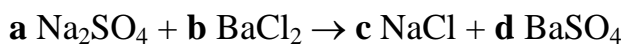
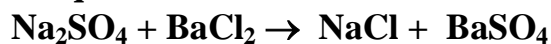


SOLUCIÓN

1. Ajusta la reacción química:



$$\text{Na: } 2a = c$$

$$\text{S: } a = d$$

$$\text{O: } 4a = 4d$$

$$\text{Ba: } b = d$$

$$\text{Cl: } 2b = c$$

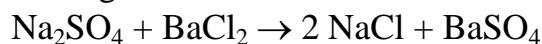
Si asignamos a d el valor 1: $d = 1$, tendremos

$$a = d \rightarrow a = 1$$

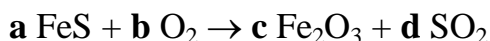
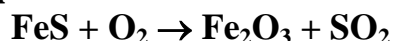
$$b = d \rightarrow b = 1$$

$$2b = c \rightarrow 2 \cdot 1 = c \rightarrow 2 = c \rightarrow c = 2$$

La ecuación ajustada es la siguiente:



2. Ajusta la reacción química:



$$\text{Fe: } a = 2c$$

$$\text{S: } a = d$$

$$\text{O: } 2b = 3c + 2d$$

Si asignamos el valor 1 $\rightarrow a = 1$, quedará

$$a = 2c \rightarrow a / 2 = c \rightarrow 1 / 2 = c \rightarrow c = 1/2 = 0,5$$

$$a = d \rightarrow 1 = d \rightarrow d = 1$$

$$2b = 3c + 2d \rightarrow 2b = 3 \cdot 0,5 + 2 \cdot 1 = 1,5 + 2 = 3,5 \rightarrow b = 3,5 / 2 = 1,75$$

Para evitar números decimales, multiplicamos por cuatro todos los coeficientes:

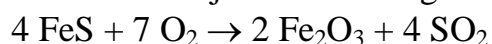
$$a = 1 \cdot 4 = 4$$

$$b = 1,75 \cdot 4 = 7$$

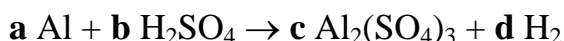
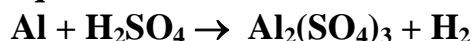
$$c = 0,5 \cdot 4 = 2$$

$$d = 1 \cdot 4 = 4$$

La ecuación ajustada es la siguiente:



3. Ajusta la reacción química:



$$\text{Al: } a = 2c$$

$$\text{H: } 2b = 2d$$

$$\text{S: } b = 3c$$

$$\text{O: } 4b = 12c$$

Si asignamos $d = 1$, quedará:

$$2b = 2d \rightarrow b = d \rightarrow b = 1$$

$$b = 3c \rightarrow 1 = 3c \rightarrow 1 / 3 = c \rightarrow c = 1/3$$

$$a = 2 \cdot c \rightarrow a = 2 \cdot 1/3 \rightarrow a = 2/3$$

Si multiplicamos por tres todos los coeficientes para eliminar fracciones:

$$a = (2/3) \cdot 3 \rightarrow a = 2$$

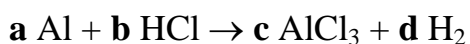
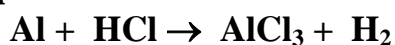
$$b = 1 \cdot 3 = 3$$

$$c = (1/3) \cdot 3 \rightarrow c = 1$$

$$d = 1 \cdot 3 = 3$$



4. Ajusta la reacción química:



$$\text{Al: } a = c$$

$$\text{H: } b = 2d$$

$$\text{Cl: } b = 3c$$

Si asignamos a c el valor 1: $c = 1$, quedará

$$a = c \rightarrow a = 1$$

$$b = 3 \cdot c \rightarrow b = 3 \cdot 1 \rightarrow b = 3$$

$$b = 2d \rightarrow 3 = 2d \rightarrow 3 / 2 = d \rightarrow 3/2 = d \rightarrow d = 3/2$$

Si multiplicamos todos los coeficientes por dos para eliminar las fracciones:

$$a = 1 \cdot 2 = 2$$

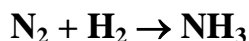
$$b = 3 \cdot 2 = 6$$

$$c = 1 \cdot 2 = 2$$

$$d = (3/2) \cdot 2 = 3$$

La ecuación ajustada queda: $2 \text{ Al} + 6 \text{ HCl} \rightarrow 2 \text{ AlCl}_3 + 3 \text{ H}_2$

5. Ajusta la reacción química:



$$\text{N: } 2a = c$$

$$\text{H: } 2b = 3c$$

Si hacemos que $c = 1$, tendremos:

$$2a = 1 \rightarrow a = 1/2$$

$$2b = 3 \cdot 1 = 3 \rightarrow b = 3/2$$

Multiplicando por dos, para que no haya coeficientes fraccionarios: $c=2$, $a=1$, $b=3$

Ecuación ajustada: $\text{N}_2 + 3 \text{ H}_2 \rightarrow 2 \text{ NH}_3$

6. Ajusta la reacción química:



Para ajustar la reacción: $a \text{Na} + b \text{H}_2\text{O} \rightarrow c \text{NaOH} + d \text{H}_2(\text{g})$

$$\text{Na: } a = c$$

$$\text{H: } 2b = c + 2d$$

$$\text{O: } b = c$$

Si le damos a c el valor 1: $c = 1$

$$a = c \rightarrow a = 1$$

$$b = c \rightarrow b = 1$$

$$\text{Para calcular d } 2b = c + 2d \rightarrow 2 \cdot 1 = 1 + 2d \rightarrow 2 = 1 + 2d \rightarrow 2 - 1 = 2d \rightarrow 1 / 2 = d \rightarrow d = 1/2$$

Multiplicamos por dos para eliminar coeficientes fraccionarios:

$$a = 1 \cdot 2 = 2$$

$$b = 1 \cdot 2 = 2$$

$$c = 1 \cdot 2 = 2$$

$$d = (1/2) \cdot 2 = 1$$

La reacción queda: $2 \text{Na} + 2 \text{H}_2\text{O} \rightarrow 2 \text{NaOH} + \text{H}_2(\text{g})$