

Worksheet 4-3

Periodic Trends

Glencoe Chemistry pp.163-169

Name _____

Period _____

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

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 | b) Na K | c) Cl Si |
| d) Ca Ba | e) P Ar | 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.

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



