Name _____ Date _____

CHAPTER
Concept Map

Protecting Earth's Resources

Use your textbook to help you fill in the blanks.

Name of Resource	Soil	Energy	Water	Air
Different Types of Resource				N/A
Source of Resource		The Sun, wind, water, atoms, biomass, fossil fuels		
Uses for Resource			Animals and plants need water to live.	Animals breathe in oxygen from the air to stay alive.
Threats to Resource	Erosion	Overuse of non-renewable energy sources		
Ways to Protect Resource			Follow laws that prevent water pollution. Conserve water.	Reduce use of cars; decrease factory emissions.

LESSON Outline

Name _____ Date _____

Minerals and Rocks

Use your textbook to help you fill in the blanks.

What are minerals?

1. A solid natural substance underground made from nonliving materials is a(n) _____ .
2. Minerals are made of one or more _____ .
3. The color powder a mineral leaves when rubbed on a rough surface is its _____ .
4. The way a mineral reflects light is its _____ .
5. How well a mineral resists scratching is its _____ .
6. Scientists use the _____ Scale to compare the hardness of minerals.

What are the shapes of a mineral?

7. The elements in minerals are in the form of _____ , which are solids whose shapes form patterns.
8. Important minerals such as copper are found in _____ , which are combinations of many minerals.

What is the rock cycle?

9. Over time, rocks change from one type to another in the _____ .
10. Pressure can cement layers of weathered and eroded sediment into _____ rock.

11. When magma and lava cool and harden, they become _____ rock.

12. If they become buried deep beneath Earth's surface, sedimentary and igneous rocks can become _____ rock.

What are igneous and sedimentary rocks?

13. Igneous rocks that form inside Earth are called _____, and have _____ crystals.

14. Igneous rocks that form from lava that cools on Earth's surface are _____, and have _____ crystals.

What are metamorphic rocks?

15. When metamorphic rocks form, the shape and _____ of crystals can change, or the crystals can change position to form _____.

Critical Thinking

16. What are the different ways that rocks are produced, and what are the different properties of minerals?

_____

_____

_____

_____

_____

_____

LESSON
Vocabulary

Name _____ Date _____

Minerals and Rocks

Who am I? What am I?

Choose a word from the word box below that answers each question.

a. crystal	**d.** luster	**g.** rock cycle
b. hardness	**e.** metamorphic rock	**h.** sedimentary rock
c. igneous rock	**f.** mineral	

1. _____ I am the measure of how well a mineral resists scratching. What am I?

2. _____ I am a type of rock that forms when sedimentary and igneous rocks change under heat and pressure. Who am I?

3. _____ I am a solid natural material made from nonliving substances in the ground. What am I?

4. _____ I am a solid whose shape forms a pattern. What am I?

5. _____ I am the type of rock that forms from layers of sediment. Who am I?

6. _____ I am the way a mineral reflects light from its surface. What am I?

7. _____ I am the type of rock that forms from magma or lava that cools and hardens. Who am I?

8. _____ I am the change that occurs over time of one type of rock to another. What am I?

Name _____ Date _____

LESSON
Cloze Activity

Minerals and Rocks

Fill in the blanks.

cleavage	lava	metamorphic
fractures	layers	minerals
igneous	luster	rock cycle

There are three categories of rocks. Rocks that form from cooled and hardened magma or _____ are _____ rocks. Rocks that form from _____ cemented together are sedimentary rocks. Heat and pressure deep inside Earth change igneous and sedimentary rocks into _____ rock. One rock can change into another type of rock in the _____. All rocks are made from _____ that have many different properties. These properties include _____, or the way the rock reflects light, and its color. A mineral is said to have _____ when it breaks along smooth surfaces. When it breaks along uneven surfaces, it _____. The measure of how well a mineral resists scratching is its hardness.

LESSON Outline

Name _____ Date _____

Soil

Use your textbook to help you fill in the blanks.

What is soil?

1. Soil is a mixture of bits of _____ and once-living parts of plants and _____ .
2. The formation of soil starts with the _____ of rock.
3. Soil forms in layers that are called soil _____ .
4. The A horizon contains _____ which is made up of decayed organic materials.
5. The soil in the A horizon is also called _____ and is the soil in which most _____ grow.
6. The A horizon also contains the decayed organic materials, or _____ , that makes soil fertile.
7. The B horizon, called the _____ , has lots of fine rock particles but little humus.
8. The C horizon, which rests on _____ , is mostly large pieces of weathered rock.

How is soil used?

9. Soil in forests has a thin layer of _____ , and has little _____ .

10. Desert soil is sandy and does not hold much _____ .

11. The soil of the prairies and other _____ in the central United States is rich in humus.

12. Grassland soil is good for _____ .

13. Plants hold nutrients that return to the soil when the plants die and _____ .

14. Chemicals that kill insects and weeds can cause soil to become _____ .

How is soil conserved?

15. Farmers can replace humus and nutrients in soil with _____ .

16. When farmers practice _____ , they plant different crops on the same land in different years.

17. Farmers can conserve soil on hills when they use _____ plowing and _____ .

Critical Thinking

18. What composes soil?

_____

_____

_____

_____

_____

_____

LESSON
Vocabulary

Name _____ Date _____

Soil

Use the words below to complete the sentences.

bedrock	horizon	pollution	topsoil
conservation	humus	soil	

1. The saving or protection of soil is _____ .
2. The A horizon of soil, where most plants grow, is _____ .
3. A mixture of particles of rock and bits of once-living parts of plants and animals is _____ .
4. The part of soil made up of decayed materials is _____ .
5. The adding of harmful materials to soil, air, or water is _____ .
6. A layer of soil is a soil _____ .
7. Large pieces of rock, on which the soil's C horizon rests, are called _____ .

Name _____ Date _____

LESSON
Cloze Activity

Soil

Fill in the blanks.

bedrock	large	pollution
desert	layers	subsoil
forest	plants	topsoil

Soil is a mixture of weathered rock and humus. It covers most of Earth's surface. Soil is divided into several _____ called soil horizons. There is unweathered _____ beneath the soil. On top of this layer is a C horizon with pieces of rock that are _____ in size. Above this is the B horizon or the _____. In this layer, there are small/fine rock particles and humus. The A horizon is the _____. It contains the most humus and is good for the growth of _____. There are mainly three types of soil in the United States: _____ soil, _____ soil, and grassland/prairie soil. Soil is a resource that can be spoiled by _____ from chemicals. It can also be eroded by flowing water and wind.

LESSON Outline

Name _____ Date _____

Fossils and Energy

Use your textbook to help you fill in the blanks.

What are fossils?

1. The remnants or traces of organisms from long ago that are preserved in soil or rock are _____ .
2. Many fossils formed when organisms died and were covered with layers of _____ .
3. Over millions of years, sediment covered and compressed dead plants to form soft or _____ coal.
4. Sometimes increased heat and pressure turned soft coal into harder _____ coal.
5. Heat and pressure on buried ocean plants and animals helped to form _____ and _____ .
6. Coal, oil, and natural gas are _____ .

How old are fossil and fossil fuels?

7. Scientists can tell how old a fossil is by testing the age of the _____ around it.
8. The law of superposition says that each layer of rock is _____ than the layer below it.
9. The comparison that tells whether one fossil is older than another fossil is _____ .

Name _____ Date _____

LESSON
Outline

How can wind, water, and the Sun provide energy?

10. Sources of energy other than fossil fuels are called _____ energy sources.

11. Running or falling water spins generators to make electricity in a(n) _____ plant.

12. Energy from the Sun is called _____ energy. This energy does not pollute.

What are other sources of alternative energy?

13. Changes in the centers of _____ can release heat that produces nuclear power.

14. Heat from deep inside the Earth is _____ energy that can produce electricity and provide hot water.

How can we conserve energy?

15. You use energy when you ride in a(n) _____ or use anything at home that runs on _____.

16. When you do not waste energy, you _____ it.

Critical Thinking

17. How did ancient organisms become fossil fuels?

_____

_____

_____

_____

_____

_____

LESSON
Vocabulary

Name _____ Date _____

Fossils and Energy

Fill in the blanks.

a. absolute age	**e.** fossil fuel
b. alternative energy	**f.** nonrenewable
c. era	**g.** relative age
d. fossils	**h.** renewable

1. Any source of energy other than fossil fuels is _____ .
2. The value that tells you whether a fossil is younger or older than another fossil is its _____ .
3. A resource that can be used up faster than it is made is _____ .
4. To find the _____ of a fossil, you must find the exact age of the rock that surrounds it.
5. The remnants or traces of ancient organisms that were preserved in soil or rock are _____ .
6. Resources that can be replaced faster than they are used are _____ .
7. A material formed from the decay of ancient organisms that is used to produce energy is a(n) _____ .
8. A unit of time that describes the age of Earth in millions of years is a(n) _____ .

Name _____ Date _____

LESSON
Cloze Activity

Fossils and Energy

Fill in the blanks.

alternative energy	nonrenewable	Sun
coal	nuclear	water
geothermal	oil	
natural gas	pollution	

Fossil fuels are formed from the decay of ancient organisms. Examples of fossil fuels are _____, _____, and _____. These fossil fuels are _____ resources. We also use _____ sources, which are energy sources that are not fossil fuels. Renewable energy sources include wind, falling _____, and the _____. These forms of energy do not produce _____ that dirties the air and water. Another energy source is _____ energy, which comes from heat inside Earth. People also burn materials such as wood, a type of biomass. Changes in the nucleus of atoms release energy that runs _____ power plants.

To save energy, people do things to conserve it.

Name _____ Date _____

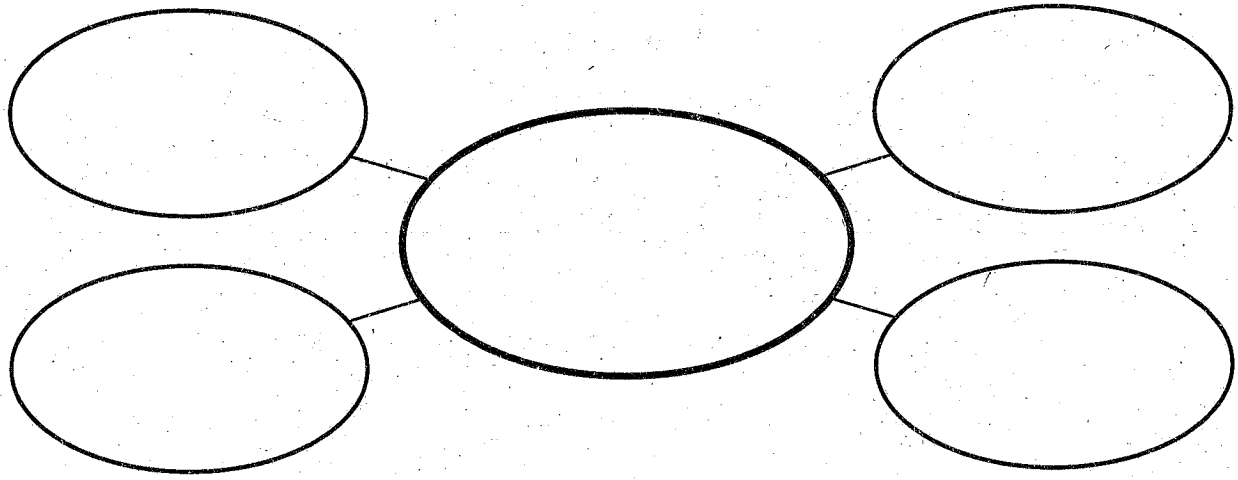
So You Want to Be a Fossil Hunter

Write About It

Select a fossil and write a description of it. Use sensory words and specific details in your description.

Getting Ideas

What fossil will you describe? Write its name in the center circle of the web below. Write details that describe the fossil in the outer circles. You can add circles to the web if you like.



Planning and Organizing

Jorge wants to describe a fossil of a dinosaur footprint. Here are some sentences that he wrote. Write Yes if the sentence describes the fossil. Write No if it does not.

1. The huge footprint was $2\frac{1}{2}$ feet across. _____
2. It showed that the dinosaur had three long bony toes. _____
3. I got scared when I looked at the footprint. _____

Name _____ Date _____

Drafting

Write a sentence to begin your description. Tell what fossil you will describe. Tell an important idea about this fossil.

_____

Now write your description. Use a separate piece of paper. Start with the sentence you just wrote. Then write your description. Use words that appeal to the senses. Use details that will help your readers picture the fossil.

Revising and Proofreading

Help Jorge improve his description. Add sensory words in the blanks. Choose a word from the box or pick your own.

deep	gray	narrow	sharp	spiky

The fossil footprint in the cold _____ stone reveals secrets of this creature that lived millions of years ago. The footprint had made a _____ impression in the earth. This suggested that the dinosaur was very big and heavy. It showed long _____ shapes at the end of the toes. Maybe this is where its _____ claws dug into the earth. The heel of the foot was _____, not wide.

Now revise and proofread your writing. Ask yourself:

- Did I include enough details to help readers picture the fossil?
- Did I use sensory words to bring my description to life?
- Did I correct all mistakes?

LESSON Outline

Name _____ Date _____

Air and Water

Use your textbook to help you fill in the blanks.

What are sources of fresh water?

1. About 70 percent of Earth's surface is covered with water, with most of it in the _____.
2. Salt enters much of Earth's water as rain and ocean waves wash over dirt and _____.
3. Running water includes sources such as _____ and _____.
4. Standing water includes sources such as _____ and _____ that fill holes in the ground.
5. Water beneath Earth's surface is _____.
6. Groundwater collects underground in layers of rock or soil called _____.

How do we use water?

7. Water can pick up substances that _____ or contaminate it as it falls through the sky or runs along the ground.
8. Wastes from mines and _____ can also pollute water.

How do we clean, conserve, and protect water?

9. The following steps clean drinking water in water treatment plants: coagulation, _____, filtration, and _____.

Name _____ Date _____

LESSON
Outline

10. People can reduce their use of water through _____ .

How do we use and pollute air?

11. Particles produced by cars and trucks can create a yellow haze in the air called _____ .

12. Chemicals in old aerosol cans and old air conditioners can escape high into the atmosphere and destroy _____ .

13. In some areas, pollution caused by smoke and gases from factories combines with rain to form _____ rain.

How do we protect our air?

14. Many pollutants are now banned or disposed of before they get into the air because of the _____ Act.

15. For example, vehicles have devices that limit the amount of pollutants that come out of _____ pipes.

Critical Thinking

16. Why are water and air important resources?

_____

_____

_____

_____

_____

_____

_____

_____

LESSON
Vocabulary

Name _____ Date _____

Air and Water

Match the correct letter with the description and fill in the blank with the correct answer.

a. aquifer	**d.** reservoir	**g.** running water
b. groundwater	**e.** smog	
c. ozone hole	**f.** oceans	

1. _____ Salty water bodies containing most of Earth's water
2. _____ A thin spot in the layer of ozone
3. _____ A lake made by people that is used to store water
4. _____ An underground layer of rock or soil that can absorb water
5. _____ Water that is beneath Earth's surface
6. _____ A type of air pollution caused by particles from cars and factories
7. _____ The type of water that comes from rivers and streams

Name _____ Date _____

LESSON
Cloze Activity

Air and Water

Fill in the blanks.

aquifers	groundwater	plants
food	oceans	reservoirs
fresh	oxygen	streams

Two of Earth's most important resources are water and air. Most of Earth's water is the salt water in _____. However, people and most other living things need _____ water to survive. Most of the fresh water people use comes from running water, standing water, and _____. We get running water from _____ and rivers. Standing water comes from lakes and _____. We get groundwater from underground layers of rock and soil called _____ that absorb water. Living things also need gases, such as _____, carbon dioxide, and nitrogen, from the atmosphere. Plants use carbon dioxide to make _____. Bacteria in soil use nitrogen to make chemicals that _____ need. People can make water and air unusable when they release pollution.

Name _____ Date _____

Getting the Salt Out

Read the following passage. Underline any sentence that identifies a problem. Circle any passages that mention possible solutions to those problems.

Why does California have water shortages when it is next to the Pacific Ocean? People cannot drink ocean water because of the salts in it.

The island of Santa Catalina lies off the coast of Southern California. It is completely surrounded by the Pacific Ocean. However, people use water from the ocean all the time—to water crops, to take showers, and even to drink. How can they use the salty ocean water? The water is converted from salty to fresh at the Santa Catalina desalination plant. Desalination means "to remove salts."

At the desalination plant, ocean water is taken from an ocean water well. Once it is moved into the plant, salt and other impurities are removed from the water. The fresh water that is produced can now be used by people.

The Santa Catalina plant is one of the few desalination plants in the United States that produces water for public use. Desalination is an expensive process that uses a lot of energy. Despite its cost, there are desalination plant projects all over the world, including places like Saudi Arabia and Japan. Desalination is generally used when a community has so little access to fresh water that they are willing to pay a high price to get it. Scientists continue to research cheaper and more effective ways to produce fresh water from ocean water.

Problem and Solution

- Identify the problem by looking for a conflict or an issue that needs to be resolved.
- Think about how the conflict or issue could be resolved.

Name _____ Date _____

Problem and Solution

Fill in the problem-and-solution graphic organizer below. Use the underlined passages from the reading to help you.

Problem

People cannot drink or use ocean water because of the _____ it contains.

↓

Steps to Solution

Communities can build _____ that turn _____ into _____.

↓

Solution

Fresh water from _____ can be used for _____, for _____, and for _____.

Write About It

Problem and Solution 1. What is in ocean water that prevents the people of Santa Catalina Island from drinking and using it directly from the ocean? 2. How do the people of Santa Catalina get fresh water?

Answer the following questions. Use clues from the graphic organizer to help you.

1. What is in ocean water that prevents the people of Santa Catalina Island from drinking and using it directly from the ocean? _____

2. How do the people of Santa Catalina get fresh water?

Name _____ Date _____

Protecting Earth's Resources

Choose the letter of the best answer.

1. A solid natural material in the ground made from nonliving substances is a(n)
   - **a.** rock.
   - **b.** aquifer.
   - **c.** mineral.
   - **d.** horizon.

2. Which type of rock is formed from layers of sediment?
   - **a.** igneous
   - **b.** magma
   - **c.** sedimentary
   - **d.** granite

3. Igneous rocks form from
   - **a.** lava and magma.
   - **b.** fossils.
   - **c.** layers of sediment.
   - **d.** humus.

4. Which of these causes the formation of metamorphic rock?
   - **a.** an increase in water content
   - **b.** very high temperatures
   - **c.** the growth of crystals
   - **d.** the splitting of atoms

5. A mixture of pieces of rock and bits of once-living parts of plants and animals is
   - **a.** humus.
   - **b.** rock.
   - **c.** pollution.
   - **d.** soil.

6. Which part of soil is formed from decayed materials?
   - **a.** rock
   - **b.** minerals
   - **c.** humus
   - **d.** topsoil

7. Soil in the A horizon is called
   - **a.** topsoil.
   - **b.** bedrock.
   - **c.** humus.
   - **d.** subsoil.

Name _____ Date _____

Choose the letter of the best answer.

8. Harmful chemicals added to air, water, or soil are

a. luster.

b. pollution.

c. runoff.

d. smog.

9. The remnants, or traces, of ancient organisms preserved in soil or rock are known as

a. fossils.

b. minerals.

c. horizons.

d. fuels.

10. Which of these is a nonrenewable energy resource?

a. wind

b. falling water

c. oil

d. biomass

11. Which of these is an alternative energy resource?

a. coal

b. natural gas

c. the Sun

d. oil

12. Which of these statements is true of a nonrenewable energy resource?

a. Its supply will never run out.

b. It is used up faster than it is made.

c. It cannot be burned as fuel.

d. It can be replaced faster than it is used.

13. An underground layer of rock or soil that can absorb water is a(n)

a. aquifer.

b. reservoir.

c. soil horizon.

d. well.

14. Which of these is a source of drinking water for people?

a. acid rain

b. ozone holes

c. groundwater

d. pools of magma

15. A yellow haze in the air caused by particles from cars and factories is

a. oxygen.

b. acid rain.

c. carbon dioxide.

d. smog.

Name _____ Date _____

Strong Storms

Read the Literature feature in your textbook.

Write About It

Response to Literature This article describes the damage caused by severe rainstorms in Los Angeles. Research the damage severe rainstorms can cause. Write a report about the effects of severe rainstorms. Include facts and details from this article and your own research.