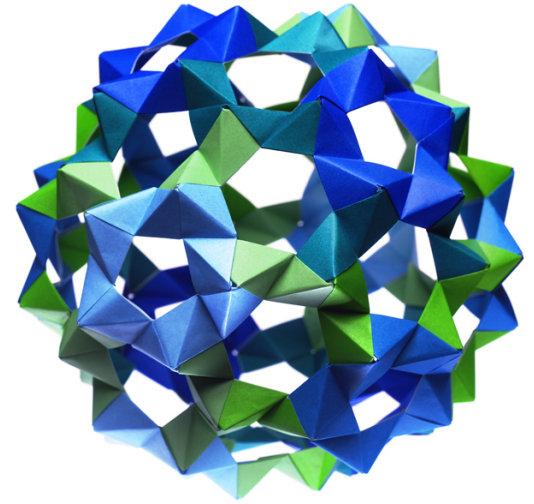


TRANSFORMING GEOMETRY & BUILDING SPATIAL REASONING VIA MODULAR ORIGAMI RESOURCES

Modular origami provides a rich environment for engaging students in three-dimensional exploration and model building. Folding individual units provides opportunities for introducing or reviewing geometric concepts and vocabulary. Assembling them involves the development of spatial reasoning, hands on learning about symmetry, and understanding of right vs. left-handedness. The results provide aesthetically pleasing and affordable models for students to use in furthering their studies of polyhedra and three-dimensional relationships.



Print Resources-Mathematical/Modular Origami

- Arnstein, Bennett & Gurkewitz, Rona. *3-D Geometric Origami, Modular Polyhedra*. Dover Publications; New York, 1995.
- Arnstein, Bennett & Gurkewitz, Rona. *Multimodular Origami, Polyhedra*. Dover Publications; New York, 2002.
- Arnstein, Bennett, Gurkewitz, Rona & Simon, Lewis. *Modular Origami Polyhedra*. Dover Publications; New York, 1999.
- Brill, David. *Brilliant Origami*. Japan Publications, Inc.; Tokyo, 1996.
- Fuse, Tomoko. *Unit Origami, Multidimensional Transformations*. Japan Publications, Inc.; Tokyo, 1990.
- Fuse, Tomoko. *Joyful Origami Boxes*. Japan Publications Trading Company; Tokyo, 1995.
- Fuse, Tomoko. *Fabulous Origami Boxes*. Japan Publications Trading Company; Tokyo, 1998.
- Fuse, Tomoko. *Origami Quilts*. Japan Publications, Inc.; Tokyo, 2001.
- Hull, Thomas, ed. *Origami 3: Third International Meeting of Origami Science, Mathematics*, A.K. Peters Ltd.; Natick, MA, 2002.
- Hull, Thomas. *Project Origami*, A.K. Peters Ltd.; Natick, MA, 2006.
- Kasahara, Kunihiko. *Amazing Origami*. Sterling Publication Co., Inc.; New York, 2001.
- Kasahara, Kunihiko. *The Art and Wonder of Origami*. Quarry Books; Gloucester, MA, 2005.
- Kasahara, Kunihiko & Takahama, Toshie. *Origami for the Connoisseur*. Japan Publications, Inc.; Tokyo, 1987.
- Kawamura, Miyuki. *Polyhedron Origami for Beginners*. Japan Publications; Inc., Tokyo, 2002.
- Lang, Robert *Origami Design Secrets*. A.K. Peters Ltd.; Natick, MA, 2004.

Mitchell, David. *Mathematical Origami*. Tarquin Publications; Cambridge, 1997.

Montroll , John. *A Constellation of Origami Polyhedra*. Dover Publications; New York, 2004.

Montroll , John. *A Plethora of Polyhedra in Origami*. Dover Publications; New York, 2002.

Petty, David. *Origami Wreaths and Rings*. Zenagraf; Ann Arbor, 1998.

Tubis, Arnold and Crystal Mills. *Unfolding Mathematics with Origami Boxes*. Key Curriculum Press; Emeryville, CA, 2006.

Web Resources-Modular Origami

Origami Mathematics

<http://origametry.net/>

Tom Hull, associate professor at Western New England University, has an extensive site for study of the connections between mathematics and origami including notes for his class in combinatorial geometry. Learn to construct everything from buckyballs to tori using Tom's "PhiZZ unit"!

Robert J. Lang Origami

<http://www.langorigami.com/>

Robert Lang, retired physicist and engineer, now spends his time as a full time origami artist. His site is organized thematically into art and science sections and in conjunction with Hull's site comprises the most comprehensive resource for studying origami within a mathematical context.

Jim Plank's Origami Page

<http://www.cs.utk.edu/~plank/plank/pics/origami/origami.html>

Jim Plank, associate professor at the University of Tennessee, has an excellent gallery of modular constructions mostly from his "penultimate module", including a compound of five tetrahedrons.

David Mitchells' Origami Heaven

<http://www.origamiheaven.com/>

David Mitchell includes his own designs and sculptures as well as one-piece paperfolds, novelties, flexagons and puzzles. He also publishes Synergy, a periodical devoted to modular origami design.

Gerald & Paula: Origami

<http://www.orihouse.com/>

This husband & wife team has compiled a mix of figurative and geometric models, many with instructions. They also have a section on "knotology", creating polyhedra by folding strips of paper.

Origami from Mathworld

<http://mathworld.wolfram.com/Origami.html>

A nice overview of the topic, with numerous references, both in print and on the web.

Origami & Math

<http://www.paperfolding.com/math/>

Part of Eric Anderson's site focused on the connections of math and origami.

Erik Demaine's Papers and Folding & Unfolding

<http://theory.lcs.mit.edu/~edemaine/papers/>

<http://theory.lcs.mit.edu/~edemaine/folding/>

Erik Demaine is an assistant professor of computer science at MIT, a job he landed at age 20, and has done impressive work in computational geometry. Important references if you want to delve deeply.