



**CALIFORNIA STATE SCIENCE FAIR
2011 PROJECT SUMMARY**

Name(s) Tim S. Brown	Project Number 31434
Project Title Frames of Silence	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals This project was designed to test if you can measure how far away something is by using sound and light. The idea is that if a light and sound were emitted from the exact same place at the exact same time, the light would be seen before the sound is heard. A video camera and a computer can be used to detect the exact moment the light is detected and the exact moment the sound is detected.</p> <p>Methods/Materials To test this, I made a short clip where the computer would flash white exactly (the same 30th of a second) when a loud sound occurred. While playing the video, I set up the camera different distances from the screen. When the footage was downloaded onto the computer, you could easily see the difference between the flash of light and the sound.</p> <p>Results The tests showed that as the distances increase, so does the gap between the flash and the sound. The distance was divided by the average amount of seconds to get the meters per second sound would have traveled to get each result. The closer the number was to the speed of sound (340 meters per second), the more accurate the video camera is as a distance measurement device. The closer the measurements were taken from, the more inaccurate the results were. For example, from 10 meters, the data resulted in 1800 meters per second, far from the actual speed of sound.</p> <p>Conclusions/Discussion The numbers at greater distances, the numbers got closer to the speed of sound, showing that it was more accurate at greater distances.</p>	
Summary Statement Using a video camera, measured how far away something that made a sound and a light at the same time was.	
Help Received Dad helped with testing the project, and Mr. Yogi gave advice.	