

2017 SC 4-H Engineering Challenge

Bridge Building Challenge

Each team will design, construct, and test their truss bridge to find out which bridge can hold the most weight.

What to bring:

Materials for this challenge will be provided on site.

This challenge is open to teams of 2 to 4 people.

Competition Instructions:

Each team will receive 60 small wooden craft sticks, 2 hot glue guns, and 3 glue sticks per glue gun. Teams will be given 40 minutes to construct their truss bridge to span a gap. On the day of the competition, they will be told how wide a gap their bridge needs to cross.

Judging:

1. Each team will bring their bridge to the testing space and put on safety goggles.
2. The members of the team will attach a container to their bridge using 2 zip ties.
3. Weights will be added one at a time by one team member at a time until the bridge breaks or has held all of the weight

In the event of a tie, the bridge weighing the least will place first.

Resources:

Apple app "Bridge Basher" is helpful in designing and researching your design.

Additional Information:

Warren truss- patented in 1848. It uses longitudinal sections joined at an angle to form alternating inverted equilateral triangles (a triangle where all sides are equal) along the length of a bridge. This makes sure that each strut, beam or tie is not subject to bending or straining forces, but only to tension or compression. Loads on the diagonals alternate between compression and tension (approaching the center). Diagonals create strength in structures.



