



Life of a Can

The Never-Ending Story

Classroom Activity

Novelis

Treasure in Your Trash?

Overview

Students will collect and analyze a day's worth of trash to determine how much is headed for a landfill and how much could be recycled. They will then estimate their personal contribution to the trash total. Students will use this information to establish their personal impact on the environment and discover ways to lessen their impact. Students will draw conclusions that recyclable and compostable trash can benefit the environment and even make some of their trash an environmental "treasure."

Grade Level: 4-5

Time required: 1-3 class sessions (45 minutes each) for data gathering and calculations.
Collection time to be determined by teacher.

Materials Needed

- **Treasure in Your Trash** student activity sheet (one per student)
- Student's Trash Footprint of 1-3 days (could include household or school waste items such as straws, paper, cups, paper sacks, sandwich bags, etc.)
- Large area(s) in which to store and sort trash
- Disposable gloves (to be worn while sorting trash)
- Student data sheet (one per student)
- Bathroom scale for weighing trash
- Sorting area signs (optional)
- Large trash bags (for clean-up)
- Compost bins (if available)
- Recycling bins (if available)

Key Vocabulary

Compost: plant material left to decompose and used to improve soil

Landfill: trash is buried in-between layers of dirt

Recycle: changes trash to reusable materials



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Background Information

How does composting help the environment?

- Reduces greenhouse gas emissions from landfills and incinerators
- Reduces use of synthetic fertilizer and pesticide
- Improves soil health
- Helps soil sequester carbon dioxide

How does recycling help the environment?

- Reduces use of natural resources
- Reduces energy consumption
- Reduces greenhouse gas emissions from landfills and incinerators

What are the negative impacts of landfills?

- Toxic materials in waste can pollute soil and groundwater
- Decomposition of landfill materials releases potent greenhouse gases
- Aesthetically unpleasing (looks ugly, smells bad, preference to not live near a landfill)

Step 1: Trash Collection

1. Invite students to collect all of the trash that they generate over one to three days before facilitating the activity. Clarify with students that “trash” means *anything* that they dispose of—food scraps, recyclable materials, compostable materials, kitchen waste, home office waste, etc.

Teacher note: The amount of trash can be limited (for example, *only* trash generated during meal preparations) or expanded to include anything that the family disposes of, including clothing, small appliances, large boxes, etc.

2. Identify a location at the school to store and sort the trash and share this location with students.

Teacher note: Students will need to collect several days’ worth of trash, but the time period that they spend collecting, and where they collect it from, is at the teacher’s discretion. Students could even pick up trash and recyclables found around the campus. Finding places at school to safely store and sort the trash, as well as logistics like ensuring all students are able to transport their trash in on the appointed day, make this step different for each class. Some suggestions for trash collection include:

- All students collect all trash from home for a set period of time (1-3 days);
- Some students collect all trash from home for a set period of time (1-3 days);
- Students work with building services to collect trash from around the school for a set period of time;



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- If transporting trash into school is a problem for some: students weigh and sort trash at home for a set period of time, and bring in only the data;
- If trash is not easily sorted, students can make a journal entry each time they have something they would throw away or recycle;
- If storing degradable trash (food scraps) at school will be a problem, ask students to collect that data at home while still bringing in non-degradable trash and recyclables.

This activity can be done by having **all** students collect, sort, and weigh their trash at home and bring in just the data to school. However, the greatest impact comes when students actually see how much trash a relatively small group can generate.

Step 2: Initial Data Collection

1. Review the differences between trash that can be **recycled**, **composted**, or sent to a **landfill**. Visit <https://www.epa.gov/recycle> to find information about what can be recycled (and where) in your area.
2. Guide students to bring all of the collected trash to the sort location. Encourage students to make initial observations about what they see and smell.
3. Ask students to **predict** how much trash they've gathered using the **Treasure in Your Trash** student activity sheet. As a reference, share with students a gallon of water weighs 8.3 pounds.

Teacher note: The units will depend on the scale being used.

4. Weigh all of the trash and guide students to record the total on the **Treasure in Your Trash** student activity sheet. Students should also record the number of students who brought in trash to be sorted.

Step 3: Trash Sort

1. Designate specific areas for each type of trash: a "Recycle" area, a "Compost" area, and a "Landfill" area.
2. Divide students into teams of two, and distribute gloves. Organize students to work in pairs to sort all of the collected trash into the appropriate area.



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3. Invite students to weigh each category separately after it has been organized. Remind students to record this information on the **Treasure in Your Trash** student activity sheet.

Teacher note: If students add the weights of the categories and it does not equal the initial mass of the trash, hold a short discussion about why this may have happened and/or experimental error.

4. Divide students into three teams (Recycle, Compost, Landfill) for cleanup. Clarify that each team is responsible for making sure that the trash in their category is disposed of in the appropriate manner (depending on recycling/composting ability at your school). **If you are continuing with Activity 2, make sure that the Recycle team saves the aluminum for use in the next activity.**

Step 4: Analysis & Reflection

1. Guide students to work together in their teams to decide how much of the total trash can be recycled or composted, as opposed to the trash that would go into a landfill.

Teacher note: Depending on the class math level, this may be represented in percent or fraction form, and may be done individually, in teams, or as a teacher-led activity.

2. Lead a whole class discussion about the environmental impacts of their findings using the following guiding questions:

- Which category of trash do they generate the most?
- What impacts does that have on the environment?
- If they observe mostly negative impacts, what can they do to change their results?

3. Ask students to estimate how much trash *they* are individually responsible for by calculating the per-person average. Ask them to reflect on this number. Do they think that this is a true reflection of how much trash they generate and of what types? Why or why not? Students record their reflection using the **Treasure in Your Trash** student activity sheet.

4. Have students reflect as to ways they can reduce their impact on the environment, now that they know how much trash they generate and the environmental effects of the different types of trash. Students record their thoughts in the appropriate area on the back of their data sheet.

5. Invite students to summarize what they have learned using the **Treasure in Your Trash** student activity sheet.



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Name _____

Date _____

Treasure in Your Trash?

Waste that can be composted or recycled is like buried treasure in your trash. Instead of going into a landfill, this “trash” *benefits* the environment by helping us conserve natural resources and energy. What types of environmental treasure will you find in your trash?

Class Data (don't forget to include your units of mass!):

<p>I PREDICT that we have collected _____ of trash.</p>	<p>We actually collected _____ of trash.</p>	<p># of students who collected trash: _____</p>
<p>TO RECYCLE</p> <p>_____</p>	<p>TO COMPOST</p> <p>_____</p>	<p>TO LANDFILL</p> <p>_____</p>

Trash Breakdown:

What *fraction* or *percent* of your trash can be **RECYCLED**? _____

Explain how you came up with that answer:



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What *fraction* or *percent* of your trash can be **COMPOSTED**? _____
Explain how you came up with that answer:

What *fraction* or *percent* of your trash will go to a **LANDFILL**? _____
Explain how you came up with that answer:

Think about the effects that recycling, composting, and landfills have on the environment. How could **your class's** trash impact the environment?

Your Contribution

Estimate the average amount of trash each person produced. Divide the amount of trash in each category on the front by the number of people who collected it.

Each person produced
an average of

_____ for **RECYCLING**

Each person produced
an average of

_____ for **COMPOSTING**

Each person produced
an average of

_____ for **LANDFILL**



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Think about the amount of trash *you* create, and compare it to what you calculated above. Do the averages above seem to reflect what happens in real life? Why or why not?

Now that you know how much of each type of trash you create, think about the impact **you** have on the environment. How can you add to your positive effects and reduce your negative effects?

Summarize what you have learned about the types of trash we create, and how our trash habits can impact the environment using the sentence frames below.

The important thing about _____

is _____.

Trash can impact the environment by _____.

I can _____

to reduce the amount of trash I contribute.