

Name: \_\_\_\_\_

Date: \_\_\_\_\_

**Directions: Read section 6.8 and 6.9, pgs234-243 in text book to review how to fill in the chart below:**

Element	Electron Configuration	Valence Electrons	Group number/ name
potassium			
magnesium			
aluminum			
silicon			
nitrogen			
sulfur			
bromine			
argon			

2. What do you notice about the group number from the periodic table and the number of valence electrons?
3. Using what you know about the trend in valence electrons, how many valence electrons are there in the following?
  - a) rubidium
  - b) indium
  - c) arsenic
  - d) oxygen
  - e) radon
4. Remember if there are 3 or fewer valence electrons, an atom will lose them to create an ion with a positive charge, if there are 5 or greater valence electrons an atom will gain electrons to form an ion with a negative charge.
5. List the charge numbers for each of the following ions:
  - a) K-
  - b) Mg-
  - c) Al-
  - d) N-
  - e) S-
  - f) Br-
  - g) Ar-

How many electrons does each of the ions have?

- a) Potassium ion-
- b) Magnesium ion-
- c) Aluminum ion-
- d) Nitride ion-
- e) Sulfide ion-
- f) Bromide ion-

Write the electron configurations for each of the ions.

- a) Potassium ion-
- b) Magnesium ion-
- c) Aluminum ion-
- d) Nitride ion-
- e) Sulfide ion-
- f) Bromide ion-

What do you notice about the number of valence electrons in each of the ions?

Where do you suppose the electrons that are lost or gained go to or come from?

**Read Chapter 7, Periodic Properties of the Elements to answer the following:**

1. The following scientists contributed to the development of the Periodic Table. Briefly describe the basis of their arrangement of the elements.
  - a) Dmitri Mendeleev-
  - b) Henry Mosely-
2. State the Periodic Law:
3. Record whether the following INCREASE or DECREASE on the Periodic Table
  - a) What is effective nuclear charge?
  - b) The number of protons (effective nuclear charge) from left to right across a period?
  - c) The number of energy levels from top to bottom of a group?

5. Would an increasing nuclear charge increase/decrease the attraction of electrons?  
How would this impact the atomic size of each representative element's atom as you move from left to right across a period?
6. Considering the nuclear charge difference, would it be easier to pull an electron from the atom of lithium or oxygen?
7. a) What is the screening constant (shielding effect)? Explain using Coulomb's Law of Attraction.  
b) Which electrons experience the greatest screening in an atom?  
d) The valance electron of which element would experience a greater shielding effect, the one belonging to sodium or the one belonging to cesium?  
e) The valance electron of which element would experience a greater shielding effect, the one belonging to sodium or the one belonging to chlorine?  
d) So, does the shielding effect increase or decrease:  
As you move down a group?  
As you move across a period?
8. Considering the shielding effect, would it be easier to pull an electron away from beryllium or radon?
9. Define the following and state how they change across a Period and down a group.:

Electron Affinity-

Electronegativity-

Ionization energy-

Metallic Properties-

Atomic radius-

Ionic Radius-

