**The Law of Conservation of Mass**

***Matter is never created or destroyed – it is only recombined***

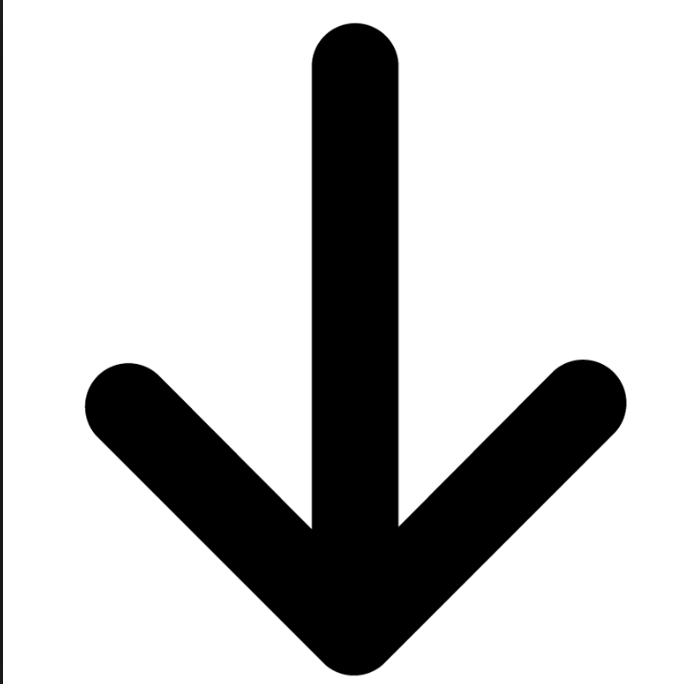
**Physical Change**- when an object changes shape or state (liquid, solid, and gas) it is still the same substance.

**Chemical change-** when certain chemicals are combined the particles are rearranged to make a different substance with different properties. Often a new smell, color, temperature, gas, or precipitate indicates a chemical change.

**A. PREDICT: Label the following with C for chemical or P for physical change. Also draw an up down or equal sign to indicate what you think will happen to the weight of the object.**

**Example:**

**Candle wax that is melted: P =**

**Candle wax that is burned: C **

1. Chocolate that gets melted. \_\_\_\_\_\_\_\_
2. A piece of paper that gets ripped. \_\_\_\_\_\_\_
3. A piece of paper gets burned in an open jar. \_\_\_\_\_
4. Vinegar and baking soda are mixed in a cup and gas is produced. \_\_\_\_\_
5. Two clear substances (laundry detergent and Epsom salt solutions) are mixed and a white precipitate is formed. \_\_\_\_\_\_

**B. TRY IT – Measuring mass in a PHYSICAL change:**

1. **MELTING CHOCOLATE CHIPS:**

* Put a layer of chocolate chips in a Dixie cup with a toothpick. Weigh the cup of chocolate chips and toothpick.

grams

* Heat the cup of chocolate chips in the microwave until just melted. Stir with the toothpick. Observe any changes.
* Now weigh it again (with the toothpick still in the cup).

grams

* Did the weight change?

1. **RIPPING PAPER**

* Weigh a piece of folded paper:

grams

* Now rip it into four pieces and weigh all four pieces.

grams

* Did the weight change?

**C. TRY IT – Measuring mass in a CHEMICAL change:**

1. **BURNING PAPER:**

Your teacher will put paper in a glass jar and place the jar on a scale. Record the weight.

grams

Then the teacher will burn the paper with the jar on the scale. Record the weight once the paper stops burning.

grams

Did the weight change?

What happened to the matter in the paper when it burned?

If you could capture all the smoke and ashes how much do you think they would weigh? Why?

1. **MIXING BAKING SODA AND VINEGAR**

You will receive a somewhat flattened bottle, ½ cup of vinegar, a teaspoonful of baking soda, and a piece of tissue paper. PUT ON SAFETY GLASSES!

* Waft the vinegar and baking soda past your nose and smell.
* Next pour all of the vinegar into the bottle.
* Place the baking soda in tissue paper and fold it into a tea bag.
* Place the bottle of vinegar and the tea bag of baking soda on the scale. Record the weight.

grams

* Place the baking soda packet into the neck of the bottle, quickly cap and shake it. Observe what happens.
* Weigh the bottle again. Record the weight.

grams

Did the weight change?

* Open the bottle and waft the smell past your nose. What do you notice?
* Put the lid back on. Now weigh it again.

grams

Did the weight change?

1. **MIXING LAUNDRY DETERGENT AND EPSOM SALT SOLUTIONS**

You will receive ½ cup of water in mixing cup A with a spoon, 1 teaspoon of laundry powder in a cup, 2 tablespoons of colored water in mixing cup B with a spoon, 1 tablespoon of Epsom salts in a cup, and a pipette. (Food coloring was added to the water in cup B to make the reaction more visible)

* Pour the laundry powder into mixing cup A and stir until dissolved. DO NOT MIX SPOONS.
* Pour the Epsom salts into mixing cup B and stir until dissolved.
* Place both cups, both spoons, and the pipette onto the scale at the same time and record the weight.

grams

* Without removing the cups from the scale use the pipette to transfer all of the liquid from mixing cup B into mixing cup A. Observe what happens.
* Once all of the liquid in cup B is moved to cup A weigh both cups AND the pipette. Record the weight.

grams

Did the weight change?

MY RESULTS:

|  |  |  |  |
| --- | --- | --- | --- |
|  | Before | After | How much did the weight change? |
| 1. Melting chocolate chips |  |  |  |
| 2. Ripping Paper |  |  |  |
| 3. Burning Paper |  |  |  |
| 4a. Mixing Baking Soda and Vinegar in a bottle |  | While closed:  After being opened: | While closed:  After being opened: |
| 5. Mixing Laundry Powder and Epsom Salt Solutions |  |  |  |

Make a bar graph of the weight of the baking soda and vinegar before the reaction, after the reaction in a closed bottle, and after the reaction after being opened.

Baking Soda and Vinegar Reaction

