



**CALIFORNIA STATE SCIENCE FAIR
2006 PROJECT SUMMARY**

Name(s) Jacquelynn D. Vaughan	Project Number J1136
Project Title Where Did the Sound Go? A Study in Sound Absorption	
Abstract Objectives/Goals The objective of this experiment is to study what materials make the best sound absorbers. It is hypothesized that out of all the materials being tested, fiberglass will absorb the most sound because of its soft composition and porous surface. Methods/Materials In each test of the experiment, the interior of an L-shaped tunnel was lined with a different material. An instrument tuner was placed at the closed end of the tunnel, generating a note. The sound was recorded by an MP3 Player at the open end of the tunnel. All sound files were analyzed on a computer, using three different software audio meters. The materials tested included carpet, fiberglass, cardboard, terry cloth towels, open-cell foam, and wood. Results The results indicated that the fiberglass absorbed the most sound, followed by terry cloth towels, open-cell foam, carpet, cardboard, and wood. The results did support the original hypothesis. Conclusions/Discussion It is shown that soft and porous materials do absorb sound better than hard and smooth materials. In the fiberglass's case, it most likely reflects much of the sound inside itself, therefore allowing the sound to die out as it loses energy. This would happen because fiberglass is made of many tiny fibers of glass which, when seen at their level, are hard and reflective. Sound would reflect into the mass of fibers and bounce around inside of it until it dissipated. Other absorbent materials probably act in a similar way.	
Summary Statement The purpose of this project is to find out what kinds of materials are best at absorbing sound.	
Help Received My father helped build the tunnel and set up the software used.	