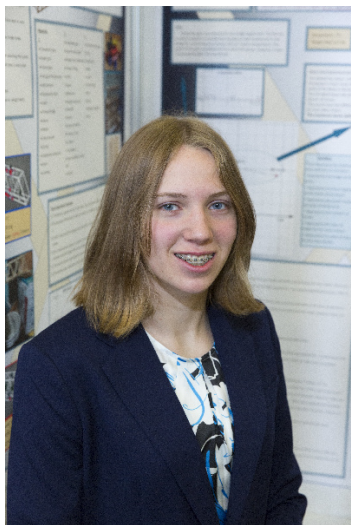


## CWSF 2018 - Ottawa, Ontario



### Annika Culhane

#### Trusses and Temperatures

**Challenge:** Discovery

**Category:** Intermediate

**Region:** Rideau-St. Lawrence

**City:** Carleton Place, ON

**School:** Carleton Place H.S.

**Abstract:** For my science fair project, I investigated the affects of temperature of the strength of a structure. To answer my question- "What are the most important factors to consider when building a temperature-resistant structure?"- I experimented with Popsicle stick bridges. Using information obtained from 3 temperature-related experiments and mathematics, I was able to determine the traits that the optimal Popsicle stick bridge design would have.

#### Biography

Hello, my name is Annika Culhane. I am 14 years old and am a competitive swimmer and Sea Cadet. I have been to several high level competitions, such as the Ontario Math Olympics and cadet provincial competitions. I enjoy taking enrichment courses in various universities and plan to be a computer scientist or software engineer. The inspiration for my project came from building popsicle stick bridges in elementary school. At that time we talked about how the models of our bridges could make them stronger and safer to use. However, we never looked at how dangerous they could become when they are exposed to extreme temperatures outside. This year, the purpose of my science fair project is to look at the bridges from a mathematical and engineering perspective- specifically the materials (using Young's modulus) and other factors that can be considered to make a stronger, safer, temperature resistant bridge. I plan to investigate further into resistance to other types of damage caused by weather, like wind and water erosion and creating the optimal material. The advice I would give to younger science fair participants is to incorporate a research perspective into their experiment.

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