

THE INCREDIBLE JOURNEY

QUICK PEEK

Students simulate water molecules as they roll a die and travel through the water cycle.

SUGGESTED GRADE LEVELS: 4-8

ILLINOIS STATE LEARNING GOALS

SCIENCE

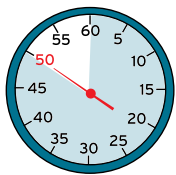
11.A, 12.B, 12.C, 12.E

LANGUAGE ARTS

4.A, 4.B

OBJECTIVES

- ★ Students will learn the different ways in which water can move through the water cycle.



PACE YOURSELF:
50 MINUTES



PREPARE YOURSELF

1. Make large signs with the following labels: Clouds, Plants, Animals, Rivers, Oceans, Lakes, Ground Water, Soil, and Glaciers.
2. Make a die for each station (Refer to the Water Cycle Table).
3. Put the signs and die for each in locations around the room or yard.



MATERIALS

Per Class:

- 9 large pieces of paper
- 9 boxes, about 15cm on each side (Template can be found at <http://resources.sparkleplus.co.uk/sb223.pdf>)

Per Student:

- Paper
- Pen or pencil



WHAT YOU NEED TO KNOW...

The Water Cycle Table provides an explanation of water movements from each station.

Earth's water is constantly in movement, and the water cycle describes this continuous movement of water on, above, and below the surface of the Earth. Since the water cycle is truly a "cycle", there is no beginning or end. Water can change states among liquid, vapor, and ice at various places in the water cycle, with these processes happening in less than a second, or over millions of years, (Refer to the Water Cycle Table on page 5 for further information)



WARM UP!

Hold up a glass of water. Ask students, "Where did I get this water from?" Answers will vary. Tell students that although you did get this water from the _____, the water in your glass has actually been around long before they were born and even before dinosaurs roamed the Earth.



THE "HOW TO"

1. Tell students that they are going to become water molecules moving through the water cycle.
2. Point out to students where the signs are posted in the room (from Warm Up!) and explain to them that these are all of the places water can travel to in the water cycle.
3. Have students identify the different places water can move to from each station in the water cycle. Discuss the conditions that cause the water to move; explain that water movement depends on energy from the sun, the population of animals, gravity, and many other variables. Sometimes water will stay where it is in the cycle and not go anywhere.
4. Tell students they will be demonstrating water's movement from one location, or station, to another (*You may want to post these guidelines for students*). When students move as liquid water, they will move in pairs, representing many water molecules together in a water drop. When students move to the clouds (evaporate), they will separate from their partners and move alone as individual water molecules. When water rains from the clouds (condenses), the students will grab a partner and move to the next location (*Having students move in partners is an option*).
5. Assign an even number of students to each station. (The cloud station can have an uneven number.)

You can do Step #3 as a whole group discussion or have students work in small groups. For students that need extra support, provide them with a copy of the Water Cycle Table.

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Transpiration is the evaporation of water from plants.

Condensation is the change of water from its gaseous form (water vapor) into liquid water.

PLAYING THE GAME!

1. Students line up at their station. (At the cloud station they will line up in single file; at the rest of the stations they should line up in pairs.)
2. Students roll the die and go to the location indicated by the label facing up. If they roll stay, they move to the back of the line.

At the clouds station, students roll the die individually, but if the die instructs them to leave the station, they must take a partner (the student immediately behind them) to move with; the partner does not roll the die.

3. After students move to the next station, they get in line. When they reach the front of the line, they repeat step #2.



WHAT'S GOING ON HERE?

Water on Earth is always moving. When we picture the water cycle, we often picture a circle—the water moving from sky, to ground, and back to sky—but this is not always the case. There are several paths water can take through the cycle. Water can move between different points through the cycle or it might get stuck in one place or one form for a long time.



DID THEY GET IT?

Have students answer the following questions in a whole group discussion, either in small groups or individually.

1. What are two places water can move to from Soil in the water cycle? (possible answers: plants, rivers, ground water, clouds)
2. What are two places water can move to from Rivers in the water cycle? (possible answers: lakes, ground water, oceans, animals, clouds)
3. What are two places water can move to from Clouds in the water cycle? (possible answers: soil, glaciers, lakes, oceans)
4. Why is it called a water cycle?
5. What station did you get stuck at, or have to stay at most often? (possible answers: ocean, ground water, glacier)

Have students keep track of their movements by keeping a "travel journal" to record each move they make, including stays.



Tell students the game will begin and end with the sound of a bell, buzzer or whistle.

ET CETERA

1. Have students use their travel journal to draw a diagram or write a story about their Incredible Journey!
 2. Have students make a bracelet as a souvenir of their Incredible Journey!
 - * Put different colored beads at each station (example: brown at soil, blue at ocean, white at glacier, etc)
 - * Each student should get a piece of twine, string, or embroidery floss
 - * Have students tie a yellow or orange bead at the end of their string (or you can prepare this ahead of time). This bead represents the sun, the original source of energy for the water cycle.
 - * As students move through the game, they will make a bracelet, which becomes their visual record of their incredible journey through the water cycle. They can use it later to write a story, draw a diagram, make a travel brochure, etc
- * Lesson adapted from Project WET

THE INCREDIBLE JOURNEY

STATION	DIE SIDE LABELS	EXPLANATION
Soil	One side Plant	Water is absorbed by plant roots.
	One side River	The soil is saturated, so water runs off into a river.
	One side Ground Water	Water is pulled by gravity; it filters into the soil.
	Two sides Clouds	Heat energy is added to the water, so the water evaporates and goes to the clouds.
	One side Stay	Water remains on the surface (perhaps in a puddle).
Plant	Four sides Clouds	Water leaves the plant through the process of transpiration.
	Two sides Stay	Water is used by the plant and stays in the cells.
River	One side Lake	Water flows into a lake.
	One side Ground Water	Water is pulled by gravity; it filters into the soil.
	One side Ocean	Water flows into the ocean.
	One side Animal	An animal drinks the water.
	One side Clouds	Heat energy is added to the water, so the water evaporates and goes back to the clouds.
	One side Stay	Water remains in the current of the river.
Clouds	One side Soil	Water condenses and falls on soil.
	One side Glacier	Water condenses and falls as snow onto a glacier.
	One side Lake	Water condenses and falls into a lake.
	Two sides Ocean	Water condenses and falls into the ocean.
	One side Stay	Water remains as a water droplet clinging to a dust particle.
Ocean	Two sides Clouds	Heat energy is added to the water, so the water evaporates and goes to the clouds.
	Four sides Stay	Water remains in the ocean.
Lake	One side Ground Water	Water is pulled by gravity; it filters into the soil.
	One side Animal	An animal drinks water.
	One side River	Water flows into a river.
	One side Clouds	Heat energy is added to the water, so the water evaporates and goes to the clouds.
	Two sides Stay	Water remains within the lake or estuary.
Animal	Two sides Soil	Water is excreted through digestive processes.
	Three sides Clouds	Water is respired or evaporated from the body.
	One side Stay	Water is absorbed into the body.
Ground Water	One side River	Water filters into a river.
	Two sides Lake	Water filters into a lake.
	Three sides Stay	Water stays underground.
Glacier	One side Ground Water	Ice melts and water filters into the ground.
	One side Clouds	Ice evaporates and water goes to the clouds (sublimation).
	One side River	Ice melts and water flows into a river.
	Three sides Stay	Ice stays frozen in the glacier.