Introduction: (15 mins)

* Define max perim
* Define the napkin problem
* **Activity:** make guesses about the answer to the problem
* Present the (surprising) answer

Hilbert Curves (15)

* Define a sequence of curves inside a square
* **Activity:** construct H2 and H3 as practice to understand how these work
* Notice: the curve always stays inside the main square
* How much longer is a hilbert curve than the previous one?
* The length of H\_n doubles when you increase n
* since it doubles every time, L(H\_n) gets arbitrarily large as n gets big
* for any number k, we can find an n such that L(H\_n) > k

A Sequence of Origami Models (10)

* Similarly to Hilbert Curves, we’re going to define a sequence of origami models, all based on this unit
* **Activity:** try folding the bird base!
  + Note: perimeter of folded = perimeter of original
* Here’s the general form of Mn. It is indeed foldable, and it turns into this spiky thing

The Proof (20)

* Here’s an outline. We need to show the first part thing
* In order to show this, let’s try to draw the perimeter of the folded form’s projection on the unfolded sheet.
* It turns out you can draw M\_n in such a way that it covers H\_n
* The proof is complete!

**Can you napkin fold?** 1-4, activity: 7 min

**Hilbert Curve + Drawing ti?** 5-6, activity: 15 min

**Length of Hilbert:** 5 min

**Bird Base:** 10 min (flexible)

**Finale (M\_n > H\_n):** 20 min

**Questions:** 5 - 10 min