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Class - 10

Chapter - 1

Chemical Reactions and Equations

Part-1

Chemical Reactions

Disha Pamecha

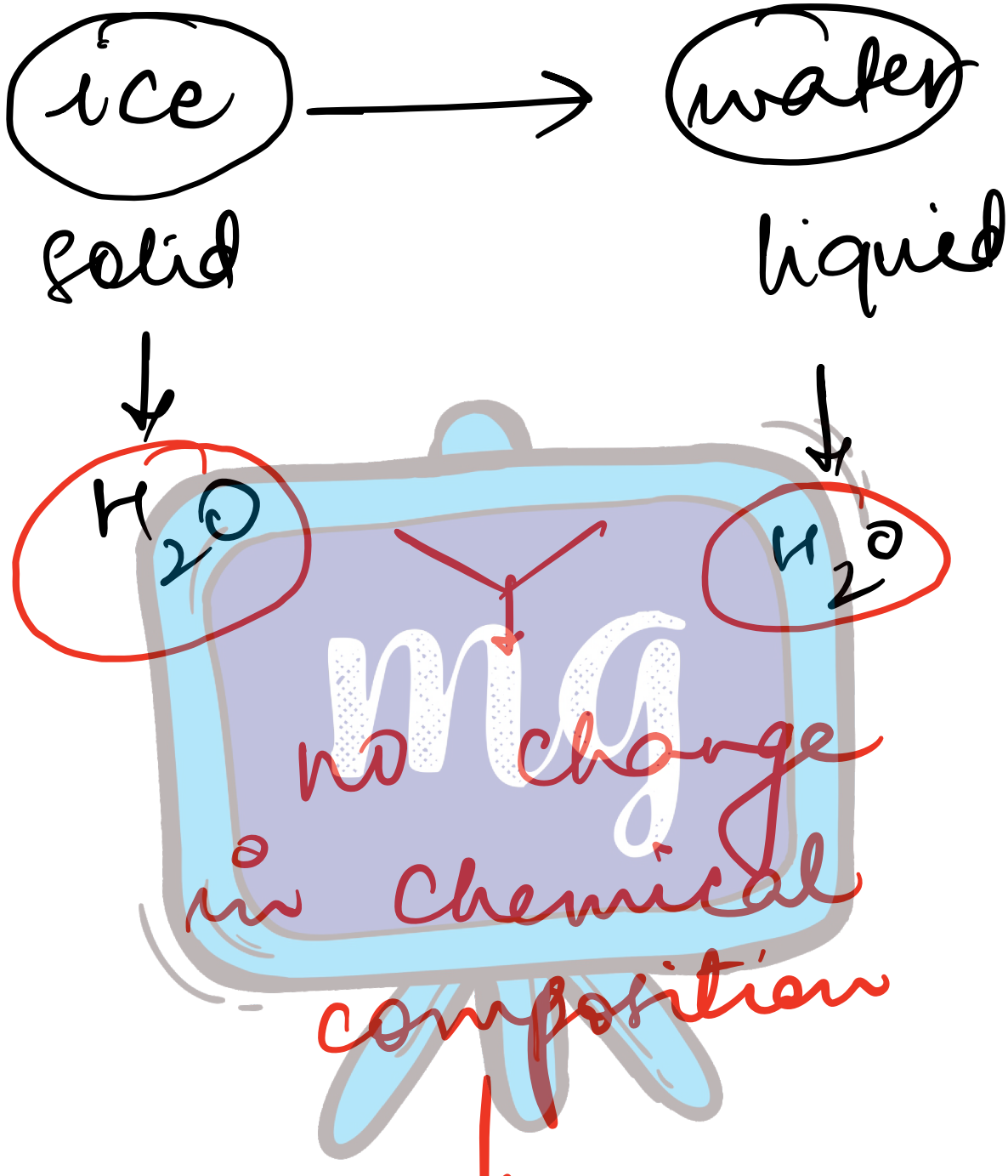
Change

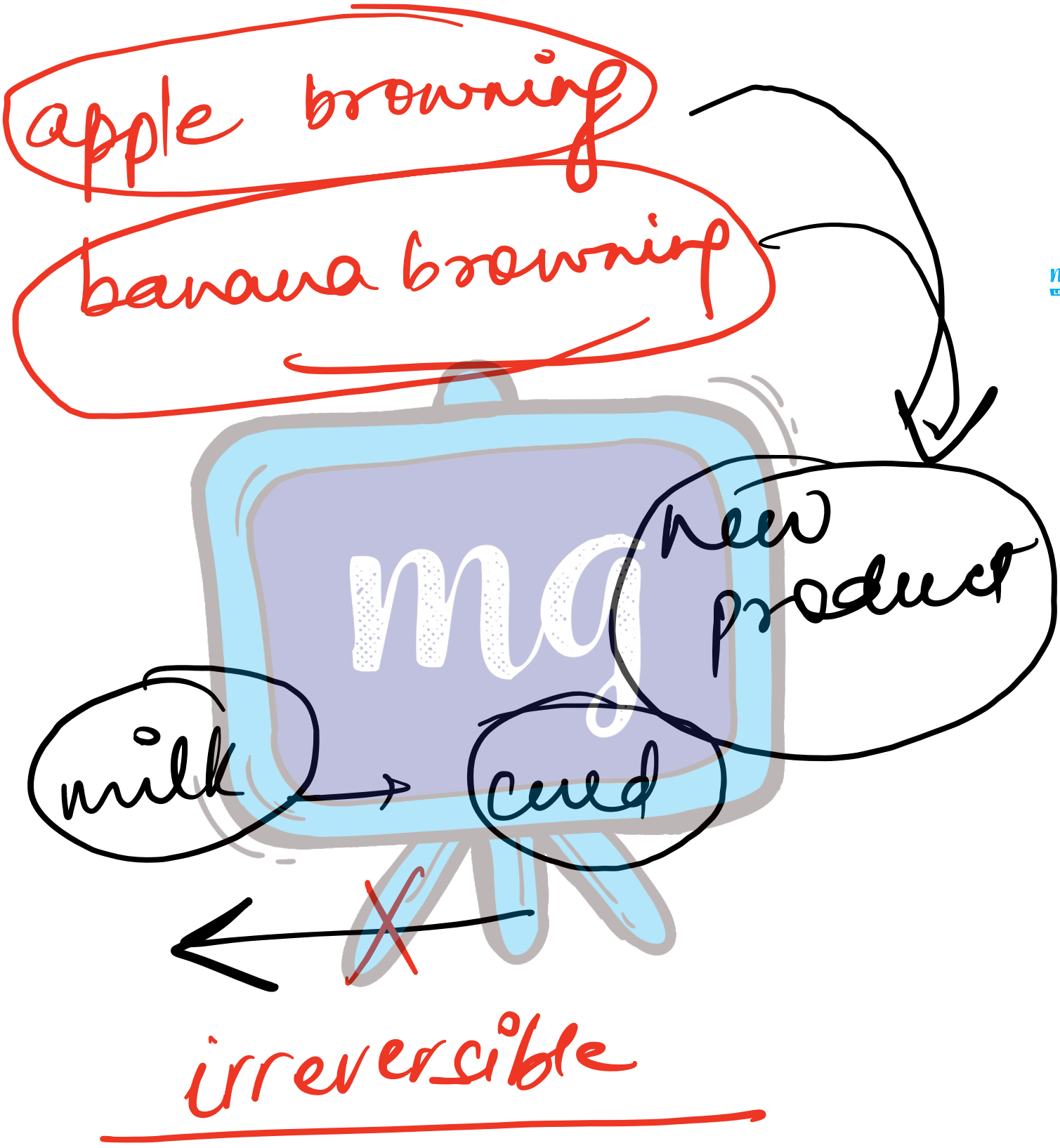
Physical Change

- → no new product is formed
- → change only in physical properties
- → usually reversible
- → no production of energy

Chemical change

- → new product is formed
- → change both in physical & chemical properties
- → irreversible
- → production of energy [light, heat, sound]


ice
water
solid
liquid
H_2O
H_2O
no change in chemical composition
only change in state
size
shape
state

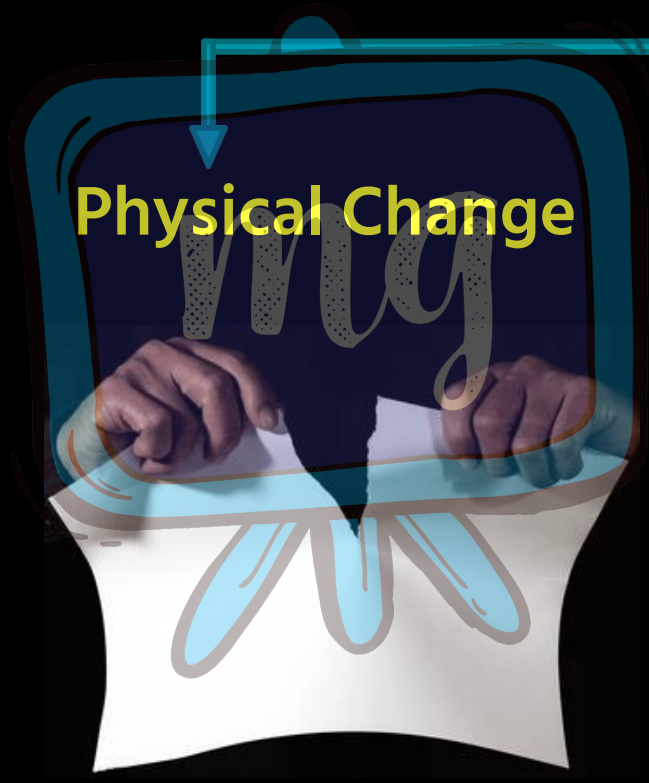

apple browning
banana browning
new product
milk
curd
irreversible

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Change

Physical Change



Chemical Change



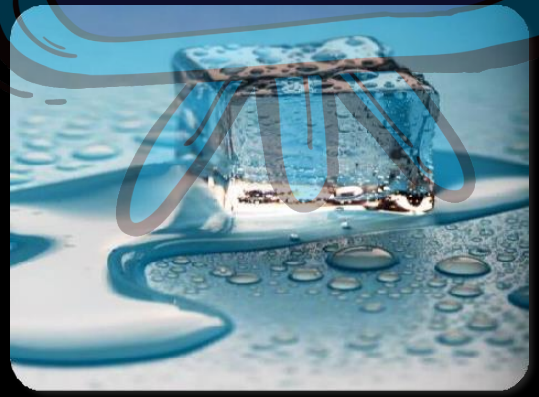
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Physical Change	Chemical Change
1. No new substance is formed.	New substance is formed.
2. Change in physical properties only. Example : Size, Shape, State	Change in both physical and chemical properties.
3. Usually reversible.	Irreversible.
4. No production of energy.	Involve production of energy (Heat, Sound, Light).

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Physical Change	Chemical Change
	
	

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Q. In which of the following, the identity of initial substance remains unchanged?

A. Curdling of milk

B. Formation of crystals by process of crystallisation

C. Fermentation of grapes

D. Digestion of food

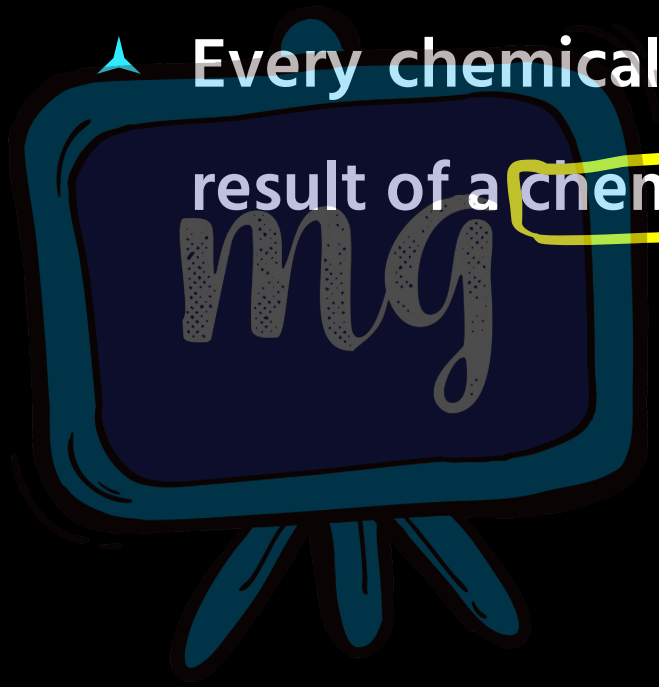
(2020)

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Note

- Every chemical change occurs as a result of a chemical reaction.



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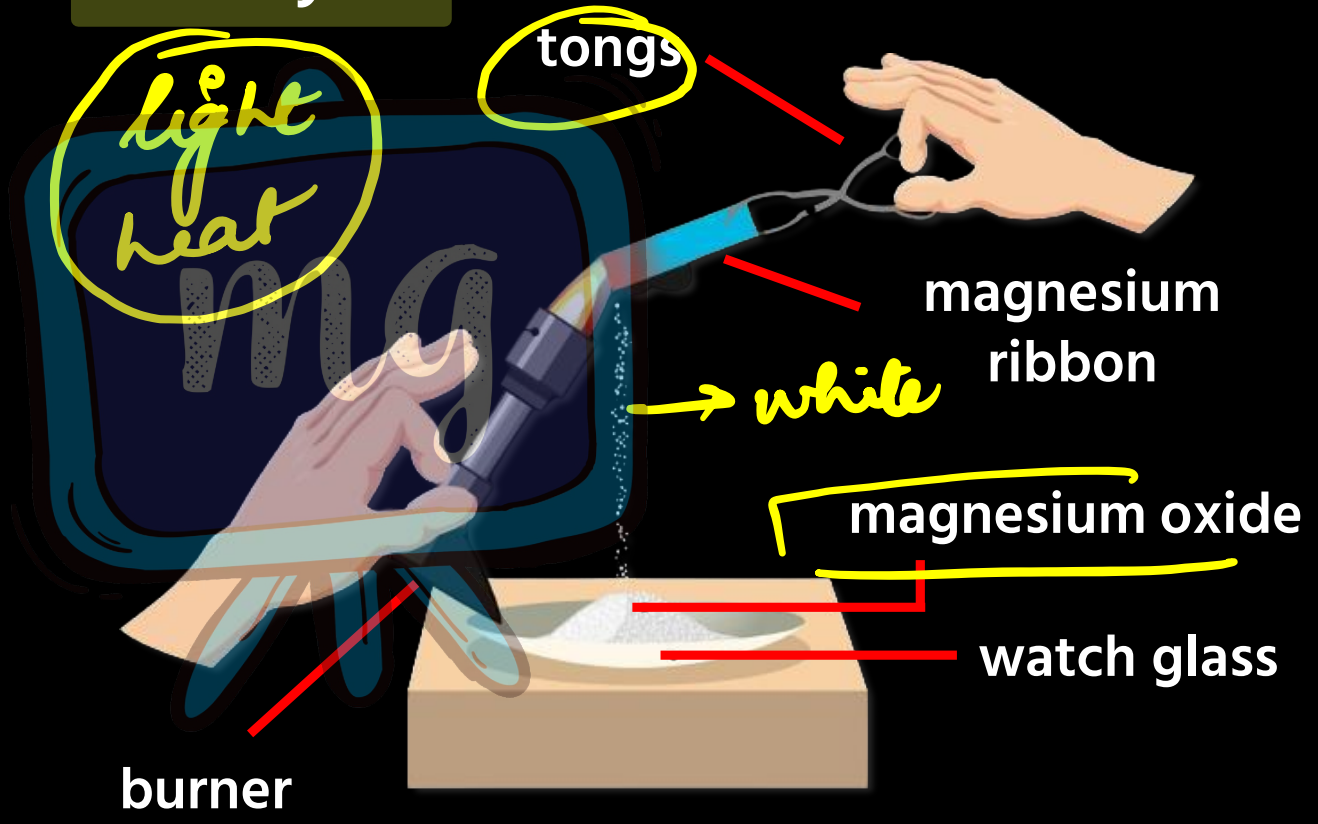
CHEMICAL REACTION

- One or more substance(s) react with each other to form new substance(s) with different properties.

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Activity - 1



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Chemical reaction :

Magnesium + Oxygen → Magnesium Oxide

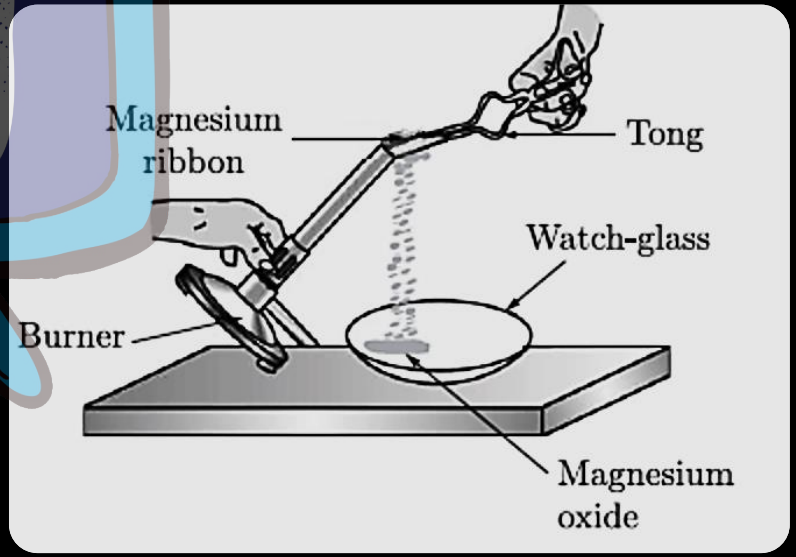
Observations :

- Magnesium ribbon burns with a dazzling white flame.
- White coloured powder, magnesium oxide is produced.

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Q. Which of the following is the correct observation of the reaction shown in the above set up? **(CBSE SQP, 2022)**



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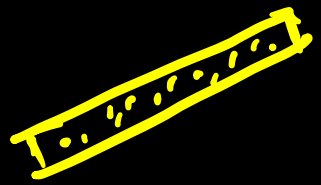
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A. Brown powder of Magnesium oxide is formed.

B. Colourless gas which turns lime water milky is evolved.

C. Magnesium ribbon burns with brilliant white light.

D. Reddish brown gas with a smell of burning Sulphur has evolved.



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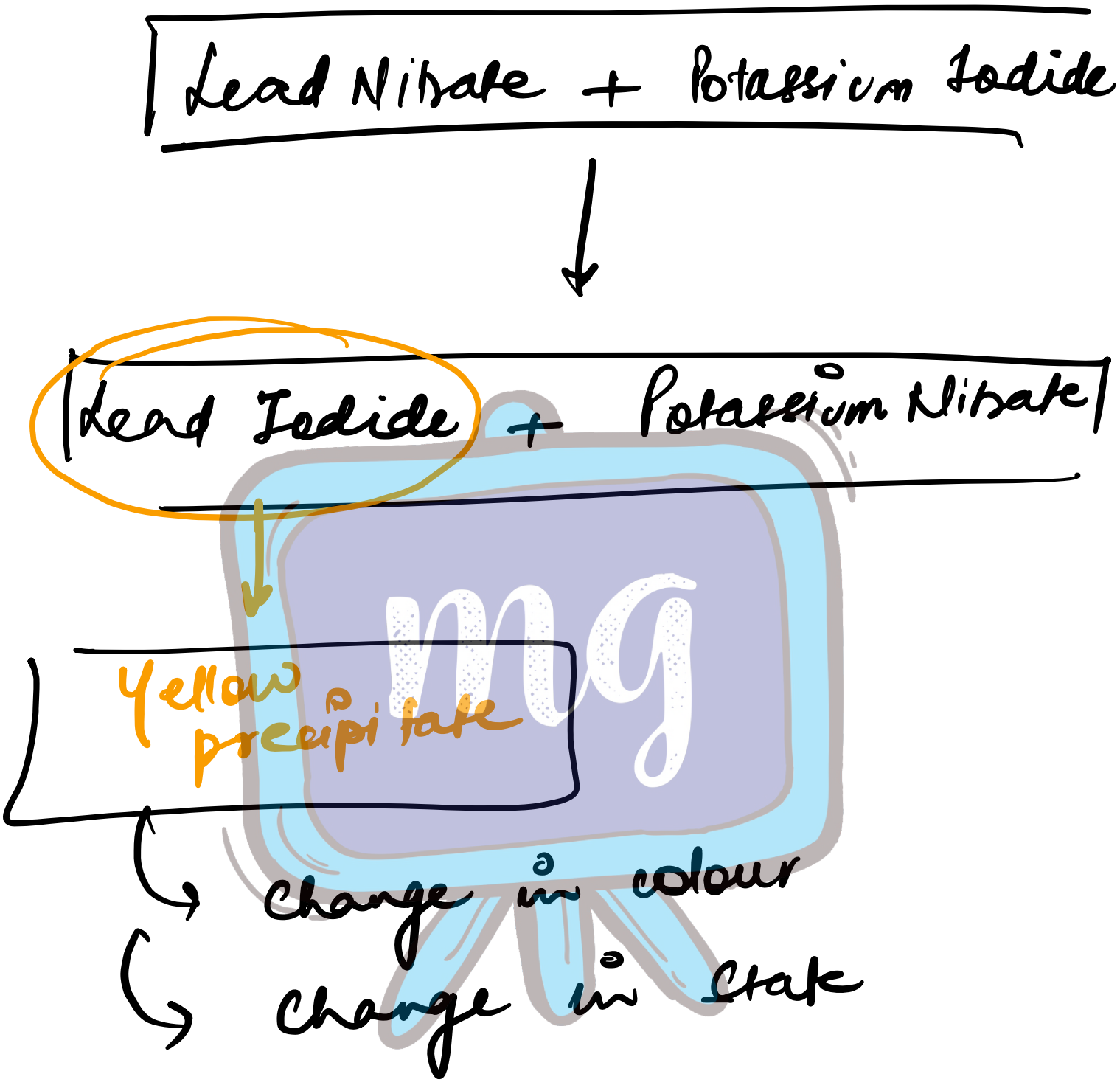
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Activity - 2








Lead Nitrate + Potassium Iodide
Lead Iodide + Potassium Nitrate
Yellow precipitate
change in colour
change in state

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Chemical reaction :

Lead Nitrate + Potassium Iodide

↓

Lead Iodide + Potassium Nitrate

Observations :

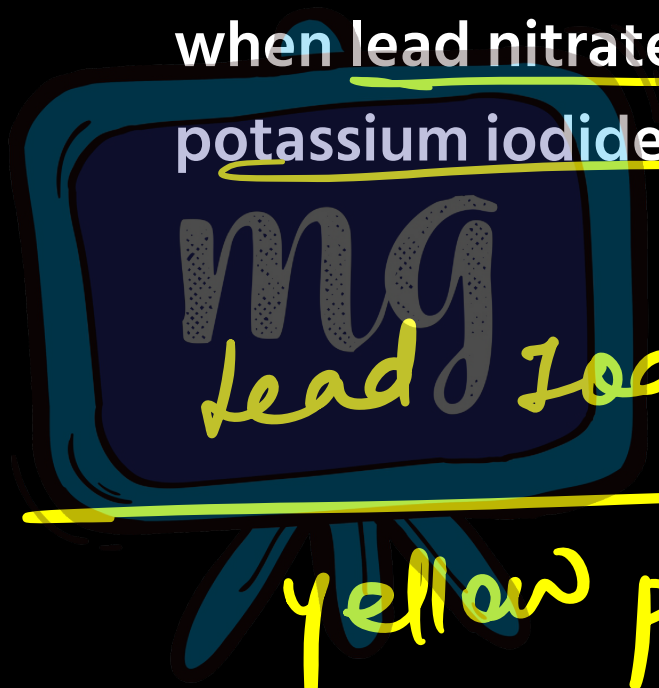
A yellow precipitate of lead iodide is obtained.

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Q. Name the colour of precipitate formed when lead nitrate solution is added to potassium iodide solution?

(2020)



Lead Iodide

yellow ppt.

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Q. Reema took 5 ml of lead nitrate solution in a beaker and added approximately 4 ml of potassium iodide solution to it. What would she observe?

A. The solution turned red.

B. Yellow precipitate was formed.

C. White precipitate was formed.

D. The reaction mixture became hot.

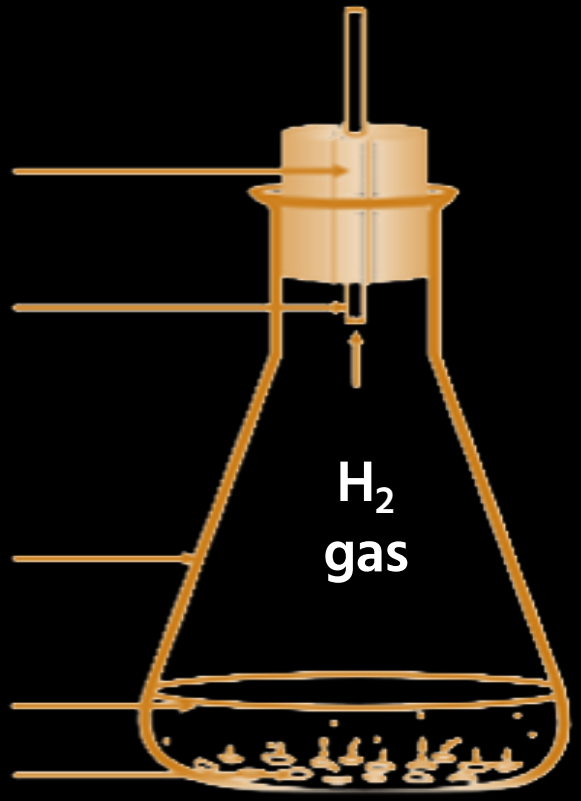
B

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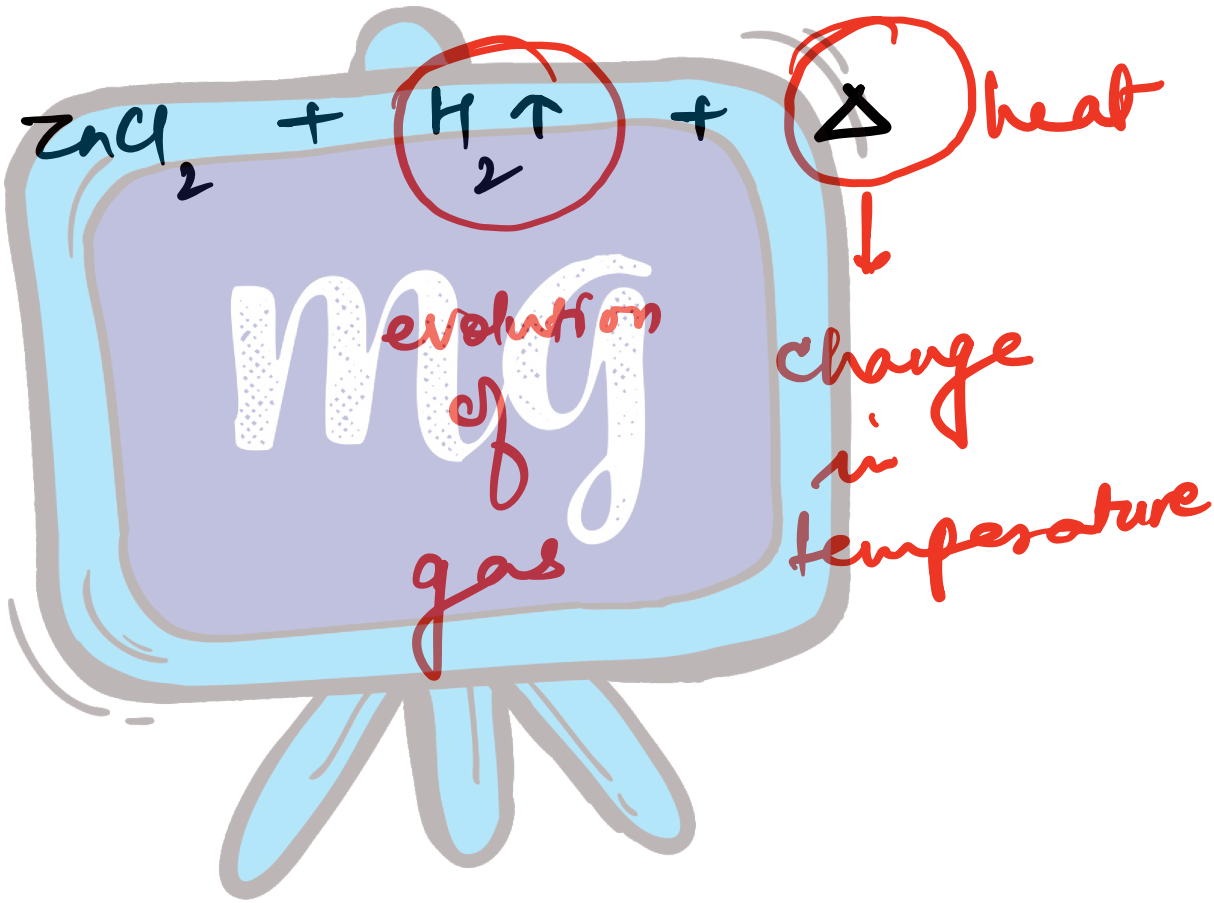
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Activity - 3





Zinc + Dil. HCl / H_2SO_4



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Chemical reaction :

Zinc + Dilute Hydrochloric acid

↓

Zinc Chloride + Hydrogen gas + Heat

Observations :

- Zinc chloride is formed.
- Hydrogen gas is evolved.
- Increase in temperature.

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S. No.	CHARACTERISTICS OF A CHEMICAL REACTION	
1.	Change in state	Hydrogen (g) + Oxygen (g) ⟶ Water (l)
2.	Change in colour	Silver + Hydrogen Sulphide ⟶ Silver sulphide + Hydrogen (g)
3.	Change in tempera-ture	Calcium Oxide + water ⟶ Calcium hydroxide + Heat
4.	Evolution of gas	Zinc + Hydrochloric acid ⟶ Zinc Chloride + Hydrogen (g)

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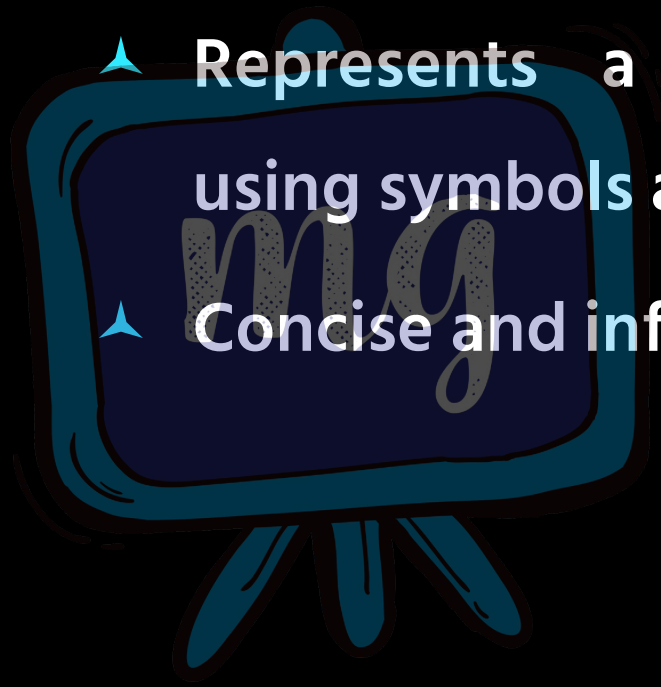
Q. Define a chemical reaction. State four observations which help us to determine that a chemical reaction has taken place. Write one example of each observation.

(2016)

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CHEMICAL EQUATION



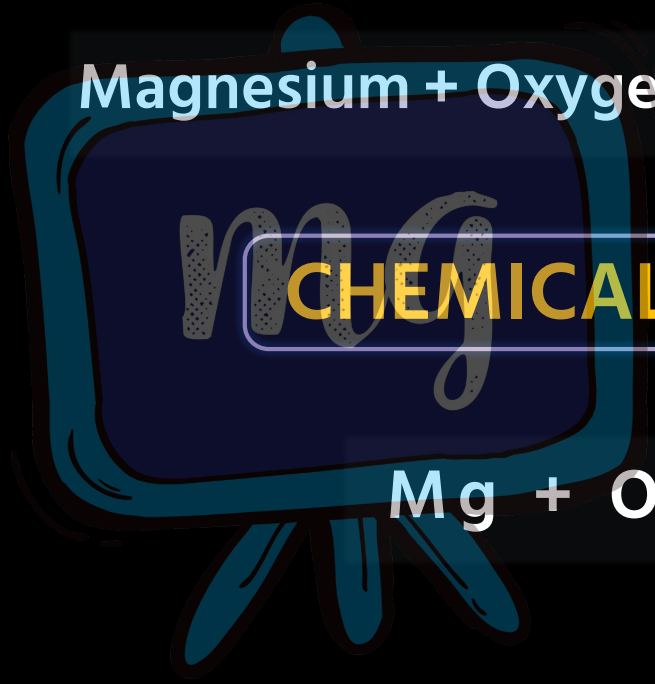
- Represents a chemical reaction using symbols and formula.
- Concise and informative way.

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WORD EQUATION

Magnesium + Oxygen → Magnesium Oxide



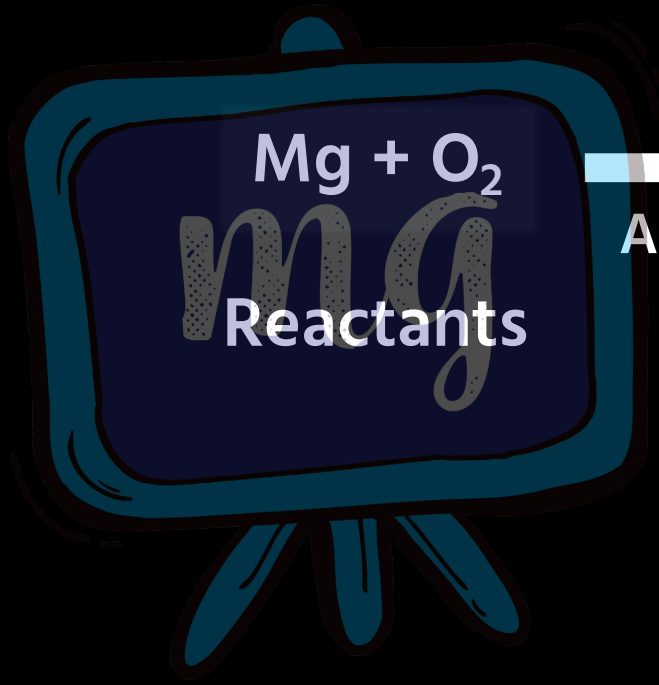
CHEMICAL EQUATION

$$Mg + O_2 \rightarrow MgO$$

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Reactants and Products



Arrow

MgO

Products

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Reactants and Products

Reactants	Products
1. Substances that undergo chemical change in a reaction.	New substances formed in a chemical reaction.
2. Written on left hand side (LHS) with (+) plus sign between them.	Written on right hand side with (+) plus sign between them

Arrow (→) :

1. Indicates direction of the reaction.
2. Points towards the products.