

Principal Energy Level and the Maximum Number of Orbitals and Electrons

Principal Energy Level (n)	Number of Orbitals Available				Total Number of Orbitals (n^2)	Maximum Number of Electrons ($2n^2$)
	s	p	d	f		
1	1	—	—	—	1	2
2	1	3	—	—	4	8
3	1	3	5	—	9	18
4	1	3	5	7	16	32

Note: Theoretically, the number of orbitals and possible number of electrons continue to increase for higher values of n . However, no atom actually has more than 32 electrons in any of its principal levels.

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

Figure 4-29 The table lists the maximum number of electrons in each sublevel. Can you predict the number of orbitals in a g sublevel?