Future Book Club at the Math Maker Neighborhood

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https://naturalmath.com/future-book-club/

Gathering 4 Gardner 16, San Francisco, 2026

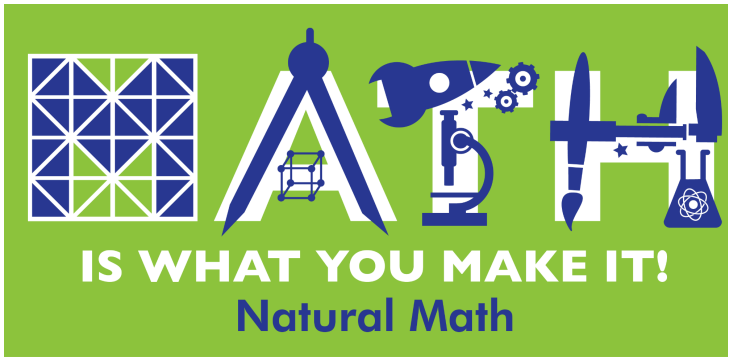
"What I can't create I don't understand" (R. Feynman)

Why make math rather than do math? "What I can't create I don't understand" (R. Feynman) and, paraphrasing, "it's mathematics of the children, by the children." In this paper, we share short, festival-style math maker activities for the very young and the young at heart. The activities inspire lovely math books and are inspired by the books.

We call what we do the Future Book Club because the books are in the making, in publication, newly published, or freshly introduced to activity participants as future readers. All books and math circle media here are Creative Commons so that we can easily share, modify, and build upon one another's creations. Everyone has a (math) story to tell, and you are so welcome to the Math Maker Neighborhood!

As a feature of our math circles, we introduce participants to the international Mathematics Subject Classification: https://msc2020.org/. Children usually want to know why there are holes in the numbering. They also like that there are many geometries and algebras; enjoy the pretty, unusual words; and appreciate that there's plenty of "different maths" out there to try if they happen not to love any they've seen so far.

We mark the starting pathways from the MSC and spotlight interesting choices that define what everyone is making. You will find several sample activities below.



Grow a happy familiarity
with all 60+ mathematics subjects
as a math maker.

What will you make today?

MSC2020–Mathematics Subject Classification System | Associate Editors of Mathematical Reviews and zbMATH

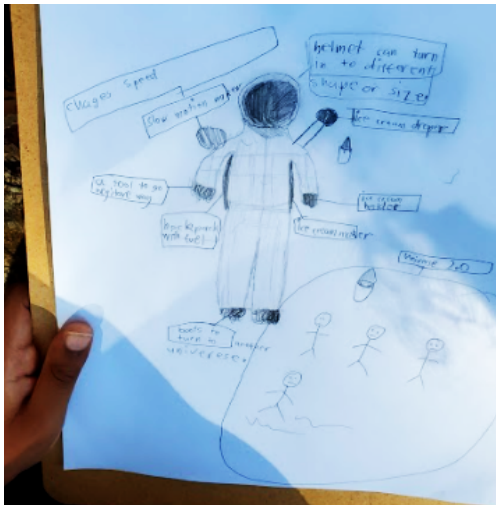
00 General and overarching topics; collections
01 History and biography
03 Mathematical logic and foundations
05 Combinatorics
06 Order, lattices, ordered algebraic structures
08 General algebraic systems
11 Number theory
12 Field theory and polynomials
13 Commutative algebra
14 Algebraic geometry
15 Linear and multilinear algebra; matrix theory
16 Associative rings and algebras
17 Nonassociative rings and algebras
18 Category theory; homological algebra
19 K-theory
20 Group theory and generalizations
22 Topological groups, Lie groups
26 Real functions
28 Measure and integration
30 Functions of a complex variable
31 Potential theory
32 Several complex variables and analytic spaces
33 Special functions
34 Ordinary differential equations
35 Partial differential equations
37 Dynamical systems and ergodic theory
39 Difference and functional equations
40 Sequences, series, summability
41 Approximations and expansions
42 Harmonic analysis on Euclidean spaces
43 Abstract harmonic analysis
44 Integral transforms, operational calculus
45 Integral equations
46 Functional analysis
47 Operator theory
49 Calculus of variations and optimal control; optimization
51 Geometry
52 Convex and discrete geometry
53 Differential geometry
54 General topology
55 Algebraic topology
57 Manifolds and cell complexes
58 Global analysis, analysis on manifolds
60 Probability theory and stochastic processes
62 Statistics
65 Numerical analysis
68 Computer science
70 Mechanics of particles and systems
74 Mechanics of deformable solids
76 Fluid mechanics
78 Optics, electromagnetic theory
80 Classical thermodynamics, heat transfer
81 Quantum theory
82 Statistical mechanics, structure of matter
83 Relativity and gravitational theory
85 Astronomy and astrophysics
86 Geophysics
90 Operations research, mathematical programming
91 Game theory, economics, social and behavioral sciences
92 Biology and other natural sciences
93 Systems theory; control
94 Information and communication, circuits
97 Mathematics education
??? Your subject area

Functions, Functionals, and *Funville Adventures*: Student Math Circle and More

Funville Adventures (Natural Math, 2017) is a math-inspired fantasy adventure by Sasha Fradkin and Allison Bishop for readers ages 5 and up where functions come to life as magical beings.

After 9-year old Emmy and her 5-year old brother Leo go down an abandoned dilapidated slide, they are magically transported into Funville: a land inhabited by ordinary looking beings, each with a unique power to transform objects.

123 pages. ISBN 978-1-945899-02-7



Student Examples

Travel through space faster and faster and faster until you can get across the universe in one minute.

Unicorn gets prettier and prettier, but not prettier than the rainbow. Because nothing is prettier than rainbows!

Pathways

#26 Real Functions

#68 Computer Science

What will everyone make?

Stories where **functions** and **functionals** come to life as characters with math powers that **transform** objects or other characters' powers. Inspired by https://NaturalMath.com/Funville/

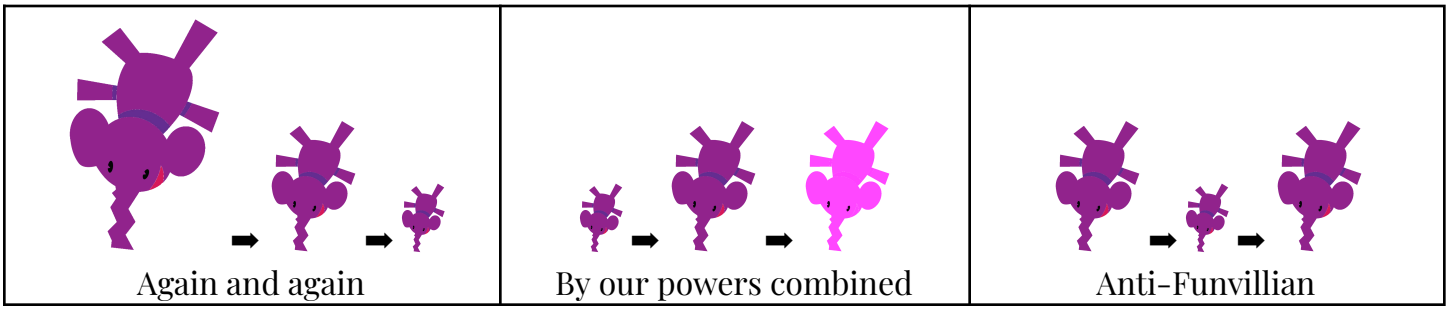
What are the interesting choices?

Choose a **domain** of objects that you like—buildings, toys, plants, magical creatures, robots, or something else. Choose to tell a **realistic or fantastic** story. Pick a **mathematical property** of your object, such as shape, size, pattern, speed, and so on. What if a person had the power to change that property? Choose a **qualitative change**, such as making a building taller or trees grow square leaves, or an **operation,** such as making a spaceship twice as fast. Choose how you can **model** what happens next, for example, write, build, or draw.

What are we exploring?

Time to check out mathematical implications of your choices!

- **Iterate** your character's power several times. Does it work? If not, what goes wrong? What if your character uses the power **infinitely** many times? Is there a **limit** or **boundary** to the changes?
- **Combine** different powers, one after another. Choose characters to combine, how many, and in what order. Does this always work? Does the order matter, or are the powers **commutative**?
- Create a character whose power is the **inverse** of yours (undo; anti; opposite). Is that always possible? Are your two characters friends, colleagues, or enemies in your story?
- Create a **functional**: a character whose power changes others' powers. Whose powers can your character transform? Does this always work? Can you iterate, invert, or compose your new character's power?

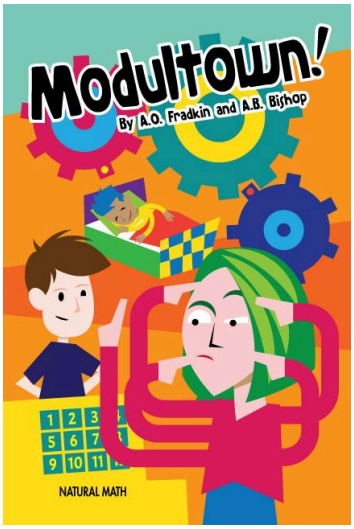


References and materials

1. Book information, video, author bios https://naturalmath.com/funville/
2. Notes from a family math circle (Google slides)

Modultown!
Math Teachers' Circle at the Zoo

Book information and preorder https://naturalmath.com/modultown/
Math Storytelling Day math circle (Google slides)
Pathways: #11 Number theory, #20 Group theory, #68 Computer science



Experience mathematics like never before in a whimsical puzzle hunt through the exciting *Modultown!* It is a fiction book by Sasha Fradkin and Allison Bishop, coming out in the summer of 2026 at Natural Math. It's for children ages 9-14 and the young at heart, a sequel to *Funville Adventures* that can be read independently. Lovers of math, puzzles, or fantasy adventures alike will delight in this journey of problem-solving and friendship. Playing in Modultown unlocks pathways into number theory, computer science, genetics, and other essential modern fields.

Scavenger hunt rules: You don't need to find every single part. Look once, look again, enjoy the day, take pictures, and share your observations with math friends!

Modultown is a place where beings have an inner modulus that determines how many hands they have, as well as a cycle for when they sleep. Moduli have between 2 and 15 hands. Modultown only has one unit of time called rezz. On this day, Moduli visit the North Carolina Zoo with their human math friends and photograph the math that they find.

Part 1. Meet the Moduli

(A) Find something or someone related to one of these Moduli's favorite numbers. Which numbers are the easiest and the hardest to find in the wild?

Diana (2) Tristan (3) Penny (5) Henry (6) Sephora (7)	Octavian (8) Nona (9) Decaro (10) Quintessa (15)

(B) Are there situations or habitats where many multiples of the same number appear, such as even numbers (for Diana) or times-five numbers (for Penny)?

Part 2. Wonderful Numberful Shapes

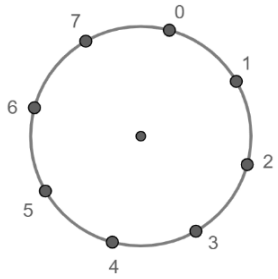
Find shapes* that have to do with:

- a small number (1-9)
- a medium number (10-99)
- a large number (over 100).

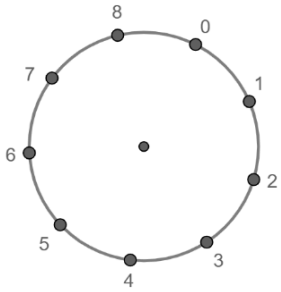
(*) *Shape* is a broad term.

Modultown has only one unit of time, called *rezz*. A Moduli's clock depends on the number of the Moduli's hands. Here are the clocks of three of the Moduli. Every Moduli wakes up at zero on their clock, after sleeping on the last rezz of their cycle. For example, Octavian sleeps every 8th rezz.

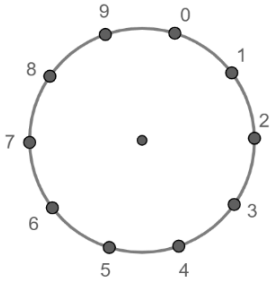
Octavian's Clock



Nona's Clock



Declan's Clock



Part 3. (Un)natural Cycles

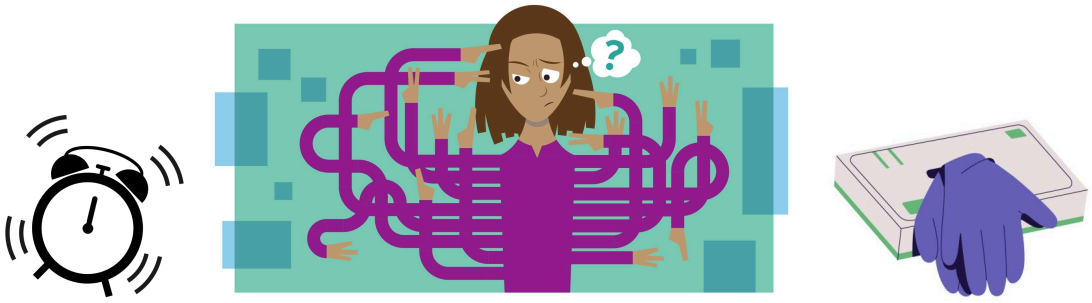
Find three different things that repeat by the numbers, like cycles or patterns.

Part 4. Least Common Breakfast

(A) It happens that Octavian and Decaro's clocks strike zero at the same time. Both moduli wake up and have breakfast together. How many rezzes will pass before that happens again?

(B) While volunteering to paint zoo benches, Henry (6) and Sephora (7) were using rubber gloves that came in standard boxes with the same number in each. They put a glove on every hand, then recycled them in the evening. At some point, Sephora had enough gloves for the day but her box was left empty. At some point, Henry had enough gloves plus one left over in the box. What could be the standard number of gloves per box?

(C) Pick two different cycles you found in Part 3 and make up a similar story-puzzle about those.



Recall that Modultown has only one unit of time, called *rezz*, and every Moduli sleeps on the last rezz of their clock.

On their trip to Earth and the North Carolina Zoo, Diana (2), Tristan (3), Penny (5), and Henry (6) wake up as their clocks happen to strike zero at the same time, and then...

Part 6. Moduli at the Zoo

Diana, Tristan, Penny, and Henry were seen (awake) around the zoo visiting exactly one animal in exactly one time period: Rezz 3, 6, 11, or 13.

A Moduli with an odd number of hands was spotted visiting the red wolves before one with an even number of hands was spotted visiting the arctic foxes.

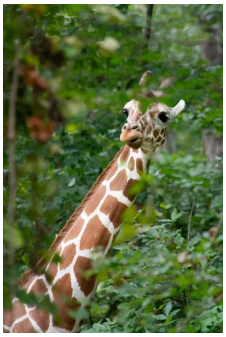
Penny was seen before Tristan, and she was visiting her favorite animal (she thinks of their trunks as being fifth legs).

The giraffes were not the last animal to be seen visiting with a Moduli.

Diana was seen looking refreshed after just one nap.

Hint: Put checkmarks and crosses in the table below to mark what you know.

	Diana	Tristan	Penny	Henry	*Rezz 3*	*Rezz 6*	*Rezz 11*	*Rezz 13*
Elephants								
Red Wolves								
Arctic Foxes								
Giraffes								
Rezz 3								
Rezz 6								
Rezz 11								
Rezz 13								



AL, Logical! It's like a Math Circle, but in a Multi-Dimensional Hunted Mansion

Preorder and crowdfund
https://www.kickstarter.com/projects/naturalmath/al-logical-a-young-adult-graphic-novel

AL, Logical! (Natural Math, being edited and crowdfunded on Kickstarter as of February 2026) is a young adult graphic novel.

It's like a math circle, but in a haunted multi-dimensional mansion where a brave artist finds a restless ghost of a mathematician. AL is ready for anything, from banishing robo-dogs by rearranging space via polygon dissections to making school math make sense with and for the regular humans at her classroom.

Book Excerpt: Riley's Shuttle on the Hunted Mansion's Wall

From the Math Notes:
Bridget Riley is an English artist who has been making geometry inspired op art since the 1960s. These are all variations on Riley's Shuttle. What is changing? What is the same?

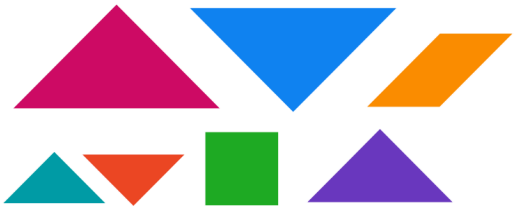
The mathematician makes a reference here to parameters. When you look at an equation with lots of letters, they may all seem like variables. But mathematicians distinguish between quantities that are allowed to vary, often in relationship to one another, and others that are fixed or set to particular values. In the famous slope-intercept equation for a line, y=mx+b, the x and y are the variables, when one changes the other changes, but we think of m and b as being set at particular values. One way to think of it: the equation determines the structure and the parameters are the controls within the structure.

You can play with the applet that made the variations: geogebra.org/m/nttpmgra There are three parameters, a, n, and m; what do they change about the picture? What values make a picture that you find interesting? Here's several more Bridget Riley inspired applets: geogebra.org/m/T6VFqgs7#chapter/587537

Book Excerpt: Octagon Dissection

From the Math Notes:
AL wants to affect the house, make it rearrange. But she thinks she knows that she is going to have to do some logical thinking to make it happen. The Mathematician suggests a dissection. A classic puzzle where a shape is divided up into pieces that can make another shape.

Probably the most famous dissection puzzle is the Tangram. A square divided up into 7 shapes that can be combined in different ways to make many other shapes. Can you rearrange these to make a square? In Polypad: polypad.amplify.com/p/bGzvxekuP932Xw



The dissection AL uses to make a square into an octagon, or vice versa, was possibly discovered by Henry Dudeney. He was a great popularizer of mathematics and wrote several books of recreational problems and puzzles, including dissections. There are older octagon to square dissections, though, some going back to Persia in the 14th century! Yet people are still proving new results about them today.

And one more thing

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If you already are a part of the Natural Math community, thank you for your continuing support. If you are new to Natural Math, thank you for checking out our latest project. Please join the math adventure!