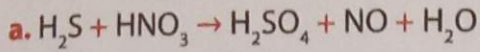




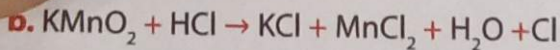
1. Balancea por óxido-reducción las siguientes ecuaciones químicas, teniendo en cuenta los números de oxidación y plantea semirreacciones para cada una, indica quien se oxida y quien se reduce.



**Izquierda**  
 $\text{H} = 3 + 2 + 2 \times 1 = 8$   
 $\text{S} = 3 \times 1 = 3$   
 $\text{N} = 2 + 1 = 2$   
 $\text{O} = 2 \times 3 = 6$

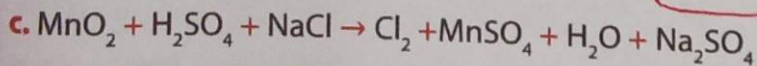
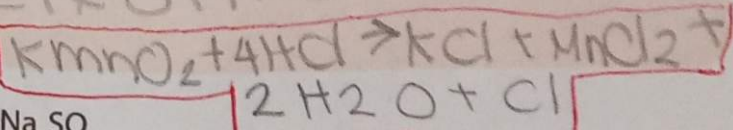
**Derecha**  
 $\text{H} = 4 \times 2 = 8$   
 $\text{S} = 3 \times 1 = 3$   
 $\text{N} = 2 + 1 = 2$   
 $\text{O} = 2 \times 1 + 4 \times 1 = 6$   
 $3 \times 0 + 2 \times 0 = 3 + 0 + 2 + 0 + 4 \times 0$   
 $0 = 0$

$3\text{H}_2\text{S} + 2\text{HNO}_3 \rightarrow 2\text{NO} + 3\text{S} + 4\text{H}_2\text{O}$



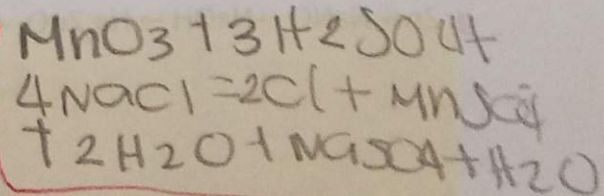
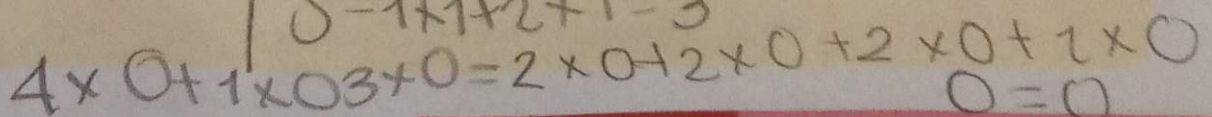
**Izquierda**  
 $\text{K} = 1 + 1 = 1$   
 $\text{Mn} = 1 + 1 = 1$   
 $\text{O} = 1 + 2 = 2$   
 $\text{H} = 4 + 1 = 4$   
 $\text{Cl} = 4 \times 1 = 4$

**Derecha**  
 $\text{K} = 1 \times 1 = 1$   
 $\text{Mn} = 1 \times 1 = 1$   
 $\text{O} = 2 \times 1 = 2$   
 $\text{H} = 2 \times 2 = 4$   
 $\text{Cl} = 1 \times 1 + 1 \times 2 + 1 \times 1 = 4$   
 $1 \times 0 + 4 \times 0 = 1 \times 0 + 1 \times 0 + 1 \times 0 + 2 \times 0$   
 $0 = 0$



**Izquierda**  
 $\text{Na} = 4 \times 1 = 4$   
 $\text{Cl} = 4 \times 1 = 4$   
 $\text{Mn} = 1 + 1 = 1$   
 $\text{O} = 1 + 3 + 3 \times 4 = 15$   
 $\text{H} = 3 + 2 = 6$   
 $\text{S} = 3 \times 1 = 3$

**Derecha**  
 $\text{Na} = 2 + 2 = 4$   
 $\text{Cl} = 2 \times 2 = 4$   
 $\text{Mn} = 1 \times 1 = 1$   
 $\text{O} = 1 + 4 + 2 \times 1 + 2 \times 4 + 1 \times 1 = 15$   
 $\text{H} = 2 \times 2 + 1 \times 2 = 6$   
 $\text{S} = 1 + 1 + 2 + 1 = 3$





izquierda

$$\text{P} = 3 \times 1 = 3$$

$$\text{H} = 5 \times 1 + 2 \times 2 = 9$$

$$\text{N} = 6 \times 1 = 6$$

$$\text{O} = 3 + 3 + 2 \times 1 = 17$$

$$3 \times 0 + 5 \times 0 + 2 \times 0 = 3 \times 0 + 5 \times 0$$

Derecha

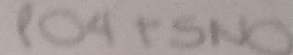
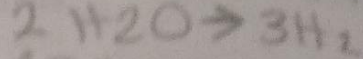
$$\text{P} = 3 + 1 = 3$$

$$\text{H} = 3 \times 3 = 9$$

$$\text{N} = 3 \times 1 = 3$$

$$\text{O} = 3 \times 4 + 3 \times 1 = 17$$

$$\text{O} = 0$$



izquierda

$$\text{H} = 6 \times 1 + 2 \times 1 = 8$$

$$\text{Br} = 6 \times 1 = 6$$

$$\text{N} = 2 \times 1 = 2$$

$$\text{O} = 2 \times 3 = 6$$

$$6 \times 0 + 2 \times 0 = 3 \times 0 + 2 \times 0 + 4 \times 0$$

Derecha

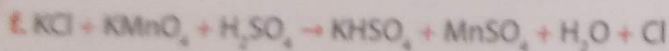
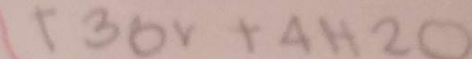
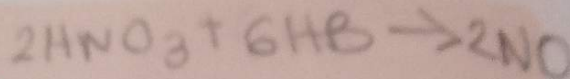
$$\text{H} = 4 \times 2 = 8$$

$$\text{N} = 2 \times 1 = 2$$

$$\text{Br} = 3 \times 2 = 6$$

$$\text{O} = 2 \times 1 + 4 \times 1 = 6$$

$$\text{O} = 0$$



izquierda

$$\text{K} = 3 \times 1 + 1 \times 1 = 6$$

$$\text{Cl} = 3 \times 1 = 3$$

$$\text{Mn} = 1 \times 1 = 1$$

$$\text{O} = 1 \times 4 + 7 \times 4 = 32$$

$$\text{H} = 7 \times 2 = 14$$

$$\text{S} = 7 + 1 = 7$$

$$5 \times 0 + 1 \times 0 + 7 \times 0 = 5 \times 0 + 7 \times 0$$

$$\text{O} = 0$$

Derecha

$$\text{K} = 6 \times 1 = 6$$

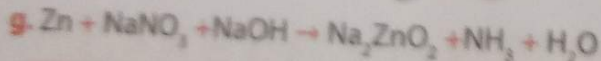
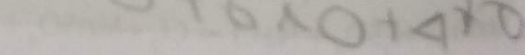
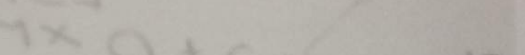
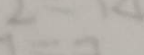
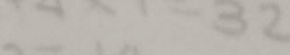
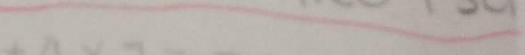
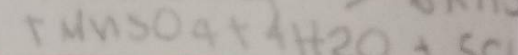
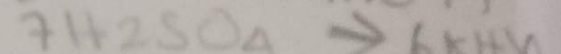
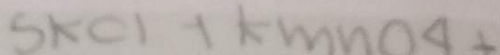
$$\text{Cl} = 3 \times 1 = 3$$

$$\text{Mn} = 1 \times 1 = 1$$

$$\text{O} = 1 \times 4 + 6 \times 4 + 4 \times 7 = 32$$

$$\text{H} = 6 \times 1 + 4 \times 2 = 14$$

$$\text{S} = 7 \times 1 + 6 \times 1 = 7$$



izquierda

$$2\text{Zn} = 4 \times 1 = 4$$

$$\text{Na} = 1 \times 1 + 7 \times 1 = 8$$

$$\text{N} = 1 + 1 = 1$$

$$\text{O} = 1 \times 3 + 7 \times 2 = 10$$

$$\text{H} = 7 \times 1 = 7$$

Derecha

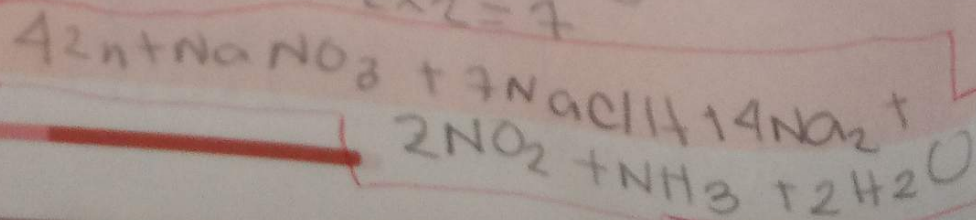
$$2\text{Zn} = 4 \times 1 = 4$$

$$\text{Na} = 4 \times 2 = 8$$

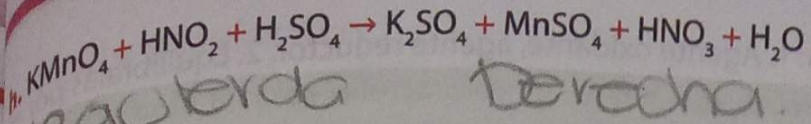
$$\text{N} = 1 \times 1 = 1$$

$$\text{O} = 4 \times 2 + 2 \times 1 = 10$$

$$\text{H} = 1 \times 3 + 2 \times 2 = 7$$

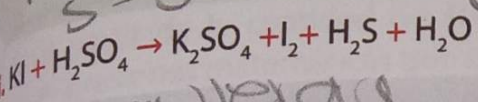






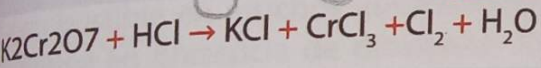
12avulada  
 $H = 2 \times 1 = 2$   
 $N = 5 \times 1 + 3 \times 2 = 11$   
 $O = 5 \times 1 = 5$   
 $K = 5 \times 2 + 2 \times 4 + 3 \times 4 = 30$   
 $Mn = 2 \times 1 = 2$   
 $S = 2 \times 1 = 2$   
 $S = 3 \times 1 = 3$

Derecha  
 $H = 5 \times 1 + 3 \times 2 = 11$   
 $N = 5 \times 1 = 5$   
 $O = 5 \times 3 + 2 \times 4 + 1 \times 4 + 3 \times 1 = 30$   
 $K = 1 \times 2 \times 2$   
 $Mn = 2 \times 1 = 2$   
 $S = 2 \times 1 + 1 \times 1 = 3$



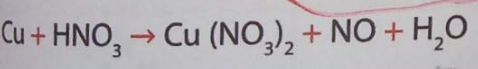
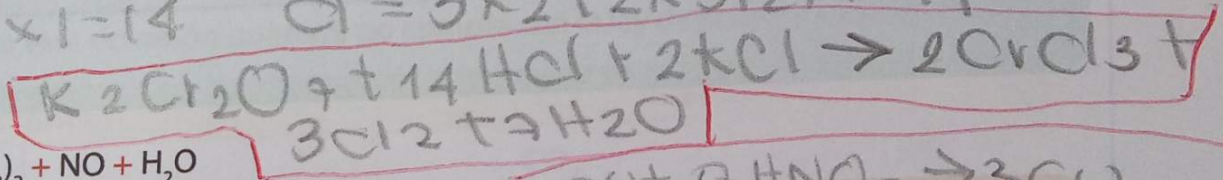
12avulada  
 $K = 8 \times 1 = 8$   
 $I = 8 \times 1 = 8$   
 $H = 5 \times 2 = 10$   
 $S = 5 \times 1 = 5$   
 $O = 5 \times 4 = 20$   
 $8 \times 0 + 5 \times 0 = 4 \times 0 + 1 \times 0 + 4 \times 0 + 4 \times 0$   
 $O = 0$

Derecha  
 $K = 4 \times 2 = 8$   
 $I = 4 \times 2 = 8$   
 $H = 1 \times 2 + 4 \times 2 = 10$   
 $S = 1 \times 1 + 4 \times 1 = 5$   
 $O = 4 \times 4 + 4 \times 1 = 20$



12avulada  
 $K = 1 \times 2 = 2$   
 $Cr = 1 \times 2 = 2$   
 $O = 1 \times 7 = 7$   
 $H = 14 \times 1 = 14$   
 $Cl = 14 \times 1 = 14$

Derecha  
 $K = 2 \times 1 = 2$   
 $Cr = 2 \times 1 = 2$   
 $O = 7 \times 1 = 7$   
 $H = 7 \times 2 = 14$   
 $Cl = 3 \times 2 + 2 \times 3 + 2 \times 1 = 14$



12avulada  
 $Cu = 3 \times 1 = 3$   
 $H = 8 \times 1 = 8$   
 $N = 8 \times 1 = 8$   
 $O = 8 + 3 = 24$   
 $3 \times 0 + 8 \times 0 = 3 \times 0 + 2 \times 0 + 4 \times 6$   
 $O = 0$

