**Name:**

# Cycles of Nature Scavenger Hunt

In this Scavenger Hunt you will search for information that will answer questions about the water, carbon, and nitrogen cycles using the listed websites.

**Water Cycle**

Precipitation, evaporation, and condensation are all terms that you recognize, but what do they really mean? They are all part of the water cycle, which is a complex process that not only gives us water to drink, and food to eat, but also helps our plants grow. Only about 3% of the Earth’s water is fresh, and 1% of that water can be used for many human purposes. Why can’t we use the other 2% of the fresh water found on the Earth? What about the other 97% of the water found in the world? To find these answers and to discover more, come along for an interactive journey through the water cycle!

**Click on the following website:**

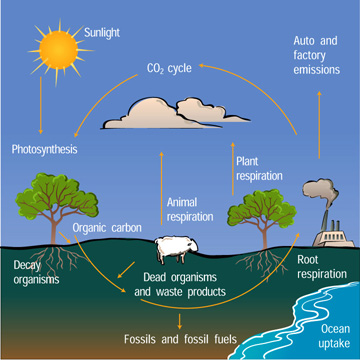
[**http://www.mbgnet.net/fresh/index.htm**](http://www.mbgnet.net/fresh/index.htm)

1. Evaporation is the process where a liquid

changes from its  \_\_\_\_\_\_\_\_\_\_\_ state

to a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ state.

1. Why is evaporated water so clean?
2. Condensation occurs when a is changed into a . Condensation is the opposite of \_.
3. When the and\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ are right, the small droplets of water in clouds form larger droplets and precipitation occurs.
4. Using the terms "evaporation", "condensation", and "precipitation", explain the water cycle in your own words.
5. What factor is most important in determining whether water is a solid, liquid, or gas?
6. Is the amount of water on Earth always changing or is it a constant amount?
7. Explain surface runoff.

**Carbon Cycle**

Carbon is an element that is found in all organisms, fossil fuels, soil, the ocean, and the atmosphere. We take part in the carbon cycle by breathing CO2 into the air; autotrophs participate by removing atmospheric CO2 for use in building leaves, stems and other organs through the process of photosynthesis. As we burn more and more fossil fuels, such as oil and coal, we release large amounts of carbon dioxide into the atmosphere - more than can be removed by oceans and photosynthetic organisms. Within the atmosphere, this extra CO2 traps heat. As more CO2 accumulates, the Earth becomes warmer through a process known as the greenhouse effect.

**Click on the following websites:**

[**http://vro.agriculture.vic.gov.au/dpi/vro/vrosite.nsf/pages/soilhealth\_organic\_carbon-cycle#**](http://vro.agriculture.vic.gov.au/dpi/vro/vrosite.nsf/pages/soilhealth_organic_carbon-cycle)

[**http://nortonbooks.com/college/biology/animations/ch38a03.htm**](http://nortonbooks.com/college/biology/animations/ch38a03.htm) **(complete the step-through and the quiz)**

[**https://www.windows2universe.org/?page=/earth/Water/co2\_cycle.html**](https://www.windows2universe.org/?page=/earth/Water/co2_cycle.html)

1. Why do plants and other photosynthetic organisms need CO2 from the atmosphere?
2. How can carbon move from “land” to bodies of water?
3. Describe the way human impact has leads to increased levels of CO2 in the atmosphere.
4. What is the greenhouse effect?
5. How much carbon is stored in the atmosphere as CO2?
6. What percentage of the atmosphere is CO2?
7. Which activity absorbs CO2 from the atmosphere?
8. Carbon moves from plants to animals through the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
9. Carbon moves from fossil fuels to the atmosphere when fuels are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
10. How many tons of carbon are released each year by the burning of fossil fuels?

**Click on the following website:**

<https://www.windows2universe.org/earth/climate/carbon_cycle.html>

1. Where are you starting within the carbon cycle?

**“Click to begin your journey”**

1. How much of the atmosphere is made of carbon dioxide (CO2)?
2. By how much has CO2 increased in the atmosphere during the past 150 years?
3. Next stop = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ What did you learn?
4. Next stop = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ What did you learn?
5. The deep ocean accounts for more than % of the Earth’s carbon.
6. How much carbon does the surface ocean absorb from the atmosphere each year?
7. True or False: When plants die and decay, they bring carbon into soil.
8. Next stop = What did you learn?
9. Next stop = What did you learn?
10. Next stop = What did you learn?
11. When carbon enters the deep ocean, how long does it stay there?
12. True or False: Phytoplankton are tiny plants and algae that float in the ocean and take up carbon dioxide as they grow.
13. True or False: Plants both absorb CO2 from the atmosphere and release it into the atmosphere

### Nitrogen Cycle

The nitrogen cycle represents one of the most important nutrient cycles found in terrestrial ecosystems. Nitrogen is used by living organisms to produce a number of complex organic molecules like amino acids, proteins, and nucleic acids. The majority of nitrogen is found in the atmosphere, where it exists as a gas (mainly N2). Other major reserves of nitrogen include organic matter in soil and the oceans. Despite its large quantity in the atmosphere, nitrogen is often the most limiting nutrient for plant growth. This problem occurs because most plants can only take up nitrogen in two solid forms: ammonium ion (NH4+) and the ion nitrate (NO3-). Specialized bacteria “fix” nitrogen, converting it to a form that can be used by organisms. By fixing nitrogen, these bacteria are a critic al link between atmospheric nitrogen and life on Earth.

**Click on the following website:**

[**http://nortonbooks.com/college/biology/animations/ch38a02.htm**](http://nortonbooks.com/college/biology/animations/ch38a02.htm) (complete the step-through and the quiz)

[**http://www.classzone.com/books/ml\_science\_share/vis\_sim/em05\_pg20\_nitrogen/em05\_pg20\_nitrogen.html**](http://www.classzone.com/books/ml_science_share/vis_sim/em05_pg20_nitrogen/em05_pg20_nitrogen.html)

1. How is nitrogen important in our lives?
2. Why are nitrogen-fixing bacteria contributions to the nitrogen cycle so important?
3. Nitrogen gas makes up of the air we breathe.
4. Nitrogen converts  to

for organisms to use.

1. Another useable form of nitrogen, NH4+ can be converted to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_for organisms to use.
2. Plants use both and to incorporate nitrogen into DNA, protein, and other molecules.
3. Explain how animals get their needed amounts of nitrogen.
4. Explain how nitrogen cycles through the land and ocean ecosystems.
5. How does the human impact of fertilizers impact the nitrogen cycle?
6. Once in plants and animals, explain how does nitrogen return to the atmosphere?