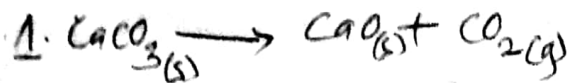
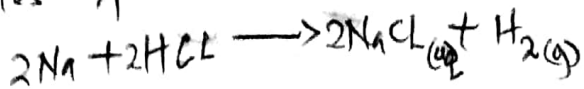


Stoichiometry problems.

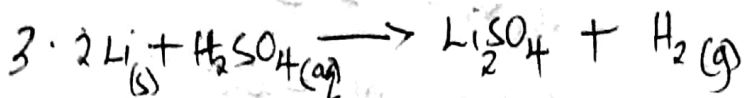


2. Moles of sodium used up when reacted with HCl.



mole ratio of Na : $\text{H}_2 = 2 : 1$
ratio 3.65

moles of sodium used up = $(3.65 \text{ moles} \times 2) = 7.3 \text{ moles}$



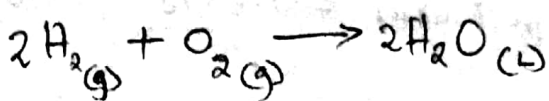
mole ratio of
Li : Li_2SO_4
2 : 1

moles of Li = $\frac{34.8 \text{ g}}{6.94 \text{ g/mol}} = 5.014 \text{ moles}$

= 5.014 moles

mole of $\text{Li}_2\text{SO}_4 = \left(\frac{5.014 \text{ moles}}{2} \right) = \underline{\underline{2.507 \text{ moles}}}$

4. Grams of water produced when it explodes



moles of $\text{H}_2 = 36.1 \text{ moles}$

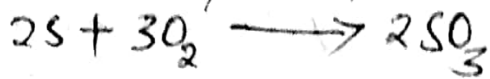
mole ratio $\text{H}_2 : \text{H}_2\text{O}$
2 : 2

mole of water = 36.1 moles

mass of water = $(36.1 \text{ moles} \times 18 \text{ g/mol})$

= 649.8 g of water

5. Grams of Sulphur trioxide produced.

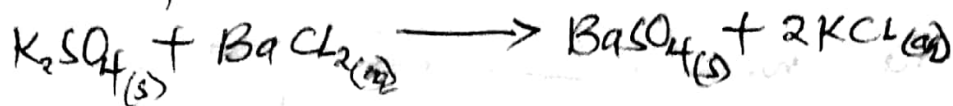


$$\text{moles of sulphur} = \frac{43.5 \text{ g}}{32.065} = 1.357 \text{ moles}$$

$$\text{moles of } SO_3 = \left(\frac{3 \times 1.357}{2} \right) = 2.036 \text{ moles}$$

$$\begin{aligned} \text{mass of } SO_3 &= (2.036 \text{ moles} \times 80.06 \text{ g/mol}) \\ &= \underline{\underline{162.96 \text{ g of } SO_3}} \end{aligned}$$

6. Grams of barium sulphate produced.



$$\text{moles of } K_2SO_4 = \left(\frac{50.0 \text{ g}}{174.259 \text{ g/mol}} \right) = \underline{\underline{0.287 \text{ moles}}}$$

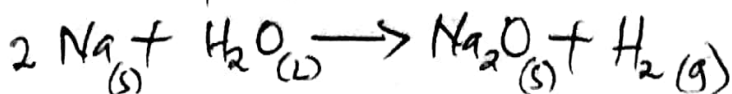
$$\text{mole ratio } K_2SO_4 : BaSO_4 = 1 : 1$$

$$\text{moles of } BaSO_4$$

$$\text{mass of } BaSO_4 \text{ produced} = (0.287 \times 233.38 \text{ g/mol})$$

$$= \underline{\underline{66.96 \text{ g of } BaSO_4}}$$

7. Litres of hydrogen produced.



$$\text{moles of Na} = 7.89 \text{ moles}$$

$$\text{mole ratio of Na : } H_2 = 2 : 1$$

$$\text{moles of } H_2 = \left(\frac{7.89 \text{ moles}}{2} \right) = 3.945 \text{ moles of } H_2$$

$$1 \text{ mole} = 24 \text{ L}$$

$$\begin{aligned} 3.945 \text{ moles} & \left(\frac{3.945 \times 24 \text{ L}}{1} \right) = \underline{\underline{94.68 \text{ Litres of } H_2}} \end{aligned}$$