FLINN SCIENTIFIC

Name_____

Data Table

"Bean Bag" Isotope

Data Table

"Bean Bag" Isotope (Bg)	Number of Atoms	Total Mass of Atoms
1		
2		
3		

Results Table

"Bean Bag" Isotope (Bg)	Average Mass of Isotopes	Percent Abundance
1		
2		
3		

Post-Lab Questions *(Use a separate sheet of paper to answer the following questions.)*

1. Determine the average mass of each Bg isotope. Enter the results in the Results Table.
2. What is the total number of "bean bag" (Bg) atoms in the original sample? Calculate the *percent abundance* of each isotope: Divide the number of atoms of each isotope by the total number of atoms and multiply the result by 100. Enter the results to one decimal place in the Results Table.
3. The atomic mass of the "bean bag" element (Bg) represents a *weighted average* of the mass of each isotope and its relative abundance. Use the following equation to calculate the atomic mass of Bg. *Note:* Divide the percent abundance of each isotope by 100 to obtain its relative abundance.

   Relative abundance = Percent abundance/100

   $$\text{Atomic mass} = (\text{rel. abundance}_{\text{isotope 1}} \times \text{mass}_{\text{isotope 1}}) + (\text{rel. abundance}_{\text{isotope 2}} \times \text{mass}_{\text{isotope2}}) + (\text{rel. abundance}_{\text{isotope 3}} \times \text{mass}_{\text{isotope 3}})$$

4. How many Bg atoms in the original sample would you expect to have the same mass as the calculated atomic mass of the element? Explain.
5. The isotopes of magnesium (and their percent abundance) are Mg-24 (79.0%), Mg-25 (10.0%), and Mg-26 (11.0%). Calculate the atomic mass of magnesium. *Note:* The mass of each isotope is equal to the mass number. Thus, the mass of an atom of Mg-24 is 24.0 amu.
6. Copper (atomic mass 63.5) occurs in nature in the form of two isotopes, Cu-63 and Cu-65. The percent aboundance is 75% Cu-63 and 25% Cu-65. Explain why the atomic mass of copper is not equal to 64, halfway between the mass of copper-63 and copper-65.