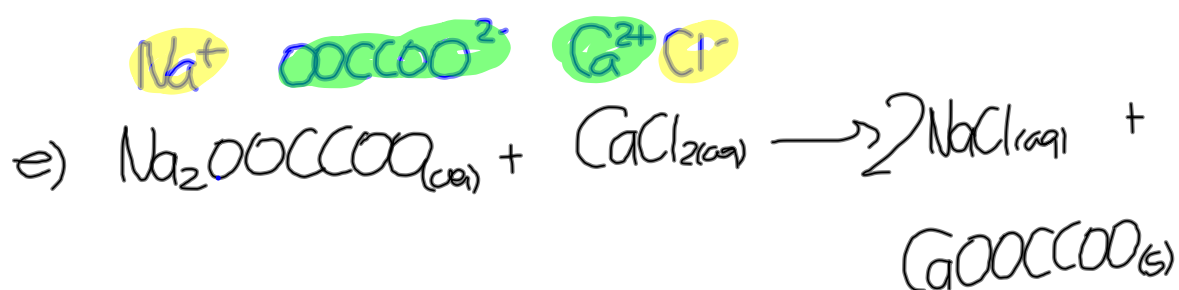


## Homework - Reactions Worksheet



Sodium oxalate + calcium chloride  $\longrightarrow$  sodium chloride + calcium oxalate



DR.

**Determine the number of atoms found in 2.78 moles of carbon.**

$$2.78 \text{ mol C} \times \frac{6.02 \times 10^{23} \text{ atoms C}}{1 \text{ mol C}} = 1.67 \times 10^{24} \text{ atoms C}$$

**Determine the number of molecules found in 6.09 moles of NH<sub>3</sub>.**

**Determine the number of atoms found in 12.6 moles of H<sub>2</sub>O.**

$$12.6 \text{ mol H}_2\text{O} \times \frac{6.02 \times 10^{23} \text{ molecules H}_2\text{O}}{1 \text{ mol H}_2\text{O}} \times \frac{3 \text{ atoms}}{1 \text{ molecule H}_2\text{O}}$$
$$= 2.28 \times 10^{25} \text{ atoms}$$

**Determine the number of atoms found in 2.78 moles of carbon.**

Calculate the number of moles contained in 45.0g of  $\text{LiNO}_3$ .

$$45.0\text{g LiNO}_3 \times \frac{1 \text{ mol LiNO}_3}{68.95 \text{ g LiNO}_3} = \boxed{0.652 \text{ mol LiNO}_3}$$

$$\begin{aligned} \text{LiNO}_3 &\rightarrow (1 \times 6.94) + (1 \times 14.01) + (3 \times 16.00) \\ &= 68.95 \text{ g/mol} \end{aligned}$$

**Calculate the volume of 4.58 moles of oxygen gas at STP conditions.**

$$4.58 \text{ mol } O_2 \times \frac{22.4 \text{ L } O_2}{1 \text{ mol } O_2} = \boxed{103 \text{ L } O_2}$$

A compound is composed of 31.0% Al, 13.8% C, and 55.2% O. Determine the empirical and molecular formula of the compound. The molar mass of the compound is 260.93 g/mol.

$$31.0 \text{ g Al} \times \frac{1 \text{ mol Al}}{26.98 \text{ g Al}} = \frac{1.149 \text{ mol Al}}{1.149 \text{ mol}} = 1$$

$$13.8 \text{ g C} \times \frac{1 \text{ mol C}}{12.01 \text{ g C}} = \frac{1.149 \text{ mol C}}{1.149 \text{ mol}} = 1$$

$$55.2 \text{ g O} \times \frac{1 \text{ mol O}}{16.00 \text{ g O}} = \frac{3.450 \text{ mol O}}{1.149 \text{ mol}} = 3$$



$$86.99 \text{ g/mol} \xrightarrow{\times 3} 260.93 \text{ g/mol}$$

$$\begin{aligned} \text{AlCO}_3 &\longrightarrow (1 \times 26.98) + (1 \times 12.01) + (3 \times 16.00) \\ &= 86.99 \text{ g/mol} \end{aligned}$$

# Worksheet