

Unit 3 HW #1: Atomic Structure

1. Fill in the blanks with the appropriate terms.

- The nucleus of an atom contains _____ and _____
- The _____ are found on the outside of the atom.
- The _____ and the _____ have approximately the same mass.
- The lightest subatomic particle is the _____
- The _____ determine the chemical properties of an element
- The _____ number of an element is its number of protons
- The _____ number of an element is its number of protons + neutrons
- Atoms form charges by gaining or losing _____
- Atoms with the same number of _____ but with different numbers of _____ are called isotopes.
- Atoms with the same number of _____ but with different numbers of _____ are called ions.
- An atom that has lost a single electron has a charge of _____
- An atom that has gained a single electron has a charge of _____
- Positive ions are called _____ and negative ions are called _____
- Isotopes have different _____ numbers but the same _____ number.

2. Write the atomic symbol (A_ZX) for the atom described by each of the following clues:

- $Z = 8$, 9 neutrons
- The isotope of chlorine in which $A = 37$
- $Z = 27$, $A = 60$
- Number of protons = 26, number of neutrons = 31
- The isotope of I with a mass number of 131
- $Z = 3$, number of neutrons = 4
- $Z = 25$, $A = 55$
- Atomic number = 12, number of neutrons = 13
- The isotope of iron with 30 neutrons in its nucleus
- $Z = 92$, number of neutrons = 146
- Mass number = 244, number of protons = 94
- The isotope with 20 protons and 21 neutrons in its nucleus

3. Complete the following table:

| Name | Symbol | Atomic Number | Mass Number | # of neutrons |
|----------|--------------------------|---------------|-------------|---------------|
| Sodium | | 11 | 23 | |
| Nitrogen | ${}^{15}_7\text{N}$ | | | |
| | ${}^{136}_{56}\text{Ba}$ | | | |
| Lithium | | | | 6 |
| Boron | | 5 | 11 | |
| Lead | | | 206 | |
| | | 7 | 14 | |
| | | 26 | | 31 |
| | ${}^{84}_{36}\text{Kr}$ | | | |