

Worksheet - Isotopes and Average Atomic masses

Name _____

Period _____

Date _____

1. Four isotopes of lead include lead-204, lead-206, lead-207, and lead-208. The average atomic mass of a lead atom is 207.2 amu. Which isotope of lead is likely to be the most abundant?
2. What do all isotopes of an element have in common?
3. Explain why carbon-14 and nitrogen-14 are not considered isotopes.
4. Write the atomic symbol (symbol notation) for the two isotopes of uranium(U), whose atomic number is 92. One isotope has 142 neutrons, and the other isotope has 146 neutrons.

5. Calculate the average atomic mass of the element iron(Fe) using the following data:

<u>Isotope</u>	<u>% abundance</u>
Iron-54	6%
Iron-56	92%
Iron-57	2%

6. Calculate the average atomic mass of the element nitrogen(N) using the following data:

<u>Isotope</u>	<u>% abundance</u>
Nitrogen-14	95%
Nitrogen-15	3%
Nitrogen-16	2%

7. Calculate the average atomic mass of the element Iodine(I) using the following data:

<u>Isotope</u>	<u>% abundance</u>
Iodine-127	80%
Iodine-126	17%
Iodine-128	3%

8. Calculate the average atomic mass of the element Hydrogen(H) using the following data:

<u>Isotope</u>	<u>% abundance</u>
Hydrogen-1	99%
Hydrogen-2	0.8%
Hydrogen-3	0.2%

9. A certain element exists as three different isotopes, 24.1% of all the isotopes have a mass of 75.23 amu, 48.7% have a mass of 74.61 amu, and 22.2% have a mass of 75.20 amu.

a. What is the average atomic mass of this element?

b. Use your periodic table to determine which element this is.

10. An element exists as 4 different isotopes. 4.35% have a mass of 49.9461 amu, 83.79% have a mass of 51.9405 amu, 9.50% have a mass of 52.9407 amu, and 2.36% have a mass of 53.9389 amu.

a. What is the average atomic mass of this element?

b. What is the identity of this element?

11. Calcium has three different isotopes. One has a mass of 35.00 amu; another has a mass of 41.00 amu; and another has a mass of 40.00 amu. Which isotope is the most abundant of the three?

12. Several isotopes of a certain atom "X" exist. 4.35% of all X atoms have a mass of 39.946 amu. 83.79% have a mass of 41.941 amu, 9.50% have a mass of 42.941 amu, and 2.36% have a mass of 43.939 amu. What is the average atomic mass of atom X?