

Project Ideas

This is a list of topics that I think might make good projects. Most of these topics will need to be further refined and focused but they might serve as good launching off point. Another good way to find interesting topics is to browse videos posted by the following place. Some of these videos are very technical while others are very accessible, I would skim a lot of them and then pick a few that look interesting.

- [Vi Hart](#)
- [3blue1brown](#)
- [Numberphile](#)

Math History

- Ancient mathematics: Who really came up with the “Pythagorean theorem”? Why do we use 360 degrees? When was all the math we know invented?
- History of marginalized mathematicians

Math puzzles and games

- Mathematical games
 1. SET
 2. Nim
 3. Many, many, more
- Math puzzles

Math and social choice

- Voting Theory: how to decide the winner of an election, hint: not the way we currently do.
- Fair Division of resources: “I cut, you choose” but with more people. Also how to fairly split rent.
- More gerrymandering
- Auction Theory: Fascinating things happen when you examine auctions mathematically. Might feel a little like game theory.
- More game theory

Computer Science

- Algorithms: What is the fastest way to sort a list? What does fastest even mean?
- Cryptography: We use cryptography every time we pay for something online. How do we securely and quickly encrypt messages?
- Data Science: What is data science and how is it used? You might look at predictive policing as a compelling example of data science gone wrong.

Math and Art

1. Origami
2. Music
3. Symmetry
4. Tessellations
5. Sona Drawings
6. Islamic geometric patterns

Statistic and Probability

1. Probability and chance
2. Sports
3. Counting: This sounds boring but actually is fascinating. You need to be quite sophisticated to count the number of poker hands that are full houses and

Geometry

- More of what shape is the universe
- Topology
- Knot Theory
- Fractals
- Apollonian Circle Packing
- Map projections
- Curvature

Logic

- Formal Logic
- Godel's Incompleteness Theorem
- Paradoxes
- Proofs
- Proof by Picture

Miscellaneous

- Math and literature: I have not found too much here but you might be able too.
- Graph Theory: This is more of a pure math topic. It is very accessible but might not feel connected to anything but math itself at first.
- Infinity: There is much more to be said about infinity.
- Chaos Theory
- Pascal's Triangle
- Dimensions