$$67.2 \times 10^{12}$$

$$\downarrow$$

$$6.72 \times 10^{13}$$

How many moles of Si do you have if you have 2.158×10^{24} Si atoms?

$$2.158 \times 10^{24} \text{ Si atoms} \left(\frac{1 \text{ mol Si}}{6.022 \times 10^{23} \text{ Si atoms}} \right)$$

$$= 3.584 \text{ mol Si}$$

How many Cu atoms are present in 78.19 g of Cu?

g Cu $\rightarrow$ mol Cu $\rightarrow$ Cu atoms

$$78.19\ \text{g Cu} \left(\frac{1\ \text{mol Cu}}{63.55\ \text{g Cu}}\right)\left(\frac{6.022\times10^{23}\ \text{Cu atoms}}{1\ \text{mol Cu}}\right)$$

$$= 7.409\times10^{23}\ \text{Cu atoms}$$

What is the mass of 1.027×10^{25} Cr atoms?

Cr atoms $\longrightarrow$ mol Cr $\longrightarrow$ g Cr

$$1.027 \times 10^{25}\ \text{Cr atoms} \left(\frac{1\ \text{mol Cr}}{6.022 \times 10^{23}\ \text{Cr atoms}}\right)\left(\frac{52.00\ \text{g Cr}}{1\ \text{mol Cr}}\right)$$

$= 886.8\ \text{g Cr}$

How many H_2O molecules are present in 57.83 g of H_2O?

$$g\,H_2O \longrightarrow mol\,H_2O \longrightarrow H_2O \text{ molecules}$$

$$57.83\,g\,H_2O \left(\frac{1\ mol\,H_2O}{18.016\ g\,H_2O}\right)\left(\frac{6.022\times10^{23}\ H_2O\ molecules}{1\ mol\,H_2O}\right)$$

$$= 1.933\times10^{24}\ H_2O \text{ molecules}$$

$$MWT_{H_2O} = 2(1.008) + 1(16.00)$$
$$= 2.016 + 16.00$$
$$= 18.016$$

H_2O 88.81% O
11.19% H

$$\text{PERCENT} = 100\% \left(\frac{\text{PART}}{\text{WHOLE}} \right)$$

$$MWT_{H_2O} = 2(1.008) + 1(16.00)$$

$$= 2.016 + 16.00$$

H part O part

$$= 18.016$$

whole

$$\%\ H = 100\% \left(\frac{2.016}{18.016} \right) = 11.19\%$$

$$+$$

$$\%\ O = 100\% \left(\frac{16.00}{18.016} \right) = 88.81\%$$

$$100.00\%$$

CHEMICAL FORMULA → MASS PERCENTAGES OF THE ELEMENTS

MASS PERCENTAGES OF THE ELEMENTS → ? CHEMICAL FORMULA

Can we do that?

With certain limitations,

Yes.