Contents

Unit Objectives

1. **Concepts**. Students will understand the following environmental concepts:
   a. We use natural resources from the environment to make products we use (e.g., trees for paper, plants and animals for food and cloth, mineral ore for metals, fossil fuels for energy and plastics and other products).
   b. When we use and throw away products, we create a lot of trash.
   c. Most of our trash is buried in landfills, which means many natural resources are buried and can't be used again; new natural resources from the environment must be used instead.
   d. There are problems with burying so much trash in landfills: natural resources are wasted; landfills are filling up and land for new ones can be expensive and difficult to find; chemicals from the trash can leak into the ground and pollute soil and water.
   e. We can recycle and reuse the natural resources in many of the products we now throw away.
   f. Paper, metal, glass, and plastic can be recycled to make new products.
   g. Recycling has many benefits: conserves the natural resources used to make the products; saves energy; saves land; reduces pollution.
   h. We can reduce how much we throw away by using fewer disposable products (e.g., paper towels, cups, and plates), by reusing or by giving away many other products (e.g., wrapping paper, clothes), and by repairing items (e.g., toys, appliances).

2. **Skills.** Students will:
   a. Identity products that most families can easily recycle.
   b. Identify behaviors that help reduce trash.

3. **Behaviors.** Students will practice the following behaviors to help the environment:
   a. Use only the paper products really needed.
   b. Use reusable rather than disposable products when possible.
   c. Recycle paper, glass, metal, and plastic whenever possible.
   d. Reuse, repair, or donate items.
   e. Turn off electrical appliances when they are not being used.
   f. Close doors and windows when heat or air conditioning is on.
   g. Turn off water faucets when brushing teeth and when water is not needed.
   h. Not litter.

Planning

Instruction on the unit's objectives is organized into **five lessons** with detailed instructional procedures for each lesson, including a listing of the objectives addressed, the materials required, and the preparation needed. The vocabulary words introduced in each lesson are listed prior to the procedures, highlighted within the lesson, and defined in the glossary.

At the end of each lesson are **additional activities**, which can help students not only accomplish the lesson objectives but also apply environmental concepts and behaviors to other disciplines and to everyday living. Each of the five lessons can be completed in one or more days, depending on your class and the activities that you do.

Following Lesson 5 are **Unit Follow-Up Activities** that can be used periodically throughout the remainder of the year to reinforce the unit's objectives and to help students further develop strong environmental attitudes and habits.

Learning About Trash

Objectives

Concepts: Students will understand the following environmental concepts:

a. We use natural resources from the environment to make products we use (e.g., trees for paper, plants and animals for food and cloth, mineral ore for metals, fossil fuels for energy and plastics and other products).

b. When we use and throw away products, we create a lot of trash.

c. Most of our trash is buried in landfills, which means many natural resources are buried and can't be used again; new natural resources from the environment must be used instead.

d. There are problems with burying so much trash in landfills: natural resources are wasted; landfills are filling up and land for new ones can be expensive and difficult to find; chemicals from the trash can leak into the ground and pollute soil and water.

Materials

- Trash/Resource Cards
- Story 1, *The Rascals* (video or PDF)
- Practice Exercise 1

Preparation

- Prepare to present Story 1, *The Rascals*. You can show students the video, show the PDF pictures and read the story aloud, or print the PDF and create a book to read to students.
- (Optional) Make copies for students of Story 1. See Procedure A.
- Prepare to present Practice Exercise 1. Make copies to hand out to each student **and/or** project on a screen or smartboard to use with the entire class.
- Print and cut apart the 16 Trash/Resource Cards.

Vocabulary

- **aluminum** – a light metal used to make cans, pots and pans, lawn furniture, and other products
- **energy** – makes things work or go
- **fossil fuels** – sources of energy (coal, oil, natural gas) that formed in the earth from the remains of prehistoric plants and animals
- **landfill** – open land where trash is buried
- **metal ore** – rocks that contain minerals used to make aluminum, steel, and other metals
- **natural resources** – things in nature, such as trees and water, that we use to make products and to live
- **non-renewable** – cannot be replaced once it is gone
- **renewable** – replaced by growth or never used up
- **valuable** – something important or worth a lot

Procedures

A. Show or read Story 1, *The Rascals*

- Tell students that they are going to listen to a story about twins, Tony and Tina, and about some funny little "rascals" that help them to Think Earth.
- Present the story to students in one of the following ways:
  - Show the video of *The Rascals*.
  - Project the pictures from the PDF and read the text from the script (included in the PDF and at the end of this lesson).
  - Give each student a copy of the story or project the script and have students either follow along as you read the story or read the story aloud themselves while you show them the pictures from the PDF.
  - Print the PDF and create a book to read to students.
- Use the questions below to discuss the story. Either call on individual students or teams of students to answer questions.

1. **Why did the rascal say that trash is valuable?**
   (Everything we throw away is made from natural resources from the environment. Some natural resources, such as oil, cannot be replaced once we use them up. Others, such as trees, take a long time to replace. It also costs money to get the natural resources and make them into products.)

2. **What kinds of things make up most of our trash?**
   (Paper and yard wastes make up most of our trash. Other trash includes metal, plastic, and glass.)

3. **Where did rascal #2 say our trash goes when it is taken "away"?**
   (Trash is usually taken to a landfill where it is buried under dirt.)

4. **Why do we have to pay to have our trash taken to a landfill?**
   (It costs money for the trucks, for the gasoline, for the drivers, for the workers at the landfill, and for the land itself.)

5. **Why did rascal #3 say we shouldn't bury so much waste in landfills?**
   (1. The products we throw away are made from valuable natural resources that can't be used again if we bury them in the ground.
   2. We're filling up our landfills too fast, and it is not easy to find new places for more landfills.
   3. The trash in landfills can create gas, which pollutes our air.
   4. Dangerous chemicals in some of the trash we bury can leak into the ground and pollute or poison our soil and water.)

6. **Why does conserving energy save natural resources, like Tina said?**
   (Most energy comes from burning fossil fuels, which are natural resources we get out of the ground. Oil makes gasoline, which runs our cars; natural gas and oil and coal are used to heat our homes and to make electricity. So when we use less energy, we use fewer natural resources.)

7. **How does conserving water save natural resources?**
   *(Water **is** a natural resource, and though we use it over and over, we have only so much fresh water on Earth, and we don't always have enough where we need it. Also, it takes energy to clean water and to get it to our homes. So using less water means saving water and energy.)*

B. Conduct group practice using Trash/Resource Cards

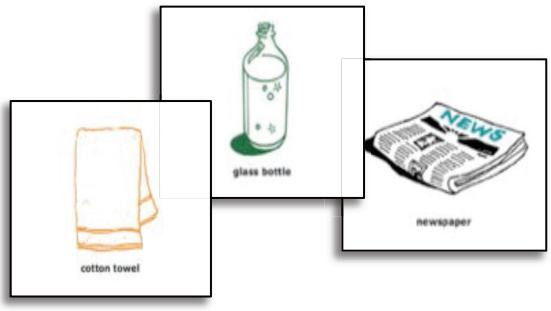
- Remind students that everything is made from natural resources—things in nature. Ask students to name some natural resources; as they do, list them on the board (e.g., trees, plants, animals, sand, rocks, air, water, oil, coal, natural gas, metal ore).

- Explain that some natural resources are never used up or they can be replaced; for example, more trees can be grown. Tell students that these natural resources are called renewable, because we can get "new" resources.

- Explain that other natural resources cannot be replaced when we use them; for example, once we use all the metal ore in the ground, we cannot get more. Tell students that these natural resources are called non-renewable, because we cannot get "new" ones.

- Hold up each Trash/Resource Card and ask:
  1. What natural resource does this item come from?
  2. Is this natural resource renewable—one we can get more of—or is it non-renewable, meaning it cannot be replaced once we use it all up?

     (Answers are on the back of each card.)



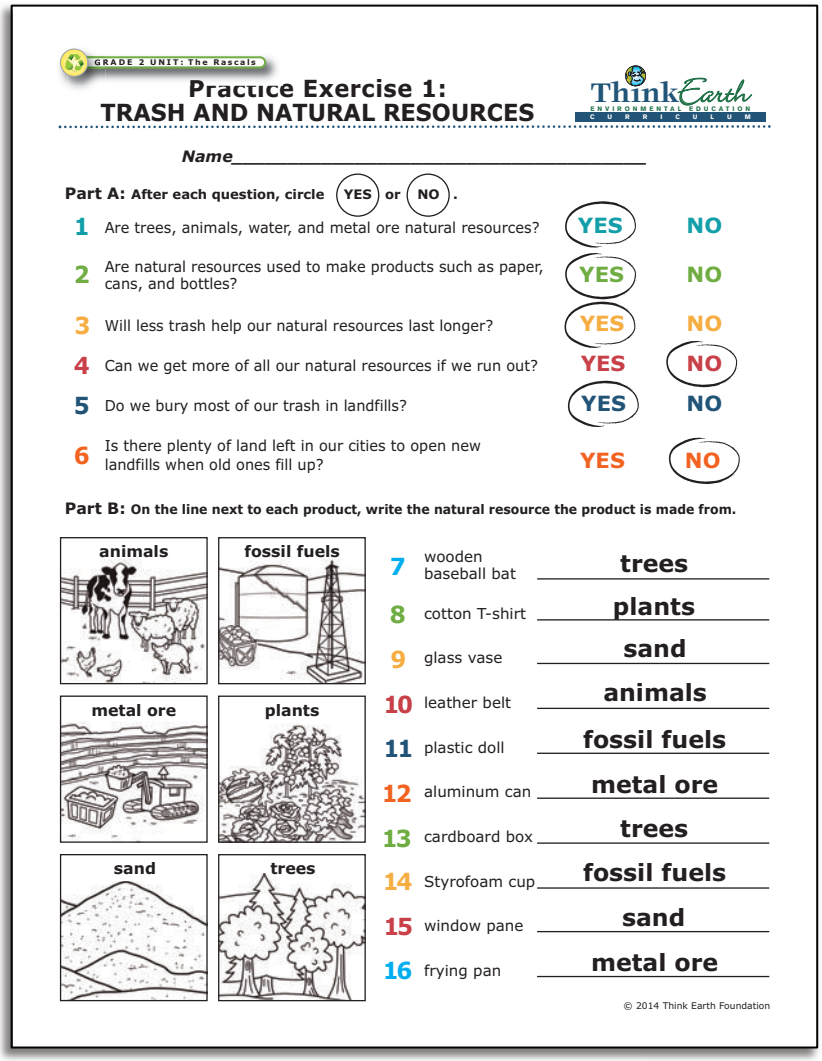
- Help students to realize that even though some resources won't run out completely, it takes time and money and energy to get the resources and make them into products.

- Continue practice, if necessary, by determining the resource base of various objects in the classroom, e.g., desk, window, cabinet, book. Help students discover that everything comes from the environment.

- Ask students what happens to products when we throw them in the trash. (*They usually go into landfills*.)

C. Have students complete Practice Exercise 1, *Trash and Natural Resources*

- To complete Practice Exercise 1, either:
  – give each student or small group a copy along with a pencil or crayon, or
  – project the exercise on a screen or smartboard, or
  – give each student or group a copy AND project the page.
- After reading aloud the directions for each part, either read each item aloud to students and give them time to mark their answers, or have students read and answer questions on their own.
- Correct the exercise using this answer key. IMPORTANT: Be sure students correct any wrong answers.



GRADE 2 UNIT: The Rascals

Practice Exercise 1:
TRASH AND NATURAL RESOURCES

ThinkEarth Environmental Education Curriculum

*Name*_____

Part A: After each question, circle (YES) or (NO).

1. Are trees, animals, water, and metal ore natural resources? **YES** NO
2. Are natural resources used to make products such as paper, cans, and bottles? **YES** NO
3. Will less trash help our natural resources last longer? **YES** NO
4. Can we get more of all our natural resources if we run out? YES **NO**
5. Do we bury most of our trash in landfills? **YES** NO
6. Is there plenty of land left in our cities to open new landfills when old ones fill up? YES **NO**

Part B: On the line next to each product, write the natural resource the product is made from.

7. wooden baseball bat ___trees___
8. cotton T-shirt ___plants___
9. glass vase ___sand___
10. leather belt ___animals___
11. plastic doll ___fossil fuels___
12. aluminum can ___metal ore___
13. cardboard box ___trees___
14. Styrofoam cup ___fossil fuels___
15. window pane ___sand___
16. frying pan ___metal ore___

Additional Activities

- **Create "Rascals" pictures and stories**. Have students draw or paint pictures of the rascals from the story. Have them write stories to go with the pictures.
- **Discuss local trash system.** Talk with students about what happens to their trash. Where do they put it when they "take it out"? When is it picked up? Where is it taken? Have any of the students been to the local landfill? With students, investigate how trash is collected and where it is taken in your neighborhoods. Do an Internet search to find information about waste management in your local area. Look for information on how trash should be prepared (bagged, sorted for recycling, etc.), and how to deal with special items such as hazardous or toxic waste, green or brush waste, and bulky items. Help students work together to summarize their findings in a report.
- **Build a mini-landfill.** Gather the following materials: large glass jar, soil, metal paper clip, small pieces of plastic, newspaper, aluminum foil, pieces of food waste. Place a layer of soil in the jar and put a few solid waste items on top. Sprinkle lightly with water and then cover with more soil. Alternate soil and waste items, ending with soil. Water lightly every day and observe the decomposition of the solid waste items for about four weeks. Have students compare and contrast the decomposition of the solid waste items.
- **Plan and give talks.** Have students give short talks on trash and natural resources, e.g., "Why we shouldn't throw so many things in the trash," "What natural resources are in your trash?"
- **Make resource tags.** Divide the class into six groups and assign a natural resource to each group (animal, plant, tree, oil, sand, metal ore). Give each group a different color of construction paper and have groups make tags labeled with their natural resource. Have the groups tape their tags to items in the room that are made primarily from their natural resource.
- **Classify trash.** Have students keep track of everything they throw in a trash can for one day. Encourage them to be specific: e.g., candy wrapper, banana peel, plastic sandwich bag. Have students work in groups or as a class to classify their trash. What got thrown away the most and the least? How could they reduce how much they threw in the trash?
- **Demonstrate fossil fuels**. Explain that millions and millions of years ago when animals and plants died, they were covered by mud, sand, and water and that the increasing pressure on them over millions of years turned them into coal, oil, and natural gas. To give students an idea of what these fossil fuels look like, show them:
  – charcoal or chunks of coal (if coal is available in your area)
  – motor oil
  – a butane lighter (if safe and allowed)

  Tell students that:
  – coal is a solid substance that is dug (mined) out of the ground
  – oil is a liquid that is pumped out of the ground
  – natural gas is an substance, like air, that either rises naturally or is pumped out of the ground.


R1

STORY 1: The Rascals

"I know about natural resources," said Tina, moving up next to this little rascal. "Natural resources are what nature gives us—trees, water, soil, air, animals—they're all natural resources. I know conserving water and energy saves natural resources. But what do natural resources have to do with trash?"

"Have a seat," the little rascal said, jumping off the trash can and pointing to some crates for Tina and Tony to sit on, "and I'll tell you. Everything you have—your clothes, your house, your toys—comes from natural resources. For example, those boxes you're sitting on are made from trees, and so are all these papers people have thrown out."

"What's so valuable about trees?" asked Tony. "They grow all over the place."

"Oh, yes, indeed, we can grow more trees," replied the rascal, "but do you know how long it takes to grow a tree?"

Tony and Tina stared at him with blank faces.

"Years!" he screeched.

"Okay," said Tony, "I got it. Wasting paper wastes trees. But all this stuff isn't made from trees."

"You're right," the rascal agreed. "This aluminum can is made from mineral ore—a rock mined from the ground. This glass bottle is made from sand, and all this plastic stuff is made from fossil fuels—like oil and natural gas. We can't grow more of these natural resources, and we're using them up fast. Once they're gone, that's it, no more, ever!"

"Wow," Tina exclaimed. "That doesn't sound good."