4 quantum numbers – electron address

Principal Quantum number (n) – indicates main energy level
n = 1, 2, 3, 4, 5, 6 & 7 (periods on P.T.)

Sublevels within main energy level

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| Principal Energy Level | # of Sublevels | Type of Sublevel |
|---|---|---|
| 1 | 1 | S |
| 2 | 2 | S, P |
| 3 | 3 | S, P, d |
| 4 | 4 | S, P, d, f |
| 5 | 5 | S, P, d, f |
| 6 | 6 | S, P, d, f |
| 7 | 7 | S, P, d, f |

S = sphere
p = dumbbell
d = double dumbbell

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| Sublevels | have | orbitals/orientations | that determines | max # of e⁻ |
|---|---|---|---|---|
| S | | 1 | | 2 |
| P | | 3 | | 6 |
| d | | 5 | | 10 |
| f | | 7 | | 14 |

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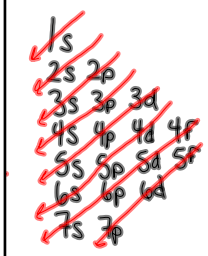
## Electron Configuration

Aufbau principal - $e^-$ occupy lowest energy first

Order of Filling

$1s\ 2s\ 2p\ 3s\ 3p\ 4s\ 3d\ 4p\ 5s\ 4d\ 5p\ 6s$

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Oxygen - $8e^-$

$1s^2 2s^2 2p^4$

Phosphorus - $15e^-$

$1s^2 2s^2 2p^6 3s^2 3p^3$

H:

He:

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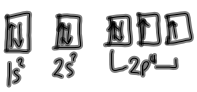
## Orbital Notation

Hund's Rule - $e^-$ have opposite spins

Pauli exclusion principle - orbital have $2\ e^-$

Oxygen - $8e^-$

$1s^2 2s^2 2p^4$

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Scandium- 21e⁻

$1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^1$


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