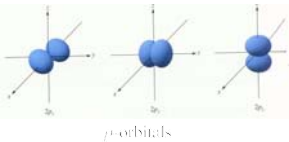
Chemistry: Form WS2.S2.0A Name _____

ATOMS Date _____ Period _____

Where are the Electrons?



Electrons are in regions of the atom known as orbitals, which are found in subdivisions of the principal energy levels called sublevels. There are up to seven principal energy levels designated by a quantum number, *n*, from 1 to 7. The maximum number of sublevels in a principal energy level is *n*, but none of the existing elements use more than 4 sublevels even in principal energy levels 5–7. Sublevels are designated by the letters s, p, d, and f, in increasing order of energy. After f, they are designated alphabetically. Orbitals are regions within a sublevel where electrons of a given energy are likely to be found. There are a maximum of 2 electrons in an orbital. The number of orbitals within a sublevel varies in a predictable pattern. The number of orbitals within a sublevel and the maximum number of electrons is as follows:

Sublevel	s	p	d	f
Number of orbitals	1	3	5	7
Maximum Number of Electrons	2	6	10	14

Fill in the table below based on your understanding of the patterns.

Principal Energy Level (*n*)		Number of Orbitals ( )	Electrons per Sublevel							Maximum Number of Electrons ( )
			s	p	d	f	g			
			1	3						
Electrons in each Location	1	1	2	-	-	-	-	-	-	2
	2	4	2	6	-	-	-	-	-	8
	3									
	4									
	5									
	6									
	7									