

Appendix 3.1: Calculating Average Atomic Mass

1. Identify the numbers of protons, neutrons, and electrons in a neutral atom of each of the following:

a) ${}_{92}^{235}\text{U}$ $p = 92, n = 143, e = 92$

b) ${}_{88}^{226}\text{Ra}$ $p = 88, n = 138, e = 88$

2. Complete the following table to calculate the average atomic mass of chlorine (Cl).

Isotope	Mass of Each Atom	Number of Atoms	Total Mass
Cl-35	34.969 μ	758 75.8%	
Cl-37	36.966 μ	242 24.2%	
Totals		1000	
Average			35.452

3. Complete the following table to calculate the average atomic mass of each element.

Element	Symbol	Mass Number	Mass (μ)	Relative Abundance (%)	Average Atomic Mass (μ)
Carbon (C)	C-12	12	12 (exactly)	98.98	12.02
	C-13	13	13.003	1.11	
Silicon (S)	Si-28	28	27.977	92.21	28.086
	Si-29	29	28.976	4.70	
	Si-30	30	29.974	3.09	

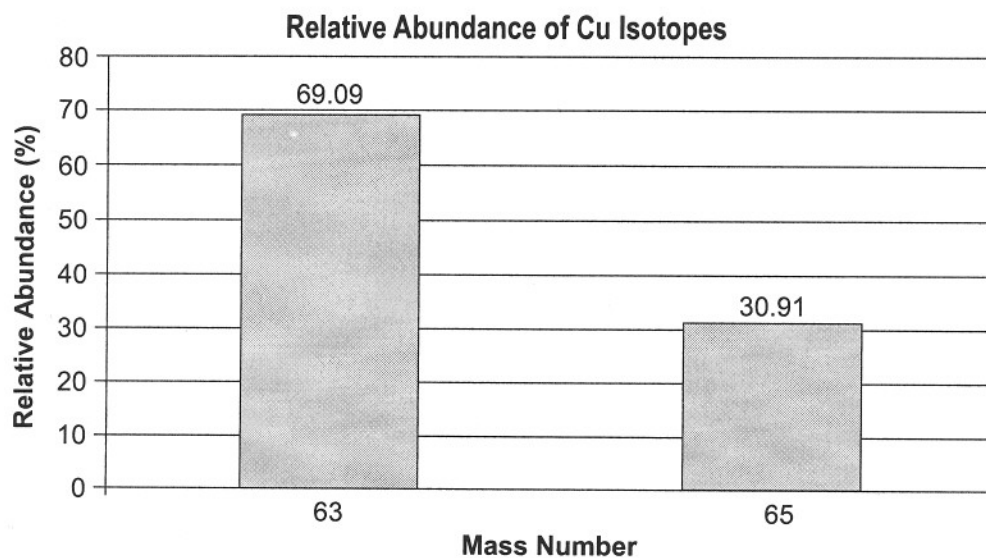
Appendix 3.1: Calculating Average Atomic Mass (continued)

4. Define the term *isotope*. Explain how an element's atomic mass is related to the abundances of its different isotopes.

isotope - an atom with the same number of protons but a different number of neutrons.

- the atomic mass is the weighted average of the mass of the isotopes.

5. Using the graph below, calculate the average atomic mass of copper (Cu).



$$63(.6909) + 65(.3091)$$
$$= 63.6 \text{ u}$$