Chapter 7 Resources and the Environment	Name
	Date
	Period

Section 7.1 Objectives

- Distinguish between renewable and nonrenewable resources
- Explain how the availability and use of minerals determine how long mineral reserves will last

Section 7.1 Vocabulary – Please Define

- Environment -
- Nonrenewable resource -
- Reserve -
- Renewable resource -
- Ore mineral -

Mineral Resources	"Protect Earth's environment!" What does this phrase mean? Earth's _____includes all of the resources, influences, and conditions near Earth's surface. Our goal is to make responsible decisions about the use of Earth's _____. To accomplish this, we must know the types of resources available and how quickly they are _____and _____.

Renewable or Nonrenewable?	Some of Earth's most important resources are basic to life. These include: _____ _____. Other resources have become critical to the world economy only since the 19th century. These include energy resources such as coal and oil, and raw materials such as minerals and metal ores.
Renewable Resource	A _____ is one that _____in nature _____ _____. Examples include: oxygen in the air, trees in a forest, food grown in the soil, energy from the sun, and water for drinking (and a variety of other uses).
Forests as A Renewable Resource	A forest is a _____because trees can be planted as they are cut. Forests are _____in many parts of the world because of increased use. When Europeans first settled North America about one-half of the area of our lower 48 states was forested. Today about _____ remains forested. Global wood consumption is expected to increase (possibly double) in the next 20 years.
Nonrenewable Resource	A _____ _____. Examples include: petroleum (such as gasoline *** and fuel oil), coal, natural gas, and some metals and nonmetals (such as sand, gravel, graphite, sulfur, gypsum, and uranium). Some nonrenewable resources include mineral resources that are mined from Earth's surface. Each U.S. citizen _____ (on average) about _____of new minerals _____. Remember, minerals provide, for example, stone and cement for building, silicon for fiber optics and computer parts, fertilizers for farming, and aluminum for cars, trucks, and cans.

Earth's Minerals	Between metallic and nonmetallic elements, _____are of _____ _____. All economically important metallic elements are obtained from minerals. Some, like gold and silver, commonly occur as native metals – uncompounded with other elements – making them easy to separate from the rock that surrounds them. In other cases, metals are found chemically combined with other elements. We _____ _____the elements before these can be used. Rock that contains enough of a metallic element to make separation profitable is called an _____. Iron ore and copper ore are examples of rocks from which metallic elements (iron and copper) can be removed. The valuable mineral (the metallic element) is called an _____. The rest of the rock is called _____ (pronounced "gang"). Quartz, feldspar, and calcite are common gangue minerals. There are _____other than those from which metals are extracted. Unlike ores, many are used in the forms in which they come out of the ground. Others must be separated from surrounding materials by means of simple physical processes. These types of resources include _____ _____ _____ _____.
Supply and Demand	Stores work on the principle of supply and demand. Similarly, the use of minerals is also a matter of supply and demand. Unlike manufactured goods, _____or faster than they are used.
Availability of Minerals	Estimating the world's supply of a particular resource and the amount of it that should be used is a complex and controversial process. Reliable estimates are hard to make – we haven't explored the entire Earth for each resource. Most estimates of minerals' available supplies refer to reserves.

	A _____is the _____ _____.** The cost of mining and processing a mineral must be considered. A high demand means that an expensive mining operation can still be profitable. _____. Knowing the size of the reserve of a particular mineral and the rate at which it is being used makes it possible to _____ _____. The more of a mineral we demand, the faster it will be used up. Earth's mantle and crust are composed mostly of lighter minerals. However, metals exist in the crust in localized concentrations. It is not always easy to find and remove these metals. Ores located deep in the ground are usually removed in underground mines reached by tunnels. Ores close to the surface are removed by digging great holes, called _____. Both types of mining can be _____, using both expensive machinery and technologies as well as the labor and knowledge of many people.
Use of Minerals	The _____has some of the world's _____of mineral resources. However, we are also one of the _____of these resources. If present rates of use continue, the world reserves of these and other elements _____ _____. _____ (platinum, magnesium, cobalt, chromium, tin, and nickel) _____ _____in the United States, and must be entirely imported. Why are minerals so desirable? Societies around the world depend on metals in a variety of ways. _____is essential to steel production. Steel is used to make skyscrapers, bridges, planes, trains, utensils, tools, and even pins. _____is used in electrical wiring and is combined with zinc to make brass.

	_____is used as a protective coating to prevent rust. _____is used in cans, cookware, and bicycle frames. _____is found in car batteries and protective shielding. _____such as sand, gravel, and crushed stone are taken from quarries (small open-pit mines). The construction industry has many uses for these resources, including the making of concrete and the construction of asphalt-gravel roofs. Phosphate rock, potash, and nitrates are used in fertilizers. Because _____, all consumers must plan for the day when these resources disappear. If we can reduce demand for these resources, then we can increase the length of time that they will be available.

Section 7.1 Review

1. Distinguish between a renewable and nonrenewable resource.

2. What characteristics make a mineral an ore mineral?

3. In what ways is a mineral reserve different from a mineral resource?

4. Review the uses of mineral resources. Identify three such resources you encounter daily and describe how life in your community might change if those mineral reserves were exhausted.

7.2 Objectives

- Identify renewable and nonrenewable resources
- Explain how fossil fuels form
- Describe how humans use renewable and nonrenewable energy resources to meet their energy needs

7.2 Vocabulary – Please Define

Fossil fuel -

Energy Resources	_____. Fuels also provide energy. In the past, the major source of energy was wood. The _____and the demand for it have changed dramatically in the past 150 years.
Nonrenewable Energy Resources	About _____use today comes from _____sources. The _____comes from _____sources, including: • Coal • Petroleum • Natural gas • Nuclear fission
Fossil Fuels	_____** because they are formed from the remains of organisms that lived millions of years ago. The _____in them. Fossil fuels are nonrenewable because they are being used up millions of times faster than they are forming.

Coal	Used primarily in power plants to _____. Also important in the manufacture of steel and as a raw material in chemical processes. Deep deposits are worked in _____. Shallow deposits are dug up in _____called _____. _____of the fossil fuels.
Types of Coal	Formed from materials such as ferns, mosses, and parts of trees. • _____– lightly compressed mass of plant remains. • _____– compressed peat. • _____ (or soft) – compressed lignite. • _____– compressed bituminous. _____contains carbon, hydrogen, and oxygen. As the organic material decays, it _____ _____and _____. _____has the _____of carbon. As the coal is compressed more and more, the carbon content rises. The higher the percentage of carbon, the greater the amount of energy released when the coal is burned. Peat = low energy _____**
Petroleum (Oil)	A _____that is also composed of organic materials is _____. Is mainly a _____(compounds of hydrogen and carbon). Recovered by drilling wells into oil-bearing rock. Only about _____ of the oil in a given well can be pumped out of it.

	Formed by _____in organic materials buried under sand and clay in shallow coastal waters. As the sediments were _____ were forced into pores and cracks of nearby sandstones or limestones. Today's deposits were _____by layers of virtually impermeable rock.
Natural Gas	_____ is a _____of methane and other hydrocarbon gases. Often occurs/ found near _____**. The pressure of natural gas overlying petroleum helps bring the petroleum to the surface.
Other Fossil Fuels	_____ and _____. When heated, oil shales _____that can be condensed into liquid oil.** The spaces between grains of tar sands are filled with the dried residue of petroleum. Oil can be removed from these sands. Oil from these 2 sources is estimated to be _____than the remaining oil reserves. However, the recovery processes are _____at present.
Uranium	_____ is the metallic element _____used as a _____. When atoms of a certain isotope of uranium are hit with neutrons, _____, and _____. Atomic fission is what takes place in our _____. A _____pumped through the reactor is _____by the _____ _____. The hot coolant is used to _____. The steam moves turbines, which generates _____.

	Fission of 1 gram of Uranium releases as much energy as 3 tons of coal or 14 barrels of oil. It is the _____behind oil, natural gas, coal, and water power.
Renewable Energy Resources	Four of the most widely used sources of renewable energy include: • _____ • _____ • _____ • _____
Water	The major use of water power today is to produce electricity (_____). _____use of producing electricity,** because the turbines that power the electrical generators are turned directly by moving water. _____, the rise and fall of Earth's oceans, can also be used to generate electricity.
Wind	Wind can be captured by a _____, which can be used to generate electricity. The amount of power produced varies greatly, depending on: • _____ • _____, and • _____.** Windmills are becoming _____.
Sun	_____is used to provide heat and _____. "Passive" and "active" systems exist. _____solar heating systems are designed to collect and store solar energy.

	_____solar heating systems are designed to collect solar energy that will then be distributed throughout a building/home as heat, or to heat water. Solar cells (_____) have been used to generate electricity in spacecraft since the start of the space age. Solar cells _____.
Geothermal Energy	Geothermal energy is _____that is converted to electrical energy when steam or hot water from below Earth's surface is piped to a power plant to run a generator. Geothermal energy can also be used in homes for heating and cooking. They are _____ found in _____, 22 countries around the world have _____ The _____of geothermal power in the world is found in the _____

Section 7.2 Review

1. List 4 nonrenewable energy resources used today. Which one is not a fossil fuel?

2. What is a renewable energy resource? Name two and tell why they are considered renewable.

3. Compare peat and the three types of coal. Which might be preferred as a fuel for power plants? Why?

7.3 Objectives

- Describe how the use of nonrenewable and renewable resources affects the environment
- Explain how humans can slow the depletion of resources

7.3 Vocabulary – Please Define

- Conservation -

- Recycle -

Environmental Issues	_____of Earth's resources often _____ that enables us to live. If Earth's environment is severely damaged, life as we know it will be changed. Our _____land, water, and air, and contribute to global warming. While renewable resources cause less pollution, they also have disadvantages.
Risks and Disadvantages of Mining for Minerals	_____can remove tons of soil, ore, or rock, often creating a rock waste that supports little life It can _____by leaving hills barren, leveling mountains, or forming enormous craters. It also produces huge piles of _____. Water that collects in open pits or runs off from piles of waste rock can be dangerous. Surface compounds in the waste can react with the water to form _____. _____can contaminate the waste chemically. _____dangerous to living things can be _____out of waste rock Mining can also _____, damaging or killing life in streams and lakes

Risks and Disadvantages of Nonrenewable Energy	The _____used in nuclear reactors produces dangerously radioactive by-products that must be stored away from living things for thousands of years _____ satisfactory way of _____or disposing of nuclear waste has been found Nuclear reactor _____can cause people to become ill or die from radiation. _____into the air that can irritate our nose, throat, and lungs Fossil fuel air pollutants _____ Acid rain can damage buildings, reduce forest growth, harm crops, and kill or injure plant and animal life in lakes and streams _____soil and water and kill wildlife Protected lands and wildlife are threatened by searching for additional oil and natural gas sources
Risks and Disadvantages of Renewable Energy	In general, these resources have a _____impact on the environment. However, each type is _____in some way. _____ (hydroelectric) power can _____be used _____can be built for water storage _____power can _____be used in areas _____strong, _____ • _____can interfere with television and radio reception • _____farms need a lot of land • Windmills can interfere with bird migration • A reliable and efficient method of storing windmill energy needs to be found Similar problems of storage and reliability affect _____. Few places in the world have the hot bedrock near the surface that _____requires.

	Chemical-rich, superheated water produced by geothermal energy can pollute lakes and streams. Cave-ins can also occur when hot water drawn from the ground is not returned to the ground.
Using Resources Wisely	How can we slow the depletion of minerals, rock resources, and energy resources? _____and the development of efficient and reliable renewable energy resources are important. _____can help slow the rate at which resources are used and help protect the environment.
Conservation	Think of _____as the _____ _____. Conservation may include: 1. _____of people's use of resources, 2. Controlling the _____of mining, 3. _____and preventing runoff that pollutes water, 4. _____consumption, 5. Developing alternative fuel mixtures (gasohol), 6. Everyone reducing energy consumption and changing energy-wasting habits
Recycling	To _____is to collect and reuse materials from waste. Reducing use and recycling can help make metal and nonmetal mineral resources last longer. Many communities now have recovery programs for recycling (or properly disposing of) household and business items.
Legislation	_____, federal and state laws have been passed that enabled governmental agencies to protect the environment and conserve resources.

	_____today help the Environmental Protection Agency (_____) to monitor and set standards for drinking water and air quality, and well as the disposal of toxic industrial chemicals and hazardous waste. The _____was designed to _____ and to _____ the _____ _____.** The act promotes recycling, reduction of resource use, and sustainable agriculture. Many states have laws requiring manufacturers to use a _____ _____in their products. Locally, residents may work to make their communities more conservation minded.

Section 7.3 Review

1. What are the advantages and disadvantages of using nuclear energy?

2. Although renewable energy resources cause few environmental problems, why is the use of nonrenewable resources not more common?

3. Name 3 ways of conserving nonrenewable energy resources. Be specific.

4. The United States currently recycles between 10% and 25% of its garbage. Propose 2 or 3 ideas for getting people in this country to recycle more.