

## Atoms WS #2: Isotopes

Average atomic mass is the weighted average of the atomic masses of the naturally occurring isotopes of an element. Calculating the mass of an element depends on both the mass and the relative abundance of each element's isotopes. The average atomic mass of an element can be found by multiplying the atomic mass of each isotope by its relative abundance (expressed in decimal form) and adding the results. This is how the atomic mass value listed in your textbook and on the periodic table were calculated.

Example: Copper has two naturally occurring isotopes.

69.17% Copper-63 and 30.83% Copper-65.

Find the average atomic mass of copper.

$(63 \text{ amu} \times 0.6917) + (65 \text{ amu} \times 0.3083) = 63.6166$  round to 63.6

Class period chart (63.546) or (63.5) on your periodic chart

**Directions:** Calculate the average atomic mass of various elements using the percent of the naturally occurring isotopes listed below. **Show all work** and compare to published values

1. Silver  
55% Ag - 107  
45% Ag - 109

2. Indium  
40% In - 113  
60% In - 115

3. Rhenium  
30% Re - 185  
70% Re - 187

4. Copper  
75% Cu - 63  
25% Cu - 65

5. Chlorine  
75.5% Cl - 35  
24.5% Cl - 37

6. Lithium  
7.4% Li - 6  
92.6% Li - 7

7. Boron  
19.6% B - 10  
80.4% B - 11

8. Oxygen  
99.76% O - 16  
.046% O - 17  
.20% O - 18