

Name

Key

Pd

Date

CYCLES OF THE EARTH

Directions: Answer the following questions after you have read the "Cycles of the Earth" article.

Summary Questions:

1. What are the four things are needed by living things?

nitrogen, carbon, oxygen, and nutrients

2. Bio means

life

Geo means

Earth

Chemical means

of or relating to chemistry

3. What are the nutrients needed by all living things made up of?

Chemical elements and molecules

4. What are the four major cycles on Earth?

Carbon, nitrogen, oxygen, and
water

The Carbon Cycle

5. Provide at least three examples of where we can find carbon on Earth.

ex: graphite (in pencil lead), diamonds, gasoline

6. How does the Plant Kingdom contribute to the carbon cycle?

through photosynthesis → combine carbon dioxide from the air with hydrogen from water to create energy.

7. How does the Animalia Kingdom contribute to the carbon cycle?

Animals eat plants, and its cells break down the plant tissues to use for energy.

The Nitrogen Cycle

8. "Nitrogen is necessary for plant growth. In fact, it is necessary for the Survival of all ecosystems!"

9. What are the Earth's sources of "free nitrogen"?

atmosphere, animal waste, dead/decaying organisms *it is all around

10. What is the role of nitrogen-fixing bacteria in the nitrogen cycle?

to change free nitrogen into other substances that other organisms can use

11. How does the Plant Kingdom obtain nitrogen?

- Nitrogen can be found in soil and roots of certain plants
- Free nitrogen is turned into nitrates, nitrites and ammonia, all used by plants

12. How does the Animalia Kingdom obtain nitrogen?

Animals eat plants containing usable nitrogen, then the nitrogen returns to soil as animal waste and/or decaying plants/animals

13. What is the role of denitrifying bacteria?

To keep the nitrogen level in soil balanced

The Oxygen Cycle

14. How much of the Earth's atmosphere is made up of oxygen?

$\approx 21\%$

15. Which energy role is responsible for keeping the oxygen cycle going?

Green plants (producers)

16. Explain how photosynthesis works and the role it plays in the oxygen cycle:

Plants use water, sun energy and carbon dioxide to make simple sugars and oxygen, that is released into the atmosphere

17. What are the basic elements of the water molecule?

hydrogen and oxygen

Bonus: How do you write the chemical name for "water" H₂O.

18. What process (occurring in the cells of all living things) requires oxygen? (hint: it combines with glucose to create energy for cells)

respiration

The Water Cycle

19. How does the water cycle begin?

When energy from the sun causes water to evaporate

20. Where does water vapor come from?

evaporate → during evaporation, water becomes vapor and is returned to the atmosphere

21. Describe how water returns to the Earth after it has evaporated into the atmosphere. Be sure to include how it transitions from water vapor into precipitation.

Water vapor cools and forms water droplets that can become heavy and fall to Earth - precipitation like rain/snow

22. What is groundwater?

Water that falls and soaks into the ground

23. What is runoff?

Excess water that cannot be soaked into the soil

24. How does the Plant Kingdom obtain water?

Ground water is used by plants - roots gather water to use for photosynthesis

Bonus: Why is water needed by organisms in the Animalia Kingdom?

Animals eat plants (who use water) and animals need water to hydrate