



Math in Art, Technology, and History

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Seattle, WA

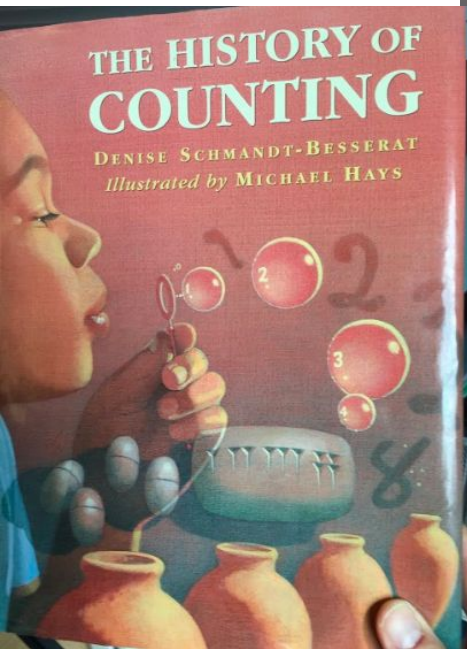
NCTM 2017

What is M.A.T.H. ?

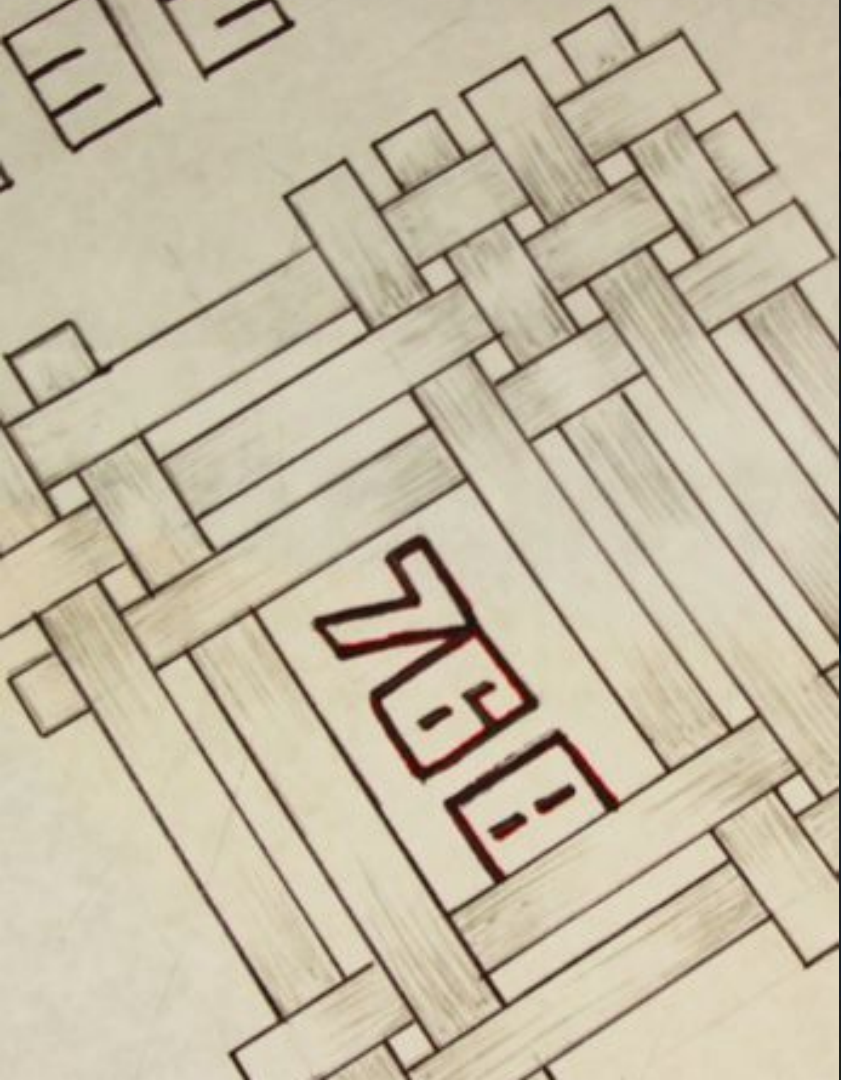
Think of all the fun things
you've always wanted to
teach, but couldn't.

First Unit: Introductory Presentations

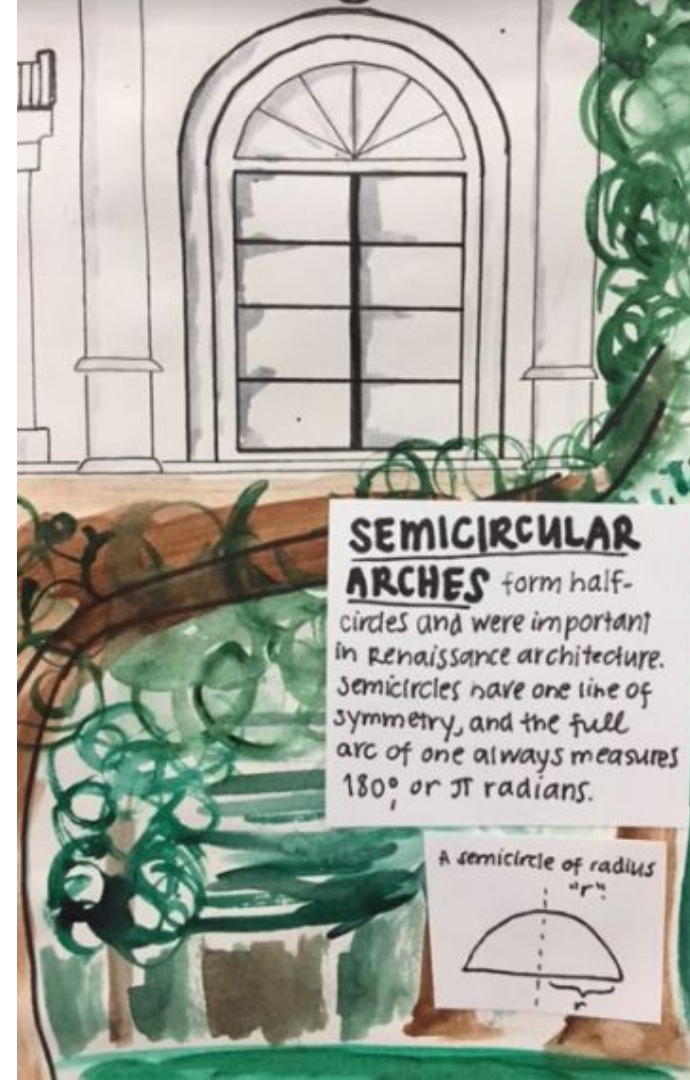
Numbers And Counting





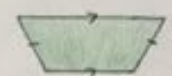


Architecture





VOCABULARY



Each voussoir is a trapezoid with 2 parallel sides and 2 congruent sides.

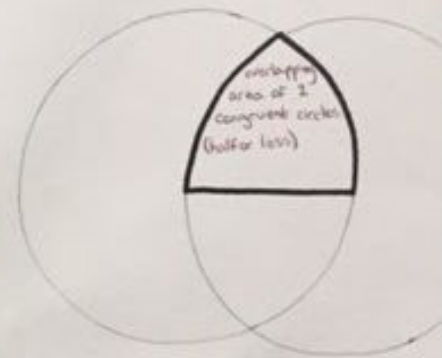


Gravity pushes down. The voussoirs push out. The arch pushes away.

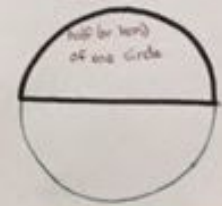
FORCES

TYPES OF ARCHES

Two-Centered Arch

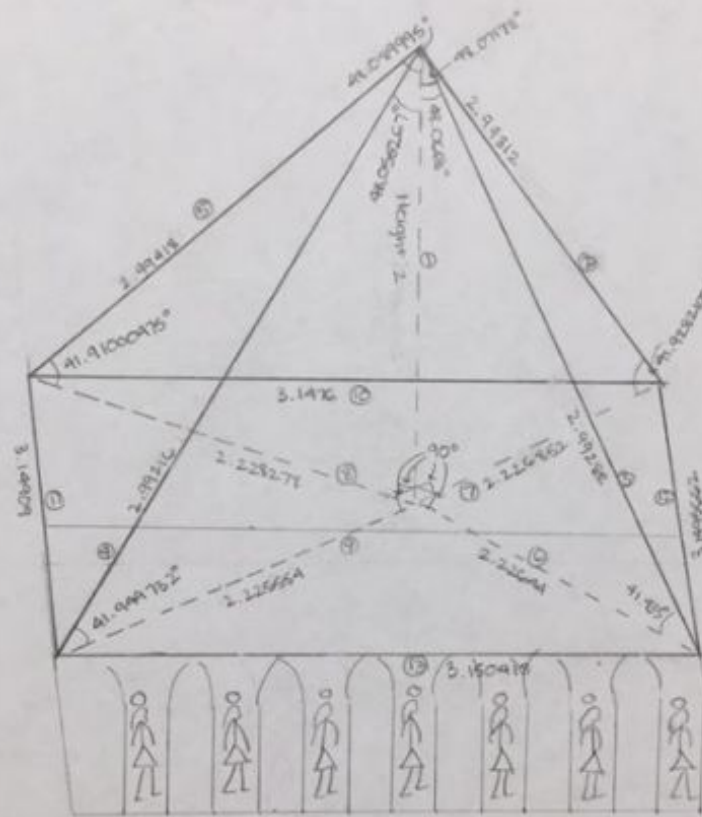


One-Centered Arch



SYMMETRY

- each arch is symmetrical
- due to forces pushing outward, being symmetrical and congruent arches in a row can make a structure stable.



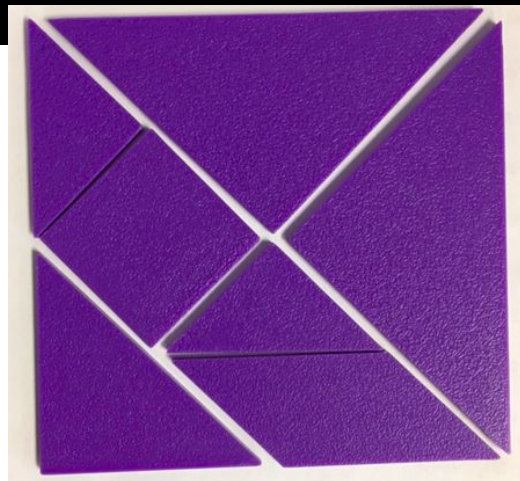
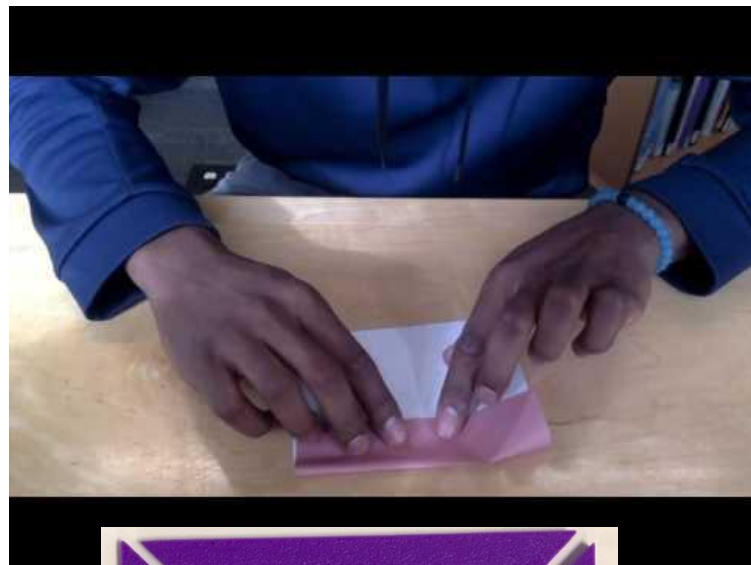
the great pyramid was man-made without the aid of modern-day machines so it was meant to be symmetrical but without modern-day machines the lengths and angles exactly the same so my structure is built in the same and way symmetrical dimensions

www.Bandicam.com

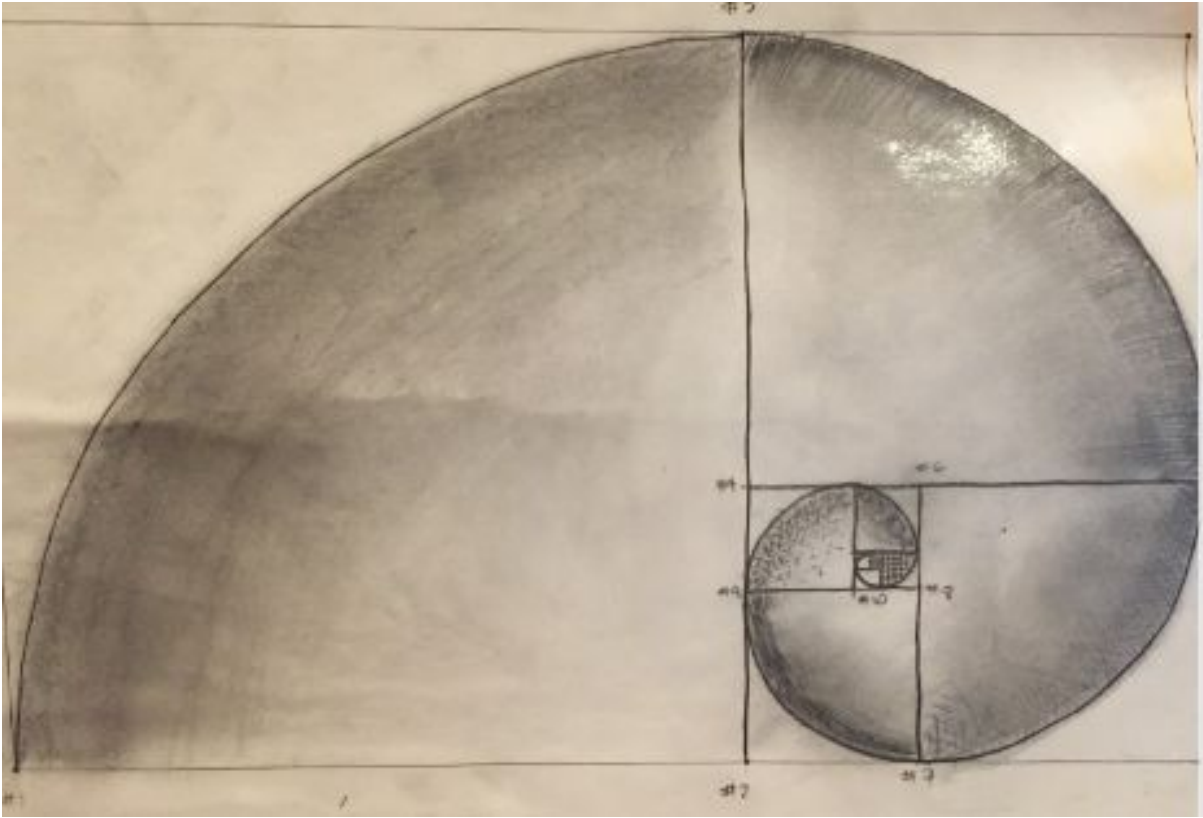


Origami



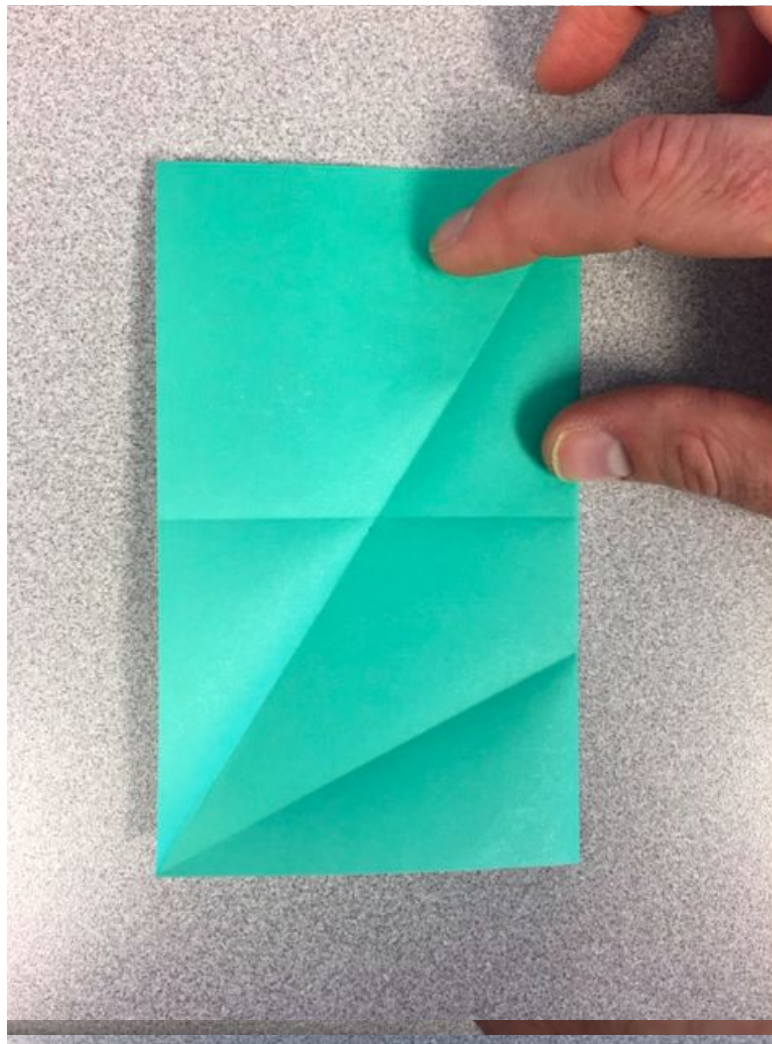


The Golden Ratio





How to Make a Golden Rectangle.



Math And Music

Music and Math/Science/Technology

- What makes some music pleasing to hear more than others? Zach/Andrew
- What are the best type of acoustics? Why does this architecture work better than others? Reabody
- What is analog music? Digital music? How is techno music made? Colton
- What is the relationship between sounds and notes?
- How do soundwaves work? Matt
- How does that thing work where you whisper in one end of a dish and another person in the area can hear you? (parabolic) Josh
- What is the makeup of sound? (pitch (frequency), loudness (amplitude), and quality (timbre) function)?
- How are computers used to compose or arrange music? Dorsa
- How does echolocation (bats) work? Scott
- What type of sounds do animals (whales, dolphins) use to communicate? How does it work?
- What computer programs allow one to make music?
- How does a tuner work?
- ? The Shephard Scale - Liz
- ?

Music and History

- How is music different in other cultures? MS Howell
- What musicians/mathematicians are pioneers in advancing music? (John Fourier, Pythagoras)
- What are some of the ancient instruments used before our modern ones?
- What was music in older cultures like? How have things changed? Sawyer





Scripts Browser

+ CREATE A NEW SCRIPT



Search your scripts



Filter the Scripts

SHOW DELETED SCRIPTS

Owner

File Type

Sort By



Scripts (5)

curriculum23.py

Last modified: yesterday

curriculum.py

Last modified: yesterday

Possibilities.py

Last modified: yesterday

curriculum2.py

Last modified: yesterday

rock opera.py

Last modified: 2 weeks ago

Digital Audio Workstation



EFFECTS

00:00 00:05 00:10 00:15



{ } Code Editor



Run >

rock opera.py

curriculum2.py

Possibilities.py

curriculum23.py

```
1 from earsketch import *
2
3 init()
4 setTempo(120)
5
6 # Add Sounds
7 fitMedia(RD_UK_HOUSE_MAINBEAT_8,1,1,9)
8 fitMedia(RD_POP_PADCHORD_2,2,1,9)
9
10 # Fills
11 fillA = "0---0-0-00--0000"
12 fillB = "0---0---0---0-0-"
13 fillC = "--000-00-00-0-00"
14 makeBeat(OS_SNARE03, 3, 4, fillA)
```

Running script...

Script ran successfully.

Curriculum

Search

Welcome

> Unit 1: Fundamentals

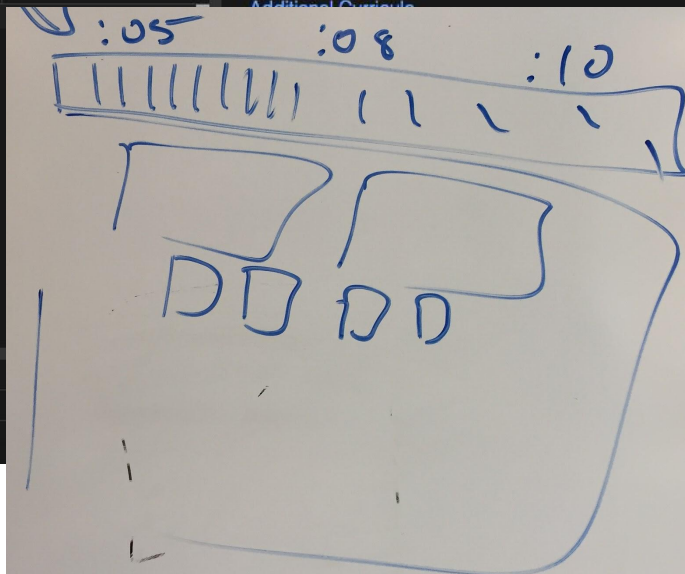
> Unit 2: Abstraction

> Unit 3: Structures

> Optional

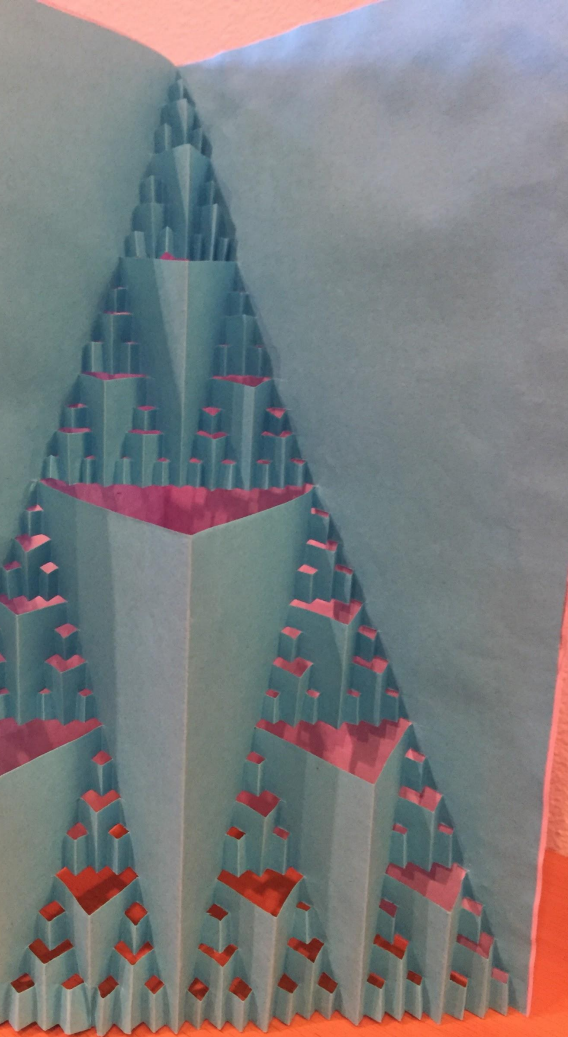
> Reference

Additional Curricula



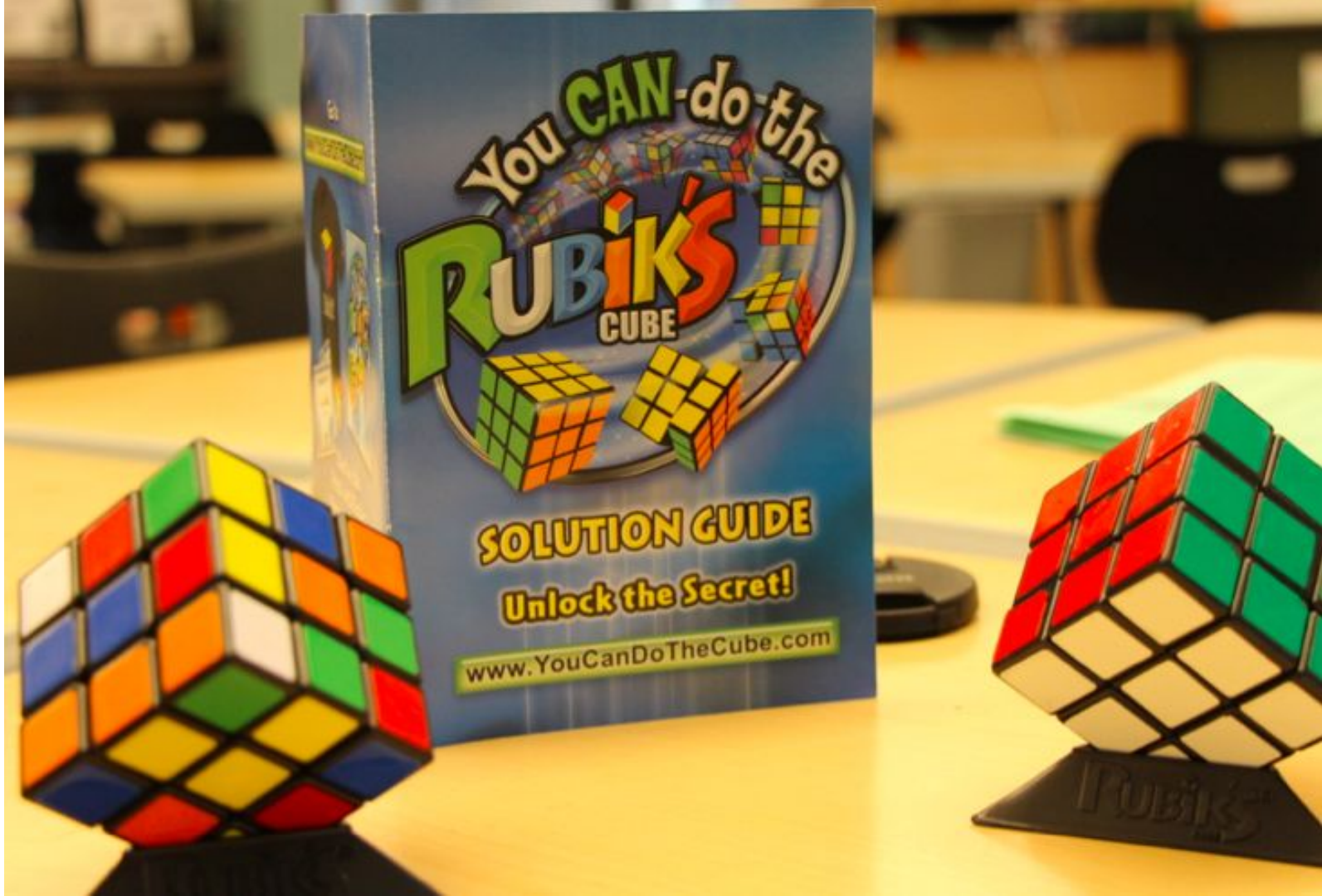
Fractals







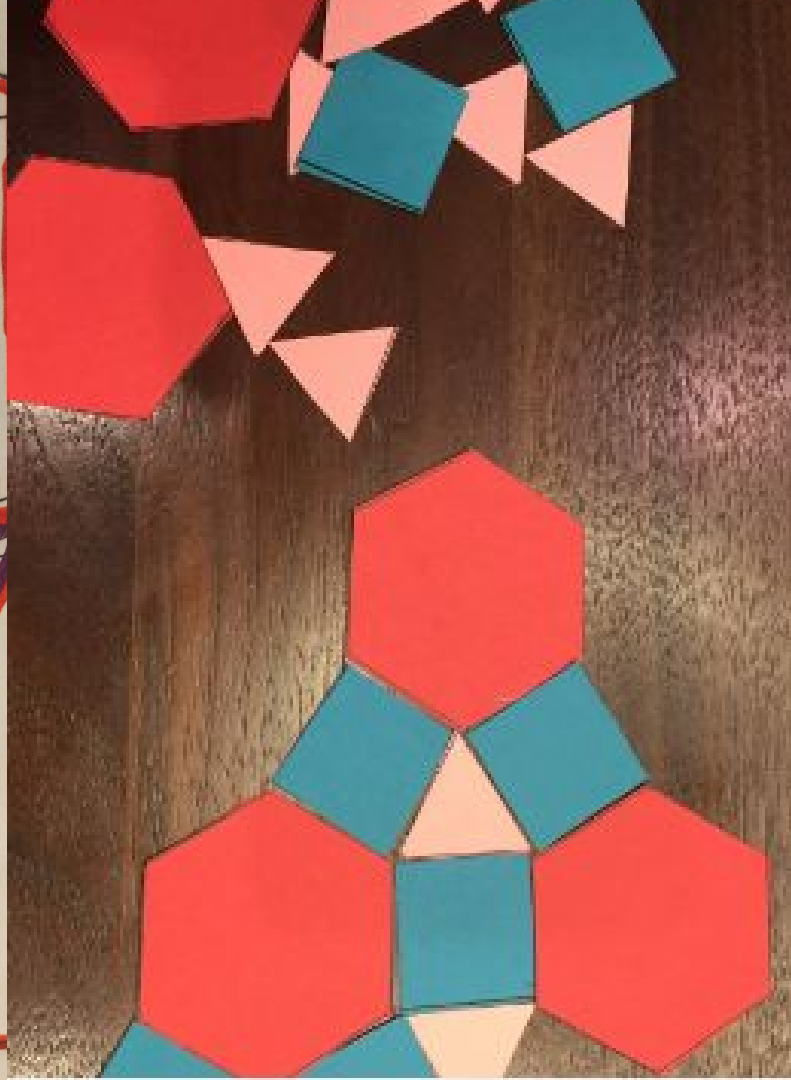
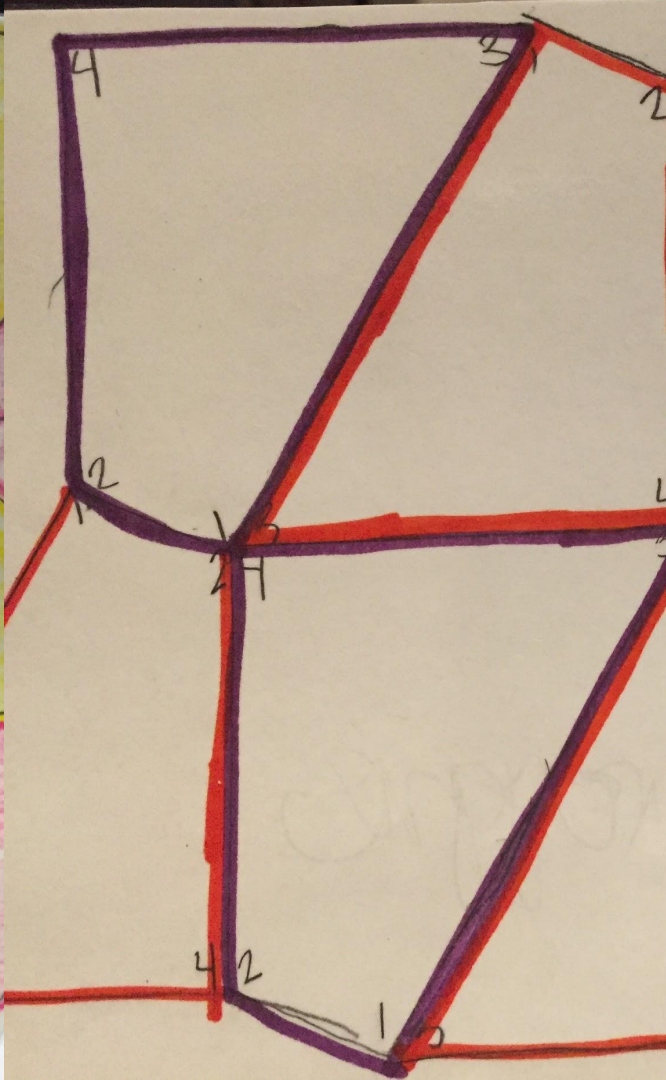
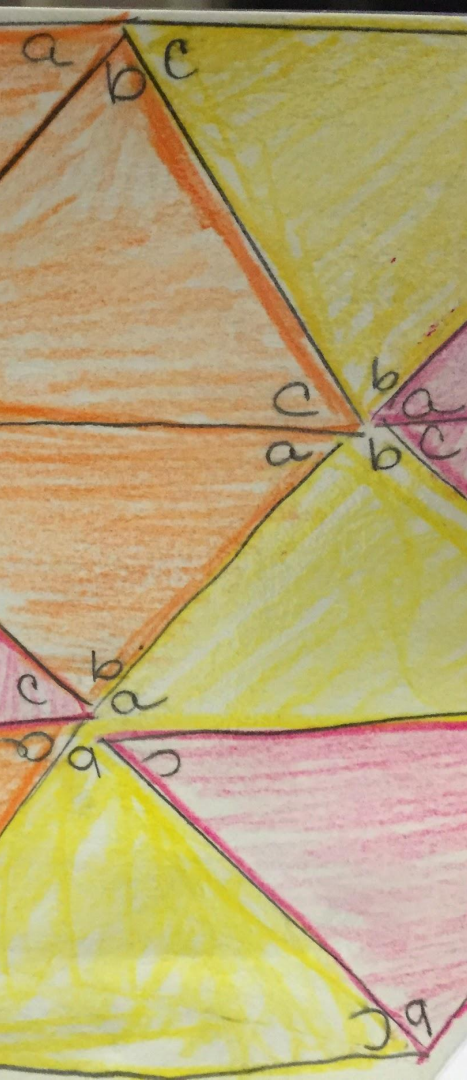
Rubik's Cube





Tessellations

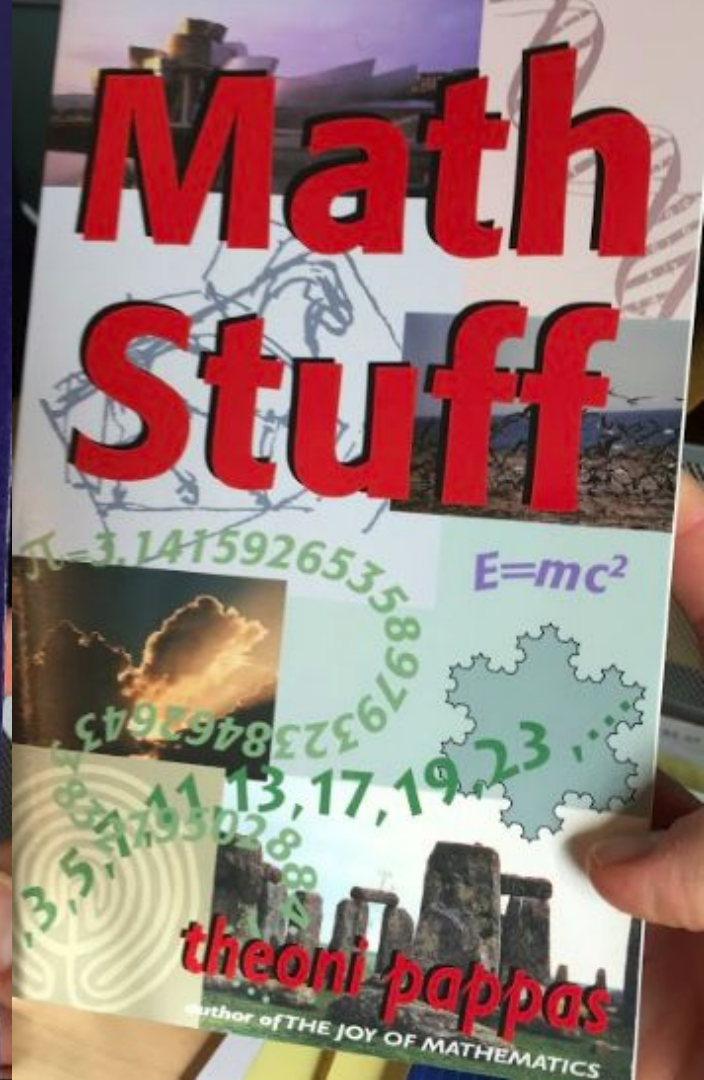
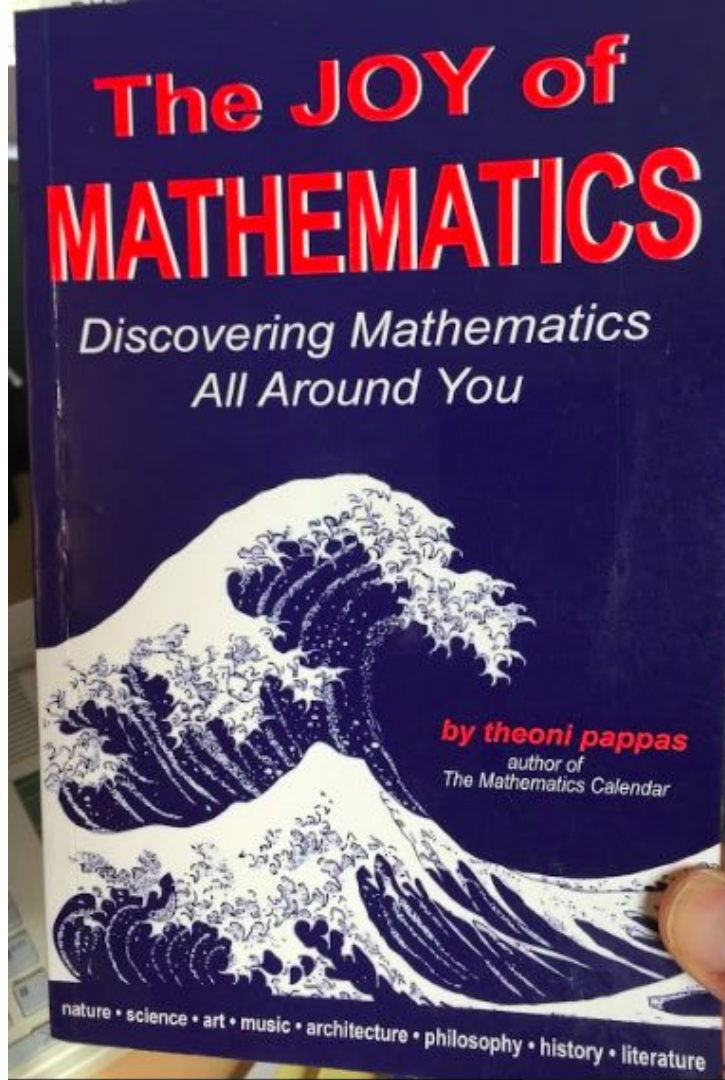






Future Units?

Resources





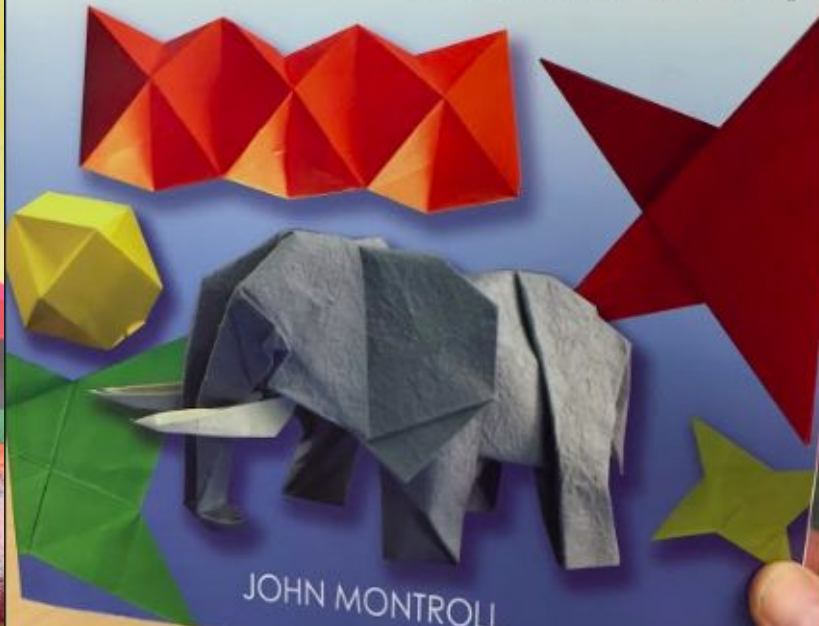
Beginner's Book of
**MODULAR
ORIGAMI
POLYHEDRA**
THE PLATONIC SOLIDS



RONA GURKEWITZ
BENNETT ARNSTEIN

ORIGAMI AND MATH

SIMPLE TO COMPLEX

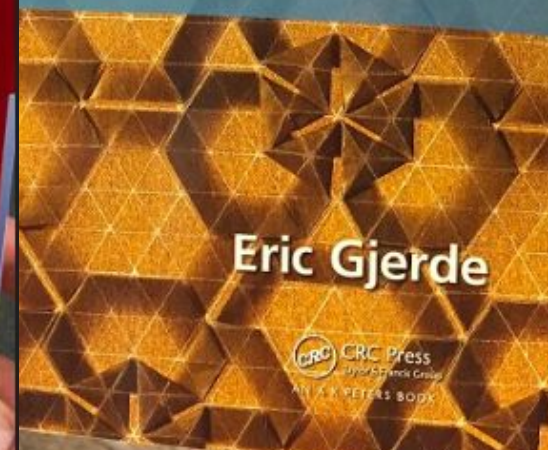


JOHN MONTROLL



ORIGAMI TESSELLATION

Awe-Inspiring Geometric



Eric Gjerde

CRC Press
Taylor & Francis Group
ANALYTICAL PETERS BOOKS

MATH AND MUSIC

HARMONIOUS CONNECTIONS



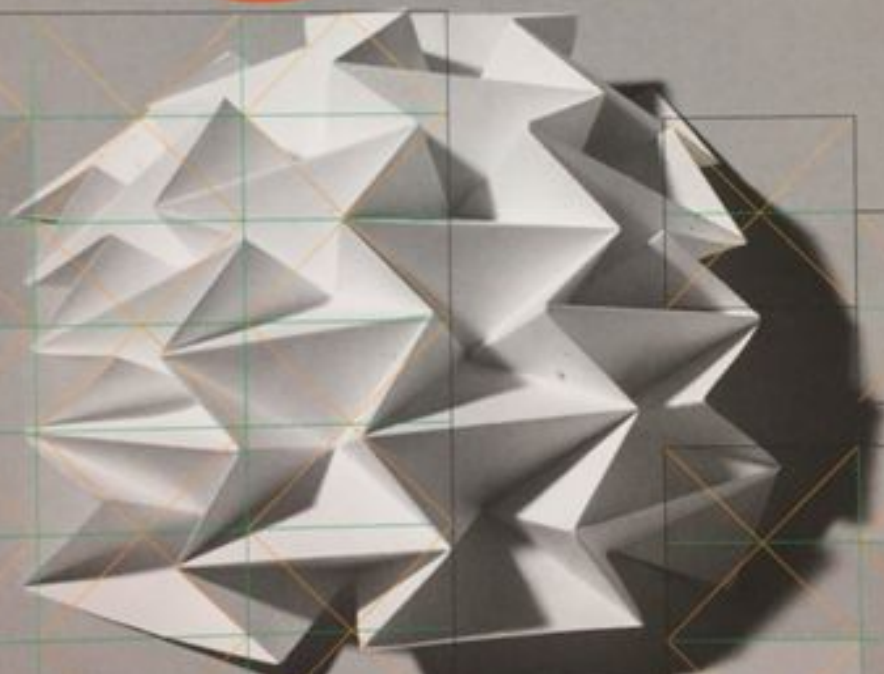
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A Mathematically Correct Flower

- to go. Thank you Vi Hart.

