

<b>Keywords for Periodic Trends</b>			
<b>Chapter</b>	<b>Concept</b>	<b>Keywords</b>	<b>Explanation</b>
<b>Periodic Trends</b>	Atomic Radius	ENC, shielding electrons and number of protons	-Across the period, atomic size become smaller due to larger ENC because of increased # of protons (nuclear charge) and same # of shielding electrons - Down a group, atomic size becomes larger due to increased size of electron cloud. This is due to increased # of e, causing greater e-e repulsion. # of protons (nuclear charge) increases down a group as well as the # of shielding electrons. These two factors cancel each other's effect causing no significant change in ENC.
	Cationic Radius	Lesser e-e repulsion	- Cationic radius is smaller than atomic radius due to lesser e-e repulsion (lesser # of e)
	Anionic Radius	Larger e-e repulsion	- Anionic radius is larger than atomic radius due to greater e-e repulsion, hence increasing the size of the electron cloud.
	Ionization Energy	Larger ENC, higher IE $A(g) \rightarrow A^+(g) + e$	- IE increases across the period, due to higher ENC, making it harder to remove an electron - IE decreases down a group due to the larger atomic size, making it easier to remove an e
	Electron Affinity	Coulomb's Law $F = k \cdot q_1 \cdot q_2 / r^2$ $A(g) + e \rightarrow A^-(g) + \text{energy}$	- EA is the amount of energy released when an e is added to a neutral atom in its gaseous state. - The larger the negative value of EA, the higher the EA - Nonmetals have higher EA than the metals, due to smaller size of atom and greater attraction for incoming e to the atom.
	Exceptions in IE	Between groups 2 and 3 - lesser penetration of p orbital e in the nuclear region as compared to the s e  Between groups 15 and 16- e-e repulsion from the paired p orbital	- Between groups 2 and 3: There is drop in IE because e is removed from p v. s orbital. P orbital electrons do not penetrate the nuclear region the same way as the s electrons due to their dumbbell shape.  - IE drops between group 15 and 16 because of e-e repulsion in the paired p orbital e in group 16 makes it easier to remove an e.
	Exceptions in EA	Between groups 1 and 2: p orbital e are not attracted by the nuclear protons as	- EA decreases between group 1 and 2 because e added to the p orbital in group 2 do not penetrate the nuclear region the same way as the s electrons do.

		effectively as s electrons due to lesser penetration in the nuclear region.  Between groups 14 and 15: pairing of e in an already occupied p orbital makes it harder (lesser EA) for the incoming e	- EA decreases between groups 14 and 15 because e are added to half-filled p orbital in group 15 causes e-e repulsion.
<b>IMFs</b>	Ion-Ion attraction, Ion-dipole, dipole-dipole, H bonding  LDFs	Coulomb's Law $F = k \cdot q_1 \cdot q_2 / r^2$  Electron cloud distortion, induced polarity	-Greater the charge and smaller the distance between two charged particles, greater the force of attraction.  - Greater # of e cause increase <i>polarizability</i> , which results into greater e cloud distortion hence a greater induced LDF. (Just writing that an atom has more LDFs because of larger molar mass is not sufficient.)
<b>Bonding</b>	Ionic, Covalent, Metallic	Coulomb's Law $F = k \cdot q_1 \cdot q_2 / r^2$	-Greater the charge and smaller the distance between two charged particles, greater the force of attraction.
	Ionic Bond Strength	Lattice Energy	Unit of ionic compounds: Formula Unit
	Covalent Bond Strength	Bond Energy	Unit of molecular compound: Molecule
<b>Gases</b>	Real Gases v. Ideal Gases	Volume	Real gases have larger volume as compared to ideal gases due to non negligible volume of the gas particles; hence a correction term is subtracted from the volume of the real gases in the Van Der Waals equation.  - Real gases have lesser pressure than ideal gases due to non negligible IMFs; hence a

		Pressure	correction term is added to the pressure of the real gases in the Van Der Waals equation.