



School Recycling Program

FeedTheBin@co.wake.nc.us

919.856.6006

Sequencing Recycling at Our School

Grades: 3-5

Materials: Scrambled Recycling (master included), Recycling Sequence (master included), scissors, glue, research material about the life cycle of paper, plastic, & aluminum (included), grading rubric.

Activity Time: 20 minutes (lesson), 50 minutes (follow-up)

Concepts Taught: Sequencing, Recycling, Life Cycles

North Carolina Curriculum Goals: Grade 3: Art 2.03, 2.07, ELA overall goal 1, 2.04 (sequence), 4.02; Grade 4: Art 1.03, ELA 3.06, 4.02, overall goal 5; Grade 5: ELA overall goal 5

Preparation:

This lesson should be taught after students have heard the presentation about the Wake County School Recycling Program. Please contact your school recycling coordinator or contact us at FeedTheBin@co.wake.nc.us or 919-856-6006 for more information.

Lesson:

Review the Feed the Bin presentation with students. Remind them that they will follow a certain procedure to recycle paper at their school.

Explain that *sequencing* is putting something in order. Students may be familiar with sequencing events from the stories they read in class.

Ask students to cut the pictures out of how paper is recycled at their school. They should then glue the pictures in order on the sequencing worksheet. Once the pictures are glued in order, students should write what is happening in the process below. Students who finish early may color their sequence. Go over the answers to the sequence. Ask students to read aloud their captions.

Independent Follow Up:

Students should create their own sequencing worksheet for the life cycle of paper, plastic, or aluminum. The worksheets can be created by groups or individually. The attached life cycles are taken from the NEED books (included in your school's Feed Bucket) entitled Trash Talk, pages 13 and 18. These books should be referenced for additional life cycle information.

Students should do research on one of the life cycles using the research materials provided. They can also use the internet if it is available.

After researching the life cycle of paper, plastic, or aluminum, students should draw pictures for each stage of the life cycle. Remind students that their life cycle should include detail (you may want to give a minimum # of 8 steps to include for each life cycle).

Underneath each picture the students should write a description of what is happening in the step (1 sentence to 1 paragraph). Life cycles can be graded using the attached rubric.

Students should present their life cycles to the class & display them around the room.

Extension:

Students can complete a creative writing exercise in which they pretend they are a tree being cut down and processed into paper according to the life cycle given. Depending on the grade level, several sentences or a short paragraph can be written.

Name _____

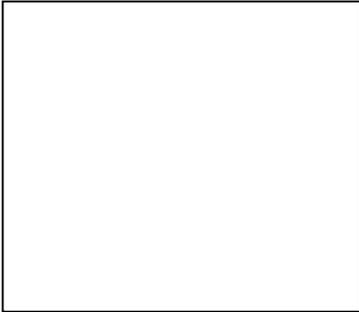
Rubric: Life Cycle of Paper, Plastic, or Aluminum

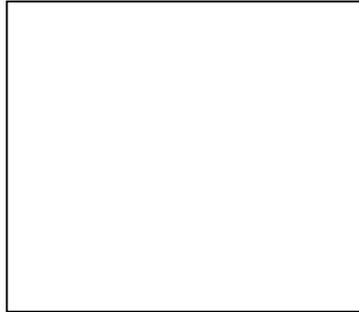
CATEGORY	4	3	2	1
Clarity and Neatness	Life Cycle is easy to read and all elements are so clearly written, labeled, and drawn that another student could understand the life cycle.	Life Cycle is easy to read and most elements are clearly written, labeled, and drawn. Another person might be able to understand the life cycle after asking one or two questions.	Life Cycle is hard to read with rough drawings and labels. It would be hard for another person to understand this life cycle without asking lots of questions.	Life Cycle is hard to read and one cannot tell what goes where. It would be impossible for another person to understand this life cycle without asking lots of questions.
Use of Time	Used time well during each class period (as shown by observation by teacher) with no adult reminders.	Used time well during most class periods (as shown by observation by teacher) with no adult reminders.	Used time well (as shown by observation by teacher), but required adult reminders on one or more occasions to do so.	Used time poorly (as shown by observation by teacher) in spite of several adult reminders to do so.
Spelling & Grammar	No spelling or grammatical mistakes on a life cycle with lots of text.	No spelling or grammatical mistakes on a life cycle with little text.	One spelling or grammatical error on the life cycle.	Several spelling and/or grammatical errors on the life cycle.
Content	All content is in the students' own words and is accurate.	Almost all content is in the students' own words and is accurate.	At least half of the content is in the students' own words and is accurate.	Less than half of the content is in the students' own words and/or is accurate.
Required Elements	Life Cycle included all 8 stages as well as a few additional stages.	Life Cycle included all 8 stages and one additional stage.	Life Cycle included all 8 stages.	One or more stage was missing from the life cycle.
Cooperation	Worked cooperatively with partner all the time with no need for adult intervention.	Worked cooperatively with partner most of time but had a few problems that the team resolved themselves.	Worked cooperatively with partner most of the time, but had one problem that required adult intervention.	Worked cooperatively with partners some of the time, but had several problems that required adult intervention.

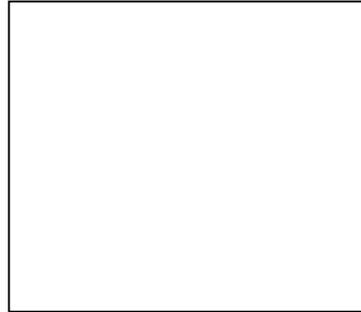
Name _____

Recycling Sequence

Place the pictures from the Scrambled Recycling in order of how paper is recycled at your school. Glue them in the correct order below. Write a brief description (at least one complete sentence) underneath each picture.



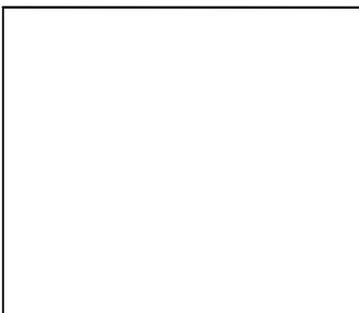


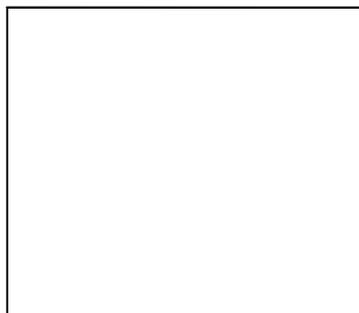


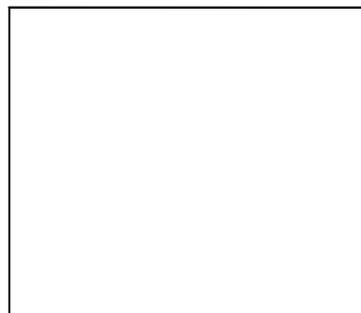






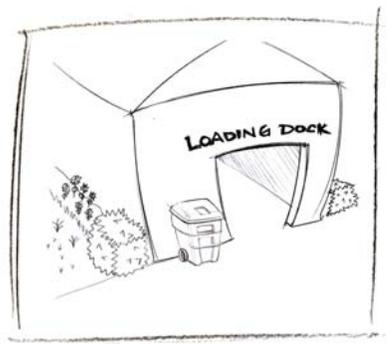
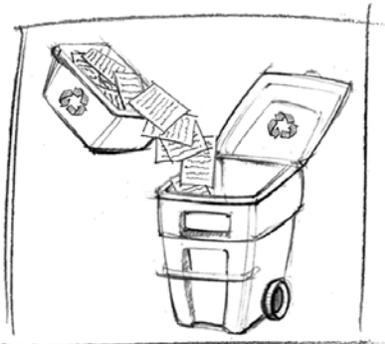
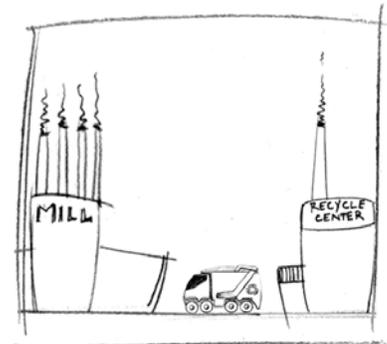
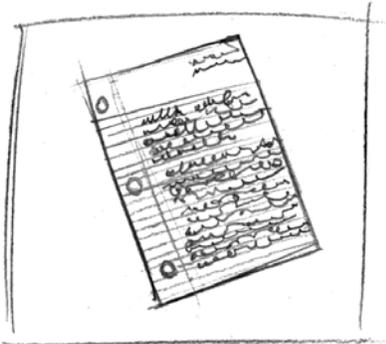
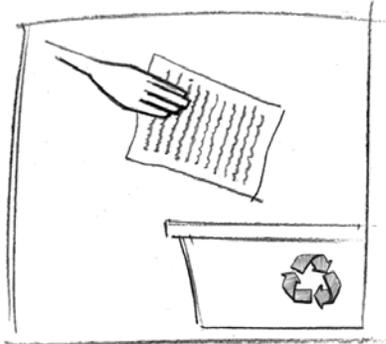
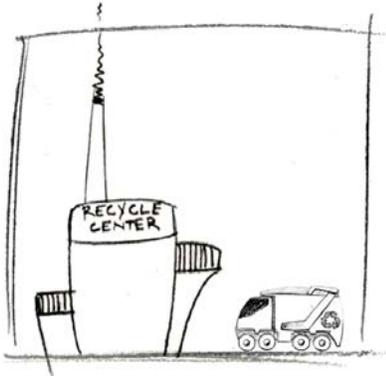






Scrambled Recycling Pictures

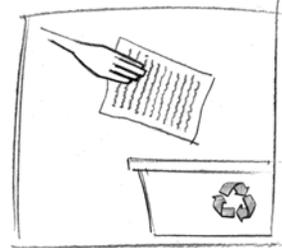
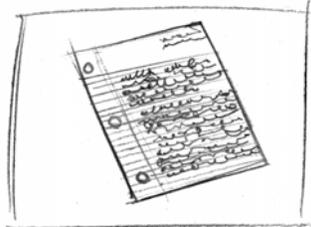
Cut out the pictures below. Place them in order of how paper is recycled at your school. Attach them to the Recycling Sequence worksheet. Write a brief description (at least one complete sentence) underneath each picture.



Pictures by:
Jesse Rademacher, NCDPPEA

Recycling Sequence

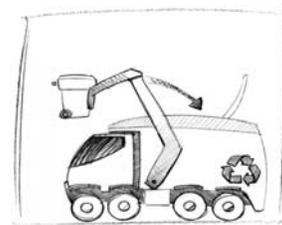
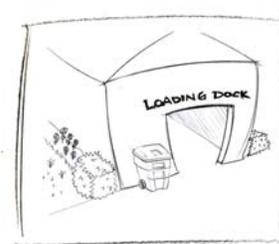
Place the pictures from the Scrambled Recycling in order of how paper is recycled at your school. Glue them in the correct order below. Write a brief description (at least one complete sentence) underneath each picture.



1. A student takes out a blank piece of notebook paper.

2. The student writes on the piece of notebook paper.

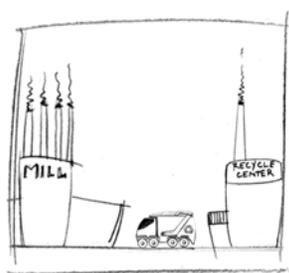
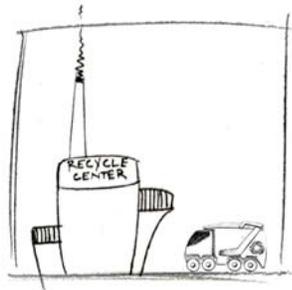
3. The student places the used paper in the recycling bin.



4. The classroom bin is emptied into a roll cart.

5. The roll cart is placed outside.

6. A recycling truck comes to pick up the paper in the roll cart.



7. The recycling truck takes the paper to the recycling center to be sorted.

8. The sorted paper is taken to the paper mill where new paper is made.

9. A recycled piece of notebook paper is created!

Please note: material on following pages is from NEED Book Trash Talk, pages 13-18.

EXHIBIT 4—RECYCLING METALS

In the U.S., we mainly recycle aluminum and steel. Some other metals—like gold, silver, brass, and copper—are so valuable that we rarely throw them away. They do not create a trash problem.

We use a lot of aluminum and steel. Americans use 100 million steel cans and 200 million aluminum cans every day. Recycling is the best way to deal with aluminum and steel waste.

Burning metal trash is not good because metals do not provide any energy. Aluminum melts and steel just gets very hot. Burying is usually not a good idea either. Aluminum, especially, is so valuable that it does not make sense to bury it.

RECYCLING ALUMINUM

Like most metals, aluminum is an ore. An ore is a mineral that is mined for a valuable material in it. Bauxite, a reddish clay-like ore, is rich in aluminum. To get the aluminum out, though, takes a huge amount of energy.

That is why recycling aluminum makes sense. It saves energy—a lot of energy. Recycling just two aluminum cans saves as much energy as the energy in one cup of gasoline. Companies save energy and money by using recycled aluminum, so they will pay you for your old cans—about a penny for every can.

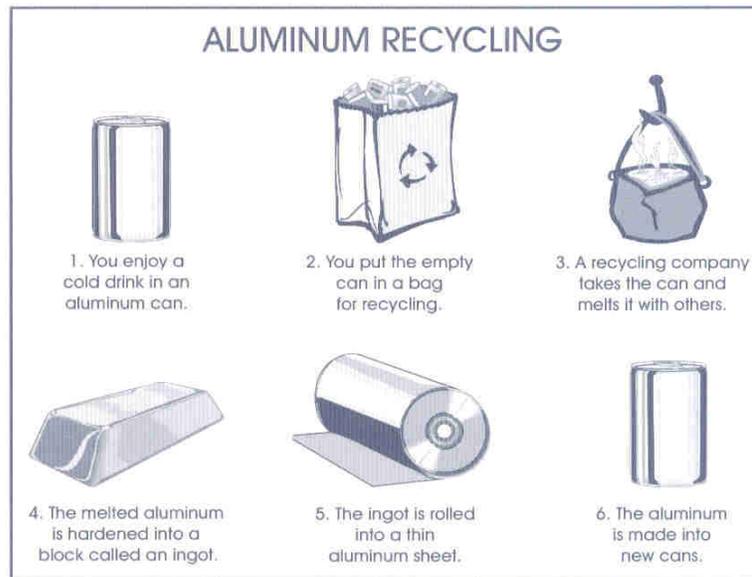
After you have put your old aluminum cans in a recycling bin, what happens next?

The old aluminum cans are taken to an aluminum plant. The cans are shredded into popcorn size chips and put into a furnace. The melted aluminum is made into thin sheets.

The sheets are usually made into new aluminum cans. This is called closed-loop recycling because the old cans are turned into the same thing again. Aluminum cans are recycled into new cans and put back onto store shelves within 90 days!

OVER AND OVER

Aluminum can be recycled over and over again. It does not lose its quality, and recycling it saves money, energy, and natural resources every time.

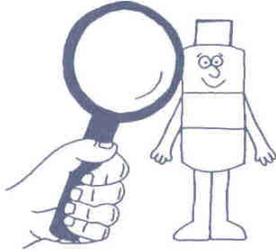


RECYCLING PLASTIC

The pictures below show the steps in recycling plastics.

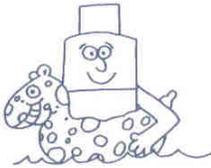
1. Inspection

Workers inspect the plastic for types they cannot recycle.



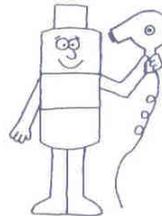
2. Chopping and Washing

The plastic is washed and chopped into flakes.



3. Flotation Tank

If mixed plastics are being recycled, they are sorted in a flotation tank, where some types of plastic sink and others float.



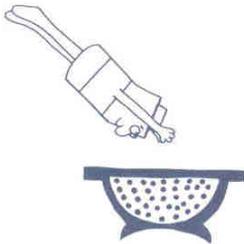
4. Drying

The plastic flakes are dried in a tumble dryer.



5. Melting

The dried flakes are melted. Different types of plastics melt at different temperatures.



6. Filtering

The melted plastic is pushed through a fine screen to remove any dirt. It is then formed into ropes.



7. Pelletizing

The ropes are cooled in water, then chopped into pellets. Companies buy the pellets to make new products. Recycled plastics can be made into flowerpots and carpet.

EXHIBIT 5—RECYCLING PAPER AND GLASS

RECYCLING PAPER

What is the number one material in trash? Look around your classroom. What do you see? Posters? Notebooks? Cardboard boxes? Textbooks? Bulletin boards decorated with construction paper? You get the picture. Paper is everywhere!

Paper is the number one material that we throw away. Of every 100 pounds of trash we throw away, 39 pounds is paper. Newspapers take up about 14 percent of landfill space, and paper packaging accounts for 15 to 20 percent.

There are many kinds of paper. It can be glossy or ragged, thin or thick. It can be for newspapers or stuffing diapers. Most paper products are made from trees, though paper can also be made from old cloth or grass.

HOW PAPER IS MADE

Papermaking uses a renewable resource—trees! The first step is cutting down the trees. Paper companies plant trees just for papermaking, like an apple farmer plants apple trees. If one tree is cut down, another is planted.

After the trees are cut, they are taken to a paper mill. Paper mills use every part of the tree, so nothing is wasted. The bark and roots are burned and used for energy to run the paper mill.

The rest of the tree is chopped into small chips to be made into paper. The raw paper is the color of grocery bags. Good papers are whitened with bleach and sometimes coated with clay to make them shiny.

Paper mills need a lot of energy to make paper. About 50 percent of their energy comes from burning wood scraps they cannot use to make paper. They buy the rest.

RECYCLED PAPER

Recycled paper is made from waste paper, usually mixed new materials. Almost all paper can be recycled today, but some types are harder to recycle than others. Papers that have wax, paste, or gum—or papers that are coated with plastic or aluminum foil—are usually not recycled because the process is too expensive.

