

Isotopes and Average Weighted Atomic Mass

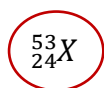
1. An atom has 19 protons, 19 electrons and 22 neutrons.

$$Z = \underline{19} \qquad A = \underline{41} \qquad M_m = \underline{39.0938 \text{ g/mol}}$$

What is the identity of the element? **potassium**

Write the isotopic symbol $\text{}^{41}_{19}\text{K}$

2. Which of the following are isotopes?



3. How many protons, electrons, and neutrons? Identify the element. $\text{}^{235}_{92}\text{X}$

There are 92 protons, 92 electrons, and 143 neutrons. The element is uranium.

4. Magnesium has three naturally occurring isotopes; Mg-24, Mg-25, and Mg-26. The isotopic masses and fractional abundances are in the following table.

Isotope	Isotopic Mass, μ	Percent Abundance
$\text{}^{24}_{12}\text{Mg}$	23.9850	78.99
$\text{}^{25}_{12}\text{Mg}$	24.9858	10.00
$\text{}^{26}_{12}\text{Mg}$	25.9826	11.01

What is the fractional abundance of these isotopes?

Mg-24; 0.7899, Mg-25; 0.1000, Mg-26; 0.1101

Calculate the average weighted atomic mass, in μ .

$$0.7899 \times 23.9850 \mu + 0.1000 \times 24.9858 \mu + 0.1101 \times 25.9826 \mu = \mathbf{24.31 \mu}$$