**Part A:** Answer the following questions

1. What is an atom?
2. What property is used to identify the type of element?
3. What makes isotopes of elements different from one another? What makes them the same?
4. In Hydrogen-3, what does the number next to the element name mean?
5. What does each of the numbers next to the element symbol mean for the symbol below?



1. What is the difference between atomic mass and mass number?
2. What would be the most common isotope of Au (gold)? (Hint: use your periodic table)
3. How can there be over a 1000 different atoms when there are less than 120 elements that have been identified?
4. Given 35Cl and 36Cl what makes the two atoms isotopes of each other? What would be different about the two elements?
5. Would 4020X and 4220X be isotopes of the same element? Why or why not?

**Part B:** Fill in the following charts

|  |  |  |  |
| --- | --- | --- | --- |
| Subatomic Particle | Relative Charge | Location in Atom | Relative Mass (amu) |
| Proton |  |  |  |
| Neutron |  |  |  |
| Electron |  |  |  |
| **Element Shorthand** **(AX)** | **Atomic #** | **Protons** | **Neutrons** | **Electrons** | **Mass #** |
|  | 9 |  | 10 |  |  |
|  |  | 14 | 15 |  |  |
|  |  |  | 25 |  | 47 |
|  |  | 28 |  |  | 58 |
| 39K |  |  |  |  |  |
|  |  |  |  | 36 | 83 |
|  |  |  | 28 | 21 |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Chromium-52 | Chromium-56 |  | Sulfur-32 | Sulfur-35 |
| Protons |  |  | Protons |  |  |
| Neutrons |  |  | Neutrons |  |  |
| Electrons |  |  | Electrons |  |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | 14C | 16C |  | 15N | 20N |
| Protons |  |  | Protons |  |  |
| Neutrons |  |  | Neutrons |  |  |
| Electrons |  |  | Electrons |  |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |
| Protons | 25 |  | Protons | 32 |  |
| Neutrons | 17 | 15 | Neutrons | 40 | 42 |
| Electrons |  |  | Electrons |  |  |