Atomic Mass Activity
Beanbagium Bg

Procedure

1. Sort the atoms in the "beanbagium" element sample (Bg) into three isotope groups (1, 2, and 3) according to the type of bean. (Assume each type of bean represents a different isotope and that each bean represents a separate atom.) Place each isotope group into a separate cup.

2. Count and record the number of atoms of each isotope.

3. Measure the total mass of Bg atoms belonging to each isotope group. Record the mass to the nearest 0.01g.

Data

Beanbagium isotope (Bg)	Number of atoms	Abundance (# / total)	Percent abundance (# / total x 100%)
1			
2			
3			
Total			

Beanbagium isotope (Bg)	Isotope total mass	Average mass (isotope total mass ÷ number of atoms in table above)
1		
2		
3		

Beanbagium isotope (Bg)	Average mass		Abundance		
1		x		=	
2		x		=	
3		x		=	
				+	
			Atomic mass =		

Answer the questions on the back of the sheet

1. How many Bg atoms in the original sample would be expected to have the same mass as the calculated atomic mass of the sample? Explain

2. 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.

3. Copper, with an atomic mass of 63.5, occurs in nature in the form of two isotopes, Cu-63 and Cu-65. Use this information to calculate the percent abundance of each copper isotope.

4. Explain why the atomic mass of copper is not exactly 64, midway between the mass numbers of copper-63 and copper-65.

5. Radioactive isotopes (radioisotopes) are widely used in medicine. Because isotopes have identical chemical properties, the reaction and distribution of radioisotopes in the body is similar to that of their natural isotopes. Iodine-131, for example, is an artificial radioisotope that is used to diagnose thyroid disorders. When administered to a patient, the radioisotope is taken up by the thyroid gland, where it is incorporated into the thyroid hormones, just as iodine in the diet would be. Based on where the following elements are likely to be found in the body, match each radioisotope with its medical use.

_____ Na-24	a) studies of bone formation
_____ P-32	b) red blood cell studies
_____ Ca-47	c) tracing blood circulation
_____ Fe-55	d) genetice (DNA) research