

Natural Resources Study Guide

1. What is wind energy?

Energy captured by the uneven heating of atmosphere to turn a turbine. → generate electricity

2. What is solar energy?

Energy from the sun that is used to generate electricity, heating and cooling.

3. What uses hydrogen to generate electricity to power vehicles?

*Hydrogen Fuel Cell

4. What is geothermal energy?

Energy from heat deep underground used to generate electricity.

5. What is an economic benefit of rechargeable batteries instead of disposable batteries?

Can be used many times

6. What are some benefits of renewable resources over nonrenewable resources?

- Can used over and over again
- no pollution
- cheaper costs
- safer

7. The table below compares human

population and carbon dioxide levels in the atmosphere over time. How has the size of human population and the amount of carbon dioxide in the atmosphere changed from 1960 to 1990?

Both population and CO₂ levels have increased.

8. What is a negative consequence of using plastic shopping bags that end up on beaches or in the ocean?

Food chains in the ocean will be negatively affected

Human Population and Carbon Dioxide Levels

Year	Human Population (billions)	Carbon Dioxide (CO ₂) Levels in the Atmosphere (parts per million)
1960	2.50	317
1970	2.75	325
1980	3.00	337
1990	5.00	342

9. List the steps of the Engineering Process and briefly describe each step.

a. Ask - defining the problem

b. Imagine - Brainstorming & Researching

c. Plan - make a blueprint, design experiment

d. Create - build the prototype or test experiment

e. Improve - analyze data to improve the design

10. Engineers must understand the difference between requirements and constraints. Let's say a team of engineers is asked to design a pair of kids' tennis shoes for less than \$20. They determine that the only way to manufacture shoes for this price is to use recycled materials. What is the team's constraint?

a. The shoes must be designed for kids

b. The shoes must be created by engineers

c. The shoes must be made out of recycled materials

d. The shoes must cost less than \$20 to manufacture

→ limit
ex. time, money,
resource.

11. What is the independent variable of an experiment?

The variable the scientist changes. (keyword: different)

12. What is the dependent variable of an experiment?

The result or outcome (things that are measured: time or mass)

13. How is carbon dioxide and oxygen exchanged in an environment?

Animals release CO_2 for plants and plants release O_2 for animals.

14. Draw a picture representing the CO_2 - O_2 cycle.

