



**CALIFORNIA SCIENCE & ENGINEERING FAIR
2018 PROJECT SUMMARY**

Name(s) Linea N. Vizenor	Project Number J0334
Project Title Strength in Numbers	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals My project consists of figuring out if there really is strength in numbers, and how it relates to the types of materials used in construction of bridges and structures.</p> <p>Methods/Materials I used a certain amount of strands of spaghetti in a bundle for each of the three trials. I used a hook attached to a bucket and placed it in the center of the spaghetti beam. I placed coins in the bucket until the spaghetti bundle broke. The bucket, coins, and hook were weighed and recorded. After the testing, I did my calculations for the average weight needed to break the spaghetti beam and the strength to weight ratio.</p> <p>Results The result of my project demonstrated as the spaghetti strands doubled; the average amount of weight needed to break the spaghetti strands doubled too. In other words, the same relative weight broke the spaghetti beams regardless of whether it was fifty strands or one hundred because spaghetti is a brittle material.</p> <p>Conclusions/Discussion In conclusion, it did not matter how many strands of spaghetti were used. It took a similar amount of tension and compressive stress to break the bundle of spaghetti regardless of whether it was a small bundle of spaghetti or a large bundle.</p>	
Summary Statement My project is about how important material selection is when building structures.	
Help Received I used the website Science Buddies for guidance on my project. I also had guidance from my parents and science teacher.	