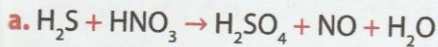




1. Balancea por óxido-reducción las siguientes ecuaciones químicas, teniendo en cuenta los números de oxidación y plantea semirreacciones para cada una, indica quien se oxida y quien se reduce.



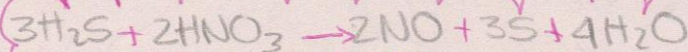
Reactivos

$$\begin{aligned} \text{H} &= 3 \times 2 + 2 \times 1 = 8 \\ \text{S} &= 3 \times 1 = 3 \\ \text{N} &= 2 \times 1 = 2 \\ \text{O} &= 2 \times 3 = 6 \end{aligned}$$

Productos

$$\begin{aligned} \text{H} &= 4 \times 2 = 8 \\ \text{S} &= 3 \times 1 = 3 \\ \text{N} &= 2 \times 1 = 2 \\ \text{O} &= 2 \times 1 + 4 \times 1 = 6 \end{aligned}$$

$$\begin{aligned} 3 \times \text{O} + 2 \times \text{O} &= 3 \times \text{O} + 2 \times \text{O} + 4 \times \text{O} \\ \text{O} &= \text{O} \end{aligned}$$



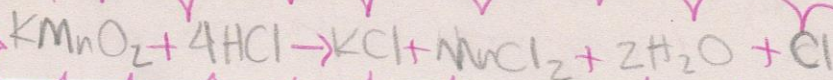
Reactivos

$$\begin{aligned} \text{K} &= 1 \times 1 = 1 \\ \text{Mn} &= 1 \times 1 = 1 \\ \text{O} &= 1 \times 2 = 2 \\ \text{H} &= 4 \times 1 = 4 \\ \text{Cl} &= 4 \times 1 = 4 \end{aligned}$$

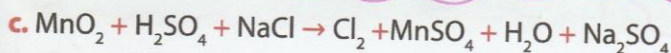
Productos

$$\begin{aligned} \text{K} &= 1 \times 1 = 1 \\ \text{Mn} &= 1 \times 1 = 1 \\ \text{O} &= 2 \times 1 = 2 \\ \text{H} &= 2 \times 2 = 4 \\ \text{Cl} &= 1 \times 1 + 1 \times 2 + 1 \times 1 = 4 \end{aligned}$$

$$\begin{aligned} 1 \times \text{O} + 4 \times \text{O} &= 1 \times \text{O} + 1 \times \text{O} + 1 \times \text{O} + 2 \times \text{O} \\ \text{O} &= \text{O} \end{aligned}$$



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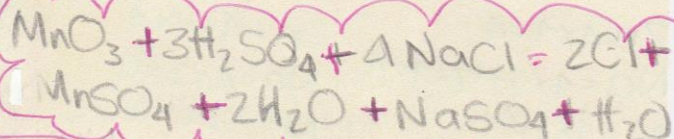
Reactivos

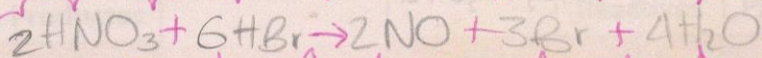
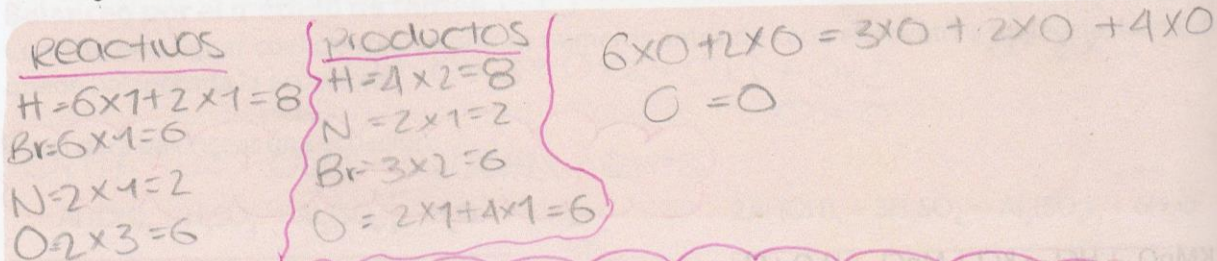
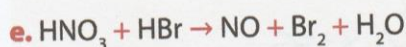
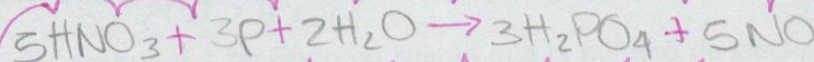
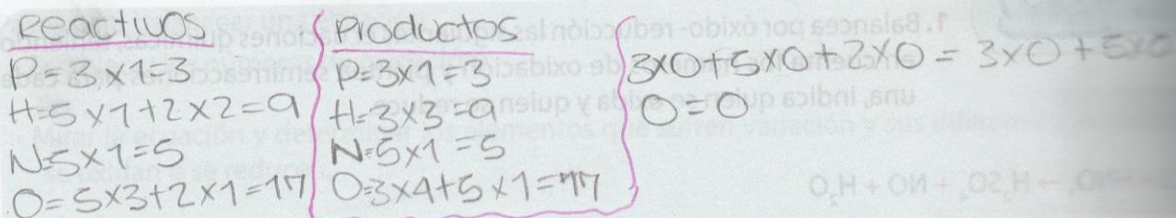
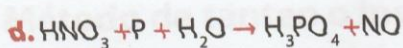
$$\begin{aligned} \text{Na} &= 4 \times 1 = 4 \\ \text{Cl} &= 4 \times 1 = 4 \\ \text{Mn} &= 1 \times 1 = 1 \\ \text{O} &= 1 \times 3 + 3 \times 4 = 15 \\ \text{H} &= 3 \times 2 = 6 \\ \text{S} &= 3 \times 1 = 3 \end{aligned}$$

Productos

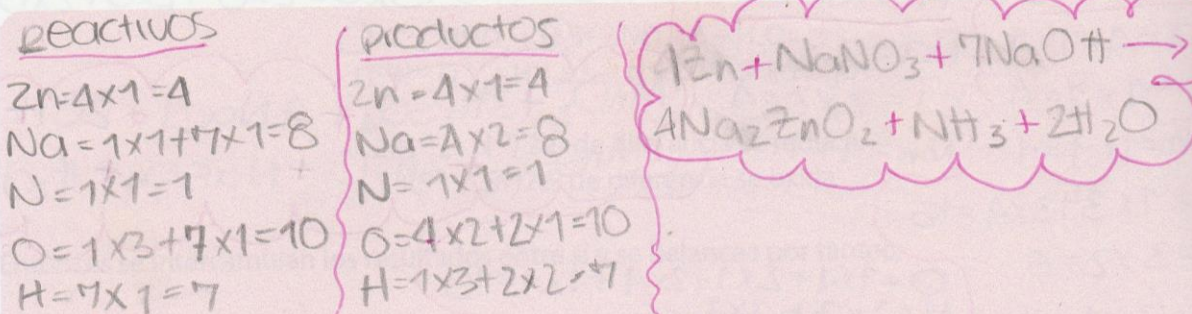
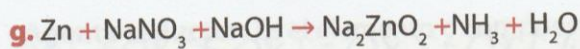
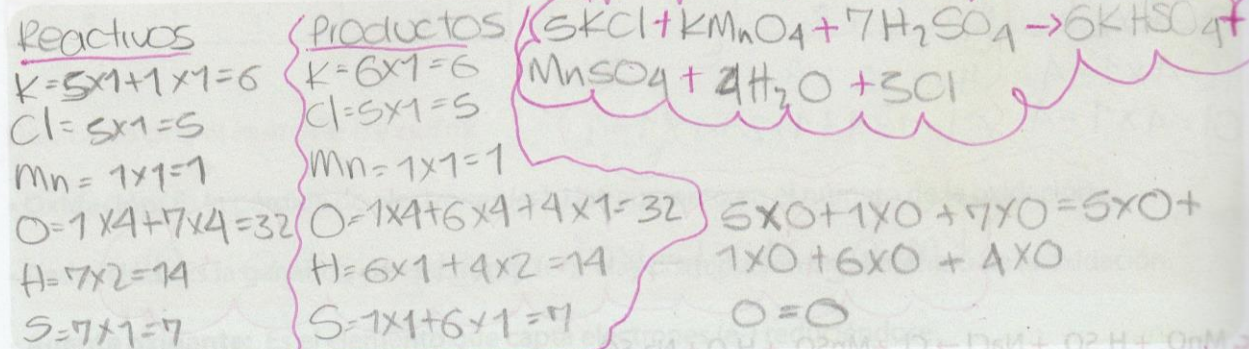
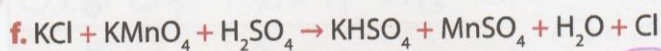
$$\begin{aligned} \text{Na} &= 2 \times 2 = 4 \\ \text{Cl} &= 2 \times 2 = 4 \\ \text{Mn} &= 1 \times 1 = 1 \\ \text{O} &= 1 \times 4 + 2 \times 1 + 2 \times 4 + 1 \times 1 = 15 \\ \text{H} &= 2 \times 2 + 1 \times 2 = 6 \\ \text{S} &= 1 \times 1 + 2 \times 1 = 3 \end{aligned}$$

$$\begin{aligned} 4 \times \text{O} + 1 \times \text{O} + 3 \times \text{O} &= 2 \times \text{O} + 2 \times \text{O} + 2 \times \text{O} \\ &+ 2 \times \text{O} \quad \text{O} = \text{O} \end{aligned}$$



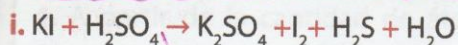


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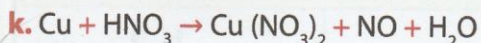
Reactivos	Productos	
H = $5 \times 1 + 3 \times 2 = 11$	H = $5 \times 1 + 3 \times 2 = 11$	$5xO + 2xO + 3xO = 5xO + 2xO + 1xO + 3xO$ $O = 0$ $2\text{KMnO}_4 + 5\text{HNO}_2 + 3\text{H}_2\text{SO}_4 \rightarrow \text{K}_2\text{SO}_4 + 2\text{MnSO}_4 + 5\text{HNO}_3 + 3\text{H}_2\text{O}$
N = $5 \times 1 = 5$	N = $5 \times 1 = 5$	
O = $5 \times 2 + 2 \times 4 + 3 \times 4 = 30$	O = $5 \times 3 + 2 \times 4 + 1 \times 4 + 3 \times 1 = 30$	
K = $2 \times 1 = 2$	K = $1 \times 2 = 2$	
Mn = $2 \times 1 = 2$	Mn = $2 \times 1 = 2$	
S = $3 \times 1 = 3$	S = $2 \times 1 + 1 \times 1 = 3$	



Reactivos	Productos	
K = $8 \times 1 = 8$	K = $4 \times 2 = 8$	$8xO + 5xO = 4xO + 1xO + 4xO + 4xO$ $O = 0$ $8\text{KI} + 5\text{H}_2\text{SO}_4 \rightarrow 4\text{K}_2\text{SO}_4 + 4\text{I}_2 + \text{H}_2\text{S} + 4\text{H}_2\text{O}$
I = $8 \times 1 = 8$	I = $4 \times 2 = 8$	
H = $5 \times 2 = 10$	H = $1 \times 2 + 4 \times 2 = 10$	
S = $5 \times 1 = 5$	S = $1 \times 1 + 4 \times 1 = 5$	
O = $5 \times 4 = 20$	O = $4 \times 4 + 4 \times 1 = 20$	



Reactivos	Productos	
K = $1 \times 2 = 2$	K = $2 \times 1 = 2$	$1xO + 14xO = 3xO + 2xO + 7xO$ $O = 0$ $\text{K}_2\text{Cr}_2\text{O}_7 + 14\text{HCl} \rightarrow 2\text{KCl} + 2\text{CrCl}_3 + 3\text{Cl}_2 + 7\text{H}_2\text{O}$
Cr = $1 \times 2 = 2$	Cr = $2 \times 1 = 2$	
O = $1 \times 7 = 7$	O = $7 \times 1 = 7$	
H = $14 \times 1 = 14$	H = $7 \times 2 = 14$	
Cl = $14 \times 1 = 14$	Cl = $3 \times 2 + 2 \times 3 + 2 \times 1 = 14$	



Reactivos	Productos	
Cu = $3 \times 1 = 3$	Cu = $3 \times 1 = 3$	$3xO + 8xO = 3xO + 2xO + 4xO$ $O = 0$ $3\text{Cu} + 8\text{HNO}_3 \rightarrow 3\text{Cu}(\text{NO}_3)_2 + 2\text{NO} + 4\text{H}_2\text{O}$
H = $8 \times 1 = 8$	H = $4 \times 2 = 8$	
N = $8 \times 1 = 8$	N = $3 \times 2 + 2 \times 1 = 8$	
O = $8 \times 3 = 24$	O = $3 \times 6 + 2 \times 1 + 4 \times 1 = 24$	