Trends in the Periodic Table – Summary Sheet

Name	Definition	Trend	Explanation
ATOMIC RADIUS	Distance measured from the center of the nucleus to the outer most e^- in pm	1. Increases as you go down a group 2. Decreases across a period from left to right	1. Increases in number of energy levels and electrons = more repulsion = high electron shielding **Electron shielding:** electrons in innermost shells "block" or shield the outermost electron from the nucleus' attractive force. 2. E^- held more tightly increasing positive charge of the nucleus (effective nuclear charge), less shielding = smaller radius **Effective nuclear charge:** the attractive positive charge of nuclear protons acting on valence electrons.
FIRST IONIZATION ENERGY	Energy required to remove the outermost electron.	1. Increases across a period from left to right 2. Decreases down a group	1. E^-s held tightly, increase in effective nuclear charge due to small radius = harder to remove e's 2. Increase in radius due to more energy levels, electrons are less tightly held
ELECTRON AFFINITY	The amount of energy released when an electron is added.	**1.** Increases across a period from left to right **except including group 18** 2. Increases up a group	1. Effective nuclear charge = greater attraction for electrons 2. Fewer energy shells, small atomic radius, therefore greater attraction for electrons
ELECTRONEGATIVITY	The measure of an atom's ability to attract electrons in a chemical bond.		
REACTIVITY OF METALS	The degree to which metals have a tendency to react with other substances by losing electrons.	1. Increases across a period from right to left 2. Increases down a group	1. Less energy is required to remove one electron 2. Larger metals atoms react more quickly than smaller atoms, Larger atomic radius = weaker attraction of e^-
REACTIVITY OF NONMETALS	The degree to which non-metals have a tendency to react with other substances by gaining electrons.	**1.** Increase across a period from left to right **except group 18** 2. Increases up a group	1. Less energy is required to gain 1 electron 2. Fewer energy levels, smaller atomic radius = greater attraction for e^-