***Periodic Trends Worksheet*** Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date:\_\_\_\_\_\_\_\_\_Pd:\_\_\_\_\_\_\_

***Draw the trend for ATOMIC RADIUS***

1. Rank each of the following in order of INCREASING atomic radius
2. F, K, Br \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. Os, Ni, Fe\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. Rank each of the following in order of DECREASING atomic radius
5. Cl, Br, Ga \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
6. Ca, Rb, C \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

***Draw the trend for IONIZATION ENERGY***

1. Rank each of the following in order of INCREASING ionization energy
2. O, S, Ge \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. Be, Ba, B \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. Rank each of the following in order of DECREASING ionization energy
5. Cl, Cu, Au \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
6. Te, Sb, Xe \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

***Draw the trend for ELECTRONEGATIVITY***

1. Rank each of the following in order of INCREASING electronegativity
2. Na, K, Ne \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. Fr, Ca, Co \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. Rank each of the following in order of DECREASING electronegativity
5. As, Se, Sn \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
6. Xe, Ru, Hf \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

## Place in order from smallest to largest atomic/ ion radius: Fe Fe+2 Fe+1

## Place in order from smallest to largest atomic/ ion radius: O O-2 O-1

## Place in order from smallest to largest atomic/ ion radius: Na Na+1 Cl

1. **(Challenge question)** Put in order of increasing size (smallest to largest): **K Cl-1 Ar**

Periodic Trends

For each of the following exercises, explain your answer.

*Exercises*:

1. In each of the following pairs, circle the species with the *higher* first ionization energy:
2. Li or Cs
3. Cl- or Ar
4. Ca or Br
5. Na+ or Ne
6. B or Be

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1. In each of the following pairs, circle the species with the *larger* atomic radius:
2. Mg or Ba
3. S or S2-
4. Cu+2 or Cu
5. He or H-
6. Na or Cl

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1. *Circle* the best choice in each list:
2. highest *first* ionization energy: C, N, Si
3. largest radius: S2–, Cl–, Cl
4. highest electronegativity: As, Sn, S
5. smallest atom: Na, Li, Be
6. largest atom: Fe, Co, Ni
7. lowest *first* ionization energy: K, Na, Ca
8. highest *second* ionization energy: Na, Mg, Al
9. lowest *second* ionization energy: Ar, K, Ca

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from http://spiepho.sbc.edu/worksheets/Gen\_Chem\_1/Chp8,Periodic\_Trends.doc