

Water Cycle

Subject: Science

Grade Level(s): K-12

Estimated Time

45 - 60 minutes

Purpose

Students will learn the various components of the water cycle by becoming a water molecule and by traveling through the stages of the water cycle.

Materials

- Pony beads in the following colors: white, brown, blue, clear, black, green, yellow
- One pipe cleaner for each student
- 7 bowls for the pony beads
- 7 Dice (one per station)

Essential Files (maps, charts, pictures, or documents)

- Water Cycle Station Signs
- Water Cycle Score Card

Vocabulary

Precipitation – forms of water such as rain, snow, sleet or hail that falls to the ground

Condensation – the process of a substance in a gaseous state changing to a liquid state

Groundwater – water that collects below the surface

Evaporation – the process of a substance in a liquid state changing to a gaseous state

Transpiration – the process where plants absorb water through the roots and live off water vapor through the pores in their leaves

Aquifer – soil and rocks that hold enough water in spaces between the particles for us to recover

Background Agricultural Connections

All living things depend on water for survival. Water covers almost 75 percent of the surface of Earth. The water found on Earth is the same water that has always been on the planet. We cannot make new water. The water on Earth is constantly moving, and this movement of water is known as the water cycle. Rain or snow falls on oceans or land as precipitation and the soil will soak up some of the water. Plants will take up some of this water through their roots and some water will move down into the soil to become groundwater. Some of the water from the rain and snow will run off the land into streams, marshes, lakes and oceans. The water that remains on the earth's surface is called surface water. The surface water will return to the atmosphere through evaporation. Then water vapor may form clouds that cause precipitation

and the cycle will continue. In the water cycle, water can be liquid, solid or gas. The forces that drive the water cycle are energy from the sun and gravity. Water is an essential natural resource needed for agriculture. Crop production is dependent on water for crops to grow.

Interest Approach – Engagement

1. Ask the students to help you make a list on the board of ways they use water.
2. Once the list has been created, ask the students, where does water come from?
3. This will lead into a discussion of water being a natural resource.

Procedures

Activity 1:

1. The seven water cycle stations should be set up around the room. Each station has a sign, fact sheet, chart, colored beads and a die.
2. Tell the students to imagine they are a molecule of water and they are going to take a journey through the water cycle. Their journey will be recorded on a data sheet and by the creation of a bracelet.
3. Divide the students into seven groups and have each group begin at one of the stations.
4. At the stations, students will collect a bead, put it on their pipe cleaner and read the fact sheet. Then they will roll the die and read the statement corresponding to the number rolled. On their data sheet, they will record what happens to them.
5. Students will travel to their next station as directed.
6. Repeat this procedure until students have collected 6-10 beads on their bracelet.
7. Students will write a story describing their journey as a water molecule through the water cycle.
8. Write the name of the seven water cycle stations on the board. Go through each station and ask the different ways the molecules traveled to each station. Draw arrows indicating how they traveled to the various stations.
9. Ask the following questions:
 - Were there stations that were visited more than others? Why?
 - Are there other parts of the water cycle? What are they?
 - What makes water move through the cycle?(sun, gravity, physical properties or water) What would happen if the sun’s energy were blocked from Earth?
 - How is the water cycle important to plants and animals?

Enriching Activities

Build a terrarium to observe the water cycle. Students will observe what happens over time.

Louisiana Student Standards for Science

This is a supplemental activity to be integrated when covering the following state standards.

K-ESS3-1	6-MS-ESS3-4
2-ESS2-3	7-MS-ESS2-4
4-ESS3-1	8-MS-ESS2-2
5-ESS2-1	8-MS-ESS3-3
5-ESS2-2	HS-ESS2-5
	HS-ESS3-1

Suggested Companion Resources

[Learn Protect and Promote Water \(Lesson Plan\)](#) – National AITC

[Terrariums: A Look at the Living and Nonliving World \(Lesson Plan\)](#) – National AITC

[Water Supply \(Lesson Plan\)](#) – National AITC

[Project WET \(website\)](#)

Author(s)

This activity has been combined from several different sources. The original source is unknown.

Water Wonders, Project Learning Tree

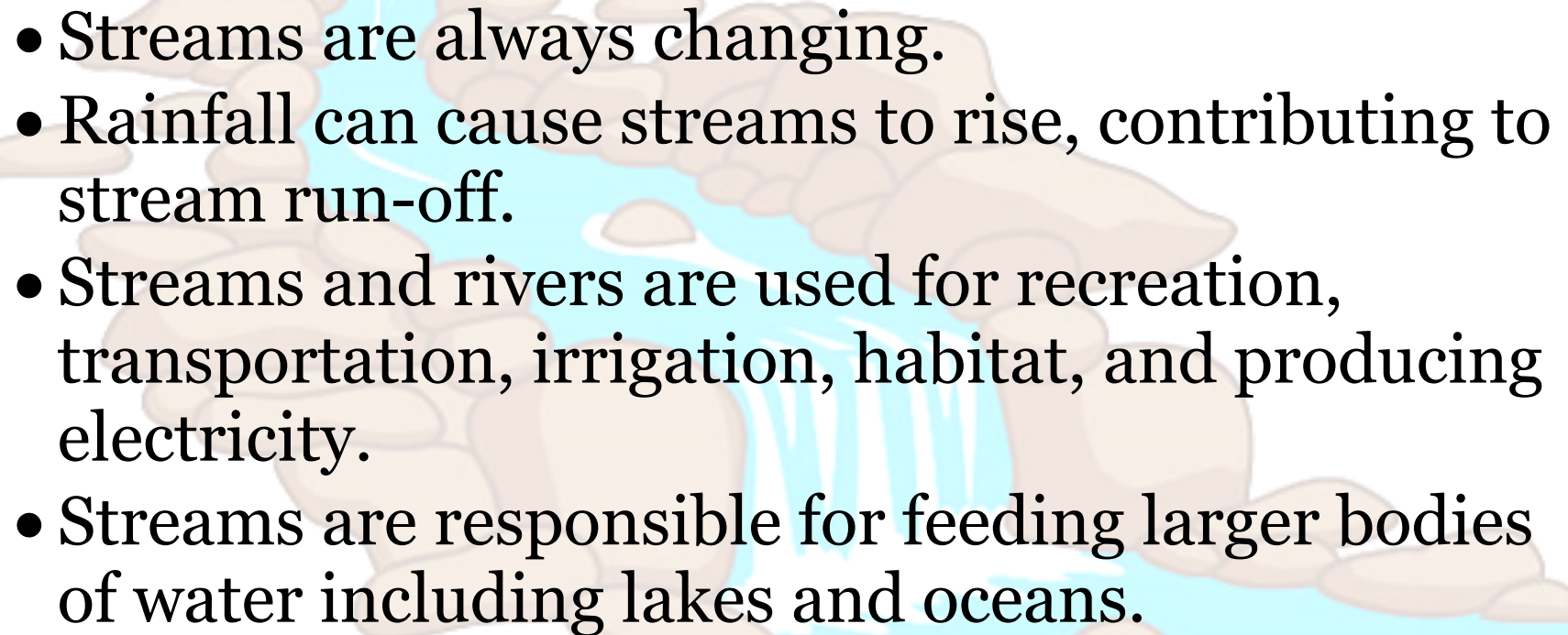
Water Cycle Bracelet, Florida Ag in the Classroom

A Bracelet to Remember, 2018 National Ag in the Classroom Workshop



STREAM

Collect one **CLEAR** bead, roll the dice, and follow instructions that match the number rolled.

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- Streams are always changing.
 - Rainfall can cause streams to rise, contributing to stream run-off.
 - Streams and rivers are used for recreation, transportation, irrigation, habitat, and producing electricity.
 - Streams are responsible for feeding larger bodies of water including lakes and oceans.

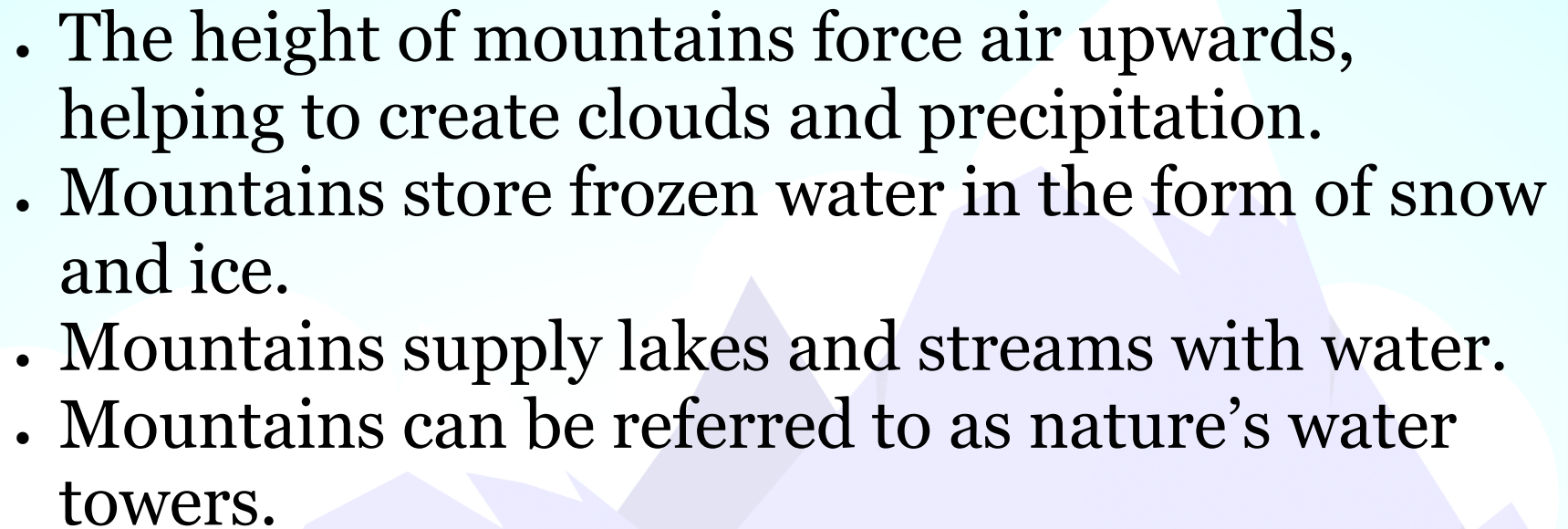
STREAM

1.	You evaporate into the air. Go to CLOUD!
2.	You evaporate into the air. Go to CLOUD!
3.	An animal comes to the stream and drinks you. Go to ANIMAL!
4.	You continue rolling downhill and become part of an ocean. Go to OCEAN!
5.	You continue rolling downhill and become part of an ocean. Go to OCEAN!
6.	A human drinks from the stream. Go to ANIMAL!



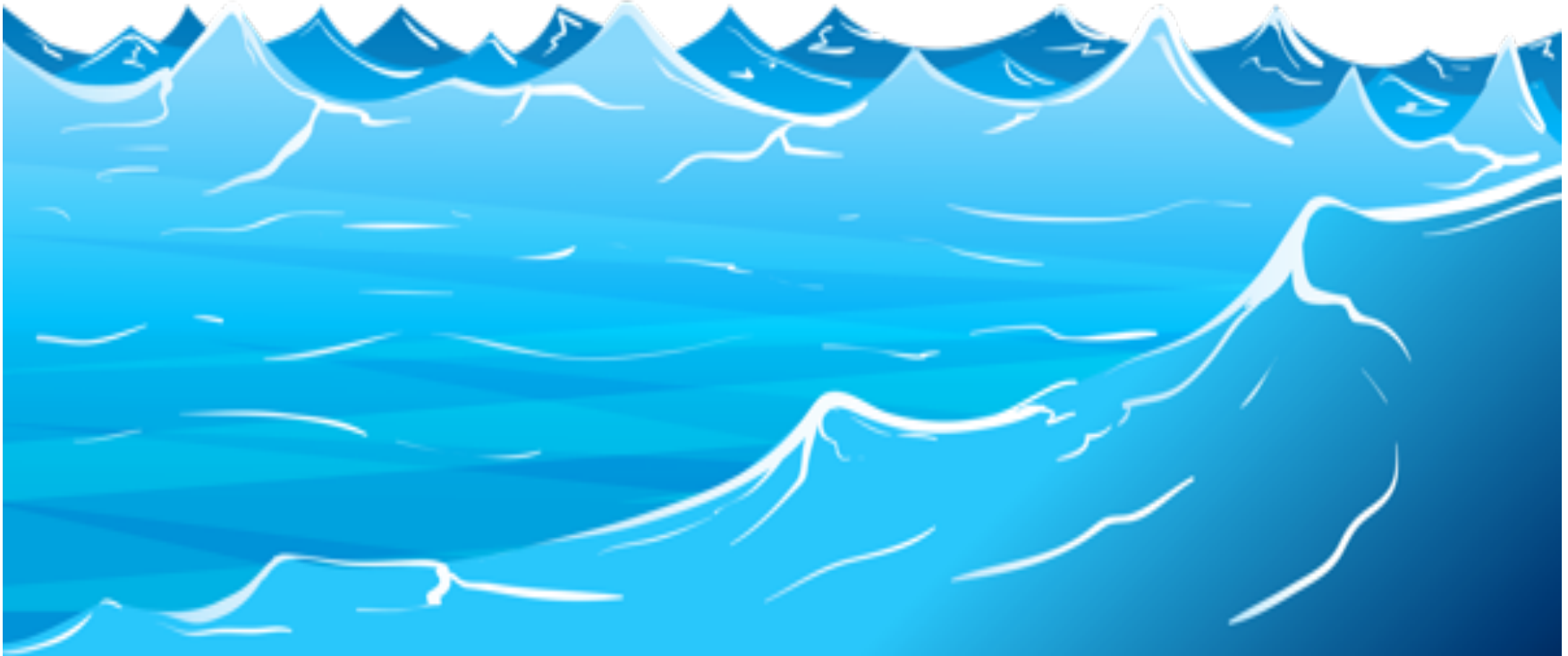
MOUNTAIN

Collect one **BROWN** bead, roll the dice, and follow instructions that match the number rolled.

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- The height of mountains force air upwards, helping to create clouds and precipitation.
 - Mountains store frozen water in the form of snow and ice.
 - Mountains supply lakes and streams with water.
 - Mountains can be referred to as nature's water towers.

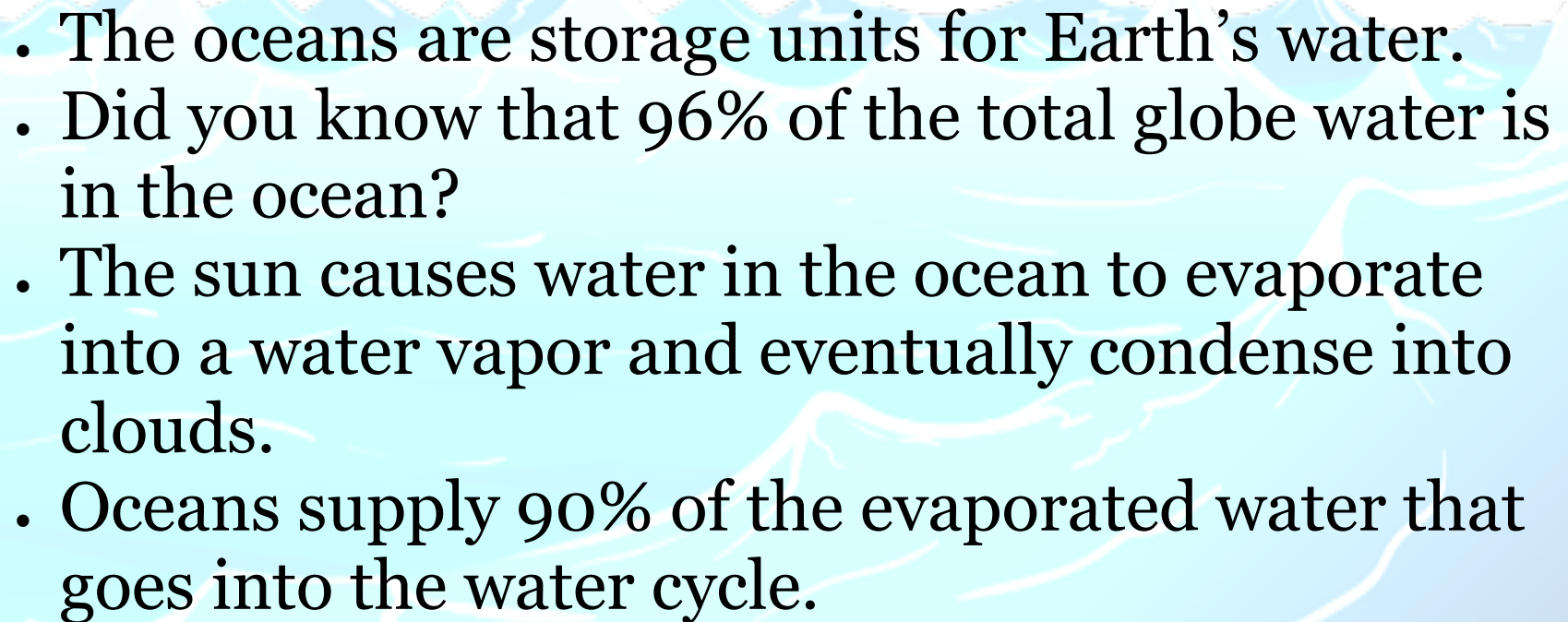
MOUNTAIN

1.	You evaporate into the air. Go to CLOUD!
2.	You soak into the ground and become groundwater. Go to GROUNDWATER!
3.	You roll downhill and become part of a stream. Go to STREAM!
4.	You become frozen at the top of the mountain. Repeat station. Stay at MOUNTAIN!
5.	An animal rolls in your puddle and takes you down the mountain. Go to ANIMAL!
6.	You break off from the mountain and fall into the ocean. Go to OCEAN!



OCEAN

Collect one **BLUE** bead, roll the dice, and follow instructions that match the number rolled.

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- The oceans are storage units for Earth's water.
 - Did you know that 96% of the total globe water is in the ocean?
 - The sun causes water in the ocean to evaporate into a water vapor and eventually condense into clouds.
 - Oceans supply 90% of the evaporated water that goes into the water cycle.

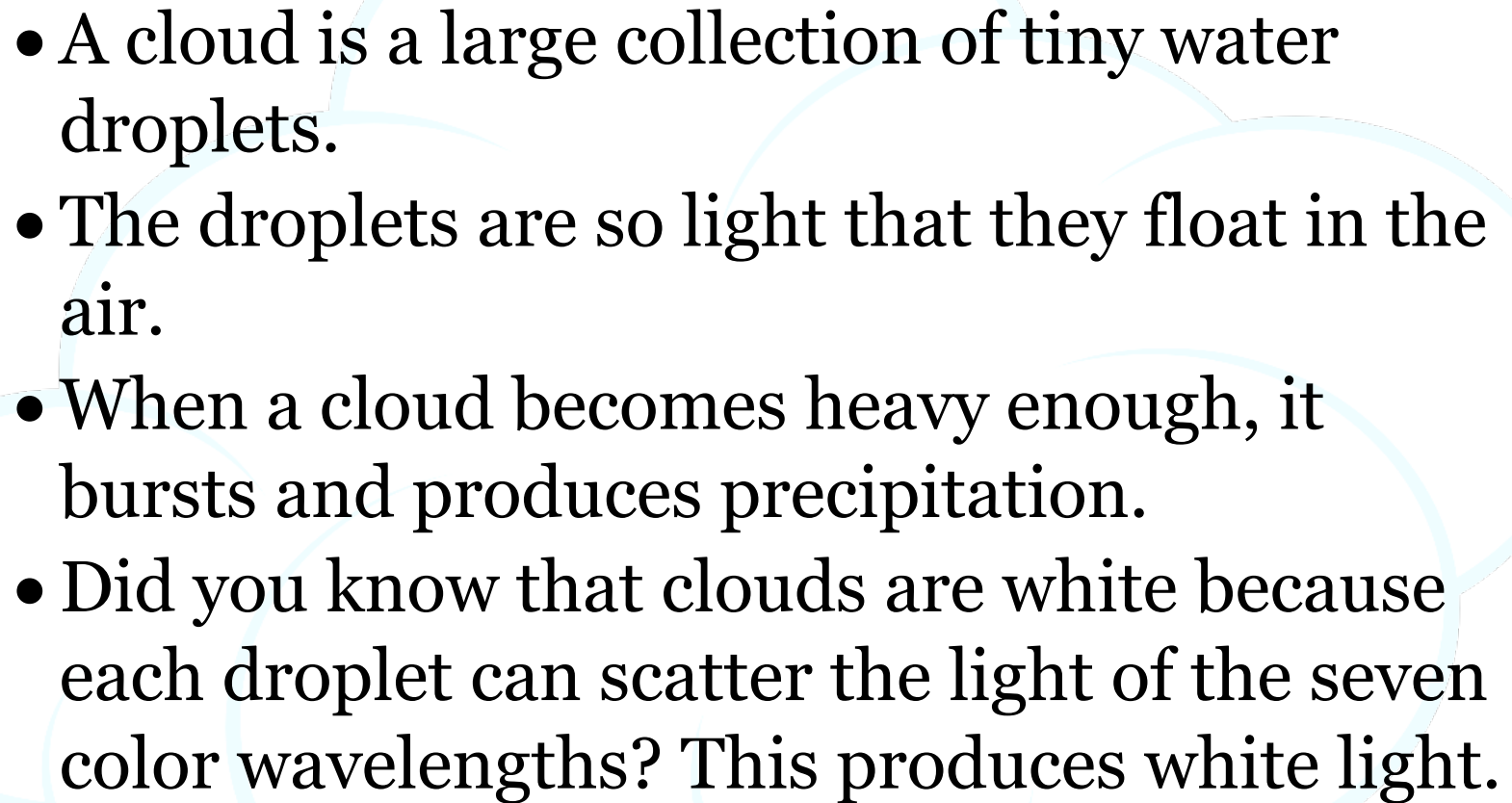
OCEAN

1.	You dance throughout the waves and stay in the ocean. Stay at OCEAN!
2.	You are one of countless water molecules in an ocean and you stay there. Stay at OCEAN!
3.	You are one of countless water molecules in an ocean and you stay there. Stay at OCEAN!
4.	You are one of countless water molecules in an ocean and you stay there. Stay at OCEAN!
5.	You evaporate into the air. Go to CLOUD!
6.	You evaporate into the air. Go to CLOUD!



CLOUD

Collect one **WHITE** bead, roll the dice, and follow instructions that match the number rolled.

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- A cloud is a large collection of tiny water droplets.
 - The droplets are so light that they float in the air.
 - When a cloud becomes heavy enough, it bursts and produces precipitation.
 - Did you know that clouds are white because each droplet can scatter the light of the seven color wavelengths? This produces white light.

CLOUD

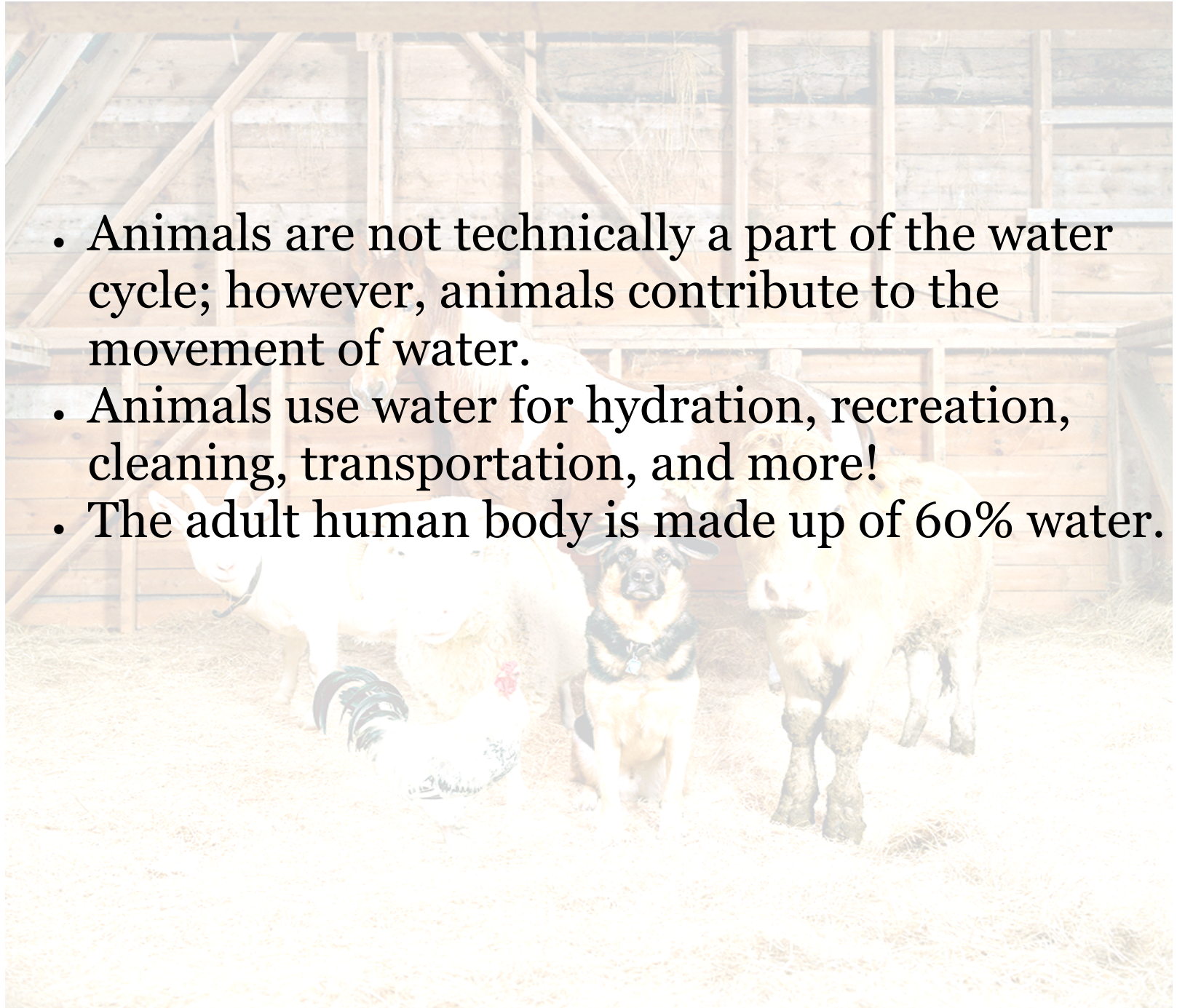
1.	You float through the sky on a cloudy day. Stay at CLOUD!
2.	You fall as rain into a garden and absorb into the ground. Go to GROUNDWATER!
3.	You fall as rain into a stream. Go to STREAM!
4.	You fall as rain onto a mountain. Go to MOUNTAIN!
5.	You fall as rain into the ocean. Go to OCEAN!
6.	You fall as rain into the ocean. Go to OCEAN!



ANIMALS

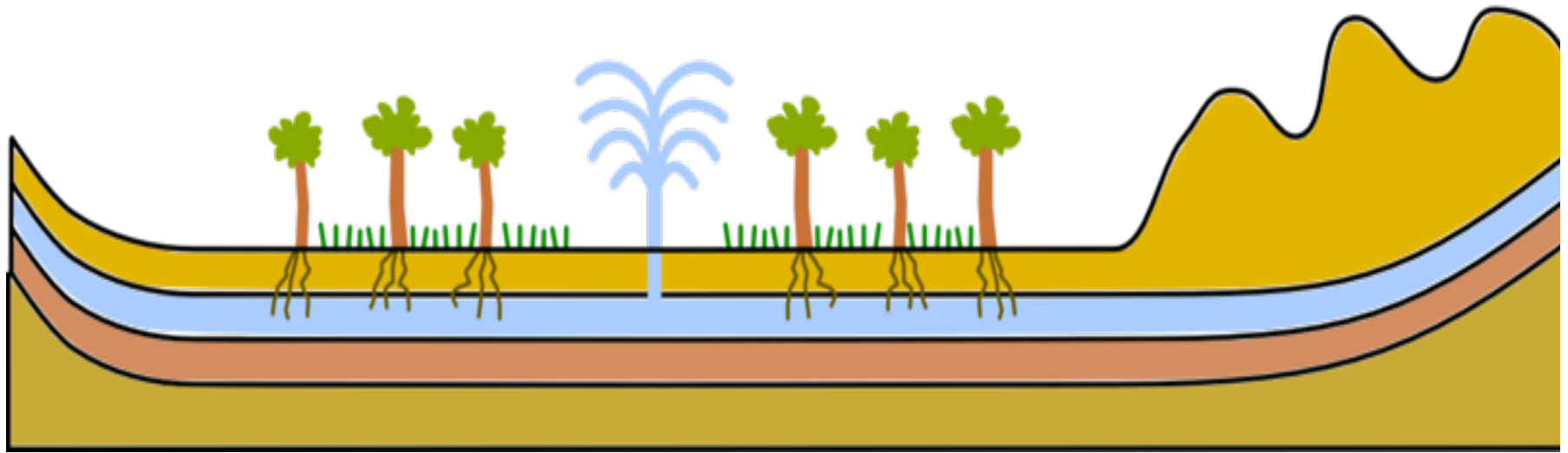
Collect one **BLACK** bead, roll the dice, and follow instructions that match the number rolled.

- Animals are not technically a part of the water cycle; however, animals contribute to the movement of water.
- Animals use water for hydration, recreation, cleaning, transportation, and more!
- The adult human body is made up of 60% water.



ANIMALS

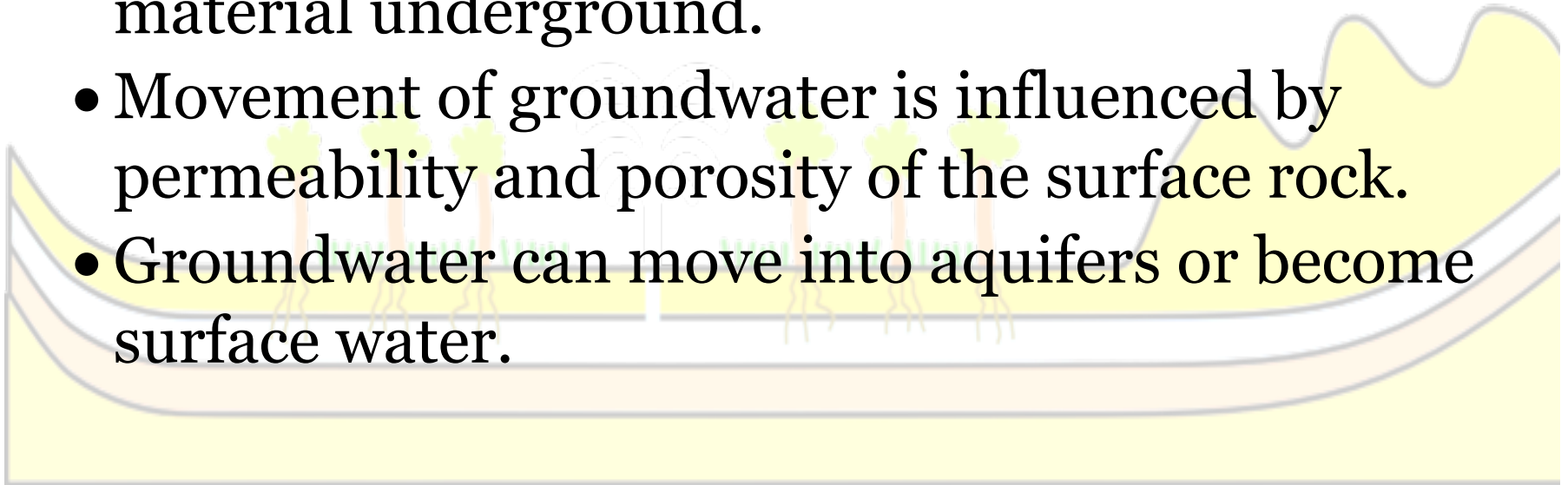
1.	After using you to process food, the mountain animal urinates and you end up in the ground. Go to GROUNDWATER!
2.	After using you to process food, the animal urinates and you end up in the ground. Go to GROUNDWATER!
3.	You are exhaled from an animal's lungs into the air as vapor. Go to CLOUD!
4.	You are exhaled from an animal's lungs into the air as vapor. Go to CLOUD!
5.	A person uses you for brushing his or her teeth and you end up going through a sewage treatment plant and then put into a stream. Go to STREAM!
6.	After using you to quench their thirst, a person urinates and you end up going through a sewage treatment plant and then put into a stream. Go to STREAM!



GROUNDWATER

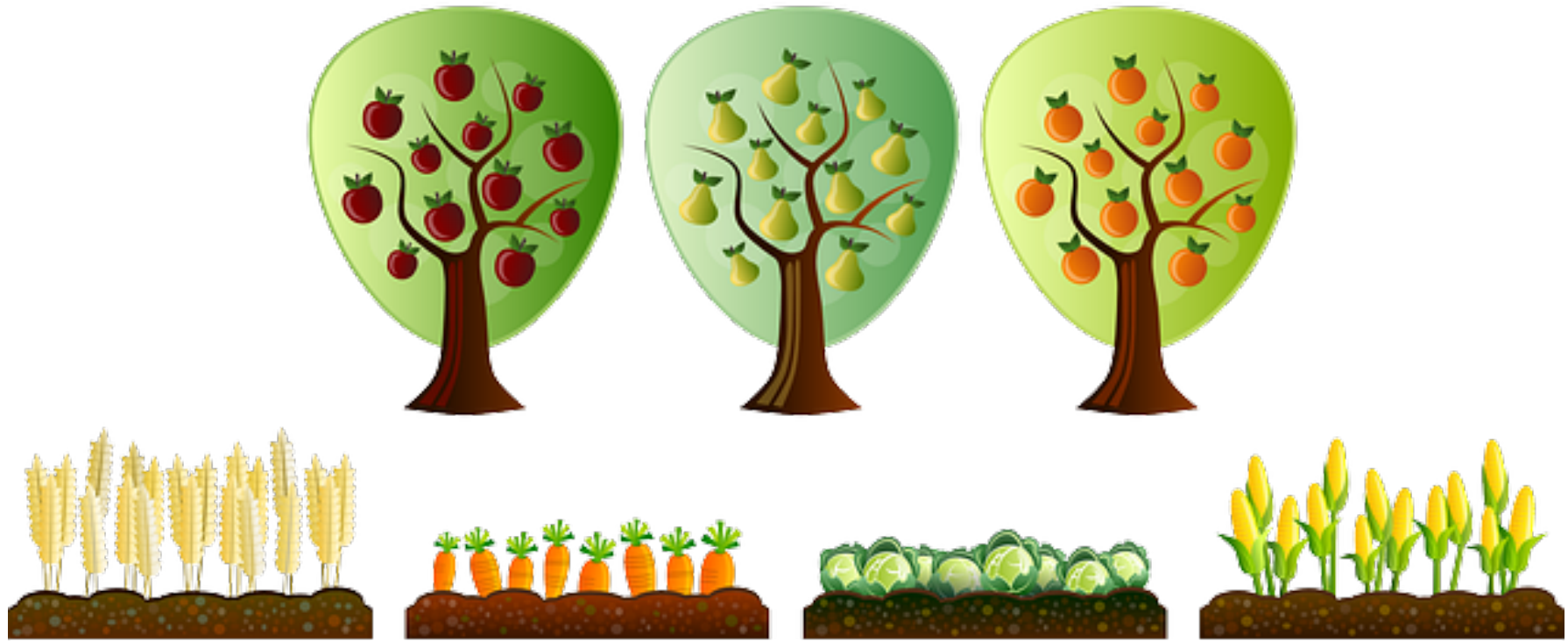
Collect one **YELLOW** bead, roll the dice, and follow instructions that match the number rolled.

- Groundwater occupies spaces between rocks and material underground.
- Movement of groundwater is influenced by permeability and porosity of the surface rock.
- Groundwater can move into aquifers or become surface water.



GROUNDWATER

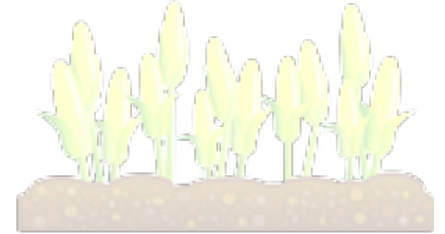
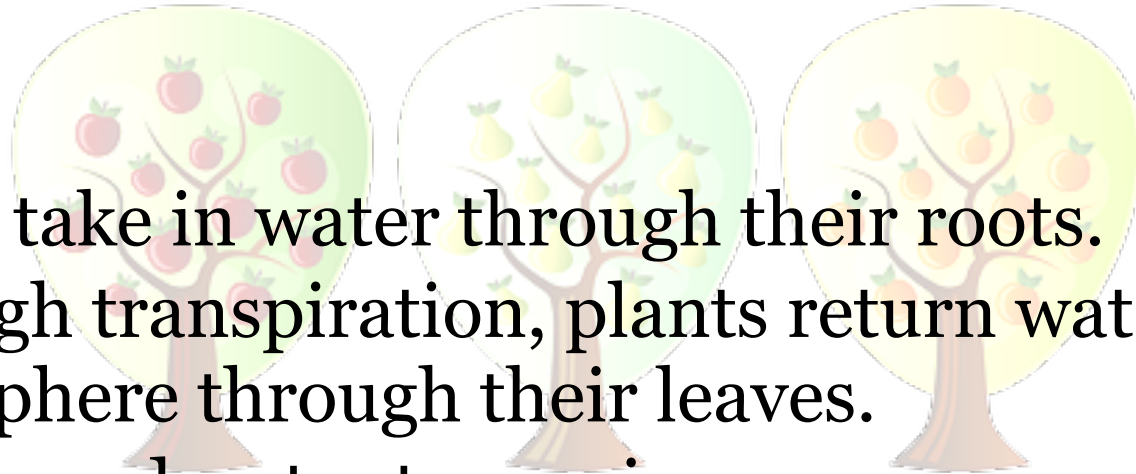
1.	You move slowly downward and become part of an aquifer. Stay at GROUNDWATER!
2.	You move slowly downward and become part of an aquifer. Stay at GROUNDWATER!
3.	You move slowly underground between grains of sediment and eventually flow downward into a wetland from there into a stream. Go to STREAM!
4.	You move slowly underground between grains of sediment and eventually flow downward into a wetland from there into a stream. Go to STREAM!
5.	A plant takes you in through its roots. Go to PLANT!
6.	You are pumped out of the ground from a well to irrigate a farm where plants take you in through their roots. Go to PLANT!



PLANTS

Collect one **GREEN** bead, roll the dice, and follow instructions that match the number rolled.

- Plants take in water through their roots.
- Through transpiration, plants return water to the atmosphere through their leaves.
- Plants need water to survive.



PLANTS

1.	The plant transpires you through its leaves and you evaporate into the air. Go to CLOUD!
2.	The plant transpires you through its leaves and you evaporate into the air. Go to CLOUD!
3.	The plant transpires you through its leaves and you evaporate into the air. Go to CLOUD!
4.	The plant uses you to grow. Stay at PLANT!
5.	The plant stores you in its edible fruit. Go to ANIMAL!
6.	The plant stores you in its edible leaves. Go to ANIMAL!

Water Cycle Score Card

Name: _____

	Station	What Happens	Destination
EX.	Cloud	Fall as rain	Ocean
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			