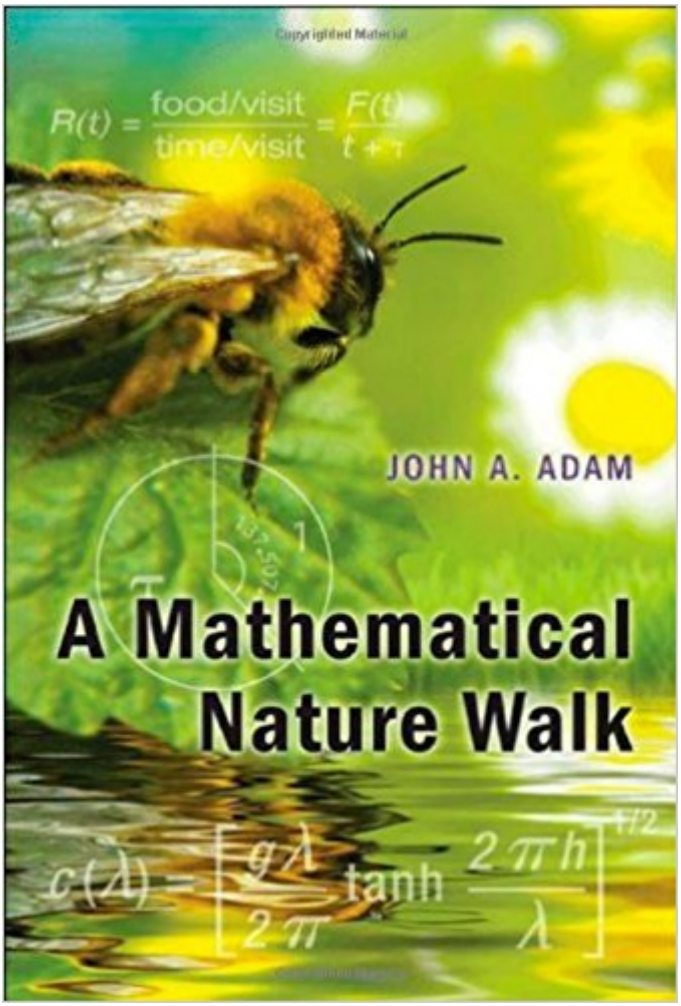
A Mathematical Nature Walk



Synopsis

How heavy is that cloud? Why can you see farther in rain than in fog? Why are the droplets on that spider web spaced apart so evenly? If you have ever asked questions like these while outdoors, and wondered how you might figure out the answers, this is a book for you. An entertaining and informative collection of fascinating puzzles from the natural world around us, A Mathematical Nature Walk will delight anyone who loves nature or math or both. John Adam presents ninety-six questions about many common natural phenomena--and a few uncommon ones--and then shows how to answer them using mostly basic mathematics. Can you weigh a pumpkin just by carefully looking at it? Why can you see farther in rain than in fog? What causes the variations in the colors of butterfly wings, bird feathers, and oil slicks? And why are large haystacks prone to spontaneous combustion? These are just a few of the questions you'll find inside. Many of the problems are illustrated with photos and drawings, and the book also has answers, a glossary of terms, and a list of some of the patterns found in nature. About a quarter of the questions can be answered with arithmetic, and many of the rest require only precalculus. But regardless of math background, readers will learn from the informal descriptions of the problems and gain a new appreciation of the beauty of nature and the mathematics that lies behind it.

Book Information

Paperback: 264 pages
Publisher: Princeton University Press; Reprint edition (October 2, 2011)
Language: English
ISBN-10: 0691152659
ISBN-13: 978-0691152653
Product Dimensions: 6.4 x 0.7 x 9.2 inches
Shipping Weight: 1 pounds (View shipping rates and policies)
Average Customer Review: 3.6 out of 5 starsÂ Â See all reviewsÂ (10 customer reviews)
Best Sellers Rank: #1,232,096 in Books (See Top 100 in Books) #53 inÂ Books > Science & Math > Mathematics > Applied > Biomathematics #396 inÂ Books > Humor & Entertainment > Puzzles & Games > Math Games #3695 inÂ Books > Textbooks > Science & Mathematics > Biology & Life Sciences > Biology

Customer Reviews

I have read a number of books of this general sort and I would classify this one, without hesitation, as one of the better ones. The book's format is a bit different. Each new section begins with a

question, e.g., "How far away is that cloud?", "How are star magnitudes measured", etc. Then what follows may be an experience that the author has had during one of his nature walks, or simply a written description of the phenomenon. Then the mathematical analysis/modelling begins in an effort to arrive at a plausible (but not necessarily rigorous) answer to the original query. The book contains 85 such questions that are dealt with in this way and these are sorted into twelve chapters, each with a different theme, e.g., "In the Playground", "In the Sky", etc. Most of the topics are well explained and the mathematical details are generally easy to follow and/or to verify for oneself; however, in a few cases, some formulas are presented as if by magic with little or no explanation - possibly leaving the reader (certainly me) occasionally perplexed. Also, I found a few (but not that many) misprints which were likely due to imperfect editing. The text is well-illustrated with plenty of helpful diagrams (a few of which have some crucial information accidentally left out, leaving the reader to fill it in). The colour plates and black and white photographs were also useful.The author, a theoretical astrophysicist by training, is certainly well-qualified to write such a book. His writing style is friendly, generally clear and actually quite entertaining - even occasionally witty and humorous - rather unusual for books of this type. A review on the book's back cover calls the book "a true gem of popular scientific writing".

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