



**CALIFORNIA STATE SCIENCE FAIR  
2009 PROJECT SUMMARY**

<b>Name(s)</b> <b>Aaron J. Adriance</b>	<b>Project Number</b> <b>J0201</b>
<b>Project Title</b> <b>Which Shape Is the Most Truss-worthy?</b>	
<b>Abstract</b> <b>Objectives/Goals</b> The objective was to determine which shape - a triangle, arch, or vertical beam - could create the strongest bridge truss. <b>Methods/Materials</b> 10 identical bridge segments were constructed for each shape using 2-ply chip board and contact cement. Each segment was taped to a five gallon bucket on both sides for stability, and each bucket had a counter weight taped to its sides. Iron weights ranging from one - ten pounds were placed (one pound at a time) on each segment until failure between two five-gallon buckets. <b>Results</b> The triangle consistently held more weight than the other shapes. The arch came close to the triangle a few times, but never held more than the triangle, which won out every time. The triangle held an average of 42 pounds, the arch an average of 30.5 pounds, and the vertical beam held an average of 12.1 pounds. <b>Conclusions/Discussion</b> The triangle is one of the most important shapes in engineering and is used on most current bridge trusses. For this reason, the triangle took considerably more weight to destroy than the other two shapes. A triangle cannot be deformed unless a side's length is changed or a joint is broken.	
<b>Summary Statement</b> The purpose was to determine which shape - a triangle, arch, or vertical beam - could create the strongest bridge truss.	
<b>Help Received</b> My dad held the material while gluing.	