Name(s)	Project Number
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Project Title

How Much Weight Can It Hold?

Abstract

Objectives/Goals

The objective of this project is to determine how the number of trusses on a bridge affect the amount of weight it can support.

Methods/Materials

Popsicle sticks and wood glue were used to construct three different bridge designs. Each bridge design contained different numbers of trusses -- 2 trusses, 3 trusses, and 4 trusses. Five identical bridges of each design were constructed for five test trials each. The bridges were seated over a 10 inch gap with an S-hook attached to the handle of a bucket and the base of the bridge. The bucket was slowly filled with water until the bridge broke. The total amount of weight supported by the bridges were determined by weighing the bucket, water, and S-hook on a scale and the results were recorded. This procedure was repeated for all 15 bridges and the average supported weight for each bridge design was calculated.

Results

The 2 truss design supported the least amount of weight, with an average of 16,159 grams. The 3 truss bridge design was able to support a little bit more weight compared to the 2 truss design, with an average of 17,551 grams. The bridge designed with 4 trusses supported approximately 45% more weight than the 2 truss design, with an average of 23,469 grams.

Conclusions/Discussion

In this project, I have concluded that the more trusses designed into a bridge would be able to support more weight. When more trusses are used in a bridge design, weight can be transferred more evenly through the span of the bridge, and therefore the load does not focus as much on smaller areas.

Summary Statement

The number of trusses on a bridge design greatly affects the amount of weight it can support.

Help Received

My grandma helped me glue some of the bridges together.