**Activity 1**

**Climate Change Experiment**

**Question:** Does creating a greenhouse effect cause temperature to change in soil?

**Materials:**  1 large, clear glass jar or clear plastic cup (large enough to cover the plastic or paper cup)

2 paper cups or other containers for soil

Soil (such as potting or topsoil)

2 thermometers (small enough for the base to fit in the cup)

**Roles:**

Equipment Manager – Gathers/returns materials. Briefly leaves the group to get supplies.

Tracker - Takes time during experiment. Announces when time is halfway through and when time is nearly up.

Communicator - Makes sure that every voice is heard. May request help from the teacher ONLY if all other members agree that assistance is needed in problem solving.

Encourager - Focuses work around the learning task. Encourages the group to stay on task.

**Procedure:**

1. Remember to write a prediction for your hypothesis BEFORE conducting the experiment.
2. Label one cup "**A**" and the other cup "**B**".
3. Put your table number and class period on the cup.
4. Place the soil in each of the cups so the cups are almost full.
5. Place one thermometer in each cup so that the bulb of the thermometers is slightly buried by the soil.
6. Record the temperature for each sample in your notes.
7. Place both cups in direct sunlight (such as on a table outside or under a heat lamp.)
8. Place the clear plastic cup (upside down) over cup "**A**" keeping the thermometer in the soil.
9. Read the temperatures of each cup after 5, 10, and 15 minutes.
10. Record your observations in your notes.
11. Return all materials.

**Wrap-Up**

1. Why do you think the temperature changed when the earth (soil) was enclosed by the glass jar?
2. What was the source of the heat? Why did it affect cup “B” differently than cup “A”?
3. Can you think of other situations where the heat from sunlight is trapped in a small space and it gets hot?
4. What happened in this experiment is similar to how the Earth’s atmosphere traps heat. It is known as the greenhouse effect. How could this effect be good or bad for the earth?

**Climate Change Experiment**

**My role is the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Question:** How will soil temperature be affected by enclosing the surrounding system?

**Hypothesis:**

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**Observe:**

What happened to the temperature of the soil when it was covered by the glass jar? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Collect Data:**

|  |  |  |
| --- | --- | --- |
| **Elapsed Time** | **Cup A (with cover)** | **Cup B (without cover)** |
| Beginning temperature (0min) |  |  |
| 5 minutes |  |  |
| 10 minutes |  |  |
| 15 minutes |  |  |

**Analysis of Date:** summarize what happened with the temperatures: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**Wrap-Up (Conclusion)** Answer questions 1-4**:** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_