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Nota di contenuto	A Probability and Statistics Companion; Contents; Preface; 1. Probability and Sample Spaces; Why Study Probability?; Probability; Sample Spaces; Some Properties of Probabilities; Finding Probabilities of Events; Conclusions; Explorations; 2. Permutations and Combinations: Choosing the Best Candidate; Acceptance Sampling; Permutations; Counting Principle; Permutations with Some Objects Alike; Permuting Only Some of the Objects; Combinations; General Addition Theorem and Applications; Conclusions; Explorations; 3. Conditional Probability; Introduction; Some Notation; Bayes' Theorem ConclusionsExplorations; 4. Geometric Probability; Conclusion; Explorations; 5. Random Variables and Discrete Probability Distributions-Uniform, Binomial, Hypergeometric, and Geometric Distributions; Introduction; Discrete Uniform Distribution; Mean and Variance of a Discrete Random Variable; Intervals, , and German Tanks; Sums; Binomial Probability Distribution; Mean and Variance of the Binomial Distribution; Sums; Hypergeometric Distribution; Other Properties of the Hypergeometric Distribution; Geometric Probability Distribution; Conclusions; Explorations; 6. Seven-Game Series in Sports IntroductionSeven-Game Series; Winning the First Game; How Long

Should the Series Last?; Conclusions; Explorations; 7. Waiting Time Problems; Waiting for the First Success; The Mythical Island; Waiting for the Second Success; Waiting for the rth Success; Mean of the Negative Binomial; Collecting Cereal Box Prizes; Heads Before Tails; Waiting for Patterns; Expected Waiting Time for HH; Expected Waiting Time for TH; An Unfair Game with a Fair Coin; Three Tosses; Who Pays for Lunch?; Expected Number of Lunches; Negative Hypergeometric Distribution Mean and Variance of the Negative HypergeometricNegative Binomial Approximation; The Meaning of the Mean; First Occurrences; Waiting Time for c Special Items to Occur; Estimating k; Conclusions; Explorations; 8. Continuous Probability Distributions: Sums, the Normal Distribution, and the Central Limit Theorem; Bivariate Random Variables; Uniform Random Variable; Sums; A Fact About Means; Normal Probability Distribution; Facts About Normal Curves; Bivariate Random Variables; Variance; Central Limit Theorem: Sums; Central Limit Theorem: Means; Central Limit Theorem
Expected Values and Bivariate Random VariablesMeans and Variances of Means; A Note on the Uniform Distribution; Conclusions; Explorations; 9. Statistical Inference I; Estimation; Confidence Intervals; Hypothesis Testing; and the Power of a Test; p-Value for a Test; Conclusions; Explorations; 10. Statistical Inference II: Continuous Probability Distributions II-Comparing Two Samples; The Chi-Squared Distribution; Statistical Inference on the Variance; Student t Distribution; Testing the Ratio of Variances: The F Distribution; Tests on Means from Two Samples; Conclusions; Explorations
11. Statistical Process Control

Sommario/riassunto

An accessible and engaging introduction to the study of probability and statistics Utilizing entertaining real-world examples, A Probability and Statistics Companion provides aunique, interesting, and accessible introduction to probability and statistics. This one-of-a-kind book delves into practical topics that are crucial in the analysis of sample surveys and experimentation. This handy book contains introductory explanations of the major topics in probability and statistics, including hypothesis testing and regression, while also delving into more advanced topics such as the anal