**ACP - Unit 1 – Valence Electrons, Core Electrons and Ions**

**Purpose**

* To discover the arrangements of electrons within an atom
* To explore patterns in ions that form when atoms transfer electrons.

**Instructions**

1. Define:   
   core electrons  
     
   valance electrons
2. Using the **Table of Electron Shells** handout, complete the **Table of Valance and Core Electrons** handout.
3. How does the number of electrons change as you move from left to right across the periodic table?
4. What do all group 1A elements have in common?
5. What happens to the electron count and the number of shells when you move from neon, Ne , to sodium, Na?
6. How many shells of electrons will Rb have? \_\_\_\_\_ How many electrons will be in the outermost shell (valence electrons)? \_\_\_\_\_
7. Look at the periodic table and the **Table of Electron Shells** handout. Explain why the number of electrons in the third shell suddenly changes from 8 to 18 between the element calcium, Ca, and Gallium, Ga?
8. On the **Table of Electron Shells** handout complete the bottom section to describe the ion properties of each group. See the two examples completed for you.
9. What happens to the charge of the atom when electrons are removed, why?  
     
   Gained, why?
10. Does transferring the electrons change the identity of the atom? Explain.
11. What will be the charge of each atoms ion listed below?   
    What noble gas will its electron arrangement most closely resemble?  
      
     **Ion formed Noble Gas resembled**

ex. Ca \_\_2+\_\_\_ Argon

* 1. Li \_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_
  2. N \_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_
  3. Cl \_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_
  4. Al \_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_
  5. O \_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_

12. Label your own periodic table with the common ionic charges for groups 1A-8A.