



**CALIFORNIA STATE SCIENCE FAIR
2007 PROJECT SUMMARY**

Name(s) Arian E. Khansari	Project Number J0215
Project Title Strength Test for Bridges	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals The problem that I set out to solve by conducting my experiment was, "How do the different structural designs of the beam bridge, the triangle bridge, the double truss bridge, and the arch bridge affect the amount of weight each bridge can support before collapsing?" My hypothesis was that the arch bridge would be able to hold the most weight because I believed the arch to be the strongest, most durable shape. I also thought that the double truss bridge would come in second, the triangle bridge in third, and the beam bridge last.</p> <p>Methods/Materials The materials that I used in my project were 27 feet (325 inches or 8.3 meters) of 1/4-inch (.62-cm) balsa wood, a craft knife, tacky glue, a wooden block about 2 X 3 X 1/2 inches (5 X 7.5 X 1.25 cm), an eye-socket screw, a S-hook, four straight pins, a shallow pan of water, two tables of equal height, a scale, a large plastic bucket, sandpaper, and weights. I began my project by using a cutting knife to cut the balsa wood into the sizes that I would need to build the bridges. I had been soaking four pieces of balsa wood in water for about three days when I took one out and tried to bend it for the arch bridge. However, it snapped. Because of this, I was unable to make or test the arch bridge. Regardless, I finished cutting the wood for the other bridges, glued the pieces together, and left them to dry. Later on, I came back and conducted the actual testing. I did this by placing a wooden block on each bridge, hanging a bucket from this wooden block, and then adding weights into the bucket until the bridge collapsed. Lastly, I weighed each bucket on a scale and recorded the results.</p> <p>Results After conducting the testing, the beam bridge had supported 17 lbs., the triangle bridge had held 35 lbs., and the double truss bridge had carried 39.5 lbs. before finally collapsing. However, I did not receive any results from the arch bridge, as I was unable to build and test that bridge.</p> <p>Conclusions/Discussion I concluded that my hypothesis was proven partially correct, as the double truss bridge did carry more weight than the triangle bridge, and the triangle bridge did hold more weight than the beam bridge. However, I was unable to receive any results from the arch bridge, making that part of my experiment inconclusive and neither proving nor disproving that particular section of my hypothesis.</p>	
Summary Statement Testing the strenght of the beam bridge, the triangle bridge, the double truss bridge, and the arch bridge.	
Help Received Mom helped by driving me around to buy materials, Dad helped by giving me tips on how to cut the wood	