

Name: _____

Date: _____

Chemistry Section: _____

Worksheet: Periodic Trends

Directions: Answer the following questions using your Periodic Table and Table S. (You may also refer to High Marks: Regents Chemistry Made Easy book Chapter 3)

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) Br Cl
 - c) O F
 - d) S O
 - e) Na Al
 - f) Mg Ca

IONIZATION ENERGY

6. Define ionization energy.
7. Is it easier to form a positive ion with an element that has a high ionization energy or an element that has a low ionization energy?
8. Na^+ and Mg^{2+} ions each have ten electrons surrounding their nuclei. Which ion would you expect to have the larger radius? Explain your answer.
9.
 - a. Explain why it is harder to remove an inner shell electron than a valence electron from an atom.
 - b. Explain why sodium forms a 1^+ ion (Na^+) but magnesium forms a 2^+ ion (Mg^{2+}).

10. What trend in ionization energy do you see as you go down a group/family on the periodic table?
11. What causes this trend?
12. What trend in ionization energy do you see as you go across a period/row on the periodic table?
13. What causes this trend?
14. Circle the atom in each pair that has the greater ionization energy.
- | | | | |
|-------|----|-------|----|
| a) Li | Be | d) Ca | Ba |
| b) Na | K | e) P | Ar |
| c) Cl | Si | f) Li | K |

ELECTRONEGATIVITY

15. Define electronegativity
16. How does the ionic radius of a nonmetal compare with its atomic radius?
17. What trend in electronegativity do you see as you go down a group/family on the periodic table?
18. What causes this trend?
19. What trend in electronegativity do you see as you go across a period/row on the periodic table?
20. What causes this trend?
21. Circle the atom in each pair that has the greater electronegativity.
- | | | | |
|-------|----|-------|----|
| a) Ca | Ga | d) Li | O |
| b) Cl | S | e) Br | As |
| c) Ba | Sr | f) O | S |