



**CALIFORNIA STATE SCIENCE FAIR  
2002 PROJECT SUMMARY**

<b>Name(s)</b> <b>Ian Y. Wong</b>	<b>Project Number</b> <b>J0725</b>
<b>Project Title</b> <b>Resistance and Resistivity</b>	
<b>Objectives/Goals</b> My objective was to study the resistivity of different types and sizes of leads. I also determined the resistivity of certain beverages relative to water.	
<b>Abstract</b>	
<b>Methods/Materials</b> 1 multi-meter, 1 potentiometer, 1 Lego setup, 1 AA battery, 10 wires, 0.3 mm-0.9 mm leads of different types, traditional pencils, known resistors, and beverages.  Construct the Wheatstone Bridge consisting of two(one) given resistors, the potentiometer, and the lead(beverage). Adjust the potentiometer until the galvanometer reads 0, and then measure the resistance of the potentiometer. Repeat five times for each type of lead.	
<b>Results</b> a.) The resistivity of the mechanical leads did not follow a clear trend for the lead types, but the resistance clearly got larger as the thickness decreased. b.) The resistivity of sour drinks was among the lowest of the beverages tested.	
<b>Conclusions/Discussion</b> a.) For the mechanical leads, the resistivity did not appear to relate unambiguously with the hardness, whereas for the traditional pencils, resistivity increases with hardness. The skinnier the lead, the larger the resistance. b.) The acidity in a beverage substantially reduces its resistivity relative to water.	
<b>Summary Statement</b> This project studied the relation between resistance and the properties of leads and beverages.	
<b>Help Received</b> Father helped buy all the leads and resistors for this project.	