



**CALIFORNIA STATE SCIENCE FAIR  
2002 PROJECT SUMMARY**

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| <b>Name(s)</b><br><b>Brandon T. Miller</b>   | <b>Project Number</b><br><br>22417 |
| <b>Project Title</b><br><b>Windy Conditions</b>  |                                    |
| <b>Objectives/Goals</b><br>Which kind of blade will produce a greater force of wind?<br><b>Abstract</b><br><b>Methods/Materials</b><br>Make two holes in the front of the box, another in the back, opposite of the first holes. Put the holes two inches from the top and bottom. Make two holes in the jar lid using the nail. Make one hole in the middle of the lid and the other near the edge. Using the tack, attach a cork to the jar lid. This the handle of your fan Attach the handle to the box with the paper fastener. Push the fastener through the second hole in the box. The handle should turn easily. Cut four evenly spaced slits in another cork. Cut four long strips for the blades using the different blade materials. Make them as wide as the slits as wide as the cork. Push the blades into the slits, and push the stick in to the cork. Push the stick through the other two holes in the box. The stick should poke out of the back of the box. Push the third cork onto the end of the stick; loop the rubber band around this cork and the handle. Your fan is ready now. Turn the handle of the fan. The blades spin rapidly and blow forward.<br><br>Jar lid; Thin wooden stick; Hammer; Knife; Three corks; Nail; Paper fastener; Tack; Rubber band; Milk carton; Scissors; Blades; Stiff plastic; Cardboard; Paper; Foam<br><b>Results</b><br>The results showed the 4-inch foam blades worked the best and the 4-inch paper blades were the worst. The foam blades produced the most air to move the test strip an average of 10 inches. The 4-inch cardboard was second. The 4-inch paper blades were the worst, with an average of 1.67 inches. The results of the experiment using the 3-inch blades showed that the paper blades worked the best and the foam blades were the worst. The results of the 1-inch blade experiment were the complete opposite of the experiment using the 4-inch blades. The stiff plastic blades did not do as well as predicted. The foam blades doing the best were a surprise and I did predict the paper blades would not do as well as the other types of blades.<br><b>Conclusions/Discussion</b><br>My hypothesis that the stiff plastic blades would work the best was wrong. The blades that worked the best were the foam blades. The data shows that the foam blades produced the most force. The blades producing the most amount of wind determined the greatest amount of force. The 4-inch foam blades, according to the results, were the blades producing the greatest amount of force. |                                    |
| <b>Summary Statement</b><br>Test different types of blades to discover which one would produce the greatest force of wind.   |                                    |
| <b>Help Received</b><br>Mother edited report and helped transport board around to competitions.  |                                    |