

## Cycles worksheet

1. Which of the following processes does not cycle carbon dioxide (CO<sub>2</sub>) back into the atmosphere?

- A) Photosynthesis  
 B) Decomposition of waste  
 C) Forest fires  
 D) Volcanic eruptions

2. Which of the following gases do not contribute to the greenhouse effect?

- A) CO<sub>2</sub>  
 B) NO<sub>2</sub>  
 C) CH<sub>4</sub>  
 D) SO<sub>2</sub>

3. Five human activities are listed below.

- |                                  |                                   |
|----------------------------------|-----------------------------------|
| 1. Raising cattle                | 2. Driving a gasoline powered car |
| 3. Using a natural gas fireplace | 4. Walking                        |
| 5. Swimming in a lake            |                                   |

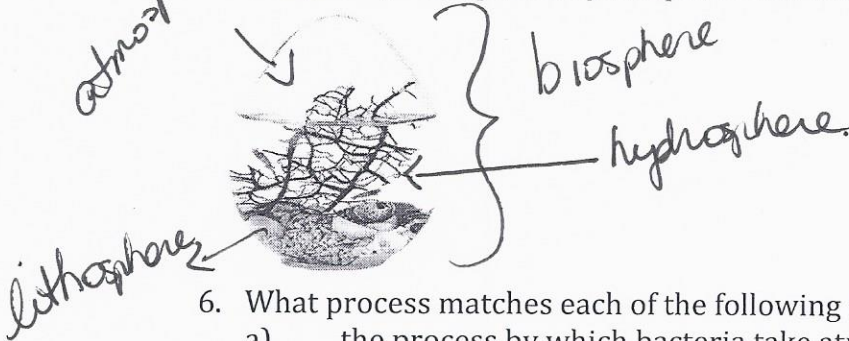
Which of the above activities could contribute to the greenhouse effect?

- A) 1 and 2 only  
 B) 1, 2 and 3  
 C) 2 and 3 only  
 D) 4 and 5

4. Which of the following is not a consequence of the warming of the permafrost?

- A) Landslides  
 B) Unstable infrastructure (buildings and roads)  
 C) A decrease in the amount of vegetation  
 D) The release of greenhouse gases

5. In the picture below, label the substance or area that represents the biosphere, lithosphere, hydrosphere and atmosphere.



6. What process matches each of the following descriptions?

- a) the process by which bacteria take atmospheric nitrogen and change it into ammonia **Nitrogen fixation**  
 b) the process by which bacteria change ammonium into nitrites **Nitrification**  
 c) the process by which bacteria change nitrates into nitrogen **denitrification**

7. The *Azotobacter* bacterium lives in soil and water. It is an oval-shaped bacterium that needs oxygen and feeds on organic matter. *Azotobacter* has the ability to convert atmospheric nitrogen into ammonia, using the enzyme nitrogenase. What is the name of this process?

**Nitrogen fixation**

8. What is the role of bacteria to the nitrogen cycle?

Key to converting  $N_2$  to usable forms.

9. How have human activities contributed to disrupting the carbon cycle?

Digging for fossil fuels releasing  $CO_2$ . Excess  $CH_4$  ~~for~~ from cows.

10. Carbon dioxide ( $CO_2$ ) is an important source of carbon for living organisms. Name two processes through which carbon can enter the biosphere?

- Respiration                      - volcanoes  
- forest fires                      - cars

11. Name 2 processes which remove carbon from the biosphere.

- photosynthesis                      - forming  $CaCO_3$

12. Give 2 negative consequences to deforestation and how it affects the carbon cycle.

1) Less photosynthesis occurring  
2) More  $CO_2$  =  $\uparrow$  global warming

13. The carbon cycle describes the movement of carbon throughout the biosphere. Some human activities can have an impact on the carbon cycle through either the production of excess carbon dioxide gas,  $CO_2$ , or through decrease in the production of carbon dioxide. Which of the following human activities will increase the amount of  $CO_2$  in the atmosphere? Explain your answer.

- a) A tree-planting initiative in the Boreal forest.
- b) Deforestation by a logging company

a) planting trees will = more photosynthesis which will remove C from atmosphere which will decrease global warming.

b) will  $\downarrow$  photosynthesis &  $\uparrow$  global warming