The Water Cycle
3131

The total amount of water on Earth never changes. Water is recycled so that it may be used over and over again by living organisms.

At the end of this unit, you should be able to do the following:

1. Explain the 3 states of matter and how matter can be found in all 3 states.

2. Draw and explain the water cycle.

3. Explain why water is important to all living organisms.

4. Explain how water is lost from living organisms to the environment.

5. Be able to use the following terms correctly:

<table>
<thead>
<tr>
<th>water cycle</th>
<th>water vapor</th>
<th>transpiration</th>
</tr>
</thead>
<tbody>
<tr>
<td>liquid</td>
<td>precipitation</td>
<td>condensation</td>
</tr>
<tr>
<td>gas</td>
<td>evaporation</td>
<td>clouds</td>
</tr>
<tr>
<td>solid</td>
<td>fresh water</td>
<td></td>
</tr>
</tbody>
</table>
The Water Cycle (3131)

You probably remember the water cycle from your elementary school. It has not changed. Water is still cycled through the environment. It is evaporated from the land and water; cooled and condensed into clouds; and returned to the Earth as precipitation in the form of rain, snow, sleet, or hail.

The total amount of water on Earth never changes. It just gets recycled. Sometimes water appears in the familiar liquid state, like the Chesapeake Bay or as rain. At other times, water appears as snow or ice, when water is in its solid state. Water also has a gaseous state. It is called water vapor. You can't see it, but it is there. There is always water vapor in the air. Sometimes you can feel it in the form of humidity. There are 3 states of matter. Water can easily be found in all 3 states of matter.

Living things need water. All chemical reactions in a cell need water. Remember that humans are mostly made of water. Almost 70% of the human body is made of water. Plants need water also.

REMEMBER THIS !!!
The process that recycles water so that it can be used over and over again by living things is called, the water cycle.

Question 1. Can water be found in all three states of matter: solid, liquid, and gas?

Question 2. How would you define the water cycle?

Question 3. Why is the water cycle important to all living things?

Interesting Scientific Fact: Have you ever wondered why there can be a lush oasis in the middle of a very dry desert? The water that supports the oasis plant and animal life comes from water that has been trapped beneath the Earth a long time ago. The oasis is a location where a crack in the Earth’s surface allows the underground water to reach the surface and form a pool of water.
**Interesting Scientific fact:** Changing the solid form of water (ice) to the liquid state of water requires heat. Changing water back into ice gives off heat. Knowing this, orange farmers in southern states spray their orange trees with water to prevent them from freezing during sudden cold snaps. The way it works is simple. As the water begins to freeze on the orange trees, it gives off heat which then prevents the fruit from freezing. The crop is saved.

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**The Water Cycle - how it works:**

Water **condenses** and falls out of the atmosphere. It is returned to the Earth as **precipitation** in the form of rain, snow, sleet, or hail. Although through **runoff**, most of the water falls back into the ocean and lakes, the rest falls on land and can be used by living things as fresh water. Some water absorbs into the ground and becomes **groundwater**.

All living organisms, both plants and animals, need a constant source of water to survive. Both plants and animals give water back to the environment. Usually the water is evaporated from plants and animals in the form of water vapor as part of their normal function. Water evaporates from the leaves of plant in a process called **transpiration**. Water is given off from animals in the form of perspiration and urination. This water returns to the atmosphere.

**Water is also evaporated from the land and water by the heat from the sun.** This water vapor then returns to the atmosphere.
Once in the atmosphere, the water vapor is cooled, which causes it to condense and change back into liquid water. We can see the tiny droplets of liquid water in the atmosphere. They are the clouds. When the droplets get big and heavy enough, gravity pulls them back to Earth as rain, snow, hail, or sleet.

**Question 4.** The process where water is lost from the leaves of plants to the atmosphere is called transpiration. What are examples of water loss from humans?

**Question 5.** Draw and explain the water cycle. Indicate how and where water is lost and where fresh water is available for use by living organisms.

**Question 6.** Compare and contrast evaporation and condensation.

**Summary**

The water cycle is a process in which water is recycled through the Earth and atmosphere for use by living things.

Once water vapor gets into the atmosphere by evaporation and transpiration, the water vapor cools, and condenses to form tiny droplets of liquid water. This is how clouds form. Condensation is the opposite of evaporation. It is the change of the gas (water vapor) to liquid water. The droplets formed by condensation stay in the atmosphere as clouds because they are too light to fall to Earth.

When droplets collide with each other they form bigger droplets. This continues until the droplets are too heavy to stay in the atmosphere. When the droplets are too heavy to stay in the clouds, gravity pulls them to Earth. They fall to the Earth as precipitation. Precipitation is the rain, snow, sleet, or hail that falls from the clouds onto the ground. It then becomes fresh water which is available for use by living things. Plants and animals need this water to help sustain life.
Water Cycle
Test Yourself

Matching

_____ 1. precipitation  
______ 2. condensation  
______ 3. evaporation  
______ 4. transpiration

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Fill in the blank.

water cycle        evaporation        transpiration
sun                condensation        clouds
precipitation      rain               snow
sleet              hail

1. _______________ are made of small droplets of water that are too small to fall to Earth.
2. The __________________ of water vapor in the air into liquid droplets helps clouds to form.
3. Water vapor gets into the air by ____________________ and ________________
4. When the water in clouds falls to Earth, it is called ________________________.
5. The four types of precipitation are ______________, ______________, ______________, and ______________.
6. The movement of water from Earth into the atmosphere and back again is called the ____________________________.
7. The energy to power the water cycle comes from the ____________.

True or False

_____ 1. Water that changes from a gas to a liquid is evaporating.
_____ 2. Water that changes from a liquid to a gas is evaporating.
_____ 3. Water that changes from a gas to a liquid is condensing.
4. Water that changes from a liquid to a gas is condensing.
5. Water vapor can get into the atmosphere by evaporation and condensation.
6. Water vapor can get into the atmosphere by evaporation and transpiration.
8. Small droplets of water collide and combine to form precipitation.
9. Transpiration is rain, snow, sleet, and hail.
10. Precipitation is rain, snow, sleet, and hail

Answer the following.

1. Draw and explain the water cycle.

2. Explain the two processes put water vapor into the atmosphere.

3. Explain what happens to the water vapor when it cools? What does it form?

4. How is water returned to Earth?
Question 1. Can water be found in all three states of matter: solid, liquid, and gas?

Question 2. How would you define the water cycle?

Question 3. Why is the water cycle important to all living things?

Question 4. The process where water is lost from the leaves of plants to the atmosphere is called transpiration. What are examples of water loss from humans?
**Question 5.** Draw and explain the water cycle. Indicate how and where water is lost and where fresh water is available for use by living organisms.

**Question 6.** Compare and contrast evaporation and condensation.