

NAME:

Due DATE:

class:

Lab Activity: Heat Radiation from the Earth's Soil Clouds vs. No Clouds

Background:

You may have noticed that, after sunset, the ground temperature does not drop as quickly on cloudy nights as it does on clear nights. In fact, during the winter, the coldest nights seem to occur when the sky is quite clear. In this investigation, you will use a model to study this pattern of temperature change.

Problem:

How do variations in the atmosphere affect the cooling rate of warmed earth material?

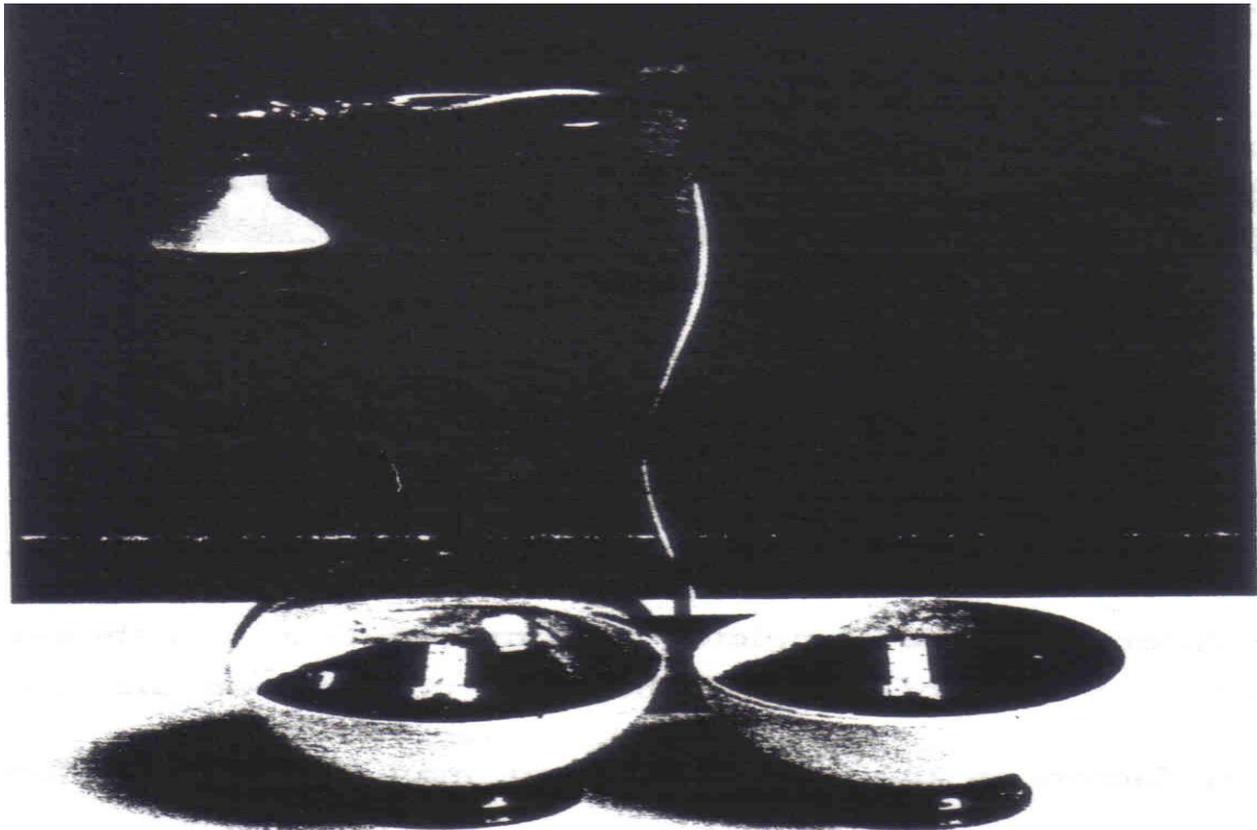
Objectives: you should be able to:

1. Describe the effect of an atmosphere-like covering on the rate at which earth material cools.
2. Identify factors in the atmosphere that may account for differences in the cooling rate of soil.
3. Construct and interpret a graph of data collected from a model situation.

Materials:

1 SPLIT earth globe
2 thermometers.
1 transparent plastic cover,
heat source,
clock or timer

2 cups of dry soil in equal amounts of earth globe
Ring stand
Ring clamp
2 Support blocks



NAME:

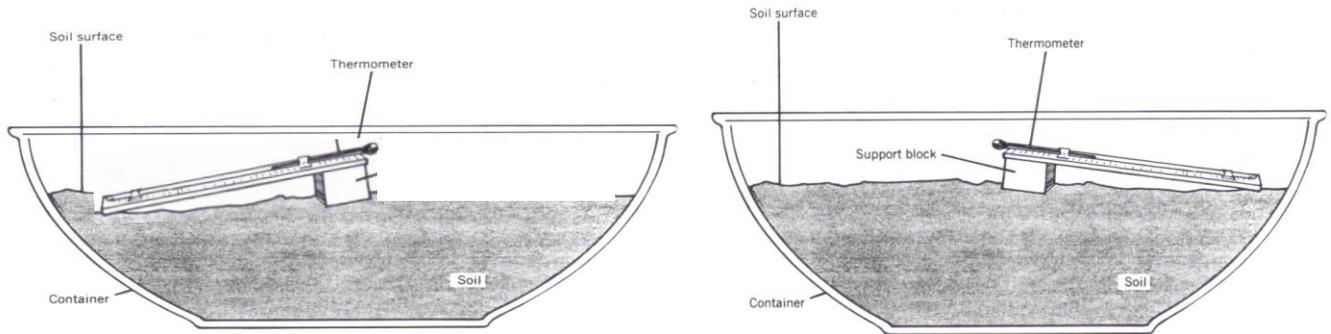
Due DATE:

class:

PROCEDURE

STEP 1: Start the lab by preparing two containers of soil

STEP 2: Place the thermometers in them so that the thermometer bulbs are positioned just above the soil surface (See diagram) and **FACING** each other.



STEP 3: Place the transparent plastic cover **THAT HAS A PIECE OF TAPE ON THE TOP OF IT**, on one container, leaving the other uncovered

STEP 4: Place a heat lamp over the soil containers **CLOSE** to the **DOMES** but **NOT** touching the dome. **MAKE** sure that the light shines **EVENLY on to BOTH containers**

STEP 5: In the Data Table on the Report Sheet, record the initial temperature in each container **IN Celsius**

STEP 6: **TURN** on the **HEAT** lamp and heat **BOTH** containers for 15 minutes, **recording** the **temperature** in each container **every minute** in the Data Table on the Report Sheet.

STEP 7: Once 15 minutes are up, turn off the lamp, **remove it immediately**

STEP 8: In the Data Table on the Report Sheet, **CONTINUE to record the temperatures of each container every minute for another 15 minutes.**

STEP 9: **CLEAN** up the lab setting.

STEP 10: Graph the data for both containers on the grid provided on the Report Sheet. Plot a separate line graph for each container. Identify the data by correctly labeling each curve. Make sure to include the following on the graph:

- i. Title
- ii. Author of graph
- iii. Date
- iv. Key

STEP 11: Answer each of the Summing Up questions at the end of this investigation.

STEP 12: Turn in last page **ONLY**... make sure your name is on the lab sheet.

