



Lesson: A Lot Of Garbage

Grade: 1-3

Subject: Science, Math

Objectives:

- define and give examples of waste
- identify the amounts of solid waste produced by individuals and groups

Teaching Time: 10 minutes introduction; return to lesson at the end of the day or the following day about 45 minutes if you do calculations with the class.

Materials: 1 trash bag per student; large plastic or paper tarp; bathroom scale; gloves
transparency, What's in Our Garbage?; student worksheet, If Bagging Trash is Your Game; class worksheet, Garbage Audit

(Optional:) a five gallon bucket to estimate volumes of the materials sorted.

Background

If students are going to help solve the garbage (waste) problem, they first need to understand the size of the problem. Throwing away a single gum wrapper or banana peel doesn't seem very important, until we see the cumulative impact of everyone's combined trash over a period of time. By performing a classroom or school wide waste audit, students will gain the necessary perspective to realize that everyone's individual waste contributes to solid waste management problems.

In this exercise, students will collect their own personal garbage for an entire day. Another option for this lesson is to assign your class as a team to collect representative samples from the school's waste bins. By performing a school waste audit, you can qualify to become an Oregon Green School. For details visit the Oregon Green School web site at www.oregongreenschools.org. Read about the Oregon Green Schools Association in the Teacher Resource Section. You may also want to use Oregon Green Schools Tools as a resource for this lesson available at www.deq.state.or.us/wmc/solwaste/edu.html.

Procedure:

INTRODUCTION

- **Who can tell me what garbage is? What is waste? Waste is material thrown away because it is worn out, used up, or no longer needed. What are some synonyms for the word garbage?** (Waste, trash, refuse, rubbish).
- **Can anyone tell me some examples of waste? (List the responses on the board.) Waste could also be thought of as things for which we have not yet found a use.** Note: One person's trash is another person's treasure!
- **Let's see what kind of waste we make. Today you will be putting all of your garbage in your own personal trash bag. We will NOT be using the class garbage can (or recycling box). Remember, all of your waste goes in your bag.** Hand out a bag to each student. You may wish to cover the classroom garbage can and recycling box. You might tell students to collect DRY materials only, or use a separate plastic bay for food scraps. CAUTION: NO SHARP ITEMS OR BATHROOM WASTE.

END OF or FOLLOWING DAY (Optional: You may also wish to have students carry their bags home to add trash they generate at home until the end of the day and bring the bags back to school for auditing).

- **Let's look inside of our garbage bags and see what we have.** Get examples from students of what they have thrown away.
- Individually or as an entire class, sort and tally the number of pieces of garbage. Use the Garbage Audit Sheet for this activity.
- **What do you notice from doing the tally?** Students should notice how much garbage is thrown away at home and at school, and what types of things are thrown away.
- **How much do you think your trash weighs?** Weigh the individual



bags or dump the trash on a tarp, pull it together and weigh it as one pile. **How much would a week's supply of garbage weigh? What about a year?** Do calculations for the students to find the answers!

- Show transparency, "What's in Our Garbage?". You might like to fill in the actual percentages for older students. **How does our garbage compare to what all of Oregon throws away?** Use the statistics for the state listed at the end of this lesson to compare with your class or school results.

Reflection/Response:

- **What could you do to make less waste?** (Examples include never taking more than you need, finding creative uses for items that are no longer wanted by others, giving away clothes that no longer fit to someone else, etc.)
- Make a list of items like a glass jar, paper that is only used on one side, an old piece of clothing or piece of fabric, etc. and have children work together to come up with ideas for reusing the item before it has to be recycled or thrown away.
- Have older students make a graph of the amount and types of waste generated.
- Assign the worksheet "If Bagging Trash is Your Game".

Extensions:

- Extend waste collection time and post results for a week or month--or simply extrapolate the numbers. Complete the weighing activity at the end of each day.
- Repeat this lesson after you complete several other lessons in this book. See if students are able to reduce the amount of waste generating by trying the suggestions they learn about reducing, reusing, and recycling.
- Have older students make a comparison graph of their waste generated before being taught the lessons and after several lessons about waste prevention and recycling have been taught.

1999 Data from the Oregon Department of Environmental Quality on Waste Composition:

Paper 24%
Wood and Yard Debris 16%
Food Waste 14%
Metal and Glass 10%
Plastics 10%
Building Materials 10%
Miscellaneous 9%
Carpet and Clothing 6%
Hazardous Waste 1%

To find updated statistics visit the Solid Waste website:
<http://www.deq.state.or.us/wmc/solwaste/rsw.htm> or contact the Solid Waste Education staff at 800-452-4011 or 503-229-5913.

Common Curriculum Goal:

Mathematics: Statistics and Probability

- Interpretation of Data
- Read, construct, and interpret displays of data (e.g., charts, tables, graphs) using appropriate techniques and technologies.

Science: Unifying Concepts and Processes

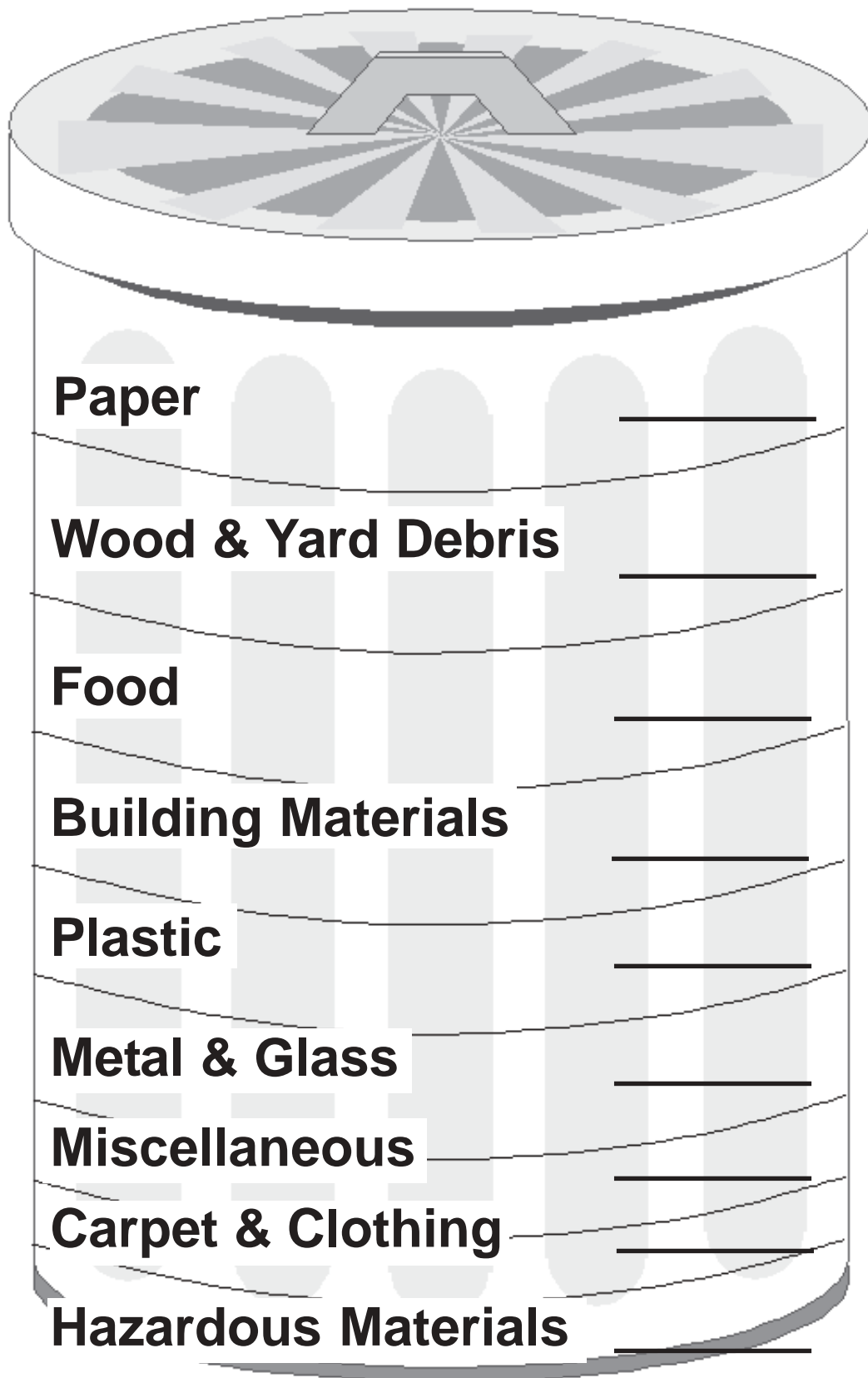
- Apply foundation concepts of change, cycle, cause and effect, energy and matter, evolution, perception, and fundamental entities.

Grade 3 Benchmark

- Collect, organize, display, and describe simple data using charts, tables, number lines, bar graphs, and line graphs.
- Identify examples of change. Arrange parts of a cycle.



Overhead: What's In Our Garbage?





Worksheet: If Bagging Trash Is Your Game

If Bagging Trash is Your Game, this Match is for you.

Match each word on the left with the phrase that best describes it.

- | | | |
|-------------------|-------|---|
| Trash | _____ | A. To find a new use for something instead of throwing it away. |
| Litter | _____ | B. A recyclable material made from trees. |
| Reuse | _____ | C. To buy less and to throw away less trash. |
| Natural Resources | _____ | D. Leaves and grass clippings that are broken down by natural forces and can be used on gardens. |
| Landfill | _____ | E. Our garbage, all the things we throw away. |
| Recycling | _____ | F. Trash that is in the wrong place, such as on the ground or in the street. |
| Aluminum & Tin | _____ | G. Damage to the environment from chemicals or other human activities. |
| Paper | _____ | H. Metals that are made from minerals in the ground. |
| Reduce | _____ | I. A special place in the ground where trash is buried. |
| Compost | _____ | J. Things that are found in nature such as air, water, trees, minerals that we use to make energy and to help us make other things. |
| Pollution | _____ | K. A process that makes something new out of something old. |



Teacher Worksheet: Garbage Audit

Area of Audit (check one)

Classroom Staff Room or Office Cafeteria Kitchen Other _____

Name or Class or School _____

Students should appreciate that individual garbage may be only a small amount. However, this garbage must be combined and total weights and volumes will be recorded so that you may calculate daily/weekly/monthly/yearly amounts for your class, your school or per person.

Instructions: Combine all individual bags into one large bag. If you are auditing a large area, weigh each container for the area.

Total weight of garbage including container or person's body weight _____ lb.

Subtract the weight of the empty container or person's weight _____ lb.

Total weight of garbage _____ lb.

Total volume of the garbage _____ gal.
(estimate based on the fullness of the bag or container)

Total weight of the garbage that is recyclable _____ lb.

Waste Composition--What's in the Can?

(To do an in depth audit, you will need to classify materials into types under each category. For example, Paper: writing, brown bags, cardboard, etc.)

Material Type	Weight		Number of Items	Volume	
	Pounds	%Total		Gallons	%Total
Paper					
Plastic					
#1					
#2					
Other					
Metal					
Aluminum					
Other					
Glass					
Bottle Bill (deposit)					
Other					

