



**CALIFORNIA STATE SCIENCE FAIR
2003 PROJECT SUMMARY**

Name(s) Cameo A. Mahan	Project Number J0222
Project Title Environmental Conditions that Affect a Rubber Ball	
Abstract Objectives/Goals I think increasing the temperature would make the rubber ball bounce higher due to the increase in the flexibility of the material. Methods/Materials The materials used were, masking tape, a tape measure, an eight-foot ladder, a Tupperware container with a lid, 12 hollow rubber balls, an oven, a vegetable steamer, a freezer, and a thermometer. I took the 12 balls and numbered them 1 through 12 and paired them for each environmental condition. The pairs of balls were subjected to the following conditions. Wet: submerge two balls in water for 30 minutes in a sealed container. Freezing: submerge two balls in water for 30 minutes in a sealed container. Then remove the balls and place them in the freezer for 60 minutes. Cold: place two balls dry balls in into the freezer at #300 f for 60 minutes. Humidity: place two balls in a vegetable steamer above boiling water for 10 minutes. Heat: put two balls in an oven at 1100 f for 40 minutes. The control balls were left dry and at the room temperature of 680f. After the balls reach the desired state they were removed and dropped from a height of 10 feet onto a concrete patio three times each. I used masking tape and the tape measure to mark a spot ten feet up on the wall and lines six inches apart from the bottom of the wall. The height of each bounce was measured and recoded. Results The results of the experiments were that the heated ball bounced the highest at an average of 67.5 inches and the frozen balls bounced the least at 17.66 inches. The control ball averaged a bounce height of 53.83 inches. The balls became more flexible after being heated. Conclusions/Discussion My hypothesis was proven correct because in the experiment the heated balls bounced higher than the control balls.	
Summary Statement How will different environmental conditions affect how a rubber ball bounces?	
Help Received Barry Mahan (dad) helped me make the measuring chart on the wall and recorded the height of the balls bounced.	