Honors Chemistry Hour\_\_\_\_\_ Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
Dr. Wexler  
Homework: Calculating Average Atomic Mass  
Date Assigned:

The term “average atomic mass” is a weighted average, and so is calculated differently from a “normal” average (see the example below)

Example: A sample of cesium is 75% Cs-133, 20% Cs-132, and 5% Cs-134. What is the average atomic mass?

% x mass# = weighted part

Answer: 0.75 x 133 = 99.75  
 0.20 x 132 = 26.4  
 0.05 x 134 = 6.7\_\_\_  
 Total = sum of weighted parts = 132.85 amu

1. There are three isotopes of silicon. They have mass numbers of 28, 29 and 30. The average atomic mass of silicon is 28.086amu. In general, what can we conclude about which isotope is the most abundant?

2. The four isotopes of lead are shown below, each with its percent by mass abundance and the composition of its nucleus. Using the following data, first calculate the mass number of each isotope. Then calculate the average atomic mass of lead.

82p 82p 82p 82p

122n 124n 125n 126n

1.37% 26.26% 20.82% 51.55%

Mass # \_\_\_\_\_\_\_ \_\_\_\_\_\_\_ \_\_\_\_\_\_\_ \_\_\_\_\_\_\_

Weighted part \_\_\_\_\_\_\_ \_\_\_\_\_\_\_ \_\_\_\_\_\_\_ \_\_\_\_\_\_\_

Sum of weighted parts = Atomic Mass = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ amu

2. What is the atomic mass of copper given the following isotope abundances:

Cu-63 = 69.17%  
 Cu-65 = 30.83%

3. What is the atomic mass of silicon given the following isotope abundances:  
 Si-28 = 92.23%

Si-29 = 4.67%

Si-30 = 3.10%

4. What is the atomic mass of zinc given the following isotope abundances:

Zn-64 = 48.6%  
 Zn-66 = 27.9%  
 Zn-67 = 4.1%  
 Zn-68 = 18.8%  
 Zn-70 = 0.6%