

Earth Pocket

Grades K-5

Meets Grades K-5 Standards

Lesson Summary

Students trace everyday objects back to the natural resources from which they were made and learn how to conserve natural resources and protect animal habitats.

Overview

In this lesson, students will:

- Identify the earth's natural resources.
- Discuss how humans and animals depend on natural resources for survival.
- Make *Earth Pocket* (mobiles) that visually show the connection between everyday products and the natural resources needed to make them.
- Analyze how natural resource extraction affects animal habitats and how negative impacts can be prevented.

Time 🕒

45 minutes to prepare lesson; 90 minutes for lesson

Background

Natural resources come from nature and are used or made into the things we want and need to survive. Clean air and fresh water are resources that supply our most basic needs for survival. Earth's soil, sun and water, grow the plants that provide the food we eat and the homes we live in. The heat that keeps our homes warm in the winter is generated mostly from fossil fuels like oil and coal. The metals that we use to manufacture cans and computers come from minerals mined from the earth's crust.

Although natural resources seem to be in great abundance, there are many natural resources that won't be around forever.

Renewable resources are natural resources, such as plants and sunlight that will continue to replenish themselves, usually by reproducing or growing again. Nonrenewable resources, however, cannot grow back once they have been used. Oil and minerals like bauxite, copper and gold are examples of nonrenewable resources.

All facets of nature are interconnected and depend on each other to maintain Earth's life supporting systems. For example, sunlight provides the energy needed for plants to grow, and plants clean the air, prevent erosion and provide food and habitats for animals.

Very often, while obtaining natural resources from around the world, humans can destroy ecosystems that are animal habitats. For example, aluminum comes from the mineral bauxite, which is found in the tropical rainforests of South America and other parts of the world. In order to extract bauxite from the earth's crust,



Vocabulary

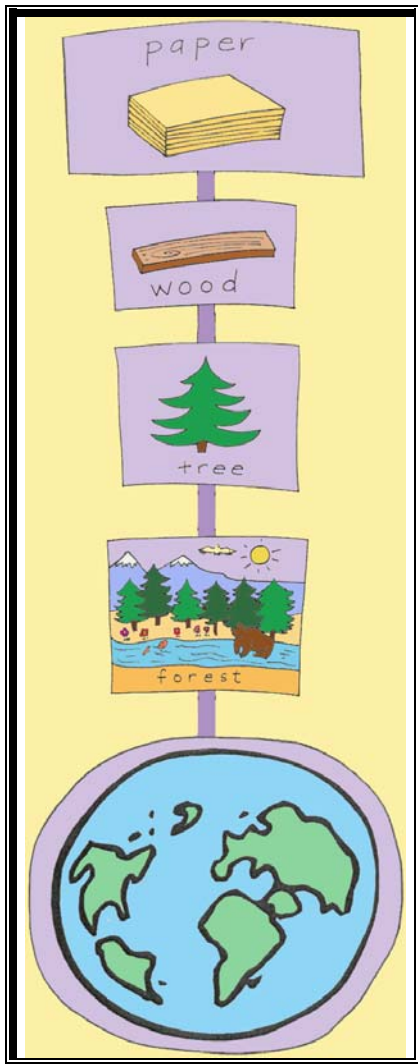
- Natural Resources
- Renewable
- Nonrenewable
- Mined
- Bauxite
- Aluminum
- Petroleum
- Habitat
- Extinct

Materials

- *What Are Natural Resources* Student Fact Sheet
- 2 copies of *Earth Pocket Outline* for each student (*See sample at end of lesson*)
- String or yarn (about 2 feet long) for each student
- Cards made from old cereal boxes or index cards (no less than 9 per student)
- Ruler
- Scissors & stapler
- Crayons and markers

Optional Materials

- Book, *Nature's Cross-Sections* by Richard Orr and *The Great Kapok Tree* by Lynne Cherry
- Atlas or globe



humans must first cut down trees and other plants, which are the natural habitat for animals like the jaguar, spider monkey and toucan. Without an intact habitat, these animals cannot survive and may go extinct like the dinosaurs.

We can conserve natural resources and protect the habitats of animals around the world by making careful decisions any time we buy, use or dispose of something. We can lessen the extraction of natural resources from the earth by only buying what we need and choosing items made from renewable resources. This can give us the things we require without using up too much of one kind of natural resource. For instance, we can actually make *tree-free* paper from plants, such as kenaf, bamboo, hemp, and even old blue jeans! And we can make plastic from corn and potato plants instead of petroleum. We can also reuse what we already have and recycle old products that can be turned into something new.

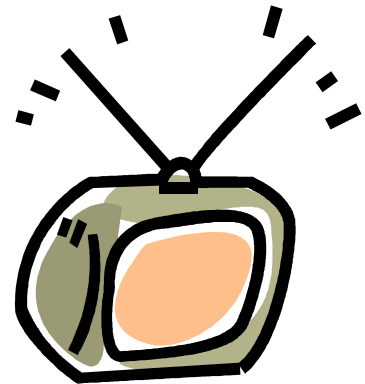
Preparation

- Read background information on front page.
- Cut out two copies of *Earth Pocket Outline*.
- Staple or glue *Earth Pocket Outlines* together, leaving a four-inch opening to make a pocket.
- Cut a card large enough so it can't fall into the four-inch pocket, and draw a piece of paper on the card. (Note: It is recommended that you make cards out of used products, such as cereal boxes, to model reuse and conserving resources.)
- Cut six cards that are small enough to fit easily into the four-inch pocket, and draw and label one of the following on each card: forest, tree, wood, paper, recycling bin, reduce use of paper, and reuse paper. (See samples at end of lesson.)
- On the forest card, draw what animals might live in the forest.
- Attach all the cards (except for the *reduce, reuse* and *recycling bin* card), to a string and assemble the *Earth Pocket* by following the illustration at left.
- Place the cards and attached string inside the pocket, leaving the card with the paper illustration sticking out of the pocket.
- Set the *reduce, reuse* and *recycling bin* cards aside to attach later.
- Prepare an *Earth Pocket* that shows how paper can also be made from a more sustainable natural resource, the kenaf plant. Follow the same procedure as above, but this time substitute the *tree* card with a *kenaf* card and the *forest* card with a *farm* card. And, eliminate the *wood* card. (See sample on next page.)
- Have students read *What are Natural Resources* student fact sheet. (For younger students, introduce relevant concepts from fact sheets)

Pre-Activity Questions

Ask students:

1. What does the word natural resource mean? (*Natural resources come from nature and are used or made into the things we need and want to survive.*)
2. What are some examples of natural resources? (*Air, soil, water, plants, minerals, and energy sources such as sunlight, wind and fossil fuels like oil, coal and natural gas*)
3. How do people use natural resources? (*For making things we want like television sets, toys and computers and for getting the food, water and shelter that we need in order to survive*)
4. What are some products that people make out of natural resources? List the names of some of the products on the board, as well as the natural resource from which they are derived. (*Paper-trees, clothing-plants, plastic toys-oil, metal bikes-minerals*)
5. Where in nature are these natural resources found? (*Trees come from forests; plants come from farms, oil comes from under the ocean or from underground in different regions like the rainforest and the Middle East; minerals come from the earth's crust in places like the rainforest or the desert.*)
6. Are there animals and other living things that live in the same area the natural resources are found? (*Yes, animals like the jaguar, spider monkey and toucan are found in the rainforest where minerals and oil are extracted; fish and whales and dolphins live in the oceans where oil is drilled; bears, bobcats and white-tailed deer live in the forests that are cut down to make paper.*)

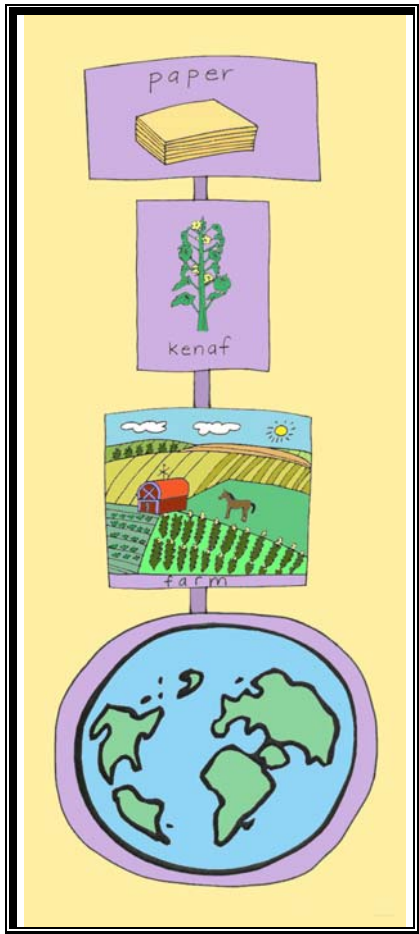


Procedure

Note: The directions for making an *Earth Pocket* may need to be simplified for younger students.

1. Show students the *Earth Pocket* that has already been prepared, making certain that the card on which the paper is drawn is sticking out of the pocket.
2. Ask students what paper is made from. Once they answer *trees*, explain that trees are cut down and the wood of the tree is used to make paper.
3. As you explain that paper is made from wood and wood comes from trees, pull out the string so that the cards with the wood illustration and the tree illustration are showing.
4. Ask where a lot of trees can be found. As the students answer *forests*, pull out the card with the forest illustration.
5. Ask students what animals might live in a forest and point out the various animals drawn on the forest card. (*bear, hawk, fish*)
6. Explain that the forest is a *habitat* or home for many animals.
7. Review the *Earth Pocket* chain and the fact that everything humans use comes from the earth and nature.





8. Ask students if they think there is any other natural resource that can be used to make paper.
9. Pull out the kenaf paper *Earth Pocket* and tell them that you have a surprise for them; paper does not have to be made from trees.
10. Explain to the students that instead of cutting down forests and using trees to make paper, some people are making paper from smaller plants grown on farms, like the kenaf plant.
11. As you explain that some paper is made from kenaf, pull out the string so that the cards with the kenaf plant and kenaf farm illustrations are showing.
12. Ask students to work individually to select an item from the list below and then list the steps from the natural resource to the item. The items they should choose from are:
 - Book-paper-wood-tree-temperate forest
 - Paper-kenaf-farm
 - Aluminum can-bauxite (mineral)-Earth's crust-tropical rainforest
 - Plastic toy-oil (fossil fuel)-ocean floor
 - Glass bottle-sand (mineral)-prairie

Note: Illustrations for the paper series and tree-free paper series are included at the end of this lesson. They can be copied for younger students. They can color, cut out and glue each illustration on a card.

13. Tell students that they will be making their own *Earth Pocket*
 - Distribute two copies of the *Earth Pocket Outline*, two feet of string and at least six cards to each student.
 - Have students color the *Earth Pocket Outline* and cut it out. (Note: Limit this to ten minutes.)
 - Help students place and staple or glue the two outlines together, leaving an opening of about four inches at the top.
 - Have students prepare the illustrations and words for their objects on the cards. They should illustrate each step back to the natural resource and habitat from which the object was made. Make certain that students use the larger card for the main object and smaller cards for all the others. Students should connect the parts (in order) to a piece of yarn or string.
 - Ask students to place the sources from which the item was made into the *Earth Pocket*, making certain that the main illustration of the object sticks out.
14. Allow students to share their *Earth Pocket* with a partner or small group.

Note: Students can use a globe or map to locate where the natural resource illustrated in their *Earth Pocket* can be found on this planet. For example, if a student chooses to make an *Earth Pocket* for an aluminum can, ask them to locate a tropical rainforest on the globe. Older students should also determine the latitude and longitude.

Discussion/Questions






1. What did you learn about natural resources today?
2. Why are natural resources important? (*They provide us with the things we want and need to live.*)
3. How do people use natural resources? (*For making things we want; for producing energy; for providing the water, food and shelter that we need to live.*)
4. Can there be shortages of natural resources? (*Yes, if we use a lot there can be shortages, especially for nonrenewable natural resources that can't grow back or reproduce.*)
5. How do people get the natural resources they use to make the products they want such as paper, metals, plastics and glass? (*They extract or take resources from the earth. For example, trees are cut down to make paper; holes are drilled in the ocean floor to pump out oil to make plastics; and in some rainforests the trees are cut down and the ground dug up in search of minerals to make metals.*)
6. How does taking resources from the earth affect animals? For example, what do you think happens to animals when forests are cut down? (*They lose their homes and some sources of food; it becomes hard for them to survive.*)
7. How can we conserve, or save, natural resources and protect animal habitat? (**Reduce:** *only buy what you need, take care of what you have, and when possible, buy things made from renewable resources such as plastic made from corn plants.* **Reuse:** *whenever possible, use things more than once and donate unwanted items to charities.* **Recycle** *paper, bottles and cans.*)
8. Show students the sample *Earth Pocket* that was prepared for paper and review with them what natural resource is used to make paper.
 - Ask students to figure out ways to use less paper and conserve more trees. (*Reuse it for things like wrapping paper, write on both sides and then recycle it.*)
 - Ask students what illustrations you should attach to the *Earth Pocket* to show the solutions for using less paper and saving trees. (*use less paper, write on both sides, recycling bin*)
 - Pull out the use less paper, write on both sides and recycling bin cards and attach them to the paper card at the top of the *Earth Pocket* chain.
 - Discuss with students what they can do with other items such as books, toys, aluminum cans and glass bottles when they no longer want them. (*See Solutions Table at end of lesson.*)
 - Ask students what type of cards they could make to attach to their *Earth Pocket* chains to illustrate their solutions. (*a reuse box, thrift store, friend, art supplies, recycling bin*)
 - Using the solutions discussed, have students make their last card(s) and attach it to their *Earth Pocket* to complete the chain.

Extensions

- Have students make a mobile, showing how wildlife depends on different things in nature. (*Example: white-tailed deer- plants-river-trees-forest*)
- Ask students to create a collage or poster that shows all the ways humans use plants for the things they want and need to live. (*oxygen, clean air, shade, food, medicine, erosion prevention, wood and paper products*)

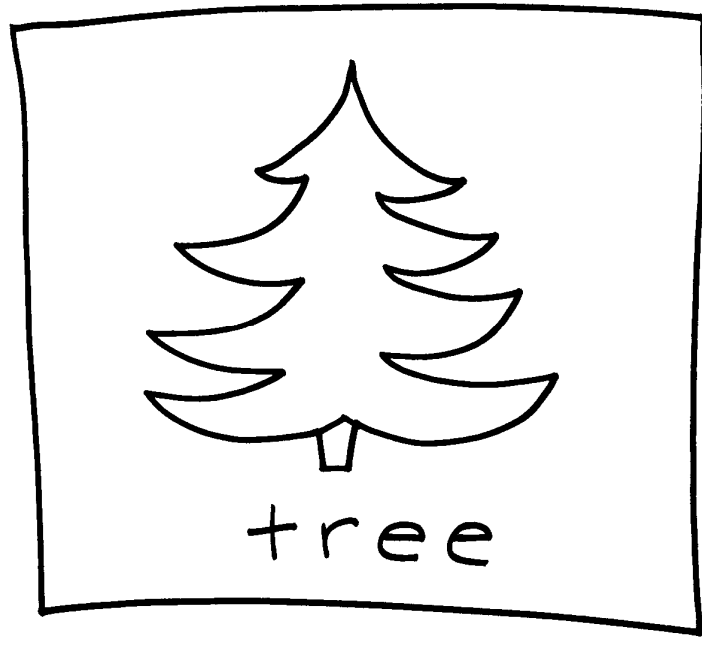
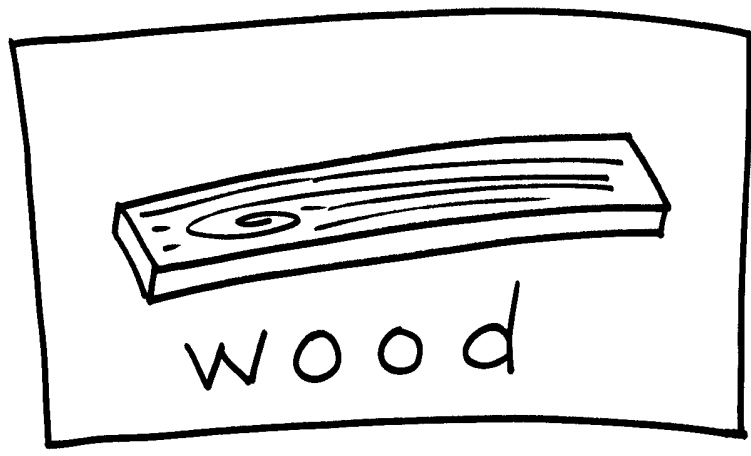
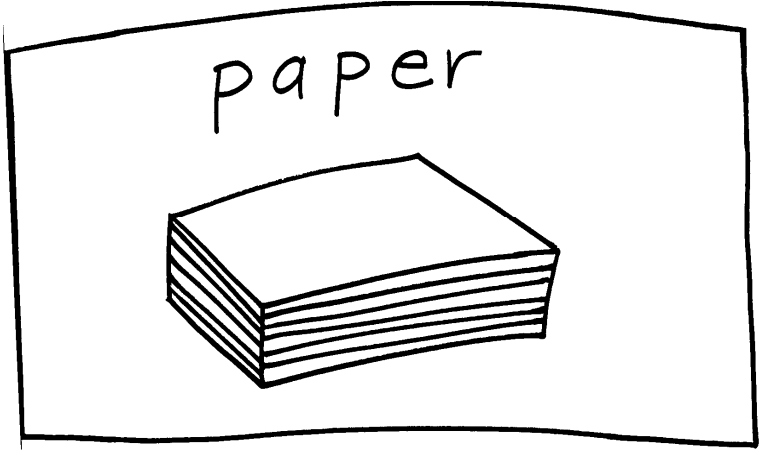


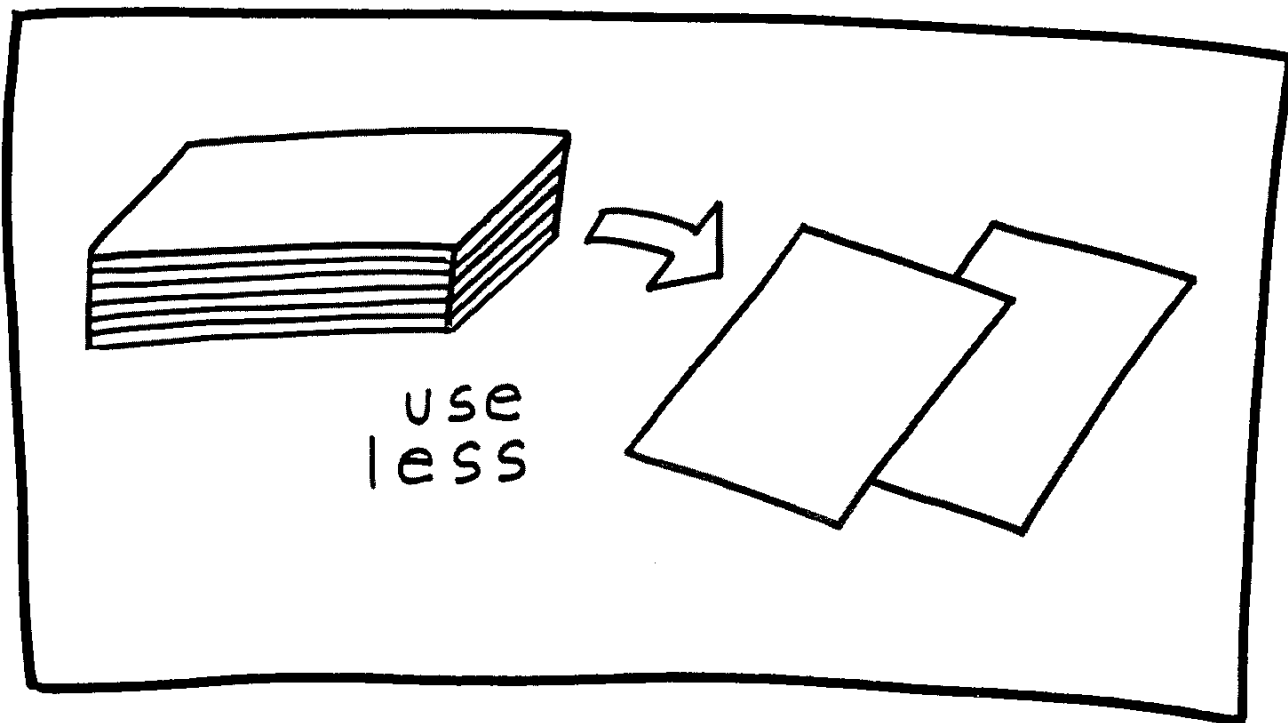
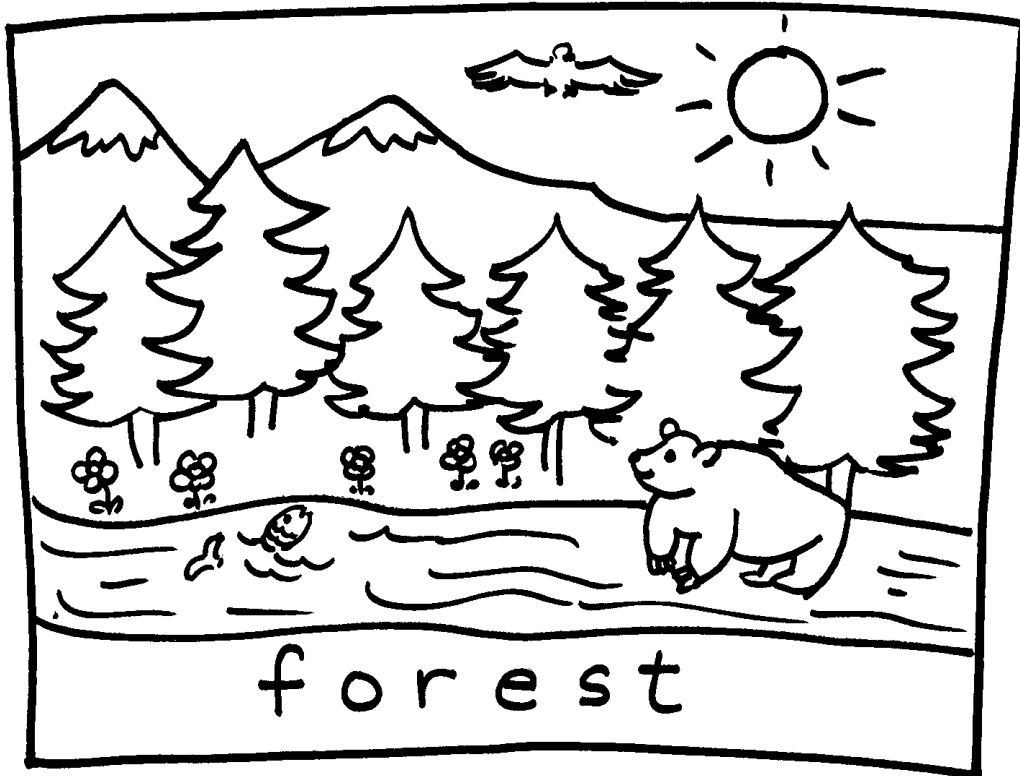
Solutions Table

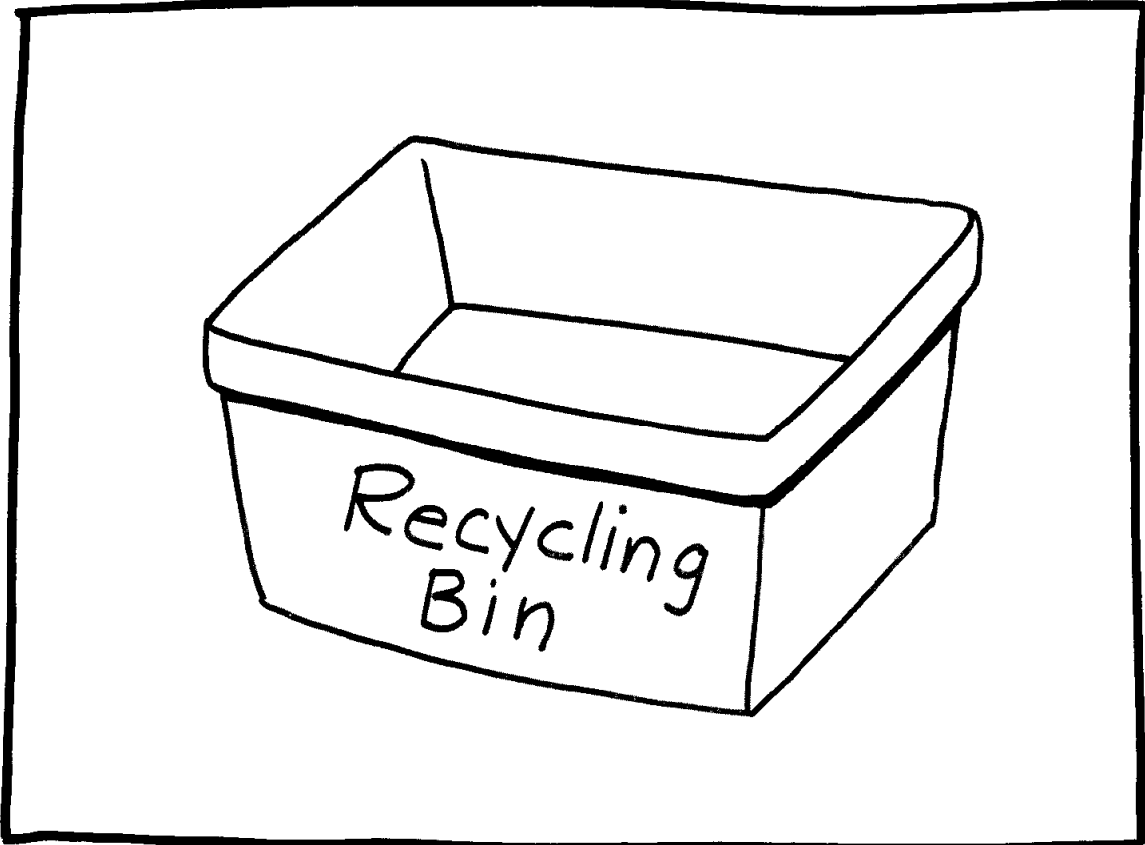
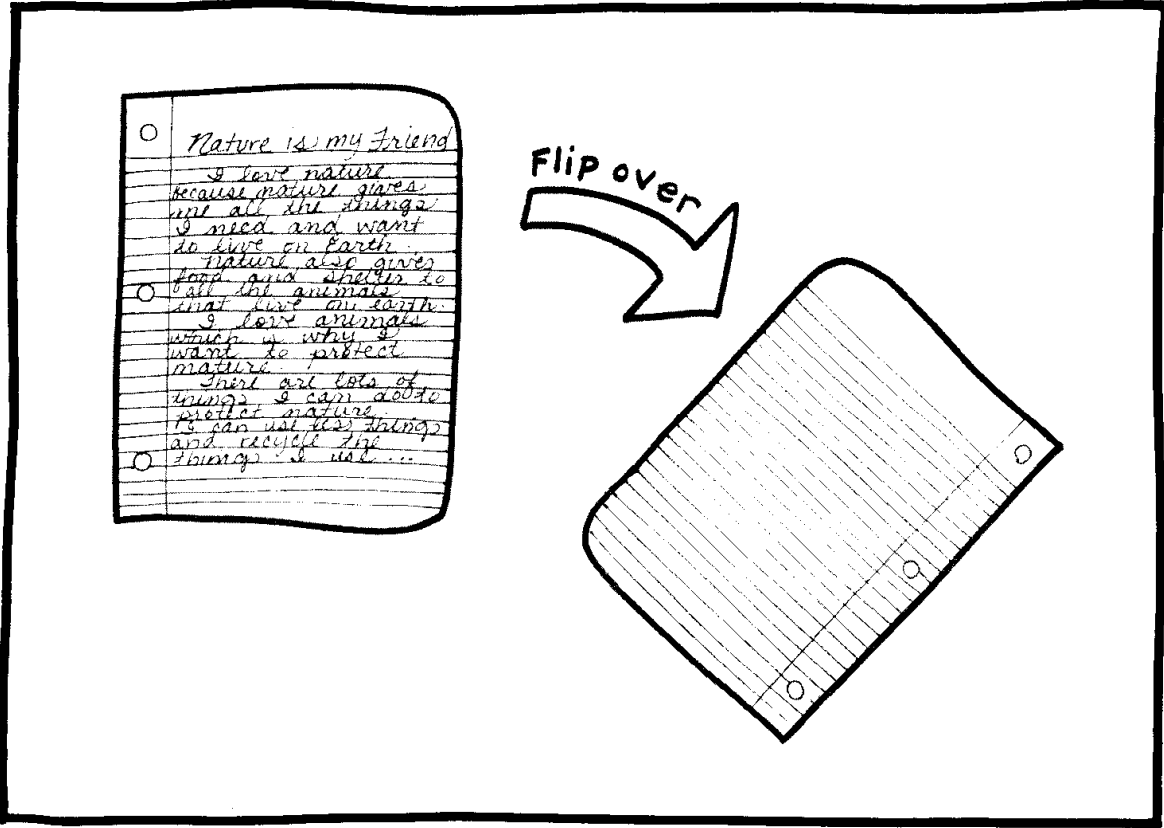
Item	Reduce	Reuse	Recycle
Paper 	Use less	Write on both sides	Recycle at home and at school
Books 	Borrow from library	Donate to charity	Recycle books by dropping them off at special recycling centers
		Give to a friend	
Toys 	Buy less	Donate to charity	Toys cannot be recycled, so make sure to reduce and reuse them as much as possible
	Share with others	Give to a friend	
Aluminum Cans 	Use a thermos or mug instead	Use to water plants	Recycle at home and at school
		Fill with dirt and use as a paper weight	
Glass bottles 	Use a thermos or mug instead	Use as a vase for flowers	Recycle at home and at school
		Use as a pencil holder	

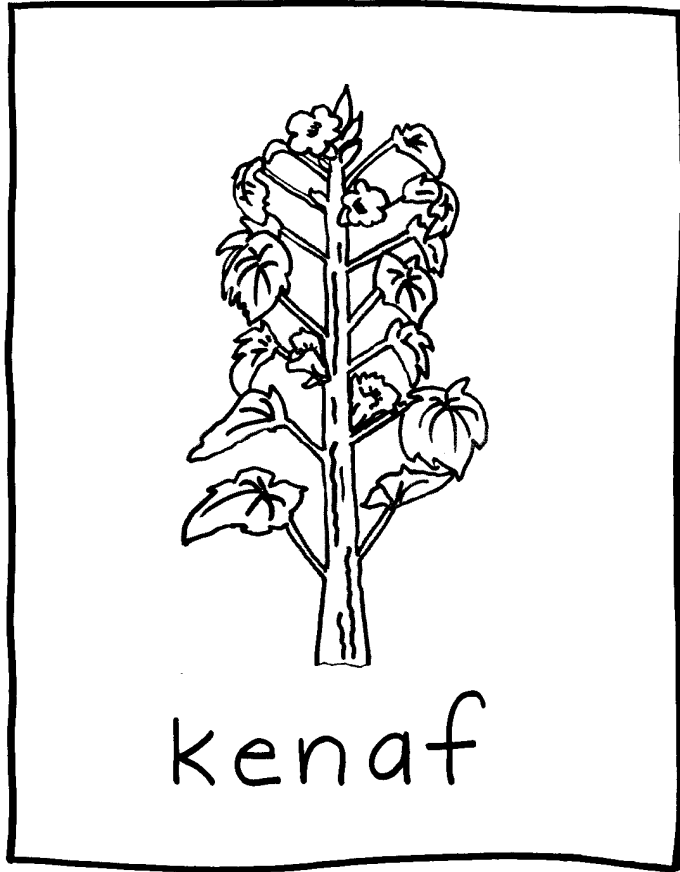
Earth Pocket Outline



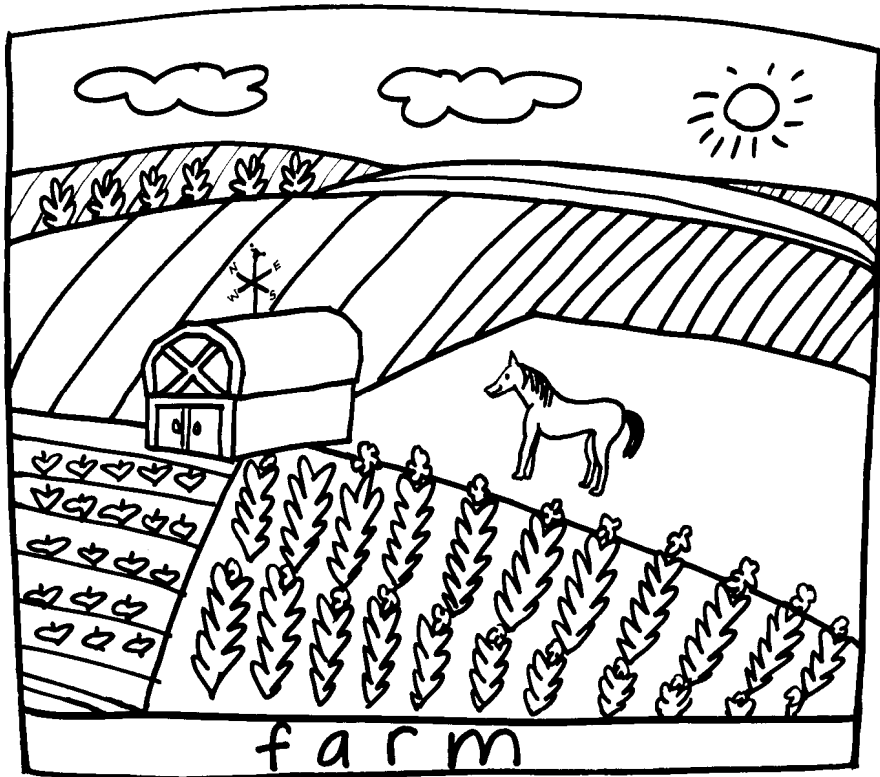








kenaf



farm



Earth Pockets

CO Standards K-5



Grades K-2

Science ◆ 4.K-2.3	The Earth's materials (rocks, soil, water) provide many of the resources that humans use and reuse.
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Grades 3-5

Science ◆ 4.3-5.3	Many of Earth's resources can be conserved, recycled and depleted.
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