

Periodic Trends

Atomic Radius – how large the atom is.

From Left to Right – decreases in size

This is due to the additional pull that the protons in the nucleus have on the electrons.

From Top to Bottom – increase in size

This is due to the additional energy levels or shells

Ionic Radius – how large the atom is in its most stable ion. You need to be able to determine what charge atoms are most likely to take on.

From Left to Right – decreases in size, but starts over around group 15

It is decreasing in size for the same reason that atomic radius does; however, it starts over around group 15 because at this point, the atoms are more likely to take on a negative charge (meaning that instead of losing electrons and ultimately energy shells, they are simply filling their existing shells). When it starts over, moving from 15 → 18, the atomic radius decreases again.

From Top to Bottom – increases in size

This is due to the additional energy levels or shells (same as atomic radius)

Ionization energy – how much energy is required to remove one electron from the atom.

From Left to Right – increases

Elements on the left side of the periodic table are more likely to give up their electrons in order to fulfill the octet rule. As you go further to the right side of the periodic table, those atoms are more likely to accept additional electrons to fulfill the octet rule; therefore, they would require increasing amounts of energy in order to remove an electron.

From Top to Bottom – decreases

This is due to the diminishing attraction between the protons in the nucleus and the electrons in the outermost energy level. The farther they are from each other, the weaker the attraction, making it easier to remove an electron.

Electronegativity – how badly the element wants another electron.

From Left to Right – increases

The closer you get to the right side of the periodic table, the more those elements want another electron in order to fulfill the octet rule. Fluorine is the most electronegative element on the table.

From Top to Bottom – decreases

Again, this is due to the diminishing attraction between the protons in the nucleus and the electrons in the outermost energy level. The farther the electrons are from the nucleus, the less pull the protons have in order to attract more electrons.