

36 Fences



Introduction by Jo Boaler

The task, 36-Fences, which originally appeared in one of my books: (<u>https://www.amazon.com/</u> <u>Experiencing-School-Mathematics/</u>) will appear in the new 2021 California State Mathematics Framework. The new Framework shares 4 new Content Connections which are:

- 1. Communicating Stories with Data
- 2. Exploring Changing Quantities
- 3. Taking Wholes Apart, Putting Parts Together
- 4. Discovering Shape and Space

This task features content connections 2, 3 and 4. Inside the task students can explore changing areas and patterns of numbers. Students can also explore the shapes formed by the fence panels and decompose those shapes into smaller shapes. If you go to the Framework website and download chapter 2 you will find this task is presented with a vignette.

Directions:

This is a true low floor – high ceiling task. The question posed is, "What is the biggest fence that can be made out of 36 pieces of fence?". The fences can be any length eg 1 meter or 1 yard. The class can decide together whether they will include irregular shapes, this is a mathematical act – working out what assumptions will be made. The task can be approached in many different ways. Some students may use grid paper and model with snap cubes or rods to approximate the greatest area. Others may construct models using dynamic geometric software and apply trigonometry. This will give students an opportunity to problem solve, drawing on different areas of mathematics.

