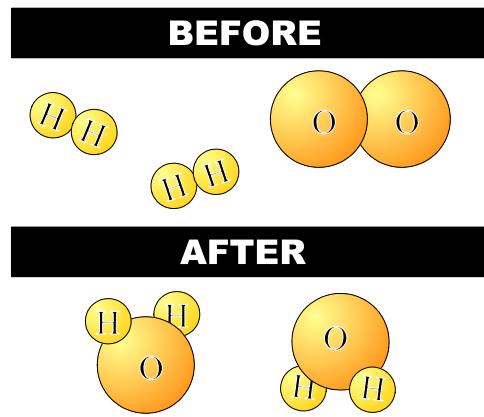


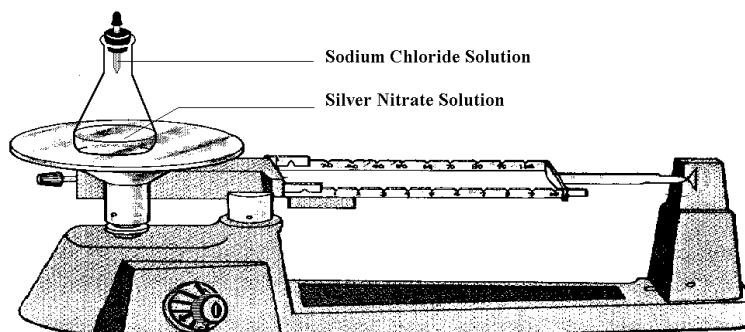
Conservation During Chemical Reactions

During a chemical reaction, new substances form with new properties. This means that during a chemical reaction there are both chemical changes and physical changes. Physical changes such as the formation of a solid precipitate, a liquid, or a gas, provide evidence that a chemical change has occurred. During a chemical change, the atoms of the reactants are rearranged to form new substances or products. No new atoms are created and none of the original atoms are destroyed. As a result, the mass of the reactants and the products is the same. This is called conservation of mass. When water (H_2O) forms from hydrogen (H_2) and oxygen (O_2), for example, the hydrogen and oxygen atoms are rearranged to form the new substance, but no new atoms are created and none of the original atoms are lost. Chemical reactions are described by chemical equations which show the reactants, the products, and conservation of mass.



Answer the questions below based on the reading above, your knowledge of chemistry, and the information provided below.

A student poured silver nitrate solution into a flask and put sodium chloride solution in a medicine dropper. Then the student put the medicine dropper through a one-hole stopper and sealed the flask with it. After that, the student measured the mass of the setup with a balance. Finally, the student squeezed the medicine dropper so the sodium chloride solution mixed with the silver nitrate in the sealed flask on the balance. A white precipitate formed.



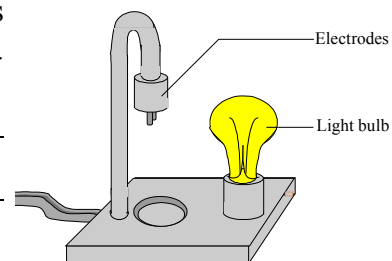
1. What evidence is there that the reaction described above is a chemical change? _____

2. Did the mass of the contents of the flask change during this experiment? Support your answer. _____

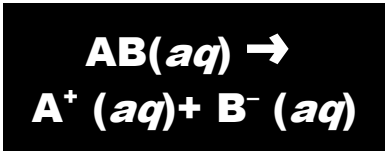
3. Write the formulas for the reactants. Write the appropriate symbols to show the phase or state [(s) = solid; (l) = liquid; (g) = gas; and (aq) = solution]. _____

4. When the electrodes of the apparatus shown to the right are placed in solutions of silver nitrate, the light bulb lights. What does this show about the solution.

What is the explanation for this? _____



5. When ionic compounds such as silver nitrate and sodium chloride dissolve, the ions separate:



a. What ions will be present in solution when silver nitrate and sodium chloride dissolve? _____

b. What new combinations of ions could form? (*HINT*: Opposites attract!) _____

6. Based on Table F (*Solubility Guidelines*), which of the products is the white precipitate? _____

7. Write an equation for the reaction between silver nitrate solution and sodium chloride solution. _____

8. The formula mass for silver nitrate ($AgNO_3$) is found as shown in the table to the right. Find the formula masses of all the reactants and products of this reaction.

Element	Atomic Mass		Subscript	=	Product
Ag	108	×	1	=	108
N	14	×	1	=	14
O	16	×	3	=	48
<i>TOTAL</i>					170

REACTANTS

a. Silver nitrate 170

b. Sodium chloride _____

PRODUCTS

c. _____

d. _____

9. How does the total mass of the reactants compare to the total mass of the products? _____
