

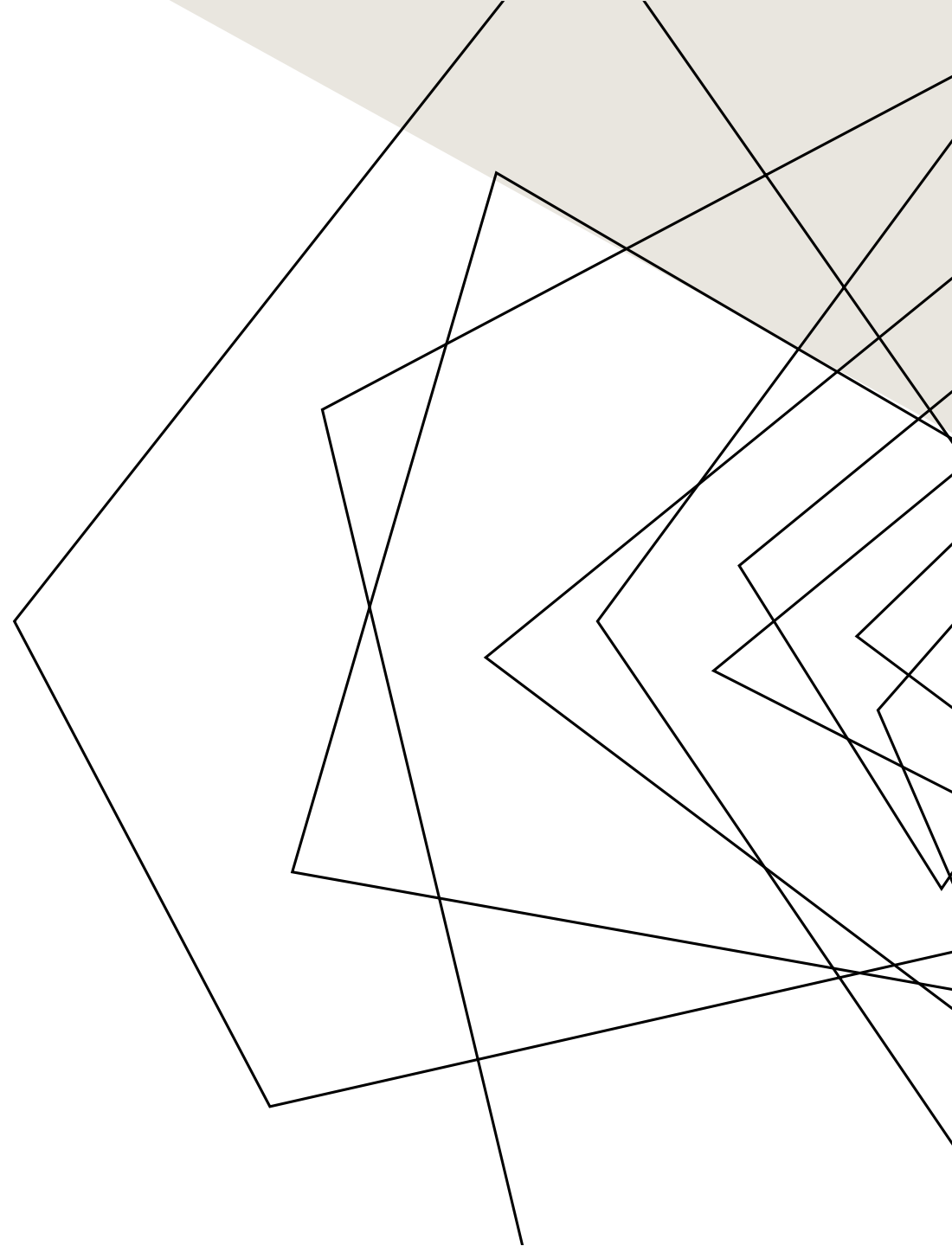


**WHY DO WE TEACH
MATHEMATICS?**

ANGLES OF THE HEART:

Emotional Regulation Skills,
Resilience, and Cognitive
Flexibility Through Learning
Mathematics

By Lindsey Shorser



BACK IN 2020...

At home:

- Wearing fuzzy bunny slippers and chilling out
- There was little social stimulation
- Almost no obvious consequences or control

Outside:

- "Breathing can kill you!"
- Advice: stay 6ft away from everyone and wash your groceries
- Almost no obvious consequences or control

EFFECTS ON LEARNING

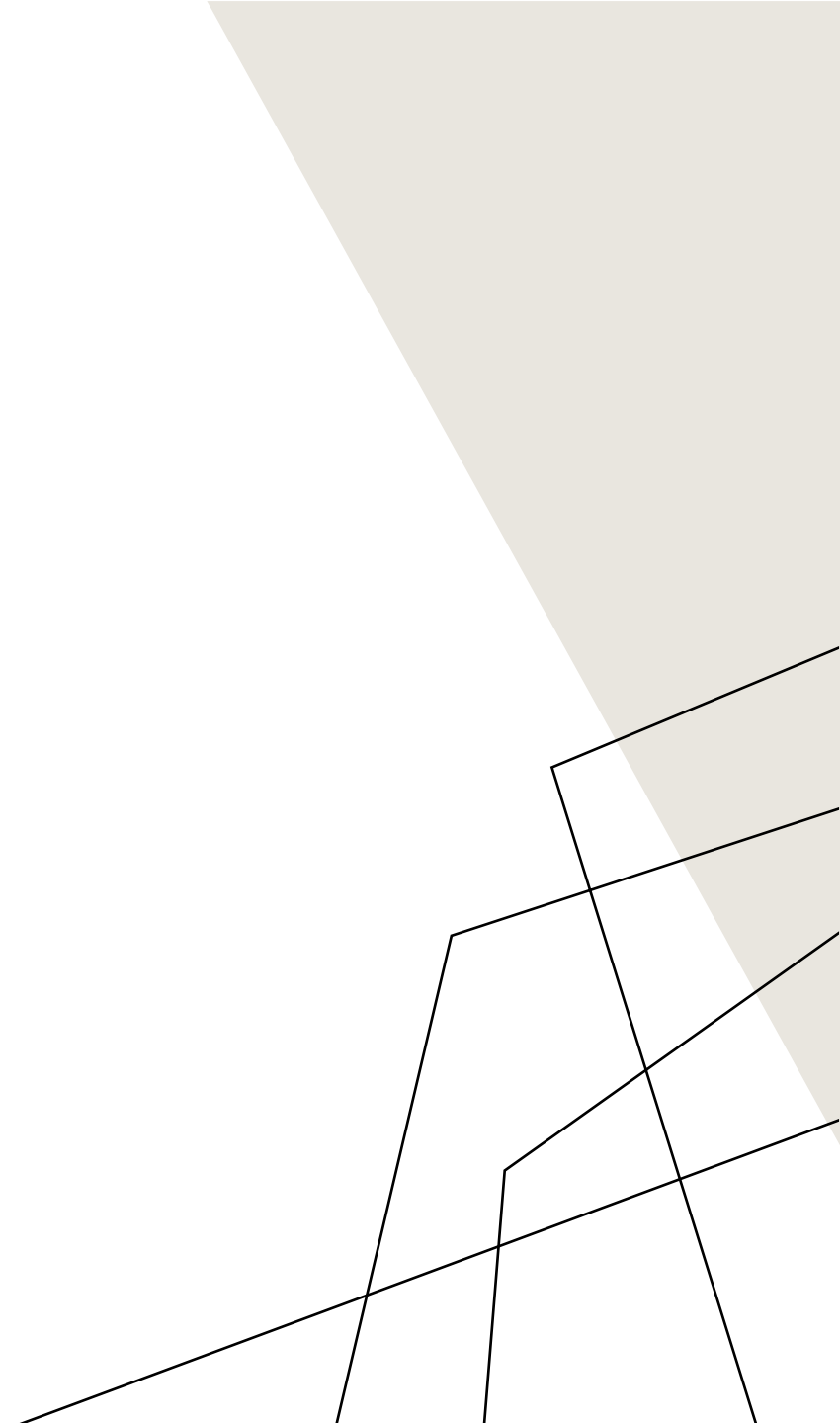
- Anxiety
- Growth Mindset vs Fixed Mindset¹
- Learned Helplessness²
- We can change these, by showing students that they can do better!
- How can we convince them that they are improving
... with math?

RESILIENCE

"The capacity to recovery quickly from difficulties"³

In a paper from 2020, Ishak, Yusoff, and Madihie review the literature on three types of related resilience:

1. Resilience in mathematics
2. Academics or educational resilience in mathematics
3. Mathematical resilience



RESILIENCE

1. Resilience in mathematics

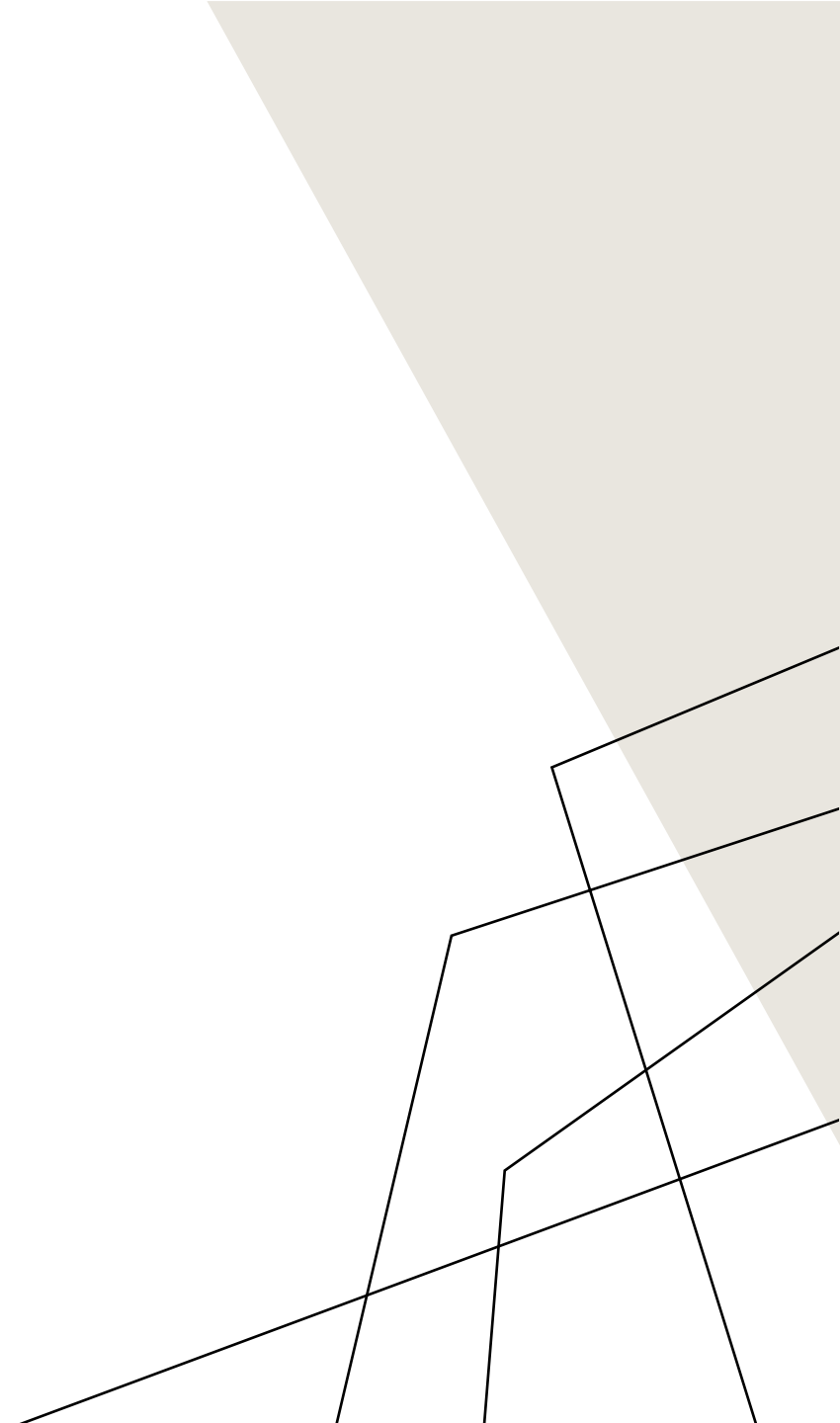
"student reflexivity in making the decision when encountering a new situation"⁴

2. Academics or educational resilience in mathematics

"The heightened likelihood of success in school, and other life accomplishments despite environmental adversities brought about by early traits, conditions, and experiences"⁵

3. Mathematical resilience Requires:³

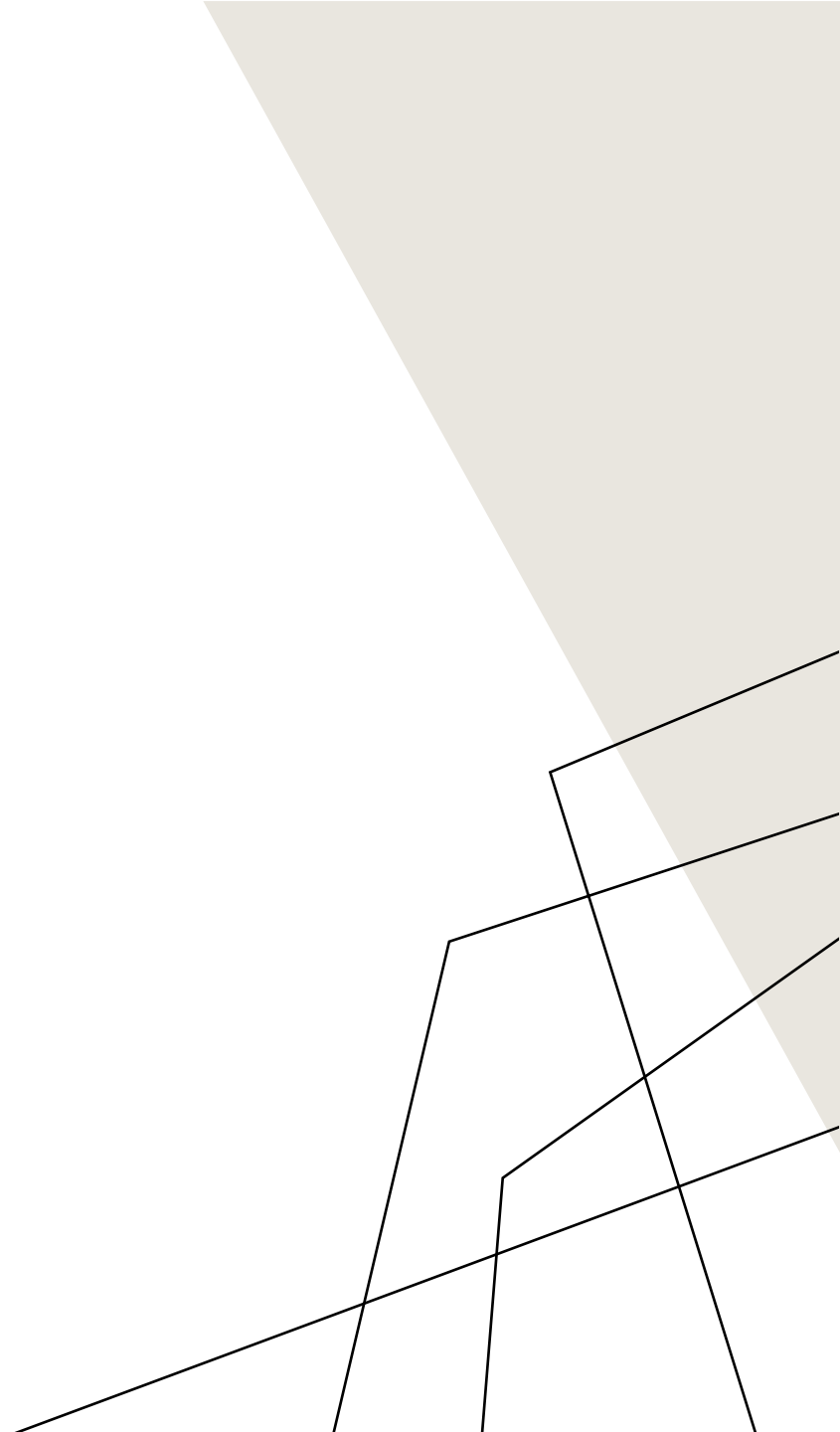
- growth mindset (6), sense of self-efficacy⁷
- to personally value mathematics,
- knowing that mathematics requires struggle,
- knowing how to find support when pursuing mathematics learning



THE SANDBOX

- Claim: It works the other way too.
Learning math can
 - help develop a growth mindset
 - lead to valuing mathematics
 - understanding that struggle is necessary (but maybe not a bad thing)
 - develop the resources to ask for help when needed

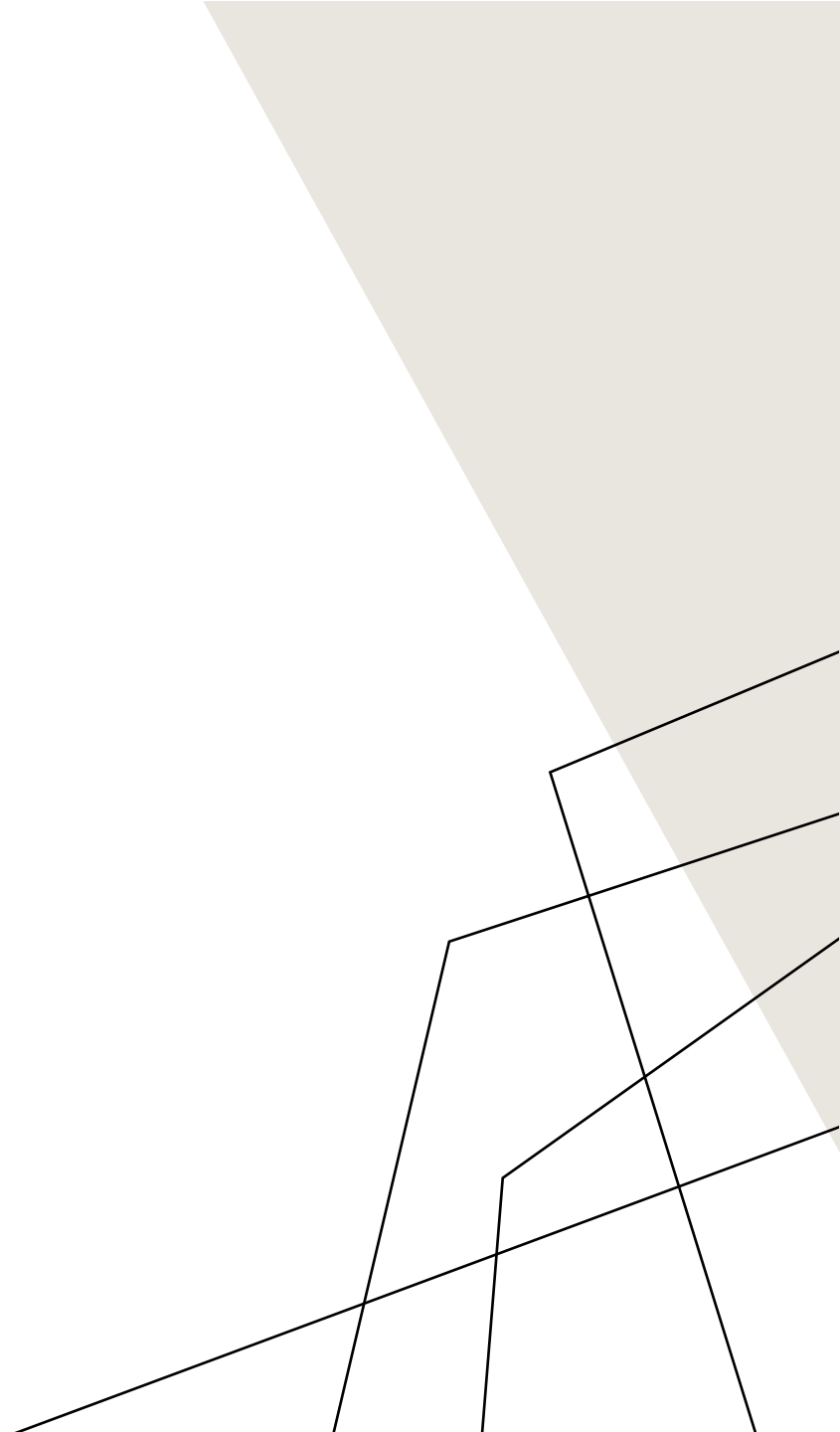
Computer programmers talk about sandboxes as safe "places" to work on something to see if it turns out okay, without harming existing code.



MATH CLASSROOM AS SANDBOX

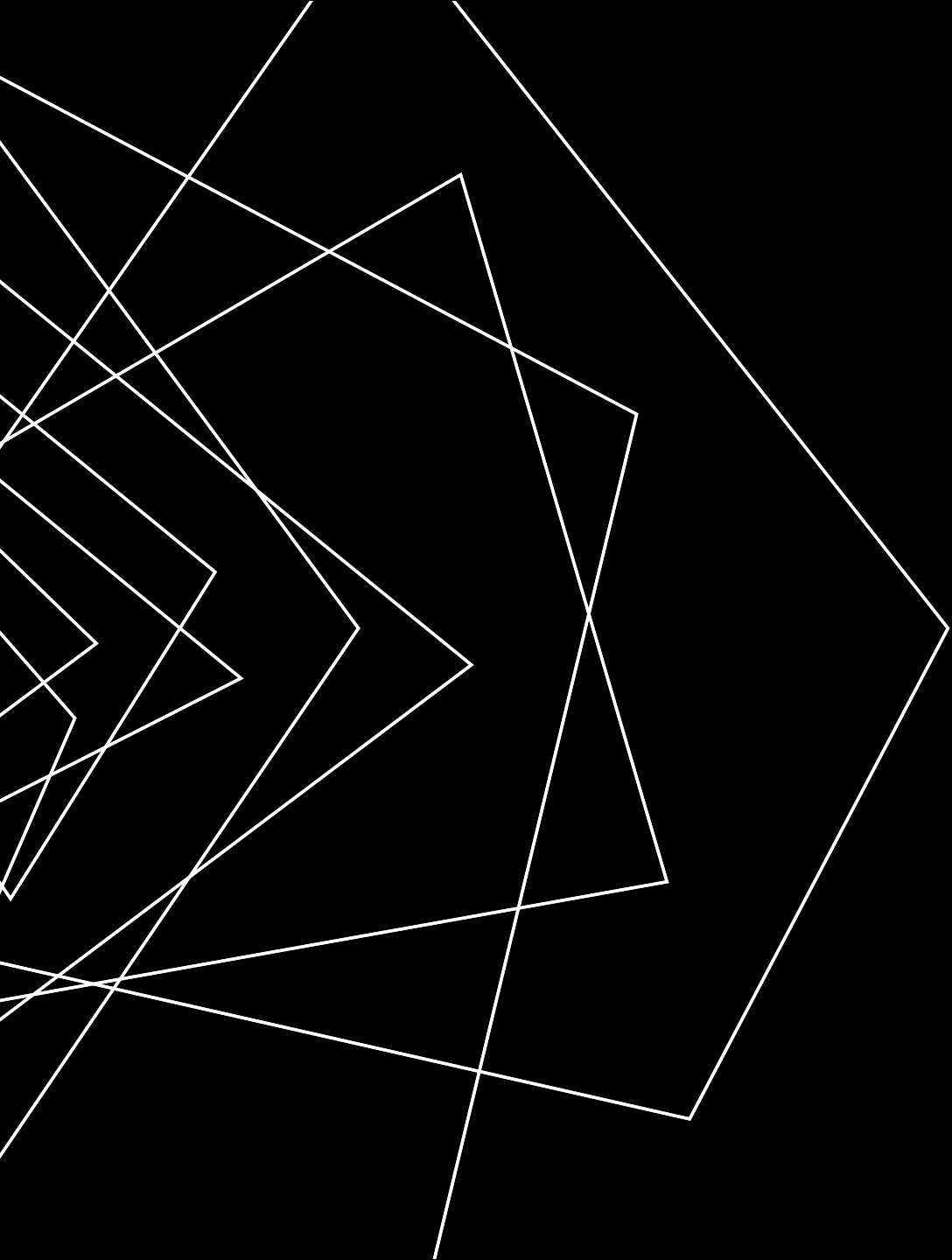
Mathematics allows us all to play games within a figurative sandbox, try out new ideas, and build cognitive flexibility with childlike wonder.

Mathematics is also a safe domain for experiencing the emotions that accompany being wrong, while gathering evidence of improvement and a sense of self-efficacy.



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THANK YOU

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