



What is a Toothpick Bridge?

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A toothpick bridge is a simplified demonstration of the mathematics involved with full scale bridges. The forces involved with toothpick bridges exemplifies the forces that are involved in Truss bridges built today.

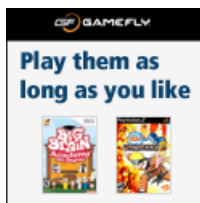
Through experiments and testing, you can reproduce the forces of a full scale bridge by building a toothpick bridge. These forces include:

Compression: Compression is the downward force placed on a beam. For example, if you take a short straw pinch it in the middle, it flats out. If you hold it length wise between your finger tips and press, it takes a significant amount of pressure before the straw finally folds. That force is called compression.

Tension: Tension is a force that pulls. For example, if you took a toothpick and tried to pull each end until the toockpick broke, it would take a lot of force. That force is tension.

Torsion: Torsion is twisting. Twisting a toothpick to make it break is easier than pulling it apart (tension). Not all toothpicks are the same and different forces on the torsion will break different toothpicks.

Shear: Shearing is two opposing forces pushing on the same point. For example, if you hold a piece of wood with both hands next to each other, and push up with one hand and down with the other, you are applying shear to that piece of wood. Shear usually occurs horizontally, and not vertically.



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Our Mission Statement

Building a toothpick bridge is a fun and exciting exercise the most school aged children can do in a couple of days. Our goal is to provide the step by step guide to building a strong toothpick bridge, tips for proper construction, and teach your child about physics and math involved with the project.

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