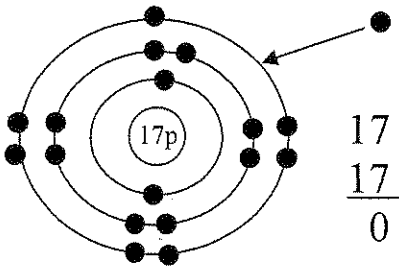
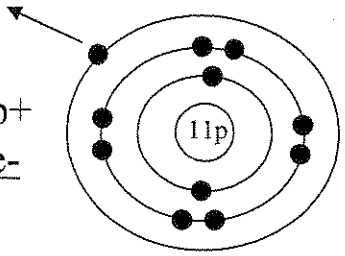
Lay It All Out on the Table: Periodic Trends

1. Size – Usually measured as atomic radius (remember your Geometry!).
   - Gets bigger as you go down a group because you add energy levels.
   - Gets smaller as you move from left to right because of increased nuclear attraction. (More protons and electrons, more attraction between + and – charges)
2. Oxidation Number
   Octet Rule – Elements want to have 8 outer energy level (valence) electrons



Chlorine

17 p+	17 p+
17 e-	18 e-
0	- 1



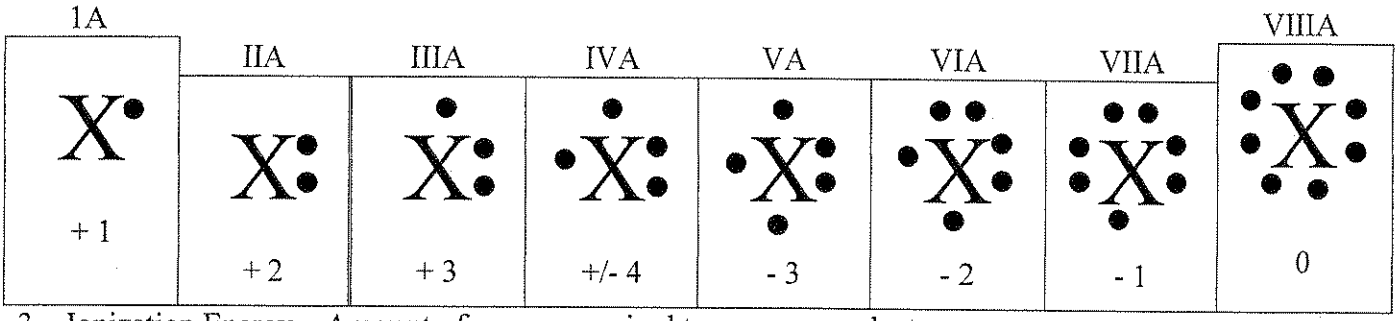
Sodium

11 p+	11 p+
11 e-	10 e-
0	+ 1

Non-Metals
Tend to add electrons
Form negative ions (anions)

Metals
Tend to lose electrons
Form positive ions (cations)

A NICE trend…..



3. Ionization Energy – Amount of energy required to remove an electron
   - Only really applies to metals
   - Decreases down a group – Takes less energy the further the electron is from the nucleus
   - Increases across a period – The more electrons an atom has, the more energy that is required to remove the electron
4. Electron Affinity – How much an atom wants an electron
   - Only really applies to non-metals
   - Is a negative value… the more negative, the more the atom attracts electrons
   - Decreases down a group – Needs the electron less in the outer energy levels
   - Increases across a period – The less electrons needed, the more the atom wants the electron
5. Reactivity – How much or how quickly an atom tends to react

Two trends…

METALS

- Increase reactivity down a group
- Decreases reactivity across a period
- Fr the most reactive metal
- Why? Bigger, less I.E., only 1 electron to lose

NON-METALS

- Decrease reactivity down a group
- Increases reactivity across a period
- F the most reactive non-metal
- Why? Smaller, more E.A., only 1 electron to gain