



OTTO AND HIS older sister, Anna, were doing one of their Saturday morning chores—sorting the trash.

“Where does all this stuff come from?” wondered Otto, as he gathered cans into the recycling bin.

“The earth,” said Anna. “Metal is a natural resource.”

“What’s a natural resource?” Otto asked.

“Something found in nature that we can gather and use to make other things,” she answered.

“Imagine how large a hole you’d have to dig to gather enough metal to make all the cans in a grocery store . . .” said Otto, trying to picture it.

Anna quickly responded, “It would have to be huge! I read that there’s a mine in Utah that’s over 1 kilometer [0.75 miles] deep and 4 kilometers [2.5 miles] wide.”

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In this unit, you will:

- *Explore phenomena* related to how humans affect the availability of natural resources, such as metals, fossil fuels, and freshwater
- *Model* the technologies and discuss the trade-offs involved with obtaining these resources
- *Construct explanations* about how earth processes form natural resources over geological time
- *Analyze* resource distribution and consumption patterns to determine what makes one resource more valuable than another
- *Investigate* the issue of how the use of natural resources by humans can affect the availability of these resources and how these resources vary in their distribution around the world

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Observing Earth's Resources

INVESTIGATION

HUMANS USE A lot of materials found on Earth. These include metals such as copper and woods such as pine. Materials that are found on Earth naturally and used by people are known as **natural resources**. Some of these resources are **renewable**, meaning that they can be replaced or replenished faster than they are used up by human populations. For example, wood is a renewable resource since more trees can be planted to replace those that are cut down. **Nonrenewable** resources cannot be replaced faster than they are used up by human populations. Oil, which takes millions of years to form, is a nonrenewable resource.

GUIDING QUESTION

What are natural resources?



Natural resources such as rocks are mined in rock quarries (KWOR-eez) like this one.

MATERIALS

For each group of four students

- 1 copper strip
- 1 rock containing fossils
- 1 sample of oil shale
- 1 vial of freshwater
- 1 sample of wood

For each pair of students

- 1 magnifying lens
- 1 metric ruler

For each student

- 1 Student Sheet 1.1, "Resource Observations"

PROCEDURE

1. Using the magnifying lens and ruler, work with your partner to carefully examine one of the natural resource samples.



2. Record your observations about the sample in the table on Student Sheet 1.1, "Resource Observations."
3. Share the natural resource samples with the other pair of students in your group. Repeat Steps 1 and 2 until you have examined all five samples.
4. Discuss with your group how valuable you think each sample is and what you think makes it more or less valuable. Remember to listen to and consider the ideas of other members of your group. If you disagree with others in your group, explain why you disagree.

5. In your table, rank each of the five natural resources from 1 to 5, where 1 = most valuable and 5 = least valuable. You do not need to agree with the other members of your group.
6. In your table, write down why you decided to rank the samples as you did. Be sure to list at least one reason for each sample. Then identify each sample as a renewable or nonrenewable resource.
7. Discuss your responses with the other members of your group. Explain why you ranked each sample as you did and why you identified a resource as renewable or nonrenewable.
8. Share your responses with your class.

ANALYSIS

1. Think about the natural resources you examined.
 - a. What was the most valuable natural resource, according to the class?
 - b. What was the least valuable natural resource, according to the class?
 - c. What reasons did other students have for identifying a natural resource as more or less valuable?
2. What else would you like to know about these natural resources to help you determine their value? What other questions do you have about these natural resources?
3. Which resource(s) did you identify as renewable? Explain your thinking.
4. Copy the list of words shown below:
 - oil
 - natural resource
 - salt
 - air
 - plastic
 - a. Look for a relationship among the words. Cross out the word or phrase that does not belong.
 - b. Circle the word or phrase that includes the others.
 - c. Explain how the word or phrase you circled is related to the other words on the list.
5. **Reflection:** What do you think makes a natural resource valuable?

EXTENSION

Do you want to see more natural resources? Bring in any natural resources you may have collected to share with your class, or go the *SEPUP Third Edition Earth's Resources* page of the SEPUP website at **www.sepuplhs.org/middle/third-edition** to link to sites with photos of more natural resources.