# Cheatography

## Chemistry Cheat Sheet

by SaumyaPatel via cheatography.com/25947/cs/7057/

### Electron Configuration

| | | |
|---|---|---|
| Valance electrons | Number of electrons in outermost shell. | |
| shell -> subshells -> orbitals | | |
| shell | K, L, M, N | n=1, 2, ... |
| subshell | s, p, d, f, g | 1s, 2s, 2p, 3s, ... |
| orbital | s, $p_x$, $p_y$, $p_z$ | 1s, 2s, $2p_x$, $2p_y$, $2p_z$ |
| Element is classified as s, p, d and f block element | depending on the orbital filled by the last electron. | |

### Quantitative Reasoning

| | | |
|---|---|---|
| Mole (Avaga-dro's constant) | It is a unit for telling the count, just like dozen. | 1 mole = 6.02 x $10^{23}$ units |
| Standard Temperature and Pressure (STP) | | |
| Avagadro's Hypothesis | Volume occupied by 1 mole of ideal gas at STP is 22.41 litres | |
| Mass of neutron | 1.0087 u | |
| Mass of proton | 1.0073 u | |
| Mass of electron | 0.00055 u | |

### Periodic Table Groups

| | | | |
|---|---|---|---|
| Group 1 | Alkali Metals | Valency +1 | ~ium |
| Group 2 | Alkali Earth Metals | Valency +2 | ~ium |
| Group 17 | Halogens | Valency -1 | ~ine |

### Periodic Table Groups (cont)

| | | | |
|---|---|---|---|
| Group 18 | Inert (Nobel) Gases | Valency 0 | ~on |
| Diatomic nonmetals | H, Halogens, C, and O | | |
| s-block | Group 1, 2 | | |
| p-block | Group 13 to 18 | | |
| d-block | Group 3 to 12 | | |

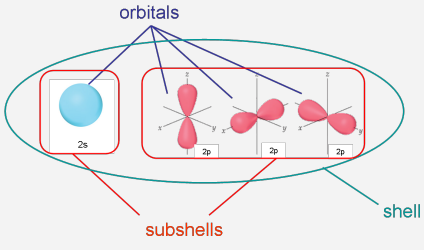
### Group 1 (Alkali Metals): +1

| | | | |
|---|---|---|---|
| **Hydrogen** (Excep-tion: Non-metal) | H | 1 (atomic number) | 1x=1 u or amu |
| **Lithium** | Li | 3 | 2x+1=7 |
| **Sodium** | Na | 3+8=11 | 2x+1=23 |
| **Potassium** | K | 11+8=19 | 2x+1=39 |
| Rubidium | Rb | 19+18=37 | 2x+11=85 |
| Caesium | Cs | 37+18=55 | 2x+23=133 |
| Francium | Fr | 55+32=87 | 2x+49=223 |

### Group 2 (Alkali Earth Metals): +2

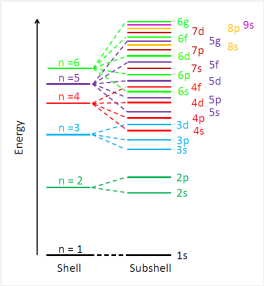
| | | |
|---|---|---|
| **Beryllium** | Be | 4 |
| **Magnesium** | Mg | 4+8=12 |
| **Calcium** | Ca | 12+8=20 |
| Strontium | Sr | 20+18=38 |
| Barium | Ba | 38+18=56 |
| Radium | Ra | 56+32=88 |

### Shell, Subshell and Orbital




### Electron Configuration - Filling Shells

### Energy levels of Orbitals

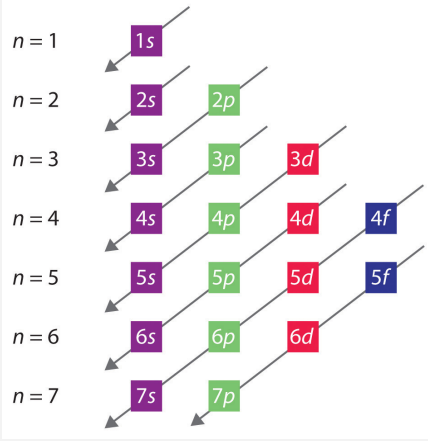



### Group 17 (Halogens): -1

| | | |
|---|---|---|
| **Fluorine** | F | 9 |
| **Chlorine** | Cl | 9+8=17 |
| **Bromine** | Br | 17+18=35 |
| **Iodine** | I | 35+18=53 |
| Astatine (Exception: Metalloid) | At | 53+32=85 |
| Ununseptium (Artificial Element) | Uus | 85+32=117 |

### Group 18 (Inert or Noble Gases): 0

| | | |
|---|---|---|
| **Helium** | He | 2 |
| **Neon** | Ne | 2+8=10 |
| **Argon** | Ar | 10+8=18 |
| **Krypton** | Kr | 18+18=36 |
| **Xeon** | Xe | 36+18=54 |
| **Radon** | Rn | 54+32=86 |
| Ununoctium | UUo | 86+32=118 |




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