

Spaghetti Bridge Building

Objectives

- Show the creative power of brainstorming
- Work effectively within a team, or individually, on a single task
- Work within limitations (weight and dimensions)
- Explain the use of different structural designs

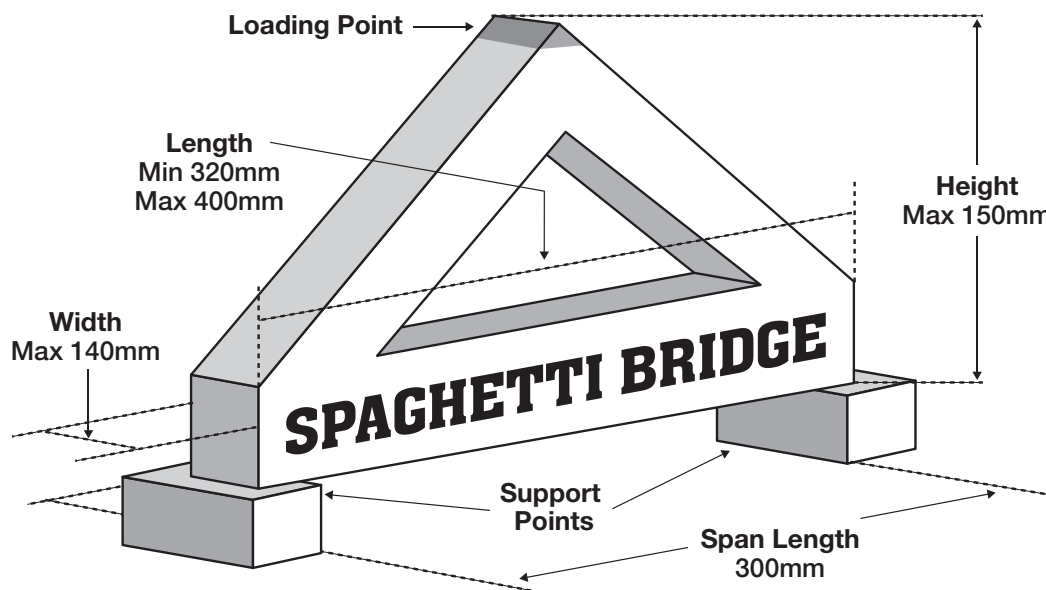
Materials

Each group of students will need:

- Regular length spaghetti
- White or wood glue
- Access to a scale and ruler to ensure the structure weighs less than 350 grams and is within the specified dimensions

Procedures

1. Register your students for the Spaghetti Bridge Truss Strength Competition by visiting www.EngGeoMB.mb.ca/spaghettibridge.html. School groups can pre-register for a designated time slot to have their bridges tested. Check online for this year's dates and locations.
2. Break the class into small groups (max 3) and hand them their materials.
3. Tell the groups how much time they will have to design and build a bridge that weighs less than 350 grams and within these dimensions:



4. Take a picture of each bridge (optional).
5. Let the glue fully dry (1-2 days).
6. Test the bridges to destruction at the Spaghetti Bridge Truss Strength Competition.
7. Watch for updates of the strongest bridges. Final winners will be announced on following the last of the competition entries.
8. Discuss the different strategies students came up with for their bridge designs:
 - What ideas did they abandon and which ones did they pursue? Why?
 - How do the different bridge designs compare? (Photos will be useful here if any bridges are destroyed beyond recognition)
 - What improvements or changes would they make if they were to repeat the exercise?
9. Challenge the students to (optional):
 - Identify the internal forces acting on your bridge such as compression, tension, shear, torsion
 - Predict the location and failure mode of your bridge
 - Determine the efficiency of your bridge by comparing its mass with the mass of the load it supports

