**Water Cycle Lab: Comparing Transpiration and Evaporation**

*Record all information in your science notebook.*

**Ask Question**: How do transpiration and evaporation in Earth’s atmosphere compare? How do they differ?

**Background Research**: See water cycle pathway in notebook.

**Hypothesis:** I hypothesize \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ will produce the greatest amount of condensation because \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

**Materials**:

* Mason Jar with lid
* Hot Plate
* Matches
* Water
* 400 mL Beaker
* Ice
* Plastic Wrap
* Latex Glove
* Flashlight
* Dark Paper

**Procedure**:

***Part 1:  Create your Evaporation Model in a Jar.***

1. Make sure your jar is clean.
2. Carefully fill the bottom of the jar with hot water until it is about 1 inch deep.  You may want to swirl the hot water on the sides of the jar to warm up the glass, otherwise, condensation will immediately occur.
3. Take the lid of the glass jar and turn it upside down so that it acts as a small bowl. Put ice in the lid and place the lid on top of the jar.
4. Notice that while you may have some condensation on the glass, there is no cloud floating inside the jar.
5. Next, take a match, light it and quickly blow it out. You can quickly remove your lid, drop the smoking match inside the jar and replace the lid of ice.
6. You may also want to shine a flashlight inside the jar to see the cloud better. Lift the lid and let the cloud out so that you can touch it.
7. Sketch your apparatus under the Procedure Section of your notebook.
8. Record your findings and observations under the data section of your notebook.

***Part 2:  Create your Transpiration Model in a Jar.***

1. Using qualitative observation, test the moisture of the lettuce by feeling the lettuce. Record your findings under the Data Section of your notebook.
2. Using the Triple Beam Balance, take the mass of the lettuce before your experiment. Record your findings in the Data Section of your notebook.
3. Rinse and dry your mason jar. Place the lettuce in the mason jar (you may have to tear it to fit it.)
4. Place glove on the opening of jar, creating a tight seal.
5. Apply a gentle heat to jar (check frequently, you don’t need a lot of heat.)
6. Glove should begin to inflate with a vapor cloud.
7. Turn off your heat. Remove glove, let stand for five minutes or until touchable. Sketch your apparatus in the Procedure section of your notebook.
8. Retest moisture of lettuce. Record your findings under the Data Section of your notebook.
9. Using the Triple Beam Balance, take the mass of the lettuce after your experiment. Record your findings in the Data Section of your notebook.

**Conclusion and Analysis**:

1. What steps of the water cycle were you able to observe during the evaporation experiment?
2. What would you predict would happen if you added a pollutant to the water? How might that affect the air quality within your jar?
3. Describe what was happening in the second experiment. Why did the latex glove fill with air?
4. Which experiment produced more condensation? Why?
5. The lettuce in the transpiration experiment was recently picked and purchased in the store. What do you predict would happen if an older head of lettuce was used? Why?