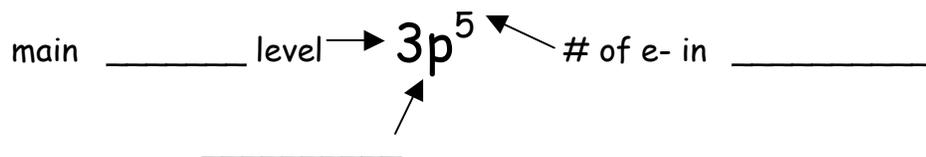


1. There are four types of orbitals:
- s** : shaped like a _____
An E level can contain only _____ s orbital, making up the "s sublevel".
 - p** : shaped like _____
An E level can contain _____ p orbitals, making up the "p sublevel".
 - d** : shaped like double dumbbells
An E level can contain _____ d orbitals, making up the "d sublevel".
 - f** : too complex to draw or describe
An E level can contain _____ f orbitals, making up the "f sublevel".
2. Each orbital can hold a maximum of _____ electrons. Since both electrons have a _____ charge, they _____. What keeps them from flying apart?
Each electron _____ on its axis. One spins _____ and the other spins _____. When charged particles spin, they act like tiny magnets. Since the two electrons spin in _____ directions, one acts like the north pole of a magnet and the other acts like the south pole. This makes the electrons _____.
3. Since each orbital can hold _____ electrons:
- The "s sublevel" can hold _____ electrons.
 - The "p sublevel" can hold _____ electrons.
 - The "d sublevel" can hold _____ electrons.
 - The "f sublevel" can hold _____ electrons.

We use this notation to describe an electron:



How are electrons distributed within a sublevel?

According to Hund's Rule, each _____ within a sublevel is half-filled before any is _____.

We draw **orbital diagrams** to show the distribution of electrons in a sublevel. Circles are used to represent the individual _____. _____ are used to represent electrons in the orbital. The first electron in an orbital is represented by a \uparrow and the second by a \downarrow .

A set of four _____ numbers is assigned to each _____ to describe its energy and location within the atom. The quantum numbers use the symbols _____, _____, _____, and _____.

_____ is the principle quantum number and represents the _____ level of the electron.

_____ represents the sublevel of the electron, which depends on the type of _____.

Pauli's Exclusion Principle states that within an atom, no two electrons can have the same set of _____. If two electrons have the same n , l , and m numbers, they are in the same _____ level, the same _____, and the same _____. They must then have _____ spins! So, the s quantum numbers must be different.

Practice: Write electron distributions and do the orbital notation for the following:

1. P :

2. Ca:

Only do the electron distributions for the following:

1. Co:

2. Eu:

3. Tc: