Name Period Date Wednesday, March 15, 2017

**Periodic Trends**

**ATOMIC RADIUS**

1. What trend in atomic radius do you see as you go down a group/family on the periodic table?

2. What causes this trend?

3. What trend in atomic radius do you see as you go across a period/row on the periodic table?

4. What causes this trend?

5. Circle the atom in each pair that has the largest atomic radius.

a) Al B b) S O c) Br Cl

d) Na Al e) O F f) Mg Ca

6. Put the following elements in order from smallest to largest atomic radius ***and*** explain why:

C, O, Sn, Sr.

**ELECTRONEGATIVITY**

7. Define electronegativity

8. How does the ionic radius of a nonmetal compare with its atomic radius?

9. What trend in electronegativity do you see as you go down a group/family on the periodic table?

10. What causes this trend?

11. What trend in electronegativity do you see as you go across a period/row on the periodic table?

12. What causes this trend?

13. Circle the atom in each pair that has the greater electronegativity.

a) Ca Ga b) Li O c) Cl S d) Br As e) Ba Sr f) O S

**General Questions**

14. Which group tends to form +1 ions? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

15. Which group tends to form +2 ions? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

16. Which group tends to form -1 ions? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

17. Which group tends not to form ions or react? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

18. Based on the concept of periodic trends, answer the following questions for these atoms: ***Li, Be, Mg, Na***. Be able to defend your answers.

* 1. Which element has the lowest electronegativity? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  2. Which element has the least metallic character? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  3. Which element is the largest atom? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

19. Based on the concept of periodic trends, answer the following questions for these atoms: ***P, S, Cl, F***. Be prepared to defend your answers.

* 1. Which element has the highest electronegativity? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  2. Which element has the least metallic character? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  3. Which element has the largest ion? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Based on the concept of periodic trends, answer the following questions for these atoms: ***Au, Zn, S, Si***. Be able to defend your answers.
   1. Which element has the highest electronegativity? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   2. Which element has the most metallic character? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   3. Which element has the largest atom? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. Complete the following chart:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | K | **Mg** | **Ne** | **N** | **Cl** | **Si** |
| **Atomic #** |  |  |  |  |  |  |
| Period |  |  |  |  |  |  |
| **Group #** |  |  |  |  |  |  |
| **Family name**  **(if any)** |  |  |  |  |  |  |
| **# of valence e-** |  |  |  |  |  |  |
| **# protons** |  |  |  |  |  |  |
| **Metal, nonmetal, or metalloid?** |  |  |  |  |  |  |
| **Conducts electricity? (yes/no)** |  |  |  |  |  |  |
| **State at room temperature?** |  |  |  |  |  |  |
| **Ion Formed?**  **(positive, negative, none, varies)** |  |  |  |  |  |  |

1. \_\_\_\_\_\_\_\_\_\_\_\_\_ metal
2. \_\_\_\_\_\_\_\_\_\_\_\_\_ chlorine
3. \_\_\_\_\_\_\_\_\_\_\_\_\_ metalloid
4. \_\_\_\_\_\_\_\_\_\_\_\_\_ transition elements
5. \_\_\_\_\_\_\_\_\_\_\_\_\_ group 1
6. \_\_\_\_\_\_\_\_\_\_\_\_\_ noble gases
7. \_\_\_\_\_\_\_\_\_\_\_\_\_ group 2
8. alkaline earth metals
9. metals with unpredictable properties
10. a halogen
11. make good semiconductors
12. alkali metals
13. has a full outer energy level (shell)
14. loses electrons in bonding

**Instructions** Fill in the arrows below with the following terms: *increasing* *electronegativity, increasing metallic character, increasing atomic radius, increasing* *nonmetallic character, increasing reactivity, decreasing atomic radius*

