

# MINI WATER CYCLE

## Learning Goal

Label the stages of the Water Cycle. Then, test how temperature affects the Water Cycle by observing water under different heat conditions.

Have you ever heard of recycling? Recycling is what we call it when something gets re-used. Humans recycle plastic, metal, paper, and all kinds of things! But, did you know that Earth recycles too? Instead of all that other stuff, Earth recycles our water. It's actually been recycling our water for over 4 billion years!

Our planet recycles water through something called **The Water Cycle**: water starts in bodies of water (rivers, lakes, and oceans), then floats up to the atmosphere, then falls back down to the land, then drips back into those bodies of water. Let's dive deeper into these steps while we observe this cycle up close!

## MAKING A MINI WATER CYCLE

### Materials:

Bottle or Jar With Lid, Permanent Marker, Water

### Optional:

Blue Food Dye

1. Draw the following on the outside of your bottle or jar:
  - A ground with flowers or plants near the bottom of your container
  - A sun and clouds at the top at the top of your container

This drawing will help you see the ways that the various steps of the Water Cycle effect our planet. Decorate your ground and sky as much as you want; just make sure they're in the right places and you can still see inside your bottle or jar.

2. Add 1 - 2 inches of water to your bottle or jar. If you have it, add 1 drop blue food dye.



3. Do your best to dry any drops of water that may have gotten on the inside of your bottle/jar.
4. Put the lid on your bottle or jar and seal it tightly. Do not open it again until you're finished observing!
5. Set your container down somewhere it will be exposed to sunlight and won't be disturbed.



6. Your water will soon begin the process of **evaporation**: when a liquid turns into a gas. In this case, the liquid is water turning into water vapor. You'll have to take our word for it because this water vapor is totally invisible!

**What makes evaporation happen?** Heat! We asked you to set your container in sunlight because the heat from the sun is what makes water evaporate -- both in your Mini Water Cycle and in the natural Water Cycle.

7. After enough water vapor has collected inside your container, the vapor will cool itself off and turn back into liquid water. This is a process called **condensation**. But, this liquid water is so small that its not heavy enough to join all the water at the bottom of the container. Instead, all this tiny water clings to the sides of your container. Things are looking a little foggy!

**Did you know?** When water vapor goes through condensation in nature, there's no bottle walls for it cling to! Instead, these tiny bits of liquid water float together in the sky, forming clouds. Lot's of folks think that clouds are considered a gas, but they're actually a liquid!

8. After about 24 hours, the condensed liquid water becomes too heavy to stay on the bottle's walls. This is when **precipitation** happens! When this happens in nature, we see clouds getting really low, heavy, and often gray. This means one thing: rain! All kinds of creatures from mammals to plants depend on the rain to quench their thirst.
9. The water drops that have fallen all the way to the bottom of your container are on their way to the last step in the Water Cycle: **collection**. In nature, collection means that the rain water has made it's way back to the lakes, rivers, and oceans it started out in.

Even though saltwater, freshwater, and rainwater are all very different, they're all connected through the Water Cycle!



# MINI WATER CYCLE: EVAPORATION EXPERIMENT

We know that heat causes evaporation, but let's see how much! We're going to see how evaporation is effected by various temperatures. We'll use the steps of the Water Cycle as a way to track our jars' progression and talk about how much or how little evaporation has happened.

## Materials:

3 Bottles or Jars With Lids, Science Journal, Pen or Pencil

1. Fill your containers with 1 -2 inches of water as shown above. You don't have to draw on these containers, but you certainly can! Remember to make sure your lids are sealed tightly.
2. Place one container in the fridge, one outside, and one inside **away from sunlight**.
3. Check on your containers every 2 hours. Whenever you check on them, answer the following questions in your science journal:
  - What is the date and time?
  - Which container am I writing about: Fridge, Outside, or Inside?
  - What stage of the water cycle has the container reached: evaporation, condensation, precipitation, or collection?
4. Continue to check on your containers every 2 hours for at least 24 hours.
5. When the experiment is complete, write a Conclusion in your science journal. Try to answer these questions:
  - Did every bottle go through all stages of the Water Cycle? Which ones did and did not?
  - Which container(s) went through the Water Cycle stages fastest?
  - Did temperature effect how quickly the containers went through the Water Cycle stages?
  - What does this mean for liquid water in colder places on Earth? Is it still part of the Water Cycle? How so?

**Make sure you post your Mini Water Cycles on social media! Use #MOSHConnect so we can see your awesome work!**