CALIFORNIA STATE SCIENCE FAIR
2009 PROJECT SUMMARY

Name(s)
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Project Number
J1901

Project Title
Chill Out

Abstract

Objectives/Goals
To study if distance between warm bodies placed together and then apart affects their cooling rate.

Methods/Materials
I studied the cooling rate of one warm body with respect to the cooling rate of two bodies and then three bodies touching the maximum surface area. Then I studied if placing the warm bodies at a distance from one another would affect their cooling rate and what that affect would be. Glass bottles of equally warm water were used to simulate the warm body and temperatures of the bottles were taken over time at equal intervals (2-10min.).
MATERIALS LIST
Three glass bottles of exactly the same size and shape; # Three laboratory thermometers scaled up to 200°F; # Metal Pot; # Stove Top; # Plastic Wrap; # One Timer; # Measuring cup; # Grid sheet with intervals of one(1) inch; # Towel; # Oven Mitts.

Results
The triple bottles touching retained the most heat over time
The double bottles touching retained the second amount of heat over time
The single bottle lost the most heat.
The triple bottles on inch apart retained a little more heat and showed some benefit to staying close without contact for retaining heat.
The 2 bottles touching were almost four percent warmer.
The three bottles touching were almost 5 percent warmer than the one and one percent warmer than the two

Conclusions/Discussion
Conclusion: I conclude that my hypothesis #If I place a greater number of warm bodies together, then I believe that they will retain a higher percentage of body heat than a smaller group of bodies# is correct.
The largest amount of warm bodies tested in my experiment stayed the warmest over time.
The single warm body in my experiment lost the most heat
The warm bodies that were placed next to each other without touching lost the most heat.
Therefore, I conclude that to retain body heat in situations of heat loss, it is beneficial to stay in contact with another warm body. It is more beneficial to stay in contact with more than one warm body. If this trend is correct, then it would seem to stay warm in heat loss situations, that a higher number of warm bodies would help retain heat better.

Summary Statement
Heat loss and retention of warm bodies with respect to distance btween the warm bodies.

Help Received
Parents assisted typing results and formulating some graphs on computer.