Name: _____ Lab Partner:_____ Block:_____ **Periodic Trends Conclusion**

1. Match the group name to the group configuration:

_____group 18
_____group 2
_____group 1
_____group 17

a. ns^1	w. alkali metals
b. ns^2np^5	x. Nobel gasses
c. ns^2np^6	y. halogens
d. ns^2	z. alkaline metals

2. Determine the number of valence electrons for the following elements

Calcium_____ Argon_____ Sodium _____
Bromine_____ Boron_____ Nitrogen _____
Helium _____ Phosphorous _____ Lithium_____

ATOMIC RADIUS

3. Does atomic radius increase or decrease as you go down a group/family on the periodic table? _____
4. What causes this trend?

5. Does atomic radius increase or decrease as you go across a period/row on the periodic table? _____
6. What causes this trend?

7. 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

8. Phosphorus is smaller than Aluminum even though Phosphorus has more valence electrons. Why?

IONIZATION ENERGY

9. Define ionization energy.

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

18. What trend in electronegativity do you see as you go across a period/row on the periodic table? _____
19. What causes this trend?

20. Which element has the greatest electronegativity? _____
21. Circle the atom ***in each pair*** that has the greater electronegativity.

a) Ca Ga b) Li O c) Cl S

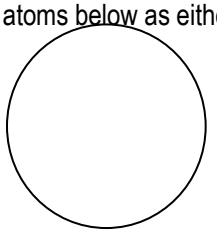
d) Br As e) Ba Sr f) O S

IONS

22. Define an ion.

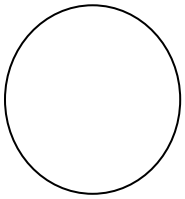
23. What is the difference between a cation and an anion?

24. Label the atoms below as either Sodium or as Sodium Ion(Na^{1+}):



a. _____ b. _____

25. Label the atoms below as either Oxygen or as Oxygen Ion(O^{2-}):



a. _____ b. _____

26. The ionic radius of Aluminum (Al^{+3}) is 54 pm while the ionic radius of Sodium (Na^{+1}) is 102pm. Explain why Aluminum ions have smaller radii than Sodium ions even though both ions have the same electron configuration.

27. Arrange the following in order of increasing ionic size.
    a. I^-, Br^-, Cl^-
    b. P^{3-}, S^{2-}, Cl^-
    c. Ba^{2+}, Sr^{2+}, Ca^{2+}