

## 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.

- a. Which element has the lowest electronegativity? \_\_\_\_\_
- b. Which element has the least metallic character? \_\_\_\_\_
- c. 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.

- d. Which element has the highest electronegativity? \_\_\_\_\_
- e. Which element has the least metallic character? \_\_\_\_\_
- f. Which element has the largest ion? \_\_\_\_\_

20. Based on the concept of periodic trends, answer the following questions for these atoms: **Au, Zn, S, Si**. Be able to defend your answers.

- a. Which element has the highest electronegativity? \_\_\_\_\_
- b. Which element has the most metallic character? \_\_\_\_\_
- c. Which element has the largest atom? \_\_\_\_\_

21. Complete the following chart:

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

22. \_\_\_\_\_ metal

23. \_\_\_\_\_ chlorine

24. \_\_\_\_\_ metalloid

25. \_\_\_\_\_ transition elements

26. \_\_\_\_\_ group 1

27. \_\_\_\_\_ noble gases

28. \_\_\_\_\_ group 2

b. metals with unpredictable properties

c. a halogen

d. make good semiconductors

e. alkali metals

f. has a full outer energy level (shell)

g. loses electrons in bonding

a. alkaline earth metals

A large, stylized outline of the letter 'W' is centered on the page. The letter is composed of several straight line segments, forming a shape that is wide at the top and bottom and narrow in the middle. It is designed to be a template for coloring.

**\*\*actinoids**

A line drawing of a roof structure. It features two identical triangular peaks. The left peak is supported by a vertical line and a horizontal base line. The right peak is supported by a vertical line and a horizontal base line. The two peaks are connected by a horizontal line segment at their base, which is supported by a vertical line. The entire structure is drawn with black lines on a white background.