

Exploring our Planet

Grade: 5

State Standards: Earth Science, 6.0 c Students know the natural origin of the materials used to make common objects. Students identify the natural origin of the materials used to make common objects. Students provide examples of the goods that are produced by natural systems and explain methods used to make common objects (useable products) from natural resources. Language Arts 5.3.1 Students listen to and follow complex oral directions for the completion of tasks. Students independently demonstrate active listening skills and practice reflective feedback for the completion of tasks.

Groups of 2

Preparation Time: 25 minutes

Activity Time: 45 minutes

Key Words: Natural resources, organic, Renewable, Nonrenewable

OBJECTIVE

Students will:

- recognize that the earth is the source of everything we make, use, and throw away
- differentiate between natural resources and human-made items and their associated life cycles

MATERIALS

Handouts: Bicycle Materials, Wastes, and By-Products, Glass Manufacturing, Paper Production; worksheet: What Kind of Waste Am I?

(Optional:) rescued items from the trash (such as aluminum can, glass bottle, paper, plastic bag, fruit peel, etc.)

BACKGROUND

This activity illustrates that the earth is the source of everything we make, use, and throw away. Natural resources are the raw materials supplied by nature. People cannot create natural resources. Even though we use natural resources in our daily life, we often do not think of them as being resources. Through the use of classifying skills, the different properties of natural and human-made objects will be reviewed. And by identifying the ways manufacturing and disposing of products alter the environment, students can better appreciate their personal role in conserving natural resources.

Earth's Resources

A number of different natural resources are used by humans throughout the world. These resources include air, plants, animals, fossil fuels, forestry, soil, water, and more.

There are two distinct classifications of natural resources: renewable resources that are essentially infinite and non-renewable resources, which have a finite volume.

The quality of life associated with the continued consumption of non-renewable natural resources and the adoption of renewable natural resources is known as natural resource management. With the depletion of many natural resources, a move towards sustainable development has been adopted by a number of industries and governments worldwide.

The concern over natural resources was heavily influenced by the westward expansion of the United States during the late 1800s. Both before and during his presidency, Theodore Roosevelt became one of the first famous advocates of the preservation of natural resources.

Basic Recycling

Material for recycling needs to be clean and uncontaminated, (meaning not mixed with other materials). Make sure that you wash bottles and cans in leftover dish water (running the hot water especially is a waste of water and energy!). Technology is being developed to deal with more mixed and contaminated material, however at present we need to take care in order for recycling to be efficient. Contaminating collected materials this way can make the whole batch unusable for recycling.

There are two main types of curbside recycling collection: Mixed and source separated. In Tehama County collections involve all of the different types of recyclable materials collected being freely mixed together in one container. This is then separated into individual material types at a materials recycling facility (MRF).

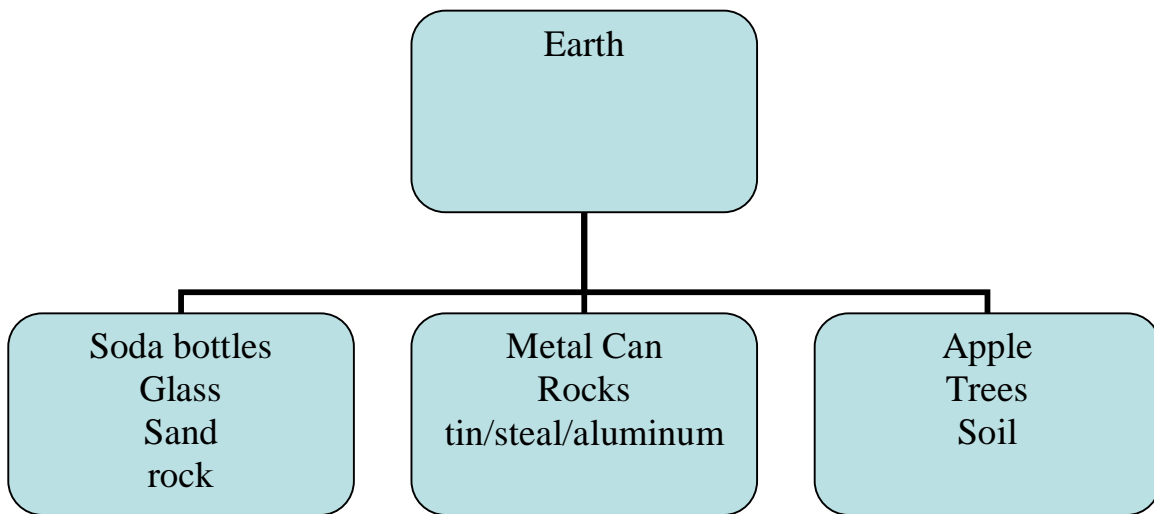
PROCEDURE

Show class an object from the trash.

- **What material is this made out of?**
- **Can you trace this material back to its source?**

For example,

A glass bottle is made from sand mixed with soda ash and lime, and melted down to form a liquid, which is then molded into glass.



As you display and discuss more objects, copy the table above on the board. See if the children can trace the objects back to their origins.

- **Can you think of anything that you use that is not provided by the earth?**

Students may name some things, but on close examination, students will realize that these things also come from the earth. (Use items from the trash as examples, if desired).

Use the transparency/handout, “Bicycle Materials, Wastes, and By-Product” as another way to reinforce this concept. Using the manufacturing and production transparencies, discuss the process and resources used for making glass and paper. Identify where recycled materials can be substituted for raw materials thus saving natural resources.

Instead of a straight line to the landfill, how can the path be made into a continuous loop? By recycling (substituting used materials for raw materials). How else could fewer natural resources and less energy be used in manufacturing? By reducing use of products and by reusing old products.

Discussion

Relate the manufacturing, production and recycling of materials to natural cycles like seed→tree→decomposition→soil fertility→new tree. Help students understand that human cycles are not usually “complete” and are sometimes harmful to the environment. Ask students to name other examples of natural cycles and diagram them on the board.

Assign the handout, “What Kind of Waste Am I?” remind students of the difference between renewable and nonrenewable resources. Nonrenewable resources cannot be replaced and are gone forever when used up and come from petroleum or natural gas originally.

Extensions:

Make a bulletin board display of natural resources and their origins in your class or school. Research the lifecycle of something. Ask students to draw or explain in writing or a flow chart, the lifecycle of an object that they use in their home. This might be a type of food, or product or toy, etc., remind students to include transportation from the origin to the manufacturer to the store--and how they receive the item, etc. Encourage them to be as thorough as possible because each step uses energy, time, money and creates pollution along the way!

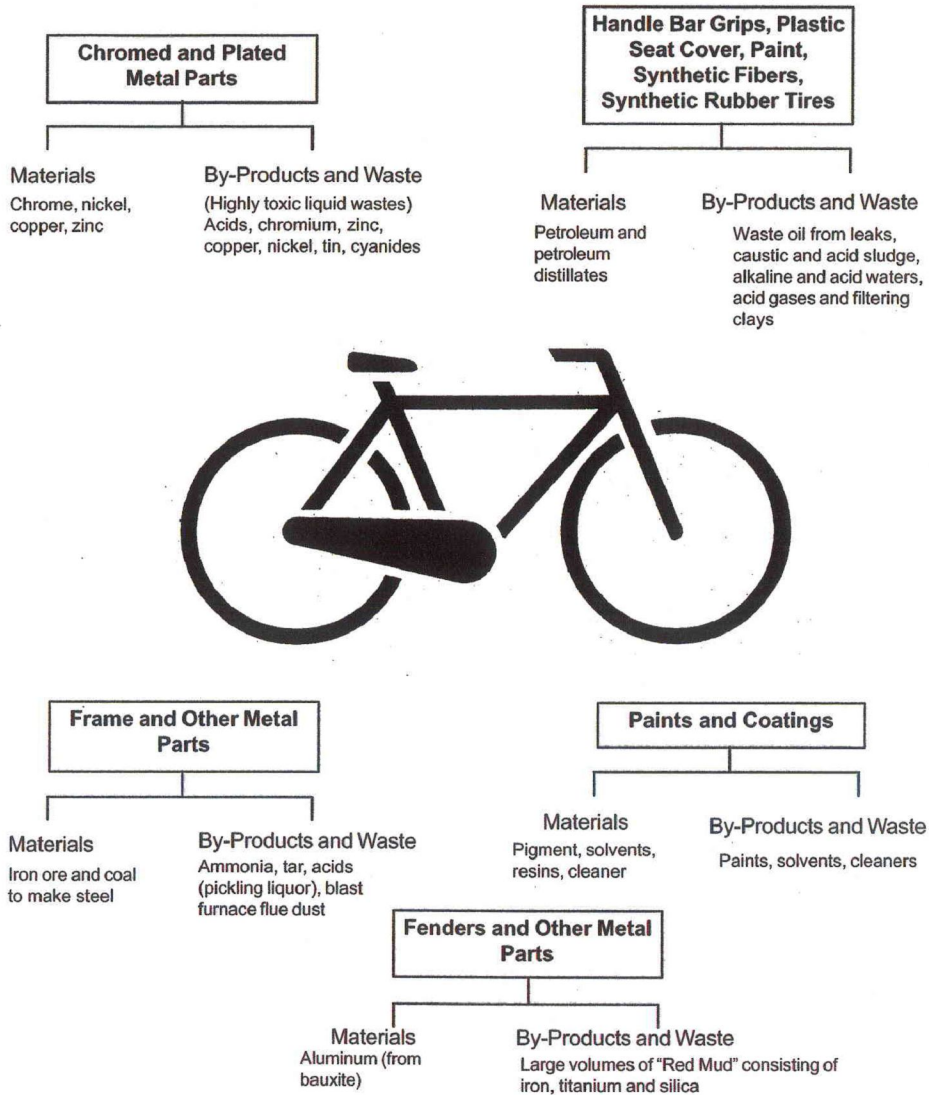
Research the areas of the world where natural resources are mined and the how many reserves are known to exist. Include minerals needed to make glass and metals like limestone, sand, feldspar, bauxite, iron, copper, nickel.

ASSESSMENT

Students will:

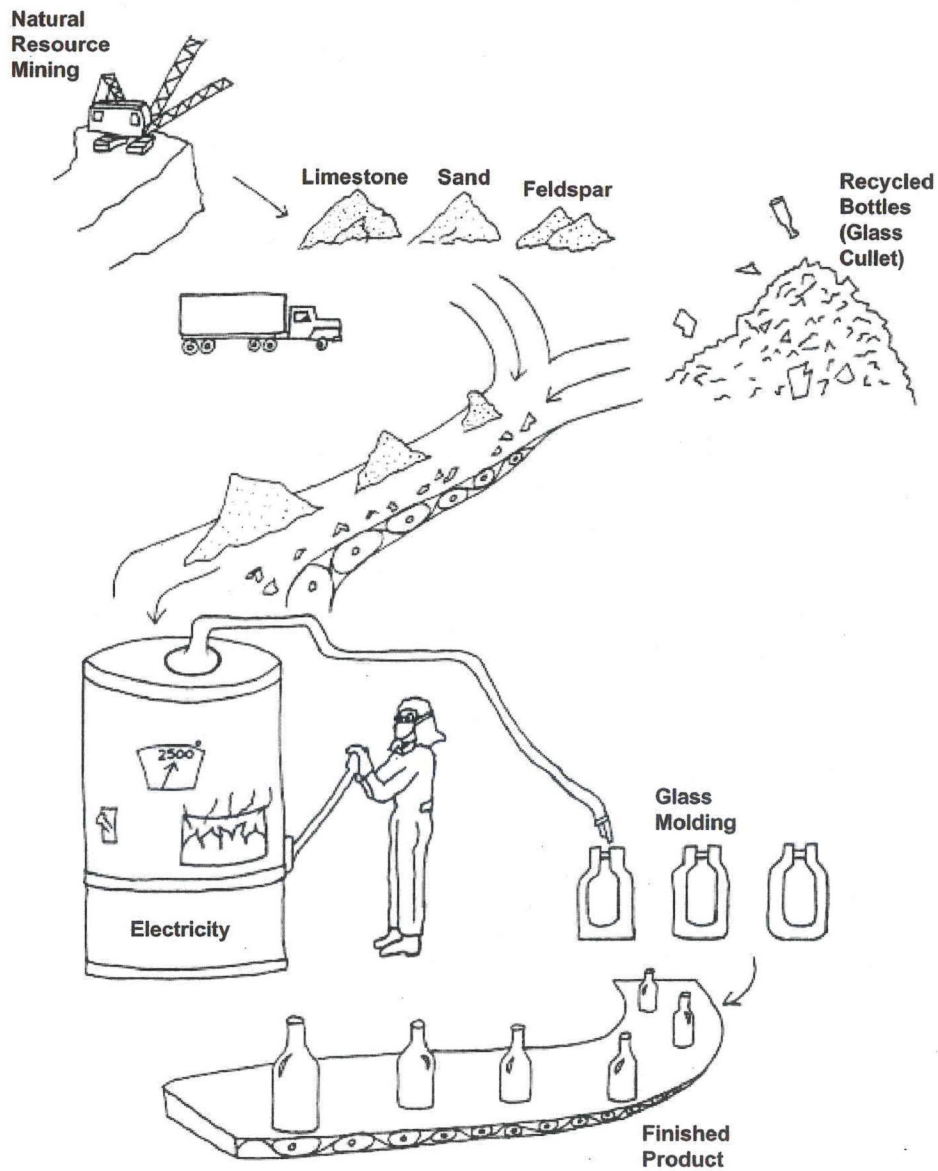
- Recognize that Earth materials have different physical and chemical properties that can be used in different ways such as for building materials, as sources of fuel, or as an environment for growing plants.
- Use models to explain how objects, events, and/or processes work in the real world.
- Identify and study two or more points of view on an event, issue, or problem.
- Explain various perspectives on recycling and the reasoning behind it.

Bicycle Materials, Wastes, and By-Products

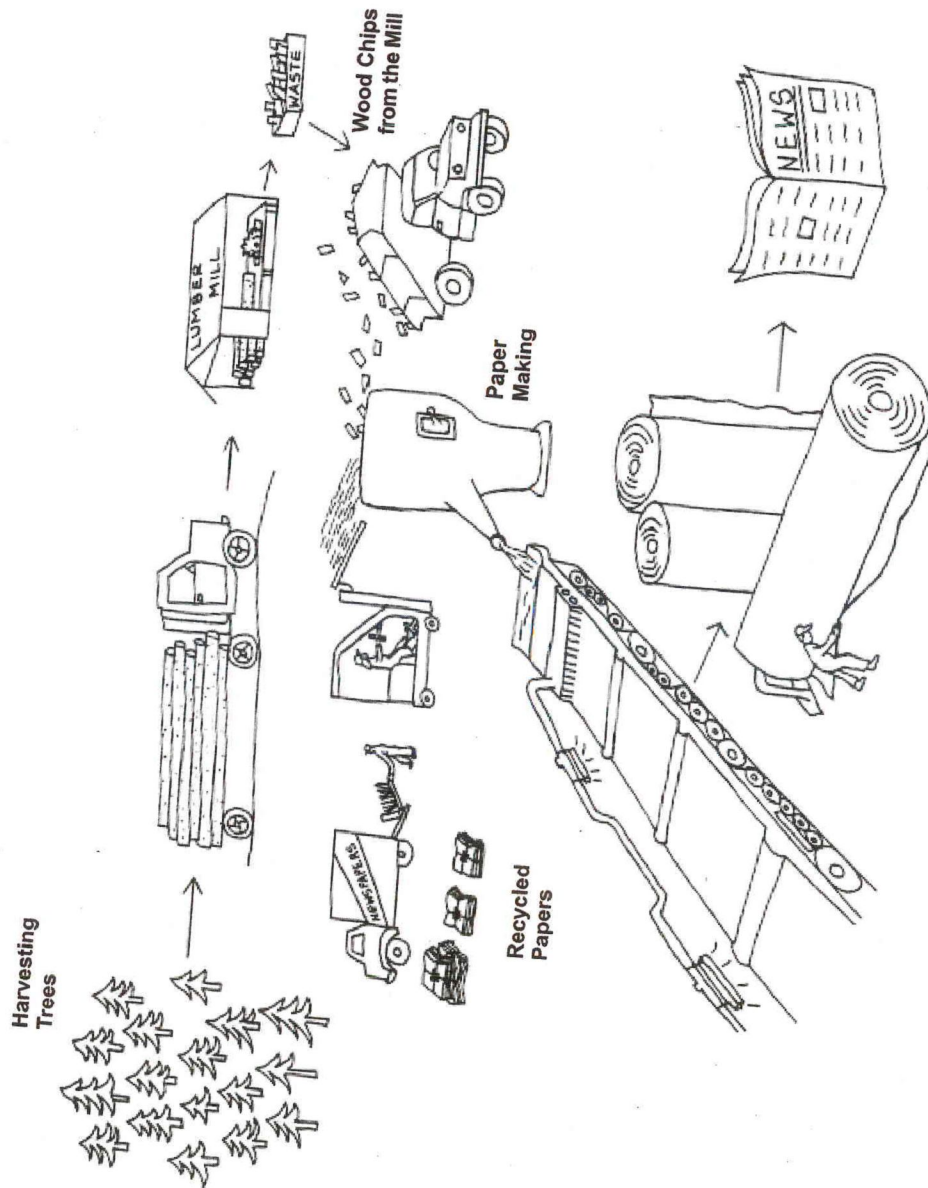


Source: Washington Dept. of Ecology: *A-Way With Waste* (1990)

Glass Manufacturing



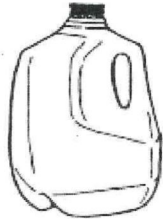
Paper Manufacturing



What Kind Of Waste Am I?

Student Name: _____

Match each object with the type of material that it originates from, note some may have more than one match. Also decide whether each object comes from a renewable or nonrenewable resource.



A. Tree/Plants

B. Rocks and Minerals

C. Animals

D. Oil or Natural Gas

E. Nonrenewable

F. Renewable