Trends Practice – It all the rage!

To do this worksheet you will need your pogils. The pogils clearly define each trend and you much be able to define each trend before you can make a logic choice for you answer. You are expected to know:

a) Each trends definition
b) Each trends group and period trend
c) Why the trend happens using coulomb's law to explain

1. Who has a higher ionization energy - Sodium or Potassium? Explain why using coulomb's law and structure as part of the answer.

2. Is lithium's ionization energy lower than beryllium's?

3. Which has a lower electronegativity – Barium or Strontium? Why?

4. Use Coulomb's law and structure to explain why oxygen's electronegativity is higher than nitrogen's?

5. Which element has a greater atomic radius – Silicon or Phosphorus? Explain why using Coulomb's Law and the structure of the atom.

6. Which element has the smaller atomic radius – Neon or Argon? Why?

7. Choose the element with the greatest first ionization energy
   a) Na or Mg b) Ca or Sr c) He or Li d) C or Al

8. Which element on the entire table should have
   a. The lowest ionization energy
   b. The highest electronegativity
   c. The largest Atomic Radius
   d. The highest Ionization Energy
   e. The lowest Electronegativity
   f. The Greatest Metallic character
   g. The most reactive nonmetal behavior

9. Arrange the following elements in order of increasing electronegativity
   a. Gallium, Aluminum, Indium b. Oxygen, Fluorine, Sulfur

   c. Calcium, Selenium, Arsenic d. Phosphorus, Oxygen, Germanium

10. Arrange the following elements in order of increasing atomic radius (size)
    a. Rb,Na, Be b. Sr, Se, Ne c. Fe, P, O

11. In the following sets, which atoms have the smallest ionization energy?
    a. Ca, Sr or Ba b. K, Mn, Ga c. Li, Na, K d. F, Cl, Br

12. For the pair Carbon and Nitrogen pick the atom that matches the description:
    a. Higher Ionization Energy and the smaller radius
    b. Larger Size (radius) and the lowest electronegativity
        i. Why do atoms with larger size tend to have low electronegativities?

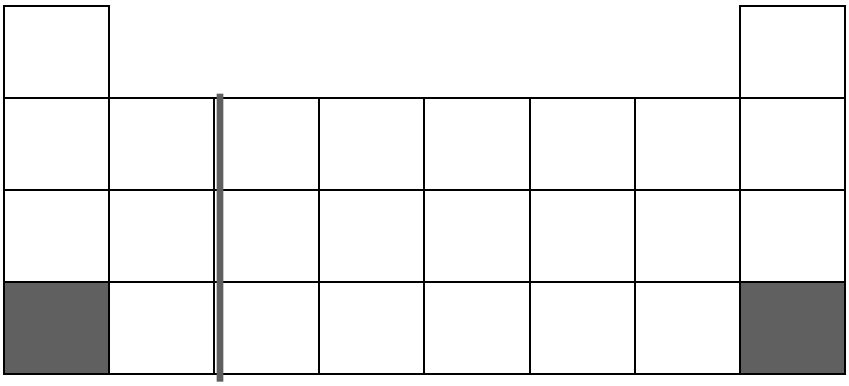
Name the element that fits each description:

1) A noble gas in the 5th period _____
2) Has outermost electrons in the $2s^2 2p^4$_____
3) The only semimetal in period 2 _____
4) All Transition metals ending in d^2_____
5) A halogen in the 3rd period _____
6) The only nonmetal in Group 1A _____
7) The only noble gas with no p electrons _____
8) An Alkali Metal with the most protons _____
9) An Alkaline Earth Metal in the 4th period _____
10) Group 8A Period 6 _____
11) The third element of Group 5A _____
12) An element with three unpaired 5d electrons _____
13) A nonmetal that is liquid at 25 Celsius _____
14) An "other metal" that has 50 protons _____
15) The transition metal ending with $5d^4$_____
16) A noble gas with electrons in the 4f orbitals _____
17) Any one representative element belonging to group 4A _____
18) The metalloid in period 3 with a valence of 4 _____

Give the period/ Group/ or Series Names:

19) The series that contains Uranium _____
20) Another name for the inner transition metals _____
21) Members of Groups 1A-8A _____
22) The "d" block _____
23) Elements that possess qualities of metals and nonmetals _____
24) Metals ending in s^1 _____
25) Nonmetals ending in s^2p^6 _____
26) Metals with a valance of 2 _____
27) The series that contains element 63 _____
28) The family with a -1 common ion charge _____
29) The group with a common ion charge of -3 _____
30) The group with a common ion charge of +1 _____

Periodic Table Puzzle 1

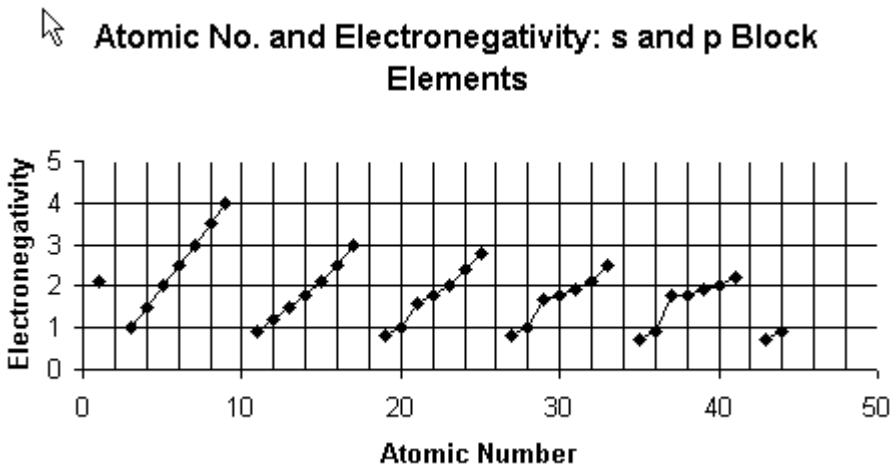


The following are the eight families of the short periodic table. They are in no particular order. It is your job to place them in their proper location on the periodic table shown above.

AJQ, BIR, CFP, DKL, EMS, GHN, OUW, TVY

The following clues are given.

A. is the largest in its family
B. has one unpaired electron in one of its p orbitals
C. has a larger radius than F
D. has a smaller ionization energy than K
E. is smaller than S
F. forms anions with a -3 charge
G. forms –2 ions
H. $1s^2 2s^2 2p^6 3s^2 3p^4$
I. has a higher ionization energy then B
J. is the lightest member of its family
K. has one more proton than Q
L. is an alkaline earth metal
M. has only one energy level with electrons
N. is more electronegative than G
O. has a lower ionization energy than W
P. has a bigger radius than both H and C
Q. is able to form +1 ions easily
R. smaller radius than D, but with the same energy level as D
S. has the highest ionization energy in its period
T. forms –1 ions easily
U. has the highest electronegativity in its family
V. has more filled energy levels than T
W. has one more proton than R and is in the same period as R
Y. is the most active nonmetal



1. This is a graph of _____ plotted against _____.

2. Electronegativity is a periodic property. How does this graph illustrate the periodic nature of our periodic table?

   _____
   _____.

3. Label the elements of the 2nd period (row). From this graph, describe what happens to the electronegativity for the elements of the 2nd period. (Going left to right from lithium to fluorine.)

   _____
   _____.

4. Label the halogens. Looking at this group, what happens to the electronegativity going down the group from fluorine to iodine?

   _____
   _____.

5. Which element has the highest electronegativity according to this chart? _____

6. Which group of elements has the lowest electronegativity? _____

7. Are the noble gases present on this graph? _____ Why would they be omitted from this chart. Hint – look at the definition of electronegativity.