun taking mathematics into account more seriously than ever before. While probability theory is the only rigorous theory modeling the uncertainty, even though in idealized conditions, numerical probabilities are viewed not only as mere mathematical information, but also as a decision-making criterion, especially in gambling. This book presents the mathematics underlying the major games of chance and provides a precise account of the odds associated with all gaming events. It begins by explaining in simple terms the meaning of the concept of probability for the layman and goes on to become an enlightening journey through the mathematics of chance, randomness and risk. It then continues with the basics of discrete probability (definitions, properties, theorems and calculus formulas), combinatorics and counting arguments for those interested in the supporting mathematics. These mathematic sections may be skipped by readers who do not have a minimal background in mathematics; these readers can skip directly to the Guide to Numerical Results to pick the odds and recommendations they need for the desired gaming situation. Doing so is possible due to the organization of that chapter, in which the results are listed at the end of each section, mostly in the form of tables. The chapter titled The Mathematics of Games of Chance presents these games not only as a good application field for probability theory, but also in terms of human actions where probability-based strategies can be tried to achieve favorable results. Through suggestive examples, the reader can see what are the experiments, events and probability fields in games of chance and how probability calculus works there. The main portion of this work is a collection of probability results for each type of game. Each game's section is packed with formulas and tables. Each section also contains a description of the game, a classification of the gaming events and the applicable probability calculations. The primary goal of this work is to allow the reader to quickly

find the odds for a specific gaming situation, in order to improve his or her betting/gaming decisions. Every type of gaming event is tabulated in a logical, consistent and comprehensive manner. The complete methodology and complete or partial calculations are shown to teach players how to calculate probability for any situation, for every stage of the game for any game. Here, readers can find the real odds, returned by precise mathematical formulas and not by partial simulations that most software uses. Collections of odds are presented, as well as strategic recommendations based on those odds, where necessary, for each type of gaming situation. The book contains much new and original material that has not been published previously and provides great coverage of probabilities for the following games of chance: Dice, Slots, Roulette, Baccarat, Blackjack, Texas Hold em Poker, Lottery and Sport Bets. Most of games of chance are predisposed to probability-based decisions. This is why the approach is not an exclusively statistical one (like many other titles published on this subject), but analytical: every gaming event is taken as an individual applied probability problem to solve. A special chapter defines the probability-based strategy and mathematically shows why such strategy is theoretically optimal."

One of the most daunting moments in a poker player's career occurs when he realizes his knowledge of how to play a specific hand well is incomplete without the additional understanding of how to play every other hand in his range well. This task would be impossible if a player had to actually think about every other hand in his range, but by understanding theoretical sound poker, he can quickly design balanced ranges using the proper bet-sizing while playing. Applications of No-Limit Hold 'em teaches theoretical sound poker, and thus the ability to create the bet-sizings and ranges which will beat the better players. The theory in this book is not designed to be complex or abstract, but rather it's intended to be applied immediately producing better overall results. Many confusing concepts such as overbetting, balancing multiple bet-sizing ranges, donk betting, and check-raising as the preflop raiser are crucial to a player's strategy despite few players implementing them or talking about them. And after reading this book, you should be able to not only conceptually understand these ideas, but also know how to begin incorporating them into your game, and thereby successfully compete against tough opponents.

Praise for the First Edition "Luck, Logic, and White Lies teaches readers of all backgrounds about the insight mathematical knowledge can bring and is highly recommended reading among avid game players, both to better understand the game itself and to improve one's skills." – Midwest Book Review

"The best book I've found for someone new to game math is Luck, Logic and White Lies by Jörg Bewersdorff. It introduces the reader to a vast mathematical literature, and does so in an enormously clear manner. . ." – Alfred Wallace, Musings, Ramblings, and Things Left Unsaid

"The aim is to introduce the mathematics that will allow analysis of the problem or game. This is done in gentle stages, from chapter to chapter, so as to reach as broad an audience as possible . . . Anyone who likes games and has a taste for analytical thinking will enjoy this book." – Peter Fillmore, CMS Notes

Luck, Logic, and White Lies: The Mathematics of Games, Second Edition considers a specific problem—generally a game or game fragment and introduces the related mathematical methods. It contains a section on the historical development of the theories of games of chance, and combinatorial and strategic games. This new edition features new and much refreshed chapters, including an all-new Part IV on the problem of how to measure skill in games. Readers are also introduced to new references and techniques developed since the previous edition. Features Provides a uniquely historical perspective on the mathematical underpinnings of a comprehensive list of games Suitable for a broad audience of differing mathematical levels. Anyone with a passion for games, game theory, and mathematics will enjoy this book, whether they be students, academics, or game enthusiasts Covers a wide selection of topics at a level that can be appreciated on a historical, recreational, and mathematical level. Jörg Bewersdorff (1958) studied mathematics from 1975 to 1982 at the University of Bonn and earned his PhD in 1985. In the same year, he started his career as game developer and mathematician. He served as the general manager of the subsidiaries of Gauselmann AG for more than two decades where he developed electronic gaming machines, automatic payment machines, and coin-operated Internet terminals. Dr. Bewersdorff has authored several books on Galois theory (translated in English and Korean), mathematical statistics, and object-oriented programming with JavaScript.

Many experiments have shown the human brain generally has very serious problems dealing with probability and chance. A greater understanding of probability can help develop the intuition necessary to approach risk with the ability to make more informed (and better) decisions. The first four chapters offer the standard content for an introductory probability course, albeit presented in a much different way and order. The chapters afterward include some discussion of different games, different "ideas" that relate to the law of large numbers, and many more mathematical topics not typically seen in such a book. The use of games is meant to make the book (and course) feel like fun! Since many of the early games discussed are casino games, the study of those games, along with an understanding of the material in later chapters, should remind you that gambling is a bad idea; you should think of placing bets in a casino as paying for entertainment. Winning can, obviously, be a fun reward, but should not ever be expected. Changes for the Second Edition: New chapter on Game Theory New chapter on Sports Mathematics The chapter on Blackjack, which was Chapter 4 in the first edition, appears later in the book. Reorganization has been done to improve the flow of topics and learning. New sections on Arkham Horror, Uno, and Scrabble have been added. Even more exercises were added! The goal for this textbook is to complement the inquiry-based learning movement. In my mind, concepts and ideas will stick with the reader more when they are motivated in an interesting way. Here, we use questions about various games (not just casino games) to motivate the mathematics, and I would say that the writing emphasizes a "just-in-time" mathematics approach. Topics are presented mathematically as questions about the games themselves are posed. Table of Contents Preface 1. Mathematics and Probability 2. Roulette and Craps: Expected Value 3. Counting: Poker Hands 4. More Dice: Counting and Combinations, and Statistics 5. Game Theory: Poker Bluffing and Other Games 6. Probability/Stochastic Matrices: Board Game Movement 7. Sports Mathematics: Probability Meets Athletics 8. Blackjack: Previous Methods Revisited 9. A Mix of Other Games 10. Betting Systems: Can You Beat the System? 11. Potpourri: Assorted Adventures in Probability Appendices Tables Answers and Selected Solutions Bibliography Biography

Dr. David G. Taylor is a professor of mathematics and an associate dean for academic affairs at Roanoke College in southwest Virginia. He attended Lebanon Valley College for his B.S. in computer science and mathematics and went to the University of Virginia for his Ph.D. While his graduate school focus was on studying infinite dimensional Lie algebras, he started studying the mathematics of various games in order to have a more undergraduate-friendly research agenda. Work done with two Roanoke College students, Heather Cook and Jonathan Marino, appears in this book! Currently he owns over 100 different board games and enjoys using probability in his decision-making while playing most of those games. In his spare time, he enjoys reading, cooking, coding, playing his board games, and spending time with his six-year-old dog Lilly.

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