

Electron Configurations

This page discusses the order of elements on the periodic table and the similarities of different elements in their electron configurations, or in other words, where the electrons are found, and relates this concept to [valences](#) and [lewis structures](#).

Every atom of any element has an equal number of electrons as it does protons when it is in the base state. For example, Uranium has 92 protons, and will have 92 electrons. The area outside of the nucleus of the atom is composed of a great amount of space called the electron cloud. In order to describe where exactly in the electron cloud that electrons are located, the concept of orbitals was created. Currently four different kinds of orbitals are used for elements on the periodic table. Four letters of the alphabet describe these four orbitals, and these letters are s, p, d, and f. Respectively these four kinds of orbitals can each hold a greater amount of electrons. S orbitals can hold 2, p orbitals can hold 6, d orbitals can hold 10, and f orbitals can hold 14. On the [valences](#) page some electron configurations are given.

As the elemental number increases on the periodic table, the number of electrons that an atom has increases. But the location of where the electron is located changes at specific times. On the periodic table, Group One and Two elements are filling an outer s orbital. On the opposite side of the table, not in the center where the transition metal elements are, are elements that are filling their outer p orbitals. The inner transition elements fill a d orbital. The actinide and lanthanide series that are usually set apart on most elemental tables fill an inner f orbital.

It is possible to determine the electron configuration for an atom when the atomic number is known because of a handy chart that determines the order for filling the orbitals. That chart is given below, and is used to determine where all of the electrons are in the electron cloud for any atom. The number given before the orbital letter is called the n value and is similar to the level of the electron cloud. :

Order for filling orbitals:	1s, 2s, 2p, 3s, 3p, 4s, 3d, 4p, 5s, 4d, 5p, 6s, 4f, 5d, 6p, 7s, 5f, 6d, 7p, and 8s.
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After reading through electron configurations and reviewing valences and lewis structures, take this [quiz](#).