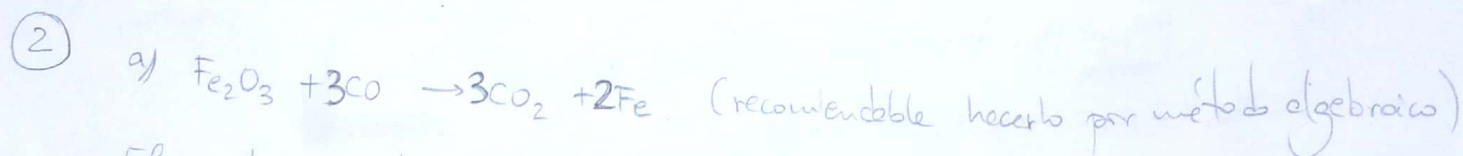
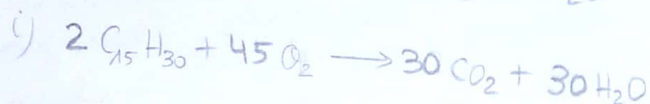
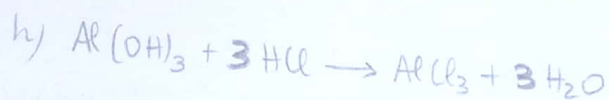
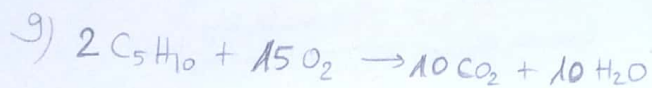
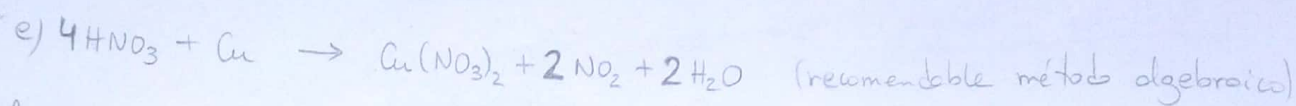
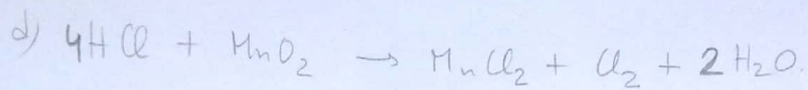
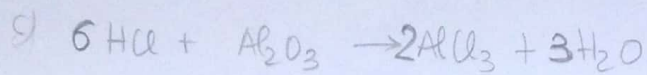
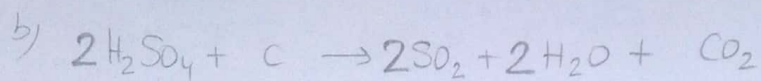
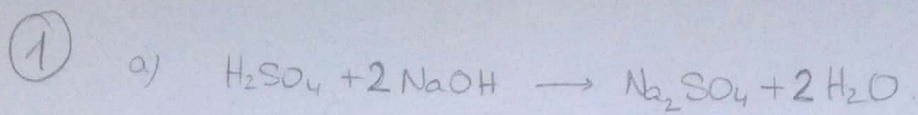
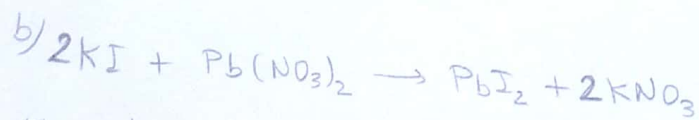


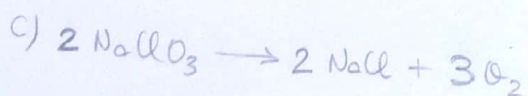
Ejercicios Reacciones Químicas y Estequiometría



El ajuste nos dice que 1 mol de Fe_2O_3 reacciona con 3 moles de CO para dar 3 moles de CO_2 y 2 moles de Fe .



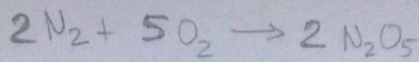
El ajuste nos dice que 2 moles de KI reaccionan con 1 mol de $\text{Pb}(\text{NO}_3)_2$ para dar 1 mol de PbI_2 y 2 moles de KNO_3 .



El ajuste nos dice que 2 moles de NaClO_3 se descomponen para dar

2 moles de NaCl y 3 moles de O_2 .

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$$m_{N_2O_5} = 30g \rightarrow \text{mols} \quad n_{N_2O_5} = \frac{m_{N_2O_5}}{H_{molar} N_2O_5} = \frac{30g}{108g/mol} = 0.28 \text{ moles}$$

$$M_{N_2O_5} = 2 \cdot m_N + 5 \cdot m_O = 2 \cdot 14u + 5 \cdot 16u = 108u \rightarrow 108g/mol$$

N_2	O_2	N_2O_5
2	5	2
n_{N_2}	n_{O_2}	0.28 moles

$$N_2O_5 \rightarrow N_2 \Rightarrow \times \frac{2 \text{ moles } N_2}{2 \text{ moles } N_2O_5}$$

$$N_2O_5 \rightarrow O_2 \Rightarrow \times \frac{5 \text{ moles } O_2}{2 \text{ moles } N_2O_5}$$

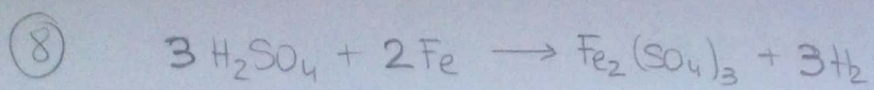
$$n_{N_2} = n_{N_2O_5} \cdot \frac{2 \text{ moles } N_2}{2 \text{ moles } N_2O_5} = 0.28 \text{ moles } N_2O_5 \cdot \frac{2 \text{ moles } N_2}{2 \text{ moles } N_2O_5} = 0.28 \text{ moles } N_2$$

$$n_{O_2} = n_{N_2O_5} \cdot \frac{5 \text{ moles } O_2}{2 \text{ moles } N_2O_5} = 0.28 \text{ moles } N_2O_5 \cdot \frac{5 \text{ moles } O_2}{2 \text{ moles } N_2O_5} = 0.69 \text{ moles } O_2$$

→ no nos va a hacer falta, pero lo calculamos para practicar.

$$m_{N_2} = ? \quad m_{N_2} = n_{N_2} \cdot H_{molar} N_2 = 0.28 \text{ moles} \cdot 28g/mol = 7.78g$$

$$M_{N_2} = 2 \cdot m_N = 2 \cdot 14u = 28u \rightarrow 28g/mol$$



$m_{\text{Fe}} = 140 \text{g} \rightarrow \text{moles}$ $n_{\text{Fe}} = \frac{m_{\text{Fe}}}{M_{\text{molar Fe}}} = \frac{140 \text{g}}{56 \text{g/mol}} = 2.5 \text{ moles}$

H_2SO_4 ácido sulfúrico	Fe	$\text{Fe}_2(\text{SO}_4)_3$ sulfato ferrico.	H_2
3	2	1	3
$n_{\text{H}_2\text{SO}_4}$	2.5	$n_{\text{Fe}_2(\text{SO}_4)_3}$	n_{H_2}

$\text{Fe} \rightarrow \text{H}_2\text{SO}_4 \Rightarrow \times \frac{3 \text{ moles de H}_2\text{SO}_4}{2 \text{ moles de Fe}}$

$\text{Fe} \rightarrow \text{Fe}_2(\text{SO}_4)_3 \Rightarrow \times \frac{1 \text{ mol de Fe}_2(\text{SO}_4)_3}{2 \text{ moles de Fe}}$

$\text{Fe} \rightarrow \text{H}_2 \Rightarrow \times \frac{3 \text{ moles de H}_2}{2 \text{ moles de Fe}}$

$n_{\text{H}_2\text{SO}_4} = n_{\text{Fe}} \times \frac{3 \text{ moles de H}_2\text{SO}_4}{2 \text{ moles de Fe}} = 2.5 \text{ moles Fe} \cdot \frac{3 \text{ moles H}_2\text{SO}_4}{2 \text{ moles Fe}} = 3.75 \text{ moles H}_2\text{SO}_4$

$n_{\text{Fe}_2(\text{SO}_4)_3} = n_{\text{Fe}} \times \frac{1 \text{ mol Fe}_2(\text{SO}_4)_3}{2 \text{ moles Fe}} = 2.5 \text{ moles Fe} \cdot \frac{1 \text{ mol Fe}_2(\text{SO}_4)_3}{2 \text{ moles Fe}} = 1.25 \text{ moles Fe}_2(\text{SO}_4)_3$

$n_{\text{H}_2} = n_{\text{Fe}} \times \frac{3 \text{ moles H}_2}{2 \text{ moles Fe}} = 2.5 \text{ moles Fe} \times \frac{3 \text{ moles H}_2}{2 \text{ moles Fe}} = 3.75 \text{ moles H}_2$

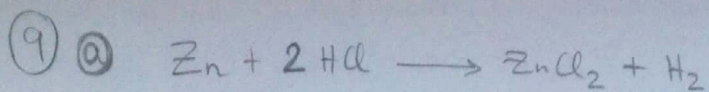
a) $m_{\text{H}_2\text{SO}_4} = ? \rightarrow m_{\text{H}_2\text{SO}_4} = n_{\text{H}_2\text{SO}_4} \cdot M_{\text{molar H}_2\text{SO}_4} = 3.75 \text{ moles} \cdot 98 \text{ g/mol} = 367.5 \text{ g}$

$M_{\text{H}_2\text{SO}_4} = 2 \cdot m_{\text{H}} + m_{\text{S}} + 4 \cdot m_{\text{O}} = 2 \cdot 1 \text{ u.} + 32 \text{ u.} + 4 \cdot 16 \text{ u.} = 98 \text{ u.} \rightarrow 98 \text{ g/mol}$

b) $n^\circ \text{ moléculas Fe}_2(\text{SO}_4)_3 = ?$

$n^\circ \text{ moléculas Fe}_2(\text{SO}_4)_3 = n_{\text{Fe}_2(\text{SO}_4)_3} \cdot N_A = 1.25 \text{ moles} \cdot 6.022 \times 10^{23} \text{ moléculas/mol} = 7.53 \times 10^{23} \text{ moléculas}$

c) $m_{\text{H}_2} = ? \rightarrow m_{\text{H}_2} = n_{\text{H}_2} \cdot M_{\text{molar H}_2} = 3.75 \text{ moles} \cdot 2 \text{ g/mol} = 7.5 \text{ g}$



1 mol de Zn reacciona con 2 moles de HCl para dar 1 mol de $ZnCl_2$ y 1 mol de H_2 .
 • Los coeficientes nos indican la proporción en la que reaccionan los reactivos y en la que se obtienen los productos.

b) $m_{H_2} = 12g \rightarrow \text{mols}$ $n_{H_2} = \frac{m_{H_2}}{M_{molar, H_2}} = \frac{12g}{2g/mol} = 6 \text{ moles}$

Zn	HCl	ZnCl ₂	H ₂
1	2	1	1
n_{Zn}	n_{HCl}	n_{ZnCl_2}	6 moles.

$H_2 \rightarrow Zn \Rightarrow \times \frac{1 \text{ mol Zn}}{1 \text{ mol } H_2}$

$H_2 \rightarrow HCl \Rightarrow \times \frac{2 \text{ moles HCl}}{1 \text{ mol } H_2}$

$H_2 \rightarrow ZnCl_2 \Rightarrow \times \frac{1 \text{ mol } ZnCl_2}{1 \text{ mol } H_2}$

$n_{Zn} = n_{H_2} \times \frac{1 \text{ mol Zn}}{1 \text{ mol } H_2} = 6 \text{ moles } H_2 \times \frac{1 \text{ mol Zn}}{1 \text{ mol } H_2} = 6 \text{ moles Zn}$

$n_{HCl} = n_{H_2} \times \frac{2 \text{ moles HCl}}{1 \text{ mol } H_2} = 6 \text{ moles } H_2 \times \frac{2 \text{ moles HCl}}{1 \text{ mol } H_2} = 12 \text{ moles HCl}$

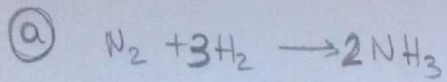
$n_{ZnCl_2} = n_{H_2} \times \frac{1 \text{ mol } ZnCl_2}{1 \text{ mol } H_2} = 6 \text{ moles } H_2 \times \frac{1 \text{ mol } ZnCl_2}{1 \text{ mol } H_2} = 6 \text{ moles } ZnCl_2$

$\rightarrow m_{ZnCl_2} = ?$

$m_{ZnCl_2} = n_{ZnCl_2} \cdot M_{molar ZnCl_2} = 6 \text{ moles} \cdot 136g/mol = 816g$

$M_{ZnCl_2} = m_{Zn} + 2m_{Cl} = 65u. + 2 \cdot 35.5u. = 136u. \rightarrow 136g/mol$

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La ecuación química nos dice que 1 mol de N_2 reacciona con 3 moles de H_2 para dar 2 moles de NH_3

b) $n_{NH_3} = 10 \text{ moles.}$

$n_{N_2} = ?$

N_2	H_2	NH_3
1	3	2
n_{N_2}	n_{H_2}	10 moles

$NH_3 \rightarrow N_2 \Rightarrow \times \frac{1 \text{ mol } N_2}{2 \text{ moles } NH_3}$

$n_{N_2} = n_{NH_3} \times \frac{1 \text{ mol } N_2}{2 \text{ moles } NH_3} = 10 \text{ moles } NH_3 \times \frac{1 \text{ mol } N_2}{2 \text{ moles } NH_3} = 5 \text{ moles } N_2$