Know About Electronegativity

The attraction of an atom or group for electron density:

- This idea, which you first studied in General Chemistry, is so important that it will help to know some actual numbers. Instead of just learning a general trend, by being more specific you will be able to solve problems more confidently.
- Electronegativity (EN) of elements increases from left to right in the Periodic Table in ~0.5 increments heading to F, which has the highest electronegativity value of 4.0 (on the 4.0 scale). Going from left to right, valence electrons are added to the same energy level while the nucleus gains one extra proton per group. The more positive nuclei will attract the valence electrons more tightly, which affects atomic size and then reactivity. Going down the Table the valence electrons get further away as electrons go into higher orbitals (3s, 4s, etc.) so the influence of the nucleus fades.

H 2.1							~~He~~
Li 1.0	~~Be~~	B 2.0	***C 2.5***	N 3.0	O 3.5	F 4.0	~~Ne~~
Na 0.9	Mg 1.2	Al 1.5	Si	P	S 2.5	Cl 3.0	~~Ar~~
K 0.8						Br 2.8	
						I 2.5	

Pauling Scale electronegativity values for the important early elements.

- Knowing the numbers means you are able to decide what kind of bonding will occur in between different atoms. Very different EN values, e.g. Na @ 0.9 and Cl @ 3.0 are only ever forming ionic bonds. C @ 2.5 and H @ 2.1 will only form covalent bonds through sharing of valence electrons. There is no absolute cutoff difference, however.
- Once molecules are formed, you will then be able to decide which areas within are **non-polar** or **polar**, which is essential for understanding reactivity patterns. Anions will be **electron-rich** and go after **electron-poor** atoms in polar-covalent areas.