Name: KEY

Periodic Trends Quiz

1) Rank the following elements by **increasing** atomic radius: sulfur, oxygen, neon, aluminum.

Ne, O, S, Al

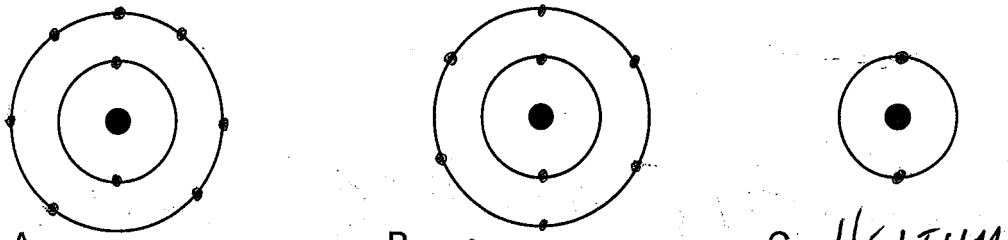
2) Rank the following elements by increasing electronegativity: carbon, aluminum, oxygen, potassium.

K, Al, C, O

3. Why does Chlorine have a higher ionization energy than Sulfur? **You must make a reference to atomic radius in your answer.**

CHLORINE IS SMALLER THAN SULFUR. SMALLER ATOMS ARE HARDER TO REMOVE e^- FROM.

Use the following diagrams to answer questions 4-9



A FLUORINE B OXYGEN C HELIUM

4. Which of the atoms has the highest Ionization energy?

C - HELIUM

5. Which of the atoms has the smallest radius?

C - HELIUM

6. From which of the 3 atoms is it easiest to remove an outer electron?

B - OXYGEN

7. Which of the atoms is the largest?

B - OXYGEN

8. Assuming the atoms are neutral, write the element names above the diagram.

9. Which of the three atoms has the highest electronegativity?

A - FLUORINE

10. Are cations of an element larger or smaller than an atom of that element?

CATIONS ARE SMALLER

Name:_____

11. Indicate which element in each pair has the greater atomic radius.

a. Na or Li b. Sr or Mg c. C or Ge d. Se or O

12. Indicate which element in each pair has the greater ionization energy.

a. Li or B b. Mg or Sr c. Cs or Al

13. Indicate which is the **largest** in each pair.

a. Na or Na^+ b. S or S^{2-} c. I or I^- d. Al or Al^{3+}

14. Which element in each pair is more electronegative?

a. Cl or F b. C or N c. Mg or Ne d. As or Ca

15. The ions O^{2-}, F^-, Na^+, Mg^{2+}, and Al^{3+} have the same total number of electrons as Neon. Which has the smallest radius and which has the largest radius? Explain your answer to receive credit.

SMALLEST: Al^{+3} Mg^{+2} Na^{+1} F^{-1} O^{-2} LARGEST

16. Put the following elements in order from MOST reactive to LEAST reactive: Sodium, Lithium, Potassium

MOST: POTASSIUM, Na, Li LEAST

17. As you move across a period on the periodic table, mass increases. What happens to atomic radius? Why does the mass increase? Explain why this is the case and answer BOTH questions.

MASS INCREASE BECAUSE EACH ATOM HAS MORE $p^+ + n^0$.

ATOMIC RADIUS DECREASES BECAUSE MORE $p^+ + e^-$ WILL INCREASE THE PULL ON OUTER e^-, MAKING THE ATOM SMALLER THAN THE PREVIOUS.

Name:_____

18. Given the choices in parentheses, fill in the following paragraph:

Alkali metals are in group 1 (1,2,16,17,18), and are very REACTIVE (reactive, non-reactive) because they GIVE (give, take) electrons quite easily. When forming compounds, the alkali metals will have a charge of +1. (+1, +2, +3, +/-4, -3, -2, -1, 0) The halogens are in group 17 (1,2,16,17,18), and are very REACTIVE (reactive, non-reactive) because they TAKE (donate, take) electrons quite easily. When forming compounds, the halogens will have a charge of -1.(+1, +2, +3, -3, -2, -1, 0)

Name:_____

19. Label the names of the groups in the periodic table:

a. Group 1: ALKALI METALS

b. Group 2: ALKALINE EARTH METALS

c. Group 3-12: TRANSITION METALS

Or d-block

d. Group 17: HALOGENS

e. Group 18: NOBLE GASES

f. Group 1 & 2: s-block

g. Group 13-18: p-block

h. Group 1,2,13-18: MAIN GROUP ELEMENTS