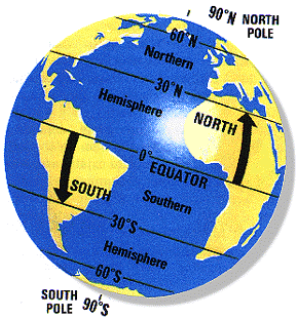
Name:_____ Date: _____
Lab #_____

Title: Angle of Insolation



Problem: How does the angle of insolation affect the amount of energy absorbed by a surface?

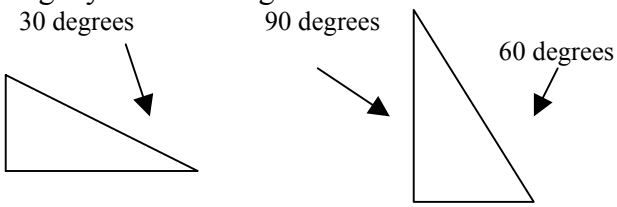
Introduction: Different places on earth receive different angles of sunlight (insolation a.k.a. **in**coming **sol**ar radi**ation**).

We all know that some times during the year are hotter than others and some times of the day are hotter than others.

Temperature is related to how much insolation (energy) is being absorbed by the air or surface of an area. Does the angle at which insolation stikes an area have an affect on the temperature?

Directions:

Design an experiment to determine the effect of different angles of insolation on temperature. In your experiment you must test three different angles; 90, 60, and 30 degrees. You may use an artificial light as your insolation. To form the different angles you may use a triangular wood block with a thermometer attached on the angle you are testing.



1. On a clean sheet of paper place your full heading, **Title**, and **Problem** for your lab.
2. Design a **Hypothesis** that states a possible solution to the problem.
3. Make a materials list of all the things that you need to solve the problem.
4. Make a list of **Procedures** that you will follow to do your investigation.
   Note: write in complete sentences and in numbered sequence.
5. For your **Observations**, make a data table for the data you will collect.
   Note: measure the temperatures of the different angles every 1 minute for at least 5 minutes.
6. Have your Hypothesis – Procedure checked by your teacher.
7. Do your experiment and collect your data.
8. For your **Analysis**, make a line graph of your data. Plot time of insolation on the x-axis and temperature on the y-axis.
   Note: Be sure to make your scale to use as much of the graph paper as possible. You should have three lines on your graph, one for each angle you tested.
9. Write a paragraph for your **Conclusion** based on your data. Did your conclusion support your hypothesis? What is the relationship between the variables? Why do you believe this relationship exists?

Evaluation Questions for Insolation Lab:

1. In your experiment, explain 2 ways you made sure each thermometer on the different angled surfaces received the same amount of energy from the lamp?
2. Where on earth receives noontime insolation at 90 degrees?
3. Where on earth receives noontime insolation at 1 degree?