



**CALIFORNIA STATE SCIENCE FAIR  
2005 PROJECT SUMMARY**

<b>Name(s)</b> Nicole Kowtko	<b>Project Number</b> <b>J1520</b>
<b>Project Title</b> Can You Hear Me Now?	
<p style="text-align: center;"><b>Abstract</b></p> <p><b>Objectives/Goals</b> I want to determine the relationship between air pressure and sound. I hypothesize that as the air pressure decreases, the sound will decrease at a faster rate.</p> <p><b>Methods/Materials</b> A ringing bell was placed inside a vacuum chamber, along with a digital sound level meter. For each test cycle, I increased the vacuum gauge 5 inches of mercury of vacuum at a time, from 0 to 25. (This decreased the air pressure in the vacuum chamber.) I recorded the inches of mercury of vacuum and the corresponding decibel number from the sound meter. After five tests, I reviewed and evaluated my data.</p> <p><b>Results</b> For each of my tests, the decibels consistently decreased as the air pressure decreased. In particular, the decibels decreased in larger increments every time there was an increase of 5 inches of mercury of vacuum.</p> <p><b>Conclusions/Discussion</b> Based on my test data, I have reached the conclusion that the decibels and inches of mercury of vacuum have an inverse relationship. You can also say that sound level decreases quickly with decreased air pressure. Either way, there is a logarithmic pattern. In other words, the decibels decrease at a rate that is exponential and not linear.</p>	
<b>Summary Statement</b> My project is about identifying the relationship between air pressure and sound, by adjusting the air pressure in a vacuum chamber, while the sound remains constant.	
<b>Help Received</b> My mother helped me with Excel and gave me lots of support and advice. My science teacher helped review my work. My math teacher tried to figure out a pattern to my test results, and my two neighbors patiently taught me about the vacuum chamber.	