

Note-Taking Guide: The Nature of Matter (Section 5-1)

I. Atom: _____

A. Subatomic Particles

Particle	Charge	Relative Mass	Location in Atom
proton		1	
neutron			
	negative		

Most atoms are **neutral** because they have equal numbers of _____ and _____.Atoms that **lose** electrons have a _____ charge.Atoms that **gain** electrons have a _____ charge.

II. Element: _____

A. atomic number: _____

B. mass number: _____

C. isotope: _____

D. radioactive isotope: _____

1. uses: _____

III. Compound: _____

IV. Chemical Bonds

A. **valence electrons**: _____**ion**: _____B. **ionic bond**: _____C. **covalent bond**: _____**molecule**: _____**Periodic Table, Electrons, and Bonding**

I. Periodic Table Design: _____

1. _____

2. _____

3. _____

4. _____

Elements are arranged in order of increasing _____.

An element's position on the periodic table tells you:

1. _____

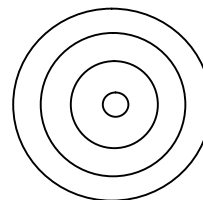
2. _____

A. **Families**: _____B. **Periods**: _____

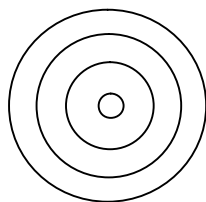
II. Electrons and Orbitals

- A. **orbital:** _____
 B. **Bohr diagram:** _____

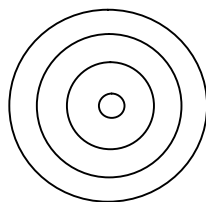
- 1st orbital can hold ___ electrons.
 2nd orbital can hold ___ electrons.
 3rd orbital can hold ___ electrons.



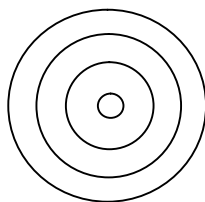
Practice making Bohr diagrams for the following atoms.



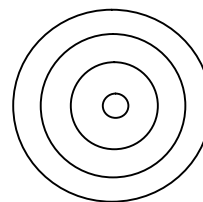
He



F



Mg



Al

C. **valence electrons**

- determine _____
- elements in the same family have _____

How many valence electrons does each of the atoms above have?

He: ___ F: ___ Mg: ___ Al: ___

- Goal: _____
 Why? _____
 How? _____

Atoms that **gain** electrons form _____ ions.

Atoms that **lose** electrons form _____ ions.

Practice: What is the ion formed by each of the following atoms?

Be sodium aluminum hydrogen F

Without drawing Bohr diagrams, can you predict the ions formed by the following atoms?

Ca: ___ iodine: ___ cesium: ___

- Generalizations
 - Atoms on the left side of the periodic table tend to _____ electrons to form _____ ions.
 - Atoms on the right side of the periodic table tend to _____ electrons to form _____ ions.

III. Bonding: _____

Examples:

- sodium: wants to _____ electron
 chlorine: wants to _____ electron
- hydrogen: wants to _____ electron
 oxygen: wants to _____ electron