

Metals, Nonmetals, and Metalloids



1 IA	2 IIA											13 IIIB	14 IVB	15 VB	16 VIB	17 VIIA	18 VIII 0A
1 H	2 He											3 B	4 C	5 N	6 O	7 F	8 Ne
3 Li	4 Be											9 Al	10 Si	11 P	12 S	13 Cl	14 Ar
11 Na	12 Mg	3B 3B	4B 4B	5B 5B	6B 6B	7B 7B	8 8B	9 9B	10 10B	11 11B	12 12B	13 13B	14 14B	15 15B	16 16B	17 17B	18 18B
19 K	20 Ca	21 Sc	22 Ti	23 V	24 Cr	25 Mn	26 Fe	27 Co	28 Ni	29 Cu	30 Zn	31 Ga	32 Ge	33 As	34 Se	35 Br	36 Kr
37 Rb	38 Sr	39 Y	40 Zr	41 Nb	42 Mo	43 Tc	44 Ru	45 Rh	46 Pd	47 Ag	48 Cd	49 In	50 Sn	51 Sb	52 Te	53 I	54 Xe
55 Cs	56 Ba	71 Lu	72 Hf	73 Ta	74 W	75 Re	76 Os	77 Ir	78 Pt	79 Au	80 Hg	81 Tl	82 Pb	83 Bi	84 Po	85 At	86 Rn
87 Fr	88 Ra	103 Lr	104 Rf	105 Db	106 Sg	107 Bh	108 Hs	109 Mt	110 Ds	111 Rg	112 Uub		114 Uuq				
		57 La	58 Ce	59 Pr	60 Nd	61 Pm	62 Sm	63 Eu	64 Gd	65 Tb	66 Dy	67 Ho	68 Er	69 Tm	70 Yb		
		89 Ac	90 Th	91 Pa	92 U	93 Np	94 Pu	95 Am	96 Cm	97 Bk	98 Cf	99 Es	100 Fm	101 Md	102 No		

57 La	58 Ce	59 Pr	60 Nd	61 Pm	62 Sm	63 Eu	64 Gd	65 Tb	66 Dy	67 Ho	68 Er	69 Tm	70 Yb
89 Ac	90 Th	91 Pa	92 U	93 Np	94 Pu	95 Am	96 Cm	97 Bk	98 Cf	99 Es	100 Fm	101 Md	102 No

Metals

To the left of the staircase line

- **Physical Properties:**

- Luster (shiny)
- Good conductors
- High melting point
- Solids at room temperature
(mercury is an exception)

- **Chemical Properties:**

- Easily lose electrons
- Corrode easily
(rusting or tarnishing)

Non-metals

to the right of the staircase line

- **Physical Properties:**

- Dull (not shiny)
- Poor conductor of electricity
- Brittle
- Low Melting Point

- **Chemical Properties:**

- Tend to gain electrons



Metalloids

along the staircase line



- *Solids*
- *Shiny or dull*
- *Conduct heat and electricity better than non metal but not as well as metals*

Electron Shell Diagram (Bohr-Rutherford)



- **Period:** Indicates the number of shells or energy levels of the element

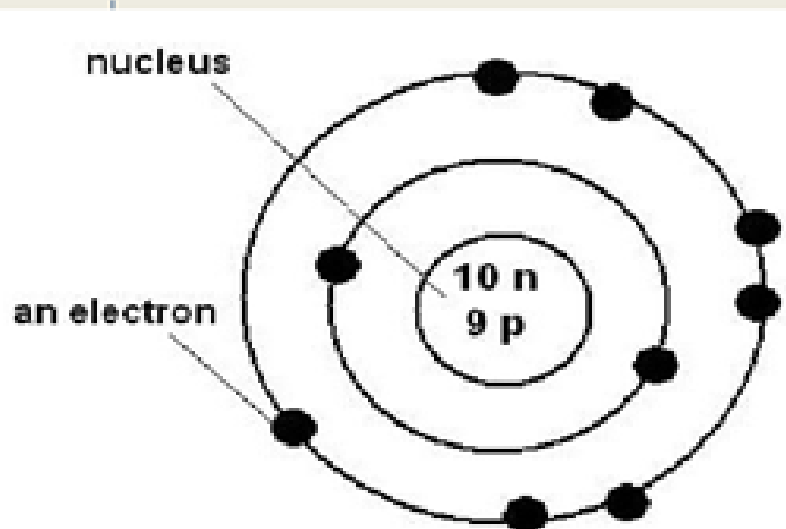
e⁻

1st level: 2e⁻

2nd level: 8e⁻

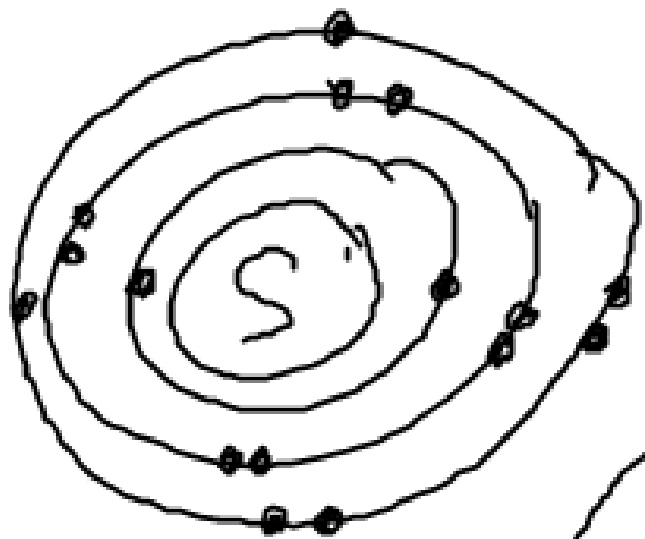
3rd level: 8e⁻

⋮

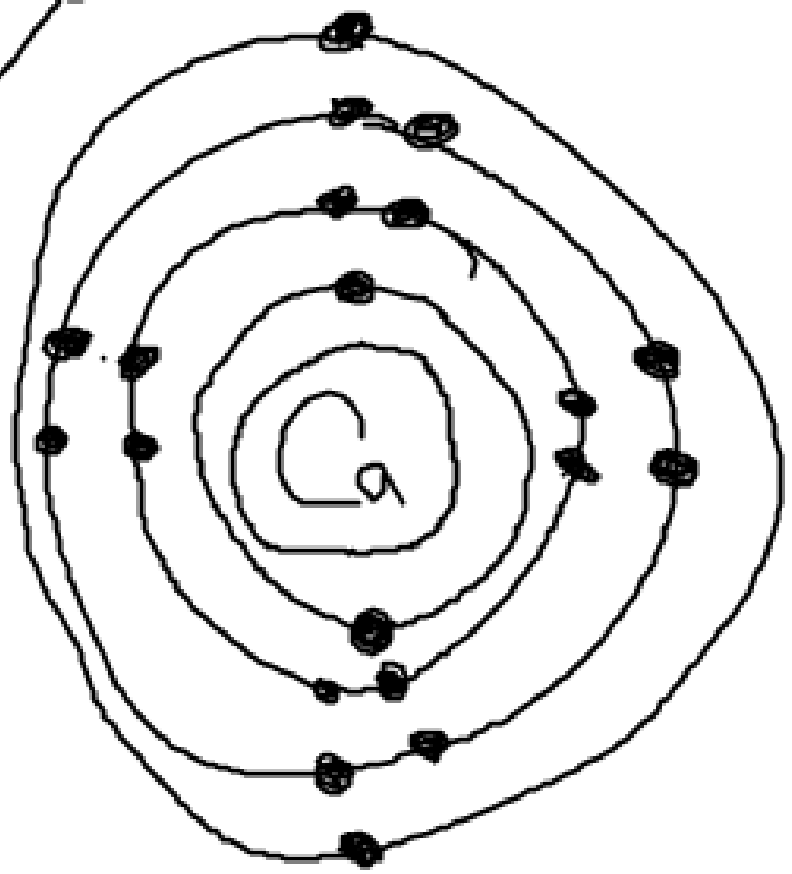


n represents one neutron
p represents one proton

f



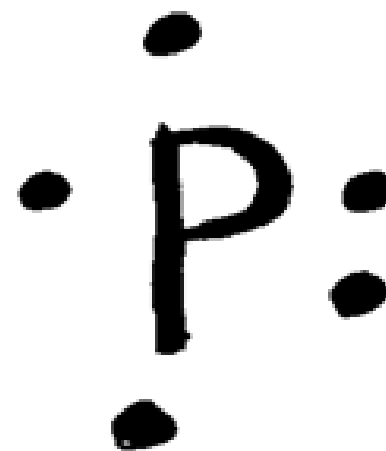
$16e^-$



Electron Dot Diagram (Lewis Diagram)



- **Group/family:** indicates the number of electrons in the outer shell (valence shell)



7 valence e⁻



