



Chemical Change: Student Activity Sheet

Name: _____

Date: _____

Part 1: Chemical Change

Put on your safety glasses and follow the directions below.

1. Place **5 ml (1 teaspoon) of Powder A** in the sandwich bag
2. Place **2.5 ml (½ teaspoon) of Powder B** in the same sandwich bag
3. Put **5 ml of Liquid C** and **10 drops of Liquid D** together in a medicine cup. Place the cup in the same bag, but **KEEP IT UPRIGHT!**
4. Press the air out of the bag and zip the bag closed.
5. Tip the cup over and mix all the chemicals.
6. Write detailed descriptions of everything you observed below.

7. What are some ideas you have about how to investigate figure out what reactants caused the changes you observed? _____

Part 2: Chemical Change 2

Develop three new recipes to help study the reaction from Part 1. You may leave out whatever you want, but you may only double any reactant. Record your recipes and detailed observations below. There is an example from Part 1.

Recipe	Powder A	Powder B	Liquid C	Liquid D	Observations
Part 1	5 ml	2.5 ml	5 ml	10 drops	The reaction...
	5ml A + 2.5ml B + 5ml C + 10 drops D results in				
1					
2					
3					

Part 3: Wrap-Up

As a class, discuss what each reactant brings to the reaction. Record your ideas below

Reactant	What Occurs in the Reaction
Powder A	
Powder B	
Liquid C	
Liquid D	

Mason Jar

Your teacher will now do the same reaction in a mason jar.

What is the weight of the mason jar and reactants **before the reaction**? _____g

What is the weight of the mason jar and the reactants **after the reaction**? _____g

This is called _____

We know some gas was produced because we saw bubbles. What could happen when you open the lid and pour the gas out of the jar? _____

What is the weight of the mason jar and the reactants after pouring out the gas? _____g

Part 4: Guided Practice

1. Early alchemists and chemists often observed reactions and then worked backwards to figure out what was happening. They did this especially where many reactants were involved, as in our bag reaction.

Comment on how each procedure might give insights into what reactions are happening in our bag.

- a. Double the dry ingredients. Mix them together in the bag and let them sit for a week.

- b. Double the amount of one reactant and see what happens.

- c. Open the bag when you turn over the liquids.

2. A teacher was trying to convince students that the conservation of matter always occurs in a chemical reaction. To do this, the teacher mixed vinegar and baking soda in a cup. Students had carefully weighed the ingredients and cup and recorded the weight before the reaction. They combined the reactants in the cup and got a fizzing reaction. When the reaction was over, the class couldn't see any baking soda. However, the cup of mixed compounds weighed less than it weighed before the reaction. The teacher still says that whenever a chemical reaction occurs, what you start with (reactants) and what you end with (products) have the same weight. Which explanation below would be best for students to use to help their teacher understand why the law of conservation of mass appeared not to work?
- a. Part of the cup dissolved into the vinegar so it all weighed less.
 - b. The fizzing is a gas produced during the reaction, so she needs to catch the gas to weigh it.
 - c. The baking soda disappeared so it all weighed less.
3. Students started proposing new experiments that would allow this reaction to prove the law of conservation of matter in a chemical equation. Which experiment or combination of experiments might supply evidence supporting the law, and why?
- a. Do the reaction in a container made of glass.
 - b. Do the reaction with more reactants so they are easier to weigh.
 - c. Do the reaction in a container with a tightly closed lid.
 - d. Weigh all reactants and products before and after the reaction.
