

EXERCISES

1. Fill in the following table for each of the isotopes listed.

	Symbol	Atomic Mass	Atomic Number	Number of Protons	Number of Neutrons	Number of Electrons
a)	$^{23}_{11}\text{Na}$					
b)	$^{20}_{10}\text{Ne}$					
c)	$^{201}_{80}\text{Hg}$					
d)	$^{65}_{30}\text{Zn}$					
e)	$^{27}_{13}\text{Al}$					

2. Complete the following table.

	Symbol	Atomic Mass	Atomic Number	Number of Protons	Number of Neutrons	Number of Electrons
a)		84	36			36
b)				35	45	35
c)		127	53			54
d)			27		32	27
e)	Zn				36	
f)	Cd^{2+}	112				
g)				38	50	36
h)	X^{2-}				75	54
i)	X^{3+}	103				42
j)	X^{3-}		33		42	

3. The following mixtures of isotopes are found in nature. Calculate the expected atomic mass of a sample of each mixture.

- $^{10}\text{B} = 18.8\%$, $^{11}\text{B} = 81.2\%$
- $^{69}\text{Ga} = 60.0\%$, $^{71}\text{Ga} = 40.0\%$
- $^{107}\text{Ag} = 51.8\%$, $^{109}\text{Ag} = 48.2\%$
- $^{70}\text{Ge} = 20.5\%$, $^{72}\text{Ge} = 27.4\%$, $^{73}\text{Ge} = 7.8\%$, $^{74}\text{Ge} = 36.5\%$, $^{76}\text{Ge} = 7.8\%$
- $^{64}\text{Zn} = 48.9\%$, $^{66}\text{Zn} = 27.8\%$, $^{67}\text{Zn} = 4.1\%$, $^{68}\text{Zn} = 18.6\%$, $^{70}\text{Zn} = 0.6\%$
- $^{90}\text{Zr} = 51.5\%$, $^{91}\text{Zr} = 11.2\%$, $^{92}\text{Zr} = 17.1\%$, $^{94}\text{Zr} = 17.4\%$, $^{96}\text{Zr} = 2.8\%$
- $^{92}\text{Mo} = 15.8\%$, $^{94}\text{Mo} = 9.0\%$, $^{95}\text{Mo} = 15.7\%$, $^{96}\text{Mo} = 16.5\%$, $^{97}\text{Mo} = 9.5\%$, $^{98}\text{Mo} = 23.8\%$, $^{100}\text{Mo} = 9.6\%$

4. Calculate the percentage of each isotope present in the following mixtures.

- a mixture of ^{107}Ag and ^{109}Ag has an average mass of 107.9 u
- a mixture of ^6Li and ^7Li has an average mass of 6.94 u
- a mixture of ^{20}Ne and ^{22}Ne has an average mass of 20.2 u
- a mixture of ^{79}Br and ^{81}Br has an average mass of 79.9 u
- a mixture of ^{113}In and ^{115}In has an average mass of 114.8 u

- 3a. 10.8 amu
- b 69.8 amu
- c 108.0 amu
- d 72.7 amu
- e 65.5 amu
- f 91.3 amu
- g 95.9 amu

- 4a 55, 45%
- b 6, 94%
- c 90, 10%
- d 55, 45%
- e 10, 90%