


**Standards and Topic Connections:**

<u>One Planet Topic</u>	<u>Crosswalk of Standards</u> Standards: <u>Next Generation Science</u> , <u>Common Core</u>	<u>Environmental Principles and Concepts (EP&amp;Cs)</u>
<b>Consumption and Waste</b>	<b>Performance Expectations (PE) and Disciplinary Core Ideas (DCI)</b>	<b>Principle I</b> <b>Principle V</b>
	<p><u>3-5-ETS1-2 Engineering Design</u>: <b>Generate and compare multiple possible solutions to a problem</b> based on how well each is likely to meet the criteria and constraints of the problem.</p> <p><u>ETS1.B Developing Possible Solutions</u> What is the process for generating potential design solutions</p> <p><u>MS-ESS3-4 Earth and Human Activity</u>: <b>Construct an argument supported by evidence</b> for how increases in human populations and per-capita consumption of natural resources impact Earth's</p> <p><u>ESS3.A Natural Resources</u>: How do humans depend on natural resources?</p> <p><u>LS4.D Biodiversity and Humans</u> What is biodiversity, how do humans affect it, and how does it affect humans?</p>	<p><b>Principle I</b> The continuation and health of individual human lives and of human communities and societies depend on the health of the natural systems that provide essential goods and ecosystem services.</p> <p><b>Principle V</b> Decisions affecting resources and natural systems are based on a wide range of considerations and decision-making processes.</p>

**Purpose / Learning Objectives:**

Every student will be able to:

- expand their understanding of the 4R's
- expand on their understanding of the 4R's via concepts such as prepare/plan, repair, food waste, household hazardous waste disposal, and the role that organic debris plays in ecosystems.
- identify and sort different waste items into recycling or compost
- evaluate family waste diversion and reduction practice

**Driving / Essential Question(s):**

- How can we help our community?
- What makes a sustainable community?
- What is your responsibility to the community?
- What systems are you a part of?

**Lesson Terms / [Academic Vocabulary](#):**

- Recycle
- Compost
- Repurpose
- Reuse
- Repair

**Materials / Technology:**

- 4R's BINGO handout
- Pencil

**Agenda / Activities:**

[Utilize the 5E Model](#) - Engage, Explore, Explain, Extend/Elaborate, Evaluate

<b>(5-10 min)</b>	<b>Engage:</b> The purpose of this activity is to discover how many personal actions a student is already taking to be an active participant in sustainable waste diversion and reduction practices
<b>Directions for Activity:</b>	1.) Read all the 4R's actions in the BINGO card 2.) Mark off all actions done in the past month 3.) 5 actions in a row wins the game!
<b>(10 min)</b>	<b>Explore:</b> The activity questions offer links to resources to further explore the reasons behind the imperative to 1) limit food waste; 2) repair, reuse and repurpose as a means to prolong the useful life of items; 3) learn about the connections between yard debris (organic materials), composting, decomposition and backyard wildlife; 4) discover household hazardous items, proper disposal and harmful effects of their improper disposal.
<b>After Completion of the Activity:</b>	For students that did not mark off many 4R's actions, teachers may want to issue a challenge to commit to one of the actions on the BINGO grid that were not marked. For students that marked off many 4R's actions teachers can issue a challenge for students to improve or create a classroom waste diversion or reduction strategy.

Although the student facing lesson is included here for reference, teachers can access the [Student Facing 4R's BINGO Lesson](#) by clicking on the hyperlink.

## 4R's BINGO *Reduce, Reuse, Recycle, Rot-Compost*

**Background:** The 4R's are useful reminders to practice waste reduction at home, school and/or around town. "Nobody can do everything, but everyone can do something" is another great quote reminding us that we can all make a difference with the actions we take.

**Lesson:** See how many actions you are already doing to show you practice the 4R's by playing the 4R's BINGO. Answer the questions on Page 2 when you finish.

**Directions:**

1. Read all the 4R's actions in the BINGO card below.
2. Mark off the ones that you have done in the past month.
3. Five actions in a row wins the game!

Used or gave away a hand-me-down clothing item	Used a refillable water bottle	Put yard waste in your green compost cart	Wrote or helped to write a shopping list	Put a glass item in your blue recycling cart
Ate left-overs	Put food scraps in a kitchen counter-top compost bin	Used a metal straw	Made a pile of leaves and twigs outside of your home for insects	Used an item and repurposed it for storage of another item/s
Wrote, drew or made notes on both sides of a piece of paper	Put cardboard in your recycling cart	<b>Free Space</b> 	Made a re-use craft or art piece	Put the recycling cart on the curb
Put the green compost cart on the curb	Re-purposed an item for a pet or backyard wildlife	Planted veggies or flowers	Borrowed a book	Disposed of batteries in special disposal bag or bucket
Used cloth napkins or cloth towels for cleaning instead of paper	Repaired an item instead of thrown it away	Put items in a bag to be donated	Put aluminum or metal cans in your recycling cart	Put food-soiled paper or a pizza box in your compost cart.

Answer the following questions:

1. How many 4R's actions (out of 24) did you check off? Write in a fun name for each of the categories below. The first one was done for you.

<b>0 - 6</b>	<b>7 - 12</b>	<b>13 - 18</b>	<b>19 - 24</b>
4R's Re-starter			

2. Why is making a shopping list or eating leftovers a 4R's action? Go to [www.stopfoodwaste.org](http://www.stopfoodwaste.org) to find out more about the actions you can take to reduce food waste.

3. Did you check off any of the boxes with the word "re-use", "repurpose" or "repair"? Choose one of the actions you checked off and describe it in detail.

4. Were you able to check off all the boxes that had to do with recycling? If not, which ones were you missing?

5. Why do you think a pile of leaves and twigs somewhere outside of your home is a part of the 4R's? If you need more information before you write an answer, check out this article from the [National Wildlife Federation](#).

6. Explain why napkins, paper plates and greasy pizza boxes belong in the green compost cart and not the recycling cart.

7. Did you find a special disposal bag or other receptacle for batteries in your home? Explain what your household does once that bag is full. Rethink Waste has lots of information about the importance of proper battery disposal on [their website](#).

8. Write down any other actions that you or your household members do to practice the 4R's.

Waste	Waste is defined as any item which is discarded after its primary use, or is deemed worthless, defective or of no use.
Garbage	Garbage is defined as waste that is sent to a landfill and items that never break down or will be used again.
Compost	Compost is defined as waste that is made of organic material that can be added to soil to help plants grow. Examples: Yard trimmings and food scraps.
Recycle	Recycle is defined as waste items that can be melted down and reformed into new items of the same material. Examples: Plastic items and metal items.
Rot	Rot is defined as the process in which organic waste items (compost) are breaking down into the basic nutrients soil needs to make plants grow.
Environment	The air, water, soil, minerals, organisms, and all other factors surrounding an organism.
Raw Materials	Raw materials are defined as the basic materials that are used to produce goods, finished products, energy, or intermediate products that are needed for finished products. Examples:
Natural Resources	Materials or substances such as minerals, forests, water, and fertile land that occur in nature and can be used for economic gain. Examples of natural resources: water, air, coal, oil, natural gas, phosphorus, iron, other minerals.
Renewable Resource	A renewable resource is a natural resource which will replenish to replace the depleted portion by consumption or usage. Examples: forests of trees grow back over time but cannot always keep up with the level of consumption by the human race.
Non-renewable Resource	A non-renewable resource is a natural resource that does not replenish to replace the depleted portion after consumption or usage. The