

Rules for Writing Electron Configurations

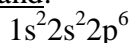
1) **Aufbau's Principle** = Electrons enter orbitals of the lowest energy first. An energy level (or sublevel more precisely) will fill with electrons before electrons start to fill the next energy level or energy state. All lower energy levels are full up to the last energy level; levels are not skipped or eliminated because of energy level.

2) **The Pauli Exclusion Principle** = An atomic orbital may describe at most two electrons, at least one for that orbital to exist. To occupy the same orbital, two electrons must have opposite spins. If two electrons occupy the same orbital they are said to be paired. Orbitals with one electron are unpaired.

3) **Hund's Rule** = When electrons occupy orbitals of equal energy, one electron enters each orbital until all the orbitals contain one electron, with spins parallel, before they are paired. Second electrons then add to each orbital so that their spins are paired.

There are different ways to show electron arrangements.

Shorthand:

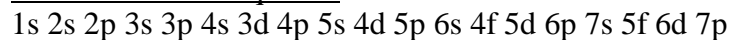


1. The first number represents the energy level.
2. The letter represents the sublevel for that particular energy level.
3. The superscript number represents the number of electrons in the sublevel of that energy level.

Aufbau Diagram: (Tabular Box Diagram)



Here is the total sequence:



4. You can also do an extreme form of shorthand. Since Noble Gases energy levels are filled for that level, you can represent all previous levels with the symbol of that Noble Gas in brackets. Here is an example of shorthand and extreme shorthand:

Sulfur is $1s^2 2s^2 2p^6 3s^2 3p^4$, it can also be represented by $[\text{Ne}]3s^2 3p^4$.