## Chapter Four, Lesson One:

# "It Weighs a Ton!"


## Concepts and Skills Addressed:

Social Science
Problem Solving

## Materials Needed:

None

## Materials Supplied:

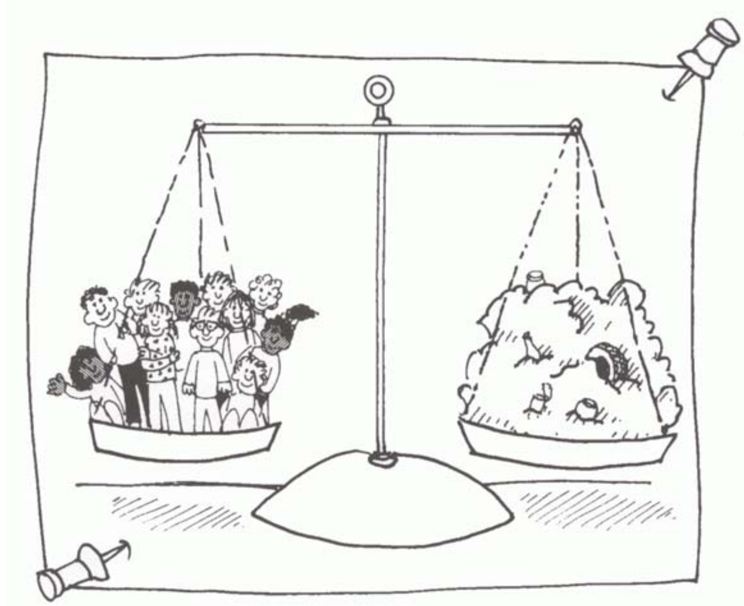
None

**Students will** learn how the trash each of us creates daily builds quickly into a huge pile. They will learn the concept of a 'ton,' and will then learn what comprises a typical ton of trash. They will explore some of the ingredients that make up many commonly recycled products, and which raw materials can be saved by recycling those products.

## A. Procedure

1. **Explain how much a ton weighs by using the information provided in the following pages.**
2. **Determine how much your class weighs collectively. (for continuity's sake, call it a ton and use your students as the example)**
3. **Divide the group into the percentages indicated in the information given here and tell each group the name of the category they represent (e.g. glass, paper, plastic, etc.)**
4. **Ask each group if the material they represent is recyclable. If it is, move them to a designated 'recyclables' area you've already established. Find some way to ensure that they remember what group they're from; they'll need to know in later lessons. Have the groups make nametags or signs to indicate what materials they are. Save plastics until the end because this issue is special one. (Some miscellaneous items ARE recyclable, but for this example, we won't address them. The point is that there is always a percentage of recyclable waste that is not recycled)**
5. **Once each group is divided into recyclables and nonrecyclables, you should have the paper, glass, metals, food and yard waste groups in on area – roughly 80% of your class. Only the miscellaneous and plastic groups should be in the 'nonrecyclables' area.**
6. **Explain to the students that by recycling, we can reduce our trash problem by as much as we reduced the size of the group. Then move on to Lesson Two and explain how recycling can save raw materials and natural resources.**

## B. "It Weights a Ton"



## What is a ton?

A ton is 2,000 pounds (lbs.). That means that if each student weighs 80 pounds, it will take 25 students to make a ton. (80 x 25 = 2,000). A metric ton is equal to 1,000 kilograms; it will take about 25 students to equal a metric ton (See Chapter Five for a lesson in weights, measures and metric conversions).

## What's in a ton of trash?

By weight, a typical ton of trash in America is comprised of:

**34.2% paper.** Americans use about 580 pounds (26.1 kilograms) of paper per person per year. We typically recycle about 25% of what we use (on the blackboard, make a list of paper products that can be recycled but are often thrown away. For example, newspaper, schoolwork, wrappers, cardboard boxes).

**7.1% glass.** Currently we recycle 12% of the 12.5 million tons (11.4 million metric tons) of glass discarded each year. Although we're getting better about reusing this valuable resource, there is much more that we could do. (Continue your list with items made of glass that can be recycled. For example, food jars, beverage bottles.) Note: some specialty glass is not widely recycled. Examples include light bulbs and window glass.

**8.4% metal**. Metal is one of the most recyclable items in or trash. Metals can be recycled repeatedly. Other recyclables, like paper, will eventually break down, which means the wood fibers that paper is made of get shorter each time the paper is recycled. Recycled paper usually is mixed with wood pulp to assure a good quality paper product. (Besides beverage cans, what other metal items do we use that can be recycled? Food cans, bottle tops, old appliances, bicycles, garden equipment.)

**8.5% food waste.** (List various food items thrown away. Could these items be recycled? How about feeding it to farm animals and composting?)

**9.1% plastic.** 14.3 million tons (13 million metric tons) of plastic are discarded each year with .2 million (.18 million metric tons), or 200,000 tons (182,000 metric tons), recycled. Many plastics can be recycled. The number of different types of plastic used makes recycling difficult because although they are all plastic they must be separated into each type to be recycled. New uses for plastic are being found all the time and the plastics industry is researching new technologies for separating and processing recyclables. (List plastic items that are thrown out. For example, shampoo bottles, laundry soap containers, milk bottles, beverage containers, plastic wrap and bags, food wrappers.)


**20% yard waste.** Yard waste can be placed in a compost pile and left to decompose naturally. The resulting humus can be used in gardens and on lawns as a rich, natural soil. (List yard wastes typically thrown away. For example, fireplace ashes, grass clippings, leaves, weeds) Currently, about 16% of yard waste is composted.

**12.7% miscellaneous trash.** This category includes items that don't fit into the above categories. Many of these items can be recycled or reused but these are small portions compared to the other categories. (Recyclable miscellaneous items include rubber and leather, textiles, wood and other inorganic waste.)