

Laws of Chemical Combination, Chemical Equations, Physical & Chemical Changes

1. LAW OF CONSERVATION OF MASS

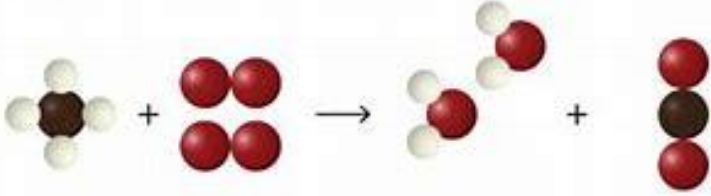
- Law of conservation of mass states that mass can neither be created nor destroyed in a chemical reaction.

Law of Conservation of Mass

- Mass is neither created nor destroyed in ordinary chemical and physical changes
- Must start and end with the same amount
- Example

	+		→		+	
Log		Fire		Ashes		Smoke
30 kg		1 kg		28 kg		3 kg

Law of Conservation of Mass



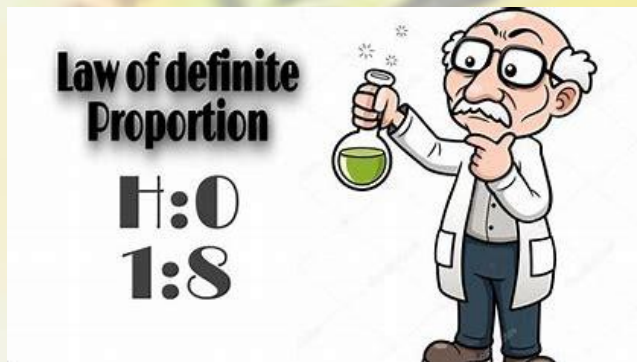
$$\text{CH}_4 + 2\text{O}_2 \longrightarrow \text{CO}_2 + 2\text{H}_2\text{O}$$

Hydrogen Atom
Oxygen Atom
Carbon Atom

teaching physical science

2. LAW OF CONSTANT / DEFINITE PROPORTIONS

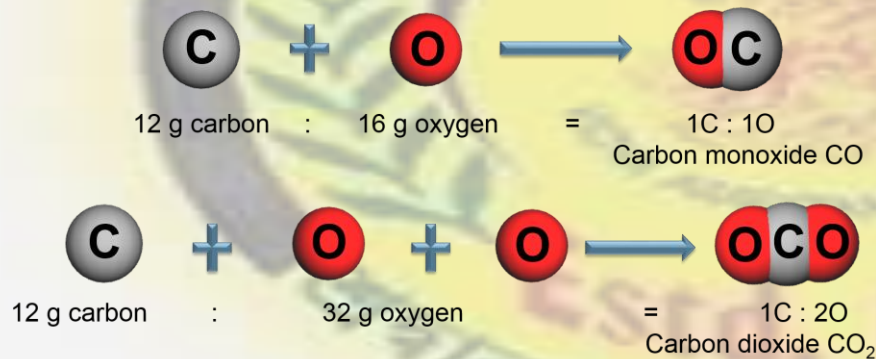
- This law was stated by Proust as "In a chemical substance the elements are always present in definite proportions by mass".



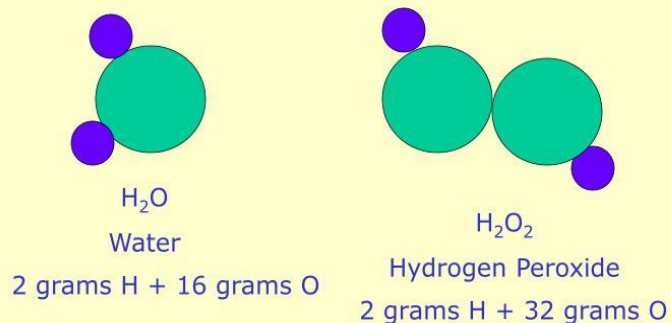
- In a compound such as water, the ratio of the mass of hydrogen to the mass of oxygen is always 1:8, whatever the source of water. Thus, if 9 g of water is decomposed, 1 g of hydrogen and 8 g of oxygen are always obtained. Similarly in ammonia, nitrogen and hydrogen are always present in the ratio 14:3 by mass,

3. LAW OF MULTIPLE PROPORTIONS

When two elements combine with each other to form two or more compounds, the ratios of the masses of one element that combines with the fixed ratio of the other are simple whole numbers.



•3) Law of Multiple Proportions



•Compounds always break down into simple ratios of elements by mass.

Q. Who proposed Law of Conservation of Mass?

- a) Antoine Lavoisier
- b) Joseph Proust
- c) Lorenzo Romano
- d) Joseph Louis

Q. What did Joseph Proust state regarding Law of Definite Proportions?

- a) A given mixture always contains absolutely the same proportion of elements by weight
- b) A given compound always contains absolutely the same proportion of moles by weight
- c) A given compound always contains absolutely the same proportion of elements by volume
- d) A given compound always contains absolutely the same proportion of elements by weight

Q. What did Dalton propose?

- a) Law of Multiple Proportions
- b) Avogadro's Law
- c) Law of Definite Composition
- d) Law of Conservation of Mass