

Phipps Fairchild Challenge – Challenge 5: Environmental Action, Prevalent Plastics: A Plastics Audit

Activity Data Sheet - **EXAMPLE**

Student Name: Emily J.

School: Phipps Conservatory

Date: Wednesday, April 1, 2020

Step 1: Tally plastic use throughout one day.

Pay attention to the plastics you use throughout one day. Record everything you use that is made of plastic in the left-most column of the table below. Items include your household appliances, food wrappers, and even your clothing! Once you've recorded an item, you can decide the approximate use time of the item in your household – how long do you use it before it's thrown away? Select the category that best fits your item and place a tally mark in that column. At the end of the day, add each "use time" column and enter the number at the bottom of the sheet to see how many of each plastic type you used.

If you need additional space, feel free to use another document or sheet of paper.

Plastics Used	Approximate Use Time of Plastic			
	2 weeks or less	6 months or less	1-2 years	2 years or more
Fitbit band				1
Phone Case				1
Shampoo Bottle		1		
Soap Bottle		1		
Coffee Maker				1
Milk Jug	1			
Cereal Bag	1			
Phone Charger				1
OJ bottle	1			
Half and Half carton/cap	1			
Refrigerator (shelves, seal, handle)				1
Face Lotion Bottle		1		
Hair Product			1	
Deodorant		1		
Toothpaste Tube		1		
Toothbrush		1		
Mirror				1
Hair dryer				1
Brush				1
Hair Tie			1	
Clothing (a pair of fleece socks)				1

Clothing (a shirt containing some plastic-based material)				1
Pair of Shoes				1
Front door				1
Car (keys, dashboard, steering wheel, engine parts, seats, seatbelts, cup holders, etc.)				1
Tupperware				2
Backpack				1
Notebook cover			1	
Highlighter			1	
Pen			1	
Computer (keyboard, charger, mouse, power strip and Ethernet cable)				1
Recycling Bin				1
Garbage Can				1
Plastic-Windowed Envelopes	3			
Hand Lotion		1		
Hand Sanitizer		1		
Soap Dispenser				1
Paper Towel Dispenser				1
Umbrella				1
Plastic Storage Bin				1
Desk Phone				1
Lip Balm			1	
Binder				4
Pretzel Bag	1			
Peanut Butter Jar	1			
Tofu Package	1			
Produce Sticker	1			
Cashew Nut Container	1			
Sponge	1			
Dish Soap Container		1		
Bag of Rice	1			
Audit Totals for One Day:	14	9	6	28

Step 2: Extrapolate data over 2 years.

Now let's extrapolate! By extrapolating our observations, we can get an idea of the amount of plastics we would use over a longer time period. This isn't an exact number, but instead is an approximation based on our collected data. We are going to extrapolate to estimate the amount of plastic we would use over 2 years.

The following unit conversions may be used:

1 year = 52 weeks

1 year = 12 months

First let's look at the plastics that have the shortest use time, the "2 weeks or less" category. These are items that would be replaced roughly every two weeks, like a milk or juice container.

To extrapolate, enter your number of "2 weeks or less" plastics in the first box below. We will multiply the numbers on the top of each fraction and divide by the numbers on the bottom. We can do a unit conversion, using **1 year = 52 weeks**.

$$\frac{14 \text{ plastics}}{2 \text{ weeks}} \times \frac{52 \text{ weeks}}{1 \text{ year}} \times 2 \text{ years} = \underline{728} \text{ plastics}$$

Next, we'll calculate the "6 months or less" category. These are plastics that we would replace about every six months. For this, we'll use the unit conversion **1 year = 12 months**.

$$\frac{9 \text{ plastics}}{6 \text{ months}} \times \frac{12 \text{ months}}{1 \text{ year}} \times 2 \text{ years} = \underline{36} \text{ plastics}$$

Now, let's extrapolate the "1-2 years" category. For the purpose of simplification, we'll approximate that these items are replaced every one year.

$$\frac{6 \text{ plastics}}{1 \text{ year}} \times 2 \text{ years} = \underline{12} \text{ plastics}$$

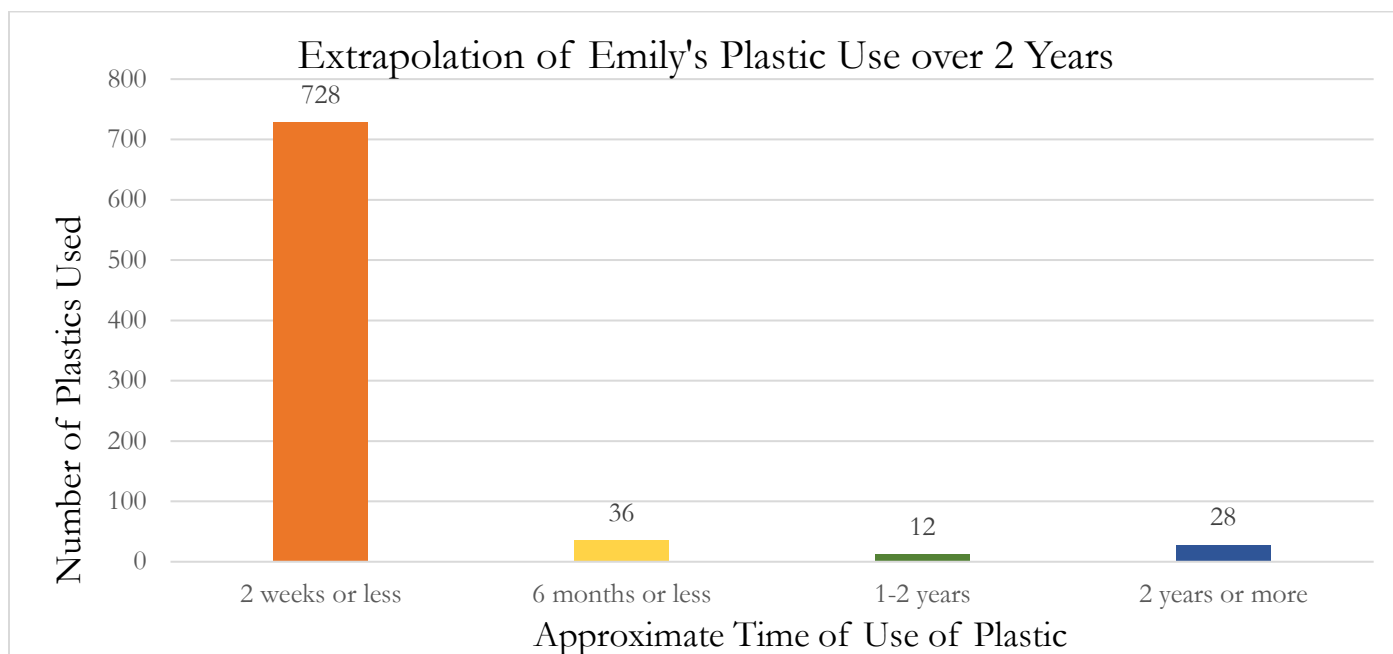
For the final category, "2 years or more," we will again simplify and say that these items are replaced every two years. In reality, some of these items, may last much longer.

$$\frac{28 \text{ plastics}}{2 \text{ years}} \times 2 \text{ years} = \underline{28} \text{ plastics}$$

Plastics Used	2 weeks or less	6 months or less	1-2 years	2 years or more
Extrapolation Over 2 Years	728	36	12	28

Step 3: Graph your extrapolated numbers.

Create a bar graph showing how much of each type of plastic you would theoretically use over two years. You can create your graph digitally (using Word or Excel) or draw it by hand. Don't forget to label your graph and the axis!



Step 4: Analyze your audit.

In 1-3 paragraphs, explain the findings of your audit along with any other information that you found interesting. Were you surprised by the results of your audit? What types of plastics did you use the most? How did you dispose of the plastics? Some plastics claim to be recyclable. Does your municipality's recycling program accept these? What happens to these plastics when they are sent away in recycling? You can write your explanation below or include it on a separate piece of paper.

Step 5: Create a mini action project!

Come up with your own mini action project idea or try one of the ideas below:

- A catchy 8 1/2 * 11" poster (made digitally or by hand) sharing an impact that plastic waste can have on the environment.
- A letter or email to a government representative urging them to support legislature limiting single-use plastics. [Find your local legislator here.](#)
- A speech to your fellow classmates at a school assembly on plastic use.
- A collage or sculpture of plastic waste from your audit, demonstrating the amount of plastic we throw away. (For digital submissions, you are invited to send photographs of the project.) Check out some of these cool artists and projects for inspiration:
 - [Washed Ashore](#)
 - [Calder Kamin](#)
 - [Project Vortex](#)
- A series of photographs of plastic objects, showing the pervasiveness of plastics. Take a look at these [photographs of plastic bags by graphic designer Sho Shibuya.](#)

Step 6: Submit your project!

Submit your data sheet, graph, essay and mini action project. Your school's Fairchild Challenge coordinator can let you know if you should send your materials to the school or directly to Phipps. If you are submitting your project to Phipps you may do so via email at ejohns@phipps.conservatory.org or via mail at

Phipps Conservatory and Botanical Gardens
One Schenley Park
Pittsburgh, PA 15213
Attn: Phipps Fairchild Challenge