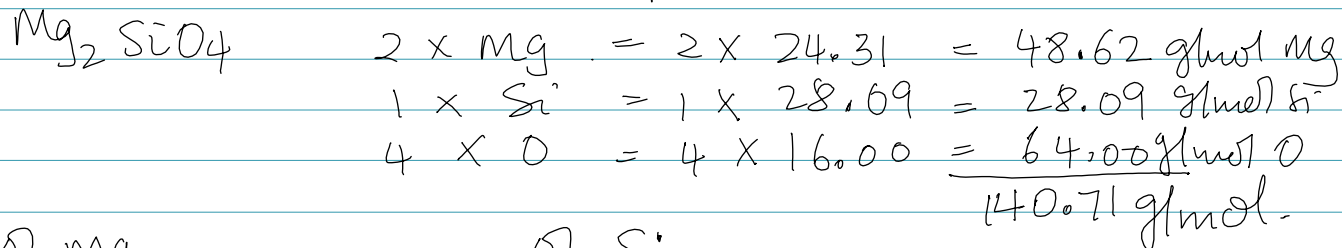


## Mass Percents

① What is the percent composition of  $Mg_2SiO_4$ ?



$$\begin{array}{ccc}
 \% Mg & \% Si & \% O \\
 \left( \frac{48.62}{140.71} \right) \times 100\% & \left( \frac{28.09}{140.7} \right) \times 100\% & \left( \frac{64.00}{140.7} \right) \times 100\% \\
 = \boxed{34.55\% Mg} & = \boxed{19.96\% Si} & = \boxed{45.48\% O}
 \end{array}$$

② Dolomite has 21.73% Ca, 13.18% Mg, 13.03% C & 52.06% O. What is the empirical formula?

→ ①  $21.73\% Ca + 13.18\% Mg + 13.03\% C + 52.06\% O = 100\%$

② Convert % to grams.  $21.73\% C \equiv 21.73g$  etc.

③ Convert grams of moles

$$Ca \quad 21.73g Ca \times \frac{1 \text{ mol}}{40.08g} = 0.5422 \text{ mol Ca} \leftarrow$$

$$Mg \quad 13.18g Mg \times \frac{1 \text{ mol}}{24.31g Mg} = 0.5422 \text{ mol Mg} \leftarrow$$

$$C \quad 13.03g C \times \frac{1 \text{ mol}}{12.01g C} = 1.085 \text{ mol C} \leftarrow$$

$$O \quad 52.06g O \times \frac{1 \text{ mol}}{16.00g O} = 3.254 \text{ mol O} \leftarrow$$

$$\begin{array}{cccc}
 \text{Ca} & \text{Mg} & \text{C} & \text{O} \\
 \frac{0.5422}{0.5422} & \frac{0.5422}{0.5422} & \frac{1.085}{0.5422} & \frac{3.254}{0.5422}
 \end{array}$$

