

6. How is the temperature of the Earth partly controlled by carbon?

7. What role do rocks have within the carbon cycle?

Go to http://www.windows.ucar.edu/earth/climate/carbon_cycle.html to play the carbon cycle game.

You are a carbon atom!

8. Where are you starting within the carbon cycle?

“Click to begin your journey”

9. How much of the atmosphere is made of carbon dioxide (CO₂)?

10. By how much has CO₂ increased in the atmosphere during the past 150 years?

As you work through this game, take some notes about where you go as a carbon atom. Make sure you visit all reservoirs!

11. Next stop = _____
What did you learn?

The deep ocean accounts for more than _____ % of the Earth's carbon.

12. Next stop = _____
What did you learn?

How much carbon does the surface ocean absorb from the atmosphere each year?

True or False: When plants die and decay, they bring carbon into soil.

13. Next stop = _____
What did you learn?

True or False: Plants both absorb CO_2 from the atmosphere and release it into the atmosphere.

14. Next stop = _____
What did you learn?

True or False: Phytoplankton are tiny plants and algae that float in the ocean and take up carbon dioxide as they grow.

15. Next stop = _____
What did you learn?

When carbon enters the deep ocean, how long does it stay there?

Nitrogen Cycle:

Go to <http://www.elmhurst.edu/~chm/onlcourse/chm110/outlines/nitrogencycle.html> and answer these questions.

16. What are the two conditions under which nitrogen will react with oxygen? (In other words, what is necessary for nitrogen in the air to combine with oxygen?)

17. What are the two compounds that are formed when nitrogen combines with oxygen?

18. How does nitric acid (HNO_3) form?

19. Why is nitric acid (HNO_3) important?

Go to: <http://users.rcn.com/jkimball.ma.ultranet/BiologyPages/N/NitrogenCycle.html> and answer these questions.

20. What percentage of the air we breathe is nitrogen?

21. Even though considerable nitrogen is available in the air, most plants do not use the nitrogen (N_2) found in the air. Explain why not.

22. In what compounds can plants use nitrogen?

23. How do animals get the nitrogen they need?

24. Atmospheric nitrogen (N_2) is pretty inert. This means that it does not easily break apart. When molecules do not break apart easily, it is difficult (or impossible) for organisms to use them as a nutrient source. As a result, nitrogen fixation is the term used to describe the process of breaking up N_2 .

a. What is atmospheric fixation?

b. What is industrial fixation? (This is how artificial fertilizers are made.)

c. What is biological fixation? (In your answer, describe the types of plants associated with the symbiotic relationship.)

Go to: <http://www.physicalgeography.net/fundamentals/9s.html> and answer these questions.

25. Draw the nitrogen cycle. (Remember there are other diagrams on the previous websites.) If you're not sure what a term means, look through the reading and links for help.

26. Why is nitrogen needed by plants and animals?