

Biogeochemical Cycles (Day 1)

Guided Practice – Part 1

Trip	Where I'm going:	How I'm getting there:
Start		-
1		
2		
3		
4		
5		
6		
7		
8		
9		

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Guided Practice – Part 1

You've arrived at the: **Atmosphere**

Potential routes from here:

- If your die reads 1 or 2: Lightning strikes! Nitrogen gas is made into a solid and travels to the soil!
 - If your die reads 3 or 4: Blue green algae and bacteria convert you into a solid bringing you to the soil!
 - If your die reads 5 or 6: Bean plants extract you from the air and bring you to the soil!
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You've arrived at the: **Surface water**

Potential routes from here:

- If your die reads 1 or 2: You are just the sort of nitrogen that plants need. You are now in a live plant!
 - If your die reads 3 or 4: You travel through the rivers and streams to the ocean!
 - If your die reads 5 or 6: You percolate deep underground in the groundwater!
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You've arrived at: **Rainwater**

Potential routes from here:

- If your die reads 1: You fall into a lake or stream so now you are part of surface water.
 - If your die reads 2 or 3: You fall on the land and become part of the soil!
 - If your die reads 4: You percolate deep underground in the groundwater!
 - If your die reads 5 or 6: You rain into the ocean!
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You've arrived at: **Groundwater**

Potential routes from here:

- If your die reads Odd numbers (1, 3, or 5): The groundwater you are dissolved within travels and you become part of the surface water!
 - If your die reads Even numbers (2, 4, or 6): The groundwater you are dissolved within travels and you become part of the ocean!
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You've arrived at: **Fertilizers**

Potential routes from here:

- If your die reads 1 or 2: You dissolve and wash into the surface water!
 - If your die reads 3 or 4: You become part of the soil!
 - If your die reads 5 or 6: You are just the sort of nitrogen that plants need. You are now in a live plant!
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You've arrived at: **Live plants**

Potential routes from here:

- If your die reads Odd numbers (1, 3, or 5): The plant you are in died. Go to dead plants and animals.
- If your die reads Even numbers (2, 4, or 6): An animal has eaten the plant you are in! Go to live animals.

You've arrived at: **Soils**

Potential routes from here:

- If your die reads 1: You dissolve and wash into the groundwater!
 - If your die reads 2: You dissolve and wash into the surface water!
 - If your die reads 3 or 4: You are just the sort of nitrogen that plants need. You are now in a live plant!
 - If your die reads 5 or 6: Bacteria transformed you into nitrogen gas. You are now in the atmosphere!
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You've arrived at the: **Ocean**

Potential routes from here:

- If your die reads 1: Look out! Water is on the move! You have washed into the groundwater!
 - If your die reads 2 or 3: You are just the sort of nitrogen that plants need. You are now in a live plant!
 - If your die reads 4, 5, or 6: Bacteria have transformed you into nitrogen gas and you are now part of the atmosphere!
-

You've arrived at: **Live animals**

Potential routes from here:

- If your die reads Odd numbers (1, 3, or 5): The animal that you are within died. Go to dead plants and animals.
 - If your die reads Even numbers (2, 4, or 6): Congratulations! The animal that you were within has excreted and you are in its waste. Go to animal waste!
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You've arrived at: **Animal waste**

Potential routes from here:

- If your die reads 1 or 2: Look out before someone steps in you! Now you decompose in the soil!
 - If your die reads 3 or 4: A farm supply company has picked you up and made you into fertilizer!
 - If your die reads 5 or 6: What's that in the water? You have dissolved into surface water!
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You've arrived at: **Dead plants and animals**

Potential routes from here:

- If your die reads 1 or 2: You are decomposed and become part of the soil!
- If your die reads 3: You are decomposed and become dissolved in surface water!
- If your die reads 4: You are decomposed and become dissolved in the ocean!
- If your die reads 5 or 6: Fire! The wood you were within burns. You are released in the atmosphere.

Biogeochemical Cycles (Day 2)

Guided Practice – Part 2

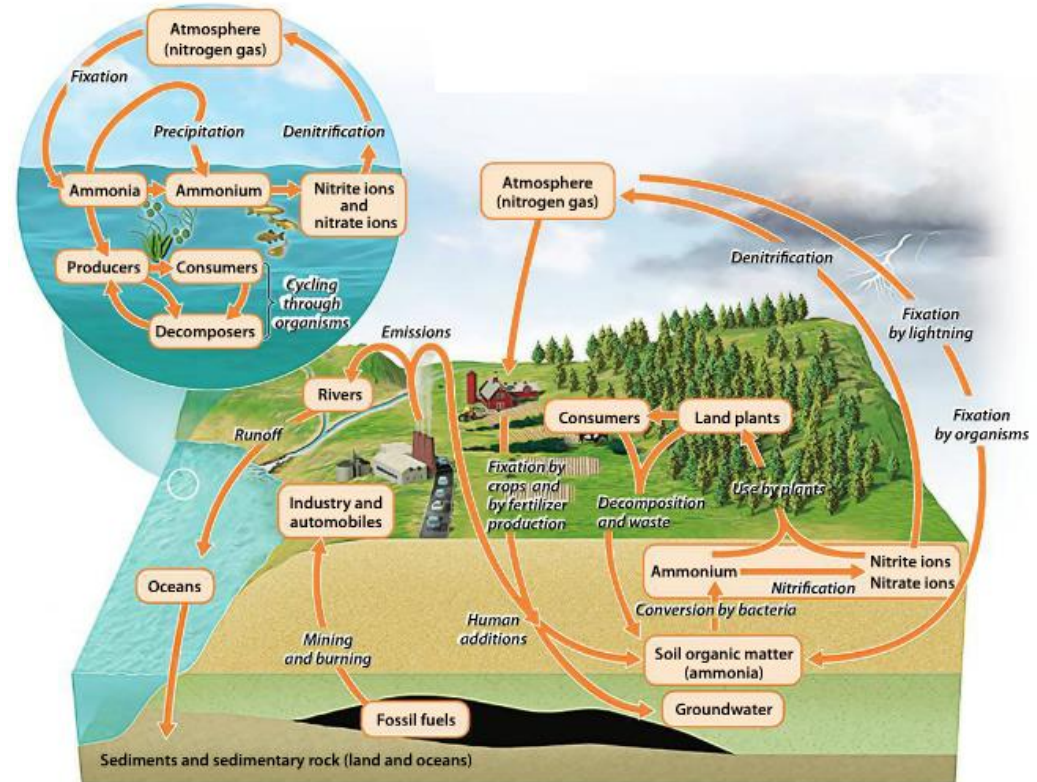
Write a R-A-F-T as if you were a nitrogen atom traveling through the nitrogen cycle. Tell about the journey you made through the nitrogen cycle (see Part 1). Be as descriptive as possible as you tell about your journey describing the processes you went through and the many different forms you took along the way. For visual, map out your journey.

R – Nitrogen atom

A – Your classmates

F – Short story

T – A tale of your journey



Biogeochemical Cycles (Day 2)

Independent Practice

1. Describe the law of conservation of matter. What does this mean in regards to the biogeochemical cycles?
2. Describe the processes of nitrogen fixation, nitrification and denitrification. Include in your description the methods in which each process may be completed.
3. What is eutrophication? Why is it dangerous? What are two possible causes?
4. Diagram the route your nitrogen molecule traveled through the ecosystem. Label where you started and number your arrow 1-9 as you traveled.
5. How many stops could you make on a trip? Will the journey ever end? Explain your answer.
6. Will your journey always be the same? Why or why not?
7. If a farmer introduced too much fertilizer or we burnt too many fossil fuels what would happen?
8. Farming creates a large amount of animal waste. How would this affect the nitrogen cycle?