

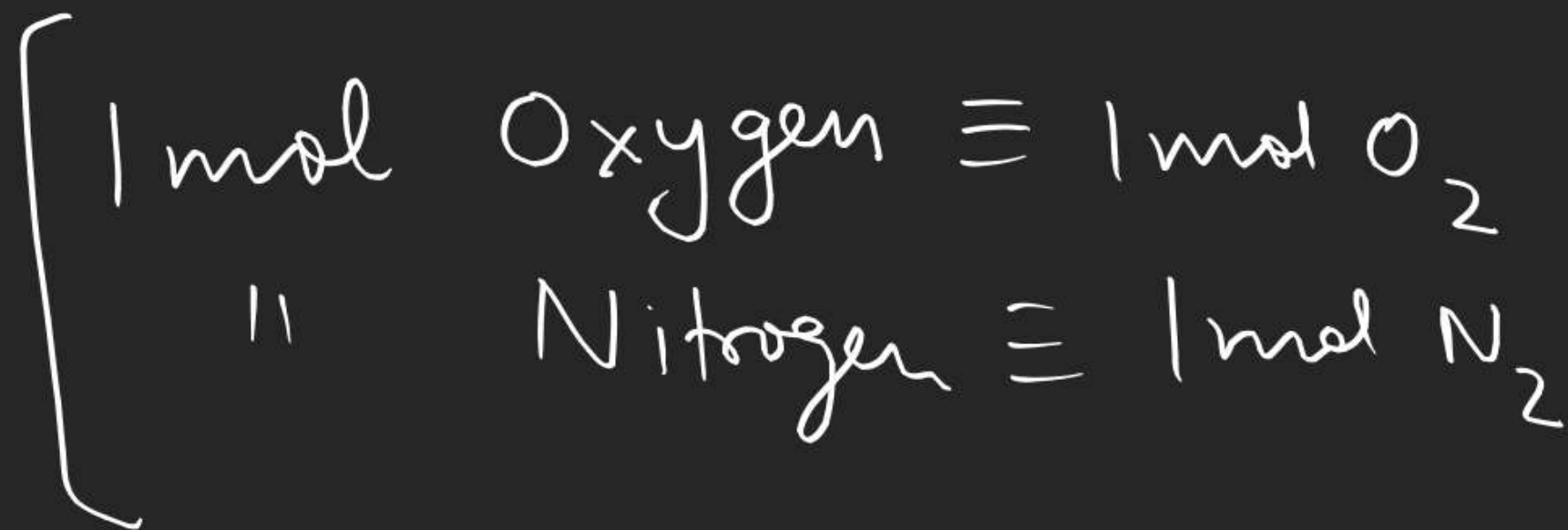
0-I11-15

(12)

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

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

(13)



1 mol 'O' $\equiv 16 \text{ gm 'O'}$ 1 mol O_2 $\equiv 32 \text{ gm Oxygen}$

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

$1 \text{ g-molecule oxygen} \equiv 1 \text{ mol O}_2$

(13)

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

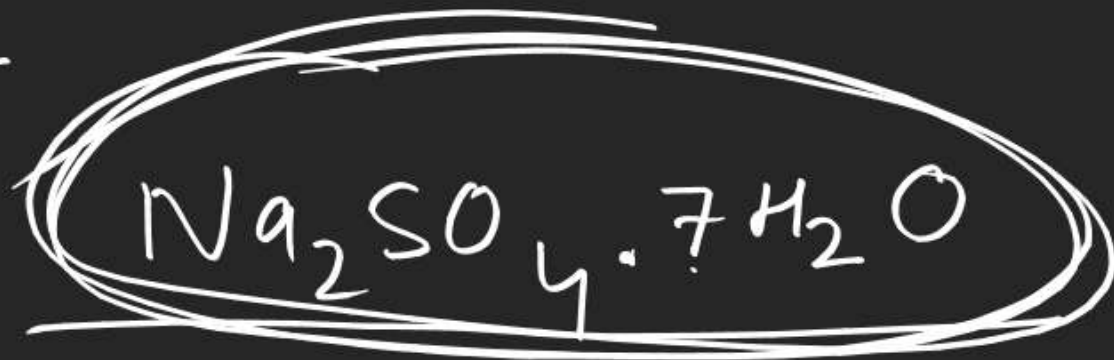
(B) $\frac{1}{2} \text{ mol of CH}_4 \equiv \frac{1}{2} \times 16 = 8 \text{ gm}$

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

(D) $\underline{\underline{3.011 \times 10^{23} \text{ atoms of oxygen}}} \equiv \frac{1}{2} \text{ mol 'O'}$
 $= \frac{1}{2} \times 16 = 8 \text{ gm}$

6-18

(10)



W gm

 6.023×10^{22} atom of 'O'

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

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

$$\text{nucleon} = n + p$$

$$= \text{mass number}$$

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

(14) (C₂H₆) Ethane

N

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

$$\frac{N}{N_A} \times 30$$

methane (CH₄)

$$10 \times 10^6$$

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

$$\frac{10 \times 10^6}{N_A} \times 16$$

$$(16) = 89600 \times \frac{0.25}{100}$$

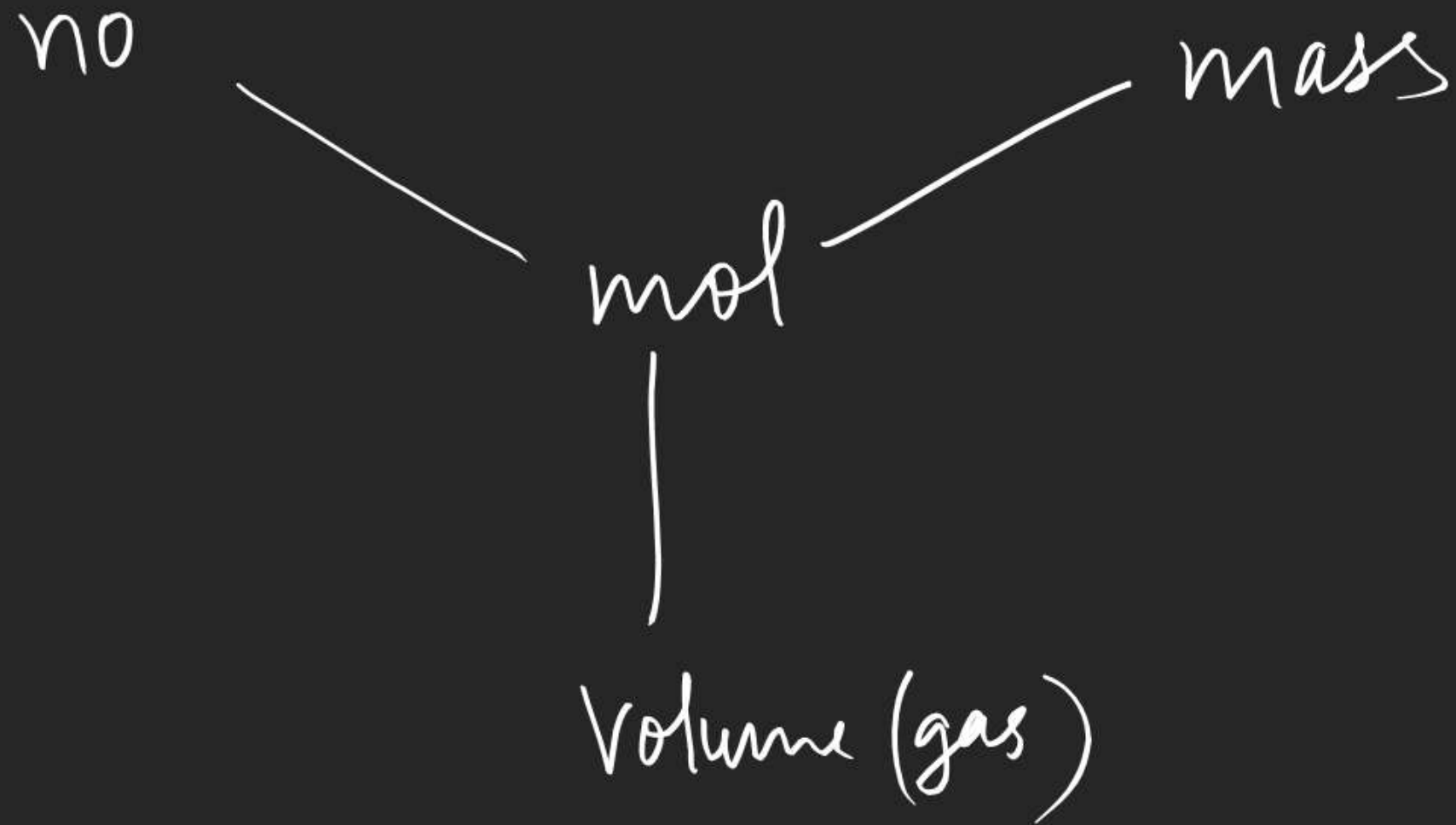
$$= 896 \times \frac{1}{4}$$

mass of
Fe

$$= \underline{\underline{224}} \text{ gm}$$

$$W = d \times V$$

$$(56) \text{ gm}$$

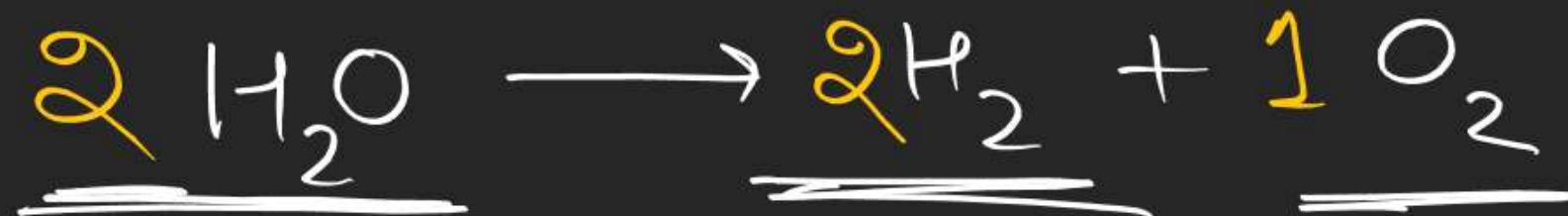
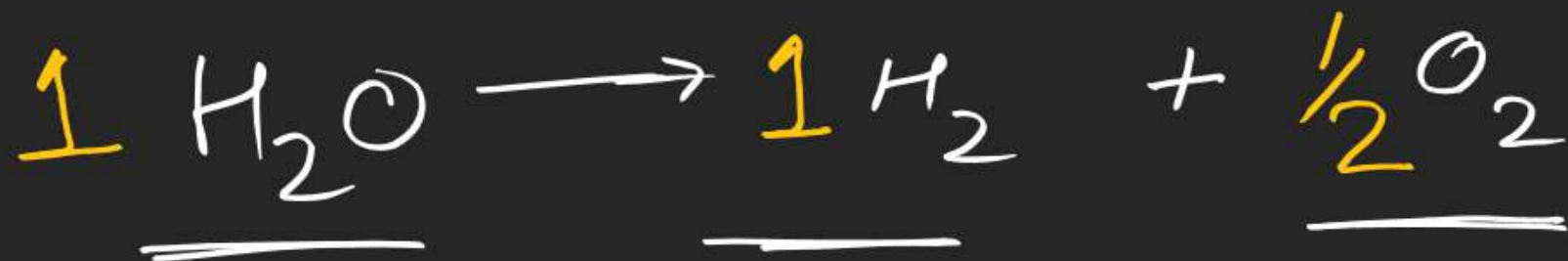


Balancing η Reactions

POAC



Principle of
atom conservation

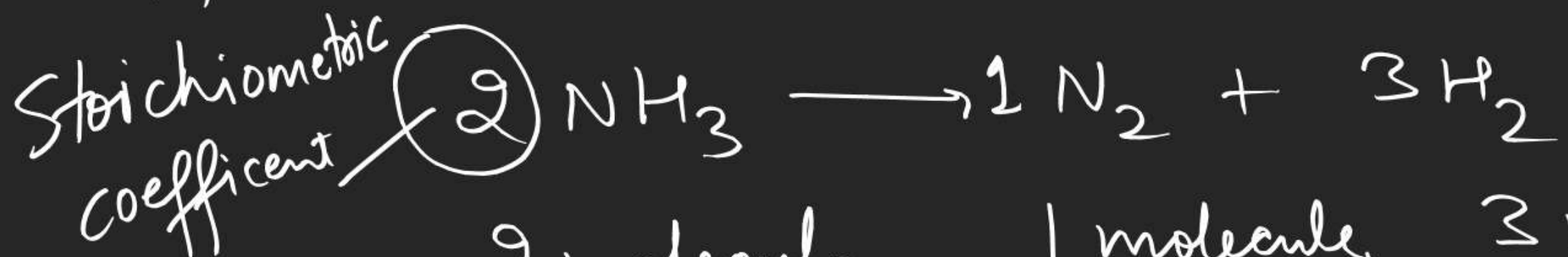


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Application of Mole concept : \rightarrow

Stoichiometric
coefficient



2 molecule

1 molecule

3 molecule

4 molecule

2 molecule

6 molecule

20 molecule

10 molecule

30 molecule

20 N_A molecule

10 N_A molecule

30 N_A molecule

20 mol

10 mol

30 mol

2 mol

1 mol

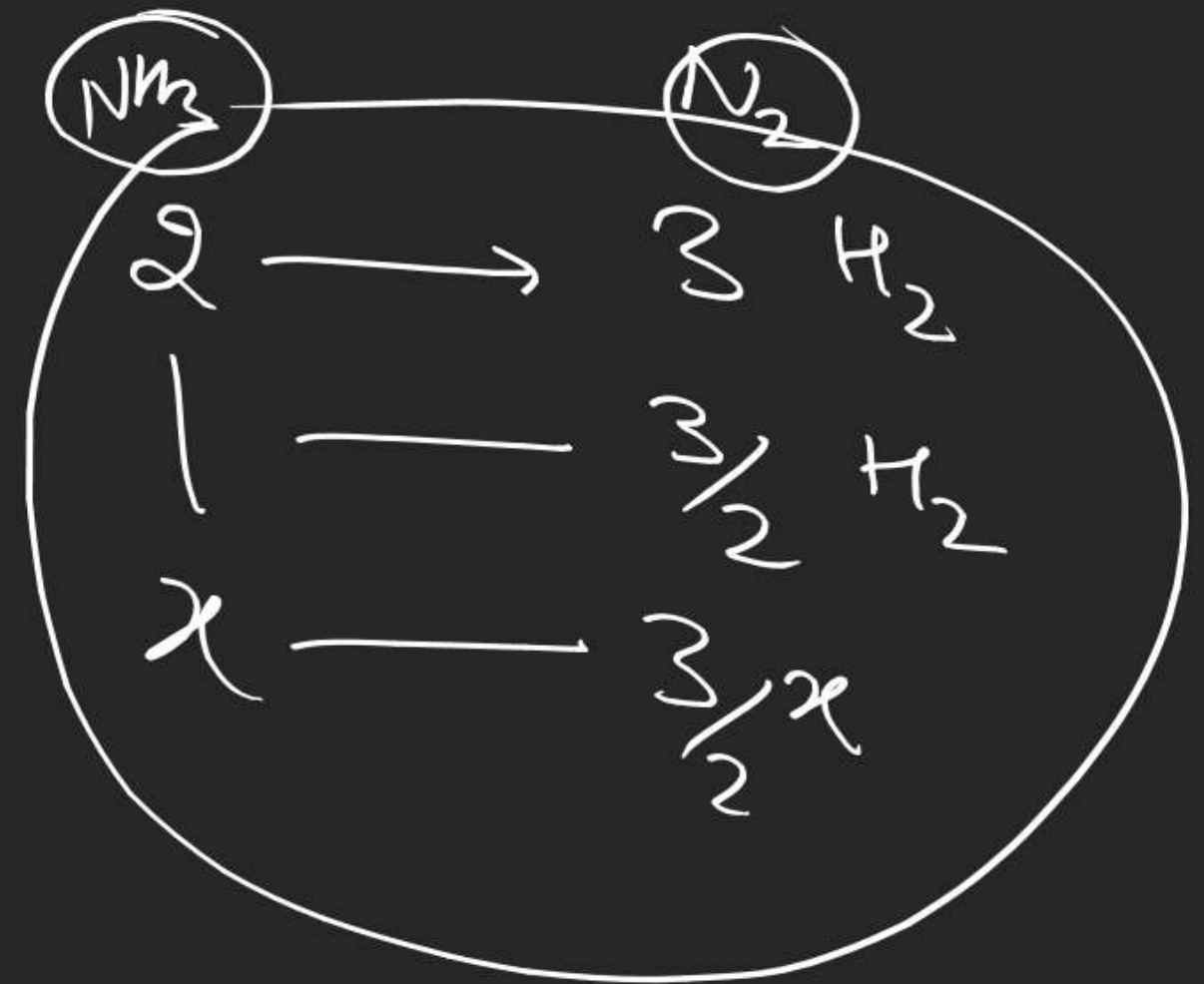
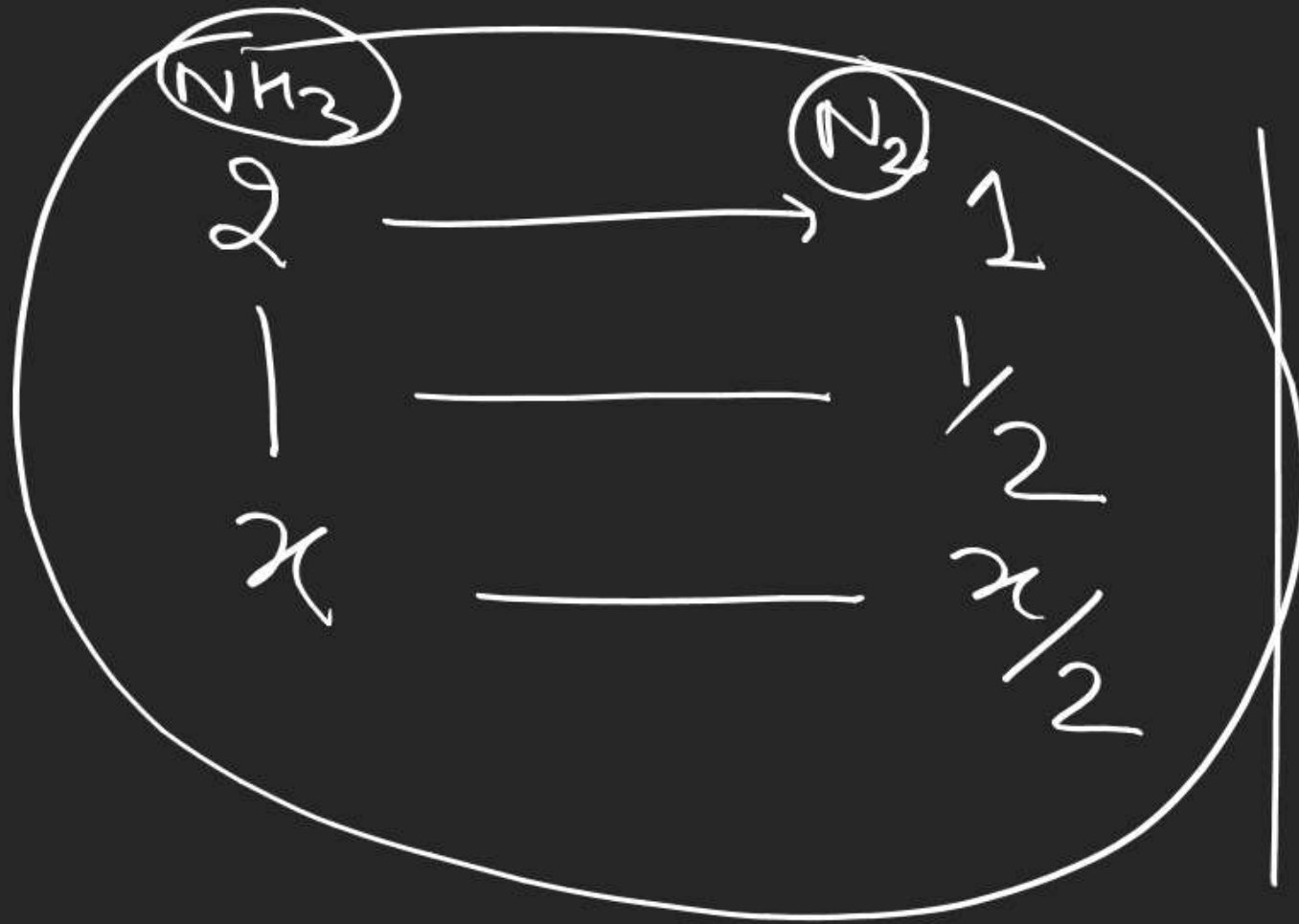
3 mol



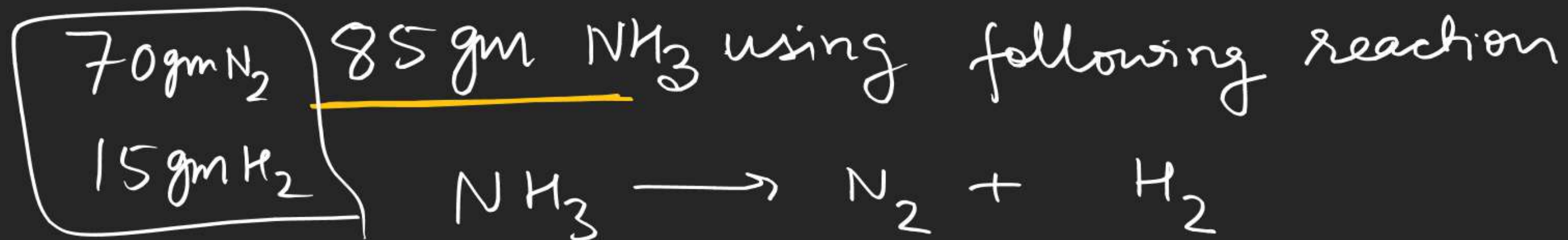
x mol

$x/2$ mol

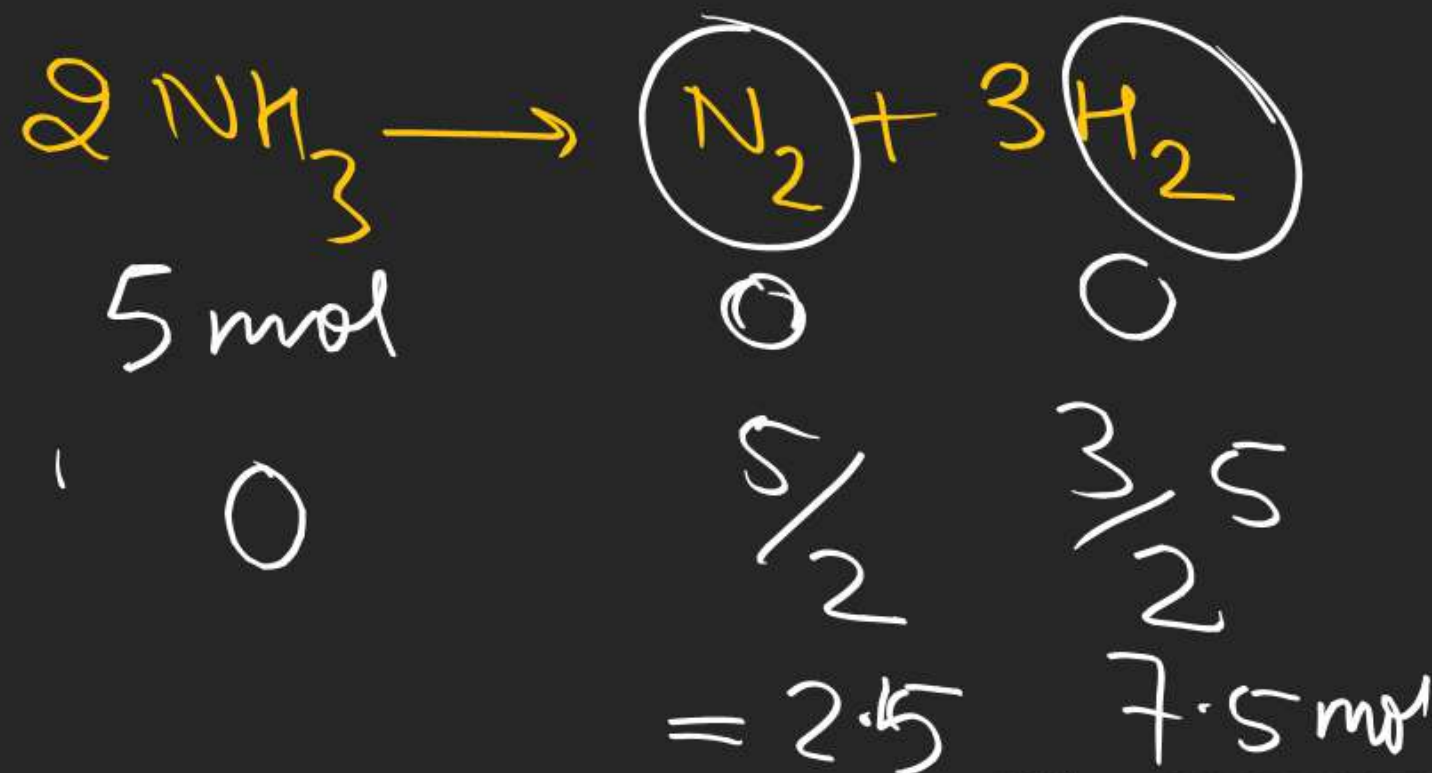
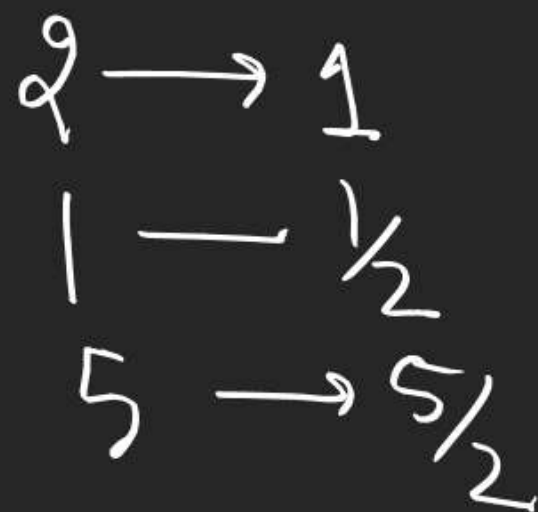
$3/2 x$ mol



Q. find mass of N_2 and H_2 produced by



Solⁿ



$$\begin{aligned}
 \text{moles of } NH_3 &= \frac{85}{17} \\
 &= 5 \text{ mol}
 \end{aligned}$$

$$\Rightarrow \underline{2.5 \times 28} + \underline{7.5 \times 2} = 15 \text{ gm}$$



a mol

b mol

x mol

$\frac{b}{a} x$ mol

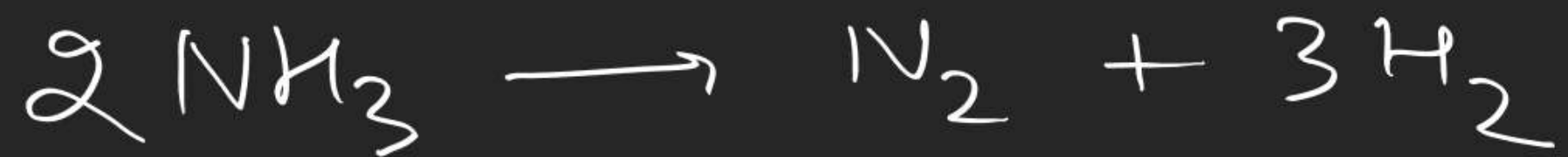
10 mol

$\frac{b}{a} \times 10$ mol

}

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

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



5 mol

0

0

0

$$\frac{1}{2} \times 5$$

$$\frac{3}{2} \times 5$$

2.5 mol

7.5 mol

$$= 2.5 \times 28$$

$$7.5 \times 2$$

$$= 70$$

$$= 15$$



6 mol

○

○

○

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

$$= 9 \text{ mol}$$

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

$$= 12 \text{ mol}$$

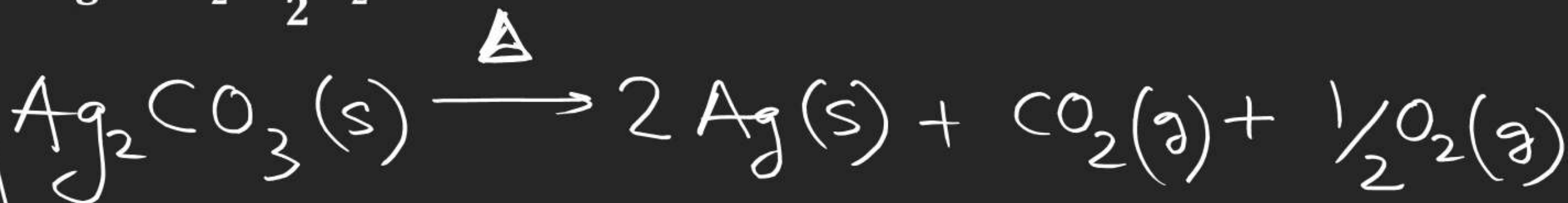
$$\frac{9 \times M_B}{1}$$

$$\frac{12 \times M_C}{1}$$

MOLE CONCEPT

Calculate the residue obtained on strongly heating $2.76 \text{ g Ag}_2\text{CO}_3$.

Ag: 108



$$= \frac{2.76}{276}$$

$$= 0.01 \text{ mol}$$

$$0.01 \text{ mol}$$

$$0$$

$$0$$

$$0$$

$$0$$

$$0.01 \times 2$$

$$0.01$$

$$\frac{0.01}{2}$$

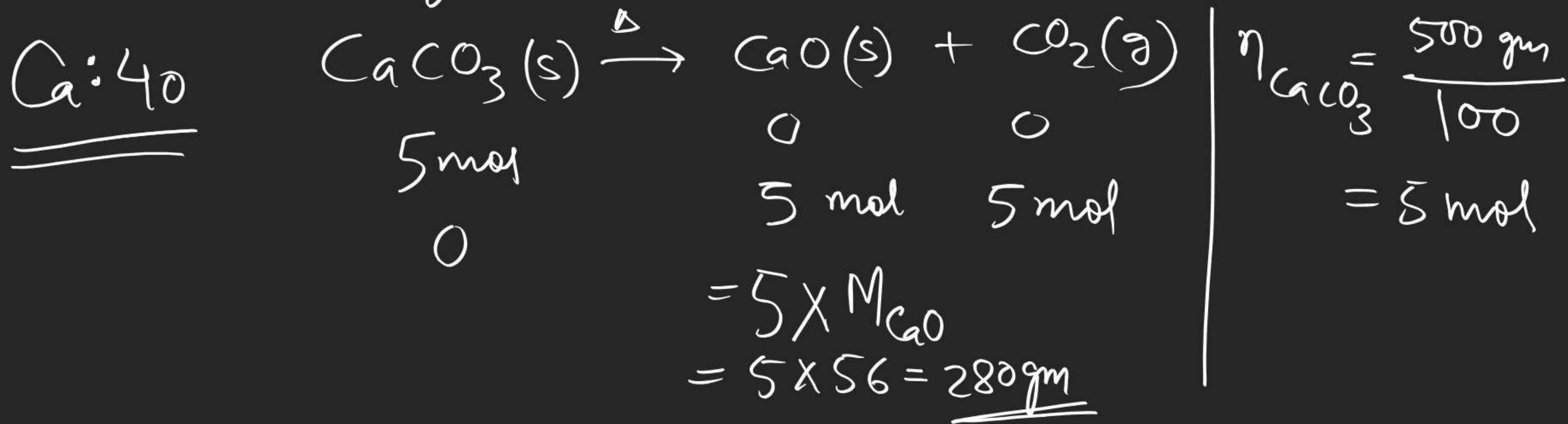
$$0.01 \times 2 \times 108$$

$$= 2.16 \text{ gm}$$

$$\begin{array}{r} 5.52 \\ 2.16 \\ \hline 1.08 \end{array}$$

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

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



O-I	16 - 25
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S-I	19 - 27
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$$\frac{\text{no. of moles}}{\text{Molar mass}} = \frac{\text{mass}}{\text{Molar mass}}$$

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