

Lesson: The Water Cycle 3D Model Project Guide

Florida Benchmark:

SC.5.E.7.1: Create a model to explain the parts of the water cycle.

NGSS Standard:

5-ESS2-1: Develop a model using an example to describe ways the geosphere, biosphere, hydrosphere, and atmosphere interact.

Objective:

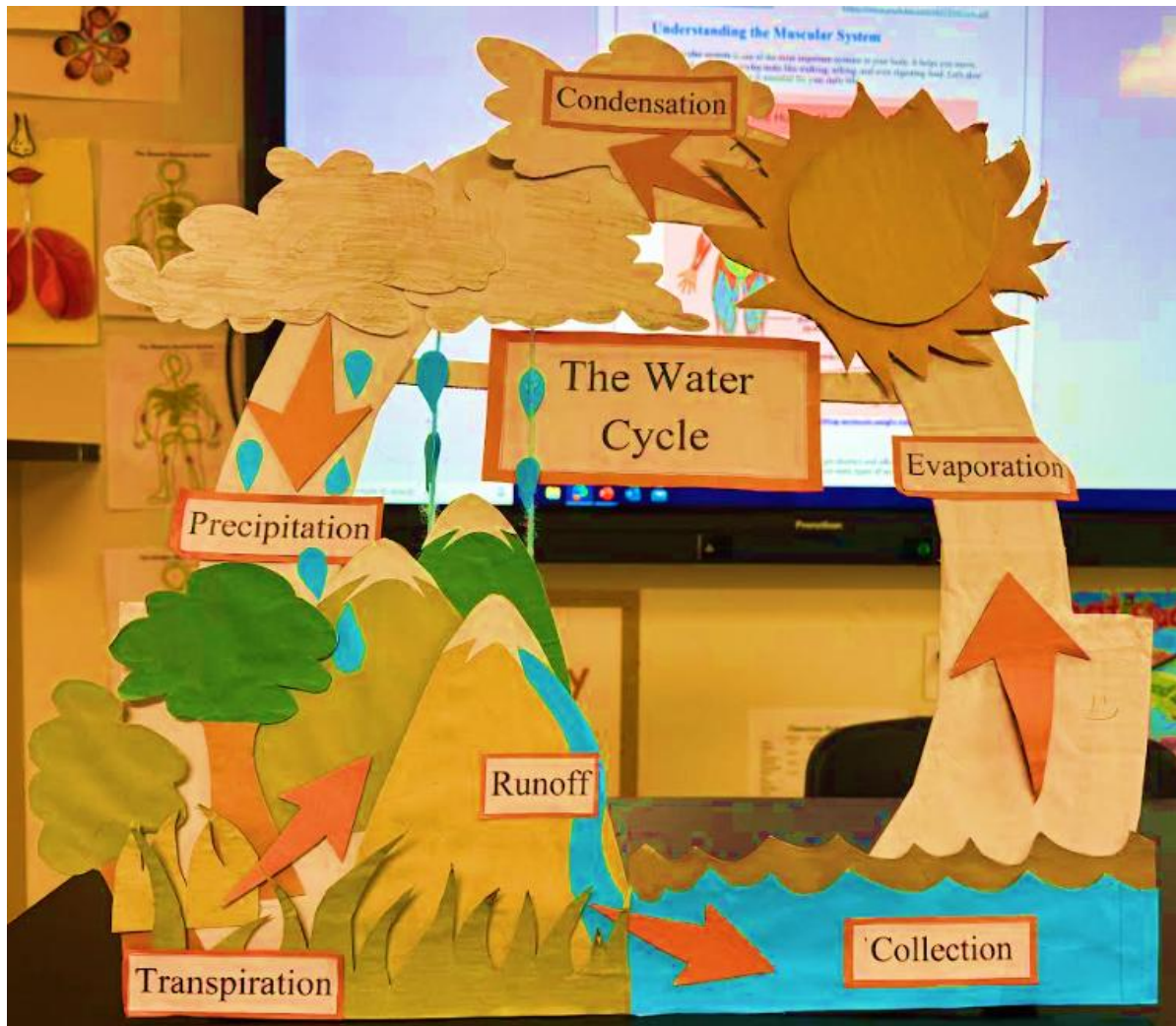
- Create a **3D model** on cardboard that represents the full water cycle, including **evaporation, condensation, precipitation, collection, transpiration, and runoff**.
- Mount and organize the stages of the water cycle on a cardboard base, using drawings, labels, and arrows to show how water moves through the cycle.

Materials:

- Large piece of **cardboard** (to use as the base for the model)
- **Construction paper** (variety of colors for different stages)
- **Markers** or colored pens for drawing and labeling
- **Scissors** for cutting paper
- **Glue** or **tape** to attach parts to the cardboard
- **Ruler** (optional for neat cutting)
- **Cotton balls** (for clouds, optional)
- **Blue food coloring** (optional for water)
- **Green construction paper** (for plants, representing transpiration)
- **Aluminum foil** or shiny paper (for runoff, optional)
- **Plastic wrap** (for condensation, optional)

Safety Precautions:

- Use scissors carefully and always cut away from your body. Keep your fingers clear of the cutting edge.
- Be cautious when using glue and tape, as it can get messy.
- If using any sharp materials, handle them carefully to avoid injury.
- Keep the workspace clear of unnecessary items to prevent accidents.



Procedures:

1. Prepare the Base:

- Start with a large piece of **cardboard** as the base for your water cycle model. This will hold all the different stages of the cycle.
- Make sure the cardboard is flat and stable to hold all parts securely.

2. Draw and Mount the Water Collection Area:

- At the bottom of the cardboard, draw a large body of water (e.g., ocean, river, or lake) using **blue construction paper** or markers.
- This represents the **collection** stage, where water collects in bodies of water.
- Cut out the body of water from the paper and glue it to the bottom of the cardboard.

3. Create Evaporation:

- Above the water collection area, draw **wavy lines** or arrows to represent **evaporation**.
- You can use **cotton balls** to represent **clouds** and place them above the evaporation lines.

- Label this section **Evaporation** and connect arrows from the water to the clouds to show the rising of water vapor due to the sun's heat.
- 4. **Create Condensation:**
 - Above the evaporation stage, draw or cut out a cloud using **white construction paper** or cotton balls glued together.
 - Attach the cloud to the cardboard to show the condensation stage, where the water vapor cools and turns back into liquid.
 - Optionally, you can use **plastic wrap** to represent the condensation, showing how water droplets form on cool surfaces.
 - Label this section **Condensation**.
- 5. **Create Precipitation:**
 - Draw **raindrops** or **snowflakes** falling from the cloud using **blue or white construction paper**.
 - Attach these falling raindrops to represent **precipitation**.
 - Use arrows to show how precipitation falls from the clouds to the ground.
 - Label this section **Precipitation**.
- 6. **Create Runoff:**
 - Below the precipitation stage, use **aluminum foil** or **shiny paper** to represent water running off into rivers, streams, or the ocean.
 - Shape the foil to represent flowing water or runoff.
 - Attach it to the cardboard with arrows pointing from the precipitation to the body of water to show how runoff works.
 - Label this section **Runoff**.
- 7. **Create Transpiration:**
 - On the side of the cardboard, draw or cut out **trees** or **plants** using **green construction paper**.
 - Represent **transpiration** by drawing small arrows rising from the plants to show how water is released into the atmosphere from the leaves.
 - Label this section **Transpiration**.
- 8. **Connect the Stages with Arrows:**
 - Use **arrows** to show the direction of water through each stage.
 - Connect the following stages:
 - **Evaporation** to **Condensation**
 - **Condensation** to **Precipitation**
 - **Precipitation** to **Runoff**
 - **Runoff** back to **Collection**
 - **Transpiration** from plants back into the atmosphere
 - Make sure the arrows are clear and point in the correct direction to show the movement of water.
- 9. **Label and Final Touches:**
 - Label each part of your water cycle: **Evaporation, Condensation, Precipitation, Collection, Runoff, and Transpiration**.
 - Add brief descriptions or explanations of each stage if desired, next to the labels.
 - Make sure everything is securely glued down and neatly arranged on the cardboard.

Note: Clean-up

- Once the model is complete, make sure to clean your workspace by putting away leftover materials and properly discarding any scraps.
- If you've used glue, allow it to dry before handling or displaying the model to prevent any parts from falling off.
- Keep the model in a safe place until it can be displayed or shared with others.