MIND TREKKERS
Toothpick Challenge Lesson Plan

Amount of time Demo takes: 3-8 minutes
Materials (be as thorough as possible):
- Large box of toothpicks
- Small bin

Set up instructions:
1. Lay out seven toothpicks on the table.

SAFETY!
1. Safe Demo

Lesson’s big idea
- Shows students the idea behind critical thinking. When trying to find ways to create 3 same sized triangles with the toothpicks, they get other ideas on how it might work. The solution is to make something like one row of the {3,6} figure below.
- A tessellation is a mathematical concept involving a ‘tiling’ of regular polygons. Regular polygons are shapes that have edges of equal lengths (and, as a result, interior angles of equal measure). They can be arranged to form patterns like these:

\[
\begin{array}{c}
\{6, 3\} & \{4, 4\} & \{3, 6\}
\end{array}
\]

from Wolfram MathWorld.

Instructional Procedure
1. Have them make three triangles of the same size only using seven toothpicks.

Sample questions you can ask:
1. Did you notice that when you tried something that didn’t work, it still gave you ideas for other ways to try? This is what mathematicians do when working on research.

References: Wolfram MathWorld

National Standards: