

# Alex Wastes Her Lunch

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3rd - 5th Grade

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# Alex Wastes Her Lunch

## Pre-Tour Teacher Lesson Plan

3rd grade - 5th grade  
Time Estimate: 45 min

### Overview

In 2017, Americans discarded 267.8 MILLION TONS of waste (EPA, 2020). That's about 4.51 pounds per person, every single day of the year! Of that waste, more than 50% was sent to the landfill, where it will sit for years and years.

We can all work to decrease that number! Small changes in our everyday lives can have a big impact on our planet. In this lesson, we'll follow Alex's journey to understand why we sort our waste using math, science, and our thinking skills. Alex questions if sorting her waste into compost, recycling, and garbage even makes a difference at all. Let's see what you think!

### History

Albert Howard is known as the father of modern composting for his work in the early 1900s experimenting with organic gardening and farming. However, people have been using organic material to improve their crops since farming began over 12,000 years ago (Carry On Composting). Tablets found from the Akkadians in Mesopotamia from around 2300 B.C. are believed to be the oldest written reference to compost (National Geographic, 2016). In the U.S., there are records as early as 1621 of the pilgrims being taught composting methods by Tisquantum (known commonly as Squanto), the Patuxet man who acted as their interpreter (Columbian College of Arts & Sciences, 2013).

In 1999, the first large-scale curbside composting collection in a U.S. city was started in San Francisco. This program was called "The Fantastic Three" and is still in use today (BioCycle Magazine, 2000). RethinkWaste, which was founded in 1982, uses a 3 bin system as well!

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## Pre-Tour Teacher Lesson Plan



### Purpose & Learning Objectives

This lesson seeks to make a mental connection between students and the waste that they produce. Students utilize the scientific method to prove or disprove a given hypothesis. Students will analyze data, generate graphs, and think critically to interpret their findings.

In conjunction with a field trip to the Shoreway Environmental Center, this activity serves as a pre-lesson to help facilitate discussions about waste. While at the facility, students will better understand the magnitude of our waste. This lesson will aid in comprehending our role in waste generation and resource conservation as consumers.

### Driving Question

How do Alex's actions impact the lifespan of the landfill? How can individuals protect the environment at mealtime?

### Standards & Topics Connections

#### **One Planet Living Topic**

Zero Waste,  
Products &  
Materials  
(Consumption)

#### **Standards: NGSS, HSS, Common Core**

NGSS: 3-5-ETS1-1, 3-5-ETS1-2  
HSS: Development of the Local  
Community: Change Over Time,  
Physical and Human Geographic  
Features That Define California,  
Economics of the Local Region:  
Choices, Costs, and Human Capital  
Common Core: 3.MD.B.3, 4.MD.A.1,

#### **Environmental Principals & Concepts (EP&Cs)**

This lesson covers  
EP&C Principles 1,  
2, 3, and 5.

### Adaptations & Extensions

Collect data from the whole class and see how much mealtime waste we can keep out of the landfill!

# Alex Wastes Her Lunch

## Pre-Tour Teacher Lesson Plan



### Lunchtime for Alex

Alex is your typical elementary school student. This morning, she wakes up late. Alex's dad stops her just as she's headed out the door, making sure Alex has her lunchbox in hand.

Alex makes it to school and is focusing hard on her classwork throughout the day. Before she knows it, the bell rings and it's time to head to lunch! She grabs her lunchbox and plops down at a bench with her friends. Alex opens her lunch box and... YUCK! A tuna fish sandwich? She throws away the sandwich and its plastic wrap.

Instead, Alex opens up her granola bar and munches away. Then she eats her yogurt with a plastic spoon. Alex's next snack is a banana, but halfway through eating the banana, Alex decides she doesn't want it any more and throws it away, too. She ends her lunch with a box of apple juice to wash it all down. The recess bell chimes, and Alex is excited to go play. Although she has compost, recycling, and trash bins at school, Alex is too busy rushing off to recess and decides to throw everything into the trash bin every day.

By the end of lunch, Alex has thrown away her tuna sandwich, plastic wrap, a granola bar wrapper, a yogurt cup, plastic spoon, half of a banana, and a juice box.

Let's take a look at Alex's lunch waste from this week

Monday	Tuesday	Wednesday	Thursday	Friday
<ul style="list-style-type: none"><li>• Tuna sandwich</li><li>• Plastic wrap</li><li>• Granola bar wrapper</li><li>• Yogurt cup</li><li>• Plastic spoon</li><li>• Half a banana</li><li>• Empty juice box</li></ul>	<ul style="list-style-type: none"><li>• Paper lunch tray</li><li>• Burrito wrapper</li><li>• A few bites of burrito</li><li>• Milk carton</li><li>• Plastic fruit cup</li><li>• Plastic spoon</li></ul>	<ul style="list-style-type: none"><li>• Apple core</li><li>• Plastic wrap for the sandwich</li><li>• String cheese wrapper</li><li>• Half of the string cheese</li><li>• Plastic water bottle</li></ul>	<ul style="list-style-type: none"><li>• Paper lunch tray</li><li>• Hotdog inside the corndog</li><li>• Corndog stick</li><li>• Mustard packets</li><li>• Milk carton</li><li>• Baby carrots</li></ul>	STUDENTS WILL FILL IN THEIR OWN DATA HERE

# Alex Wastes Her Lunch

## Pre-Tour Teacher Lesson Plan



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Each of the items in Alex's lunch weigh a certain amount of ounces:

- Soft plastic & wrappers:  $\frac{1}{5}$  oz
- Fruit:  $\frac{2}{5}$  oz
- Food:  $1\frac{2}{5}$  oz (or  $\frac{7}{5}$  oz)
- Hard plastic:  $\frac{3}{5}$  oz
- Food soiled paper:  $\frac{2}{5}$  oz
- Metals:  $\frac{3}{5}$  oz
- Milk carton:  $\frac{2}{5}$  oz

What happens to Alex's waste once she throws it away? To answer this question, let's use the plastic water bottle Alex threw away on Tuesday as an example.

The trash on the school campus is taken out to the dumpsters by their custodian, Mr. Leo. Garbage from the dumpsters is collected every Thursday by the Recology garbage trucks and dropped off at the Shoreway Environmental Center, in an area called the Transfer Station. The water bottle will land in a big pile of garbage, adding to the 1.7 million pounds of trash collected here every day.

Then, another truck brings the garbage to the landfill. A landfill is a large area of earth that has been carved out in order to fill with garbage. Where Alex lives, there are 35 semi trucks full of trash adding to the landfill every day, and it's filling up quickly. Alex's plastic bottle lands in the giant pile, and is covered up with dirt. Because it's made of hard plastic, it will be at least 450 years before the water bottle breaks down, all while adding chemicals to the soil and water around the landfill.

One day, Alex's class takes a field trip to the Shoreway Environmental Center and she sees all the garbage that is sent to the landfill every day. She remembers all of the waste she threw in the garbage and wants to do something to help. Alex predicts that sorting her trash at lunch will reduce the amount of waste going to the landfill. She promises herself that when she gets back to school, she will stop throwing everything in the garbage and start sorting in the 3 bins: compost, recycling, and garbage.

# Alex Wastes Her Lunch

## Student Worksheet, Grades 3-5



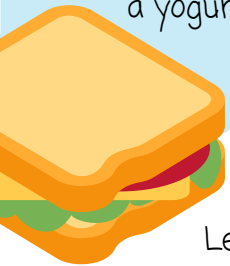
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By the end of lunch, Alex has thrown away her tuna sandwich, plastic wrap, a granola bar wrapper, a yogurt cup, plastic spoon, half of a banana, and a juice box.



Let's take a look at Alex's lunch waste from this week. Fill out Friday with your own lunch waste.

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# Alex Wastes Her Lunch

## Student Worksheet, Grades 3-5

Each of the items in Alex's lunch weigh a certain amount of ounces:

- Soft plastic & wrappers: 1/5 oz
- Fruit: 2/5 oz
- Food: 1 2/5 oz (or 7/5 oz)
- Hard plastic: 3/5 oz
- Food soiled paper: 2/5 oz
- Metals: 3/5 oz
- Milk carton: 2/5 oz



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# Alex Wastes Her Lunch

## Student Worksheet, Grades 3-5

### ★ Key Terms

- Landfill: A place to dispose of waste. When material goes to the landfill, it is buried and covered it over with soil.
- Food waste: Edible or inedible parts of a meal that are thrown away
- Hypothesis: An educated guess, or a guess you make based on information you already know
- Lifespan: How long something is expected to live or last



### History

Albert Howard is known as the father of modern composting for his work in the early 1900s experimenting with organic gardening and farming. However, people have been using organic material to improve their crops since farming began over 12,000 years ago (Carry On Composting). Tablets found from the Akkadians in Mesopotamia from around 2300 B.C. are believed to be the oldest written reference to compost (National Geographic, 2016). In the U.S., there are records as early as 1621 of the pilgrims being taught composting methods by Tisquantum (known commonly as Squanto), the Patuxet man who acted as their interpreter (Columbian College of Arts & Sciences, 2013).

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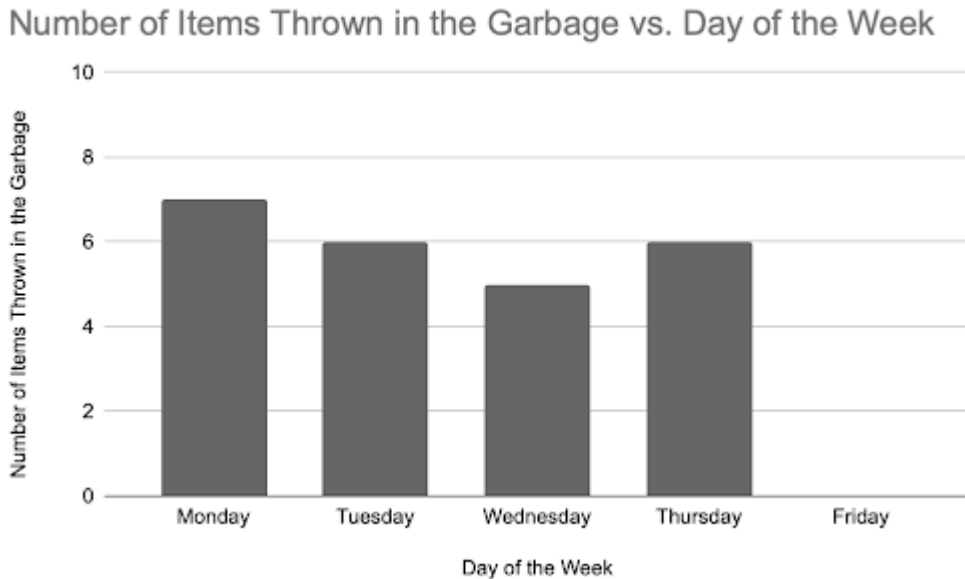
## Student Worksheet, Grade 3



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### Data Analysis

Complete the following bar graph with your data from Friday.



In looking at the entire graph, on which day was the most waste generated? Order the days from lowest to highest.

Identify the hypothesis Alex determines in the story.

What else, besides sorting, could Alex do to reduce her waste at lunch?

How does the waste Alex throws away affect the size of the landfill?

# Alex Wastes Her Lunch

## Student Worksheet, Grade 4

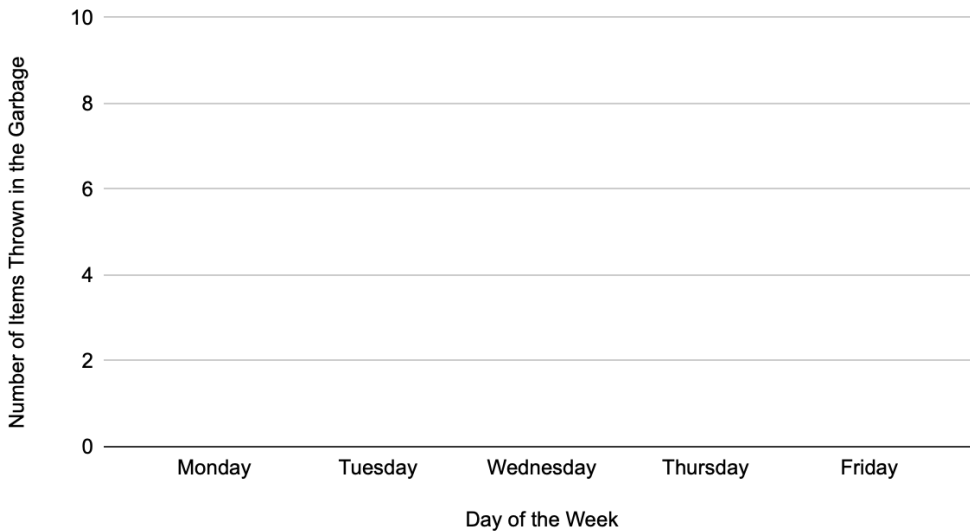


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### Data Analysis

Complete the following bar graph using the table from Alex's lunch.

Number of Items Thrown in the Garbage vs. Day of the Week



On which day of the week was the most waste generated? What fraction of the total waste of the week was generated on this day?

Identify Alex's hypothesis. Do you think this hypothesis will be proven true? Why or why not?

Besides sorting, what else could Alex do to reduce her waste at lunch?

# Alex Wastes Her Lunch

## Student Worksheet, Grade 5



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### Data Analysis

Use the table from Alex's story to complete the following bar graph. Identify the X and Y axis, and plot each day of the week.



On which day of the week was the most waste generated?

What fraction of the total waste of the week was generated on this day?

Identify the hypothesis of Alex's story. Do you think this hypothesis will be proven true? Why or why not?

What could Alex do to pack a zero waste lunch?