

Name: _____ Class: _____ Date: _____

ID: A

Atomic Structure Common Assessment

Multiple Choice

Identify the choice that best completes the statement or answers the question.

- _____ 1. An unknown element, X, is isolated and examined. It is determined that 91.0% of the sample is composed of the isotope ^{75}X while the other 9.00% of the sample is composed of ^{77}X . Based on this information, what is the atomic mass of element X?
 - a. 75.2 grams
 - b. 76.0 grams
 - c. 77.2 grams
 - d. 76.8 grams

- _____ 2. A scientist examines a sample of an unknown nonmetal. She isolates several atoms which contain 53 protons and 74 neutrons. Which of the following isotopes has she isolated?
 - a. Arsenic-74
 - b. Chromium-53
 - c. Iodine-127
 - d. Tungsten-184

- _____ 3. C-12 and C-13 are naturally-occurring isotopes of the element carbon. C-12 occurs 98.89% of the time and C-13 occurs 1.108% of the time. What calculation should be used to determine the atomic mass of this element?
 - a.
$$\frac{(12 \times 0.01108) + (13 \times 0.9889)}{2}$$
 - b. $(12 \times 0.9889) - (13 \times 0.01108)$
 - c. $(12 \times 0.9889) + (13 \times 0.01108)$
 - d. (12×0.9889)

- _____ 4. A new synthetic element, Jh, is created and examined. Of the atoms of this element that have been synthesized, 20.5% of the atoms are of the isotope ^{265}Jh , 35.5% of the atoms are isotope ^{266}Jh , and the other 44% of the atoms are composed of ^{268}Jh . Based on this information, what is the approximate atomic mass of element Jh?
 - a. 267.3 g
 - b. 266.7 g
 - c. 265.9 g
 - d. 266.2 g

- _____ 5. An unknown element, Z, is examined and three isotopes are determined to be present.

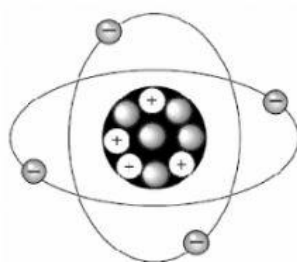
$^{88}\text{Z} = 2.24\%$	$^{90}\text{Z} = 78.32\%$	$^{91}\text{Z} = 19.44\%$
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 What is the atomic mass of the unknown element X according to this data set?
 - a. 90.1 grams
 - b. 89.2 grams
 - c. 88.4 grams
 - d. 90.6 grams

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6. How many neutrons would be found in the nucleus of the isotope chlorine-37?
- a. 37 c. 35.5
b. 17 d. 20
7. A scientist examines a sample of an unknown metal. She isolates several atoms which contain 29 protons and 35 neutrons. Which of the following isotopes has she isolated?
- a. Bromine-29 c. Copper-64
b. Chlorine-35 d. Gadolinium-35
8. An atom of the isotope argon-40 contains how many neutrons in its nucleus?
- a. 22 c. 21.948
b. 40 d. 18
- 9.



The picture shows a model of the isotope —

- a. beryllium-13 c. beryllium-9
b. boron-9 d. boron-8

Short Answer

10. Element X has two known naturally occurring isotopes. The mass and relative abundance of each isotope are shown below.

Relative Abundance	Mass (amu)
50.57%	78.92
49.43%	80.92

What is the average atomic mass of Element X to the nearest hundredth of an atomic mass unit? Record your answer and fill in the bubbles on the back of your answer document.