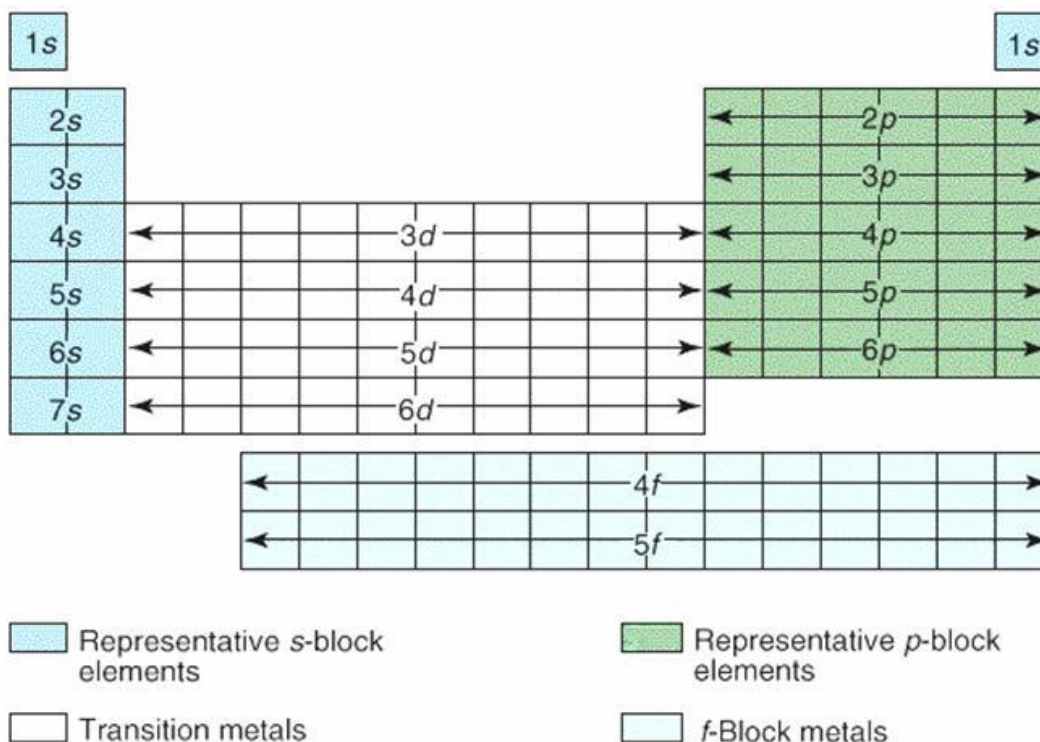


## Electron Configuration

Atoms have electrons and part of our job as chemists is to know where these electrons are going to be found. They are not simply floating around randomly. There is some order, but what kind of order? Flying around the nucleus or in some sort of set trajectory? It's actually a little bit of both. Electrons are found in orbitals, much like the planets around the sun, never in one specific spot. Think of it more like a cloud where the electrons are more likely to be. We call these clouds **orbitals**.

- Orbitals have names: **s, p, d, and f**
- **s** orbital holds **2 electrons**
- **p** orbital holds **6 electrons**
- **d** orbital holds **10 electrons**
- **f** orbitals hold **14 electrons**



Example:

- If asked to give electron configuration of Calcium we would say:  $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2$  ←  
 (The exponent we provide tells us how many electrons are in that orbital)
- We can also do a short form which allows us to use the last Noble gas:  $[\text{Ar}]4s^2$
- If given an ion, simply add or subtract an electron accordingly:  
 $\text{Na}^+$ :  $[\text{Ne}]$  or  $1s^2 2s^2 2p^6$        $\text{Cl}^-$ :  $[\text{Ar}]$  or  $1s^2 2s^2 2p^6 3s^2 3p^6$