

RECYCLE RIGHT INTRODUCTION

Elementary School Programs

Third through Fifth Grade (3-5)

Research proves there is a direct link between knowledge and active involvement. From gathering stones, shells, or pinecones, and shuffling through piles of autumn leaves to studying ecosystems, to seeing how technology has changed over time, learning about the environment is a life-long process. It advances skills and habits that people can use throughout their lives to understand and act on environmental issues. It promotes critical and creative thinking skills that are key to finding solutions.

The Importance of Why We All Need to Recycle Right.

Recycling is an essential part of environmental protection. Forty years ago, the recycling challenge was about getting people and businesses at the grassroots level to embrace a new way of discarding waste. We started bundling newspapers, sorting out plastics and glass, and resisting the old habit of throwing everything in the garbage. Having won the public's support of recycling, we must now rethink recycling. With changing material streams, collections and processing systems, recycling has become more complex. The right materials really do matter. It is estimated that the rate of contamination of materials that are recycled is approximately 16%, indicating the need to educate everyone about what materials can be recycled. To meet the challenge of the Recycle Right program, everyone must understand why and how to recycle.

Education is the Key to Recycle Right.

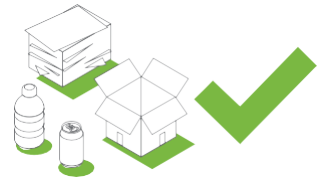
With the support of you and your students, we can close this gap between public support for recycling and the number of people who make recycling a habit and follow the recycling rules. The past has proven that through education, students are true ambassadors of carrying this message forward. The lessons that follow are designed to ensure that students not only have the basic knowledge about the need to reduce, reuse, recycle and rethink our garbage, but also to promote a change in their behaviors so that their knowledge is turned into action.

WHY RECYCLE?

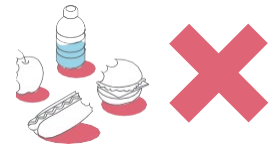
Plastic bottles
can turn into clothing

Aluminum Cans
can turn into new ones
in 60 days.

Today's news
can become a new
cereal box



Recycle clean bottles, cans, paper, and cardboard.



Keep food and liquid out of your recycling.



No loose plastic bags and no bagged recyclables.

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CURRICULUM MATERIALS AND LESSONS

This curriculum offers teachers a resource where they can access highly effective content and related support materials. These resources and materials are STEM based and align with the Next Generation Science Standards.¹ Recycling is important for environmental protection. The goal is to help students develop an understanding of why they should make recycling a habit and how to recycle correctly. In this way, they will play an important role in furthering the recycling message in their homes, schools and communities. The lessons are designed to answer:

- What are the benefits of recycling?
- What should we recycle?
- What shouldn't we recycle?
- What are the challenges inherent in recycling efforts?
- What has been, and can be, the impact of recycling on our communities and natural resources?
- What is my part in becoming an environmentally responsible individual?
- How do I recycle forward?

Each lesson includes background information, the basic content to be delivered, a suggested lesson plan, a list of extension activities for going beyond the scope of the lessons provided, and the correlation between the lessons and the Next Generation Science Standards.¹ There are multiple opportunities to monitor learning and adjust teaching throughout each lesson. In addition to closure activities, these will provide opportunities for assessment of student learning. A suggested teacher dialogue is included with each lesson in order to reduce teacher preparation time and to help facilitate delivery of the lesson. As in all lessons presented by teachers, their own creativity, expertise, and adaptations to the levels of their students will make learning even more successful.

Although these can be considered stand-alone lessons, they are equally beneficial when integrated into other subject areas. For example, if a teacher's lesson is on persuasive writing, the need for a community to increase and improve recycling would be an excellent topic, and an opportunity for students to reinforce their learning about recycling. Research has shown it takes seven "touches" before someone will internalize and act on a call to action. We hope you see this curriculum as an ongoing opportunity for your students to learn and be inspired to become good stewards of the environment.

¹ "The Next Generation Science Standards (NGSS) is a registered trademark of Achieve. Neither Achieve nor the lead states and partners that developed the Next Generation Science Standards were involved in the production of, and do not endorse, this product."

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RECYCLE RIGHT GRADES 3-5

A Call to Action Lesson

Time Frame:

This lesson has been developed to span a time period of approximately 45 minutes. However, it can be adapted to fit your classroom needs based upon attention span and levels of students. It can also be adapted and used with learning centers and in reading and math lessons.

Teacher Introduction

The concepts of recycling often and following the recycling rules will be a core component of this and every other lesson in the series, and will be a central theme that is reinforced again and again. This lesson is designed to be a call to action for the RECYCLE RIGHT educational program. It will serve as both a foundation for the need to recycle and for each of us as individuals and as a community to commit to both the act of recycling and to “recycle it forward” as ambassadors of recycling. It will teach students, and, hopefully, inspire and motivate them, to make a difference in the critical area of dealing with waste. As with other lessons, this is only a foundational

one that should be used as a starting point for an ongoing commitment to, and support for, students, the school, and the community to engage in practices, such as recycling, that positively impact on our environment.

Lesson Objectives

1. Students will be able to tell three ways in which the amount of garbage being thrown out is impacting on our environment.
2. Students will be able to orally define contamination in the recycling process and the impact it has on recycling.
3. Students will be able to list three actions or things that violate the recycling rules.
4. Students will begin to develop an action plan defining how they can impact recycling personally, in their homes, in their classroom, in their school, and in their community, as ambassadors for recycling.

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RECYCLE RIGHT GRADES 3-5

A Call to Action Lesson

Essential Learnings

1. Categories that different types of waste can be placed into: paper, plastics, food waste, yard waste, glass, rubber, metals, wood, and other.
2. A basic introduction to a material recovery facility (MRF), and how this facility enables us to more efficiently and more effectively handle items that are recycled.
3. Challenges associated with material recovery facilities including a lack of understanding by people as to what is and is not recyclable and why it is important to follow the recycling rules.
4. What can be done to “pay forward” the Recycle Right message, by becoming an ambassador for recycling.

Anticipatory Set

- Write the word garbage on the board. (A student could also be designated as the one to write on the board as you direct him/her.)

“You are all familiar with this term. In fact, in previous lessons we learned about the need to reduce, reuse and recycle more of our garbage. Well, today I want you to think of as many kinds of garbage as you can, and as you tell me, I (or designated student) am going to group them into categories on the board.”

- As a student gives an example, write the category that item would be grouped into on the board. For example, if a student says newspaper, you would write the category “paper” on the board. If the next student said, “plastic water bottle,” you would write “plastics” as the category on the board. If the next student said, notebook paper, you would say that would go into the “paper” category that we already have on the board. Elicit examples until you have at least one example of each of the following categories: paper, food waste, yard waste, plastics, metals, rubber-leather-textiles, wood, glass, and other. After collecting examples that fit into each of these categories, distribute the “What We Do with Our Waste” Chart (attached).

“You will see that the “What We Do with Our Waste” Chart that I just handed out has percentages on it but no labels. In other words, you will see that there is a 28%, but there is no label that tells you what category of waste that represents. I want you to look at the board where I have listed all the categories of waste that you came up with, and try to match the kind of waste with the percentage it is of the total waste that is thrown out in the United States. Just to make it easier for you, I have listed the categories at the bottom.”

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RECYCLE RIGHT GRADES 3-5

A Call to Action Lesson

- After students complete their charts, show them the correct percentages.

“As you can see we throw away a lot of different types of garbage. We are going to take the next several minutes and discuss something important about garbage– the fact that throwing away so much of it creates a great many problems. In addition, we are going to talk about one aspect of disposal – recycling, and how that has become so important to our environment. However, we are not just going to talk about the problem. We are going to see if we can find some solutions, and be a solution, to that problem. Let’s get started.”

- Call on one student, and ask other students to signal whether that was on their list by raising one finger if it was, and two fingers if it wasn’t. Continue with this process, calling on students who have two fingers raised after each answer to get different responses.

Purpose for the Lesson

“Today, we are taking a closer look at recycling to see if there is anything that we can do, as good stewards of the environment, to be sure that people recycle often, and when they do, that they follow the recycling rules. By the way, what does that term mean, good stewards of the environment?”

- Elicit responses.

“Listen carefully as we talk about this very important issue, because at the end of the lesson not only will I be asking you to tell me what new things you learned today, but we will also be mapping out a plan to see what we can do to help.”

Learning Activities

- Using the bar graphs from earlier in the lesson, ask the students to look at each of the categories of garbage and make a decision about how those things are disposed of. For example, ask them to consider “paper” and whether it can be reduced, reused, recycled, or placed into the garbage can.

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RECYCLE RIGHT GRADES 3-5

A Call to Action Lesson

“You will see on your “What We Do with Our Waste” Chart a column that says Options at the top. Under it are the letters A, B, C, and D. If you look at the bottom of the page you will see what each letter stands for. For example, letter A means Reduce, B means Reuse and so on. I would like each of you to circle the letter(s) A, B, C, or D next to each item based upon what you would do with it. Understand that there can be more than one letter placed next to each category. For example, next to plastic, you could circle A, B, or C, because you could reduce the number of plastic containers you use, or you could reuse them again, or you could recycle them.”

- After a few minutes, have students compare answers with neighbors and then review responses as a group, selecting several categories and having students raise their hands indicating how they categorized each.

“For our lesson today, we are only going to look at those items you placed a C next to – those items that should be recycled. Let’s recap them: paper/cardboard, plastics, cans, and bottles. Does anyone have any idea where the recyclables go after they are either picked up or dropped off at a recycling center?” Elicit responses. “You may not be aware, but they go to a material recovery facility (MRF- pronounced merf). These facilities include engineered and highly technical processes that have been developed to sort recyclable materials, including magnets and sorters and wind screens. They are very complex but I want you to have some idea of what they look like so I am going to pass out to you a picture that shows what the inside of a material recovery facility looks like - what did I say it was called for short? Yes- a MRF!”

- View the Mr. Cool Can YouTube video, available at: www.youtube.com/watch?v=aPdpwD4MhM0 – it runs about 7 minutes – as an informative and fun way to introduce the overview of the MRF. If not possible to show the video, proceed with the lesson from here.

“As you can see it looks pretty complex. With any complex machinery, sometimes it breaks down or stops working for some reason. Let’s think about that, what do you think might cause the MRF not to run well or even stop working? What if something is put into the recycle bin that doesn’t belong there, perhaps a plastic bag that would mess up the machinery, or someone puts something in the recycle bin that they think is recyclable but really isn’t, like a garden hose or a bowling ball? And what about things that might ruin other recyclables? For example, what happens when someone puts a pizza box with leftover pizza into the recycling bin? Boys and girls, this has become a major problem in recycling efforts because there is a right way to recycle and a wrong way. And since we have all made a commitment to recycle, we need to make sure that we follow the recycling rules.”

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Talk about the recycling rules and review them with the class. Seek out ideas about why they are important and talk about contamination in recycle bins. Refer to the Recycle Right Recycling Rules provided below.

- 1. Recycle clean bottles, cans, paper, and cardboard.**
- 2. Keep food and liquid out of your recycling.**
- 3. No loose plastic bags and no bagged recyclables.**

“Through our discussion, we can all agree that we need to follow the recycling rules. If we don’t, we will have an impact on the ability of the MRF to operate and some of these items may have to be sent to the landfill. This costs more and takes up valuable space for our other garbage. What do you think we can do about that? Take a few minutes and, with your neighbor, try to think of what we might do to help address this problem.

After all, we now know what we should and should not put in our recycling bins.”

- Elicit responses and then move on to final activity. Comment that many people know about recycling but they do not know the recycling rules.
- Recycle Forward – Ask students if they have ever heard of paying it forward? Give examples such as people doing kind deeds for others, people paying for someone else’s coffee that is behind them in line, etc. Tie this to the idea of passing along to others the message to increase recycling and follow the recycling rules. Share with them that a recent study shows that most people know they should recycle, but don’t do it on a regular basis, and when they do, may end up putting products in that contaminate the recycling. Obtain their commitment to become ambassadors for recycling, asking them to think about how they might do that for the next class. Give them a few ideas to consider, such as making a weekly announcement over the PA system that provides information on recycling and encouragement to others to recycle often and follow the recycling rules, creating a Recycle Right ad for the school newspaper, arranging class competitions to reward those classes that increase recycling, or developing posters that show what should and should not go into the recycling bin. (Additional ideas in the extensions)

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Closure:

“As we come to the end of today’s study of recycling, I want each of you to think of the two things that were the most important to you that you learned today, and be ready to share them with the class. Now that you have thought about that, I want you to turn to the person next to you and share one of your learnings and then let your neighbor share one of their learnings with you.”

- After ending idea exchange, call on specific students and ask them to share what their neighbors told them.

Homework Assignment

“I want you to take home two assignments to follow-up on today’s study of recycling.” (Distribute the attached homework word problem for completion.) “Tonight, after you have completed the worksheet I have just handed out, I want you to think about the idea of recycling forward. Share what you learned today about the need to recycle often and to follow the recycling rules with your family. Work with them to come up with ideas about how you as a family can increase your recycling as well as how we can spread the message of recycling the right way to others. When you come to school tomorrow we will share those ideas with each other and see how we can contribute to recycling forward.”

- It is suggested that the next day be utilized to formulate an action plan by the class to continue its commitment to recycling. Such a plan could include the following (additional ideas are included above in the section entitled Recycle Forward):
 1. Daily monitoring of trash and recyclables in the classroom or in the cafeteria.
 2. A school-wide project to inform others about the need to recycle often and follow the recycling rules.
 3. Incorporation of many of the activities included in the Extension Activities.

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RECYCLE RIGHT GRADES 3-5

A Call to Action Extension Activities

School Recycling Program

If your school does not have a recycling program, have the students develop a strategy and present it to the principal and/or administrators for consideration. Your Waste Management team could provide guidance in this area. If approved, have them take the lead emphasizing the importance of recycling often and following the recycling rules.

Year of the Recycler

At the conclusion of the initial lesson, along with your students, proclaim the school year as the “Year of the Recycler” in your classroom. Develop daily, weekly, monthly activities to encourage recycling often and following the recycling rules. Measure recycling efforts, report results and celebrate accomplishments. This would demonstrate in a very real and concrete way the positive impact that students, families, schools, and communities can have on protecting our environment. Earth Day would be an excellent opportunity to invite parents and community leaders into your classroom to discuss initiatives, report out findings, and celebrate successes.

Utilize “Did You Know” Messages in Lessons

These messages can be used as part of the lesson attached or to advance the Recycle Right educational program beyond these lessons.

For example, “Did You Know” messages could be used as a time-filler while waiting for the bell to change classes, or right before going out to recess, or as students are entering the room after lunch or after recess as a way of settling them down, and as a continual reminder to recycle. Several examples are provided below:

Ever wonder, “Why Recycle?” When you recycle, great things can happen:

- Did you know that after an aluminum can lands in the recycling container, it can be recycled and returned to the shelf as a new can in as little as 60 days? Do your part! Be a recycling ambassador and follow the recycling rules!
- Did you know recycling just one aluminum can save enough energy to:
 - Run a TV for two hours?
 - Power a 14-watt CFL bulb for 20 hours?
 - Power a computer for three hours?

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- Did you know that the newspaper you read today can be recycled up to seven times? They can become cereal boxes, egg cartons – and even new newspapers. Do your part! Be a recycling ambassador and follow the recycling rules!
- Did you know that recycling is the first step in the cycle? Then the material is processed, and the last step is up to you: Keep recycled content products in demand. Close the loop by buying products made from recycled material. Do your part! Be a recycling ambassador and follow the recycling rules!
- Did you know that magazines usually get a second life as newspapers or paperboard packaging? Recycled cereal boxes are processed into paper towel rolls. The cardboard boxes you recycle make new paper bags, paperboard packaging, and new cardboard boxes. Do your part! Be a recycling ambassador and follow the recycling rules!
- Did you know a single dirty product, or one with food waste still in it, could ruin an entire load of recyclables? Don't let your good efforts go to waste. Never put food or containers with food in them into your recycling bin. Pizza boxes? Clean box lids, sure. But toss out any part of the box that's greasy. And please, make sure to rinse your containers and jars! Do your part! Be a recycling ambassador and follow the recycling rules!
- Did you know that today, many products can now be recycled, which conserves valuable natural resources? But certain items can slow down the recycling process, or worse, contaminate an otherwise good, reusable load. These "Recycling Offenders" include loose plastic bags, food or greasy food containers such as pizza boxes, and liquids or soggy items. Do your part! Be a recycling ambassador and follow the recycling rules!
- Did you know that recycled laundry detergent bottles might get a new lease on life as toys or stadium seats? Recycled milk and juice containers might become plastic lumber, children's outdoor play sets, or new milk and juice jugs. Your carpet, polar fleece blanket or ski parka filling might contain the materials from a recycled soda or water bottle. Do your part! Be a recycling ambassador and follow the recycling rules!

Have Students Create "Did You Know" Messages of Their Own

Students could make their own posters, daily or weekly announcements, a recycling campaign, a brochure, or other "recycle forward" projects that include these messages.

Social Media

Are your students interested in social media? Consider researching and identifying social media pages within your community and engaging them in your class posts on recycling. Under teacher direction, have the students create a class website, or a Twitter account where they can share their project updates, photos, and engage the community.

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Engage the Media and Local Government Officials

Have students organize an event or invite them to your classroom for a presentation to promote recycling. Encourage students to write a public service announcement and/or Letter to the Editor. Consider a newsletter to send to the community, media and/or other officials. This would be an excellent opportunity for students to write a persuasive letter to someone arguing for expanded recycling programs to benefit and protect the environment. Language Arts, coupled with environmental topics, provide students with opportunities to discover the power of writing about issues that affect their community and demonstrate how both written and spoken language can influence the world around them.

Ambassadors: Take the Pizza Box Challenge

The improper disposal of pizza boxes is a big problem. The cardboard box would be fine if it had no traces of food in it, but most often it does. Prior to asking students to take action, have them brainstorm ways in which they could partner with pizza shops in order to decrease the amount of contaminated pizza boxes that are thrown into recycle bins. After this discussion, ask the students to collect the names and addresses of all of the pizza shops or restaurants that sell pizza in their community. Once they have the names, they should break into teams and arrange times to go visit the store (with parental or adult supervision), to provide information on recycling often and the recycling rules. They could ask if they could bring posters to the store or make stickers that could go on each of the boxes, or utilize the ideas they brainstormed earlier.

Presentation to Students in Grades 1 and 2 on Recycle Right

Using their recycling forward ideas, the fifth grade students develop a presentation for the first and second grade students, and in groups, present to the different classes. They should utilize the learnings of their RECYCLE RIGHT lessons, emphasizing paper, cardboard, plastics and cans. They should introduce the importance of saving natural resources and work with the younger students in a hands-on learning environment to show how something useful can be made out of something recycled.

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Additional Extensions:

All of the following extension activities demonstrate to students how things they now throw away can be reused and made into something else. These activities would be appropriate for learning centers or class projects. Instructions for each project can be found in the Recycled Art Projects PDF.

Twig Journal: No need to use new paper for journals, lists and notes. Use scrap paper to make eye-catching booklets and pads. The journal can be used as part of a writing unit or science unit. Students can use it to record information. Students are challenged to explore possible designs. Students apply knowledge to use materials derived from the natural world.

Party Placemats: Students measure, mark, and cut into strips clean orange juice, milk cartons, or cereal boxes. The strips will be weaved into colorful place mats. Tip: Beverage cartons are more water resistant and can easily be wiped clean. Students use math, measuring, and creative design skills.

Picture Frames: Reuse shoe and other cardboard boxes to create imaginative frames for photos. Students are challenged to explore possible designs, and use measuring and mathematics skills.

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RECYCLE RIGHT GRADES 3-5

A Call to Action Teacher Preparation

Review essential background information provided with regard to a Material Recovery Facility (attached)

Materials Needed:

(Please note: consider laminating copies for shared or future use or display using available technology)

1. **Material Recovery Facility Information Sheet** (attached)
2. **Graphic of a Material Recovery Facility** (attached)
3. **What We Do with Our Waste**– one blank and one completed with answers (attached)
4. **YouTube video** entitled Mr. Cool Can – seven minute video on the importance of recycling that shows the technology and operation of a Material Recovery Facility (available at <http://www.youtube.com/watch?v=aPdpwD4MhM0>)
5. **RECYCLE RIGHT Rules** (attached)
6. **Recycling Homework Grades 3-4** (attached)
7. **Recycling Homework Grade 5** (attached)

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TEACHER VOCABULARY FOR THE LESSON

Vocabulary for students should be adapted based upon grade level.

“Close the Loop”

Recycling is a success when we choose to buy recycled-content products. Remanufacture is the final leg in an object’s journey from the recycling bin back to the supermarket shelf.

In the case of an aluminum can, it can take as little as six weeks for it to reappear as a brand new can.

Compost

A mixture that consists largely of decayed organic matter and is used for fertilizing and conditioning soil.

Conservation

The use of natural resources in a way that ensures their continuing availability to future generations; the intelligent use of natural resources for long-term benefits.

Contamination (in recycling)

When garbage or other similar items are improperly disposed of in a recycling container.

Material Recovery Facility (MRF)

A MRF is a specialized plant that receives, separates and prepares recyclable materials for reuse.

Natural Resources

Those raw materials supplied by the Earth and its processes. Natural resources include nutrients, minerals, water, plants, animals, etc.

Non-renewable Resources

Substances such as oil, gas, coal, copper, and gold, which, once used, cannot be replaced in this geological age.

Renewable Resources

Resources that have the capacity to be replaced through natural processes; trees and animals are renewable resources.

Recycle

To make materials such as glass, aluminum, paper, steel and plastic into new products.

Recycle Forward

This is an expression for describing an individual who is knowledgeable about, and committed to, recycling, and sharing this knowledge and commitment with others.

Reduce

To decrease the amount of waste we produce by buying only what we need, avoiding disposables, and buying products that are not over-packaged.

Reuse

To extend the life of an item by using it again, repairing it, or creating new uses for it.

Stewards of the environment

Taking care of our natural resources for future generations

Waste Reduction

The process of producing less waste. For example, people can reduce waste by minimizing what they use and by reusing and recycling items.

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MATERIAL RECOVERY FACILITY

Both essential information as well as additional background information on a Material Recovery Facility is provided below. The use of this information will vary depending on the grade level and the objectives of each lesson.

Essential Information

A Material Recovery Facility is highly engineered and uses conveyers, screens, optical sorting, air jets, vacuums, and many people to sort recyclables. Challenges associated with materials recovery facilities include a lack of understanding by consumers as to what is and is not recyclable, receiving clean and dry material (i.e. material that is not contaminated because improper items are being put into recycling bins), and as a result, wearing down the equipment which increases cost. In addition to recycling often and following the recycling rules, it is important to buy recycled goods ensuring that companies continue to produce those goods (Close the Loop).

Additional Background Information:

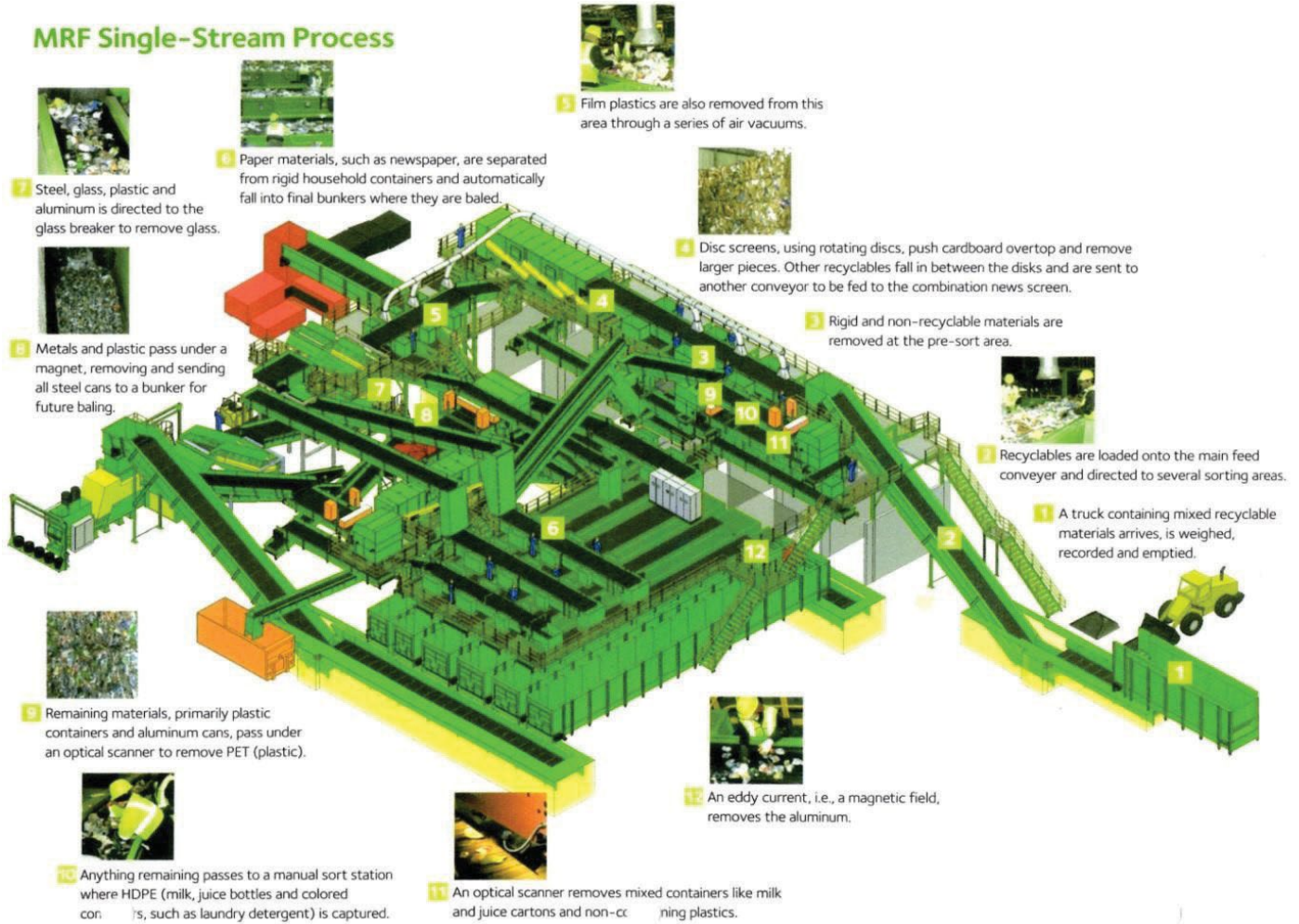
A truck containing mixed recyclable materials arrives, is weighed, recorded and emptied. Recyclables are loaded onto the main feed conveyor and directed to several sorting areas. Large items and non-recyclable materials are removed first at a pre-sort area. Disc screens, using rotating discs, push cardboard over the top. Other recyclables fall in between disks for sorting into separate categories. The paper travels on the conveyor to another conveyor for more sorting and baling, and the containers travel separately to another area for sorting. Steel, glass, plastic and aluminum are separated by magnets (steel), optical scanners (for some types of plastics and juice cartons), and an eddy current i.e. a magnetic field (for aluminum). Workers remove any remaining paper, plastic film, or contamination while the glass continues on to a glass bunker.

The separated tin, aluminum and plastics are each stored for future baling. Non-recyclable material goes to the waste line for transfer to a Waste Management landfill or to a waste-to-energy plant.

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MATERIAL RECOVERY FACILITY GRAPHIC

MRF Single-Stream Process



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WHAT WE DO WITH OUR WASTE

Handout

CATEGORY	PERCENTAGE	BEST OPTION?
	28%	
	14%	
	14%	
	12%	
	9%	
	8%	
	7%	
	5%	
	3%	

CATEGORIES:			OPTIONS:
Food Waste	Glass	Metals	A-Reduce
Other	Paper	Plastics	B-Reuse
Rubber	Wood	Yard Waste	C-Recycle
			D-Throw Away

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WHAT WE DO WITH OUR WASTE

Answer Key

CATEGORY	PERCENTAGE	BEST OPTION?
Paper	28%	
Food Waste	14%	
Yard Waste	14%	
Plastics	12%	
Metals	9%	
Rubber	8%	
Wood	7%	
Glass	5%	
Other	3%	

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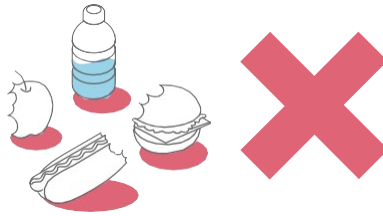


RECYCLING RULES

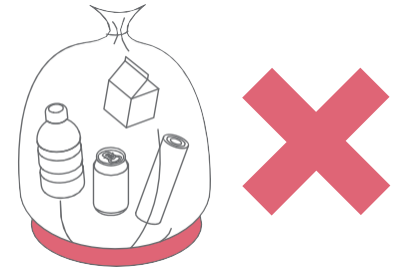
Certain offenders can slow down the recycling process or even ruin the load.



Recycle clean bottles, cans, paper, and cardboard.



Keep food and liquid out of your recycling.



No loose plastic bags and no bagged recyclables.

Visit wm.com/recycleright to join the cause and become a Recycling Ambassador.

Examples of Items That Contaminate the Recycling Process:

- Paper
- Towels
- Straws
- Items with Food or Liquid
- Chip Bags
- Juice Pouches
- Foam Cups
- Candy
- Wrappers

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RECYCLING HOMEWORK (GRADE 3-4)

Name: _____

Your family produces 10 pounds of garbage and 20 pounds of recycling in 1 week. Your neighbor's family produces 15 pounds of garbage and 5 pounds of recycling in 1 week.

1. Who produces the most garbage, your family or your neighbor? (Circle the correct answer)

- a. your family
- b. your neighbor

2. Who produces the most recycling, your family or your neighbor? (Circle the correct answer)

- a. your family
- b. your neighbor

3. What is the total amount of garbage produced by your family and your neighbor?

_____ pounds

4. What is the total amount of recycling produced by your family and your neighbor?

_____ pounds

5. List one step you would take to encourage people in your school and community to increase recycling and follow the recycling rules.

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RECYCLING HOMEWORK (GRADE 5)

Name: _____

2/3 of the waste in a community goes to a landfill.

1/3 is recycled.

The total weight of the garbage and recycling is 1½ tons.

1. How much does the garbage weigh in pounds?
2. How much does the recycling weigh in pounds?
3. List two steps you would take to encourage people in your school and community to increase recycling and follow the recycling rules.

1. _____

2. _____

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RELATIONSHIP TO NEXT GENERATION SCIENCE STANDARDS FOR GRADES 3-5

STANDARD	RELATIONSHIP
3-5-ETS1-1	Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time or cost.
3-5-ETS1-2	Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem. Engineers improve existing technologies or develop new ones to increase their benefits, decrease known risks and meet societal demands.
3.MD.B.3	Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories.
3.MD.B.4	Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch.
4-ESS3-1	Obtain and combine information to describe that energy and fuels are derived from natural resources and their uses affect the environment. Over time, peoples' needs and wants change, as do their demands for new and improved technologies. Knowledge of relevant scientific concepts and research findings are important in engineering.
4.ESS3.A	Energy and fuels that humans use are derived from natural resources and their use affects the environment in multiple ways. Some resources are renewable and others are not.
4-ETS1-A	Possible solutions to a problem are limited by available materials and resources (constraints). The success of a designed solution is determined by considering the desired features of a solution.
4-PS3-4	Apply scientific ideas to design, test and refine a device that converts energy from one form to another. Engineers improve existing technologies or develop new ones. Most scientists and engineers work in teams.
4.OA.A.1	Interpret a multiplication equation as a comparison. Represent verbal statements of multiplicative comparisons as multiplication equations.
4.OA.A.3	Solve multi-step word problems posed with whole numbers and having whole- number answers using the four operations, including problems in which remainders must be interpreted.

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RELATIONSHIP TO NEXT GENERATION SCIENCE STANDARDS FOR GRADES 3-5

STANDARD	RELATIONSHIP
4.MD.A.1	Know relative sizes of measurement units within a system of units.
4.MD.A.2	Use the four operations to solve word problems involving distances, intervals of time, liquid, volumes, masses of objects, and money, including problems, involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit.
5.NF.B.7	Apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by fractions.
5.MD.A.1	Convert among different-sized standard measurement units within a given measurement system and use these conversions in solving multi-step word problems.
5.ESS3-1	Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and the environment.
5-PS1-3	Make observations and measurements to identify materials based on their properties.
5-LS2-1	Develop a model to describe phenomena.

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