Name: _____ Date: _____

GRCI SCH 3UI

Average Atomic Mass Calculations

The values of atomic mass (mass number) in the periodic table for the elements are the "AVERAGE ATOMIC " masses since most elements consist of 2 or more isotopes.

The formula used to calculate the average atomic mass (AAM) is:

$$AAM = \frac{(\text{atomic mass of isotope\#1})(\%\ \text{abundance})}{100} + \frac{(\text{atomic mass of isotope \#2})(\%\ \text{abundance})}{100} + \text{etc}$$

AAM = (atomic mass of isotope#1)(decimal abundance) + (atomic mass of isotope #2)(decimal abundance) + etc

Questions

1. Determine the average atomic mass of the following elements:

Element	Atomic mass of isotope (u)	% abundance of isotope
a) Lithium	6.01512 7.01600	7.42 92.58
b) Boron	10.01290 11.00931	19.78 80.22
c) Magnesium	23.98504 24.98584 25.98259	78.70 10.13 11.17

2. Chlorine consists of two isotopes Cl-35 (atomic mass is 34.9689 u) and Cl-37 (atomic mass is 36.9659 u). If the average atomic mass of chlorine is 35.453 u, calculate the % abundance of each isotope.

3. Silver consists of two naturally occurring isotopes: Ag-107 has a % abundance of 51.82, and Ag-109 has a % abundance of 48.18 %. Calculate the approximate average atomic mass of silver. Since the atomic mass is not provided, use the mass number.

4. Neon consists of three isotopes of consecutive number. The isotope with the lowest mass number has a percent abundance of 90.90%, the next isotope makes up 0.30 % of Neon, and the third isotope has 8.80 %. The average atomic mass of neon is 20.18 u. Calculate the mass numbers of the three isotopes.

If you are up for a mathematical challenge, try this question. Don't be spaced out about it.

5. Chris Hadfield recently discovered the element Marsium (just kidding). However, this hypothetical element consists of three isotopes: **^{95}Ms, ^{98}Ms and ^{102}Ms**. The lightest and heaviest isotopes are present in equal amounts. If the average atomic mass is 98.1 u, calculate the percent abundance of each of the isotopes.