

Earth's Resources Short Study Guide**Multiple Choice**

Identify the letter of the choice that best completes the statement or answers the question.

- _____ 1. Which group consists only of nonrenewable resources?
a. carbon, sunlight, water, aluminum c. phosphorus, soil, water, oxygen
b. coal, trees, water, carbon d. natural gas, peat, coal, oil
- _____ 2. Which group consists only of renewable resources?
a. carbon, sunlight, water, aluminum c. phosphorus, soil, water, oxygen
b. coal, trees, water, carbon d. natural gas, peat, coal, oil
- _____ 3. The largest component of air is _____.
a. oxygen c. nitrogen
b. hydrogen d. carbon dioxide
- _____ 4. About 80 percent of the freshwater used for _____ is wasted.
a. irrigating crops c. cooling power plants
b. cooking and cleaning d. industrial processing
- _____ 5. Decomposers in topsoil are responsible for recycling most of the _____ that organisms need.
a. salt c. ore
b. aggregates d. nutrients
- _____ 6. It can take almost 500 years to create 1 cm of _____.
a. aggregate c. ore
b. topsoil d. bedrock
- _____ 7. Erosion of cropland leads to _____ in arid countries.
a. production of moraines c. desertification
b. settling of crystals in ores d. increased hydrothermal fluids
- _____ 8. The mixture of gravel, sand, and crushed stone called _____ is an extremely useful construction material.
a. aggregate c. ore
b. bedrock d. topsoil
- _____ 9. Sand and gravel _____ remove impurities from water supplies.
a. filters c. crystals
b. concrete mixtures d. ores

Matching

Match each item with the correct statement below.

- | | |
|-------------------------------|-----------------------|
| a. freshwater | d. trickle irrigation |
| b. transport of surface water | e. placer deposit |
| c. nitrogen | |
- _____ 10. Gas that makes up most of the atmosphere
- _____ 11. Sand and gravel bars that contain heavy sediments, such as gold dust and gold nuggets

- ___ 12. Three percent of Earth's water
- ___ 13. System of perforated pipes used to provide water directly to plant roots
- ___ 14. Bringing water from areas of plenty to areas of need

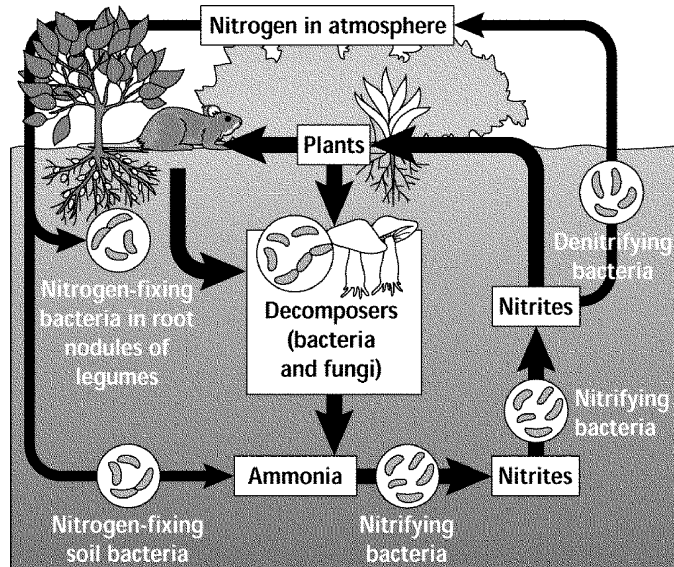
Short Answer

Use the items below to answer the following questions.

- | | | |
|------|-----------|--------|
| coal | copper | gold |
| iron | petroleum | silver |

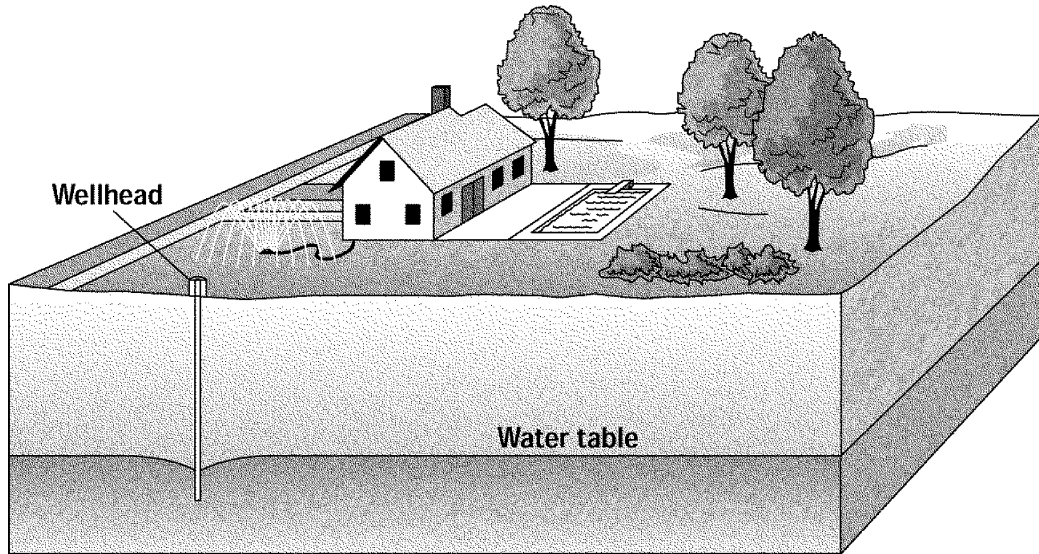
- 15. What type of resource is represented by the items above? How are they obtained?
- 16. Why might some of the items be worth more money than others?

Refer to the diagram below to answer the following questions.



- 17. At what points do human influences disturb the cycle?

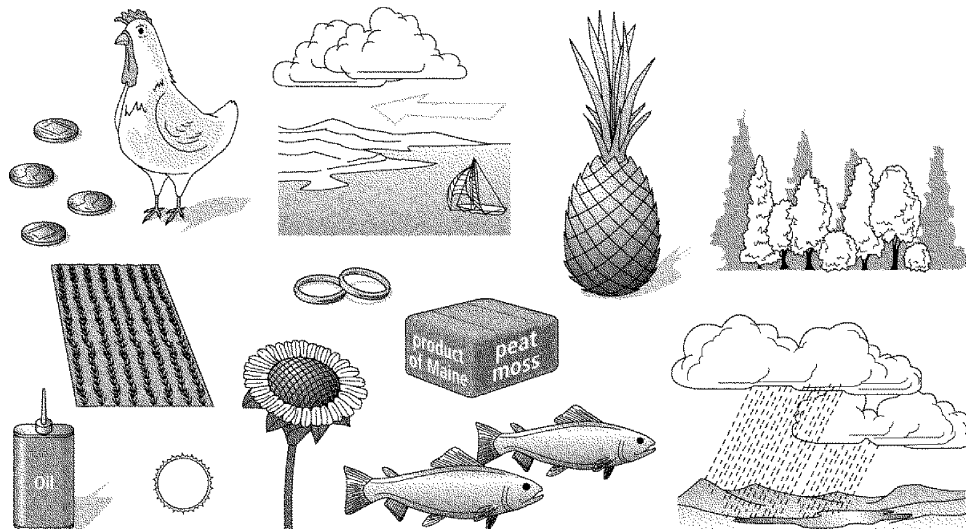
Refer to the illustration below to answer the following questions.



18. Is the groundwater beneath this house a renewable resource? Explain your answer.
19. How might a cone of depression develop at this well?

Compare and contrast each pair of related terms or phrases.

20. aggregate, bedrock
21. List the items in the picture below that are renewable resources on Earth.

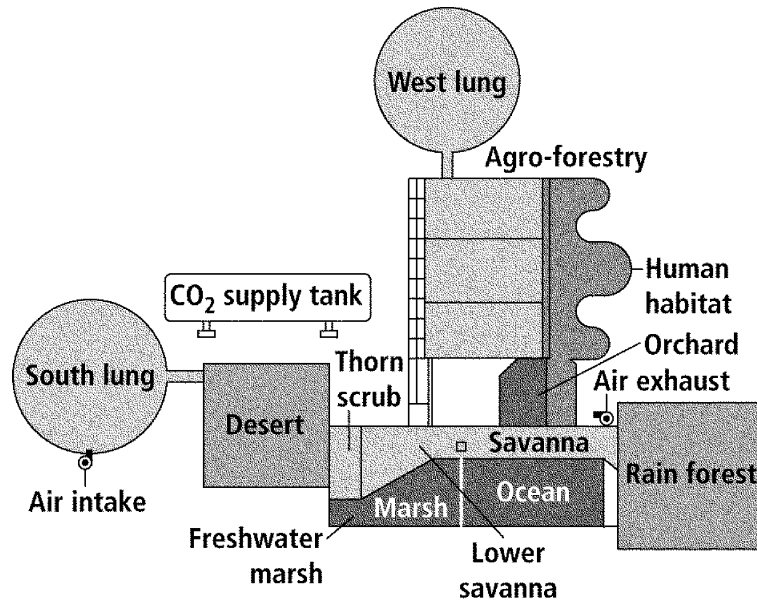


Give an example why each property below makes water an important resource on Earth.

22. Water is a versatile solvent.

Use the information and the plan of Biosphere 2 to answer the questions that follow.

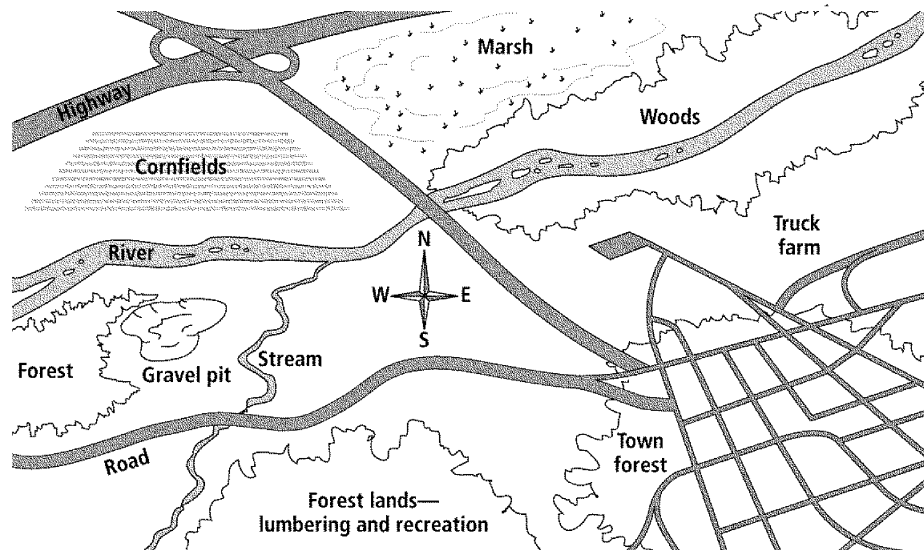
Biosphere 2 is a sort of greenhouse in the Arizona desert. It contains medium-sized communities of plants and animals. For a while, it was used in an experiment to see how humans and Earth systems interact. The whole complex was tightly sealed from the environment. It had a set amount of water, air, soil, and organisms (including eight people). Electrical equipment moved air among the buildings and controlled temperature. Biosphere 2 was carefully planned to be a self-sustaining ecosystem.



23. The Biosphere 2 sealed experiment with humans was stopped because carbon dioxide levels were too high and oxygen levels were too low. Why would these levels be a problem?
24. Technologically advanced materials are an important part of Biosphere 2. They figure in construction and in interior design. The materials were tested for toxicity before they were used. Why?

Problem

You are on the planning board of a small township (population 2000) in the eastern United States. The town appeals to hikers, canoeists, and fishers. This year, three major land-use proposals came up for the board's review: a shopping plaza, a factory that makes paper, and a housing development. Read the descriptions of the projects and look at the map of the township. Then answer the questions that follow.



The shopping plaza would cover about 4 acres northeast of town where the truck farm is now. It would include a supermarket, small shops, and parking. It would create some jobs and generate traffic drawn from neighboring towns.

The paper factory would be on a site of about 3 hectares approximately 4 km west of town where the gravel pit is now. It would include wood storage, the factory, a water-pumping station, an access road, and employee parking. A great quantity of water is used in making paper. This water would be pumped from the river and then distributed into the air as steam or restored as clean, warm water into the river.

The housing development would replace most of the cornfields northwest of the town between the river and the highway. Forty houses would be built on 0.5-hectare lots. A U-shaped access road would connect to the road currently located between the highway and the town.

25. Resource conservationists recommend that towns use local resources. How would the land-use proposals affect that goal?
26. Which proposals might affect the level of air pollution from motor vehicle emissions? Explain your answer.
27. Which proposals would increase demands on the water supply? Which would decrease demands?

Name: _____

ID: A

28. What three questions would you, a planning board commissioner, like to have answered before deciding on these proposed land uses?
29. Based on the information included here, which project do you think would be the best addition to the community? Why?

Earth's Resources Short Study Guide Answer Section

MULTIPLE CHOICE

1. D
2. C
3. C
4. A
5. D
6. B
7. C
8. A
9. A

MATCHING

10. C
11. E
12. A
13. D
14. B

SHORT ANSWER

15. The items are all nonrenewable resources. They are obtained by mining or other means of physical extraction from the land.
16. They are more difficult to mine and/or process and therefore more expensive.
17. Humans release nitrogen oxide into the atmosphere when fossil fuels are burned. Fertilizers release excess nitrogen into the ground and water.
18. Yes, it is replenished continuously by the water cycle.
19. When the withdrawal rate of a well exceeds the natural recharge rate, the water table around the withdrawal point is lowered. This creates a waterless area called a cone of depression.
20. Both are rocks. Bedrock is unweathered, solid parent rock that can be mined in quarries. Aggregate is a mixture of particles, such as gravel, sand, and crushed stone, which lies on or near Earth's surface.
21. chicken, air, solar energy, agricultural crop, sunflower, trees, fish, freshwater, pineapple
22. Answers may vary. Sample answer: Water can carry nutrients into the tissues of living things.
23. Life on Earth relies on a delicate balance of carbon dioxide and oxygen. These levels had gotten out of balance, which would be harmful to humans and animals.
24. Because of the tight seal of the building, any toxic materials would be unable to escape. Biosphere 2 could develop "sick" building symptoms due to indoor air pollution.

PROBLEM

25. Answers may vary. Sample answer: The town would lose its local gravel source and local farmland, so the proposals would adversely affect that conservation goal.
26. Any increase in traffic through town would increase air pollution due to additional exhaust from motor vehicles. A housing development means more cars in town, as would a shopping plaza. Both of these would increase local traffic. Truck and employee traffic to and from the paper factory would also increase motor vehicle emissions in the area.
27. The paper factory would use water from the river, but the shopping plaza parking lot would increase runoff into the river. The shopping plaza and housing development might use less groundwater than current agricultural lands, especially if the land is currently irrigated.
28. Answers will vary. Sample answer: Is there a reasonable way to cool the water from the paper factory before it reenters the river? How will the solid waste from the housing development be treated? Will the housing development be hooked up to sewers or on septic systems? Will the new traffic patterns require changes to the town roads?
29. Answers will vary. Sample answer: The shopping center would save people's time and fuel consumption that might be required to shop elsewhere.