

Name:

Date:

Class:

Activity Worksheet

Challenge

Use the materials provided to formulate a sustainable, cost-effective multipurpose cleaning product.

Step 1: Understand and Test Your Materials

Using the information provided, review the ingredients provided and document your observations about each.

Ingredient	Properties (e.g., texture, smell, reaction with water)	Hypothesized Cleaning Use	Biodegradable? Yes or No
Sodium Bicarbonate			
Citric Acid			
Essential Oils			
Isopropyl Alcohol			
Vinegar			

BROUGHT TO YOU BY

Name:

Date:

Class:

Step 2: Experiment With Mixtures

Test combinations:

- Using the cups provided, mix **small amounts** of the ingredients and observe reactions.
- Record results for foam, solubility, cleaning power, or other effects. Circle Yes or No.
- Test on a small area, such as your working table.

Combination Tested	Dissolves		Foams		Cleans	
Vinegar + Sodium Bicarbonate	Yes	No	Yes	No	Yes	No
Vinegar + Citric Acid	Yes	No	Yes	No	Yes	No
Alcohol + Essential Oil	Yes	No	Yes	No	Yes	No
Alcohol + Sodium Bicarbonate	Yes	No	Yes	No	Yes	No
Alcohol + Citric Acid	Yes	No	Yes	No	Yes	No
Other: _____	Yes	No	Yes	No	Yes	No

BROUGHT TO YOU BY

Name:

Date:

Class:

Step 4: Create and Test Your Product

Create your product:

- Using the cups provided, mix **small amounts** of the ingredients you chose.

Test your product:

- Record results of your product for foam, solubility, cleaning power, or other effects. Circle Yes or No in the table below.
- Test on a small area, such as your working table.
- Run your test at least twice.

Combination Tested	Dissolves		Foams		Cleans	
	Yes	No	Yes	No	Yes	No
	Yes	No	Yes	No	Yes	No
	Yes	No	Yes	No	Yes	No
	Yes	No	Yes	No	Yes	No

1. What worked?
2. What did not work?
3. What will you change to improve your product?

BROUGHT TO YOU BY

Name:

Date:

Class:

(Optional) Step 5: Improve Your Product

Improve your product:

- Using the cups provided, mix **small amounts** of the ingredients you chose to improve your product.

Test your improved product:

- Record results of your product for foam, solubility, cleaning power, or other effects. Circle Yes or No in the table below.
- Test on a small area, such as your working table.
- Run your test at least twice.

Combination Tested	Dissolves		Foams		Cleans	
	Yes	No	Yes	No	Yes	No
	Yes	No	Yes	No	Yes	No
	Yes	No	Yes	No	Yes	No
	Yes	No	Yes	No	Yes	No

1. What worked?

2. What did not work?

3. What would you change to improve your product?

BROUGHT TO YOU BY



Name:

Date:

Class:

Step 7: Market Your Product

1. Product Name:

2. Recipe:

- List the ingredients and their amounts. Use the price list below.

Ingredient	Amount	Cost
Water	1 bottle	1.00
Spray Bottle	1 bottle	4.00

Total Cost

Price List
Green Chemicals Inc.

Sodium Bicarbonate	\$0.15 per spoon
Citric Acid	\$0.25 per spoon
Isopropyl Alcohol	\$1.00 per bottle
Vinegar (Acetic acid)	\$0.25 per bottle
Water	\$1
Essential Oils	\$0.25 per bottle
Spray Bottle	\$4.00

BROUGHT TO YOU BY

Name:

Date:

Class:

Step 8: Create a Label

Design a label for your cleaning product. Sketch your label below, including **Product Name**, **Main Ingredients**, **Safety Warnings**, **Benefits (e.g., eco-friendly, child-safe, nontoxic)**

Draw your label here



Once your label is complete, use the markers and labels provided to draw your final label for your spray bottle.

BROUGHT TO YOU BY

Name:

Date:

Class:

Step 9: Present Your Product

Prepare a **three-minute** presentation covering:

1. The name and purpose of your product.
2. Key ingredients and why you chose them.
3. Cost analysis (why it's affordable).
4. Demonstration (if possible).

Step 10: Reflection Questions

1. What surprised you most about how the ingredients worked?

2. How could you improve your product?

3. What did you learn about designing eco-friendly products?

BROUGHT TO YOU BY

