Introduction to the Periodic Table Name _____

Use you textbook to define the following terms:
Ion –

Isotope –

Use your Periodic Table to complete the table below (considering "balanced" atoms only).

Element	Atomic Number	Atomic Mass	Mass Number	Protons	Neutrons	Electrons
Hydrogen						
Helium						
Sodium						
Chlorine						
Argon						
Carbon						
Nitrogen						
Oxygen						
Silver						
Uranium						

Questions:
1. When table salt (sodium chloride or NaCl) is dissolved in water, its two components separate as they go into solution. Each sodium atom in salt gives one of its electrons to a chlorine atom. As a consequence, the sodium atoms are positively charged and the chlorine atoms are negatively charged. Are they ions or isotopes? Explain.

2. Deuterium or "heavy hydrogen" is frequently used in scientific research. It contains one neutron as well as one proton in its nucleus (and one electron). This makes deuterium a(n) _____ of hydrogen (ion or isotope).

3. Does deuterium have an electrical charge? Describe your reasoning.

4. Each neutron and proton has a mass of one, while the mass of each electron is very close to zero (1/1836 amu). Note: amu = Atomic Mass Unit. What is the approximate mass of deuterium?

Use your Periodic Table to complete the table below for each ion.

Element / Charge	Atomic Number	Atomic Mass	Mass Number	Protons	Neutrons	Electrons
Cesium +1						
Bromine -1						
Magnesium +2						
Selenium -2						

5. Helium (He) has a mass number of 4, meaning that it generally contains 2 protons, 2 neutrons, and 2 electrons. Helium has an atomic mass of 4.003. What is the atomic mass of the following?

a. Bismuth (Bi) _____ b. Radium (Ra) _____

c. Californium (Cf) _____ d. Mendelevium (Md) _____

e. Yttrium (Y) _____ f. Cesium (Cs) _____

6. Only the lighter elements occur in living things. In particular, living organisms are composed of about 25 of the elements in the top four rows of the periodic table. What element has an atomic mass of 40.08 and where does this occur in humans?

The Periodic Table is made up of vertical columns of elements called groups. Elements found in the same group tend to behave in a similar manner. Horizontal rows are known as periods. Six of these 25 elements (in the top four rows) are of critical importance in that they comprise the four major groups of molecules found in living organisms. These elements are called CHNOPS for short. Find the six CHNOPS elements in the periodic table and complete the following chart.

Symbol	Element Name	Atomic Number	Atomic Mass	Group Number
C				
H				
N				
O				
P				
S				

Questions:

7. Which of the other five elements in CHNOPS behaves most like Oxygen? Why?

8. Which of the other five elements in CHNOPS behaves most like Nitrogen? Why?

9. Which element in CHNOPS has the greatest mass? Which has the least mass?

The chemical symbols for the following elements are not abbreviations of their English names. See if you can match the Element with the correct name.

Element	**Name**
10. Copper _____	A. Argentum
11. Gold _____	B. Aurum
12. Iron _____	C. Cuprum
13. Lead _____	D. Ferrum
14. Tin _____	E. Hydroargyrum
15. Mercury _____	F. Kalium
16. Silver _____	G. Natrium
17. Sodium _____	H. Plumbum
18. Potassium _____	I. Stannum
19. Antimony _____	J. Stibnum
20. Tungsten _____	K. Wolfram

A common treatment for some medical procedures is intense, high-energy radiation. A particular application is found in the treatments of thyroid gland tumors. In order to function properly, the thyroid gland must absorb iodine.

21. What are the atomic number, symbol, and atomic mass of Iodine?

22. Iodine typically can be found as one of two isotopes: iodine-131 and iodine-130. Note: The number following iodine represents the mass number for that particular isotope. How many neutrons are present in each iodine isotope?