



**CALIFORNIA STATE SCIENCE FAIR
2009 PROJECT SUMMARY**

Name(s) Emily M. Spencer	Project Number J2230
Project Title Thermal Insulation Comparison of Sleeping Bag and Blanket Combinations	
Abstract Objectives/Goals My objective was to see how much a sleeping bag's temperature rating and the type of blanket that a person uses while camping effects the amount of heat transfer that takes place. Methods/Materials Three forty-five degree Fahrenheit rated sleeping bags, a thirty degree farenieght sleeping bag, a fifteen degree farenieght bag, a zero degree fareneight bag, a reflective blanket, and a traditional blanket were used in the experiment. One of the forty-five degree farenieght rated sleeping bags was wrapped in a reflective blanket while another forty five degree bag was wrapped in the more traditional blanket. Then three gallon jugs of water at about human temperature were placed in each sleeping bag. A cooking thermometer was used to check the temperature of the water in each gallon throughout the night. Results When comparing the heat transfer with a sleeping bag's rating, the sleeping bag with the lowest temperature rating was the best insulator. When comparing the type of blankets, the more traditional blanket was a better insulator then the reflective blanket. Conclusions/Discussion My conclusion is that a sleeping bag with a lower temperature rating is a better insulator then a bag with a higher temperature rating. In this experiment, the traditional blanket was a better insulator then the reflective blanket. However, considering the reflective blanket's thickness and weight to that of the traditional blanket, the reflective blanket was a better insulator for its weight.	
Summary Statement My experiment is on the relationship of heat loss with sleeping bag temperature ratings and blankets.	
Help Received Mother helped with board and report; Father helped with report and conducting the experiment	