



Joy of Paper Folding

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by **Farica Erwin**



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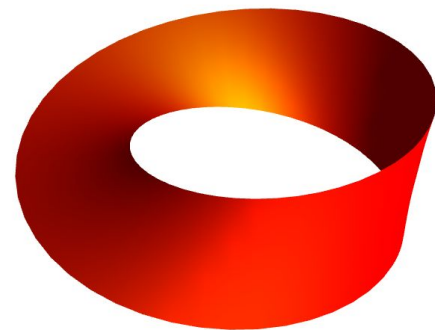


Möbius Shorts



Möbius Strips vs. Möbius Shorts

- ▶ Variation attributed to Gourmalin
- ▶ Non-orientable surfaces
- ▶ One sided, one edge



By Gelada from Wikimedia Commons

Let's explore what happens when we cut them in half

“

Origami, the ancient art of paper folding, has applications in the modern-day classroom for teaching geometry, thinking skills, fractions, problem solving, and fun science.

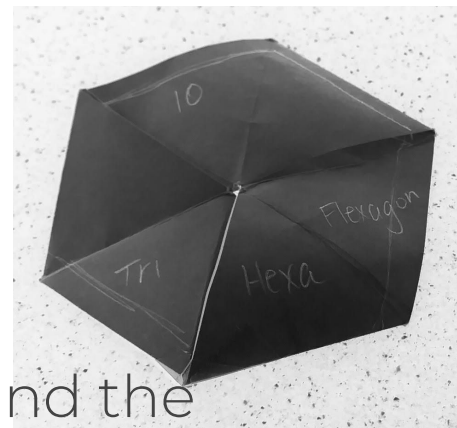
~ [Ainissa Ramirez](#) with [Edutopia](#)
[@ainissaramirez](#)

Flexagons



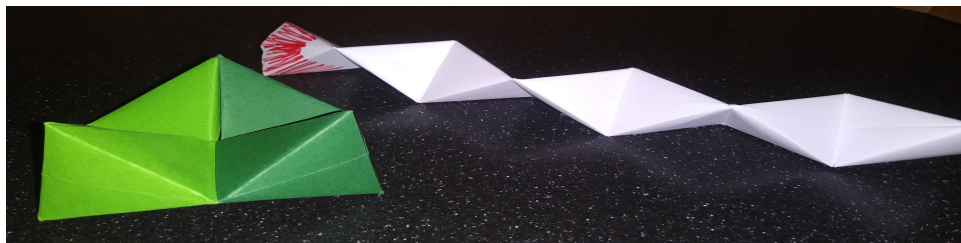
Planar Flexagons

- ▶ Discovery by Arthur H Stone
- ▶ Named for how many faces show and the shape of the flexagon
- ▶ Planar mobius strip (trihexaflexagon)
- ▶ Trihexaflexagon [template](#) & [without](#)
- ▶ Hexahexaflexagon [template](#) & [without](#)



Nonplanar Flexagons (Kaleidocycles)

- ▶ Orientable (we are making a triangular torus)
- ▶ Flexible polyhedron
- ▶ Made of 6 tetragonal disphenoids
- ▶ [Make from a template](#)
- ▶ [Make an origami nonplanar flexagon](#)

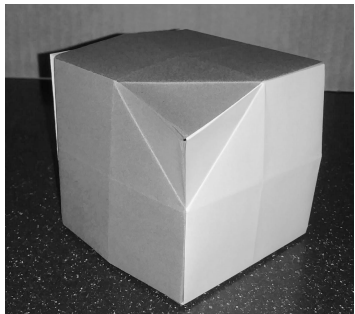
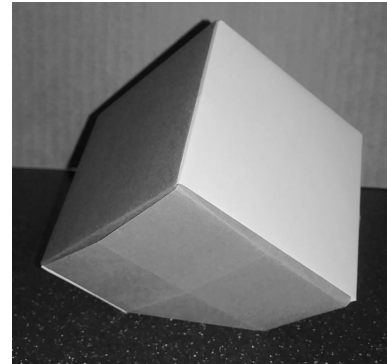


Modular Origami



Columbus Cubes

- ▶ Variation by David Mitchell
- ▶ Quick, beginner activity for students
- ▶ [Video directions](#)
- ▶ [Written directions](#)



Stellated Polyhedra

Follow Euler's characteristics for polyhedra
Made from Sonobe Units (parallelograms)

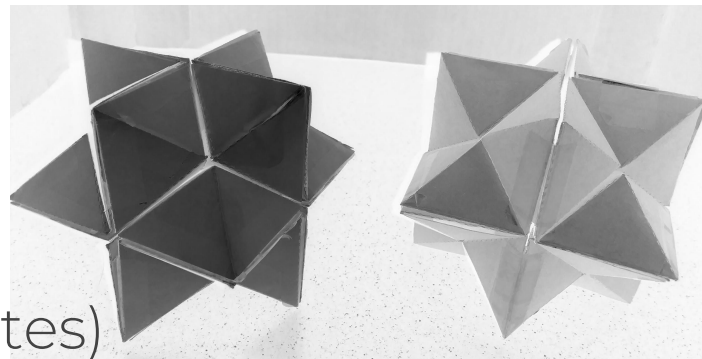


Polyhedra	Sonobe	Faces	Vertices	Edges
Triakis tetrahedron	6	12	8	18
Triakis octahedron	12	24	14	36
Triakis icosahedron	30	60	32	90

▶ [Try on your own](#)

Stellated Rhombic Dodecahedron

- ▶ Space-filling polyhedron (tessellates)
- ▶ 48 faces, 26 vertices, 72 edges
- ▶ Face-transitive, Edge-transitive, Vertex-transitive (move from one to the other with a translation, rotation, or reflection)
- ▶ Cube form has same volume as hollow inside
- ▶ [Learn how to make one](#)



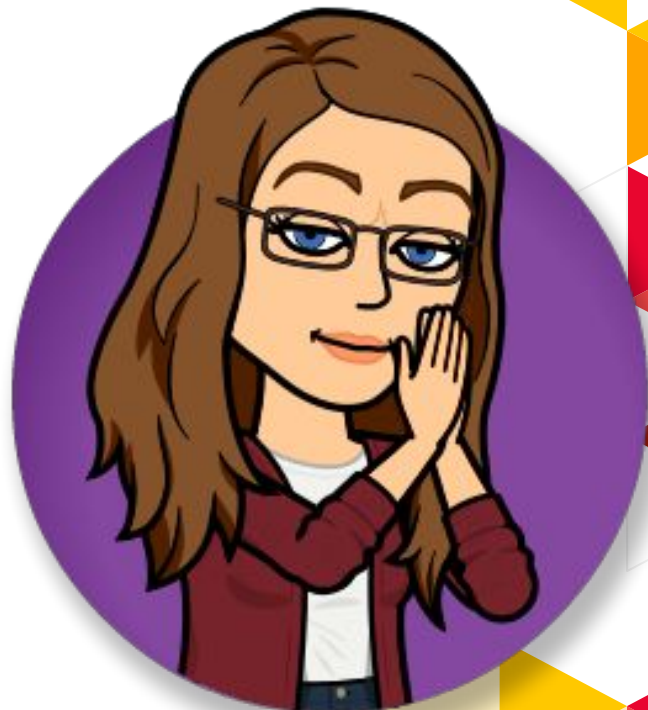


Thanks!

Any questions?

You can find me on

- ◀ Twitter [@Nerd_QED](#)
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Credits

Special thanks to all the people who made and released these awesome resources for free:

- ◀ Presentation template by [SlidesCarnival](#)
 - ◀ [Bitmoji](#) app
- 