

## ***GASP! At Home***

# **Week 2: Weather**

### **Hello all!**

While our Girls Advancing Scientific Progress (GASP!) program is, the Environmental Learning Center would still like to provide families with environmentally themed activities that they can do at home! Below are a variety of activities ranging from quick, 10-minute activities to more in-depth, 45-minute activities that all explore the topic of **weather!**

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**At the Environmental Learning Center**, our mission is to connect people to nature. We want to encourage families to get outside, here's some tips to do it safely: [Please visit this website for the most up to date information on COVID-19 \(coronavirus\) in Larimer County.](#)

Larimer County is currently under a stay at home order; [read more about the stay at home order here.](#) This order currently allows outdoor recreation, as long as physical distance guidelines are adhered to.

- When you go outside, always **maintain at least 6 feet of physical distance** with people who do not live in your household.
- [New guidance has come out about the use of facemasks](#), click the link to see the guidance from Larimer County: <https://www.larimer.org/health/communicable-disease/coronavirus-covid-19/fabric-face-coverings>
- **Be mindful of signs** posted in outdoor areas you visit. In most parks the playgrounds, picnic areas and bathrooms are closed.
- **Stay home** if you or your child feel sick.

Please practice everyday actions to prevent the spread of disease:

- **Frequently and thoroughly wash your hands** with soap and water for at least 20 seconds, especially after coming in from outside.
- If soap and water are not available, **use hand sanitizer** with at least 60% alcohol.
- **Avoid touching your eyes, nose, and mouth** with unwashed hands.

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### **Scientist of the Week!**

Weather is important for so many different processes that take place on earth. So, **how do we look at weather from so high up in the atmosphere?** That's where an astronaut can help with the use of **satellites!** Watch the video below to learn more about what astronauts do and how you can become one! <https://www.youtube.com/watch?v=jhD8GFwy734>

Also, can you **imagine washing your hair in space?**! Check out this video of how Karen Nyberg washes her hair while in the International Space Station:

<https://www.youtube.com/watch?v=uljNfZbUYu8>

## Pre-discussion questions for all activities:

- **Discuss with your child:**
- What is the name of a scientist that studies the weather?
  - a. A meteorologist
- Do you know the names of tools that a meteorologist would use to observe the weather?
  - a. Thermometer (temperature), anemometer (wind speed), wind sock(wind direction)
- **Watch the video below** to learn about how you can record weather:  
<https://www.youtube.com/watch?v=Uo8lbeVVb4M>
- What is the difference between weather and climate?
  - a. Weather is the temperature, humidity, precipitation, cloudiness, visibility and wind **from day-to-day**.
  - b. Climate is the **weather of a place over many years**, often 30 years.
- Look at the weather chart below. What is the weather like today? Why is it important to know the weather for the day?



# Cloud Chart/ Taking Weather Measurements

*Time: 10 minutes*

## **Materials:**





- cloud chart (see next page)
- scrap paper or old journal to record observations

## **Objectives:**

- Identify the different types of clouds and what weather is associated with them.
- Record weather measurements in a journal to practice recording scientific data.

## **Predict the Weather:**

1. In this activity, you will be **using the cloud chart below** to look at the clouds outside and predict what weather they may be bringing! First, some background knowledge:
  - o Clouds are **formed through the process of evaporation** in the water cycle and contain many water or ice droplets that have cooled in the sky.
  - o Clouds can be very high up or close to the ground but **depending on their shade, we can tell how much precipitation is in them.**
  - o Clouds move around due to air currents that happen at every level of the atmosphere. Sometimes there may not be any wind on the ground but if you look up, you can see the clouds moving quickly.
2. Go outside and either on scrap paper or in an old notebook, **record your observations of the clouds.** What color are the clouds? Are they big and fluffy? Thin and wispy? Big and dark? Record other data like: the current temperature, is it sunny out, is it windy?
  - a. What tools would you use to find temperature? Wind speed? Humidity?
  - b. Hint: remember the video from the pre-discussion questions!
3. Now, **take a look at the cloud chart** and see what type of clouds you observed. Write down what weather the clouds could bring with them on your paper or notebook.

	Cloud Type	Description	What it could mean
	<b>Stratus Clouds</b>	Low, gray clouds	Misty rain, or snow, sometimes makes fog
	<b>Cumulus Clouds</b>	Fluffy clouds, blue sky	Clear day
	<b>Alto cumulus Clouds</b>	White-gray puffy clouds across sky	May mean afternoon rain if also warm in the morning
	<b>Cirrus Clouds</b>	High few wispy clouds	Fair weather, but if the clouds grow, rain may be on the way

# Cloud in a Bottle

*Time: 25 minutes*

## Materials:

- plastic bottle (any size)
- matches or lighter and piece of paper
- cold water
- cloud chart (see activity 1)

## Objectives:

- Get active and outside with a game about types of weather
- Conduct a hands-on experiment on how clouds form

## Games and Making Clouds:

### 1. Go outside and **play a game of Meteorologist Says:**

Like Simon Says, in this game, one person will be the meteorologist and will give different commands for the others playing by saying "The weather forecast calls for...". The trick is like Simon says you can only do that action if the "meteorologist says..." The commands will be different types of weather which have certain actions related to them:

- Sun = everyone must find shade to stand in and pretend to rub sunscreen on their face and arms
- Rain = everyone must find something that covers their head from the "rain"
- Wind = everyone must spin around in circles and be blown by the "wind"
- Thunderstorms = everyone must run to a door that leads inside to a building and back to the meteorologist
- Blizzard = everyone must run to the meteorologist and huddle around them for warmth
- Tornadoes = everyone must yell "Twister!" and crouch on the ground with their arms covering their head
- Flash floods = everyone must get on top of sturdy object that keeps them off the ground

### 2. **Make a cloud in a bottle!** For this you will need a plastic water bottle (should be 17 oz water bottle or larger), cold water and matches or a lighter and a strip of paper that can easily fit into the bottle. **PARENT SUPERVISION IS NECESSARY FOR THIS ACTIVITY!**

- a. **Fill up the plastic bottle  $\frac{3}{4}$  of the way** full with cold water. Put the cap on and shake the bottle a couple of times.
- b. **Take the cap off** and either strike a match or use a lighter to ignite a **small strip** of paper. Quickly and carefully, drop the match or paper into the bottle and put the cap back on tightly.
- c. **Squeeze the bottle and then release it.** When you release it, you should see clouds! Squeeze and release the bottle a couple more times to see the clouds form and disappear.

### **Why does this happen?**

When you squeeze the bottle, you are adding **pressure** to the bottle which raises the temperature causing the water droplets to **evaporate**. When you add the match or paper, you are adding **smoke particles** which attach to the water droplets and make them visible. The water droplets can **condense** with the smoke particles when you release the bottle because you get rid of the pressure and cool down the water droplets.

3. Now, **go outside and look at some real clouds!** Use the chart in activity 1 to identify the different types of clouds and what weather might come with them.

# Activity 3 Water Cycle Activity

Time: 45 minutes

## Materials:

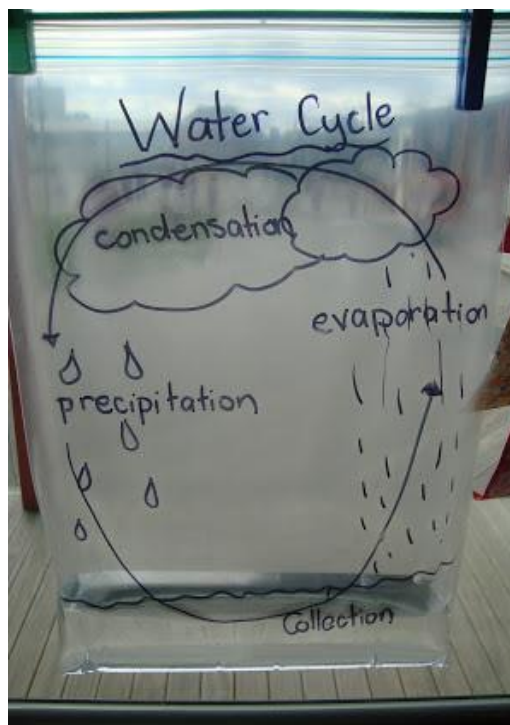
- scrap paper or old notebook
- pencil
- Ziploc bag
- marker
- water
- tape
- cloud chart from activity 1

## Objectives:

- Conduct an experiment that emulates the water cycle and its steps
- Identify the steps of the water cycle
- Identify clouds from a cloud chart

## Test the Water Cycle:

1. **Using scrap paper** or an old notebook, make a scientific journal you can use to record your observations.
2. With a plastic Ziploc bag, **draw the water cycle on it** with a marker (dry erase, permanent, etc.) like the picture below.



3. **Put water into the bag** enough to fill it halfway.
4. Using tape, **place the bag in a sunny window** or wall and let it sit for 40 minutes.

While you wait, review the water cycle:

- a) Evaporation** occurs in bodies of water like rivers, lakes and oceans. The sun heats up the water and causes it to go from a liquid to a gas, called **water vapor**, where it rises into the atmosphere.
- b) Condensation** occurs when the water vapor cools down at the low temperatures high in the atmosphere and settles at water droplets which form clouds.
- c) Precipitation** occurs when the clouds become full, or **saturated**, with water droplets and they empty from the clouds. If it is really cold, the water droplets turn into snow or sleet.
- d)** The water falls to the ground and goes into either bodies of water or soaks into the ground to become **groundwater**.
- e)** A **cycle** means that something repeats over and over again and so the water cycle continues this process of evaporation, condensation and precipitation over and over again.

5. **Play the “Meteorologist Says” game** from activity 2 or look at the cloud chart from activity 1 and record the weather of the day while you wait for your water cycle to happen!

6. After 40 minutes, **look at your water cycle in the bag. Record your observations** in your scientific journal. Did you get condensation at the top? Any precipitation down the bag? Is the inside of your bag foggy?



## ***VOCABULARY***

**Evaporation:** when water turns from a liquid to a gas due to a rise in temperature.

**Condensation:** when water turns from a gas to a liquid high in the atmosphere due to cooler temperatures and low pressure.

**Precipitation:** when liquid water falls from clouds due to the cloud be full of water.

**Saturated:** having the most amount of water something can absorb; completely soaked.

**Groundwater:** water that has soaked underground into the soil or holes in rocks.