

## Reaction based Numericals

Law of Conservation of Mass (Given by Lavoisier)

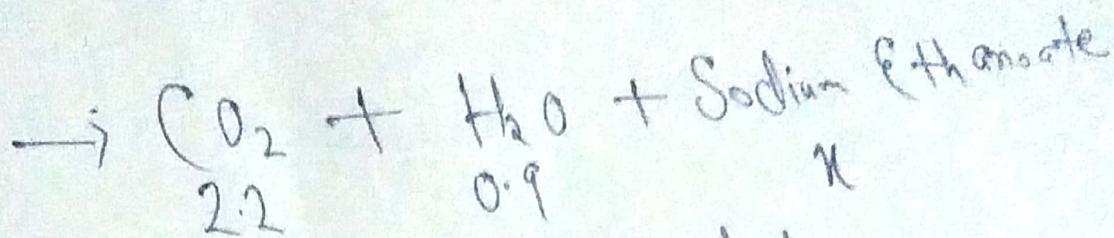
In a chemical reaction Mass of Reactant is always equal to Mass of product  
(Mass neither be created nor be destroyed)

Ex-① In a reaction 5.3 gm of Sodium Carbonate reacted with 6 gm of Ethanoic acid. The product were 2.2g of  $\text{CO}_2$ , 0.9g water and ~~2.2~~  $k$  g of Sodium Ethanoate. Find the value of  $k$ .

①



Soln Sodium Carbonate + Ethanoic Acid  
5.3 g 6 g



Mass of Reactant = Mass of Product

$$5.3 + 6 = 2.2 + 0.9 + x \text{ so } x = 8.2 \text{ g}$$

Law of Constant Proportion - Given by Proust  
According to this law a chemical compound always  
consist of the same elements combined together in  
the same ratio. Ex  $\text{H}_2\text{O} \rightarrow 1:8$

Ex-1 Hydrogen and Oxygen combine in the  
ratio of 1:8 by mass to form water.  
What mass of Oxygen gas would be required to  
react completely with 3 gm of  $\text{H}_2$  gas

Soln -  $\frac{1}{8} = \frac{3}{x} \quad (x \text{ gm } \text{O}_2)$

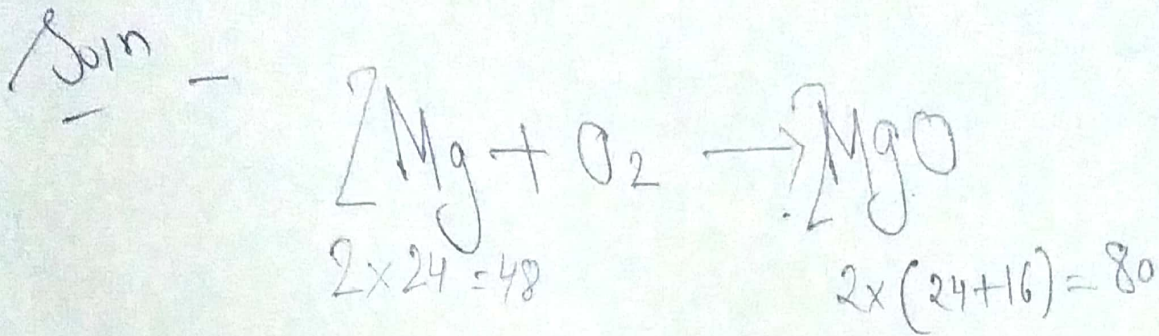
$$x = 24 \text{ g}$$

Or  
1 gm  $\text{H}_2 \rightarrow 8 \text{ gm } \text{O}_2$   
3 gm  $\text{H}_2 \rightarrow 3 \times 8 = 24 \text{ gm } \text{O}_2$

(2)



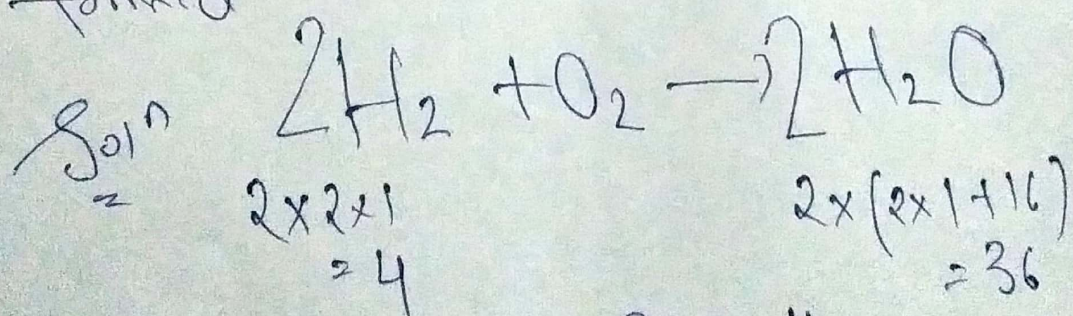
2015/2019  
Ex-3 Find out wt of Magnesium Oxide  
 formed when 3 gm of Magnesium are  
 burned in Oxygen.



$$\begin{array}{lcl}
 48 \text{ gm Mg} & \longrightarrow & 80 \text{ gm MgO} \\
 1 & & \frac{80}{48} \times 3 = 5 \text{ gm}
 \end{array}
 \quad \left| \quad \begin{array}{l}
 3 \text{ gm Mg} \longrightarrow 3 \times \frac{5}{3} \\
 = 5 \text{ gm}
 \end{array}
 \right.$$

2020  
Ex-4 10 gm of  $\text{H}_2$  is burnt in presence  
 of Oxygen. Calculate how much of water

formed:



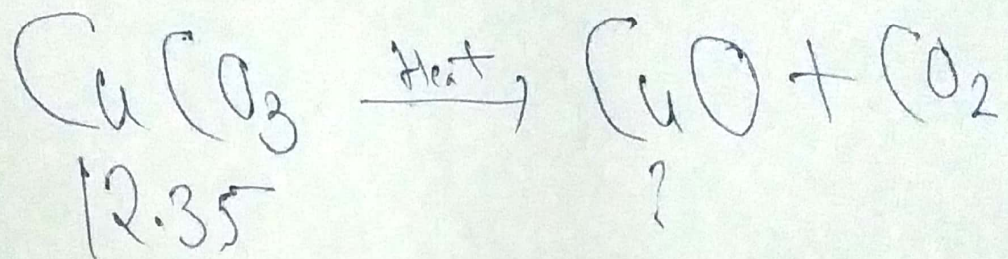
$$\begin{array}{lcl}
 4 \text{ gm H}_2 & \longrightarrow & 36 \text{ gm H}_2\text{O} \\
 1 & & \frac{36}{4} = 9 \text{ gm} \\
 10 & \longrightarrow & 10 \times 9 = 90 \text{ gm}
 \end{array}$$

③



③ How much of Copper Oxide will be obtained by heating 12.35 gm of Copper Carbonate.

Soln -



At wt

$$= 63.5 + 12 + 48$$

$$= \underline{\underline{123.5}}$$

$$63.5 + 16$$

$$= \underline{\underline{79.5}}$$

$$123.5 \text{ gm CuCO}_3 \text{ on heat} \rightarrow 79.5 \text{ CuO}$$

$$1 \quad \quad \quad \rightarrow \frac{79.5}{123.5}$$

$$12.35 \text{ gm} \quad \quad \quad = \frac{79.5}{123.5} \times 12.35$$

10

$$= 7.95 \text{ gm}$$

④