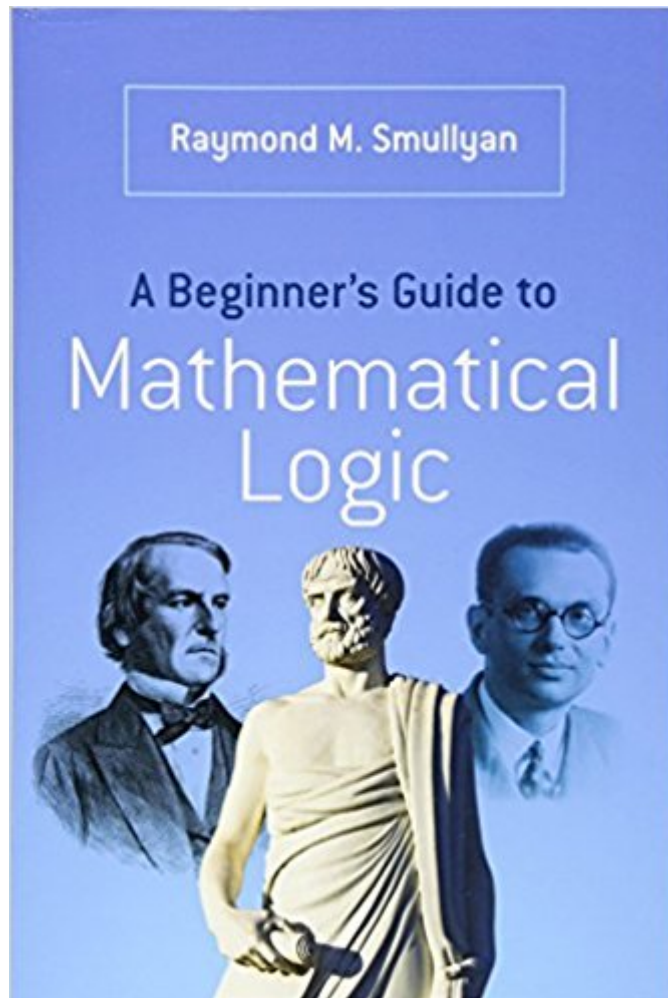




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# A Beginner's Guide To Mathematical Logic (Dover Books On Mathematics)



## Synopsis

Written by a creative master of mathematical logic, this introductory text combines stories of great philosophers, quotations, and riddles with the fundamentals of mathematical logic. Author Raymond Smullyan offers clear, incremental presentations of difficult logic concepts. He highlights each subject with inventive explanations and unique problems. Smullyan's accessible narrative provides memorable examples of concepts related to proofs, propositional logic and first-order logic, incompleteness theorems, and incompleteness proofs. Additional topics include undecidability, combinatoric logic, and recursion theory. Suitable for undergraduate and graduate courses, this book will also amuse and enlighten mathematically minded readers. 2014 edition.

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## Customer Reviews

Written by a creative master of mathematical logic, this introductory text combines stories of great philosophers, quotations, and riddles with the fundamentals of mathematical logic. Author Raymond Smullyan offers clear, incremental presentations of difficult logic concepts. He highlights each subject with inventive explanations and unique problems. Smullyan's accessible narrative provides memorable examples of concepts related to proofs, propositional logic and first-order logic, incompleteness theorems, and incompleteness proofs. Additional topics include undecidability, combinatoric logic, and recursion theory. Suitable for undergraduate and graduate courses, this book will also amuse and enlighten mathematically minded readers. Dover (2014) original publication. See every Dover book in print at [www.doverpublications.com](http://www.doverpublications.com)

Raymond Smullyan received his PhD from Princeton University and taught at Dartmouth, Princeton,

Indiana University, and New York's Lehman College. Best known for his mathematical and creative logic puzzles and games, he was also a concert pianist and a magician. He wrote over a dozen books of logic puzzles and texts on mathematical logic. • Raymond Smullyan: The Merry Prankster Raymond Smullyan (1919–2017), mathematician, logician, magician, creator of extraordinary puzzles, philosopher, pianist, and man of many parts. The first Dover book by Raymond Smullyan was First-Order Logic (1995). Recent years have brought a number of his magical books of logic and math puzzles: The Lady or the Tiger (2009); Satan, Cantor and Infinity (2009); an original, never-before-published collection, King Arthur in Search of His Dog and Other Curious Puzzles (2010); and Set Theory and the Continuum Problem (with Melvin Fitting, also reprinted by Dover in 2010). More will be coming in subsequent years. In the Author's Own Words: "Recently, someone asked me if I believed in astrology. He seemed somewhat puzzled when I explained that the reason I don't is that I'm a Gemini." "Some people are always critical of vague statements. I tend rather to be critical of precise statements: they are the only ones which can correctly be labeled 'wrong.'" • Raymond Smullyan

I should begin by noting that I've been a fan of Raymond Smullyan's books for many years now and have bought and enjoyed each volume. Although often described as "puzzle" books (which they are), they are also much more than that as Professor Smullyan uses his puzzles, all of which are normally woven into well-told stories and tales, not only to entertain, but also to teach various aspects of logic. I've found all the books to be (very) interesting reads, challenging, and amazingly effective at elevating one's understanding of some often daunting matters. As an example, one of his books brings one along to the point of actually understanding, in much more than just a "pop-science" way, some of the complexities and implications of Kurt Godel's work--quite an accomplishment. As a result, when I saw that Smullyan had written a more formal guide to mathematical logic, I quickly availed myself of the opportunity of buying it and digging in. Unfortunately, I became somewhat frustrated for two separate but related reasons, one of which was due simply to having purchased the Kindle edition. The first difficulty is due to a quirk of mine, but one I believe may be shared by others. Often in academic texts about math or the hard sciences problems or exercises are given at the end of chapters which allow one to practice the topics covered in that particular chapter. Most teachers of math generally agree that having the students do a number of such problems is very useful, maybe even essential, to allowing students to gain mastery of the topic in question. I agree with this general attitude or belief. I also believe, however, that doing the exercises should not be essential before moving on to the next chapter. In particular,

a number of texts make it necessary to complete some of the final exercises because the answers provide essential information required to be able to understand the following chapters. This is a tendency that I dislike and find both unnecessary and manipulative, even if not intended to be so by the author. Well, Smullyan's text interposes every few paragraphs or pages within each chapter puzzles, similar to those in his more puzzle-oriented books, that one must complete before one can understand or appreciate the paragraphs that follow. This tendency, even if one is not bothered by such (as I am, at least in more formal, not puzzle, books) slows down the reading of the text, and breaks the flow of study a bit too much for my liking. The other difficulty I had with the text is due to having the Kindle version. In a normal book version, as one dealt with each of the puzzles mentioned above, one could flip to the end of each chapter to check one's solution with that given by Smullyan, or, by reading the first part of the answer, get a useful hint to how best to solve the puzzle. It would also be easy to flip back and forth readily, should there be the desire or need to do so. With the Kindle, paging forward a large number of screens and then paging back, particularly if one had to do that a number of times for each puzzle/teaching point, becomes definitely burdensome and frustrating. If the desire to keep the puzzles in the text rather than simply explain the points being made by them is strong enough, one could put the answers immediately following each respective puzzle question, thus eliminating the constant flipping back and forth. This work-around, however, would require presumably a good deal of time and money changing the format from the printed version to the e-book version, so I understand why this will probably not happen. Anyway, I remain a fan of Smullyan, and will continue to purchase his books (the solid ones, not any future e-books), but it was frustrating that this one, which I really wanted to learn from, was so difficult and tiring to deal with.

I am currently a good portion of the way through this book. It's very fun to read, and the author's writing style is inspiring and playful. There are lots of good exercises in each chapter, but I find myself constantly flipping back and forth to and from the answers section to keep moving on. A good amount of the information required to solve the problems, terminology, ideas etc is not revealed until you skip ahead to read the answer. I love being mentally challenged but it's demoralizing to try at a riddle and then realize that the answer required a concept or a set of terms that was withheld. Of course, the author is not only famous as a mathematician but as a writer of puzzles and riddle books, so I guess "trick" questions are in his nature. I don't get the feeling at all that he's trying to prove how clever he is, just that he may be a little out of touch with the process of coming across certain types of problems for the very first time. Still, once you do understand the

answers they are generally clear and well written. I think this book is about as friendly as a book on set theory and logic can get to someone who is interested in mathematical concepts but not enrolled in an undergrad program like myself. The book itself has some typos ( okay, a lot of typos ) but they don't distract from the really good information that's presented. Overall, four stars. A good book for self study.

An excellent introductory book on logic, advances on issues that should be studied more deeply and well explains the fundamental concepts.

Presents important ideas in a simple way. Thanks Mr. Smullyan

This is NOT a book for Beginner's .... and, if I could return it, I would.

A first rate book on mathematical logic; good to review the subject or as a reference. Includes topics not referenced in text books we used college. Kurt Godel's work is covered as well as types of logical notation not usually found in older books on the subject. Some links to current findings and research too. Will become a classic alongside DeLong's "Profile of Mathematical Logic".

This is another absolutely incredible masterpiece from an absolutely incredible man! Raymond Smullyan is unique unto himself and a one-man show! Every book he produces is a gem. He entertains while teaching and teaches while entertaining. And he effortlessly - modulo intense hard work on the part of the reader - moves from fundamental concepts in logic up to the dizzy heights of mathematical logic as it stands today. Dr. Smullyan is a remarkable man on all levels and a real delight! It is my sincere hope that I will stumble upon him during one of my many sojourns out of this mortal coil that we call ordinary life!

The master has written the best mathematical logic book ever!! He actually teaches rather than proves how smart he is!! The solutions were very important for understanding the material! I hope he continues to take us on his wonderful Journey!! Thank you Professor Smullyan !! Gale Gray, a most grateful student!!!

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