

Graphing Periodic Trends Activity

Name: _____ Period: _____

Use the information in these tables to complete the graph as described below

Symbol	Atomic Radius (Picometers)	First Ionization energy (kilojoules/mole)	Electronegativity (4-point scale)
H	31	1312	2.1
Li	128	520	1.0
Na	166	496	0.9
K	203	410	0.8
Rb	220	403	0.8
Cs	244	376	0.7

Symbol	Atomic Radius (Picometers)	First Ionization energy (kilojoules/mole)	Electronegativity (4-point scale)
Na	166	496	0.9
Mg	141	738	1.2
Al	121	578	1.5
Si	111	787	1.8
P	107	1012	2.1
S	105	1000	2.5
Cl	102	1251	3.0
Ar	106	1521	---

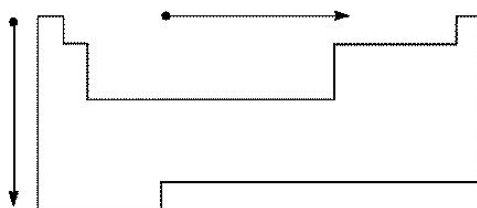
- Using colored pencils or pen, list under the symbol (in this order!) the Atomic Radius, First Ionization Energy, and Electronegativity.
- Use a different color for each property. Example: Write all of the Atomic radius values in red, all of the First ionization energies in green, and all of the Electronegativities in blue. Of course, you can pick any colors that are available, as long as you are consistent.
- Observe the trends in each property as you go down the Alkali metal group, and as you go across Period 3.
- Write out each of the statements written on the opposite side, completing each statement with the observed trend (increase or decrease)

H	<p>Across a period (→) atomic radius tends to _____.</p> <p>Across a period (→) first ionization energy tends to _____.</p> <p>Across a period (→) electronegativity tends to _____.</p>							
Li								
Na 166 496 0.9	Mg	Al	Si	P	S	Cl	Ar	
K	<p>Down a Group (↓) atomic radius tends to _____.</p> <p>Down a Group (↓) first ionization energy tends to _____.</p> <p>Down a Group (↓) electronegativity tends to _____.</p>							
Rb								
Cs								

Extra Trend Practice

Part I: Atomic Radius

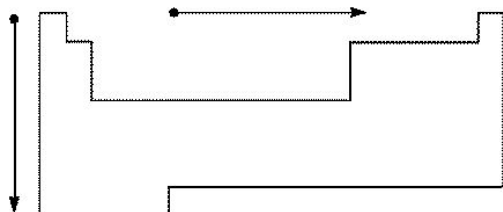
1. On the periodic table below, describe the trend for atomic size/radius as you move down the group and as you move across a period.



2. Why does the atomic size (atomic radius) increase as you move down a group?
3. Why does the atomic size (atomic radius) decrease as you move across a period?
4. Use your Periodic Table to arrange the following sets of elements in order of *increasing* atomic size. (start with the smallest atom, end with the largest atom)
 - a. N, C, O, F _____
 - b. F, Cl, Br, I _____
 - c. Rb, P, As, Co _____
 - d. Mg, Si, Ar _____
 - e. N, As, Bi _____
 - f. Fr, Cd, Ne _____

Part II: Electronegativity/Ionization Energy

1. On the periodic table below, describe the trend for electronegativity as you move down the group and as you move across a period.



2. How is *electronegativity* different from *ionization energy*?
3. Use your Periodic Table to arrange the following sets of elements in order of *increasing* electronegativity. (start with the least electronegative, end with the most electronegative atom)
 - a. N, C, O, F _____
 - b. F, Cl, Br, I _____
 - c. Rb, P, As, Co _____
 - d. Mg, Si, Ar _____
 - e. N, As, Bi _____
 - f. Fr, Cd, Ne _____
4. Use your Periodic Table to arrange the following sets of elements in order of *decreasing* ionization energy (start with the atom with the most, end with the atom with the least)
 - a. N, C, O, F _____
 - b. F, Cl, Br, I _____
 - c. Mg, Si, Ar _____
 - d. N, As, Bi _____
 - e. Rb, P, As, Co _____
 - f. Fr, Cd, Ne _____