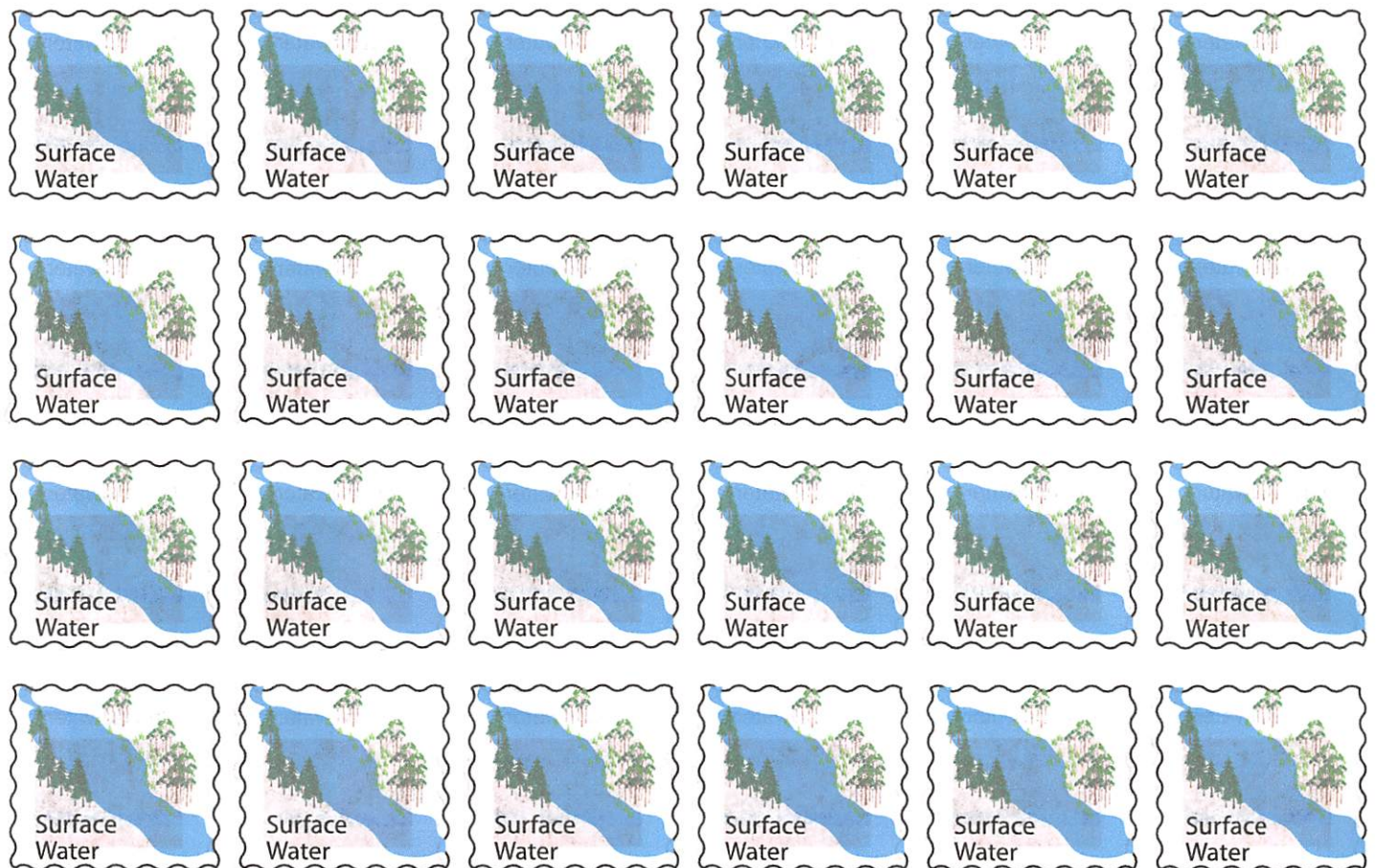
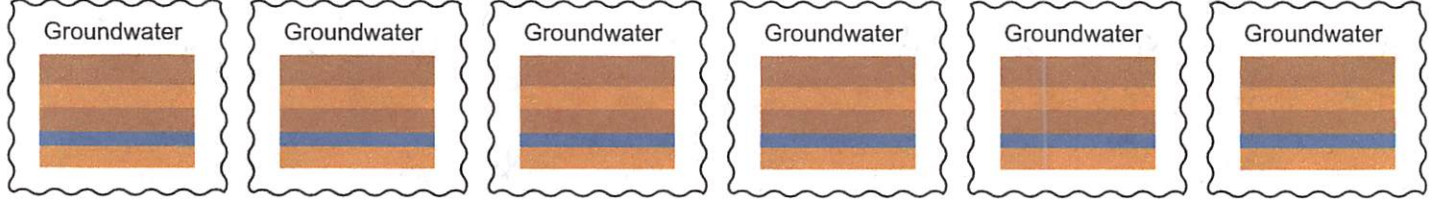
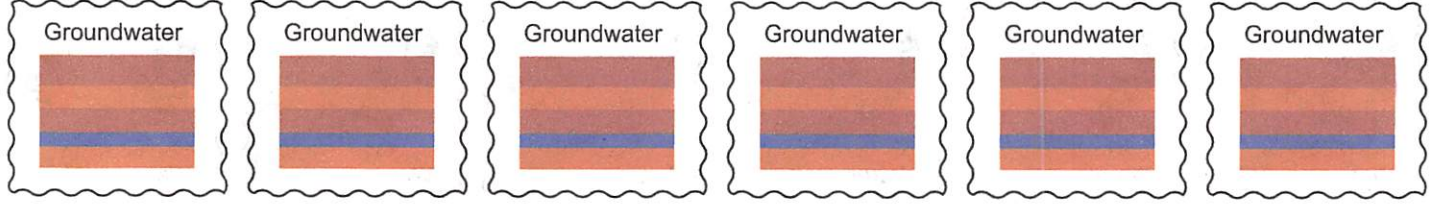
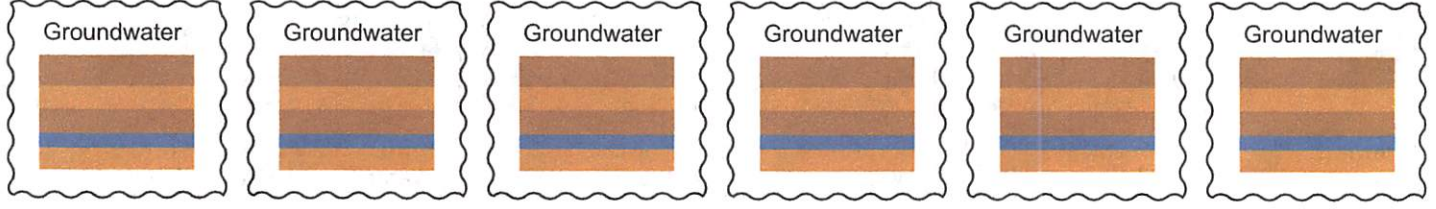
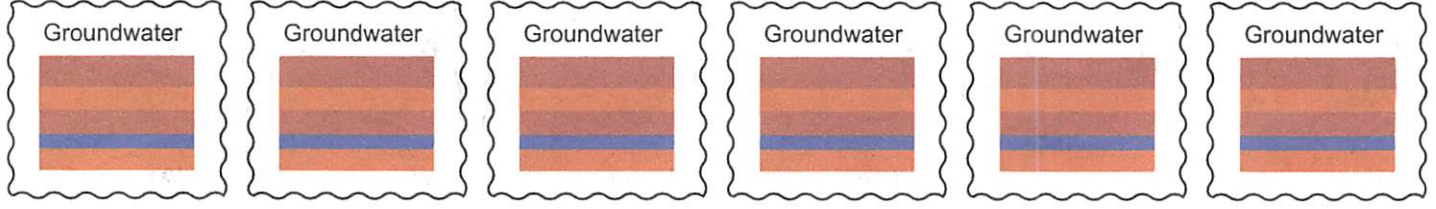
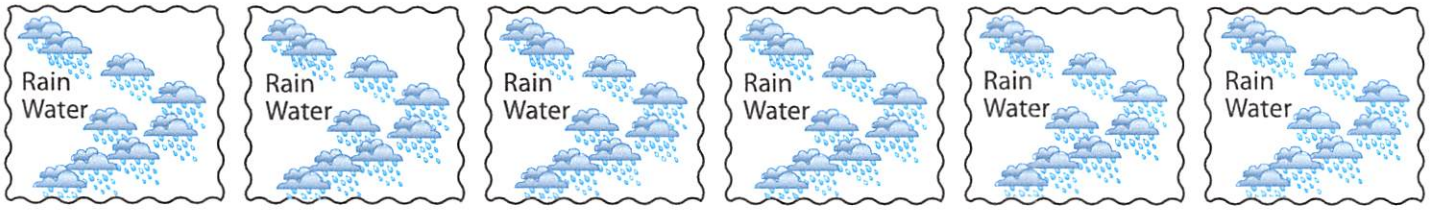
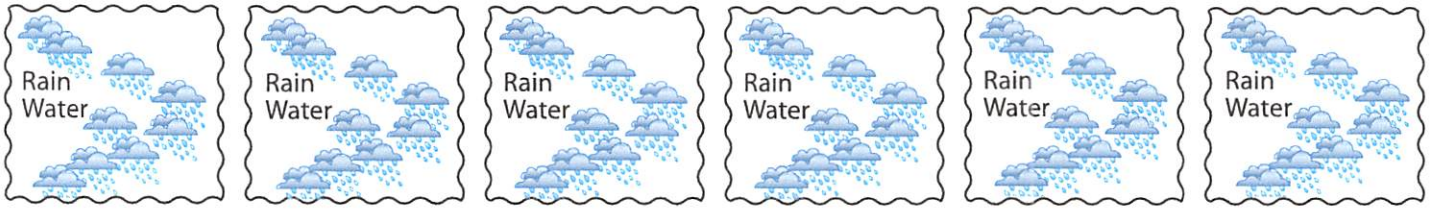
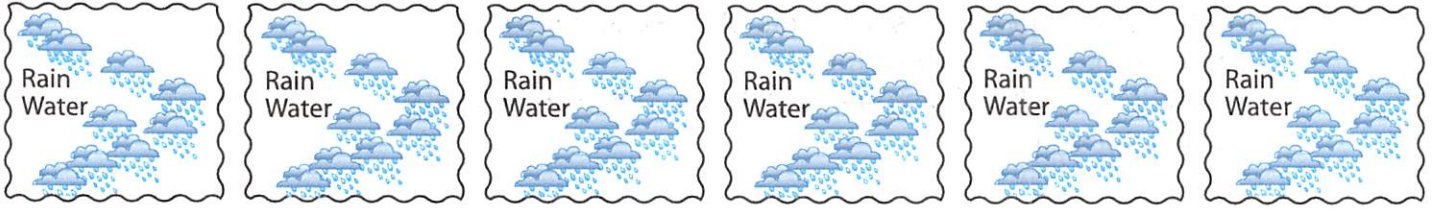
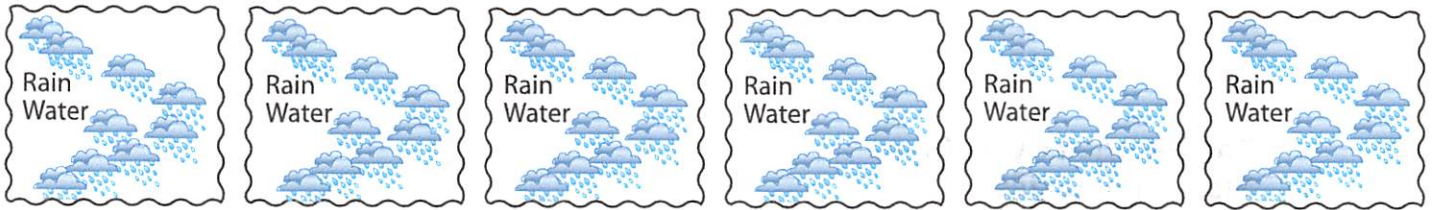


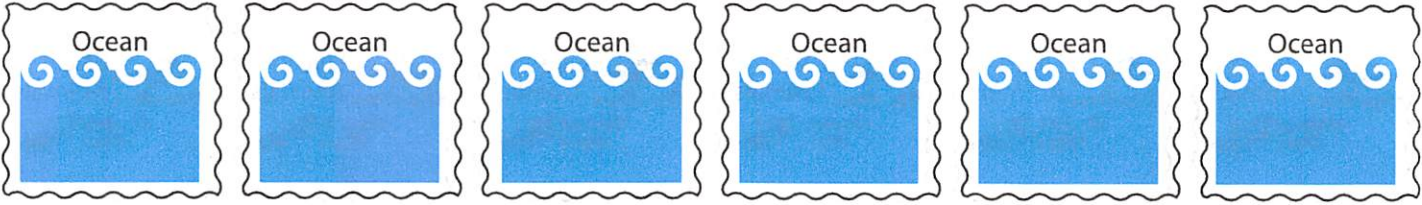
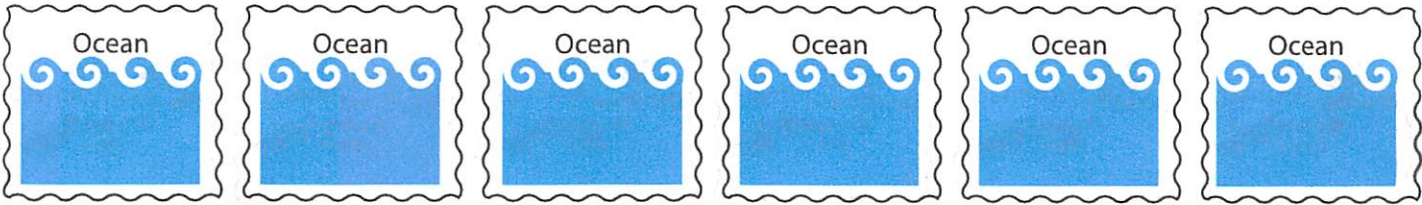
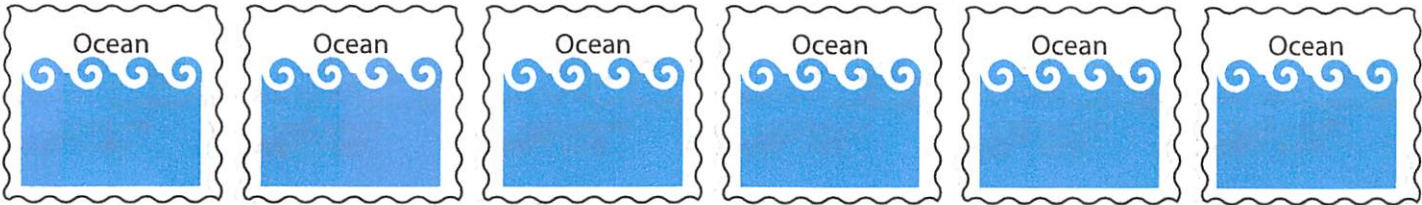
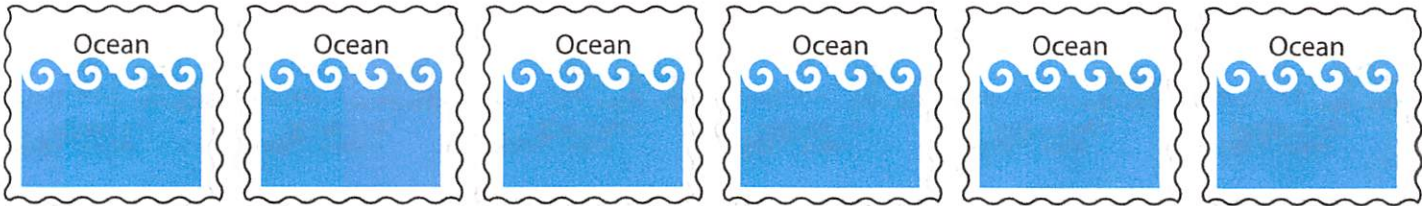
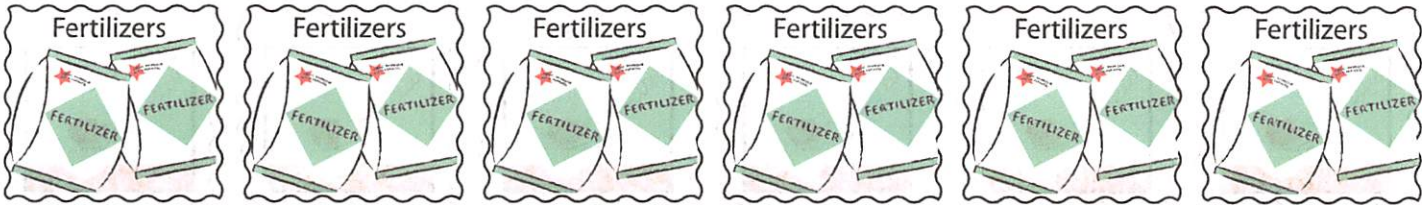
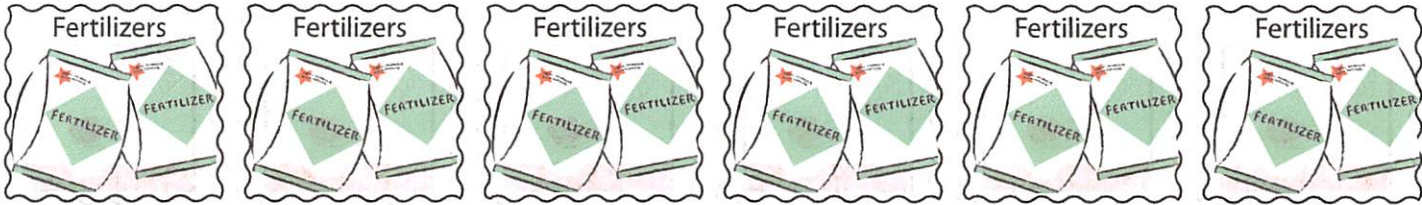
The Nitrogen Cycle Game Stamp Templates

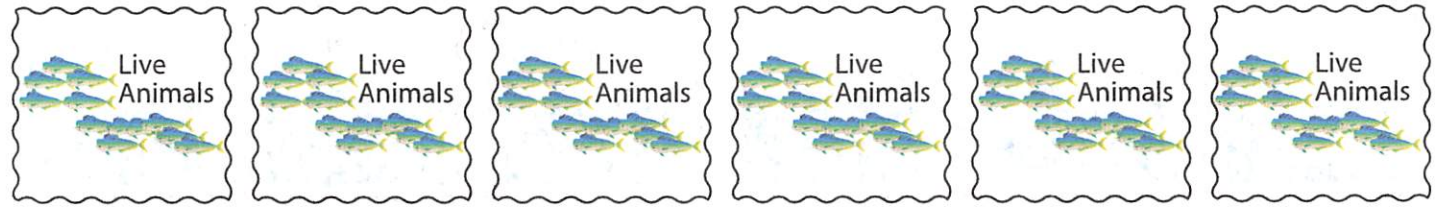
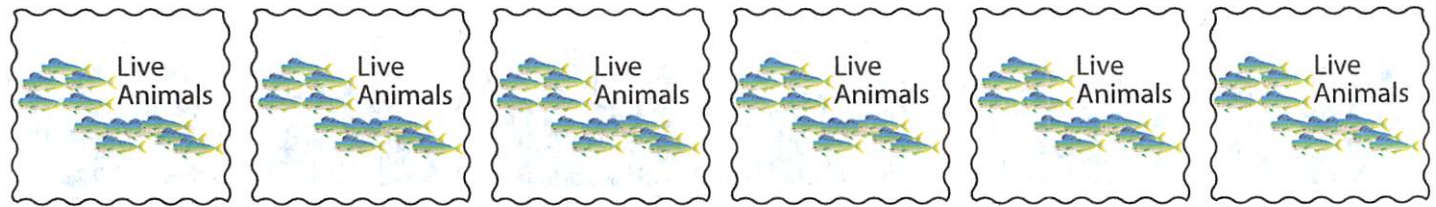
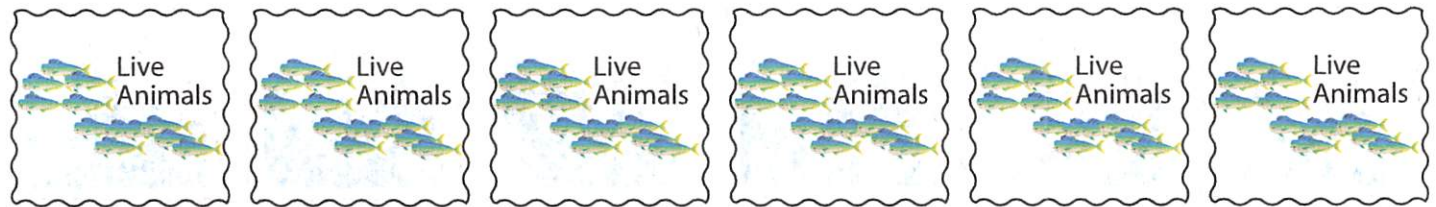
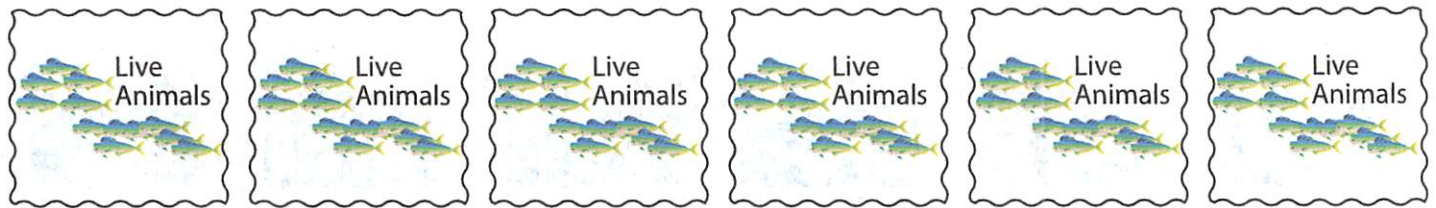
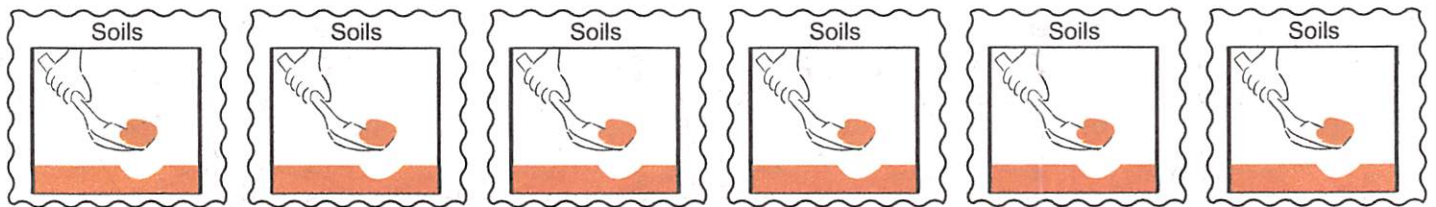
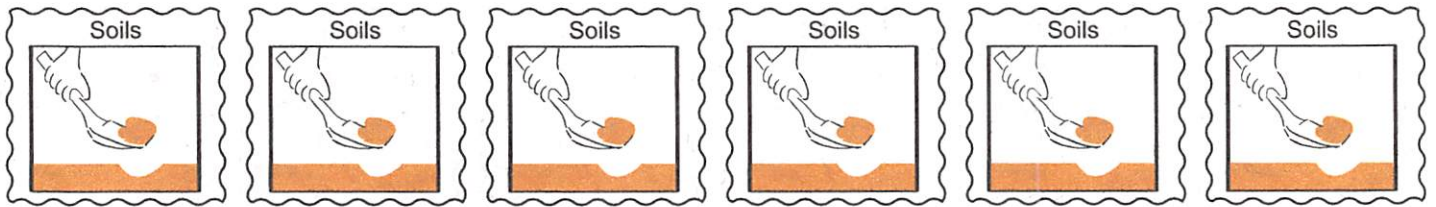
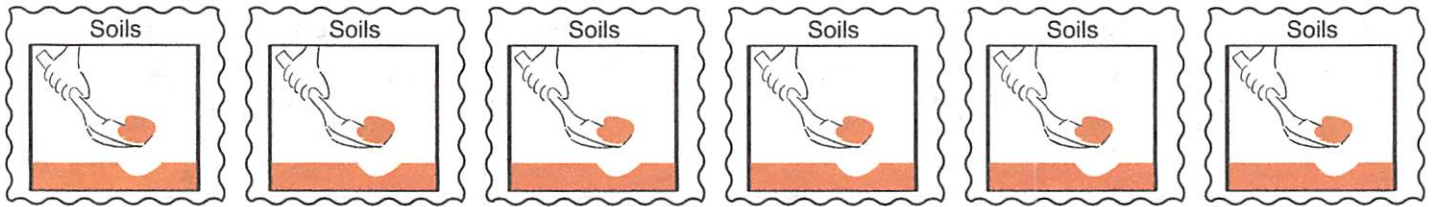
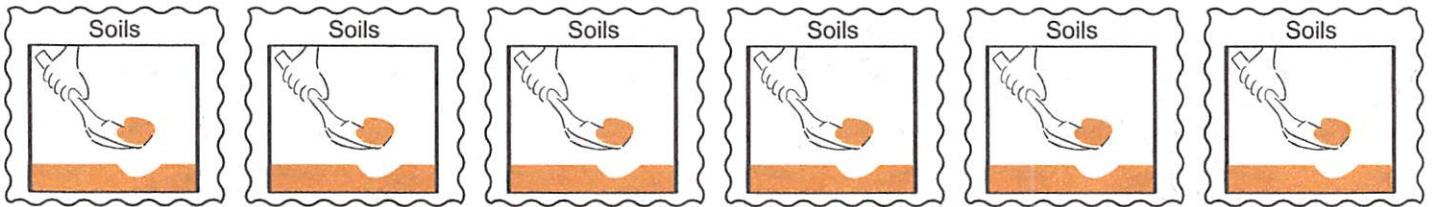
Print and cut apart at least two sets of these stamps for use with The Nitrogen Cycle Game.

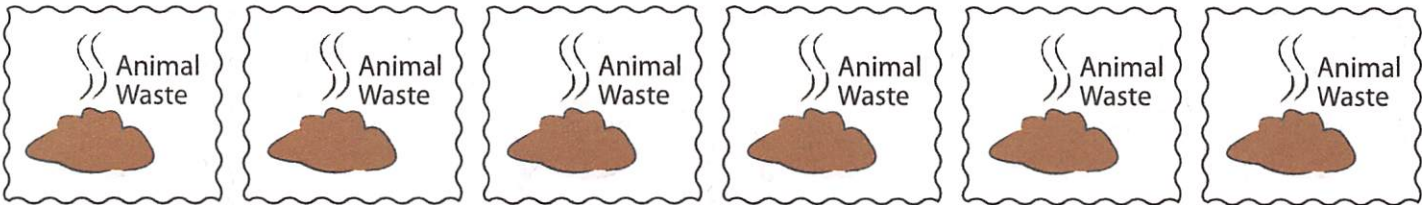
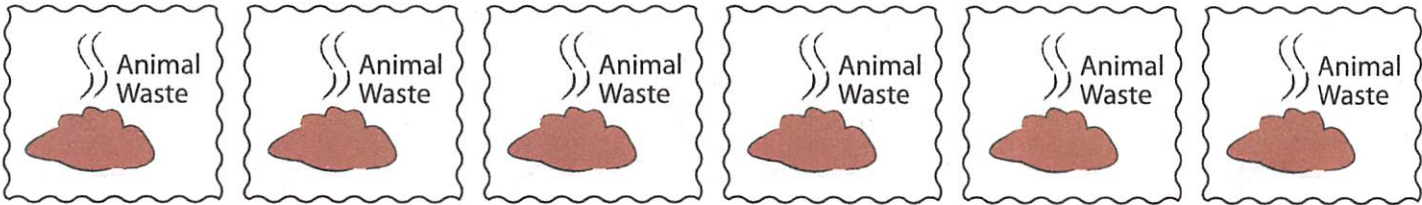
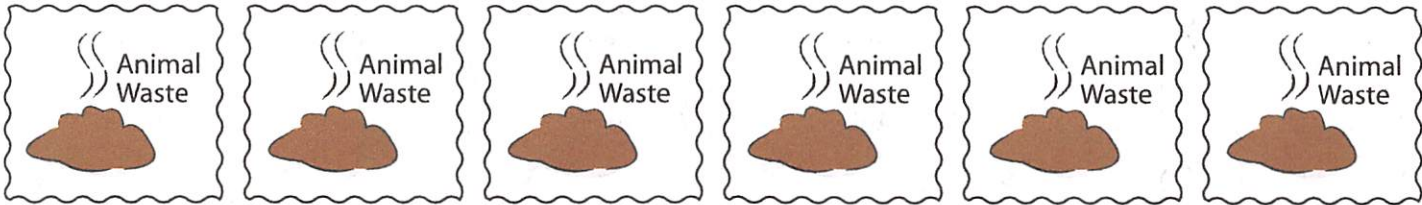
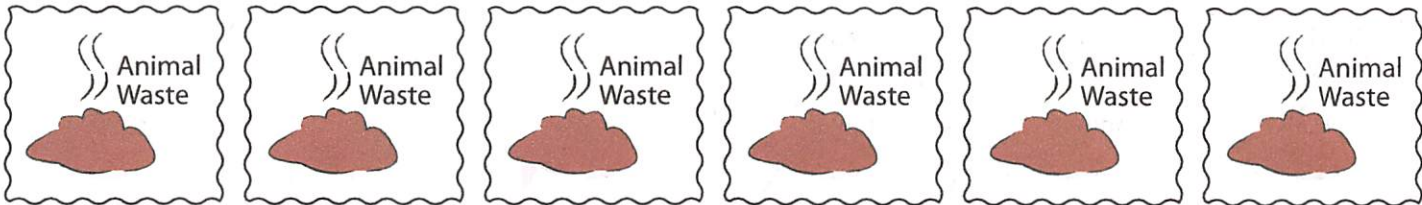
Instructions for this classroom activity are available at Spark (spark.ucar.edu).

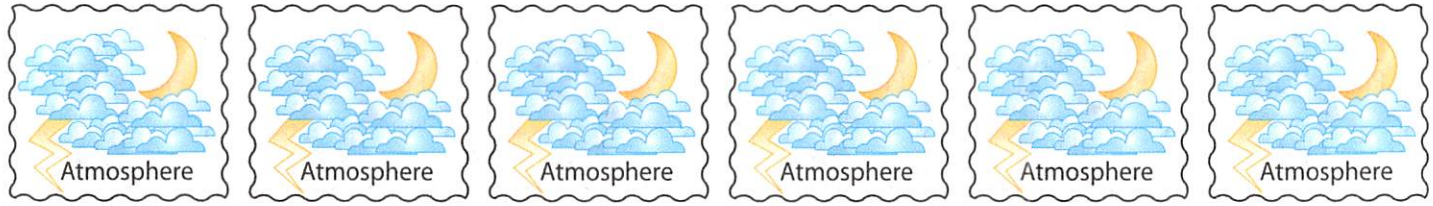
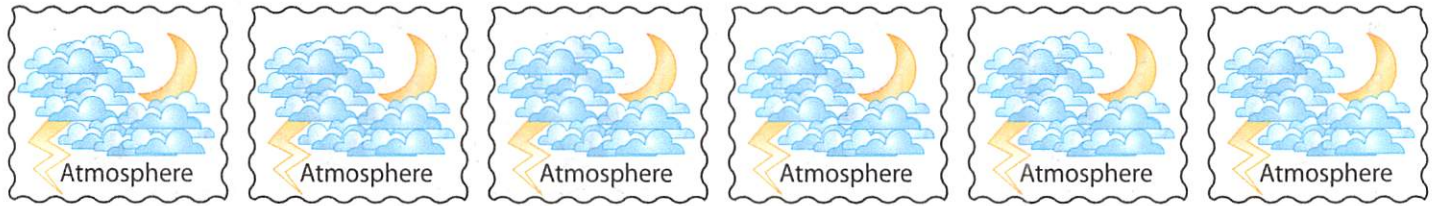
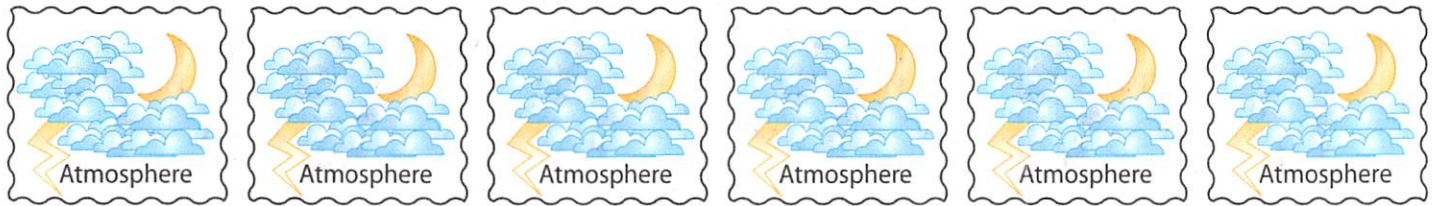
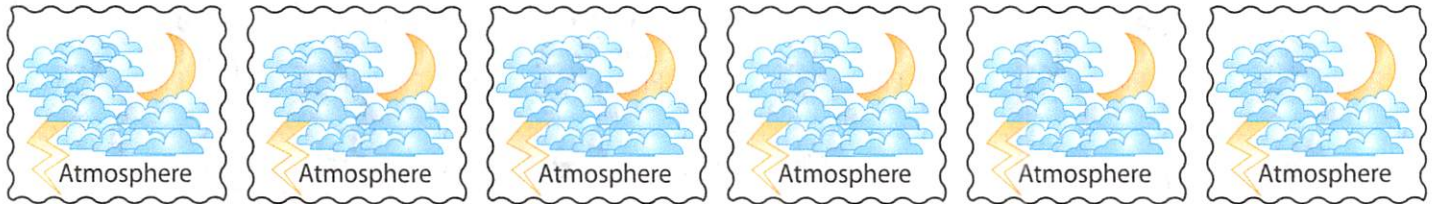
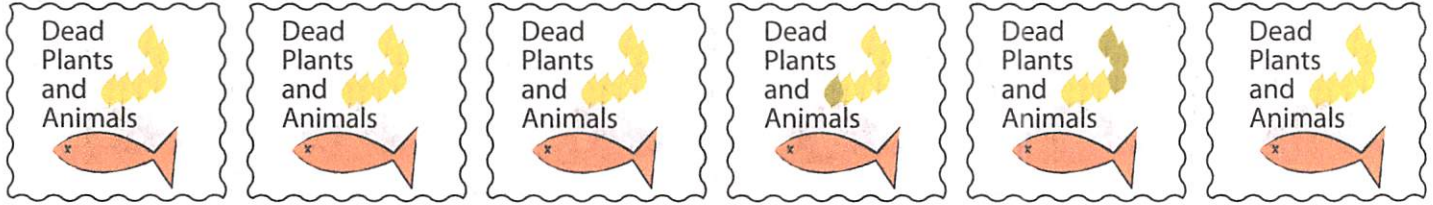
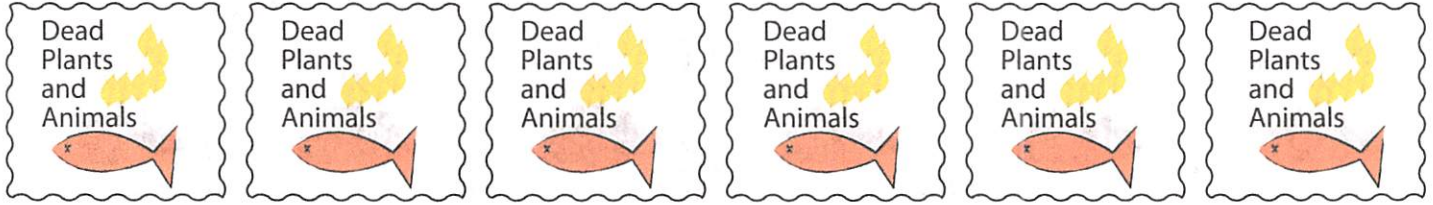
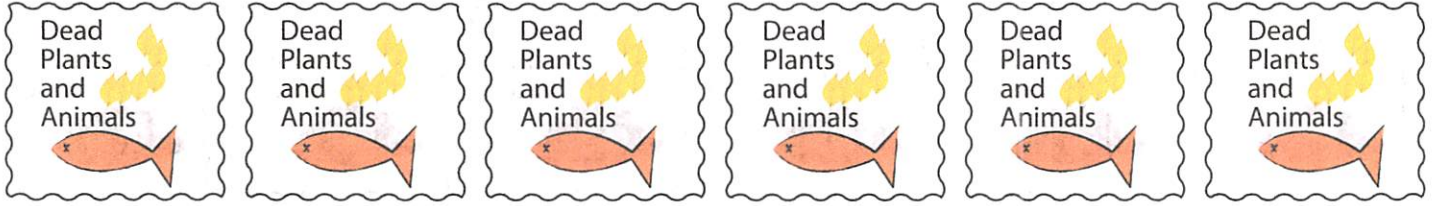
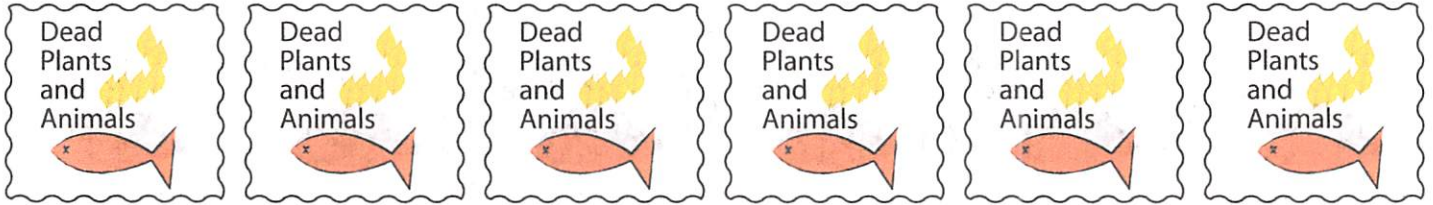














Traveling Nitrogen

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!
-

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!
-

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!
-

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.
-

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.



Traveling Nitrogen

DICE CODES

1. Print the dice code pages (p.4-5 of this lesson).
 2. Cut each reservoir apart on the dotted lines.
 3. Place dice codes at appropriate reservoir stations ?(see Advanced Preparation for more information)
-

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!
-

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!
-

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!
-

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!
-

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!




CLIMATE DISCOVERY STUDENT PAGES

NATIONAL CENTER FOR ATMOSPHERIC RESEARCH

Traveling Nitrogen

Name _____
 Date _____ Class _____

1. Fill out your start location in the space below.
2. Roll the die at your start location to find out where to go next. Write the "Where I'm going" and "How I'm getting there" information in the Trip #1 box (as in the example at the right).
3. Head to that location and stamp the Trip#1 box. Then, roll the die at that location to find out where to go next.

Trip#1:Where I'm going: <u>Surface Water</u>	How I'm getting there: Fertilizer washed into stream
	

Start Location: _____

Trip#1:Where I'm going: _____	How I'm getting there: _____
<i>Stamp above</i>	

Trip#6:Where I'm going: _____	How I'm getting there: _____
<i>Stamp above</i>	

Trip#2:Where I'm going: _____	How I'm getting there: _____
<i>Stamp above</i>	

Trip#7:Where I'm going: _____	How I'm getting there: _____
<i>Stamp above</i>	

Trip#3:Where I'm going: _____	How I'm getting there: _____
<i>Stamp above</i>	

Trip#8:Where I'm going: _____	How I'm getting there: _____
<i>Stamp above</i>	

Trip#4:Where I'm going: _____	How I'm getting there: _____
<i>Stamp above</i>	

Trip#9:Where I'm going: _____	How I'm getting there: _____
<i>Stamp above</i>	

Trip#5:Where I'm going: _____	How I'm getting there: _____
<i>Stamp above</i>	

Trip#10:Where I'm going: _____	How I'm getting there: _____
<i>Stamp above</i>	