

## Exploring the Water Cycle

Name: Key Date: \_\_\_\_\_ Period: \_\_\_\_\_

LT: I can explore the cycling of water through the Earth's systems to help me develop a model for the water cycle.

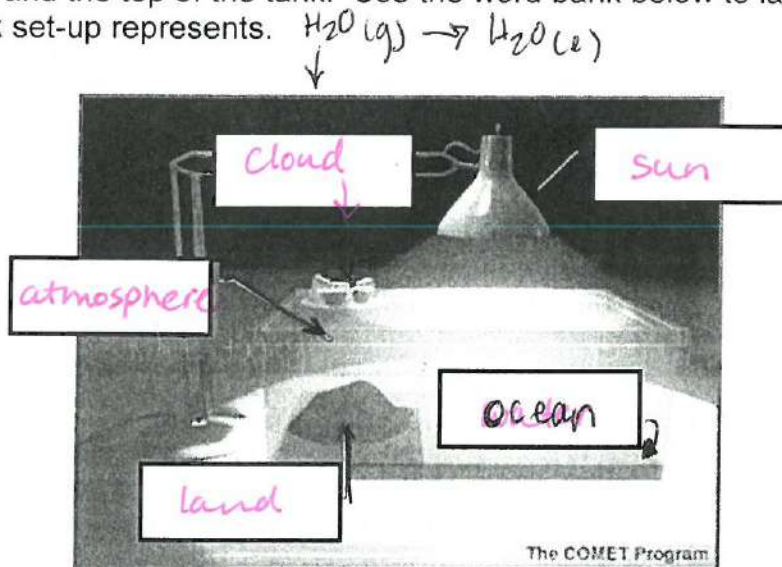
### Background Information:

In *Exploring the Water Cycle*, Kim Castagna explains the water cycle as follows – “Water is found almost everywhere on Earth: from high in the atmosphere (as water vapor) to low in the atmosphere (precipitation, droplets in clouds) to mountain snow caps and glaciers (solid) to running liquid water on the land, ocean, and underground. Energy from the sun and the force of gravity drive the continual cycling of water among these reservoirs. Sunlight causes evaporation and propels oceanic and atmospheric circulation, which transports water around the globe. Gravity causes precipitation to fall from clouds and water to flow downward on the land through watersheds.”

You have used your background knowledge, the dictionary definition and a background reading from *newsela* to draw an initial model of what you think the water cycle looks like. You will explore four different activities that can be used to help gather additional information to help you refine your model of the water cycle.

### Activity 1: Water Cycle in a Tank

The tank is set-up to mimic what happens during the water cycle. Take a few minutes to observe the tank. Notice the sides and the top of the tank. Use the word bank below to label what each item in the drawing of the tank set-up represents.



Word Bank: ocean sun cloud atmosphere land

Now answer the following questions:

1. How does this simulation show evaporation? The simulation shows evaporation because the heat lamp heats the water & evaporation occurs
2. How does this simulation show condensation? The simulation shows condensation because there are water droplets on the plastic film.
3. How does this simulation show precipitation? The simulation showed precipitation because water droplets were falling down from the top of the tank.

4. What is the energy source in this simulation? What does it represent in the water cycle?

The energy source in the simulation was the lamp. The lamp simulates the sun.

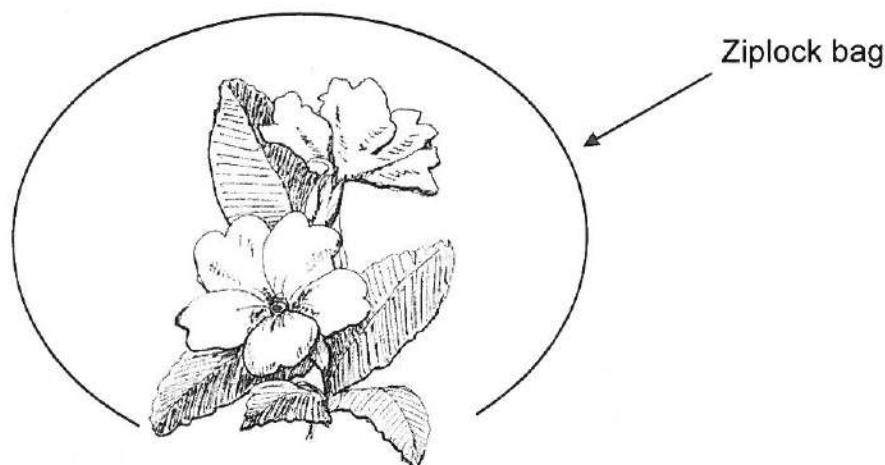
5. Why might scientists use a model like this in their research into the water cycle in real life?

Scientists might use a model like this, because it makes it easier to study the entire cycle at one time.

6. Update your model based on what you have learned in this activity.

### Activity 2: Including Plants in the Water Cycle

The plant was placed in a dry Ziploc bag and placed under a lamp. Take a few minutes to observe the plant and the bag. Be gentle with the bag so that you do not damage the plant inside.



1. What did you notice about the outside of bag as compared to the inside? The inside of the bag was wet, the outside of the bag dry.

2. Where did the water from inside the bag come from? Circle the correct answer.

- a. It came from the inside of the plant, because all plants need water.
- b. It came from the air inside the bag because air makes water.
- c. It was in the air outside the bag and it condensed on the bag.

3. Explain your choice for number 2 above. \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

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4. Transpiration is the process by which plants release water vapor into the air through little holes (stomata) in their leaves. Does this explain where the water in the bag came from? Explain.

Yes, the definition of transpiration explains where the water came from, because the plant was inside the bag and no additional water was added, so the water must have come from water vapor (from the plant) condensing on the bag.

5. Do you think that you should include transpiration in your water cycle? Why or why not?

Yes, I should include transpiration in the water cycle because it is a source of  $H_2O$ . The water vapor from plant would evaporate & condense in clouds.

6. Update your model based on what you have learned in this activity.

### Activity 3: Water Cycle Animation

You will need your computer. Go to Google Classroom. You will find a link to a Water Cycle Animation. Watch the animation several times. As you watch the animation, update your water cycle model to include processes that you might have missed.

### Activity 4: Water Cycle Flash Cards

You will need your computer. Go to Google Classroom. You will find a set of flash cards with water cycle vocabulary. Practice the cards at least 5 times or until you feel comfortable with the vocabulary words. If needed, write down the definitions. If you have extra time you can play one of the other vocabulary games.

#### Vocabulary List:

|                    |                  |                          |
|--------------------|------------------|--------------------------|
| Condensation       | Earth System     | Energy                   |
| Evaporation        | Force            | Gravity                  |
| Groundwater Runoff | Hydrologic Cycle | Percolation/Infiltration |
| Runoff             | Solar Radiation  | Water Cycle              |

#### Sources:

Castagna, Kim. "Lesson Plan: Exploring the Water Cycle." *South Coast Science Project*, UC Santa Barbara, [scsp.chem.ucsb.edu/sites/secure.lsit.ucsb.edu.chem.d7\\_scsp/files/sitefiles/lessons/Water%20Cycle%20Lesson%20Plan%206th%20grade.pdf](https://scsp.chem.ucsb.edu/sites/secure.lsit.ucsb.edu.chem.d7_scsp/files/sitefiles/lessons/Water%20Cycle%20Lesson%20Plan%206th%20grade.pdf). Accessed 28 Jan. 2020.

Traina, Amanda. "Water Cycle." *Georgian Court University*, GCU Online, 2011, [gcuonline.georgian.edu/wootton/water\\_cycle.htm](http://gcuonline.georgian.edu/wootton/water_cycle.htm).

This page can be used for notes and a rough draft for your model of the water cycle.