

Sound Waves into Electric Currents

Fill in the circle by the correct answer. Then write the answers to numbers 3, 4, and 5.

1. Hearing aids _____.
Ⓐ convert sound into spoken words
Ⓑ convert electrical energy into sound waves
Ⓒ do not help many people
Ⓓ help repair damage to the ear

2. An electromagnet creates _____.
Ⓐ sound waves
Ⓑ an electric current
Ⓒ a changing magnetic field
Ⓓ electronic data

3. Why are speakers in hearing aids important?
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-

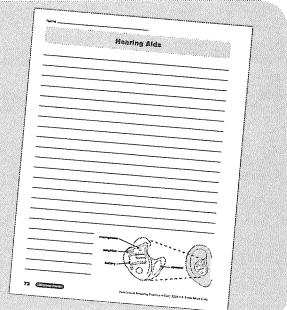
4. What part does electronic data play in hearing aids?
-
-

5. In your opinion, what is the most important part of a hearing aid? Explain why.
-
-

Write About the Topic

Use the Writing Form to write about what you read.

Explain the technology of modern hearing aids.



Natural Resources

Level 1 ■

Words to Know list, Reading Selection, and Reading Comprehension questions

Name _____

Resources from Nature

III In the circle by the correct answer.

Resources from Nature

The resources we get from nature are useful things people take from the Earth. Forests, water, air, minerals, and rocks are some of the natural resources. There are pros and cons to using any natural resource.

Not Renewable

Nonrenewable resources are coal, oil, and natural gas. These are finite because once they are used up, they don't come back. These are called "fossil fuels." Coal is a fossil fuel that was formed from plants that lived in the United States a million years ago. Oil and natural gas are fossil fuels that were formed from ancient sea animals and plants. They are nonrenewable because they can't be replaced.

Renewable

Wind and water are examples of renewable resources. They can be used over and over again. Wind energy comes from wind turbines. A small part of the wind will blow every day. Wind turbines will have wind. Sunlight comes the air over the land in the form of solar energy. Sunlight causes the air to heat up faster than the air over water. This causes the air to move, creating wind in place. The wind is at work.

People can use the wind. Wind turbines change wind energy into electricity. A wind farm is a power plant made up of many wind turbines. However, there are some difficulties to setting up a wind farm. Another difficulty is that wind turbines may harm birds with their blades.

Water

Water is renewable because it moves through the water cycle. When water evaporates, it goes up into the air. The water in the form of clouds. Clouds warm up, it rains, and the water falls. The water falls into the lakes and oceans. Water falls as it moves through rivers and falls of great heights. Clouds move in the sky because the air moves. Air moves because the pressure is not equal. The air moves to equalize the pressure. Wind is air moving.

Some people are working to make use of natural resources around us. For example, people can use the sun's energy to heat their homes. People can use the sun's energy to turn salt water into fresh water.

Conservation

Conservation means to limit the amount of energy they use, as well. This conserves our natural resources.

Wind Energy



The old fashioned way

Solar Energy



The modern way

Hydroelectric Power



Holding back water

Wind Energy

Wind energy is a type of energy that comes from wind turbines. Wind turbines are machines that change wind energy into electricity. Wind energy is a renewable resource. It is good for the environment because it does not pollute the air or water.

Solar Energy

Solar energy is a type of energy that comes from the sun. The sun is a star that gives off light and heat. The sun's energy can be used to heat water or to make electricity. Solar energy is a renewable resource. It is good for the environment because it does not pollute the air or water.

Hydroelectric Power

Hydroelectric power is a type of energy that comes from water. Water is used to turn turbines. The turbines are connected to generators. Generators change mechanical energy into electrical energy. Hydroelectric power is a renewable resource. It is good for the environment because it does not pollute the air or water.

Minerals

Minerals are solid substances found in the ground. Minerals are used to make many things. Some minerals are used to make buildings. Other minerals are used to make cars. Minerals are nonrenewable resources.

Natural Resources

Natural resources are materials that come from nature. Natural resources are used to make products. Some natural resources are renewable. Some natural resources are nonrenewable.

Renewable Resources

Renewable resources are natural resources that can be used over and over again. Renewable resources are good for the environment because they do not pollute the air or water.

Nonrenewable Resources

Nonrenewable resources are natural resources that cannot be used over and over again. Nonrenewable resources are bad for the environment because they pollute the air and water.

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Level 2 ■ ■

Words to Know list, Reading Selection, and Reading Comprehension questions

Level 3 ■ ■ ■

Words to Know list, Reading Selection, and Reading Comprehension questions

Assemble the Unit

Reproduce and distribute one copy for each student:

- Visual Literacy page: Wind and Water Resources, page 81
 - Level 1, 2, or 3 Reading Selection and Reading Comprehension page and the corresponding Words to Know list
 - Graphic Organizer of your choosing, provided on pages 180–186
 - Writing Form: Natural Resources, page 82

Introduce the Topic

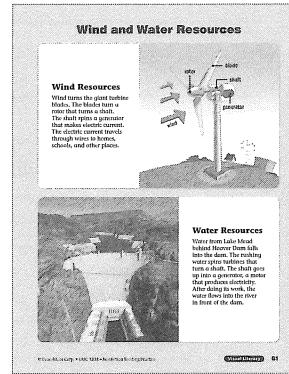
Read aloud and discuss the text and pictures on page 81, which show two types of renewable natural resources. Explain that both pictures show turbines that connect to generators. Tell students that the generators produce electricity.

Read and Respond

Form leveled groups and review the Words to Know lists with each group of students. Instruct each group to read their selection individually, in pairs, or as a group. Have students complete the Reading Comprehension page for their selection.

Write About the Topic

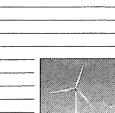
Read aloud the leveled writing prompt for each group. Tell students to use the Graphic Organizer to plan their writing. Direct students to use their Writing Form to respond to their prompt.



Visual Literacy

Name _____

Natural Resources

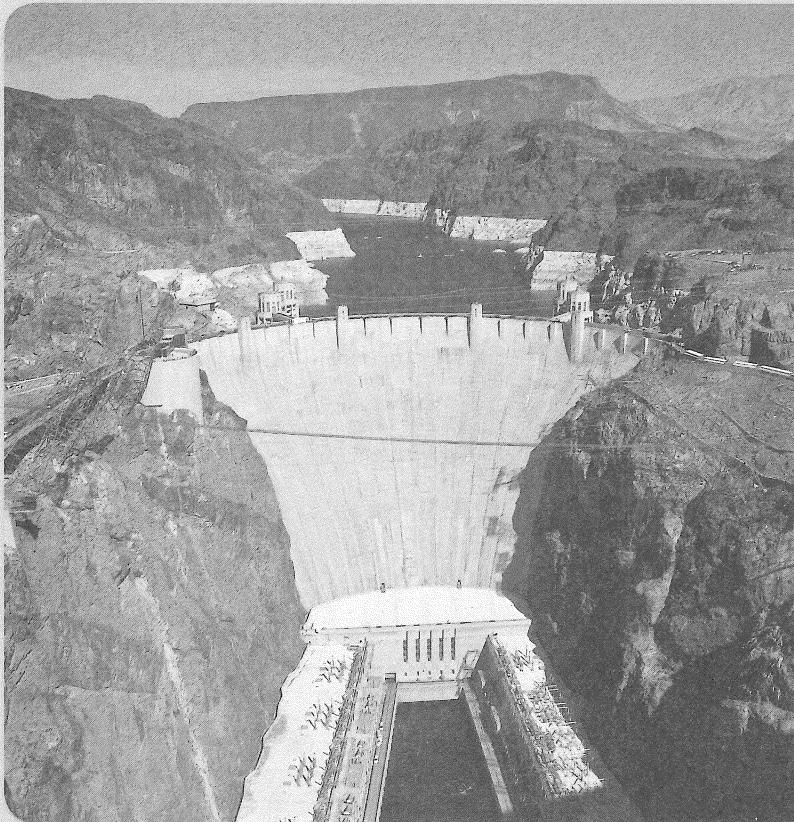
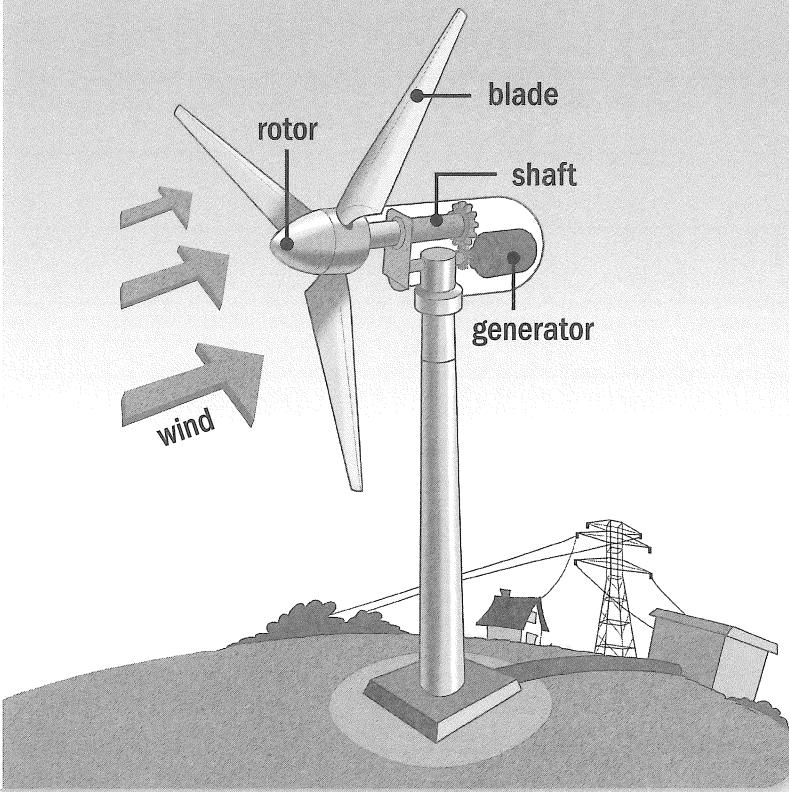


Writing Form

Wind and Water Resources

Wind Resources

Wind turns the giant turbine blades. The blades turn a rotor that turns a shaft. The shaft spins a generator that makes electric current. The electric current travels through wires to homes, schools, and other places.



Water Resources

Water from Lake Mead behind Hoover Dam falls into the dam. The rushing water spins turbines that turn a shaft. The shaft goes up into a generator, a motor that produces electricity. After doing its work, the water flows into the river in front of the dam.

Name _____

Natural Resources



Words to Know

Resources from Nature

natural resources

minerals

nonrenewable

fossil fuels

electricity

renewable

energy

turbines

wind farm

support

difficulty

water cycle

evaporates

disadvantage

habitats

conserve

Words to Know

Using Natural Resources

natural resources

minerals

renewable

nonrenewable

fossil fuels

replaced

electricity

water cycle

hydroelectricity

turbines

energy

disadvantage

habitats

wind farm

support

conserve

Words to Know

Conserving Natural Resources

natural resources

factors

available

minerals

renewable

nonrenewable

replaced

fossil fuels

valuable

conserve

electricity

turbines

energy

wind farm

disadvantages

constant

support

Natural Resources ■ ■

Natural Resources ■ ■ ■

Natural Resources ■ ■ ■ ■



Resources from Nature

Natural resources are useful things people take from the Earth. Forests, water, air, minerals, and rich soil are some natural resources. There are pros and cons to using any natural resource.

Not Replaceable

Natural resources such as coal, oil, and natural gas come from deep in the Earth. These minerals can be used up. They are called "nonrenewable." They were formed millions of years ago and are known as "fossil fuels." Most electricity in the United States is made by power plants that burn fossil fuels. They help us heat our homes. They run our computers and light our streets. On the downside, burning fossil fuels uses up our natural resources and can cause air pollution.

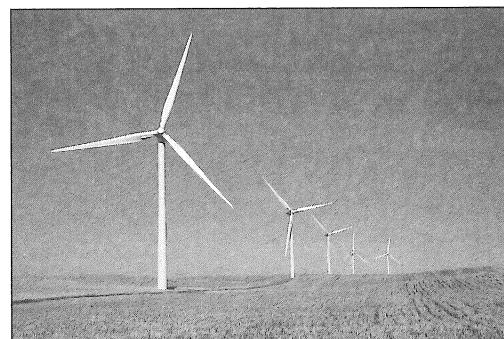


This old windmill used wind power to grind grain.

Wind Power

Wind and water are examples of renewable resources. They can be used and then renewed by nature over time. A small part of the electricity we use comes from wind energy. As long as there is sunlight, Earth will have wind. A cool wind on a hot day at the beach can feel good. Sunlight causes the air over the land to heat up faster than the air over water. The warmer air rises. The cooler air moves in to take its place. This moving air is wind.

People can use the wind. Giant wind turbines change wind energy into electricity. A wind farm is a power plant made up of many wind turbines. However, not all areas have enough wind to support a wind farm. Another difficulty is that wind turbines may harm some birds and insects.



This modern wind turbine uses wind power to make electricity.

Water Power

Water is renewable because it moves through the water cycle. When water warms up, it evaporates into the air. The water in the air forms clouds. Clouds produce rain that fills the lakes and oceans. Then the cycle repeats.

A small amount of the electricity we use comes from dams. Water falls over a dam with enough force to turn the blades of giant turbines. The energy of the turbines is changed into electricity. A disadvantage of water power is that building a dam can force people to move or destroy animal habitats.

Scientists are working to make our use of natural resources cleaner and safer for all. People need to limit the amount of energy they use, as well. This will help conserve our natural resources.

Resources from Nature

Fill in the circle by the correct answer. Then write the answers to numbers 3, 4, and 5.

1. Some nonrenewable resources are _____.

- (A) wind and water
- (B) coal and oil
- (C) lakes and oceans
- (D) sunlight and habitats

2. Wind is created by _____.

- (A) air pollution
- (B) the wind cycle
- (C) flying animals
- (D) sunlight warming the air

3. In your opinion, should people be aware of how much energy they use? Why or why not?
-
-

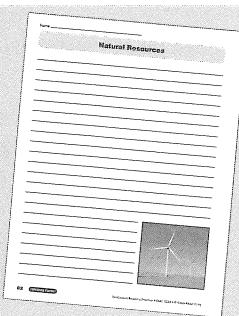
4. Why does the author say there are pros and cons to using any natural resource?
-
-

5. If you were an energy scientist, which natural resource would you like to study? Why?
-
-

Write About the Topic

Use the Writing Form to write about what you read.

Describe how the water cycle is related to producing electricity.
Use details from the text to explain why water is renewable.



Using Natural Resources

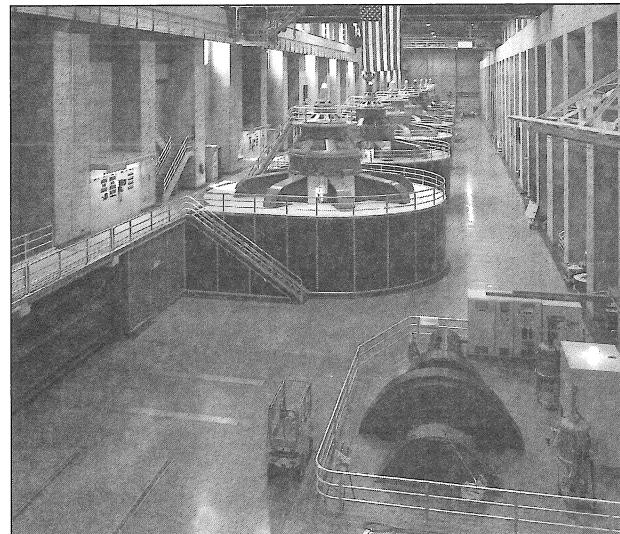
Natural resources are things that come from the Earth and can be useful to people. Forests, water, air, minerals, and rich soil are some natural resources. Resources are either renewable over time or nonrenewable.

Using Nonrenewable Resources

The fuels that people use come from natural resources. Coal, oil, and natural gas are called “fossil fuels.” These minerals come from deep in the Earth, and were formed over millions of years. Fossil fuels are nonrenewable. Once they are taken out of the Earth, they cannot be replaced. Most electricity used in the United States is made by power plants that burn fossil fuels. Besides being nonrenewable, burning fossil fuels can cause air pollution.

Using the Power of Water

Water and wind are examples of renewable resources. They can be used and are renewed by nature. For example, water is renewable because it moves through the water cycle. A small amount of the electricity we use comes from the power of moving water. It is called “hydroelectricity.” (*Hydro* means water.) Water falls over a dam with enough force to spin the blades of giant turbines. The energy of the turbines is changed into electricity. A disadvantage of hydroelectric power is that building a dam can destroy animal habitats.



Giant hydroelectric generators make electricity inside Hoover Dam.

Using the Power of Wind

Another small part of the electricity we use comes from wind energy. Wind is a renewable resource. Have you ever felt a cool ocean breeze on a hot day at the beach? A breeze happens because the air over the land heats up faster than the air over water. The warmer air rises. The cooler air moves in to take its place. The moving air is wind. As long as there is sunlight, Earth will have wind.

Giant wind turbines change wind energy into electrical energy. A wind farm is a power plant made up of many wind turbines. However, not all areas have enough wind to support a wind farm. Also, wind turbines may harm some birds and insects.

Conserve Natural Resources

Scientists are working to make fossil fuels cleaner, to save animal habitats, and to make wind turbines safer. People also need to be aware of the amount of energy they use. This will help conserve our natural resources.

Using Natural Resources

Fill in the circle by the correct answer. Then write the answers to numbers 3, 4, and 5.

1. Some renewable resources are _____.

- (A) coal and oil
- (B) fossil fuels
- (C) natural gas
- (D) wind and water

2. Hydroelectricity is made from _____.

- (A) forests
- (B) the force of wind
- (C) the force of water
- (D) fossil fuel

3. What questions would you ask a hydroelectric engineer who is building a dam?

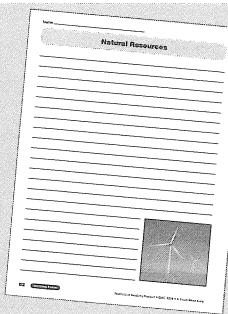
4. If you had a choice of working as an engineer on a wind farm or at a dam, which would you choose? Why?

5. If you were an energy scientist, what kind of study would you design to improve the use of fossil fuels?

Write About the Topic

Use the Writing Form to write about what you read.

Based on what you know, explain why wind is a renewable natural resource. How is it useful to people?



Conserving Natural Resources

People choose where to live based on many factors. One of the factors people consider is the type of natural resources that are available in a location. Natural resources are things that come from the Earth and can be useful to people. Forests, water, minerals, and rich soil are some examples of natural resources.

Renewable and Nonrenewable

Natural resources are renewable or nonrenewable. Air (wind), plants, water, and animals are some renewable resources. They can be used and are replaced by nature. Fossil fuels, or nonrenewable resources such as coal, oil, and natural gas, were formed in the Earth over millions of years. Once these valuable resources are taken out, they cannot be replaced. People need to use both renewable and nonrenewable natural resources with care. It becomes more and more important to conserve our resources as Earth's population grows.

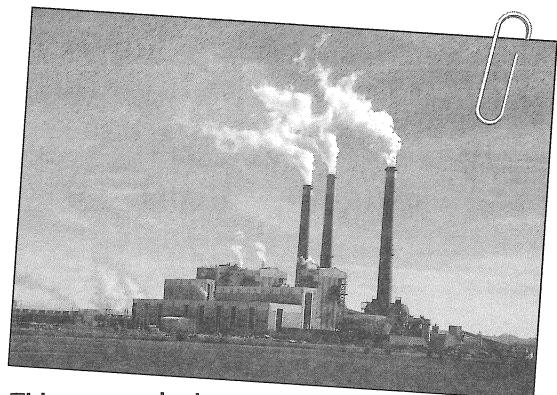
Conserving Our Resources

One way to conserve is by using renewable resources. For example, most electricity used in the United States is made by power plants that burn nonrenewable natural gas, coal, and oil. But a small amount of the electricity we use comes from wind, a renewable resource. Giant wind turbines change the energy of wind into electrical energy. A wind farm is a power plant made up of many wind turbines.

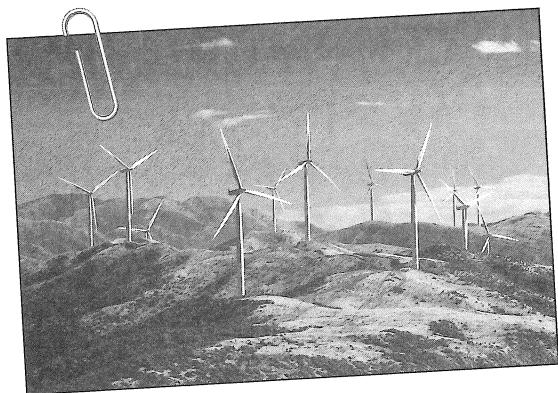
Wind is a renewable resource because it is produced when the sun heats the Earth. Have you ever been to the beach and felt a cool ocean breeze on a hot day? A breeze happens because the air over the land heats up faster than the air over water. The warmer air rises, and cooler air moves in to take its place. This moving air is wind. As long as we have air and heat from the sun, we will have wind.

Advantages and Disadvantages

Wind power is renewable and clean to produce, but use of natural resources has disadvantages, too. Not all areas have enough constant wind to support a wind farm. Some people do not like a wind farm blocking the view. Wind turbines make a humming noise that can be heard close by. Sometimes, wind turbines harm birds and insects. Engineers are working to make wind turbines safer for wildlife. They are studying ways to store the power made during windy days for later use.



This power plant uses coal to produce electricity.



A wind farm produces electricity from a renewable natural resource.