**Percent Composition**

**Percent Composition**: the percentage, by mass, of each element in a compound.

The percent (%) composition of carbon monoxide, CO, is 43% Carbon and 57% oxygen.

Why does oxygen have a higher percent composition than carbon, when the ratio of C atoms to O atoms is 1:1?

*Oxygen has a higher percent composition because it is has a larger molar mass and percentage composition is by mass.*

**Calculating % composition:**

**Ex 1.** A 38.72 g sample contains 22.69 g of Mg and 16.03 g of S. Find the % composition.

%Mg = mass Mg x 100 %S= mass S x 100

total mass total mass

= 22.69 g x 100 = 16.03 g x 100

38.27g 38.72g

= 58.60% = 41.40%

**Summary:** Divide mass of each element by the total mass of the sample. Multiply by 100 to get %.

**Ex 2**.What is the % composition of FeBr2?

**Step 1:** Find the molar mass of each element in the compound.

MFe = 55.845 g/mol MBr = 79.904 g/mol

**Step 2:** Calculate the molar mass of the compound.

MFeBr2 = 55.845 + 2(79.904) = 215.653 g/mol

**Step 3:** Calculate % composition by dividing the mass of each element by the total mass of compound (then X 100 to get %)

% Fe = 55.845 g/mol x 100 %Br = 2(79.904) g/mol x 100  
 215.653 g/mol 215.653 g/mol  
 = 25.90% = 74.10%

**TIP:** Check your answer! The % composition of each element in a compound should add to 100.