

Bag It!



GRADES
K-4

The average American uses more than 300 plastic bags every year. This activity challenges students to monitor their plastic bag usage, and explore where plastic bags come from and the energy it takes to make them. Finally, students create their own messaging to encourage their communities to re-use and recycle plastic bags in an environmentally friendly way.



PREPARE:

Time Required: 2 class periods (90 minutes) without extensions

* Students will need one week to collect data from home.

- Gather materials (see activity pages).
- Using your newsletter or electronic communications, ask parents to help students keep track of the number of plastic bags used over the course of the week.
- Generate a map of your community. For simple maps, you can go directly to [google maps](#) or [yahoo maps](#) and type in your city or town. By zooming in or out, you can obtain desired level of detail and print (Alt + PrtScr will print an image of the window you have open). You can also obtain maps at the town hall, library, or AAA.
- Collect a variety of HDPE plastic bags from local stores kids will recognize.
- Optional: For the extension activity, collect crochet hooks



MOTIVATE:

- Show students a pile of plastic bags from local grocers and big box stores. Ask them where they come from and if they know how many they use in a week.
- Ask students to work with their parents to create a log of the plastic bags that their family receives in a week and identify places where bags can be left for recycling.
- Ask students if they know where plastic comes from. Discuss the following to the level appropriate for your students: what fossil fuels are; how they form; and idea of limited natural resources. You might also discuss how plastic can be broken back down into carbon molecules and made into new products. See Web Links and Resources list for further reading and background.
- Have students think about how plastic bags might be harmful to the environment (discussions can include: harm to animals and the environment related to littering, and/or marine debris; issues related to landfills; how long it takes for plastics to break down; how plastic bags should never be burned because they release poisonous chemicals into the environment; and how it requires a lot of resources and energy to make plastic bags).



TEACH:

- Conduct activity with students. Students should record their family's plastic bag usage every day for a week. At the end of each day, or at the end of the week, have students help complete the class data sheet. You might project this

on your computer and have students come up to add their information or you might have them report while you or another student types. You might also have the class data on a clipboard to pass around to the class and have them fill in by hand. Some families might not use any bags the particular week you conduct this activity, so it is important to have students use the collective data set as well. You might include a discussion of how collecting data for one week may not be the most accurate way to determine actual usage. Have students discuss why and how to improve methods if they wanted to collect more reliable data.

- Provide guidance as needed as students compute how many miles they could travel based on the number of plastic bags used.
- For the mapping activity, you may need to orient students to scale and how to determine distance. Students can use a string (especially if they are not travelling in a straight path) to map out their routes.
- There are some useful websites that can also help you learn more about where local plastic bag recycling drop-off sites are such as [The Plastic Film Recycling Site](#).
- Help students mark the places where they can recycle plastic bags on their maps. It helps if you can also project the same map and show locations.
- Provide guidance as needed as students make a poster or flyer that will help their family and neighbors find places to recycle their plastic bags. End products might be displayed throughout the school as well.



REFLECT/ASSESS

Students should be able to:

1. List ways they can reduce the amount of plastic bags they use.
2. List 2-3 ways to get rid of used plastic bags that are friendly and safe for the environment.
3. List 2-3 things they should not do with plastic bags and explain why.
4. Create a flyer that includes the community map of bag recycling locations and explains to readers why recycling is important.



EXTEND

Students can create a “memory bracelet” according to the directions provided. If resources permit, beads spelling “Recycle” can be added. Students might also create a recycling project of their own. Encourage students to share their creations and bring them in for display.

For older students: Oil is a “non-renewable” resource. Have students investigate what this means using the internet and any other resources they may have available. Have them consider how the production of plastic bags impacts the environment in terms of exhausting a natural resource.



JOURNAL QUESTION

Have students reflect on why it is important to recycle plastic bags.



WEBLINKS

Have students reflect on why it is important to recycle plastic bags.

Google Maps

<https://maps.google.com>

Yahoo Maps

<https://maps.yahoo.com/b/>

Plastic Bag Recycling Locations

<http://www.plasticfilmrecycling.org/s01/s01dropoff.html>

Background Readings on Fossil Fuels

<http://kidcyber.com.au/tag/fossil-fuels-for-kids/>

http://www.fe.doe.gov/education/energylessons/coal/gen_howformed.html

<http://tiki.oneworld.org/energy/energy3.html>

http://www.softschools.com/facts/energy/fossil_fuel_facts/407/

Video: How Plastic are Made

<https://www.youtube.com/watch?v=6eCt0VDg-Kc>

Video: Plastic Bags to Batteries:

<http://www.youtube.com/watch?v=q17Bd6tOMHI>

A Green Chemistry Solution



Bag It!

Did you know that the average American uses more than 300 plastic bags every year! These bags can be harmful to people and the environment. The good news is that plastic bags can be reused and recycled. This saves energy too. Plastic bags are made from oil, similar to the material that heats your home in the wintertime! Oil is a type of **fossil fuel**, meaning it takes millions and millions of years for it to form and is made from the remains of dead animals and plants buried deep beneath the ground. To get oil in the first place, you need to go underground where it is stored. Then, the oil must be changed through heat and chemical processes. It takes about as much energy to make fifteen plastic bags as it takes to drive a car one mile! Recycled plastic bags can be made into new products like building materials, fencing, and trash cans. Making things from recycled plastic bags takes less energy than making things from scratch! In this activity, you will find out how many plastic bags you and your family use in a week. Then, you will explore your local community to find places where plastic bags can be recycled and help make a map to share with your schoolmates, friends, and family.

Materials:

- Data Sheet
- Map of local community (one per student)
- String
- Ruler
- Calculator
- Markers
- Poster board or paper to create a flyer

Part 1: Count Your Plastic Bags

1. Collect information on how many plastic bags you and your family use. Keep track of your data every day for at least one week in the table provided.
2. Add your information to the class data sheet.
3. Using the information below, find out how many miles you could drive if you could capture all the energy from the plastic bags you used in a week. Calculate how many miles you could drive from all the plastic bags you and your classmates used.

Amount of energy to make 15 plastic bags = amount of energy to drive 1 mile

4. Get a map of your community. Find and mark the location of your school.
5. Imagine you could use the energy from your plastic bags you used in a week to fuel a car. Using a piece of string or ruler, draw a route that goes that many miles on your map. Where would you end up? Find 2-3 different locations. Where would your class end up if you could use the energy from all the plastic bags that your class used in a week?

Part 2: Create a Map of Recycling Locations

1. Plastic bags can be recycled at many store locations. How could you find out where these recycling bins are located? Over the course of the week, try to find as many local plastic recycling centers as possible and report these locations to your teacher.
2. Using the information you and your classmates collect, mark the places where you can recycle your plastic bags on your map.
3. Using the map you created, make a poster or flyer that will help your family and neighbors find places to recycle their plastic bags and remind them of the importance.

Reflect and Apply

1. How could you reduce the amount of plastic bags you use?
2. List 2-3 things you should not do with your plastic bags and explain why.
3. List 2-3 ways to get rid of used plastic bags that are friendly and safe for the environment.

Extension

Create a memory bracelet from used plastic bags. Use the directions provided. Or create a recycling project of your own with your used plastic bags. What other projects or artwork could you make? Share projects with your class.

Oil is a “non-renewable” resource. Using the internet and any other resources you may have available to you, research the term “non-renewable”. How does the production of plastic bags impact the environment?



JOURNAL QUESTION

Why is it important to recycle your plastic bags?

Extension

Directions for Making a Reminder Bracelet

Step 1

Collect clean plastic bags of different colors.



Step 2

Cut the bags into strips about 1 cm wide.



Step 3

Use the strips to crochet 3 chains about 10 cm long.
(Tutorials can be found online. Students may also make braids).



Step 4

Braid the strips and tie them at the end.



Student Name: _____

Period: _____

1. Fill in the table below with some help from your family:

Number of Plastic Bags My Family Uses in a Week

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Total

2. Fill in the table based on the following information:

Distance I Could Travel

Amount of energy to make 15 plastic bags = amount of energy to drive 1 mile

	Number of Plastic Bags Used in 1 Week	Number of Miles a Car Could Travel (Show Your Math!)	Places I could end up on my map
My Family			
My Class (data combined for all students' families)			



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