Periodic Properties Worksheet

1) **What is the atomic radius of an atom?**

2) **What is the trend in atomic radius across a period?**

3) **The trend in atomic radius across a period is caused by _____.**

4) **What generally happens to atomic radii as one goes down a group or a family?**

5) **Write the equation for the ionization of an atom.**

6) **What is an ion?**

7) **What is ionization energy?**

8) **Which group or family has the lowest ionization energy?**

9) **Group 18 or 8A, the noble gases, have the highest ionization energy (True or False).**

10) **Elements with a high ionization energy lose electrons easily (True or False).**

11) **The increase in ionization energy across a period is caused by _____.**

12) **Why does ionization energy generally decrease going down a group or family?**

13) **What is meant by electron shielding?**

14) **What is the second ionization energy of an atom?**

15) **What is electron affinity?**

16) **Write the equation for electron affinity for an exothermic process.**

17) **Write the equation for electron affinity for an endothermic process.**

18) **Which group or family gains electrons most easily?**

19) **What is a cation?**

20) **What is an anion?**

Solutions

1) **One-half the distance between the nuclei of identical atoms combined in an element or a compound.**

2) **There is a gradual decrease as you go from an alkali metal to a noble gas.**

3) **additional electrons in the same principal energy level being more strongly attracted by the more positive nucleus.**

4) **Atomic radii of main group elements generally increase.**

5) **$X + energy \rightarrow X^+ + e^-$**

6) **An atom or a group of atoms (a polyatomic ion) having a positive or negative charge.**

7) **The energy required to remove one electron from an atom.**

8) **Group or Family I (alkali metals).**

9) **True**

10) **False**

11) **an increase in nuclear charge which strongly attracts electrons in the same energy level.**

12) **Electrons are removed from higher principal energy levels meaning they are further from the nucleus. The force of attraction between the electron and the nucleus has decreased.**

13) **Electron shielding results from a greater number of electrons found between the positive nucleus and the valence electrons which results in a smaller attraction.**

14) **The energy required to remove a second electron from an atom.**

15) **The energy change that occurs when an electron is acquired by a neutral atom.**

16) **$X + e^- \rightarrow X^- + energy$**

17) **$X + e^- + energy \rightarrow X^-$**

18) **The halogens (Group or Family 17).**

19) An atom that has more protons than electrons resulting in a positive ion.

20) An atom that has more electrons than protons resulting in a negative ion.