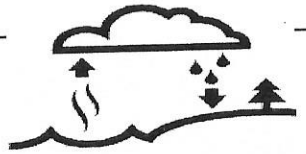
The Water Cycle

Cross-Curricular Focus: Earth Science



Name: _____

Answer the following questions based on the reading passage. Don't forget to go back to the passage whenever necessary to find or confirm your answers.

Water on Earth can be found in three different forms, or states. These states are solid, liquid and gas. When it is frozen, it is solid ice. When it is liquid, it is liquid water. When it is a gas, it is water vapor. The water cycle is the set of processes that water goes through as it changes from one state to another.

When the heat of the sun shines on the water in oceans, lakes, rivers and streams, the water evaporates, rising up into the air as water vapor. As it moves higher into the sky, it cools. The cooled water vapor begins to form liquid drops, which gather together as clouds. This process is called condensation. Little by little, more microscopic drops of water join together in the cloud. Finally, the cloud becomes so heavy that the drops start to fall. Any form of water that falls from the sky is called precipitation.

Precipitation will take on different forms. The form depends on the conditions that exist inside the clouds and the condition of the air the water travels through on its way to the ground. Drops of liquid water fall as rain, the most common form of precipitation. If the drops of water fall through air that is warmer than water's freezing point, they will remain as rain. Sometimes cold temperatures inside clouds produce ice crystals that melt in warmer air on their way down, ending up as rain as well.

If raindrops fall through air that is below the freezing point of water, they form tiny frozen drops known as sleet. If the air inside the cloud and the air on the way down are both below the freezing point, ice crystals will form and fall as snowflakes. There is a lot of variation in snow, depending on how cold it is when it falls. Warmer temperatures mean "wetter" snow, while colder temperatures mean drier, fluffier snow.

Perhaps the most interesting form of precipitation is hail. Hail forms when windy conditions combine with freezing temperatures. Drops of frozen rain begin to fall, and are then repeatedly caught up by the wind and pushed back up through the clouds where they gather more and more layers of ice. When they become too heavy for the wind to lift, they fall to the ground as hail.

No matter what form the precipitation takes, much of it will become runoff and find its way back to the sea. Most of the rest will join surface water in lakes and streams or soak into the ground and become groundwater. Some will spend some time atop tall mountains as ice and snow.

All water awaits its turn to participate once again in each state of the water cycle. Water continually changes from one state to another. The water cycle never ends.

1) How does the water cycle ensure that we have water?

_____

_____

2) What are the three stages of the water cyle? _____

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3) Describe the conditions that are necessary for snow to fall.

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4) How does precipitation return to the water cycle?_____

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5) What is your favorite form of precipitation? Why?_____

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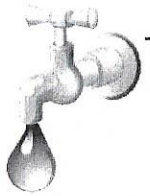
_____

Water, Water Everywhere

Cross-Curricular Focus: Earth Science



Name: _____

Answer the following questions based on the reading passage. Don't forget to go back to the passage whenever necessary to find or confirm your answers.

Water is probably Earth's most precious resource. After all, we can't live without it. Earth is the only known planet to have water. Our entire planet is covered in water, with little pieces of land called continents here and there. Our oceans are not the only places we have water. It is also present under the ground and as vapor in the air. Clouds formed by the vapor ensure that water falls back down to Earth as rain, sleet, snow or hail.

So with so much water all around us, why do we hear so much about the need to conserve water? It has to do with the water's salinity, or saltiness. Ocean water has too much salt in it for us to drink. Much of the water that falls back to Earth in one form or another becomes **runoff.** It travels some distance over land before making its way back to one of Earth's oceans. As it travels over land, the water picks up salts and minerals from the rocks and soil and washes them into the ocean. The deposits have built up over many years. That is why ocean water is so salty.

Approximately 97% of Earth's water is salt water. The process of **desalination**, or removing salt from water, is expensive. That leaves only about 3% that is freshwater for meeting the needs of people, plants and animals. This is why there is concern for protecting this rare and critical resource. Unfortunately, only about a third of our freshwater is even available for us to use. The rest is frozen solid in glaciers, in the snow on high mountaintops and in the polar ice caps. So the end result is that we have only about 1% of all the water on Earth that we can use.

The freshwater we use comes from surface water and **groundwater**. Surface water, just as it sounds, is water we can see in ponds, rivers, lakes and streams. Groundwater is water that seeps down into the ground and collects in the spaces between rocks and soil underground. You can find water just about anywhere on Earth if you dig far enough into the ground.

It is important to protect our water supplies from pollution. Once the water becomes polluted, it can be difficult or even impossible to clean. Chemicals, like cleaning supplies, paints and other toxins, can seep into the ground and make the water unusable. People must dispose of their waste products appropriately so we will have plenty of freshwater to go around.

1) With so much water all around us, why is there so little water for us to use?

_____

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_____

2) What are the four forms that water takes when it returns to Earth from the clouds?

_____

_____

3) What is the main idea of this passage?

_____

_____

4) Where is groundwater found?

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_____

5) What type of substance can seep into groundwater and make it unusable?

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