



Answer the questions below then check your answers.

- 1. Define the term electronegativity.*
- 2. What are the 2 main factors that affect the electronegativity of an atom?*
- 3. What happens to the size of atoms as you cross a period in the periodic table?
Explain your answer.*
- 4. What happens to the size of atoms as you go down a group in the periodic table? Explain your answer.*
- 5. What are the trends in the electronegativity values for the elements in the periodic table?*
- 6. What is electron shielding? Give an example how this affects electronegativity.*
- 7. Why is fluorine more electronegative than chlorine?*
- 8. Why are no electronegativity values listed for the noble gases?*

Answers

1. Define the term electronegativity.

The ability of an atom in a covalent bond to attract electron density towards itself.

2. What are the 2 main factors that affect the electronegativity of an atom?

***Nuclear Charge:** The greater the positive charge of the nucleus, the more strongly it attracts electrons.*

***Atomic Radius:** The smaller the atom, the closer the nucleus is to the bonding electrons, which increases the attraction. Additionally, electron shielding by inner electrons can also affect electronegativity, as inner electrons can block the attraction of the nucleus for the bonding electrons.*

3. What happens to the size of atoms as you cross a period in the periodic table? Explain your answer.

Additional electrons as we cross the period are added to the same energy level or principal energy level. At the same time the nuclear charge is increasing, which means the electrons are drawn in closer to the nucleus.

4. What happens to the size of atoms as you go down a group in the periodic table? Explain your answer.

It increases. As we go down a group a new principle energy level is added. This increases the radius of the atom.

5. What are the trends in the electronegativity values for the elements in the periodic table?

As you cross a period electronegativity increases.

As you descend a group electronegativity decreases.

6. What is electron shielding? Give an example how this affects electronegativity.

This is where the inner electrons screen or partly block out the nuclear charge from any electrons in higher energy levels. Shielding can reduce the ability of an atom to attract electrons in a covalent bond and so affect its electronegativity value.

7. Why is fluorine more electronegative than chlorine?

Fluorine atoms are smaller than chlorine atoms. Both have the same effective nuclear charge, but due to its smaller size, fluorine can attract electron density in a covalent bond more effectively than chlorine.

8. Why are no electronegativity values listed for the noble gases?

Noble gases have no tendency to gain electrons or form covalent bonds.