The Mole #1 **Isotopes** Name:

1. Complete the following chart:

Isotope	Isotope Symbol	Mass Number	Number of Neutrons	Number of Protons
potassium-40				
nitrogen-15				
	$^{60}_{28}Ni$			
		59		27
	$^{54}_{26}Fe$			
			30	25

2. Bromine exists as two naturally occurring isotopes: Br-79 (78.91 u) and Br-81 (80.92 u). These isotopes have isotopic abundances of 50.69 % and 49.31 % respectively. Calculate the average atomic mass of bromine.

3. In nature, antimony is composed of two isotopes. These isotopes with their isotopic abundances and atomic masses are antimony-121 (120.90 u, 57.30 %) and antimony-123 (122.90 u 42.70 %). Calculate the average atomic mass of antimony.

4. Neon has three naturally occurring isotopes shown below:

Isotope	neon-20	neon-21	neon-22
Atomic Mass	19.992 u	20.994 u	21.991 u
Relative abundance	90.60 %	0.26 %	9.20 %

Calculate the average atomic mass of neon.

5. Rubidium-85 has a mass of 84.912 u and a relative abundance of 72.17 %. The relative abundance of the other isotope is 27.83 %. If the average atomic mass of rubidium is 85.47, calculate the mass of the other isotope.

6. The average atomic mass of silicon is 28.090 u. Silicon-28 has a mass of 27.977 u and relative abundance of 92.23 %. Si-29 has a mass of 28.976 u and relative abundance of 4.67 %. Find the mass of the silicon-30 isotope.

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Enrichment: Use a system of equations to solve the following: (OPTIONAL)

7. Rhenium has two isotopes: Re-185 (184.95 u) and Re-187 (186.96 u). If the average atomic mass of rhenium is 186.21 u, determine the percentage abundance of each isotope. Show your calculations.

8. Thallium has two naturally occurring isotopes: Tl-203 (202.97 u) and Tl-205 (204.97 u). If the average atomic mass of thallium is 204.37 u, determine the percentage abundance of each isotope. Show your calculations.