CALIFORNIA STATE SCIENCE FAIR
2005 PROJECT SUMMARY

Name(s)
Dionne E. Dettmer

Project Number
J0310

Project Title
Sound Location

Abstract

Objectives/Goals
I tried to find out in which areas the human ears best locate a given sound. I chose 12 different areas around the person being tested.

Methods/Materials
For each test I beeped a timer 5 times in one location. With the person being tested having her eyes closed, she tried to find the sound by touching the timer. I did two different types of tests. My general inaccuracy tests only measured how close the middle finger came to the sound. The second type of test measured vertical inaccuracy, which is how much lower or higher the middle finger was from the timer, and depth inaccuracy, which is how close or far away horizontally the guess was.

Results
I averaged my inaccuracy results, and displayed them on graphs.

Conclusions/Discussion
The most accurately located sound was in the middle front area. For my depth inaccuracy in the middle area, everyone guessed the sound was closer than it really was. I found certain patterns in the vertical and depth inaccuracy. I also found what I call a "blind spot". This is when the person being tested is completely confused and connot determine if the sound is coming from the low front area or the high back area. Almost everyone tested has this blind spot in her hearing.
I believe all my test results can be explained by the shapes of the outer ears of the person being tested.

Summary Statement
Determining how well human hearing can locate the source of a sound

Help Received
Mother and father read my report to make sure it was understandable. Father helped glue materials onto display board.