Describing & explaining trends in electronegativity (Level 3) exam tips

• Electronegativity is the ability of an atom to attract a bonding pair of electrons to itself.

• Always relate the electronegativity of atoms within a molecule to

 1. the polar/non-polar bonds within a molecule

 and

 2. to the overall shape of the molecule

• See below a graph that summarises the trends in electronegativity across a period and down a group



When discussing trends in electronegativity refer to

1. number of energy levels

2. shielding/electron-electron repulsion

3. number of protons/nuclear charge

4. attraction to the valence electrons

You must refer to and link any similarity (or difference) to the elements asked about in the question.

• **Electronegativity increases across a period**

Elements in the same period have the same number of energy levels and therefore the same shielding/electron-electron repulsion from inner levels.

However, going across a period, non-metal elements (such as S) have more protons/greater nuclear charge and therefore a greater attraction for valence electrons than metallic elements in the same period (such as Na). Therefore, an element such as S has a greater electronegativity than Na.

**• Electronegativity decreases going down a group.**

Doing down a group the energy levels increase, resulting in increased shielding/electron-electron repulsion. For example, sulfur has one more energy level than the oxygen atom and therefore increased shielding/electron-electron repulsion. Even though S has more protons/ greater nuclear charge than O because the valence electrons are further from the nucleus, the electronegativity of S is lower.

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