



**CALIFORNIA STATE SCIENCE FAIR
2007 PROJECT SUMMARY**

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Project Title If You Can't Stand the Heat...	
Abstract	
Objectives/Goals Solar ovens do not have dials so it is very difficult to predict the temperature that the oven will reach. I hope to write an equation that can predict the temperatures that my solar ovens will reach on any given day.	
Methods/Materials 2 solar ovens 2 instant read thermometer log book and pencil for recording data	
<ol style="list-style-type: none">1. Assemble two solar box ovens.2. Place the two solar ovens out in the sun on a clear day by 10:00 am.3. Open flaps of solar ovens and turn the solar ovens so that they face the sun.4. Place the instant-read thermometer in the temperature port.5. Record the temperature in the ovens at regular time periods. Record the location, date, time, and temperatures onto the chart.6. Using software from the University of Oregon, calculate the longitude and latitude of the location.7. Using software from the University of Oregon, calculate the solar irradiance dependent on the location, date and time.8. Evaluate relevant data9. Compare the solar irradiance to time and the oven temperature to time10. Compare the solar irradiance to the oven temperature11. Generate equations and correlate results.	
Results Using Microsoft Excel to determine an equation to represent the relationship was reasonably successful. The graph of peak solar irradiance vs. peak oven temperature resulted in a linear equation $Y=0.0353X + 52.252$ with a reliability factor $R^2 = 0.7398$. This could be considered a good fit, but not a great fit.	
Conclusions/Discussion The results showed that a direct relationship does exist between solar irradiance and the temperature of the solar oven. Therefore, the hypothesis was supported by the results.	
Summary Statement I tried to write an equation to predict the temperature of a solar oven based on available solar energy.	
Help Received My mother helped me build my ovens and plot my data on the computer.	