1. Record Nr. UNINA9910458060203321 Autore O'Rourke Joseph Titolo How to fold it: the mathematics of linkages, origami, and polyhedra // Joseph O'Rourke [[electronic resource]] Cambridge: ,: Cambridge University Press, , 2011 Pubbl/distr/stampa 1-107-21769-5 **ISBN** 1-139-23486-2 1-283-29846-5 1-139-12295-9 9786613298461 0-511-97502-3 1-139-11721-1 1-139-12787-X 1-139-11285-6 1-139-11504-9 Descrizione fisica 1 online resource (xii, 177 pages) : digital, PDF file(s) Disciplina 516.3/5 Soggetti Liaison theory (Mathematics) Origami - Mathematics Polyhedra Protein folding Lingua di pubblicazione Inglese **Formato** Materiale a stampa Livello bibliografico Monografia Note generali Title from publisher's bibliographic system (viewed on 05 Oct 2015). Nota di contenuto Machine generated contents note: Part I. Linkages: 1. Robot arms; 2. Straight-line linkages and the pantograph; 3. Protein folding and popup cards; Part II. Origami: 4. Flat vertex folds; 5. Fold and one-cut; 6. The shopping bag theorem; Part III. Polyhedra: 7. Durer's problem: edge unfolding; 8. Unfolding orthogonal polyhedra; 9. Folding polygons to convex polyhedra; 10. Further reading; 11. Glossary; 12. Answers to exercises: 13. Permissions and acknowledgments. What do proteins and pop-up cards have in common? How is opening a Sommario/riassunto 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? With the help of 200 colour 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 website, http://www.howtofoldit.org, has dynamic animations of many of the foldings and downloadable templates for readers to fold or cut out.