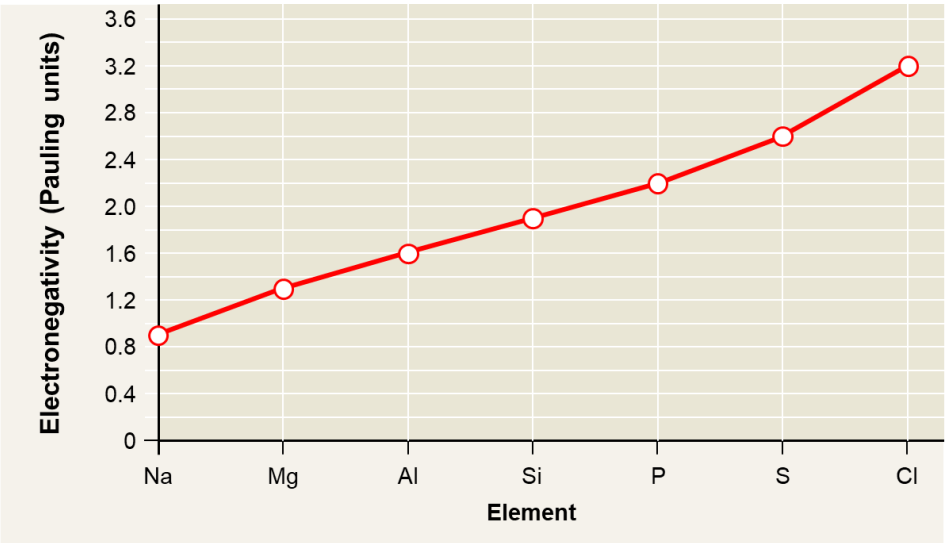

Figure 1.47: Trend in electronegativity across period 3

However, the trend of electronegativity increasing with atomic number is only observed in the elements comprising a single period on the periodic table. Each time the period number increases, the group 1 element beginning a period has a lower electronegativity than the group 18 element in the previous period despite having a higher atomic number. For example, rubidium (Z = 37) which begins period 5, has a lower electronegativity than krypton (Z = 36) which ends period 4. This observation suggests that each time the period number increases, and one electron shell is added to the atom, its ability to attract electrons is reduced. This observation is explained by understanding that each additional electron shell added to an atom shields its nucleus, reducing the attractive force it exerts on the electrons of other atoms. The increase in shielding explains why the electronegativities of elements decrease down a group. Figure 1.48 shows the trend in electronegativity down group 2 on the periodic table.

Figure 1.48: Change in electronegativity down group 2.