

# CARBON CYCLE

Dice Simulation  
with Writing Connection

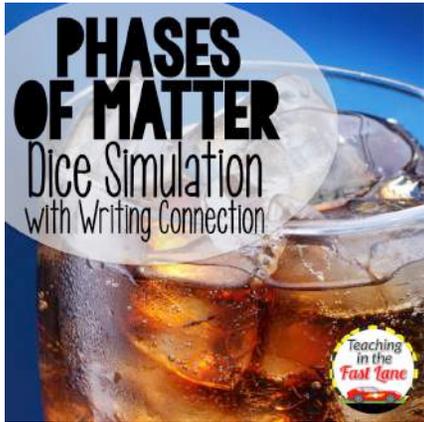
Teaching  
in the  
*Fast Lane*



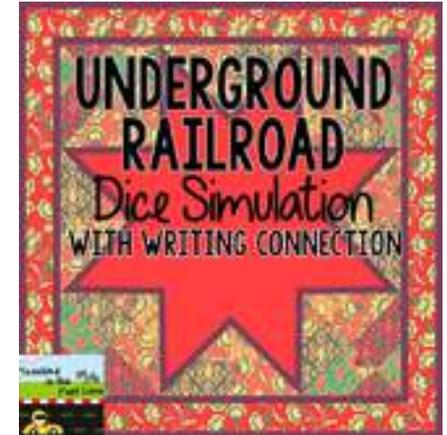
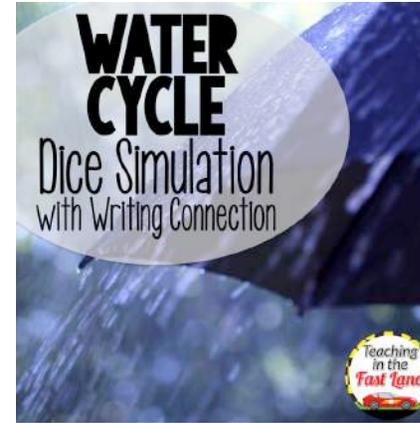
PLEASE VISIT MY TEACHERSPAYTEACHERS STORE

# Teaching in the Fast Lane

FOR MORE SIMULATIONS!



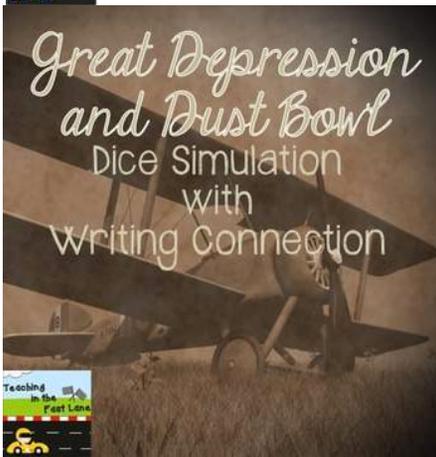
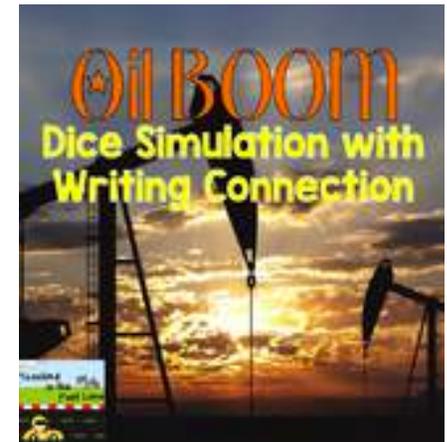
**TURKEY IN HIDING**  
Dice SIMULATION  
AND WRITING CONNECTION



**CIRCULATION OF A DOLLAR**  
Dice SIMULATION  
AND WRITING CONNECTION



**REINDEER GAMES**  
Dice SIMULATION  
AND WRITING CONNECTION



**MANY MORE TO COME!**

©2015 TeachingInTheFastLaneLLC



# INCLUDED IN THIS PRODUCT:

- Teacher and student directions for simulation
- Recording sheet
- Sample recording sheet
- Teacher directions for narrative
- Sample narrative based on sample recording sheet
- Rubric for narrative
- Signs for each location with directions
  - For larger classes, I would make multiple copies of each poster and directions, so that lines at each don't get too long.

\*\*You will need seven dice to complete this simulation. I recommend the large foam dice that can be found at the dollar store.\*\*

# NOTE TO TEACHER

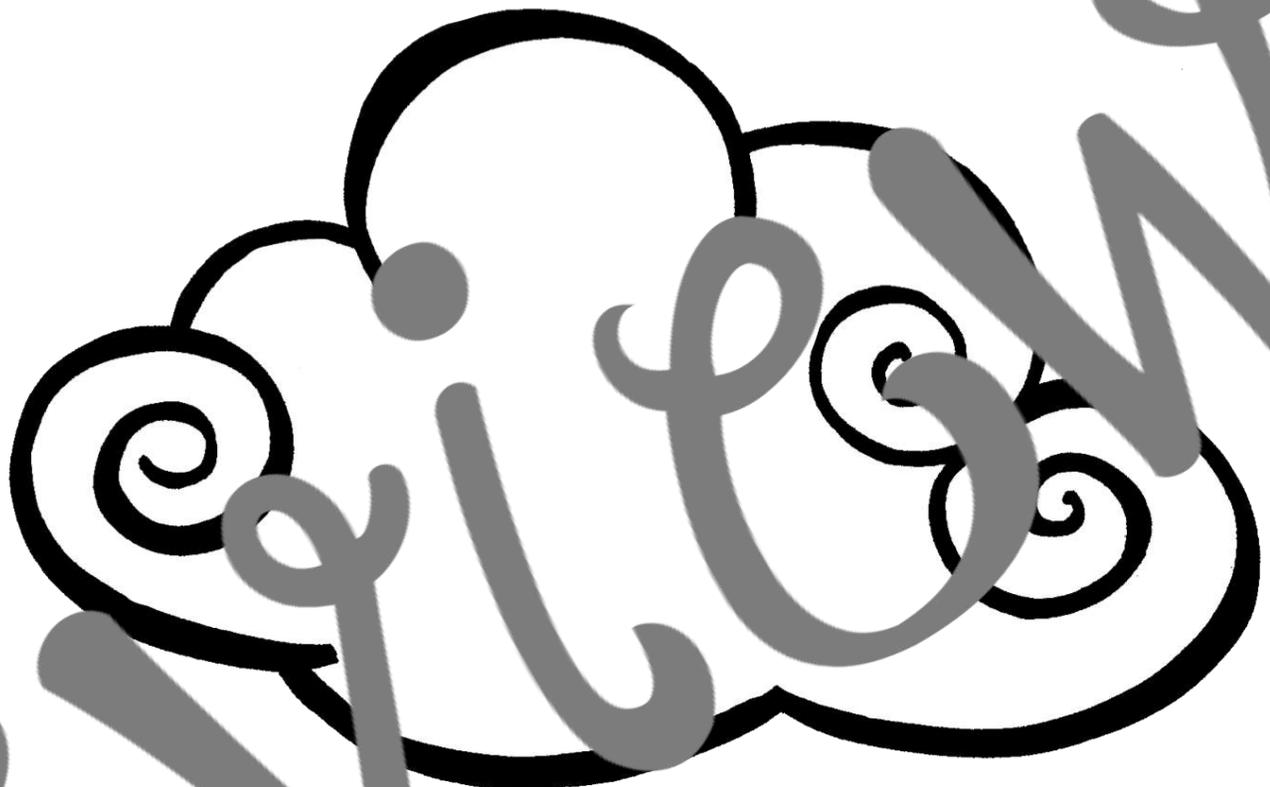
This is a simulation meant to reinforce students' knowledge of the Earth's carbon cycle. This simulation is a great way to connect science and writing within your curriculum.

# TEACHER DIRECTIONS FOR SIMULATION

- Print and laminate each of the location signs and student directions.
- Hang the location signs and student directions around your classroom and place one die by each poster.
- Hand out recording sheets to students and review the directions with them:
  - Directions are found on the next page.
- Monitor students as they travel around the classroom during the simulation and complete their recording sheet.
- Assign students to their starting location.
  - I do this by numbering students off #1-6 and assign them to the following locations:
    1. Atmosphere Carbon Store
    - 2. Fossil Fuel Emissions
    - 3. Diffusion
    - 4. Photosynthesis
    - 5. Organic Matter
    - 6. Respiration and Decomposition

# DIRECTIONS FOR SIMULATION

- After each student has their starting location, they should begin to circulate.
- At each location, roll the die and read the event associated with the number rolled. Use the underlined words to record your progress and travel to the next location.
- Once you have established your location, travel there quietly and wait in line to roll the die.
  - If your directive is to stay in the same location, then go to the end of the line and take another turn rolling the die.
- Students should continue to travel from location to location until they complete their recording sheet or time is up.
  - I would recommend allowing students to complete the simulation for about 10-15 minutes.

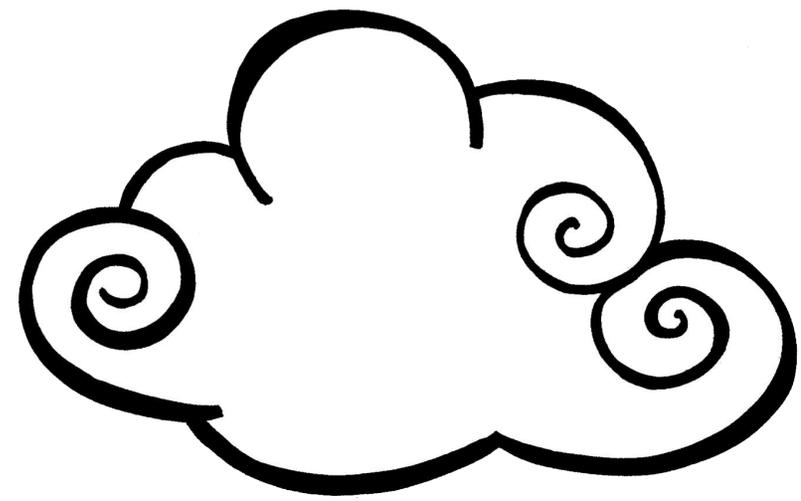


**ATMOSPHERE**

**CARBON STORE**

# ATMOSPHERE CARBON STORE

1. Diffuse into the ocean.
2. Used to complete photosynthesis.
3. Remain in the atmosphere carbon store.
4. Used to complete photosynthesis.
5. Diffuse into the ocean.
6. Remain in the atmosphere carbon store.

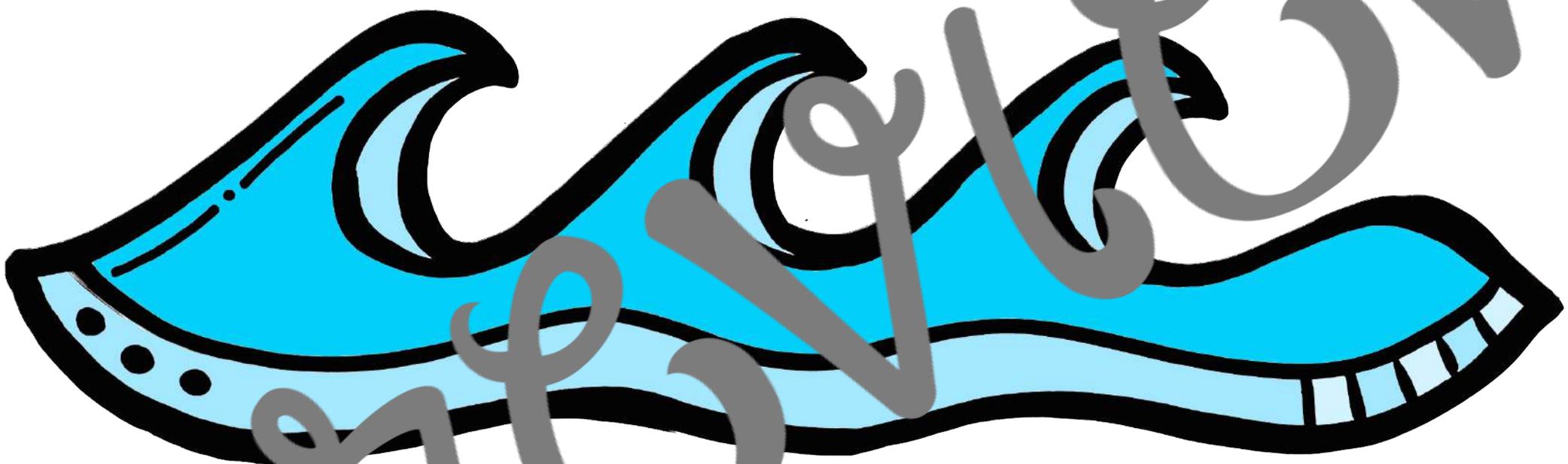


# FOSSIL FUEL EMISSIONS



# FOSSIL FUEL EMISSIONS

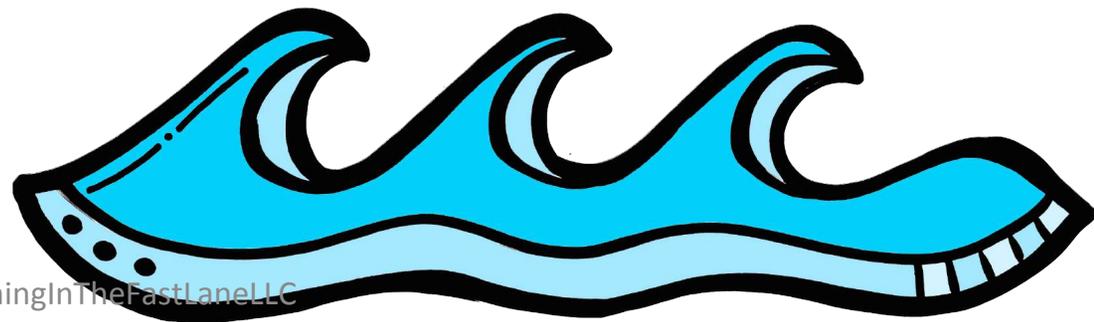
1. After leaving a factory you are returned to the atmosphere carbon store.
2. After being emitted from a car exhaust you are returned to the atmosphere carbon store.
3. After leaving a factory you are returned to the atmosphere carbon store.
4. After being emitted from a car exhaust you are returned to the atmosphere carbon store.
5. After leaving a factory you are returned to the atmosphere carbon store.
6. After being emitted from a car exhaust you are returned to the atmosphere carbon store.

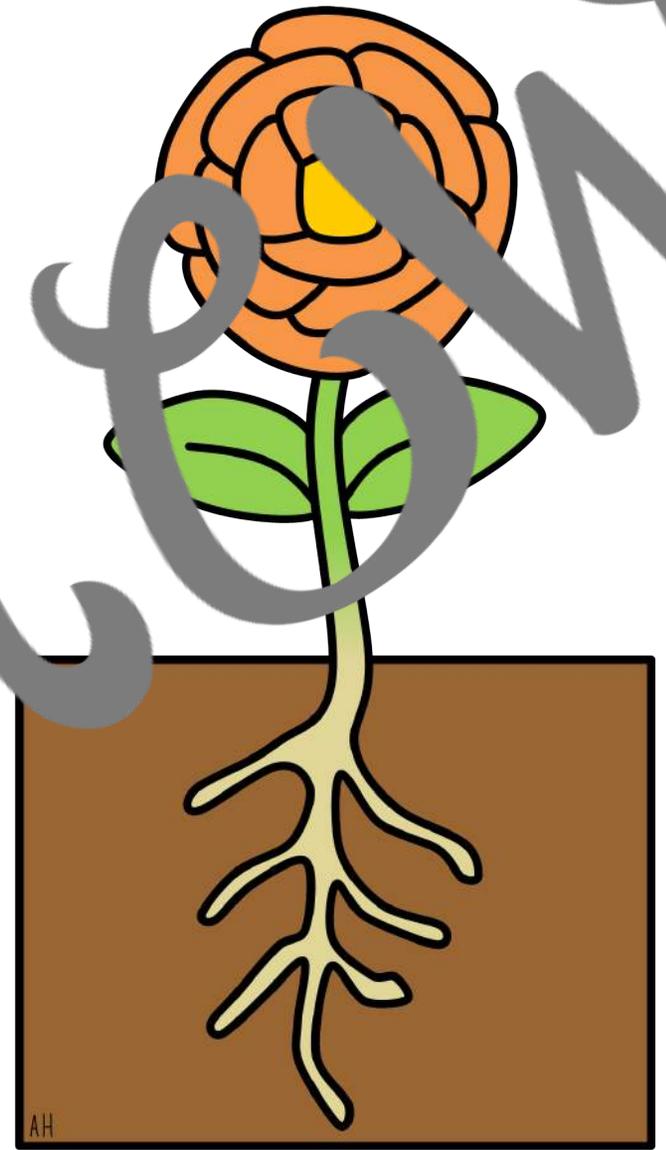


**OCEAN**

# OCEAN

1. You are diffused into the atmosphere carbon store.
2. Phytoplankton use you to complete photosynthesis.
3. You are absorbed by the soil and used by organic matter.
4. Remain rest in the ocean.
5. Phytoplankton use you to complete photosynthesis.
6. You are absorbed by the soil and used by organic matter.

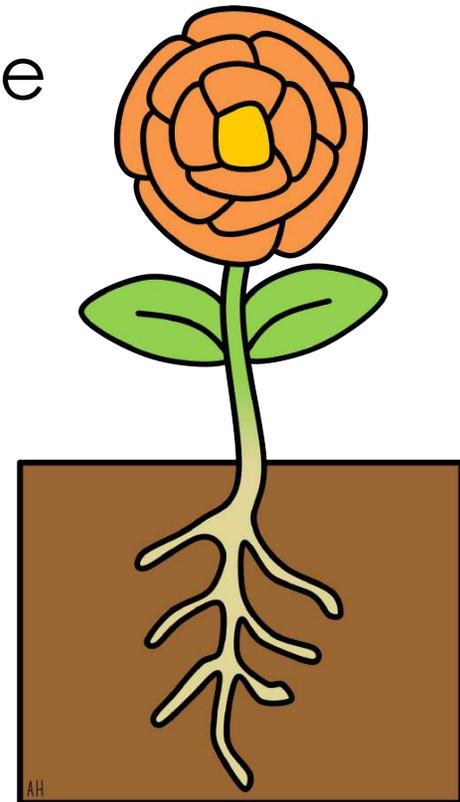




# PHOTOSYNTHESIS

# PHOTOSYNTHESIS

1. As oxygen you are absorbed by marine life in the ocean.
2. You are used to complete respiration.
3. You are used to aid in decomposition.
4. As oxygen you are absorbed by marine life in the ocean.
5. You are used to complete respiration.
6. You are used to aid in decomposition.

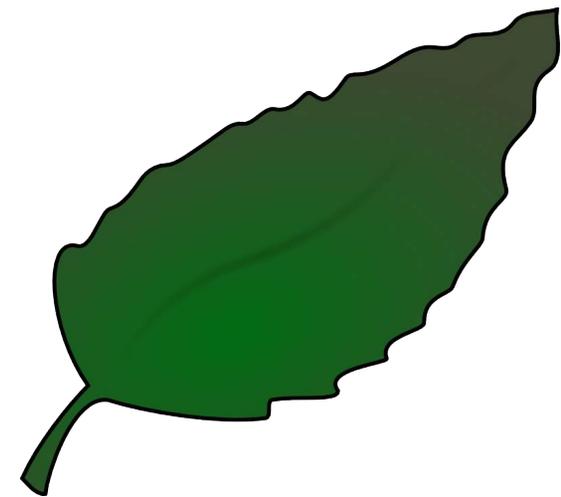


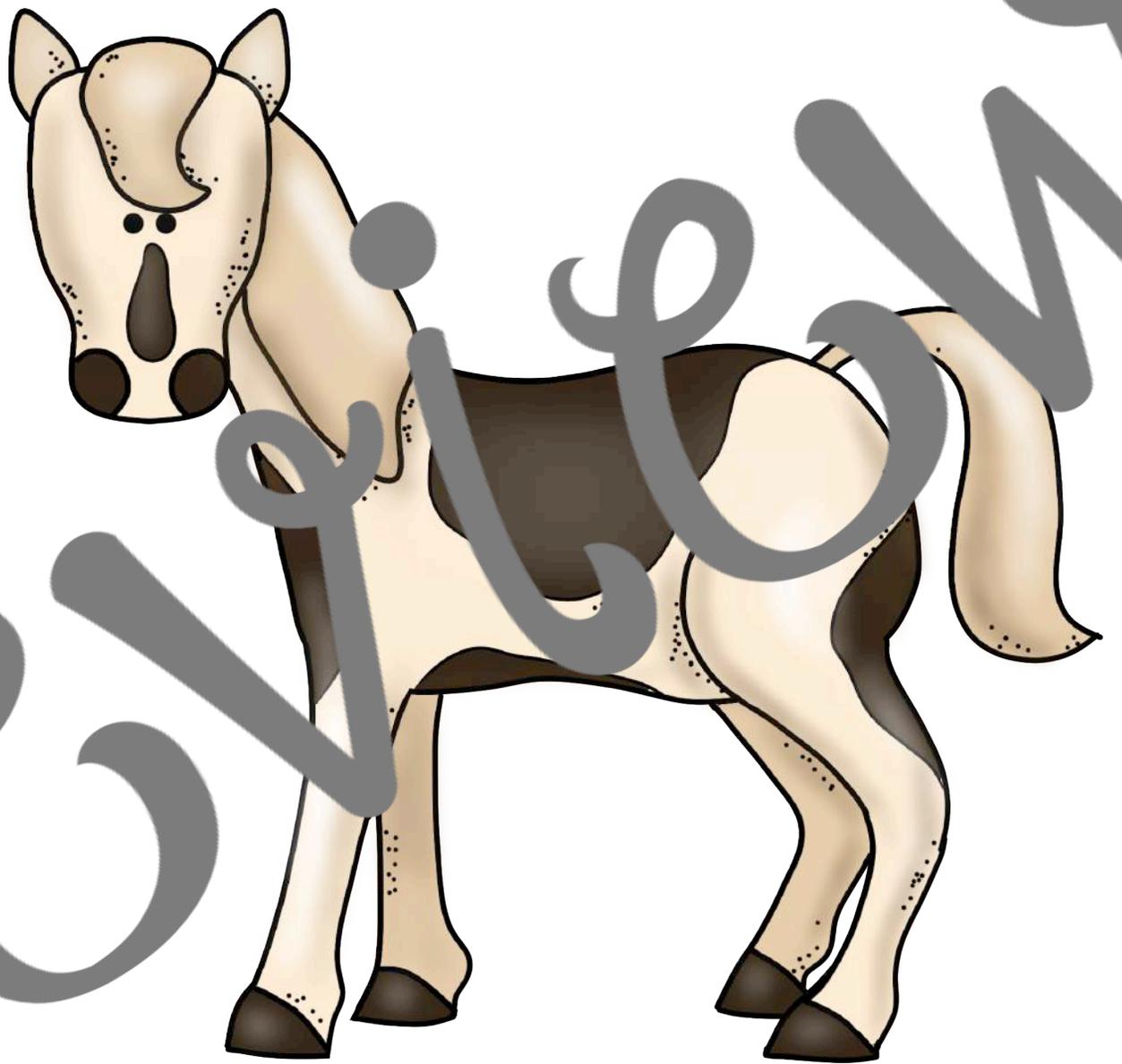


# ORGANIC MATTER

# ORGANIC MATTER

1. Over millions of years you are turned into fuel and emitted as fossil fuel emissions.
2. You aid in the completion of photosynthesis.
3. Remain a part of organic matter.
4. You are decomposed.
5. Over millions of years you are turned into fuel and emitted as fossil fuel emissions.
6. Remain a part of organic matter.

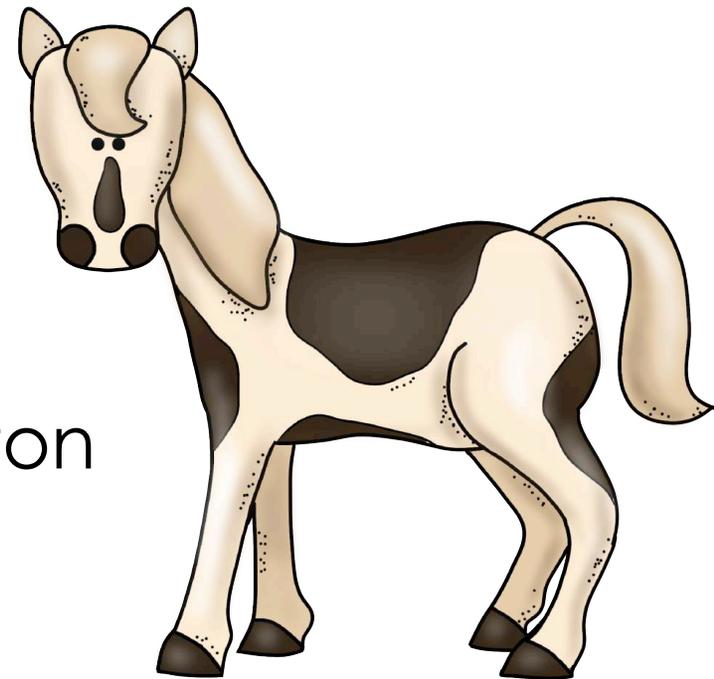




# RESPIRATION

# RESPIRATION

1. You are breathed out into the atmosphere carbon store.
2. You are breathed out and absorbed by a plant to aid in photosynthesis.
3. You are taken in by phytoplankton in the ocean.
4. You are breathed out into the atmosphere carbon store.
5. You are breathed out and absorbed by a plant to aid in photosynthesis.
6. You are taken in by phytoplankton in the ocean.





# DECOMPOSITION

# DECOMPOSITION

1. You return to organic matter.
2. You are taken into the ocean.
3. You return to organic matter.
4. You are taken into the ocean.
5. You return to organic matter.
6. You are taken into the ocean.



Name \_\_\_\_\_

# \_\_\_\_\_

Date \_\_\_\_\_

# CARBON CYCLE DICE SIMULATION

1	Begin	1 1	
2		1 2	
3		1 3	
4		1 4	
5		1 5	
6		1 6	
7		1 7	
8		1 8	
9		1 9	
10		2 0	

# SAMPLE RECORDING SHEET FOR CARBON CYCLE DICE SIMULATION

1	Begin as atmosphere carbon store	11	respiration
2	ocean	12	organic matter
3	photosynthesis	13	organic matter
4	respiration	14	ocean
5	photosynthesis	15	ocean
6	decomposition	16	ocean
7	organic matter	17	photosynthesis
8	decomposed	18	organic matter
9	organic matter	19	fossil fuel emissions
10	photosynthesis	20	atmosphere carbon store

# TEACHER DIRECTIONS FOR NARRATIVE

- After completing the dice simulation, students are ready to write a narrative from the point of view of carbon traveling through earth's environment.
- Students should use their recording sheet (the locations they visited) to write a narrative piece about their adventure.
- By following their recording sheet and adding details, students will have a narrative describing their adventure. It is also important for students to use their science vocabulary in the narrative.
- It is alright for students to not use all of the locations on their recording sheet, but they should include at least five events.
- A rubric for the narrative is included.

# SAMPLE NARRATIVE

My adventure began floating high in the sky above the Earth. I had spent quite a bit of time out in the atmosphere and was beginning to think that it was my destiny to remain in the atmosphere, but before I knew it I was making my way down to the ocean. The process of being diffused into the ocean's warm water was a wonderful new sensation, and I was glad that I had made the journey down to earth.

Once deep in the ocean I was afraid that I would be stuck here, much like I was in the atmosphere, but I didn't last long at all. A microscopic phytoplankton plucked me right out of the water. I had the pleasure of experiencing a whole new process, that they called photosynthesis. I fused with the organism and then was expelled back into the water, but this time as oxygen which was an altogether new feeling.

Floating around the water as oxygen I was quite popular. Every organism wanted me for respiration. I got to be a little choosy and went with an octopus. I had always read about octopi and found them very interesting. Exploring the respiratory system was absolutely fascinating, and I would have loved to spend more time there, but I was soon exhaled as carbon dioxide once again.

Back in the ocean water I floated towards the surface and was once again diffused into the atmosphere carbon store. Then returned to the ocean by once again diffusing. From there I was transferred to organic matter and decomposed by a fungus. I much enjoyed becoming part of the earth itself. From here I was once again absorbed by a plant to undergo photosynthesis. After being released as oxygen I began my search for an organism to undergo respiration. This search brings me to today, while I continue my journey.

# RUBRIC FOR CARBON CYCLE DICE SIMULATION NARRATIVE

	1 point	3 points	5 points
<b>Grammar, Mechanics, &amp; Spelling</b>	Many mistakes that make it difficult for the reader to understand.	A few mistakes, but the reader can still understand.	Only 1-2 mistakes and the reader can understand.
<b>Organization and Coherence</b>	The story does not make sense or follow order of events.	The story follows order of events, but lacks coherence.	The story follows a logical order and is coherent.
<b>Events from recording sheet</b>	Includes 2 or less events from the simulation.	Includes 4-5 events from the simulation.	Includes 6 or more events from the simulation.
<b>Details and Scientific Vocabulary</b>	No details are added. Academic vocabulary is not present.	A few obvious details are added along with some academic vocabulary.	Many imaginative details are added. Clear use and knowledge of academic vocabulary is present.

Terms of Use: ©2015TeachingintheFastLaneLLC. All rights reserved. Purchase of this product entitles the purchaser the right to reproduce the pages for ONE CLASSROOM ONLY. Duplication for more than one classroom such as another teacher, grade level, school, or district is strictly forbidden without written permission from the author. Copying any part of this product and placing it on the internet in any form is strictly forbidden and is a violation of the Digital Millennium Copyright Act (DMCA).

**Thank you for your purchase. If you have time, please rate this product and leave me some feedback on how I can improve my products. All constructive criticism is greatly appreciated.**

**PLEASE VISIT MY TEACHERSPAYTEACHERS STORE**  
**Teaching in the Fast Lane**

**FOR MANY DIFFERENT PRODUCTS!**

<http://www.teachinginthefastlane.com>

