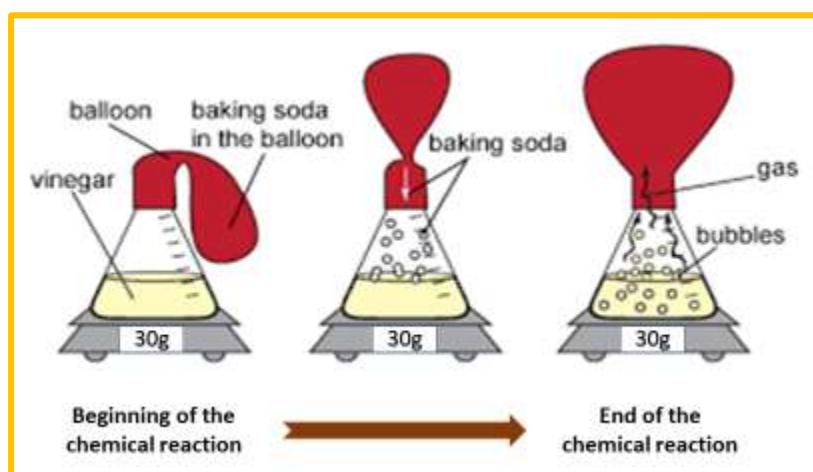


## Conservation of Matter

### Experimental Time

- Pour some vinegar into an Erlenmeyer flask (*you can use any other cup*)
- Put some baking soda in a balloon then fix the balloon on the top of the flask (*as shown in the figure at the beginning of the reaction*)
- Empty the contents of the balloon into the flask
- Record the mass at the beginning and at the end of the experiment.



### Observations:

- The balloon inflates indicating that a gas is released (*evidence of chemical reaction*)
- Both records have the same value of mass.

### Conclusion:

- During a chemical reaction, mass is conserved. The total mass of the reactants is **equal** to the total mass of the products.



This is called **Lavoisier's Law** which states that: "Matter is neither created nor destroyed during a chemical change, there is only transformation".



## Solve the following exercise from your "Smart Guide"

→ Exercise (4) page (168):

**Ex: 4**

Put 20 ml of vinegar in a nylon bag and tie it in the middle with a bag string. Then put a tea spoon of calcium carbonate in the same bag and tie it with a second string. Put the nylon bag on the balance as shown in figure (A), it indicates 27g. Untie the middle bag string which separates the vinegar from calcium carbonate and place the bag string next to the bag on the plate of the balance as shown in figure (B).

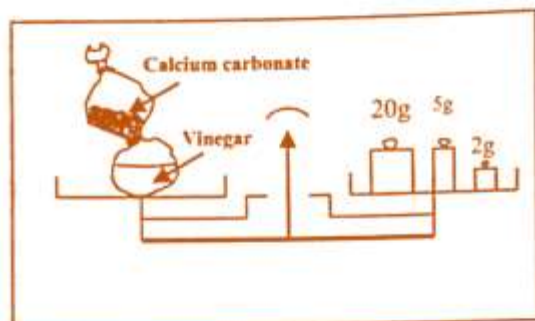


Figure (A)

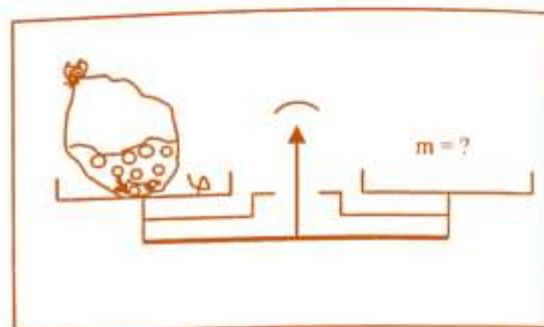


Figure (B)

- 1- When the reaction is over, indicate the mass that must be placed on the other pan of the balance to have equilibrium. Justify.
- 2- Indicate the evidence which proves that a chemical reaction has taken place.
- 3- This reaction proves a chemical law called Lavoisier's law. State this law.



Check out the following video about "Law of Conservation of Mass"

[https://www.youtube.com/watch?v=HmzFG\\_xOeaQ](https://www.youtube.com/watch?v=HmzFG_xOeaQ)