

1. Consider the following fictitious elements. They have been assigned the symbol "A" and identified using atomic notation:



a) Which are isotopes of the same element?

${}_{46}^{107}\text{A}$ and ${}_{46}^{110}\text{A}$

b) How many protons do these isotopes have?

46

c) How many neutrons do these isotopes have?

61 and 64

2. Carbon atoms exist as three different isotopes: C-12, C-13, and C-14. However, the mass shown for Carbon on the periodic table is 12.01.

a) What is the unit used for these masses? i.e. 12...what?

Ans: a.m.u or u

Refer to the masses of specific isotopes.

b) Which number/s given above (12, 12.01, 13, and 14) is/are

mass number/s and which is/are atomic mass number/s?

mass number/s: 12, 13, 14

atomic mass number/s: 12.01

↑ atomic mass number is the average mass of all of the isotopes in a sample of the element.

2. In a sample of pure uranium,

the mass number of 0.005% of the atoms is 234u

the mass number of 0.7% of the atoms is 235u

the mass number of 99.3% of the atoms is 238u

Calculate the average atomic mass of Uranium.

$$\frac{0.005}{100}(234) + \frac{0.7}{100}(235) + \frac{99.3}{100}(238)$$

$$= 0.0117 + 1.645 + 236.334$$

$$= 237.9907 \text{ u}$$

Answer: 237.9907 u