CONCEPT: LAW OF DEFINITE PROPORTIONS

- In 1799, the French chemist Joseph L. Proust, originated the **Law of Definite Proportions**.
  - □ It is also sometimes referred to as the Proust's Law, Law of Constant or Definite Composition.
  - □ **Mass ratio**: Proportions of elements by mass.
  - □ Different samples of a pure chemical compound always contain the _____ proportions of elements by mass.
  - □ For the **mass ratio**, place the element with the _____ **mass** on the top.

CO_2

6	8
C	**O**
Carbon	Oxygen
12.01	16.00

__ C x 12.01 g/mol =
__ O x 16.00 g/mol =

Mass Ratio = _____ =

EXAMPLE: Using the Law of Definite Proportions, illustrate why NO_2 and NO represent different compounds.

Proportions

- You can determine the unknown amount of an element if you know the **mass ratio** and the mass of the other element.
  - □ This is accomplished through the use of a proportion.

EXAMPLE: A substance is found to contain only silver and oxygen. An examination of this substance finds that it contains 3.40 g of silver and 2.80 g oxygen. Based on the Law of Definite Proportions, how many grams of oxygen should another sample of this substance possess If it has 6.63 g silver?

PRACTICE: The formula for sodium hydroxide is NaOH. A sample of NaOH weighing 18.1124 is found to be comprised of 10.41 g Na and .456 g H. Determine the grams of oxygen most likely to be found in a sample that weighs 25.360 g.

a) 10.1 g b) 8.29 g c) 15.6 g d) 16.0 g