



Bricks Activity



Teacher Lesson Plan

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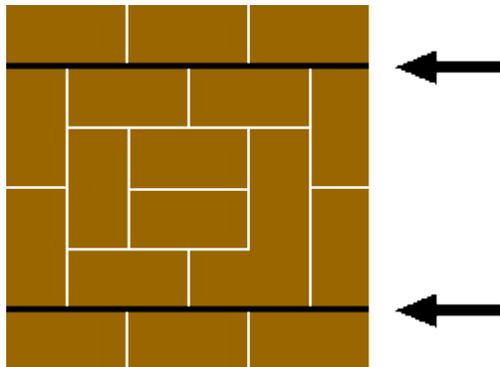
This activity is aligned to [NCTM Standards](#) - Grades 6-8: Geometry, Problem Solving, Reasoning and Proof, and Communication and to [California Mathematics Standards](#) Grade 7: Mathematical Reasoning #1.2, 1.3, 2.4, 2.5, 2.6

★ Use Matt Wringer's [applet, Bricks Activity](#), to think about this problem. ★

On page 17 in **Polyominoes** by Solomon Golomb he states that the Masonry Problem was first proposed by Robert I. Jewett, while a graduate student in mathematics at the University of Oregon. Here's the problem:

The problem:

You are a brick wall builder in Southern California. You have discovered how to build the strongest wall possible using 2-by-1 bricks. You have come to the conclusion that a wall made of these bricks has the most strength if there are **no fault lines**. Here is an example of a brick wall **with a fault line**. You can see that there are lines that go through the wall uninterrupted.



You have found a masonry pattern without any **fault lines**. This means that every grid line (that is, the lines, both horizontal and vertical, spaced at the width of one domino and extending perpendicularly between parallel edges) of the rectangle intersects at least one

domino.

You found this special masonry pattern by considering first one brick, then two bricks and you continued until you found a fault free pattern.

Using manipulatives

Each group of 4 students is given 25 or more dominoes or paper dominoes.

Explain the idea of a **fault line**. Allow enough time for groups to explore different possibilities of making brick walls with and without **fault lines**.

Diagram, Process, Solution

After giving time to have the students explore the possibilities, remind to use [diagram](#), [process](#), and [solution](#) in their problem solving. Instruct the groups to record their findings and respond to the following:



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System of Response for Students

- 1. What is the system for your group's investigation?
- 2. Once you find a fault-free pattern, draw it.
- 3. Describe how you found your pattern.
- 4. Are there other fault-free patterns using this number of bricks or is the one you found unique?

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Here are [hints](#) and the [answers](#).

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