Amounts in Chemistry: Mass

Review:

- Protons and neutrons are inside the nucleus
- Electrons orbit the nucleus
- Mass of protons and neutrons are each 1
- Mass of electrons is negligent (so small it doesn't matter)

A. Determining the Mass of Atoms

- Mass of an atom is equal to the mass of its nucleus (protons and neutrons)

- Multiply the relative atomic mass by the abundance, and add all the isotopes together

- Eg: an elements has two isotopes in nature, half of the atoms have a relative atomic mass of 8, the others have 6

$$\text{Mass} = (8 \times 0.5) + (6 \times 0.5)$$
$$= 7$$

B. Atomic Mass and Molecular Mass

- **Atomic Mass –** the mass of one atom of an element, found on the periodic table

- **Molecular Mass –** the mass of one molecule, calculated by adding the masses of all atoms

- Eg: mass $_{H_2O} = 2(m_H) + 1(m_O)$
  $= 2(1.01 \text{ g/mol}) + 1(16.00 \text{ g/mol})$
  $= 18.02 \text{ g/mol}$