

Objectives

The student will be able to do the following:

- Explain that water does not disappear but rather moves through the water cycle
- Define precipitation, evaporation, condensation, and streamflow
- Diagram the water cycle

Materials

A cold or frozen can, put out for demonstration

The activity sheets, cut to size and packaged for the appropriate group size

Background

This unit builds on previous units on water, particularly by building on the concept of the three phases of water. Students should understand that water can move between these three phases. Students should also understand that water can be found and stored in many locations, and that water moves around among these storage reservoirs.

Advance Preparation

Teachers should prepare the activity by printing and cutting out activity sheets, enough for the number of groups. Each group should receive a puzzle of the water cycle.

If available, teachers may want to freeze or chill a cup of liquid, so as to demonstrate condensation. If available, teachers may want to microwave or boil water to demonstrate the conversion of liquid water to a gas.

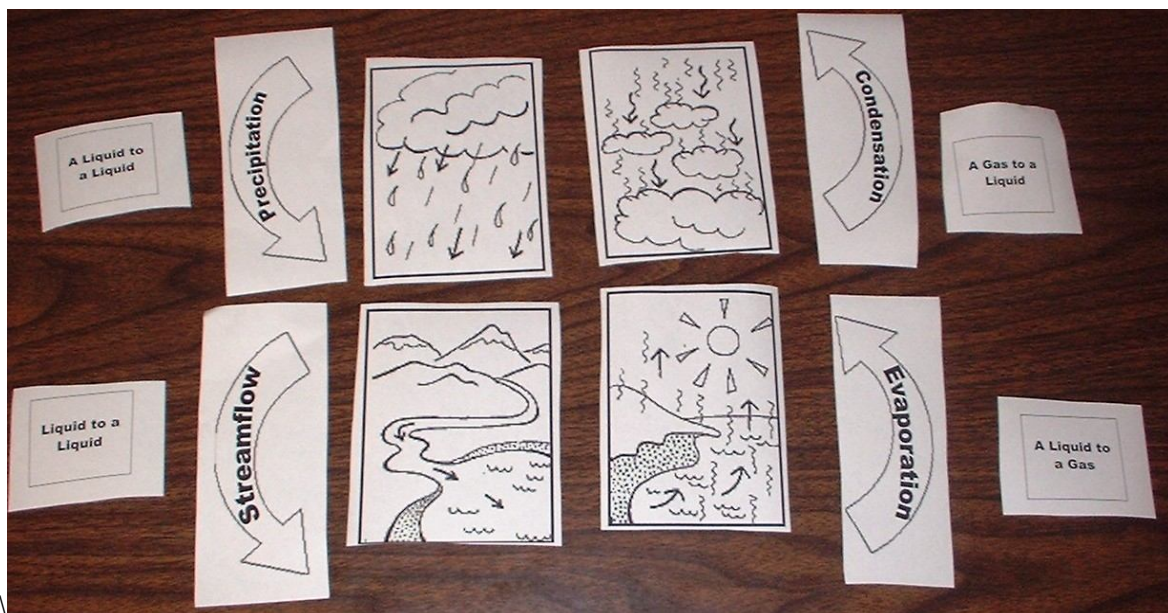
Procedure

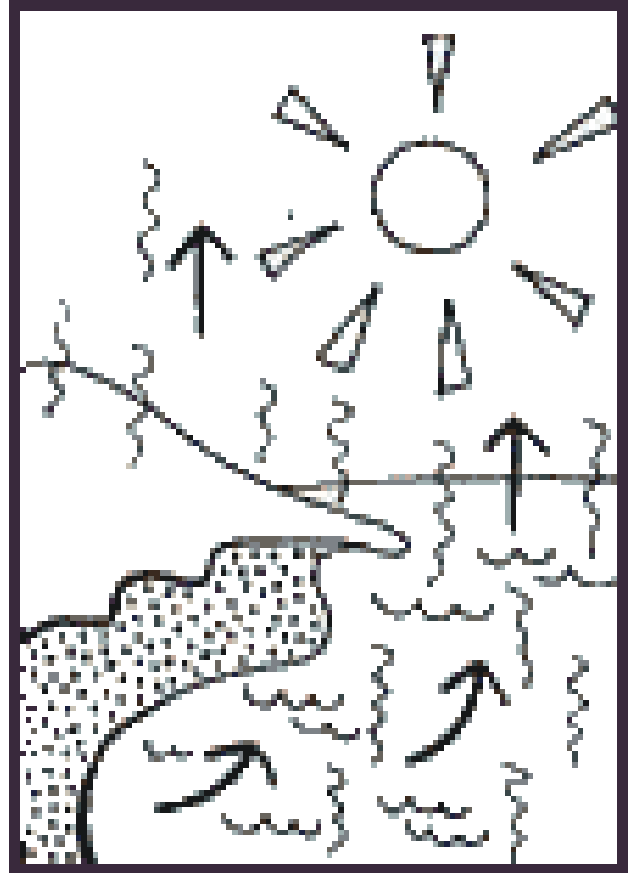
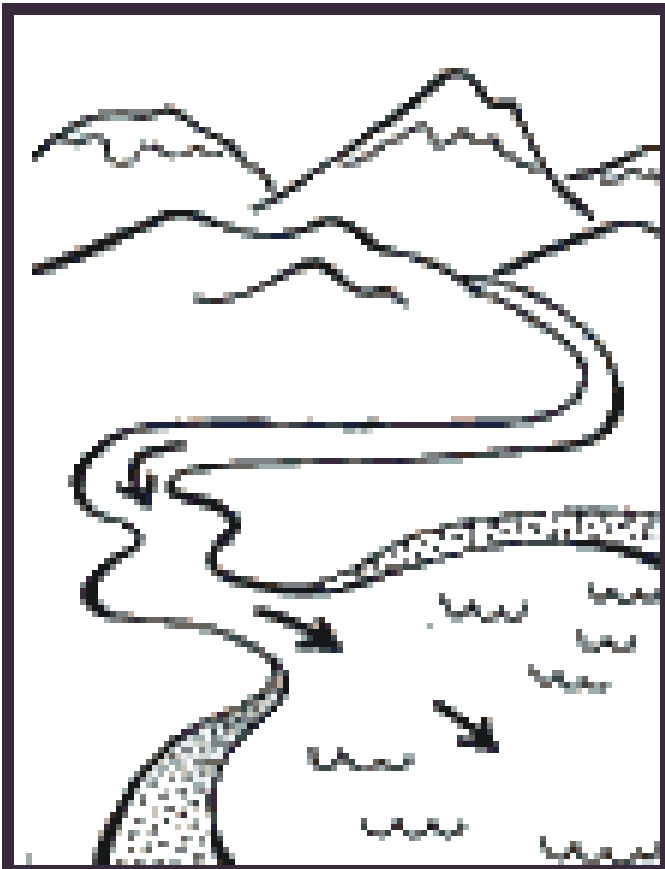
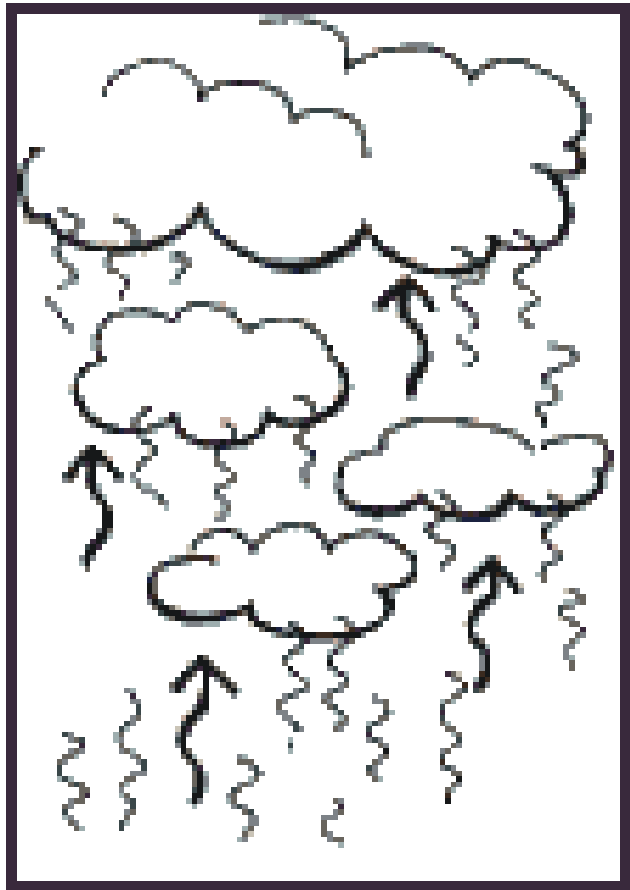
1. Start by having students make a hypothesis about what will happen to a cold can/bottle of water. Place the cold, DRY, can out in the front where it can be observed. Ask students to think about what they have observed in other places (soda cans get wet, etc.) and to make a hypothesis about the can – the hypothesis must have something to do with water. Put the can away.
2. Have students remember where water is stored. Draw on the board water storage reservoirs. For the sake of time and simplicity, you may want to stop with a cloud, air, stream, and the ocean (ocean for Hawaii, otherwise lake or ground for other places).
3. Have students describe the phase of water for each storage reservoir (solid for streams, ocean, rain, clouds; gas for air)
4. Stress that water is very old. Water is not created or destroyed, but instead moves around and around.

5. Go through the water cycle. Ask students how water goes from one storage reservoir to another, and what phases the water is in when it does this:
 - a. Ocean to Air: Evaporation – Liquid to a gas
 - i. Have students recall boiling water – this is an example of evaporative forces
 - b. Air to Cloud: Condensation – Gas to liquid
 - i. You may need to remind students that clouds are made up of tiny droplets of liquid water.
 - c. Cloud to Ground: Precipitation – Liquid
 - d. Ground to Ocean: Streamflow – Liquid
 - i. Streamflow is an addition to the basic water cycle. But in Hawaii, much of the water cycle is driven by evaporation on the ocean, thus the land to ocean connection is included here.
6. Go back to the can of soda. Water should have condensed on the outside of the can. Go through the rest of the steps of the scientific process.
 - a. What was the hypothesis again?
 - b. What were the results (e.g. water on the outside of the can)
 - c. How did this happen (condensation)
 - i. You might want to have students examine the can to determine if it is still closed and that it is indeed wet
7. Have students break into groups and conduct the activity

Activity

1. Student groups should put together pieces of paper (a puzzle) in order to form the water cycle.
2. If enough time permits, they can glue/tape/color the puzzles
3. If enough time permits, they can show off their puzzle to other groups (although all are the same).
4. Finished puzzles should look like this:







A Gas to a
Liquid



Liquid to a
Liquid



A Liquid to
a Gas



A Liquid to
a Liquid