How to Fold It: The Mathematics of Linkages, Origami, and Polyhedra

Joseph O'Rourke
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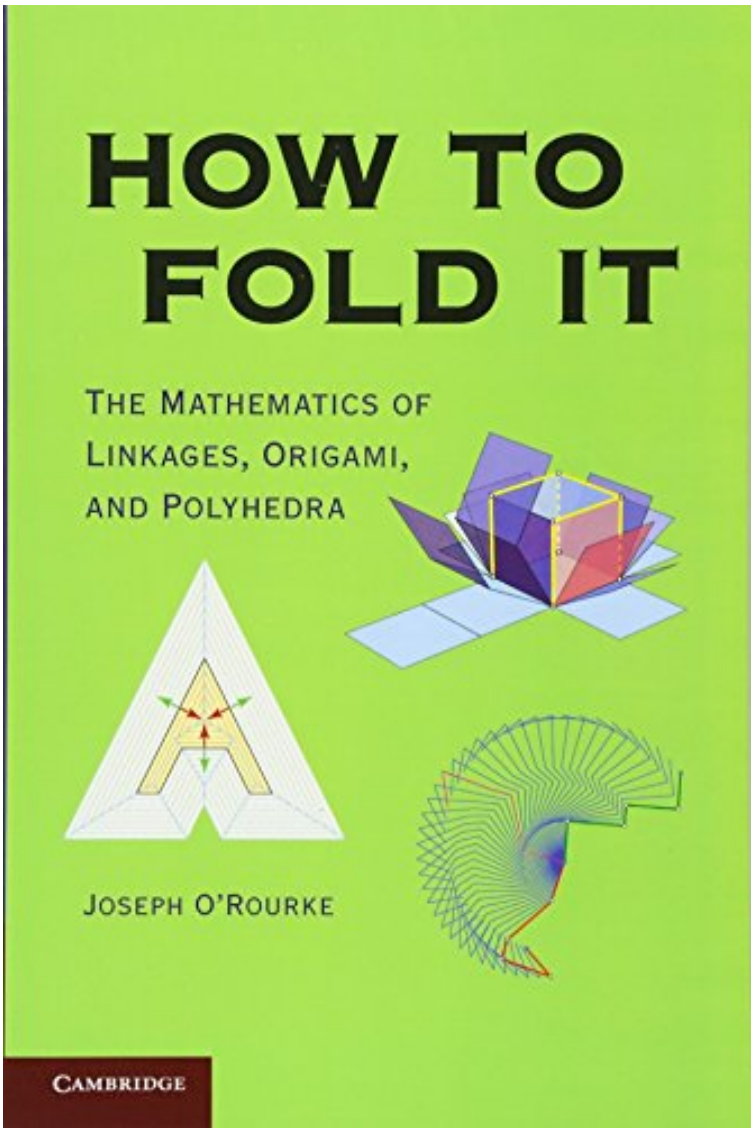

#445914 in Books O Rourke Joseph 2011-04-25Original language:EnglishPDF # 1 8.98 x .39 x 5.98l, .75 #File Name: 0521145473190 pagesHow to Fold It The Mathematics of Linkages Origami and Polyhedra | File size: 56.Mb

Joseph O'Rourke : How to Fold It: The Mathematics of Linkages, Origami, and Polyhedra before purchasing it in order to gage whether or not it would be worth my time, and all praised How to Fold It: The Mathematics of Linkages, Origami, and Polyhedra:

9 of 9 people found the following review helpful. Great book on linkages, origami, and polyhedraBy Ed Pegg JrThe

random pages from "Click to Look Inside" were good enough for me to order this book, and I was not disappointed. Good illustrations, good math, and good writing on every page.For example, on page 138, he asks for the polyhedra other than a cube which can be folded from a Latin cross. He shows 7 tetrahedra, 3 pentahedra, 4 hexahedra, and 6 octahedra. He explains that this was unknown territory that he ventured into with 5 college students, and they made these discoveries.Most of the book concerns older problems, such as linkages and origami, but there was plenty of newer material, such as robot arms and protein folding.The supporting website is howtofoldit.org, which has some animations. Excellent book. Recommended.2 of 2 people found the following review helpful. A gift of a bookBy readerO'Rourke is clearly one of those exceptionally gifted teachers who enjoys making complex ideas intelligible and exploring his subject matter with the reader. This is a fascinating and beautifully executed introduction to the mathematics of various folding structurs - O'Rourke provides a rigorous and stimulating explanation accessible to the mathematically interested lay reader.1 of 1 people found the following review helpful. I liked it.By KyneI found this to be an interesting read. The illustrations are good, and I found the writing clear and easy to understand.A good book, I would recommend it.

What do proteins and pop-up cards have in common? How is opening a grocery bag different from opening a gift box? How can you cut out the letters for a whole word all at once with one straight scissors cut? How many ways are there to flatten a cube? You can answer these questions and more through the mathematics of folding and unfolding. From this book, you will discover new and old mathematical theorems by folding paper and find out how to reason toward proofs. With the help of 200 color figures, author Joseph O'Rourke explains these fascinating folding problems starting from high school algebra and geometry and introducing more advanced concepts in tangible contexts as they arise. He shows how variations on these basic problems lead directly to the frontiers of current mathematical research and offers ten accessible unsolved problems for the enterprising reader. Before tackling these, you can test your skills on fifty exercises with complete solutions. The book's Web site, http://www.howtofoldit.org, has dynamic animations of many of the foldings and downloadable templates for readers to fold or cut out.

"The major theorems presented are remarkable - results that may surprise the reader include the fact that, with the right folds, any shape or collection of shapes (even ones with holes in) that is composed of straight lines may be cut out from a sheet of paper with just a single cut." Martin Smith, London Mathematical Society Newsletter"Readers learn firsthand how the right way of looking at the right question potentially launches new fields of mathematics." D.V. Feldman, Choice Magazine"... a great book for someone who wants to learn about the mathematics behind origami without being overwhelmed by the mathematics itself. This is a great book for a high school or undergraduate student to get introduced to the open problems in computational origami." Brittany Terese Fasy and David L. Millman, SIGACT NewsAbout the AuthorJoseph O'Rourke is Professor and Chair of the Computer Science Department, a Professor of Mathematics, and Director of Arts and Technology at Smith College. His research is in computational geometry, developing algorithms for geometric computations. He has won several awards, including a Guggenheim Fellowship in 1987 and the NSF Director's Award for Distinguished Teaching Scholars in 2001. He has published more than 145 papers in journals and conference proceedings, more than 30 of which were coauthored with undergraduates. He has taught folding and unfolding to students in grade school, middle school, high school, college and graduate school, and to teachers - of grade school, middle school, and high school - professors, and researchers. This is his sixth book.