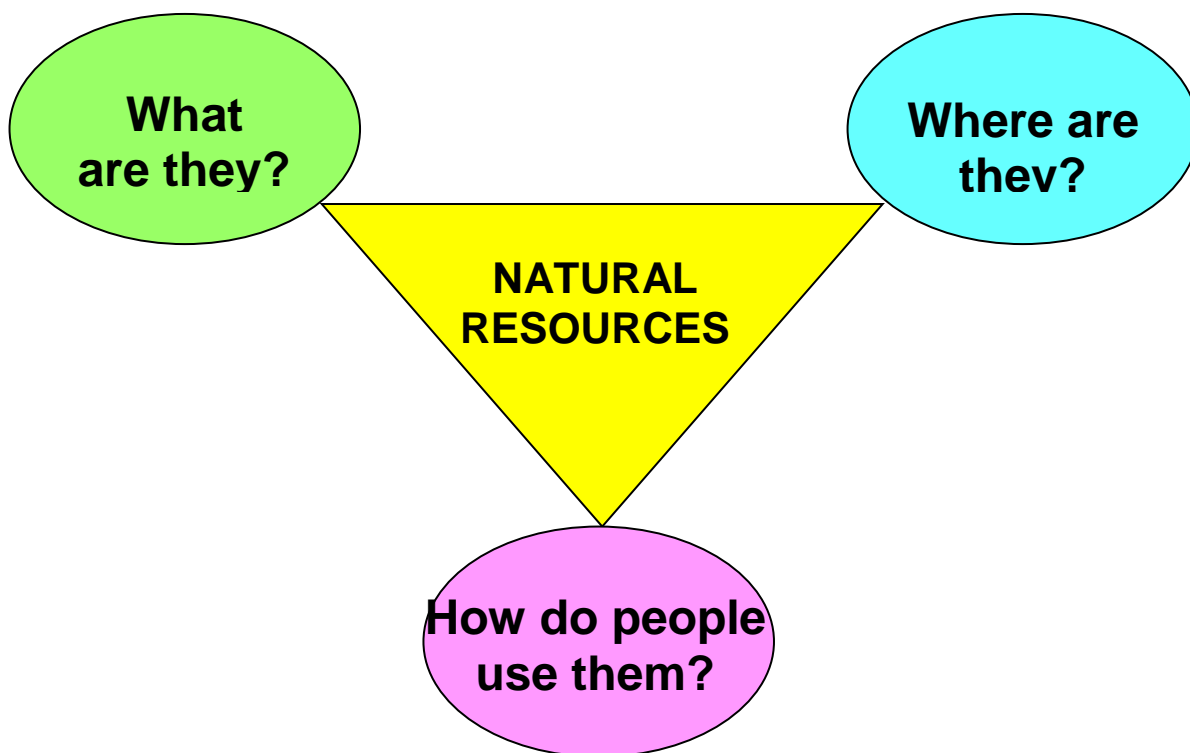


Graphic Organizer



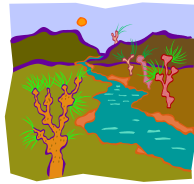
Big Ideas of Lesson 2, Unit 5

- Humans depend on the earth through the use of natural resources.
- Natural resources are useful materials found on and under the earth's surface.
- Natural resources are unevenly distributed across the earth. Some countries like the United States have a great number of natural resources and other countries have few.
- The pace of resource use and extraction has been speeding up since the Industrial Revolution in the 1800s.

Word Cards

4 natural resources

any physical environmental item that people perceive to be useful



Example: Soil, trees, water, and minerals are all natural resources.

5 renewable natural resources

natural resources that Earth or people can replace



Example: Wind, water, and plants are renewable natural resources.

6 non-renewable natural resources

natural resources that cannot be replaced in a relatively short period of time



Example: Coal and natural gas are non-renewable natural resources.

7 fossil fuels

a natural source that stores potential energy and that is formed from the remains of once living organisms



Example: Coal, oil, and natural gas are the main fossil fuels.

8 mineral resources

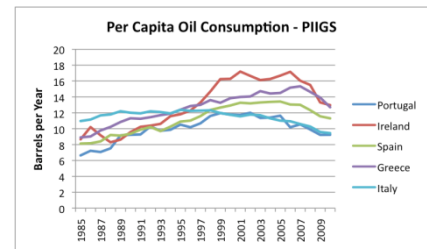
natural resources found on and in the Earth's crust that include metals, nonmetals, and fuels



Example: Gold, tin, and copper are mineral resources.

9 per capita

by each person equally



Example: In that year, Americans earned \$15,304 per capita.

10 Gross Domestic Product (GDP)

the total market value of all final goods and services produced within a country during a period of time.

Example: GDP is a way of measuring the health of a country's economy.

The Formula For GDP

Gross Domestic Product
 = Consumption + Investment
 + Government Spending
 + (Exports - Imports)

Anticipation Guide

Directions: Write “T” if you think the statement is true and “F” if you think the statement is false.

Before Lesson		After Lesson
	Countries now are dependent on natural resources, but this was not true of societies in the past.	
	Iron ore, petroleum, indium, natural gas, and diamonds are all examples of natural resources.	
	Countries with lots of natural resources are richer than countries with few natural resources.	
	Natural resources are distributed unevenly across the earth.	
	Oil, wind, and trees are all examples of renewable natural resources.	
	The United States has more natural resources than most countries of the world.	
	Natural resources are needed to produce every good in the world.	
	People have figured out ways to make natural resources like coal and copper in scientific laboratories.	

FACTS AND FIGURES

Natural Resource Consumption Facts

- The United States uses one million gallons of oil every 2 minutes.
- Every American uses about 47,000 pounds of newly mined materials each year.
- A television requires 35 different minerals, and more than 30 minerals are needed to make a computer.
- Over the past 40 years, global consumption of wood as industrial fuel rose by nearly 80 percent. North America alone accounts for about 40 percent of both production and consumption of wood as industrial wood products.
- Global annual extraction of natural resources equals the weight of more than 41,000 Empire State buildings, each weighing around 365,000 tons (or 112 Empire State Buildings every day).

Natural Resource Consumption Facts. 3 December 2013
 <http://www.epa.gov/osw/education/quest/pdfs/sections/u1_chap1.pdf>.

Pounds of minerals and metals used every year by the average American

	1776	2010
Aluminum (bauxite)	0	52
Cement	12	530
Clay	100	156
Coal	40	6,988
Copper	1	12
Iron Ore	20	187
Lead	2	10
Phosphate	0	195
Potash	1	22
Salt	4	409
Sand, gravel & stone	1,000	14,280
Sulfur	1	73
Zinc	0.5	7
All Others	18.8	14,766
Total pounds/capita/year	1,200	37,687

Facts and Figures

Per Capita Mineral Usage

Every year— 37,687 pounds of new minerals must be provided for every person in the United States to make the things we use every day



8,343 lbs. **Stone** used to make roads, buildings, bridges, landscaping, and for numerous chemical and construction uses



12 lbs. **Copper** used in buildings; electrical & electronic parts; plumbing; transportation



5,937 lbs. **Sand & Gravel** used to make concrete, asphalt, roads, blocks & bricks



10 lbs. **Lead** 75% used for transportation— batteries, electrical, communications and TV screens



530 lbs. **Cement** used to make roads, sidewalks, bridges, buildings, schools and houses



7 lbs. **Zinc** used to make metals rust resistant, various metals & alloys, paint, rubber, skin creams, health care and nutrition



187 lbs. **Iron Ore** used to make steel— buildings; cars, trucks, planes & trains; other construction; containers



44 lbs. **Soda Ash** used to make all kinds of glass; in powdered detergents; medicines; as a food additive; photography; water treatment



409 lbs. **Salt** used in various chemicals; highway deicing; food & agriculture



3 lbs. **Manganese** used to make almost all steels for construction, machinery and transportation



195 lbs. **Phosphate Rock** used to make fertilizers to grow food; and as animal feed supplements



403 lbs. **Other Nonmetals** have numerous uses: glass, chemicals, soaps, paper, computers, cell phones



156 lbs. **Clays** used to make floor & wall tile; dinnerware; kitty litter; bricks & cement; paper



19 lbs. **Other Metals** have the same uses as nonmetals but also electronics, TV & video equipment, recreation equipment, and more



52 lbs. **Aluminum (Bauxite)** used to make buildings, beverage containers, autos, and airplanes

Plus These Energy Fuels

- 933 gallons of **Petroleum**
- 6,988 lbs. of **Coal**
- 76,319 cu. ft. of **Natural Gas**
- 1/4 lb. of **Uranium**

Source: "Everything is Made of Something: A Study of the Earth." *Mineral Information Institute*. 3 December 2013
<http://www.mineralseducationcoalition.org/pdfs/study/studyoftheearth.pdf>.

What are Natural Resources?

Everything Comes From the Earth!

Do you love chewing bubble gum? Do you enjoy hula hooping or playing baseball? Did you know that all of these things, from bubble gum machines to the stitching on a baseball come from the earth? In fact, everything we use comes from something originally found in nature! We call these things **natural resources**. Natural resources come from nature and are used or turned into the things that we want and need to live.

What do Natural Resources Give Us?

From the ancient pyramids of Egypt to rockets in space, everything human beings have ever made or used comes from natural resources. The earth's soil, sunlight, and water grow the plants that give us the food we eat. The heat that keeps our homes warm in the winter comes mostly from oil and coal. The metals that we use to make computers and cans come from minerals found in the earth's crust.

Natural resources provide us with the things we need, such as air, water, and food, as well as things we may want, such as television, toys, and soda.

Where do We Find Natural Resources?

Although natural resources come from the earth, they are not always found right where we need them. Very often, natural resources come from far away places before they end up in our home or city.

For instance, a lot of the trees we use for making paper come from the Southeastern forests of the United States.

Petroleum or oil comes



from deep underground, in places like the Middle East, and from underneath the ocean floor. Aluminum comes from a mineral called **bauxite**, which is found in the tropical rainforests of South America and other parts of the world. Even the food we eat often travels thousands of miles before it ever reaches our plates.



Aluminum Cans and Toucans

Besides providing humans with natural resources that we need and want, the earth also provides **habitat**, or homes, for animals. Very often, while trying to get natural resources like trees, oil or minerals, humans destroy animal habitat. Let's look at bauxite, for example. Since this mineral has to be **mined**, or taken out of the ground, from areas like the rainforest, trees and other plants in the forest must first be cut down. These trees and plants provide food and create natural habitat for animals like the jaguar, the spider monkey, and the toucan. Without their rainforest habitat, these animals can't survive.

Will Natural Resources Last Forever?

Although we may have everything we need now, there are many natural resources that won't be around forever. **Renewable** resources are natural resources that will continue to **replenish** themselves, usually by reproducing or growing again. Plants and sunlight are examples of resources that are renewable. **Non-renewable** resources, however, cannot grow back once they have been used up, and the earth will not make more for us to use. Oil and other minerals like bauxite and gold are examples of non-renewable resources.

What are Natural Resources? Garbology Student Fact Sheet B-1. Nature Bridge. SF Environment. San Francisco. 3 December 2013
<http://www.naturebridge.org/sites/default/files/Garbology%20Fact%20Sheet%20-%20What%20are%20Natural%20Resources.pdf>.

Summarizing Text

What do natural resources give us?	
Where do we find natural resources?	
How can trying to get natural resources affect the habitats of animals?	
Will natural resources last forever? Why or why not?	

Resources Used in Advanced Technologies

Tantalum	
Germanium	
Gallium	
Beryllium	
Scandium	
Indium	
Niobium	
Europium	
Dysprosium	
Neodymium	
Rhenium	
Neodymium	
Antimony	
Terbium	
Gadolinium	

Making Predictions

Directions: Analyze the resources of the Mystery Countries below and then predict whether they are a rich country, a poor country or in the middle.

Letter	Natural Resources	Rich, Poor or In the Middle?
A	cobalt, copper, niobium, tantalum, petroleum, industrial and gem diamonds, gold, silver, zinc, manganese, tin, uranium, coal, hydropower, timber	
B	deepwater harbor, feldspar	
C	nickel, uranium, rare earth oxides, peat, cobalt, copper, platinum, vanadium, arable land, hydropower, niobium, tantalum, gold, tin, tungsten, kaolin, limestone	
D	petroleum, natural gas, fish	
E	coal, copper, lead, molybdenum, phosphates, rare earth elements, uranium, bauxite, gold, iron, mercury, nickel, potash, silver, tungsten, zinc, petroleum, natural gas, timber	
F	none	
G	hydropower, fertile agricultural land, gold, diamonds, petroleum, hardwoods, limestone, iron ore, copper, chromium ore, zinc, tungsten, mica, silver	
H	limestone, arable land, hydropower, unexploited deposits of uranium, coal, and bauxite	

