

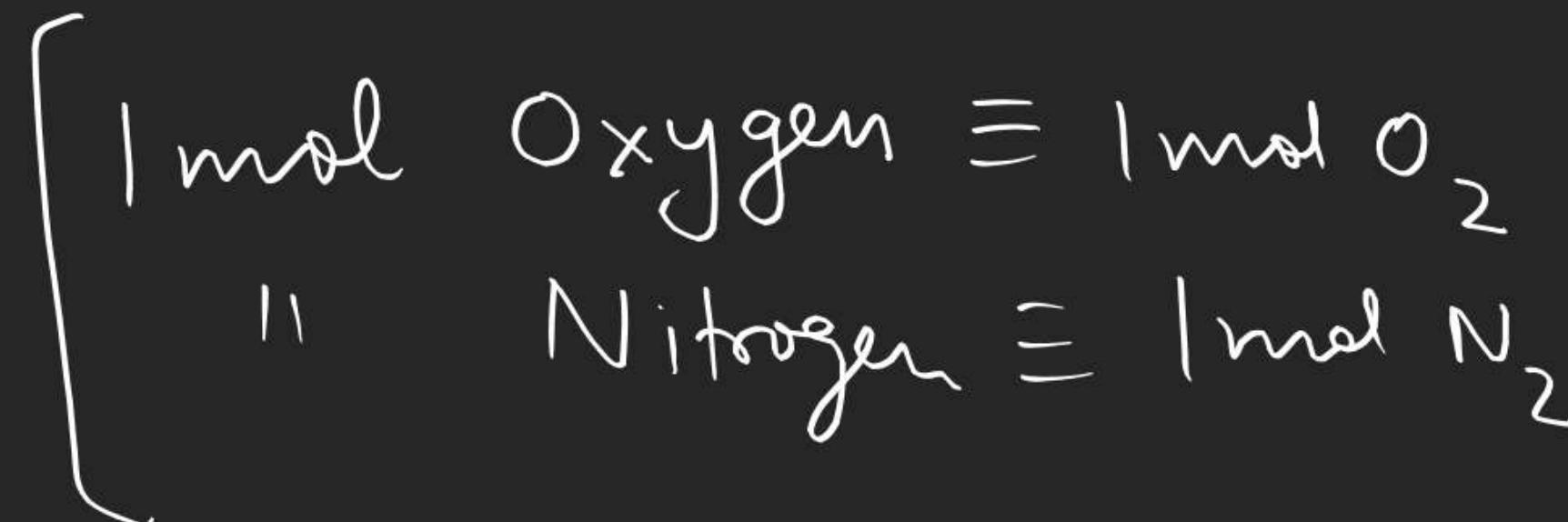
O-III-15

(12)

$$W_{\underline{\text{NaI}}} = 3 \times \frac{0.5}{100} \text{ gm}$$

$$= 1.5 \times 10^{-2} \text{ gm}$$

(13)



1 mol 'O'

$\equiv 16 \text{ gm } 'O'$

1 mol O_2

$\equiv 32 \text{ gm Oxygen}$

| 1 g-atom oxygen $\equiv 1 \text{ mol } 'O'$

| 1 g-molecule oxygen $\equiv 1 \text{ mol } O_2$

(13)

Ⓐ

$$1 \text{ g-atom of C} \equiv 1 \text{ mol 'C'} \equiv 12 \text{ gm}$$

Ⓑ

$$\frac{1}{2} \text{ mol of CH}_4 \equiv \frac{1}{2} \times 16 = 8 \text{ gm}$$

Ⓒ

$$10 \text{ ml H}_2\text{O} \equiv 10 \text{ gm}$$

Ⓓ

$$\underline{3.011 \times 10^{23}} \text{ atoms of oxygen} \equiv \frac{1}{2} \text{ mol 'O'}$$

$$= \frac{1}{2} \times 16 = 8 \text{ gm}$$

6-18

10



W gm

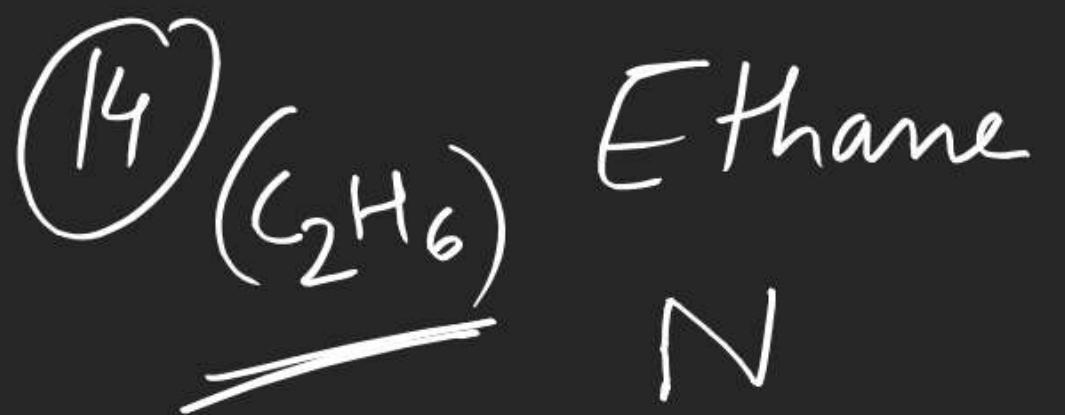
$$\text{No. of moles} = \frac{W}{268}$$

$$\begin{aligned}\text{nucleon} &= n + p \\ &= \text{mass number}\end{aligned}$$

$$6.023 \times 10^{22} \text{ atoms of 'O'}$$

$$\begin{aligned}\text{no. of moles of 'O' atom} &= \frac{W}{268} \times 11\end{aligned}$$

$$\frac{W}{268} \times 11 \times N_A = 6.023 \times 10^{22}$$

N

$$\frac{N}{N_A} \text{ mol}$$



$$10 \times 10^6$$

$$\frac{10 \times 10^6}{N_A} \text{ mol}$$

$$\frac{N}{N_A} \times 30 = \frac{10 \times 10^6}{N_A} \times 16$$

$$W = d \times V$$

⑯ $= 89600 \times \frac{0.25}{100}$

$$= 896 \times \frac{1}{4}$$

mass γ
Fe $= \underline{\underline{224}} \text{ gm}$

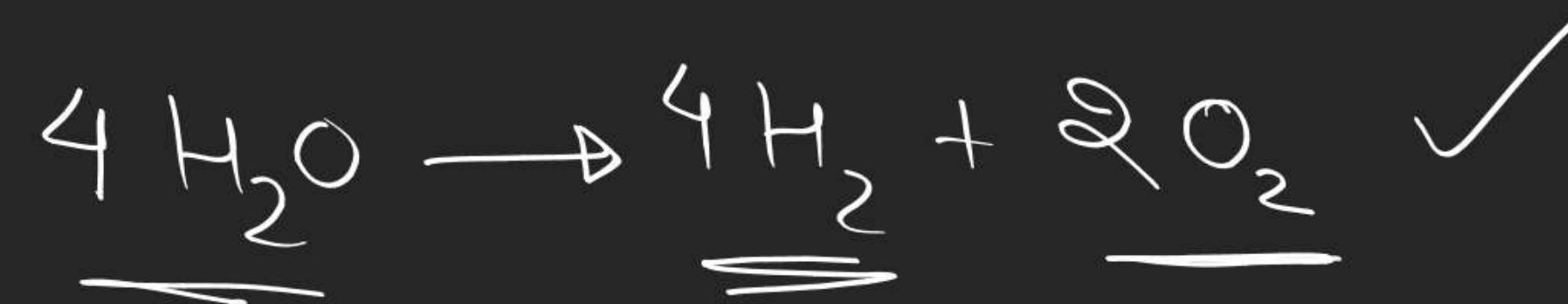
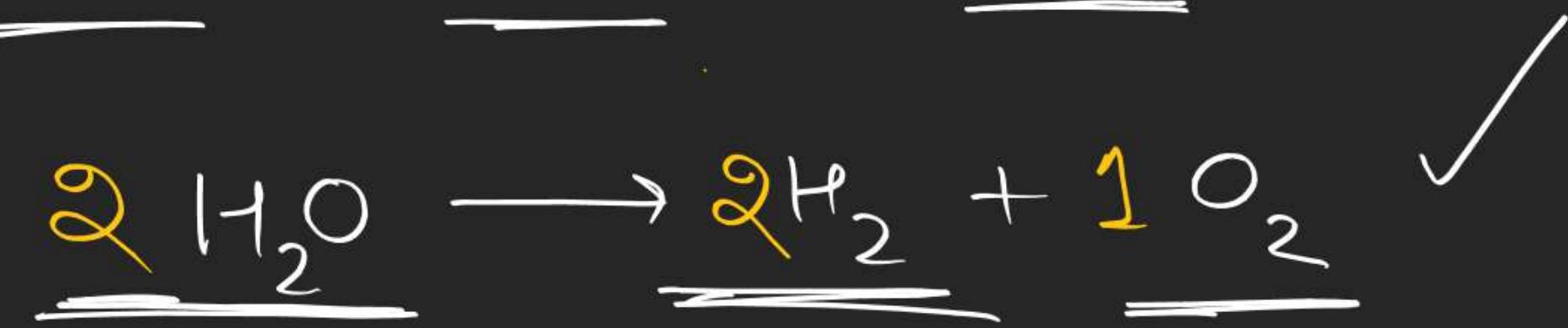
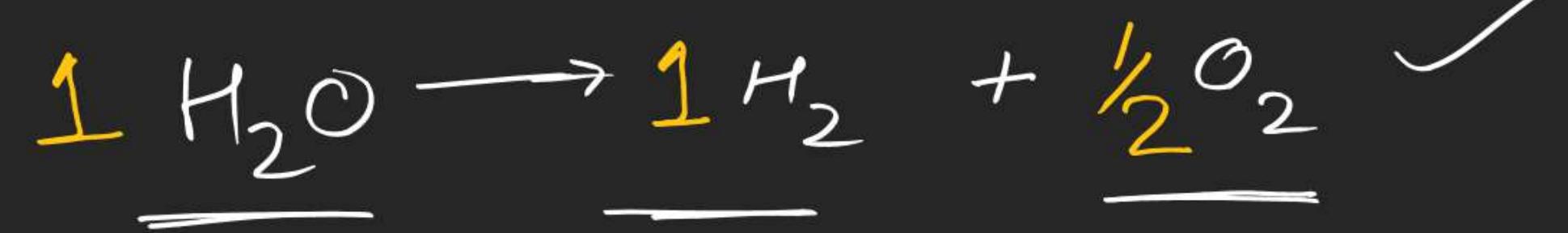
56 gm

no
mol
mass
Volume (gas)

Balancing Reactions

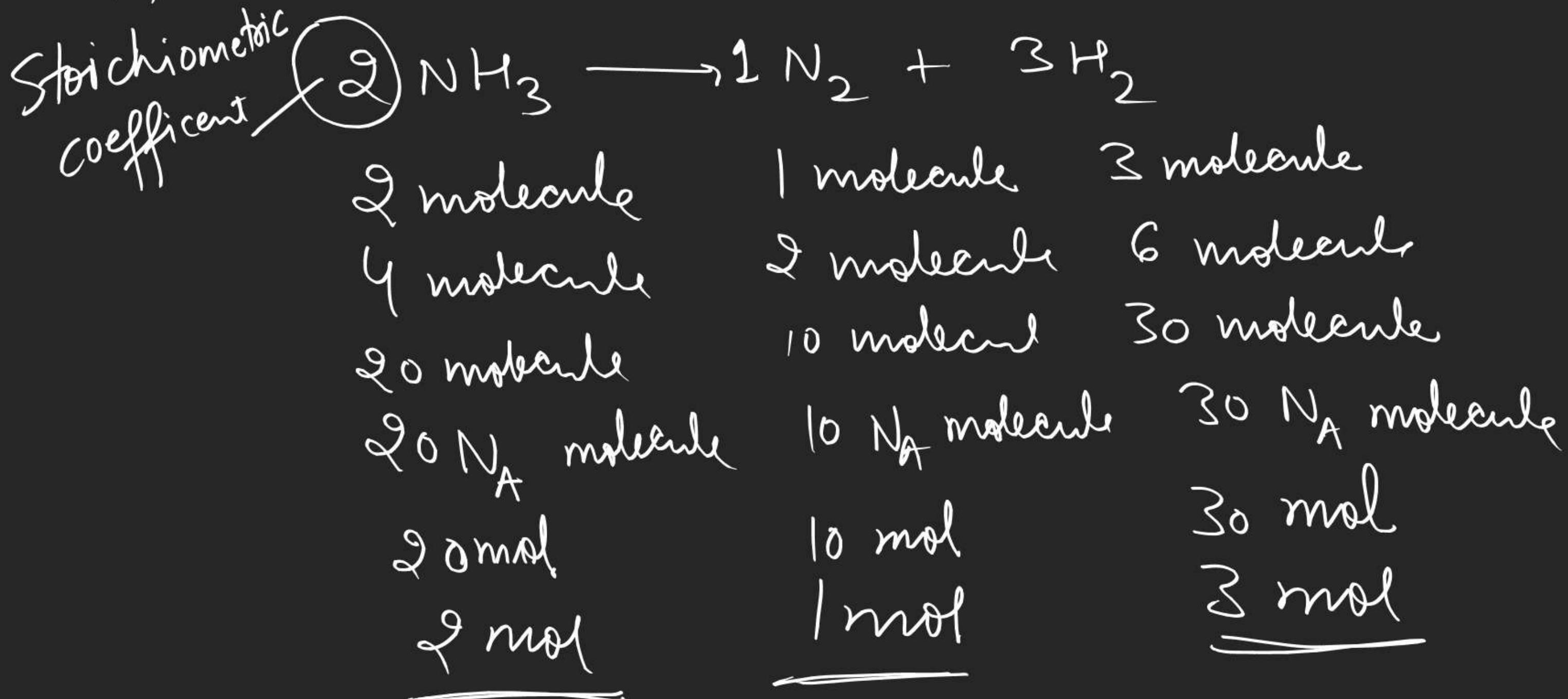
POAC

↑
Principle of
atom conservati





Application of Mole concept : →

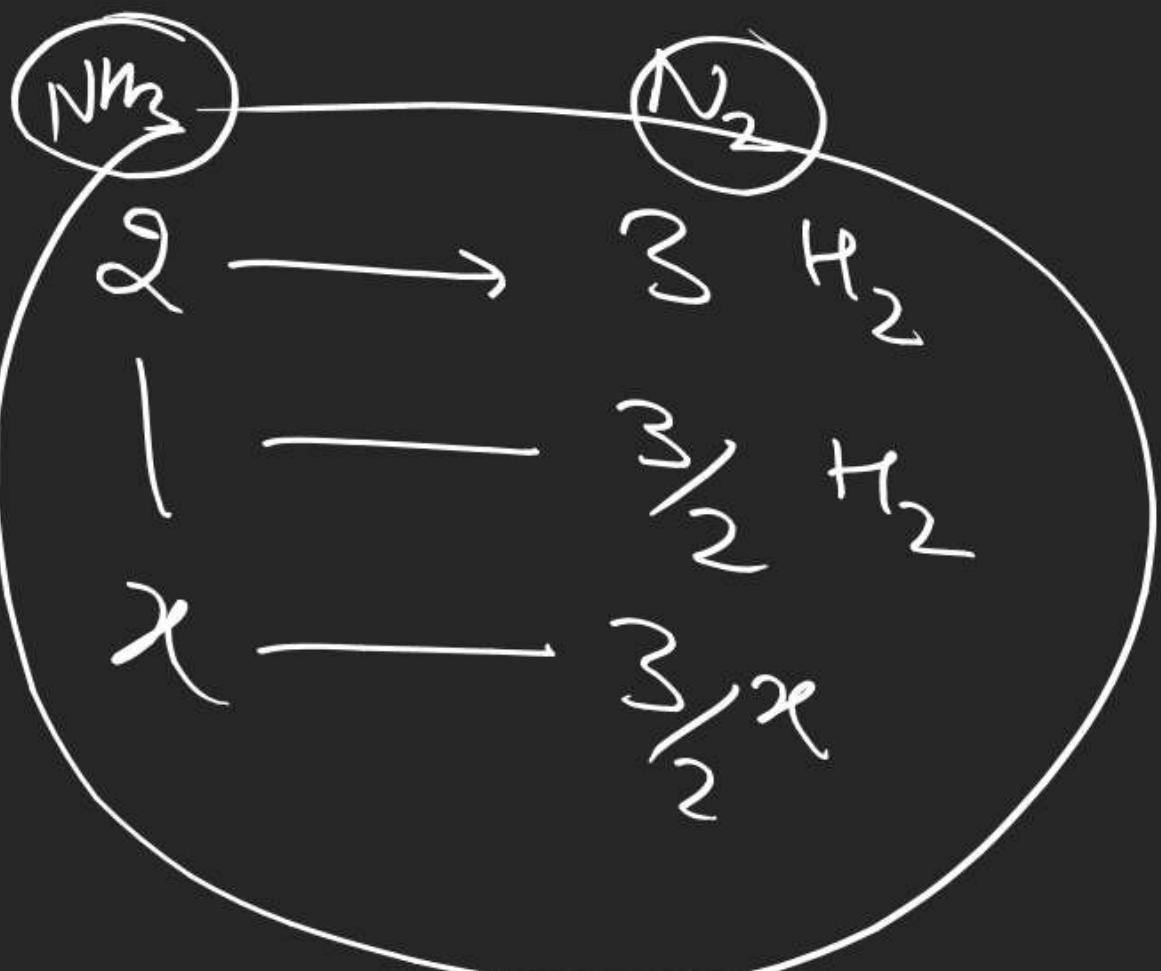
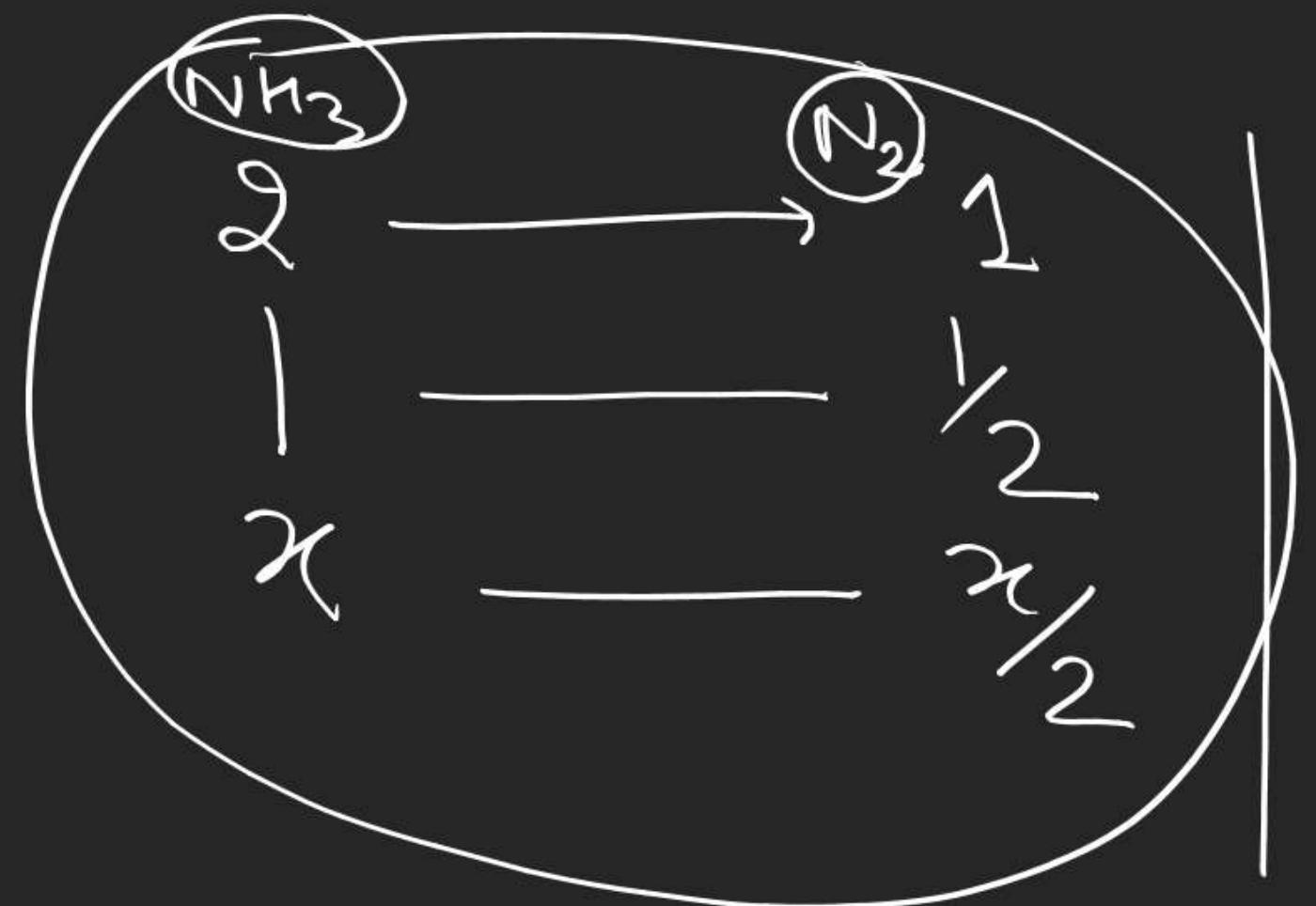




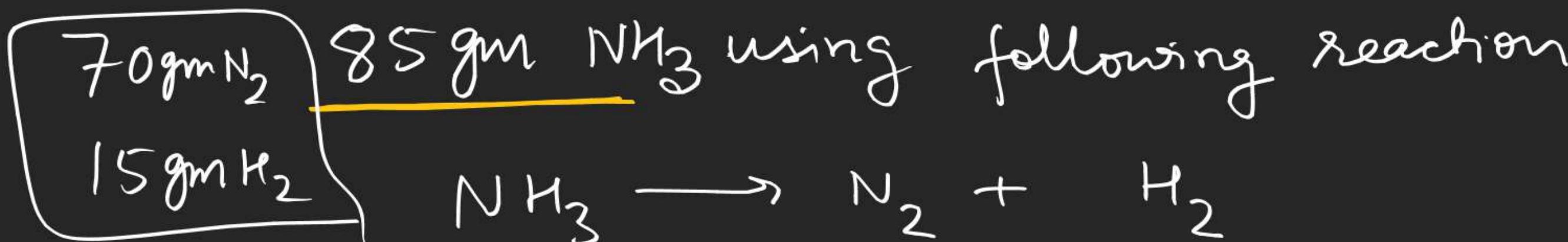
x mol

$\frac{x}{2}$ mol

$\frac{3x}{2}$ mol

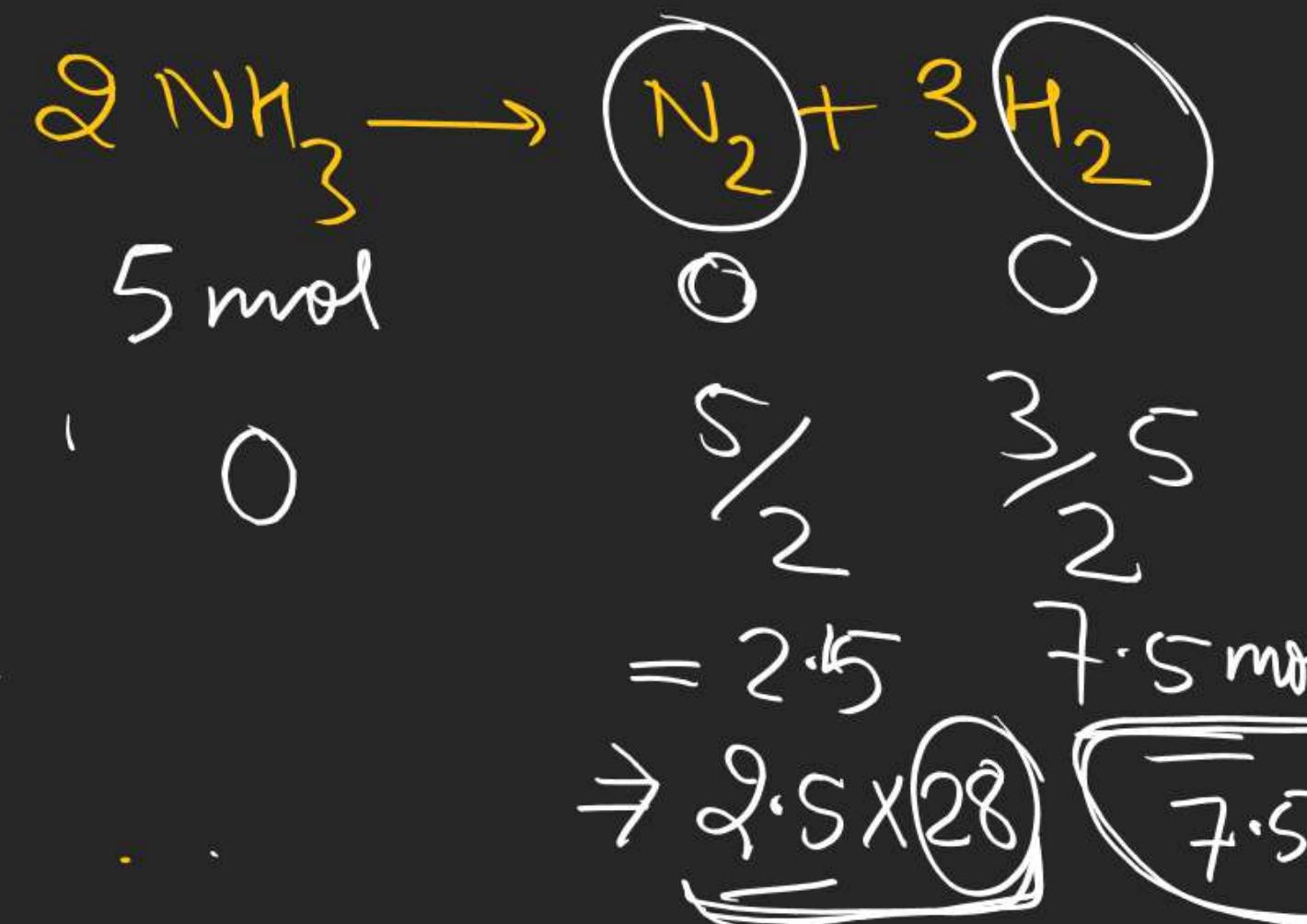


Q. find mass of N_2 and H_2 produced by



Soln

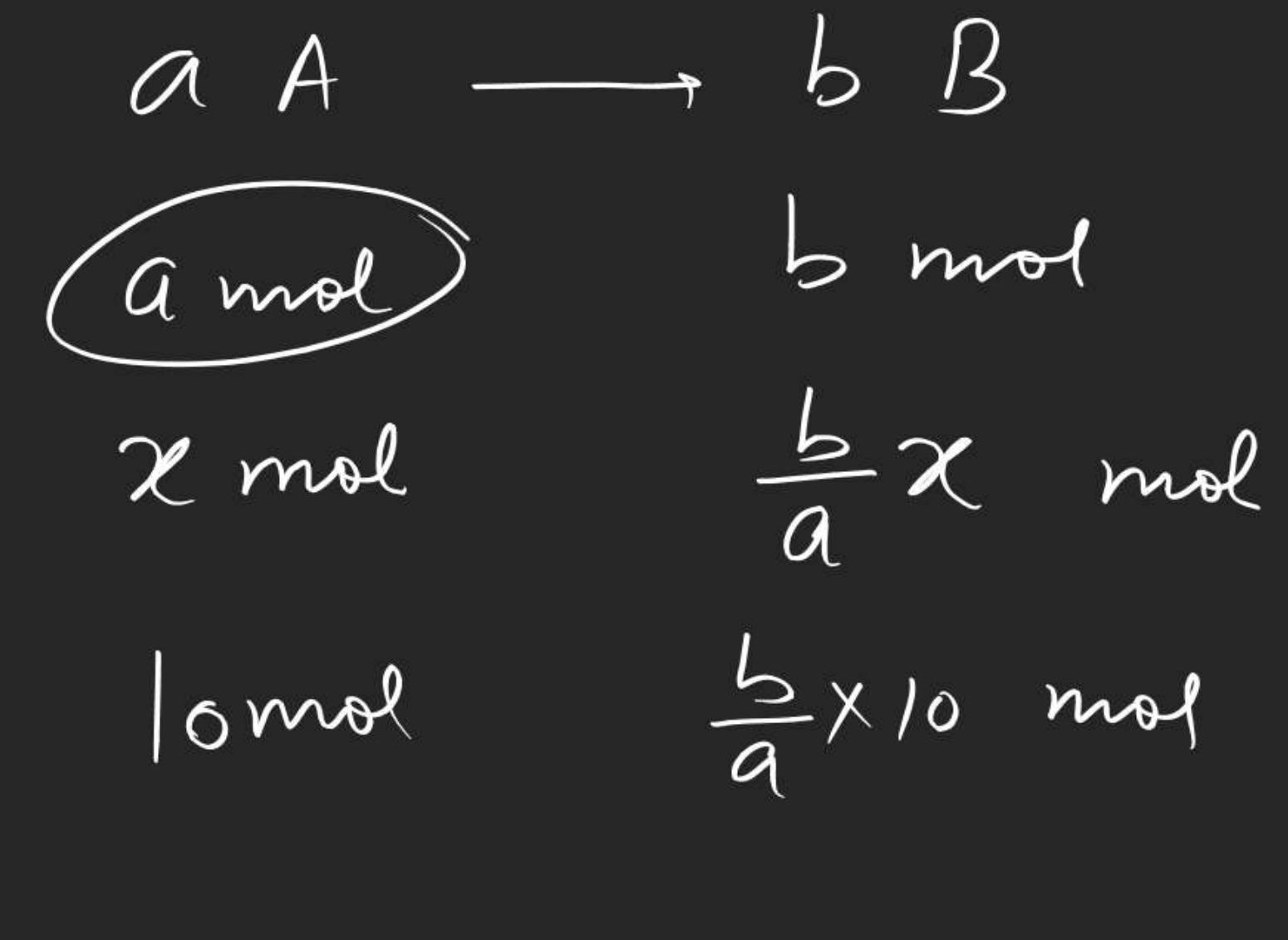
$$\begin{array}{rcl} 2 & \rightarrow & 1 \\ | & & | \\ 1 & - & \frac{1}{2} \\ 5 & \rightarrow & \frac{5}{2} \end{array}$$



molar mass of $NH_3 = \frac{85}{17} = 5$ mol

$$2.5 \times 28 = 70 \text{ gm}$$

$$7.5 \times 2 = 15 \text{ gm}$$



$$\text{no. of moles} = \frac{\text{mass}}{\text{Molar mass}}$$

$$\text{mass} = (\text{no. of moles}) \times \text{Molar mass}$$



5 mol	O	O
0	$\frac{1}{2} \times 5$	$\frac{3}{2} \times 5$
2.5 mol	7.5 mol	
$= 2.5 \times 28$	7.5×2	
$= 70$	$= 15$	



6 mol

O

O

$$\frac{3}{2} \times 6$$

O

$$\frac{4}{2} \times 6$$

$$= 9 \text{ mol} = 12 \text{ mol}$$

$$\underline{\underline{9 \times M_B}}$$

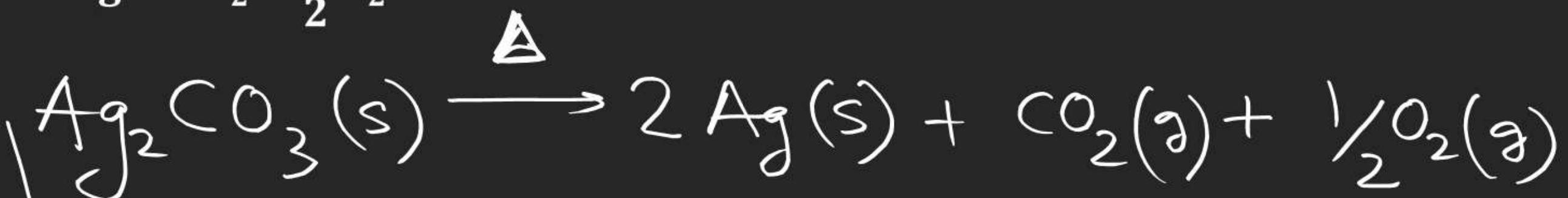
$$\underline{\underline{12 \times M_C}}$$

MOLE CONCEPT

Calculate the residue obtained on strongly heating 2.76 g Ag_2CO_3 .



$$\begin{aligned} &= \frac{2.76}{276} \\ &= 0.01 \\ &\text{mol} \end{aligned}$$



$$0.01 \text{ mol}$$

$$○$$

$$0.01 \times 2$$

$$0.01 \times 2 \times 108$$

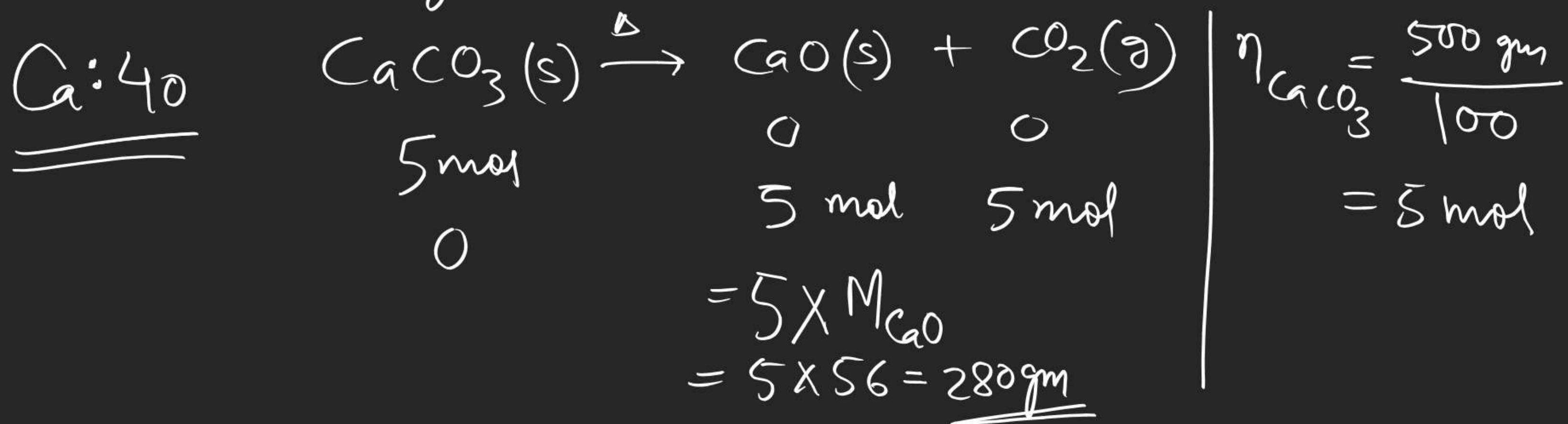
$$= 2.16 \text{ gm}$$

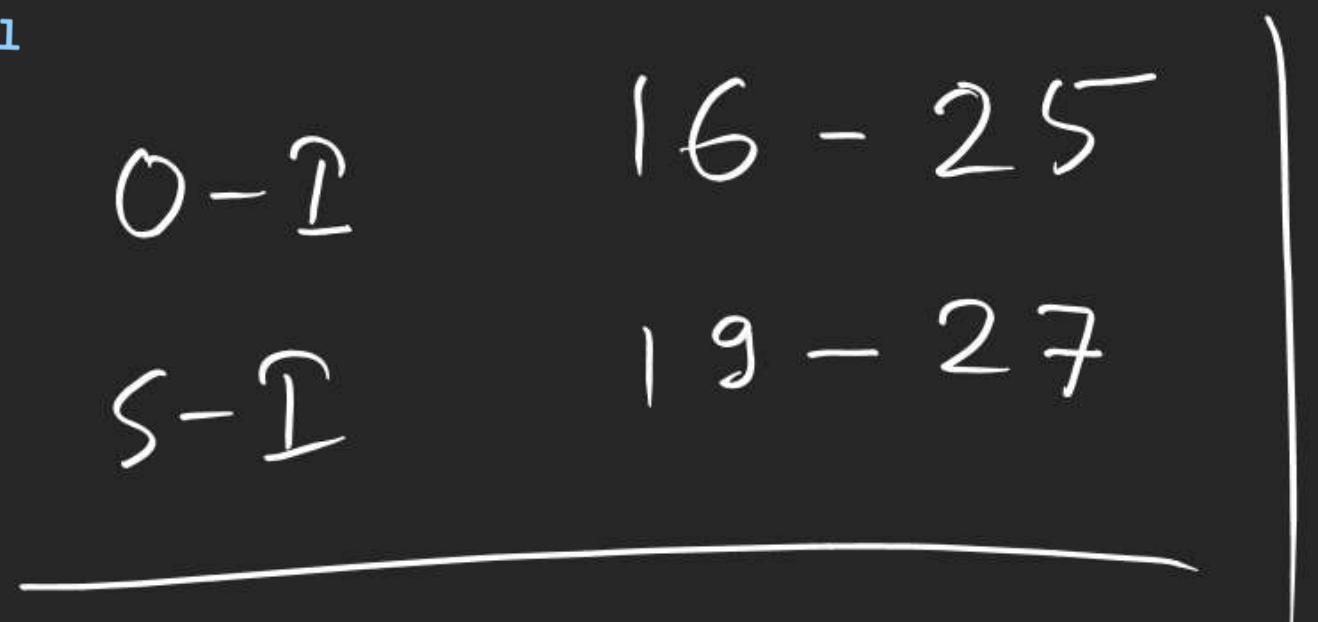
$$\begin{aligned} &○ \\ &○ \\ &○ \\ &\frac{0.01}{2} \\ &5.52 \\ &2.16 \\ &1.08 \end{aligned}$$

$$\text{Ag: } 108$$

Type-1 problems : Reactions in which only one reactant is involved.

Q. Calculate mass of residue obtained by heating 500 gm $\text{CaCO}_3(s)$. Given





$$\frac{\text{no. of moles}}{6} = \frac{\text{mass}}{\text{Molar mass}}$$

$$\text{mass} = \underline{\text{no. of moles}} \times \underline{\text{Molar mass}}$$