# Trends in the Periodic Table

## Chemistry – Leaving Cert

## Quick Notes

# Trends in the Periodic Table

The atomic radius of an atom is defined as half the distance between the nuclei of two atoms of the same element that are joined together by a single covalent bond.  Atomic radius decreases across a period of the periodic table for two reasons – increasing nuclear charge and no increase in screening effect.  It increases down a group for two reasons – new shell and increase in screening effect.  The first ionisation energy of an energy required to remove the most loosely bound electron from a neutral gaseous atom.  Ionisation energy increases across a period of the periodic table due to the increasing nuclear charge and decreasing atomic radius.  It decreases down a group due to increasing atomic radius and increase in screening effect.  However, there are certain exceptions to this rule e.g. it requires more energy to remove an electron from beryllium or magnesium than we would expect due to their extra stability from the full outer shell.  Electronegativity increases across a period of the periodic table because of the increasing nuclear charge and decreasing atomic radius.  It decreases down a group because there is an increase in atomic radius and screening effect also increases.  There are also certain trends within groups largely related to the number of electrons in  the outermost shell e.g. the alkali metals (group 1) become more reactive down a group because they react by losing their most outermost electron.  These alkali metals are so reactive with oxygen that they must be stored under oil to prevent any serious reactions.  Group 7 (the Halogens) become less reactive down the group because they react by gaining an electron.