Review Sheet for Chem. 141 (Early Atomic Theory)

1. Complete the following table, indicating the correct atomic number, mass number, number of protons, electrons and neutrons and write the correct symbol

|  | **Atomic notation** | **Isotopic name** | **ATOMIC #** | **MASS #** | **PROTONS** | **ELECTRONS** | **NEUTRONS** | **ATOMIC MASS** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 1 | 5323V |  |  |  |  |  |  |  |
| 2 | 20480Hg |  |  |  |  |  |  |  |
| 3 | 5323V3+ |  |  |  |  |  |  |  |
| 4 | 8235Br1- |  | 35 |  | 35 | 36 |  |  |
| 5 |  |  | 54 | 132 |  |  |  | 131.8 |
| 6 |  |  | 9 | 19 |  | 10 |  |  |
| 7 |  |  |  | 57 | 26 | 24 |  |  |
| 8 |  |  | 53 |  |  | 54 | 128 |  |

1. Given the following information which atoms are isotopes of Chromium (you may select more than one answer)?
2. 25 protons, 25 electrons, 27 neutrons
3. 23 protons, 23 electrons, 29 neutrons
4. 24 protons, 24 electrons, 28 neutrons
5. 52 protons, 52 electrons, 24 neutrons
6. 24 protons, 24 electrons, 29 neutrons
7. Describe Rutherford's nuclear model of the atom. In particular describe where the positive and negative charge resides in the atom, where the vast majority of the mass resides, and the size of the nucleus compared to the size of the atom as a whole. How does this model of the atom explain the scattering of alpha-particles from gold foil in Rutherford's experiment?
8. A compound of copper and sulfur is 65.43% copper by mass. How many grams of copper can be obtained by decomposing 249 g of this compound completely? How many grams of sulfur would remain?
9. Magnesium has three naturally occurring isotopes: magnesium 24, magnesium 25 and magnesium 26. The following table gives the mass of the individual isotope and the naturally occurring abundance of that isotope

|  |  |  |
| --- | --- | --- |
| Isotope | Isotopic Mass | Percent Abundance |
| 2412Mg | 23.98 u | 78.70 % |
| 2512Mg | 24.97 u | 10.18 % |
| 2612Mg | 25.96 u | * 1. %
 |

 Calculate the average atomic mass for the isotopes of magnesium.