Unit 3

Modeling Atomic Structure

Mr. Maxwell

PACS

February 7, 2025

1. Atomic Structure
   - Atomic Number
   - Mass Number
   - Bohr Model
     - Energy Levels
   - The Periodic Table
     - groups and periods
   - Valence Electrons

Atomic Number

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Hydrogen

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What does the 1 mean?

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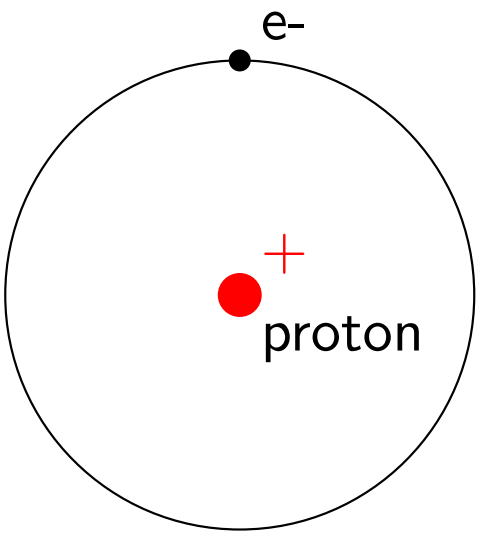
1 is the total number of neutrons and protons.



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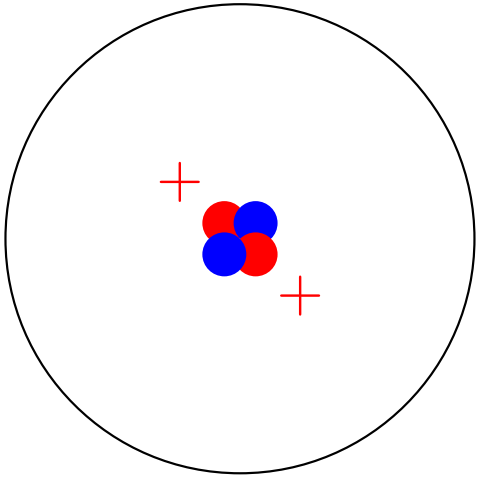

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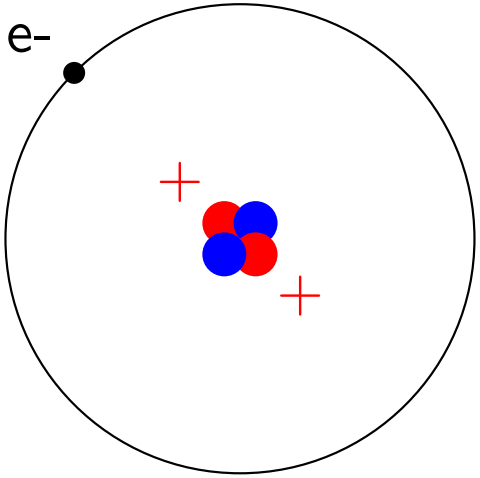

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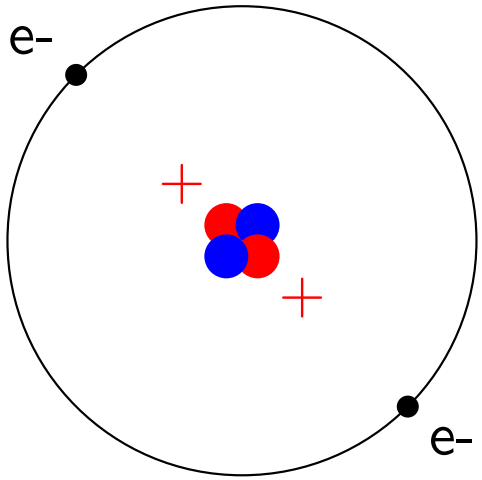

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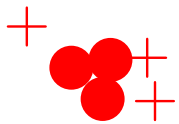

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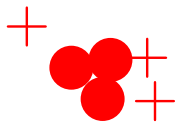

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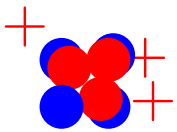

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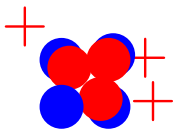

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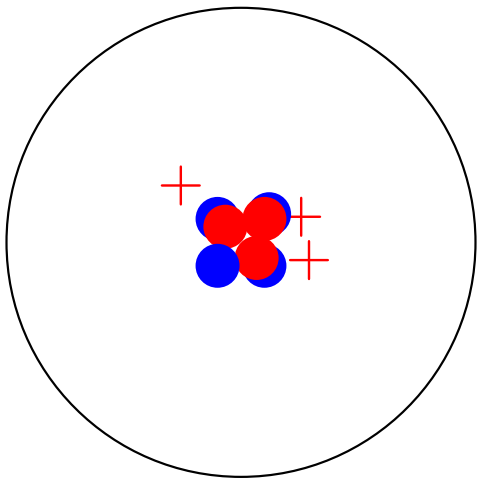

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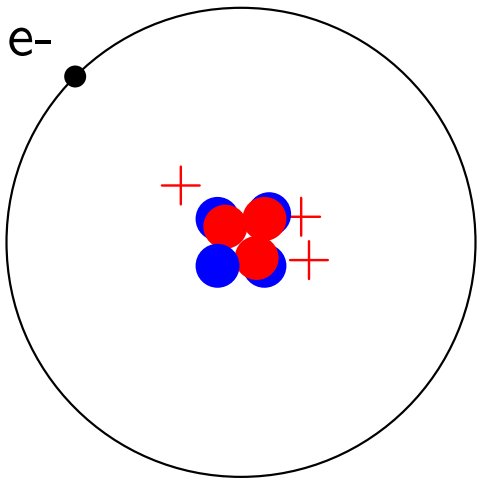

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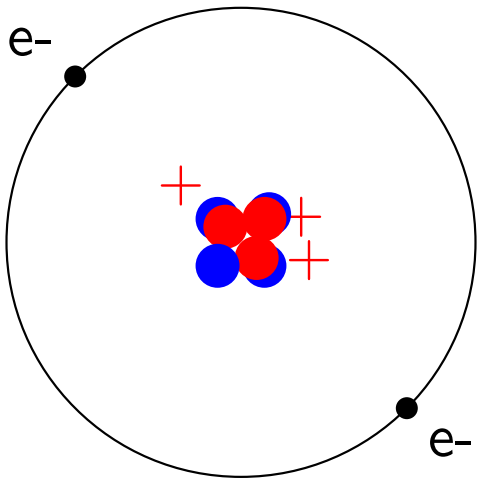

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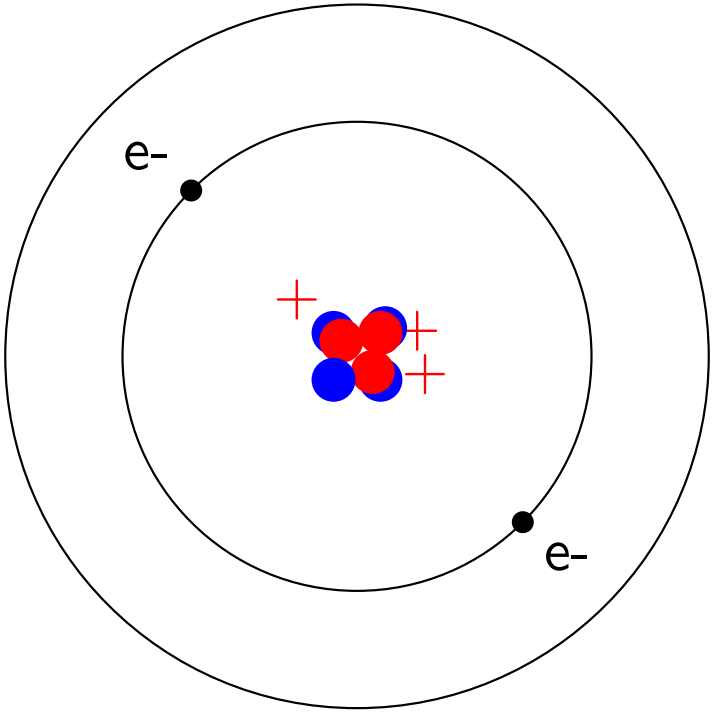

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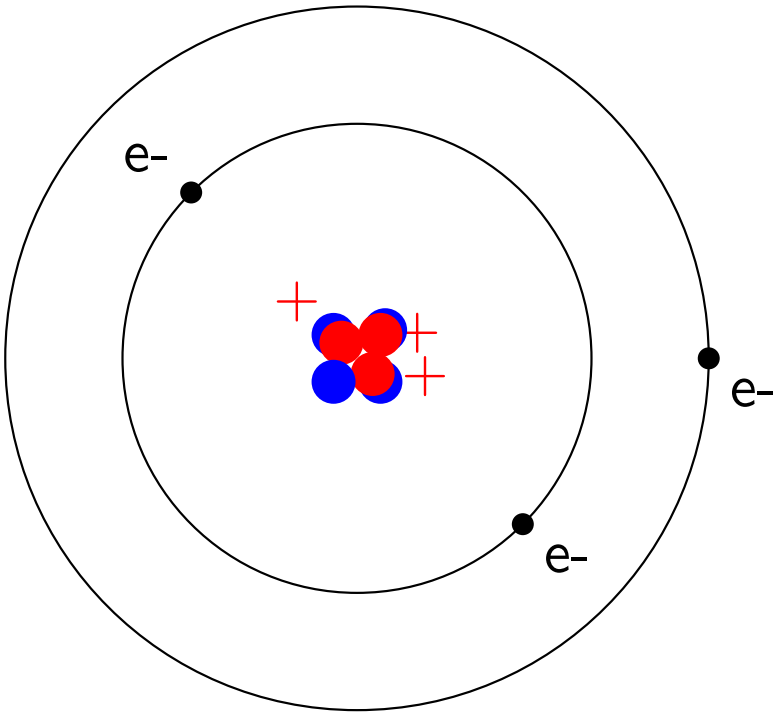

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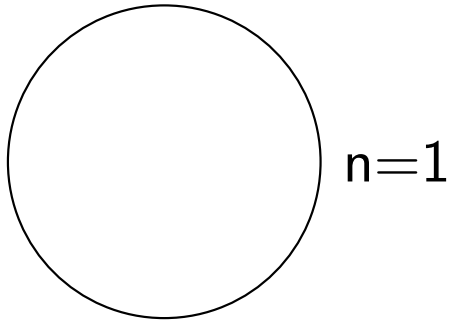

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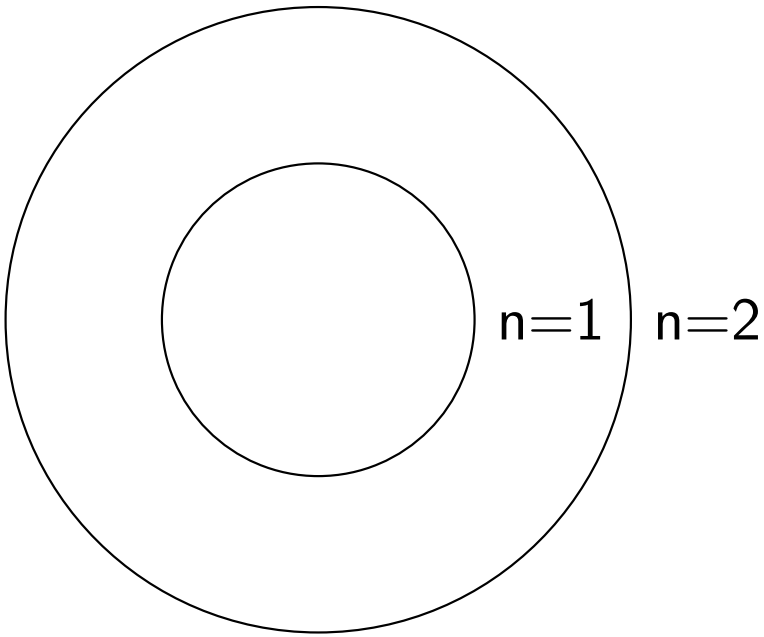

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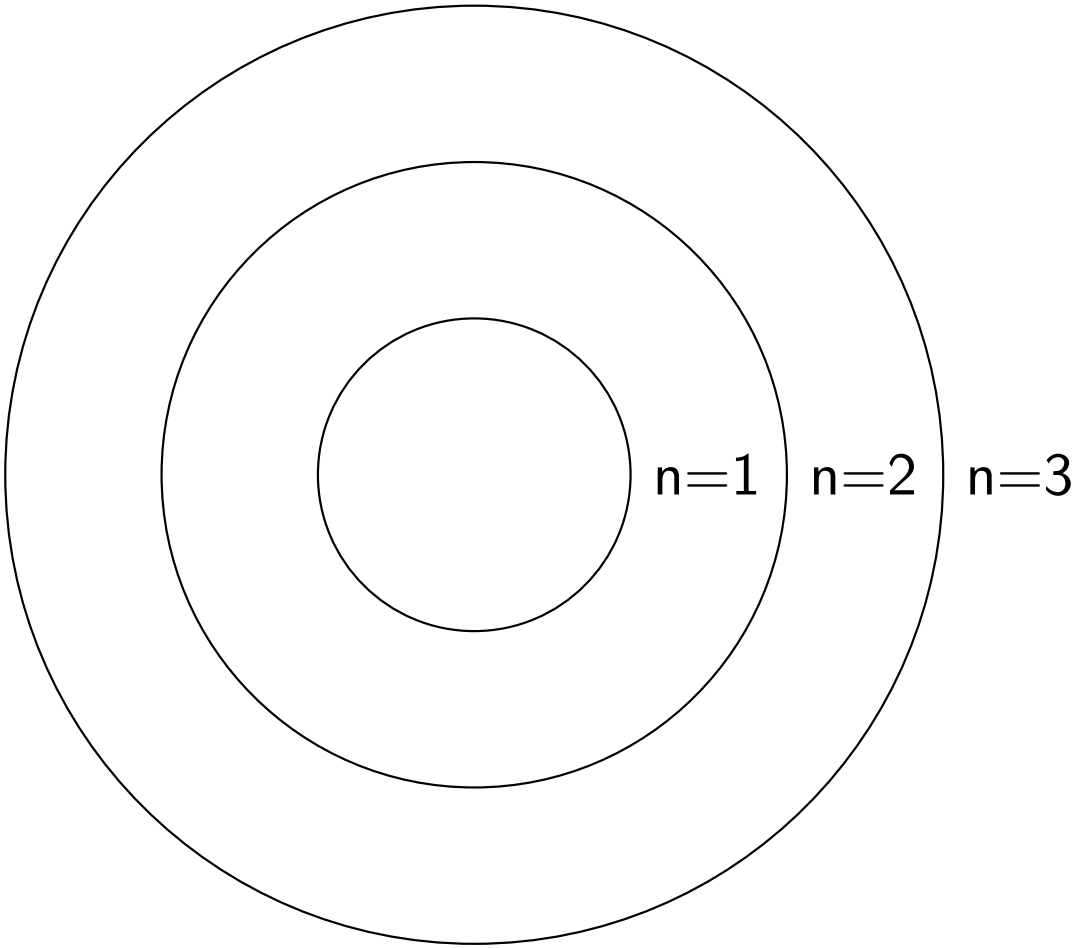
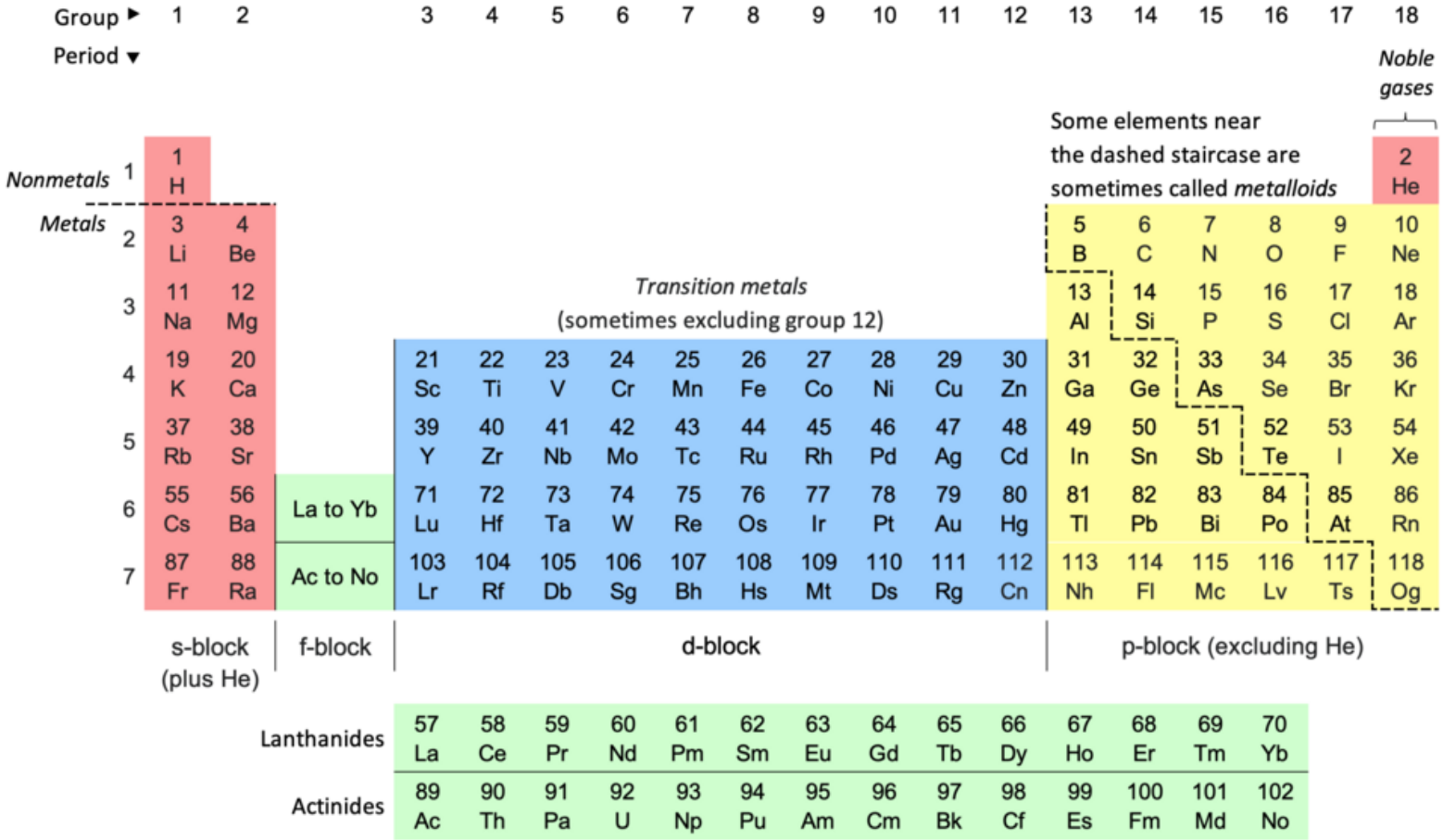
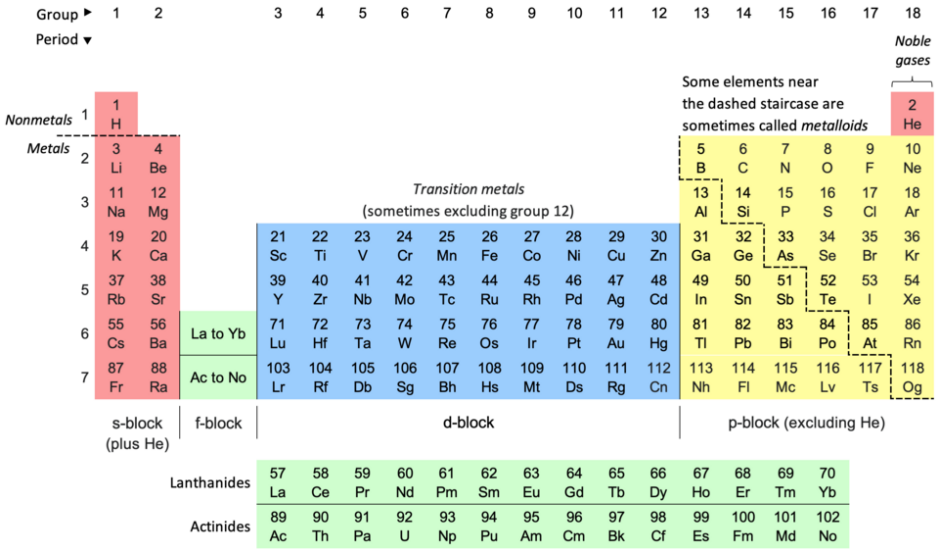
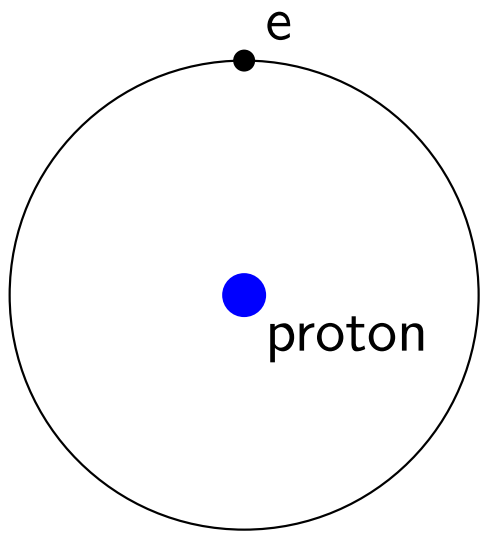


Energy Levels and the Periodic Table

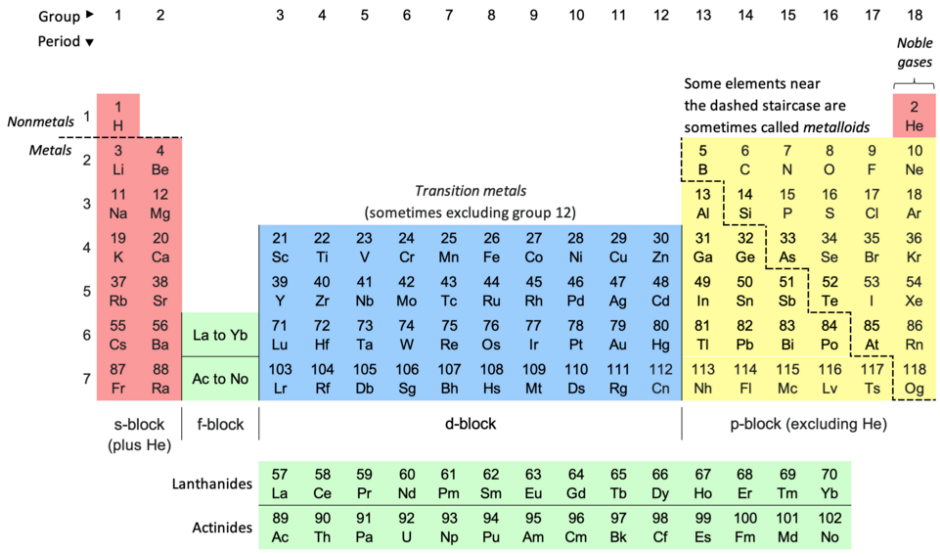


Energy Level of Hydrogen





Energy Level of Lithium



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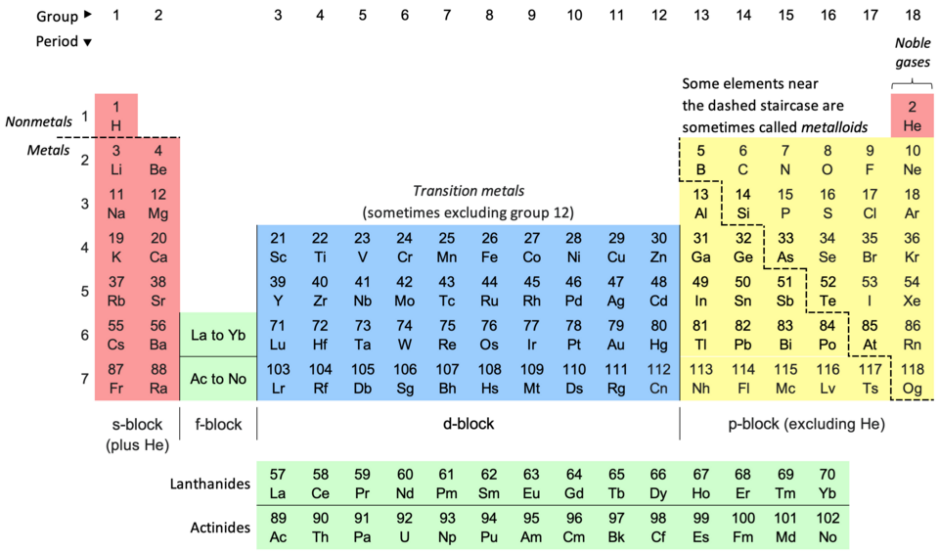

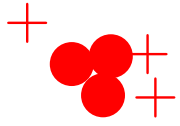

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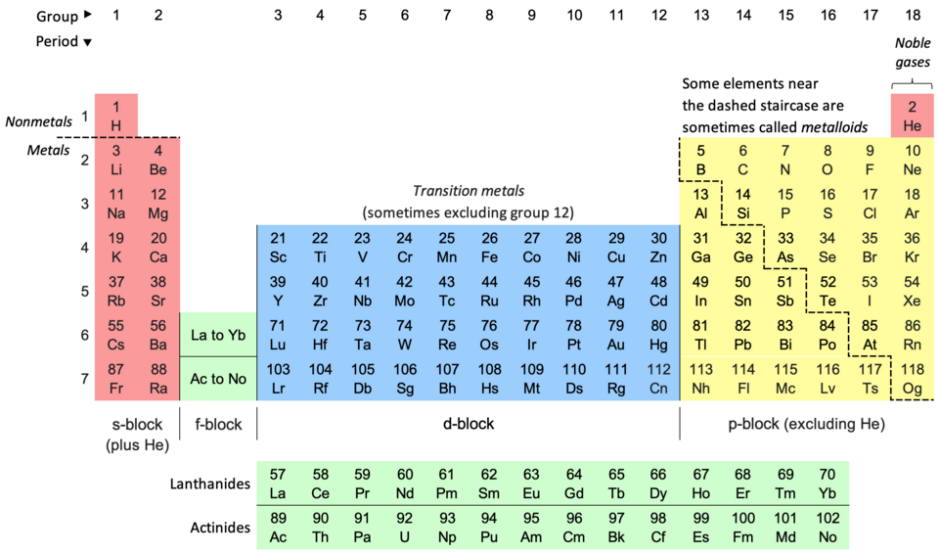

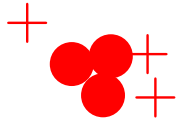

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5	37 Rb	38 Sr	39 Y	40 Zr	41 Nb	42 Mo	43 Tc	44 Ru	45 Rh	46 Pd	47 Ag	48 Cd	49 In	50 Sn	51 Sb	52 Te	53 I	54 Xe
6	55 Cs	56 Ba	La to Yb	71 Lu	72 Hf	73 Ta	74 W	75 Re	76 Os	77 Ir	78 Pt	79 Au	80 Hg	81 Tl	82 Pb	83 Bi	84 Po	85 At	86 Rn
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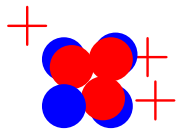
Transition metals (sometimes excluding group 12)



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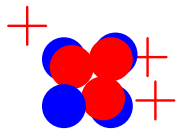

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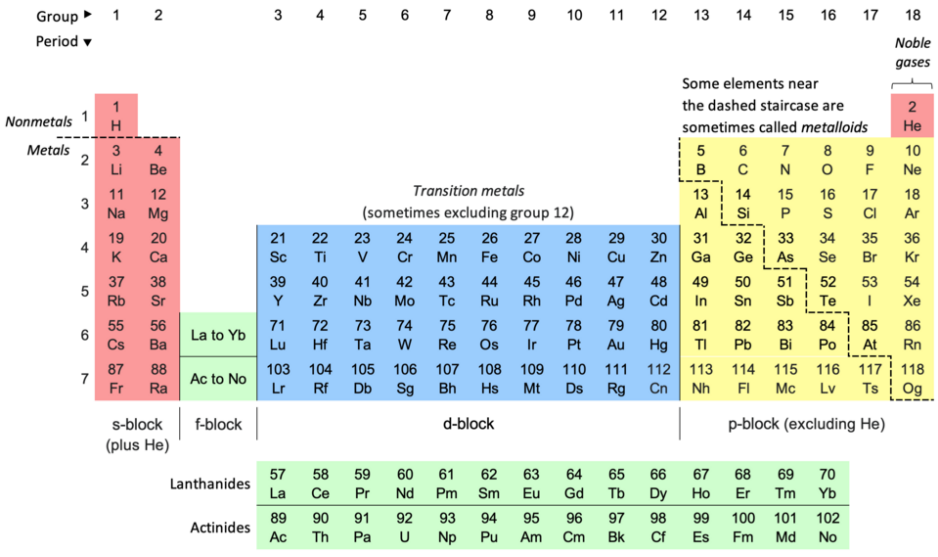

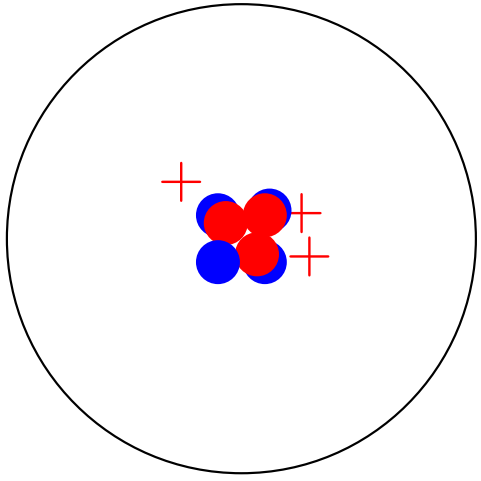

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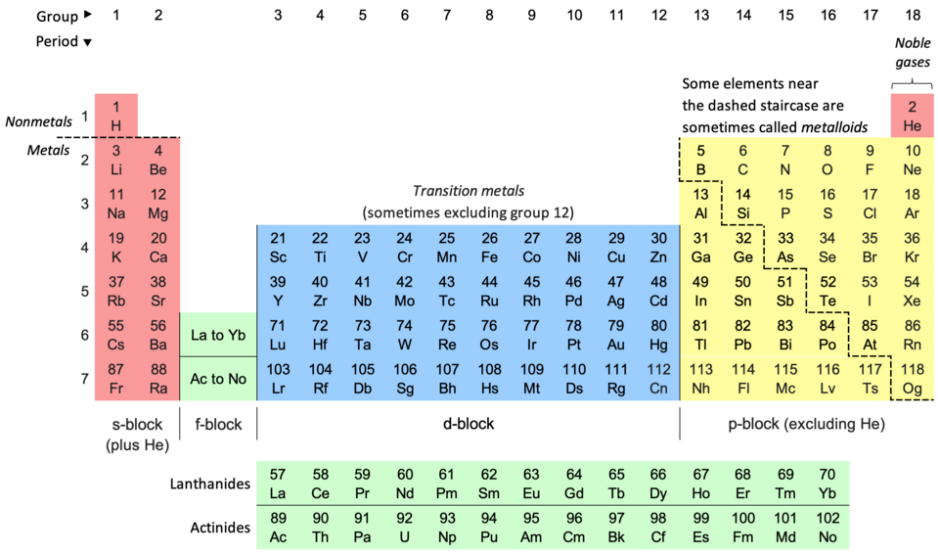

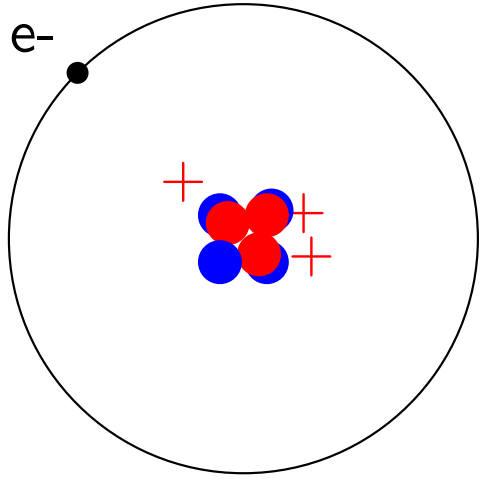

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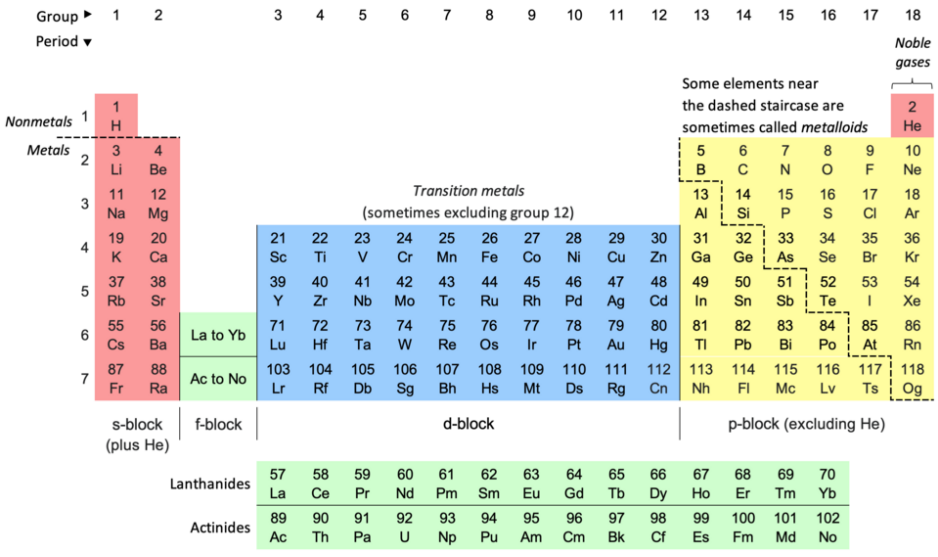

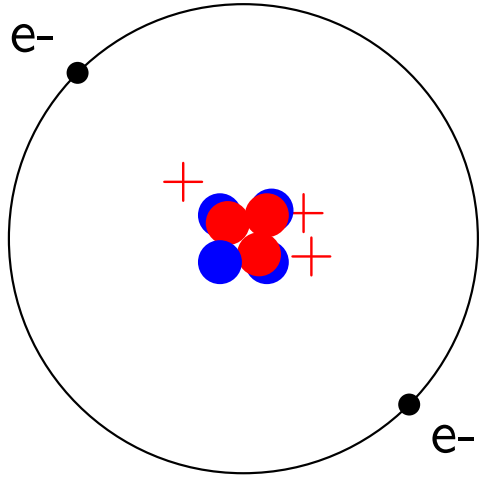

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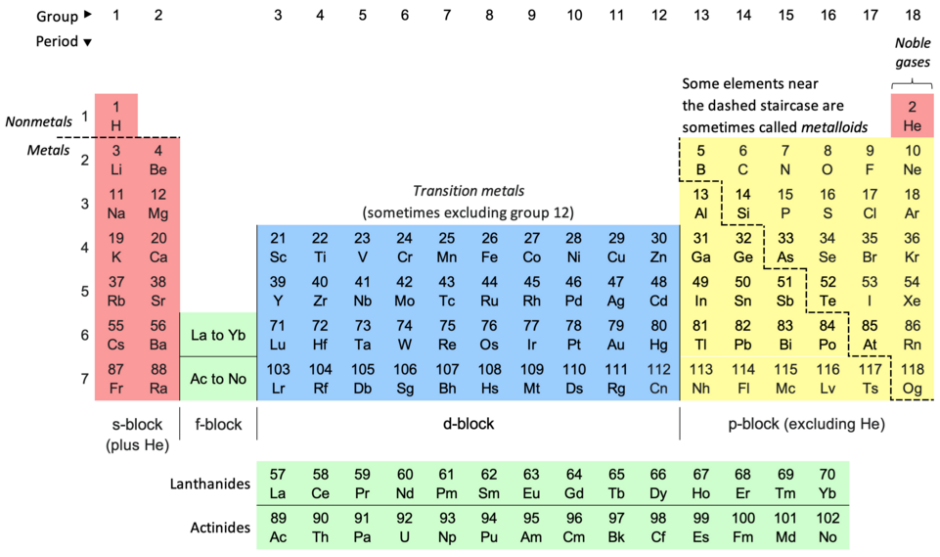

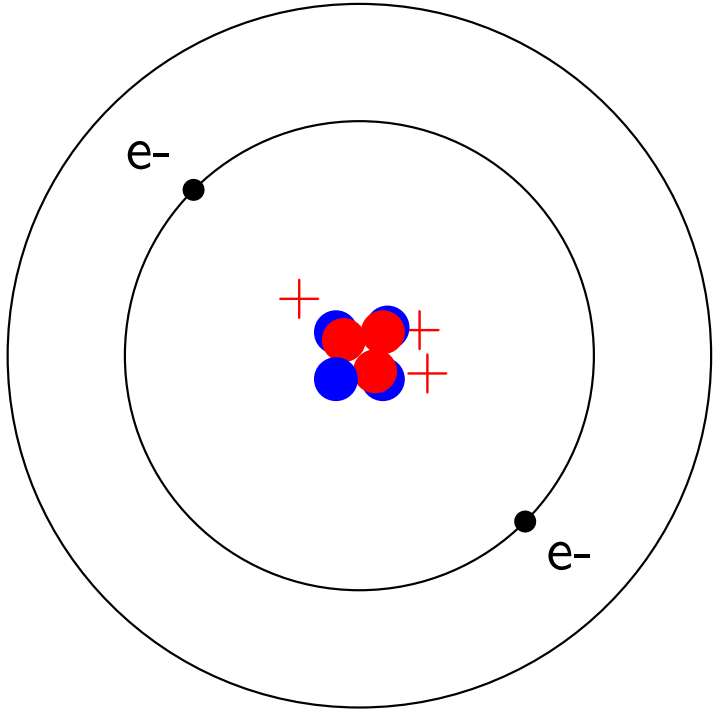

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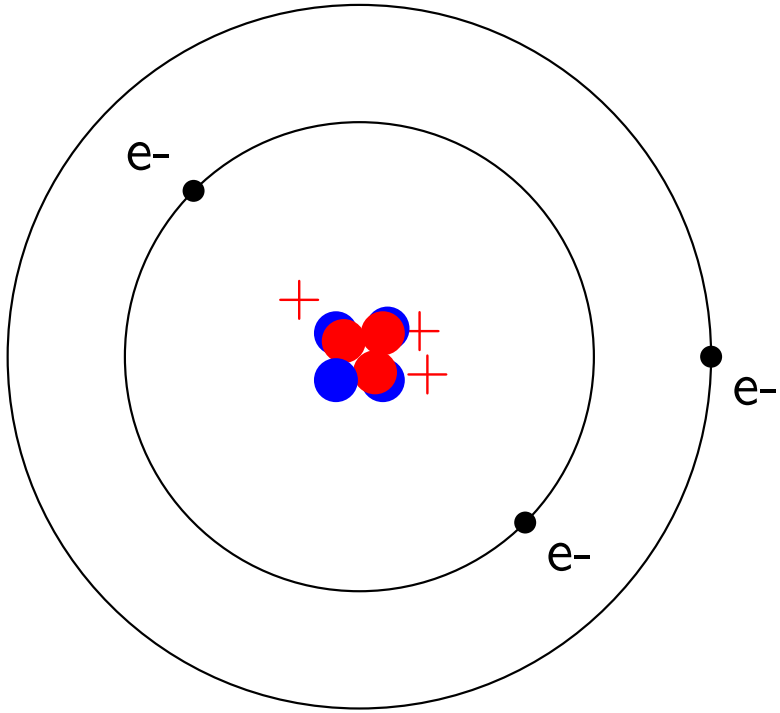

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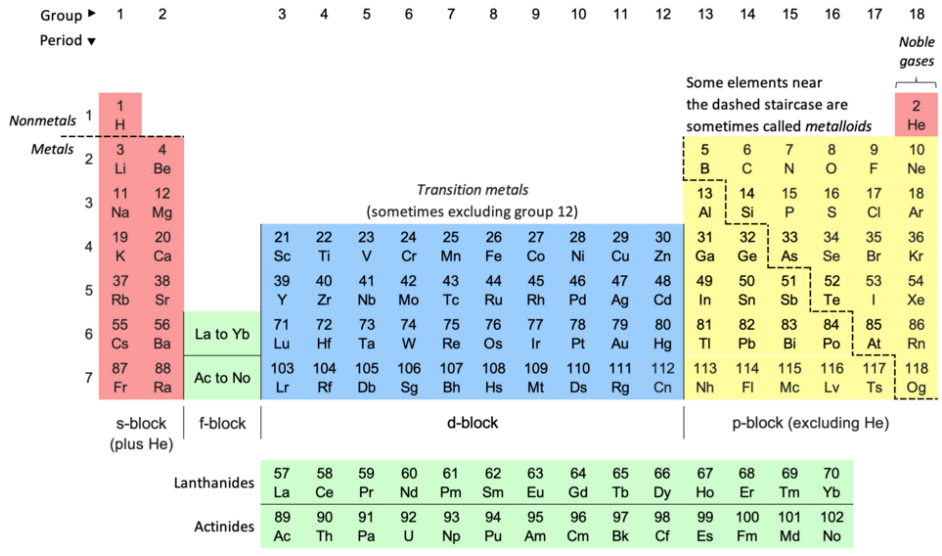

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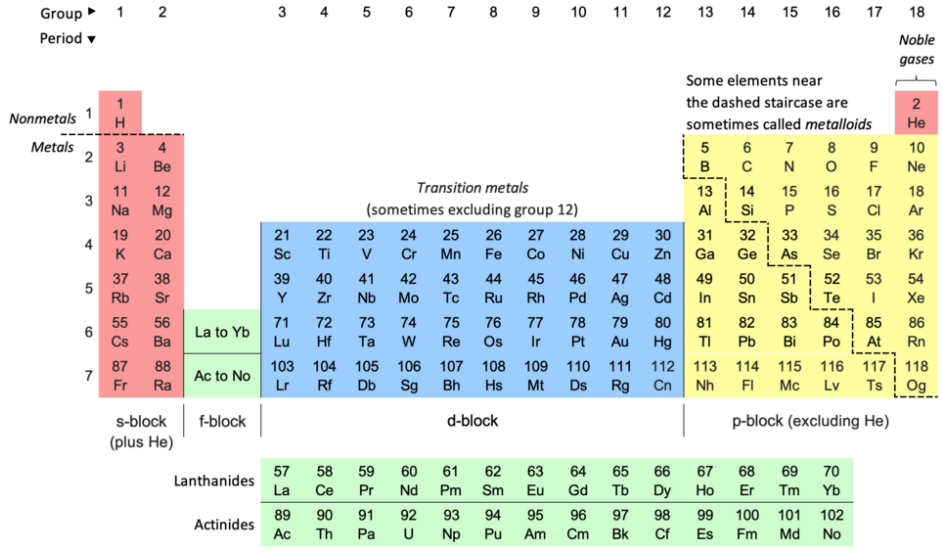

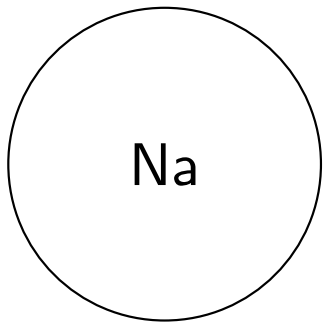

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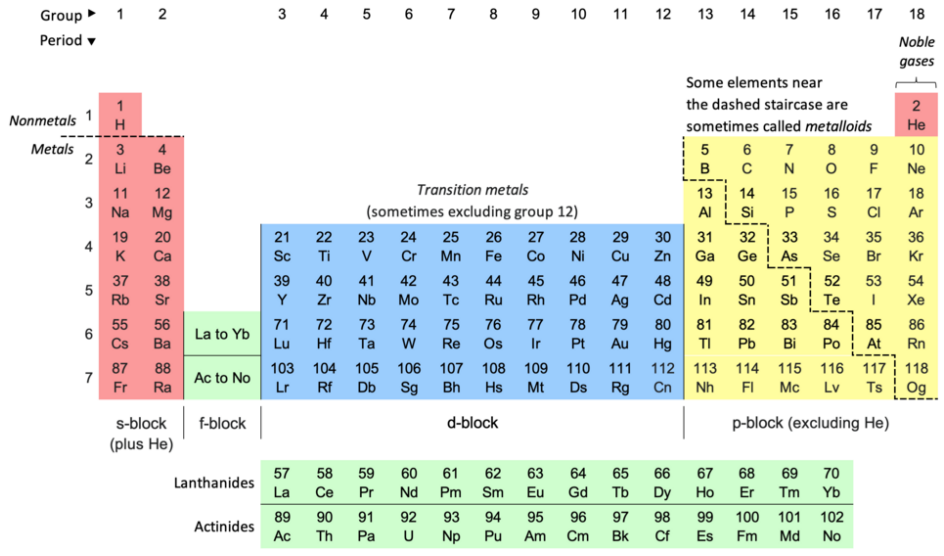
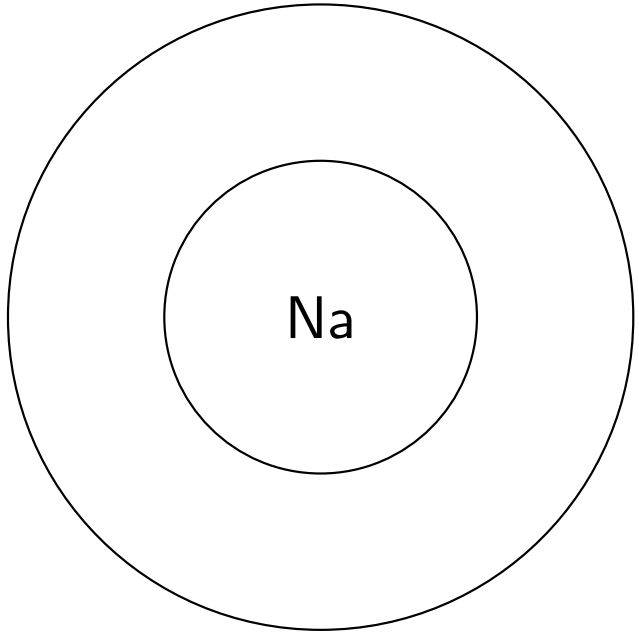
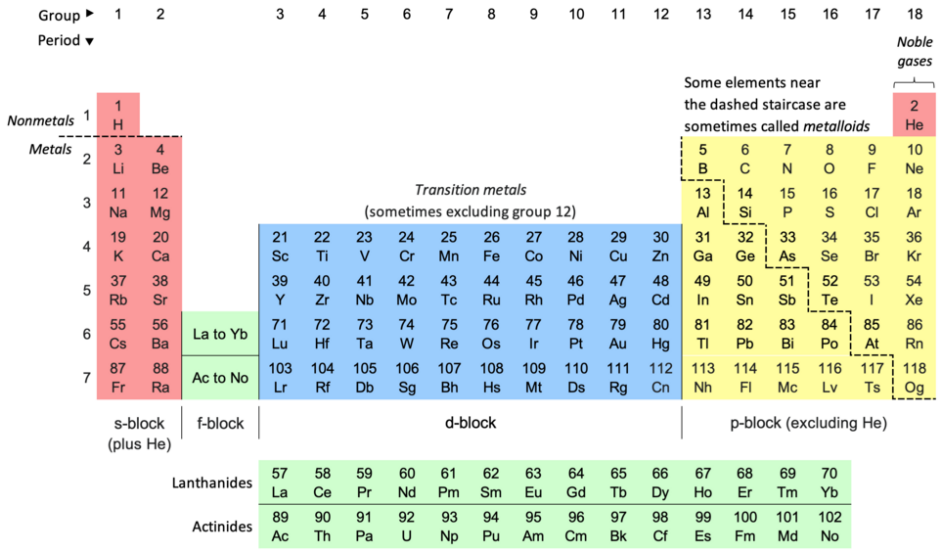
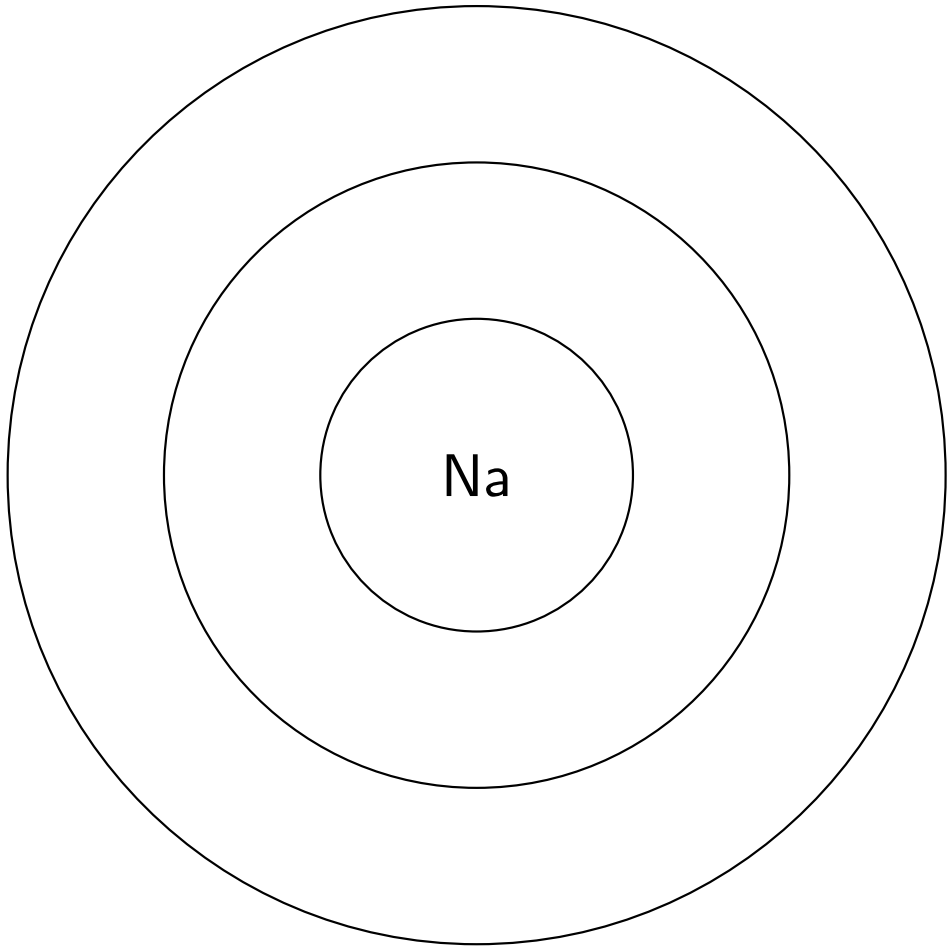




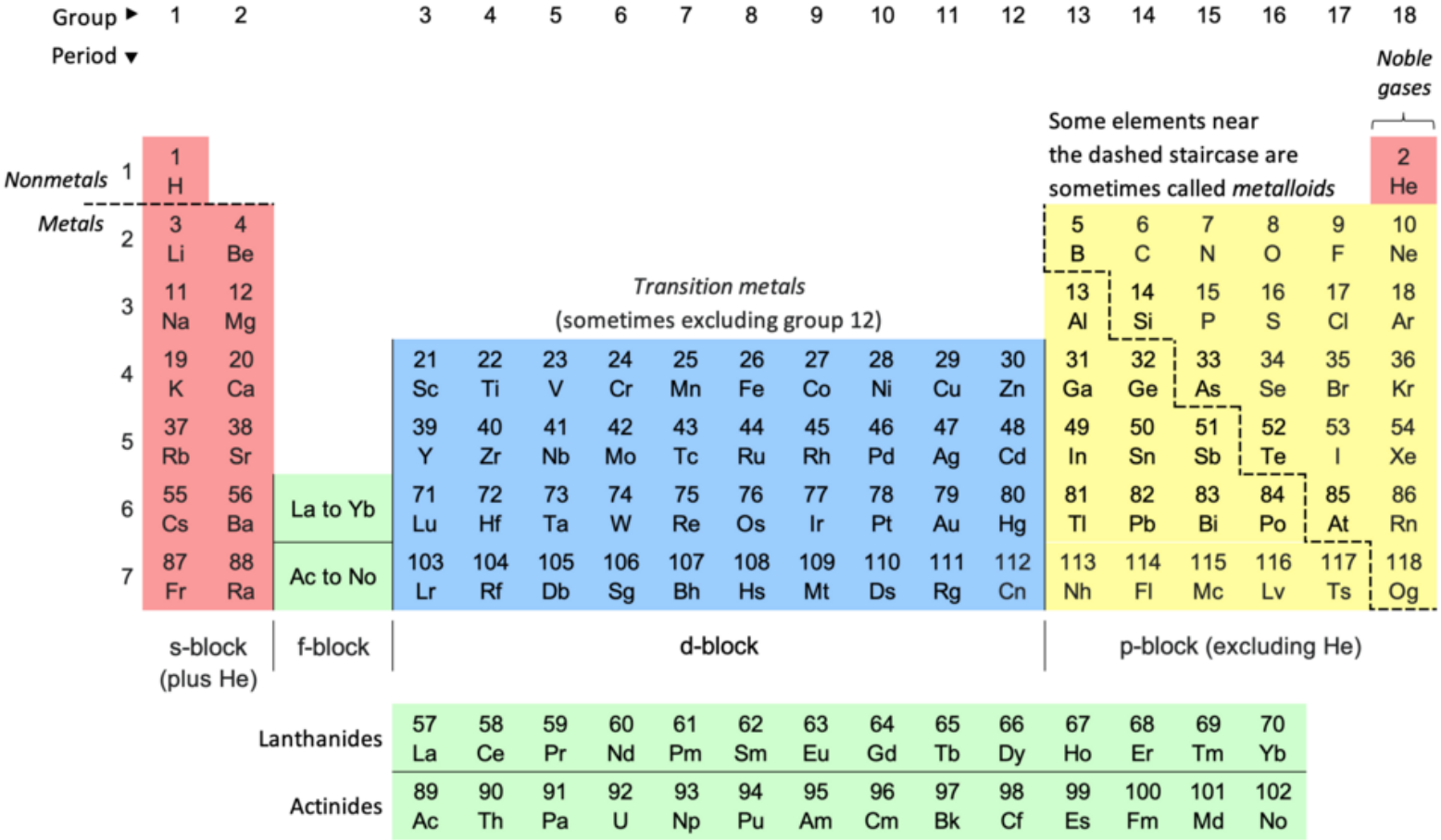
Energy Level of Sodium





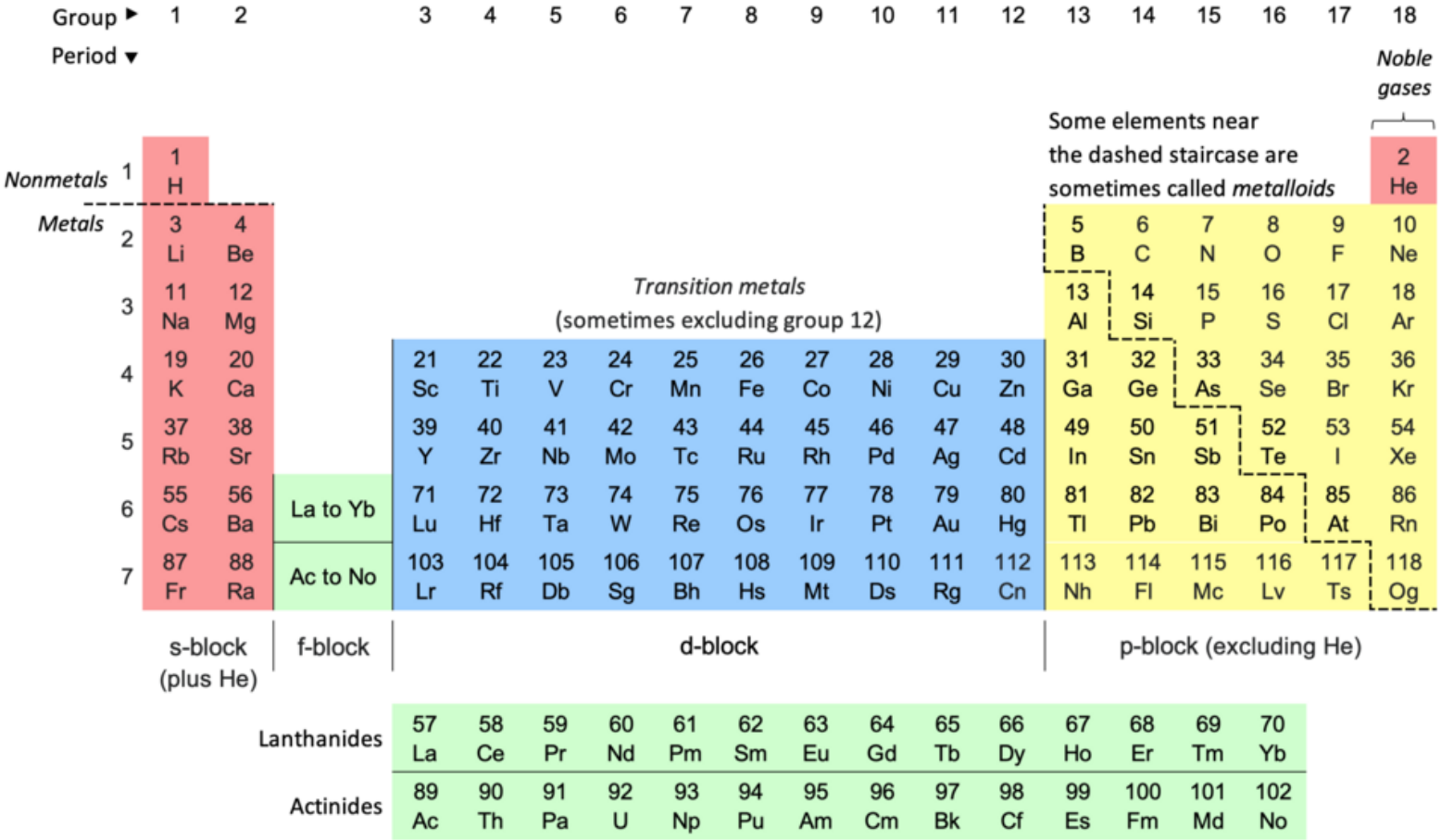
The Periodic Table

The Periodic Table has periods and groups.



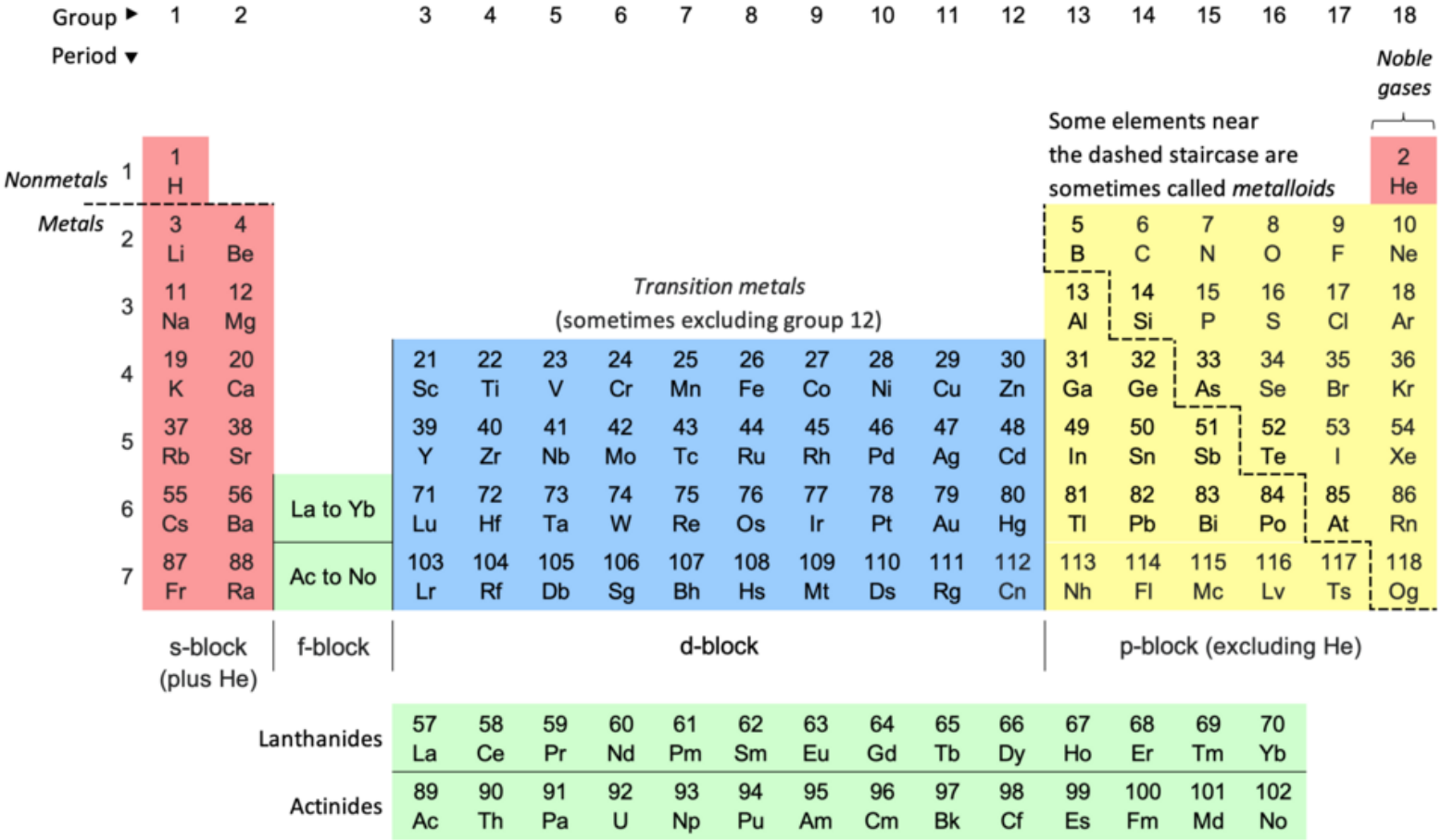
The Periodic Table

The Periodic Table has 7 periods and groups.

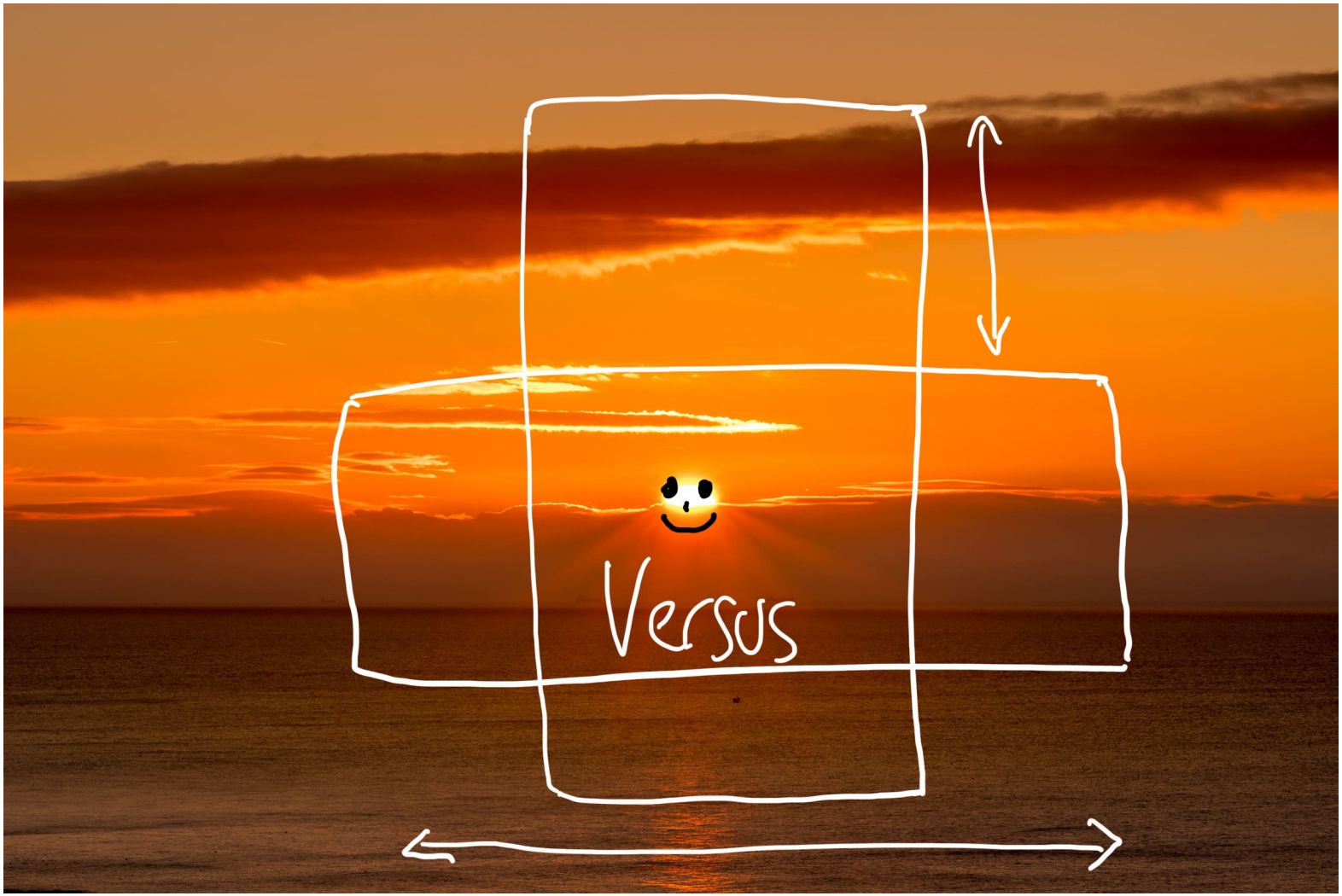


The Periodic Table

The Periodic Table has 7 periods and 18 groups.

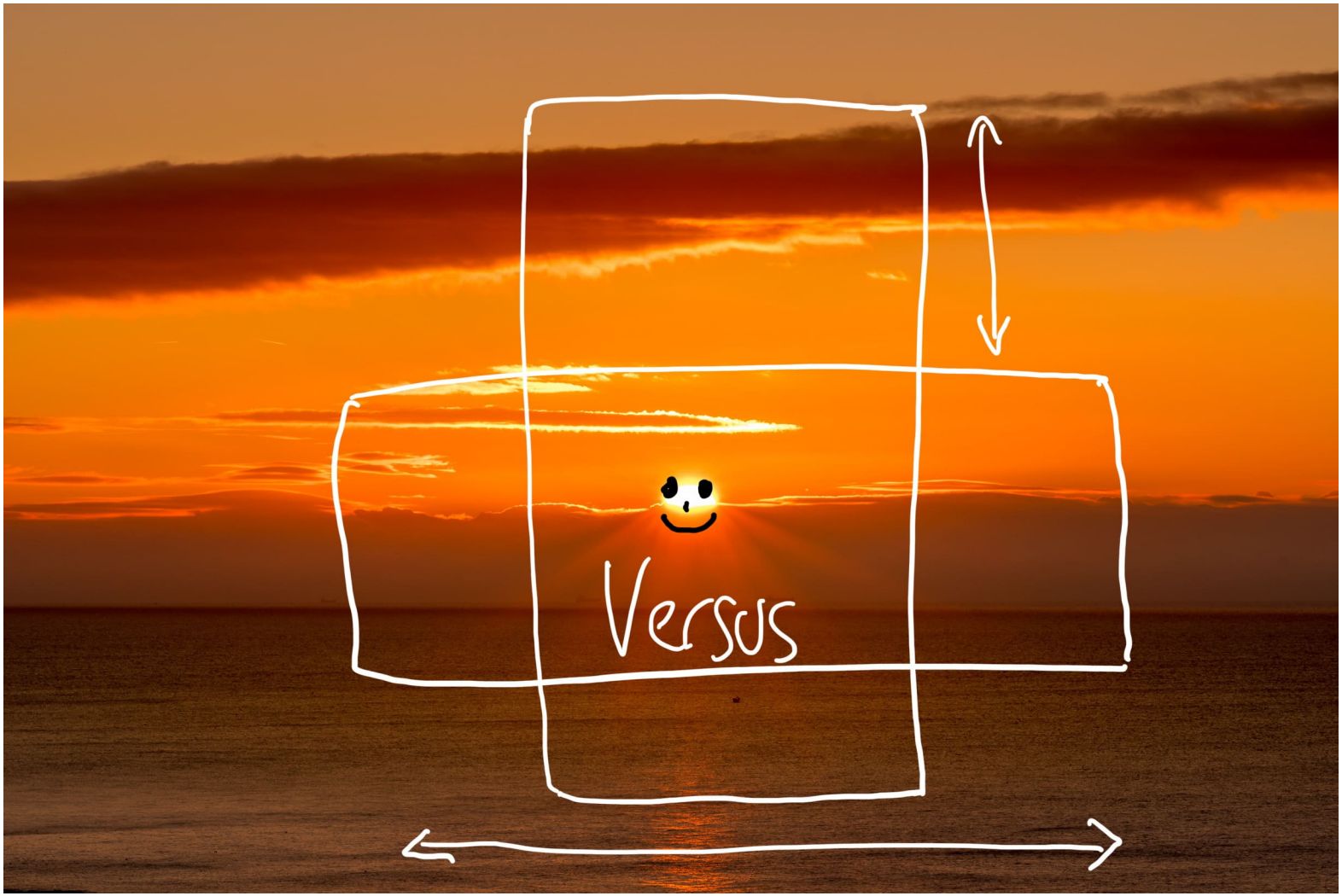


Horizontal and Vertical



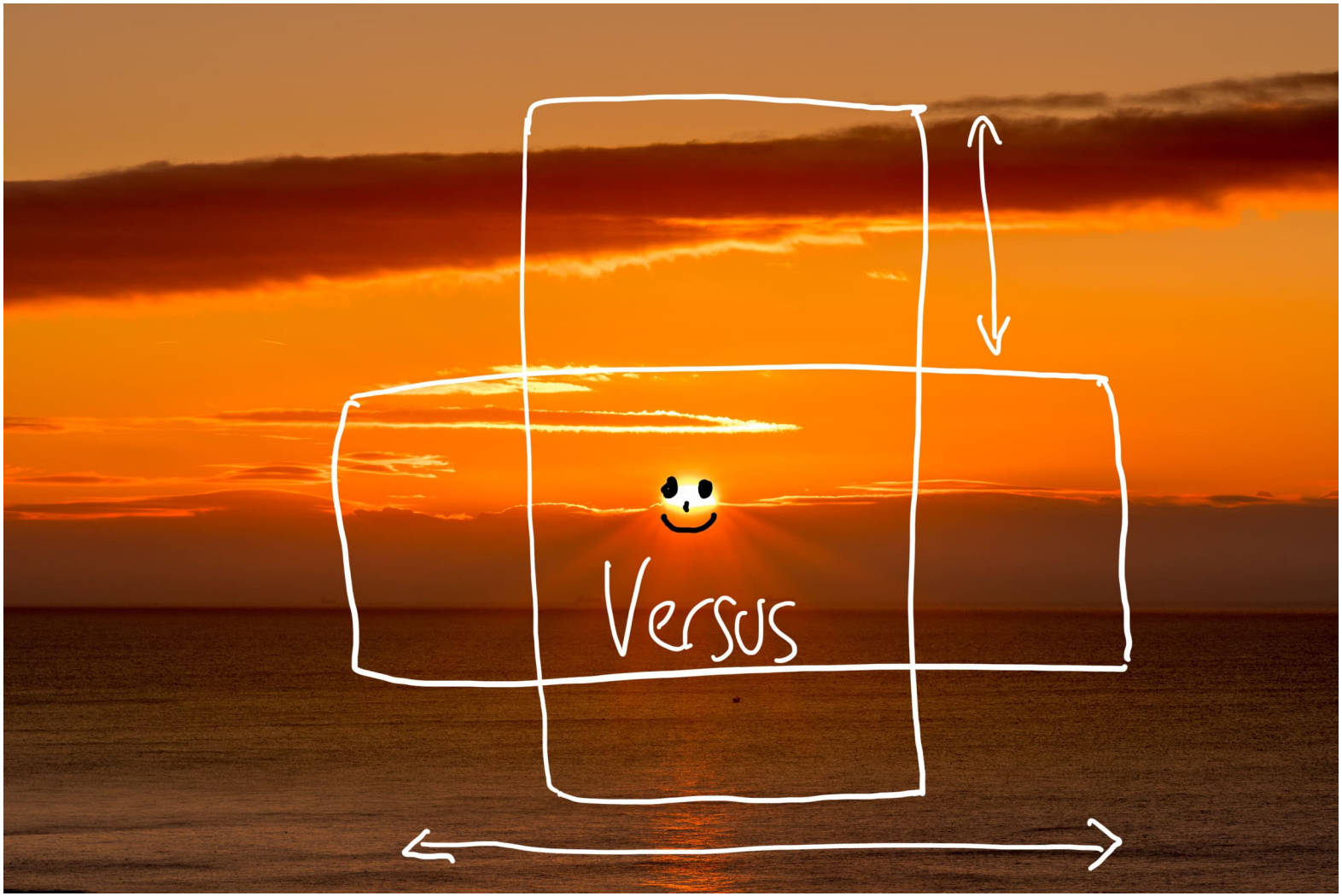
The periods are and the groups are

Horizontal and Vertical



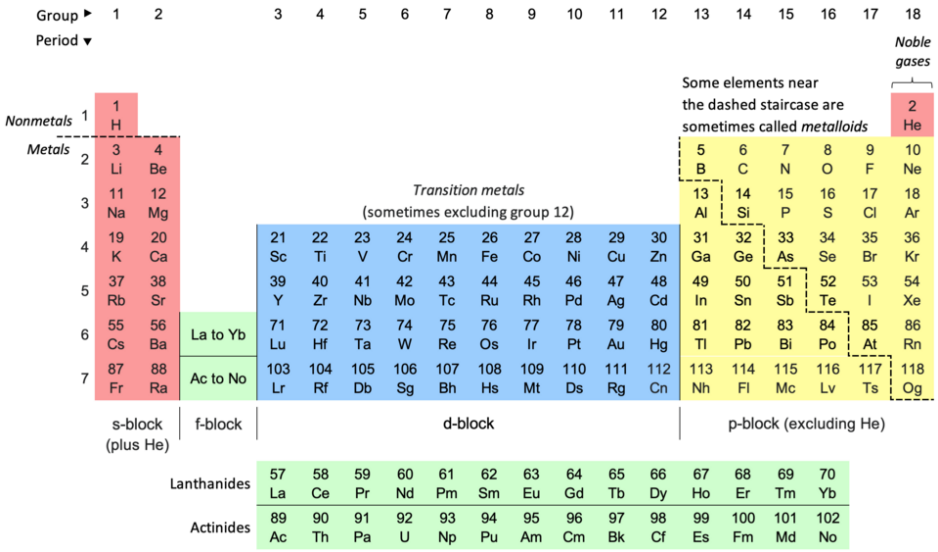
The periods are horizontal and the groups are

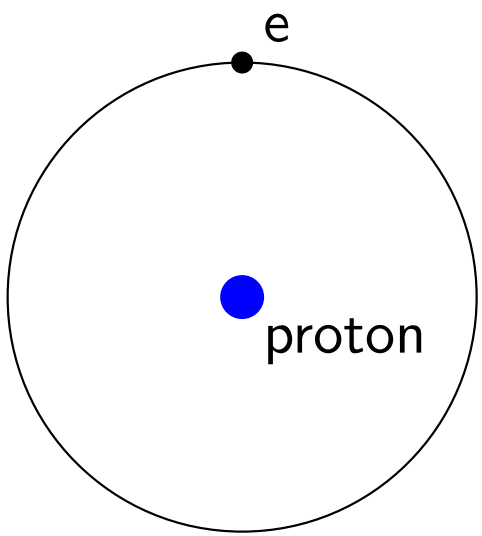
Horizontal and Vertical



The periods are horizontal and the groups are vertical.

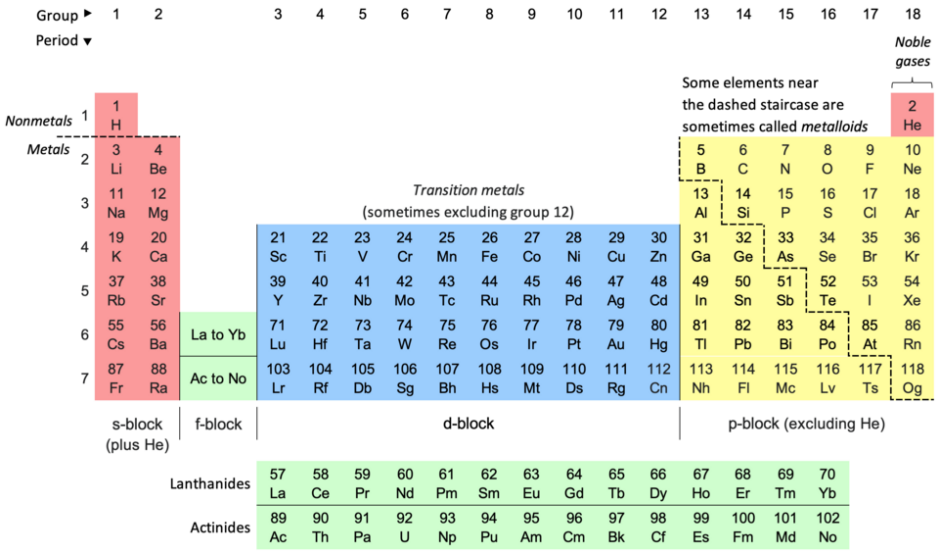
Energy Level of Hydrogen

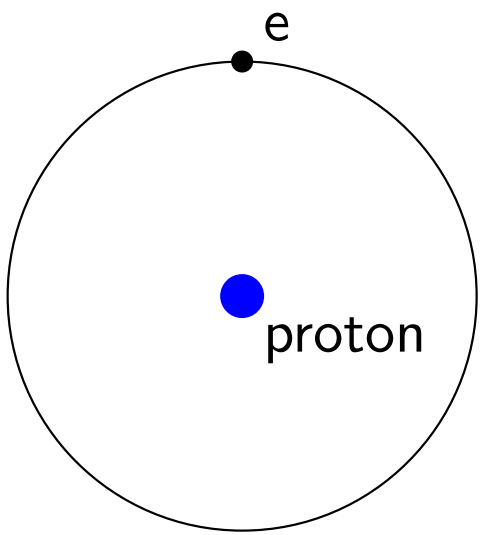




You can know the configuration of an element from its in the the periodic table.

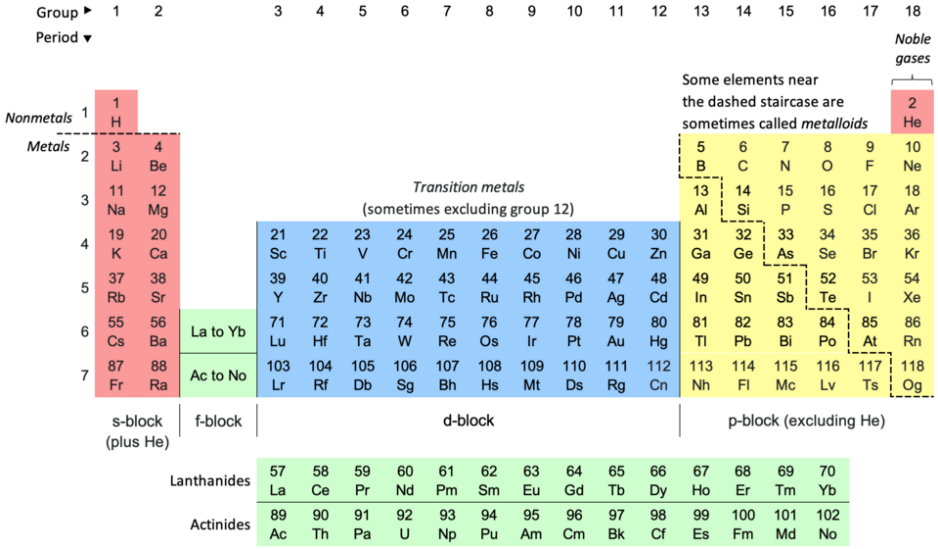
Energy Level of Hydrogen

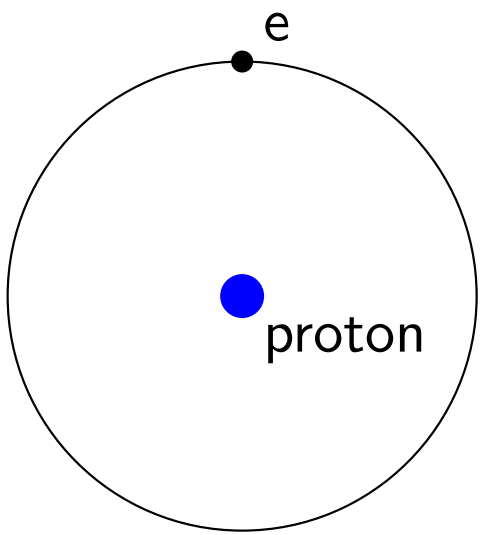




You can know the electron configuration of an element from its in the periodic table.

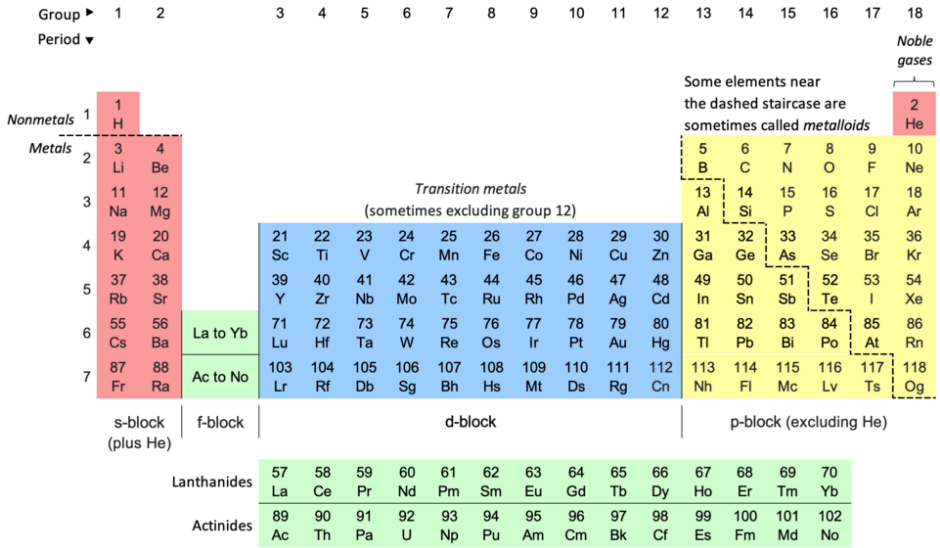
Energy Level of Hydrogen

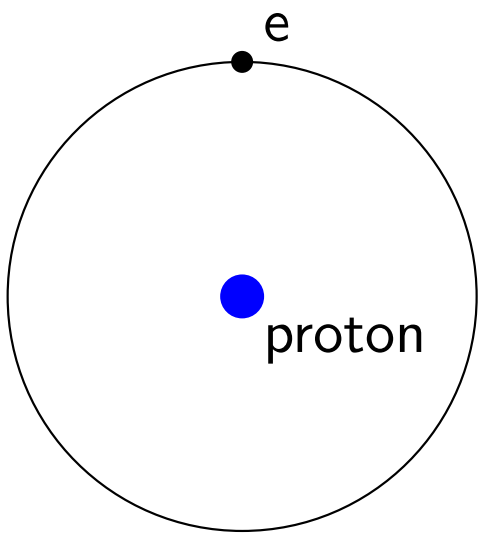




You can know the electron configuration of an element from its position in the periodic table.

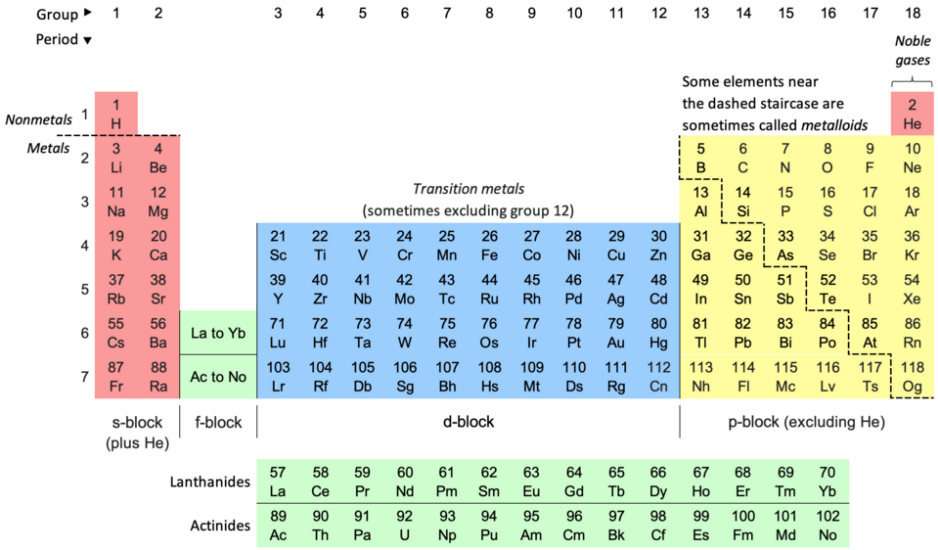
Energy Level of Hydrogen

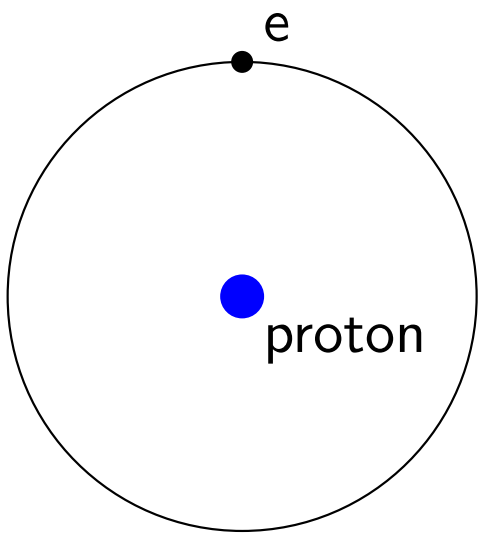




The number of electron (or energy levels) is equal to the number.

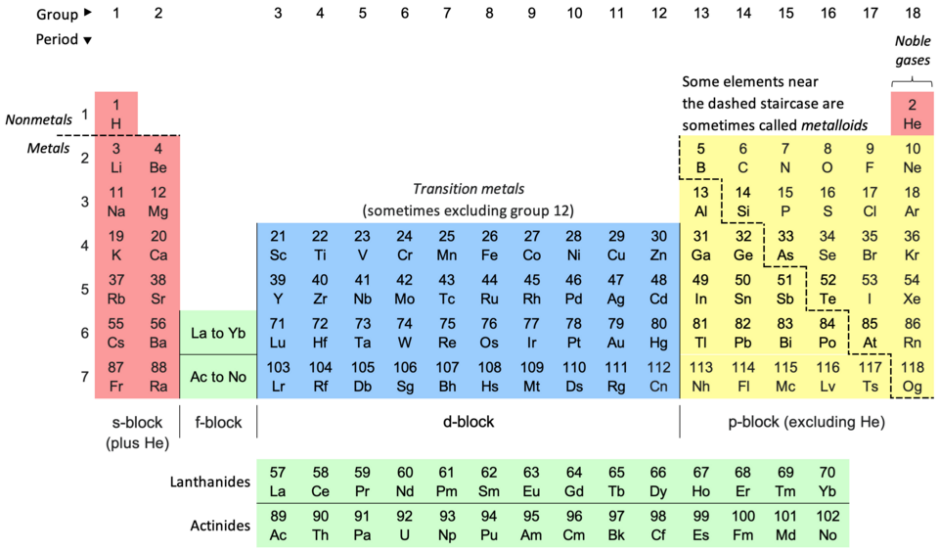
Energy Level of Hydrogen

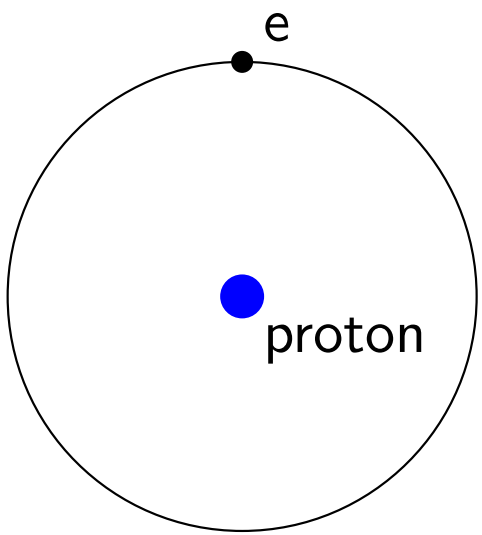




The number of electron shells (or energy levels) is equal to the number.

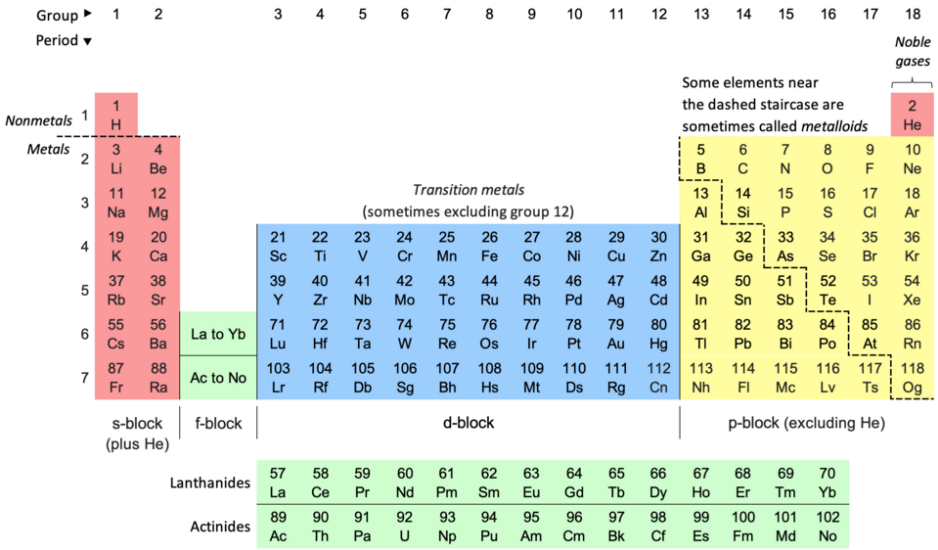
Energy Level of Hydrogen

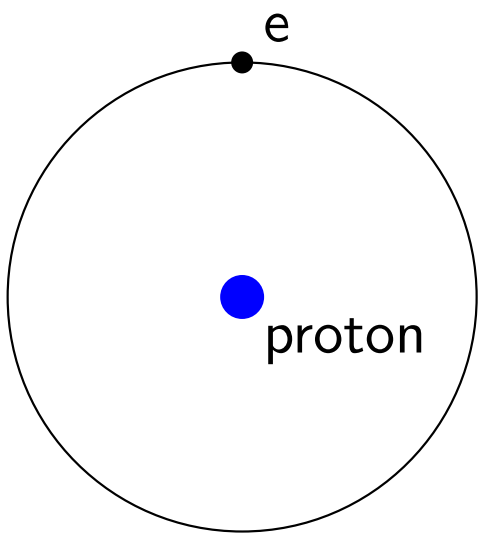




The number of electron shells (or energy levels) is equal to the period number.

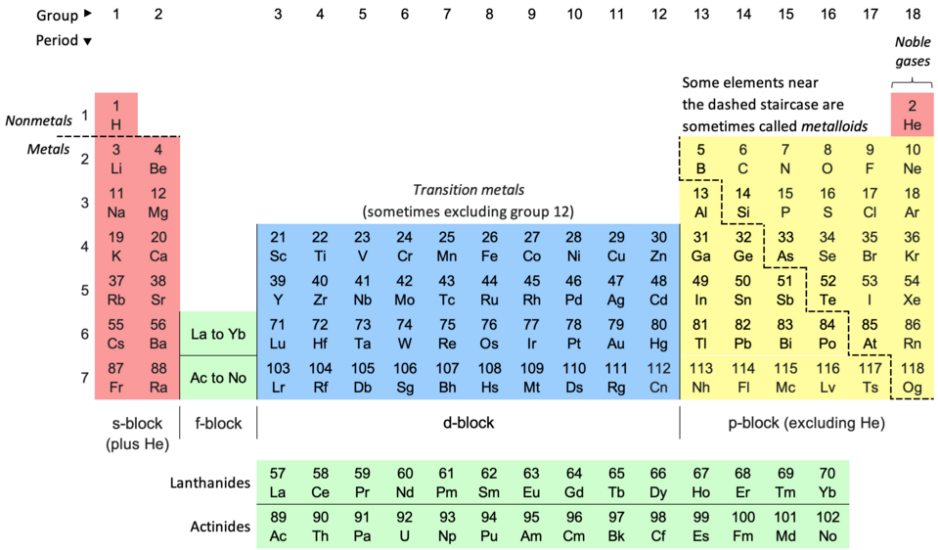
Valence Electrons

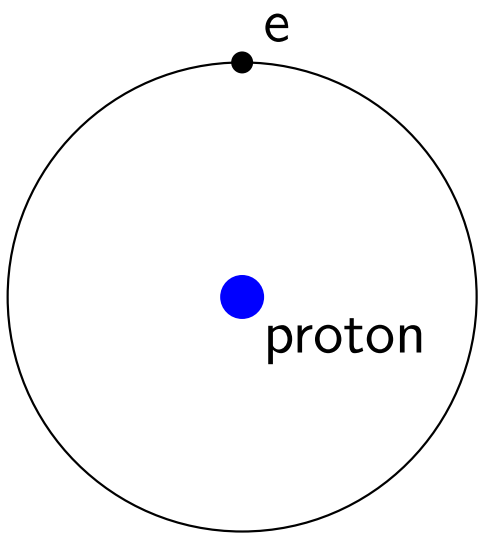




The number of valence electrons is related to the

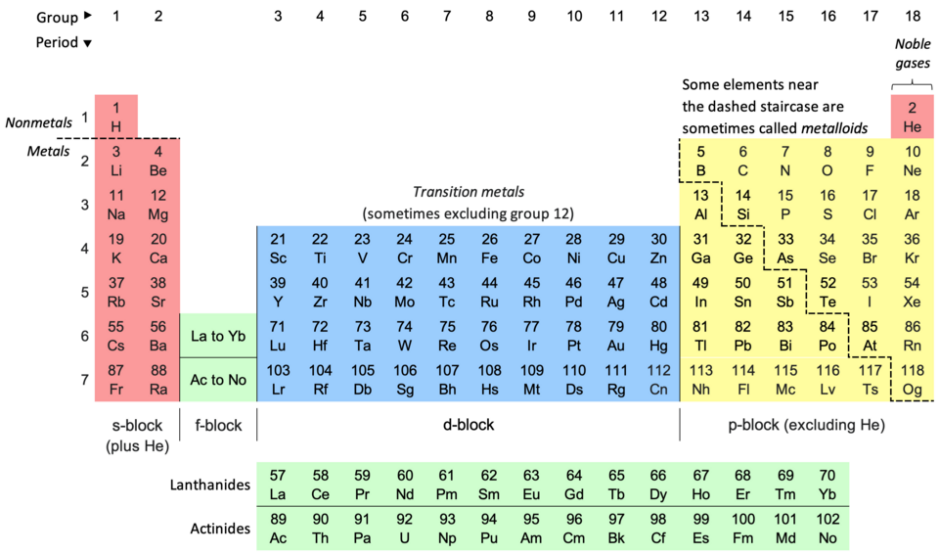
Valence Electrons

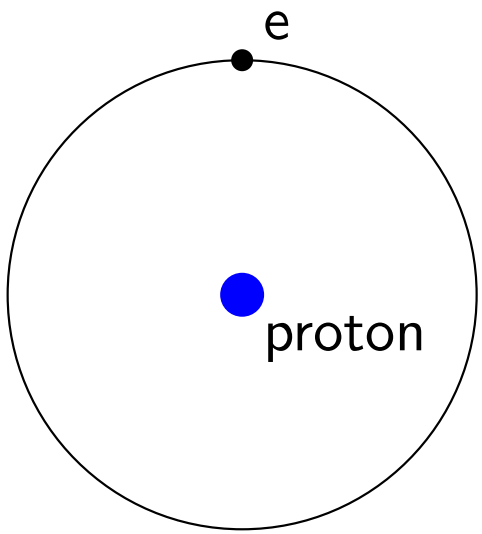




The number of valence electrons is related to the group number.

Valence Electrons

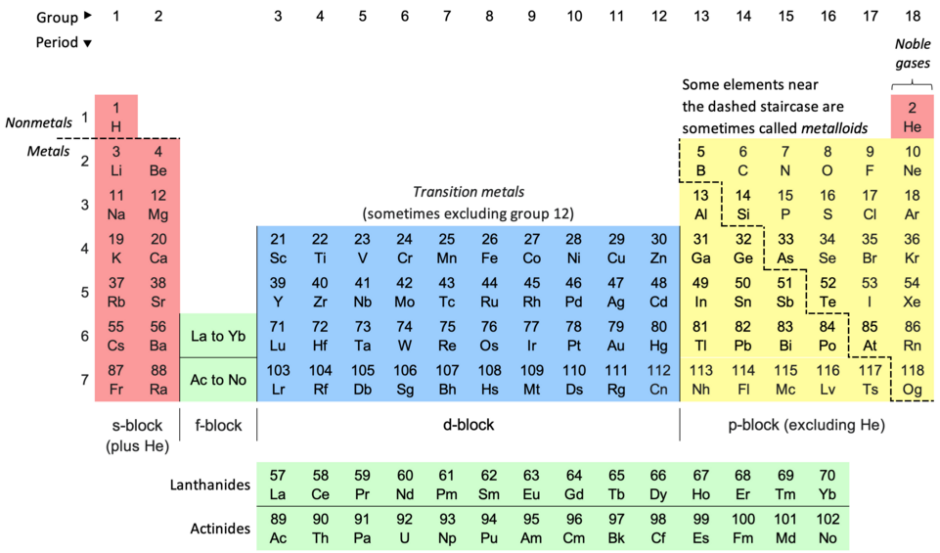


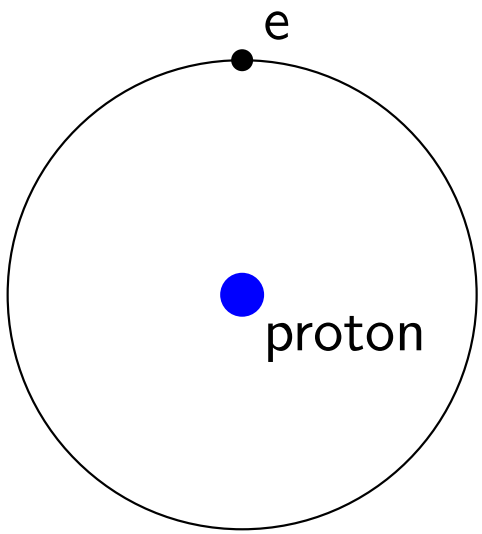


For atoms in groups and the number of are equal to the group number.

For atoms in groups to the number of are equal to the group number minus 10.

Valence Electrons

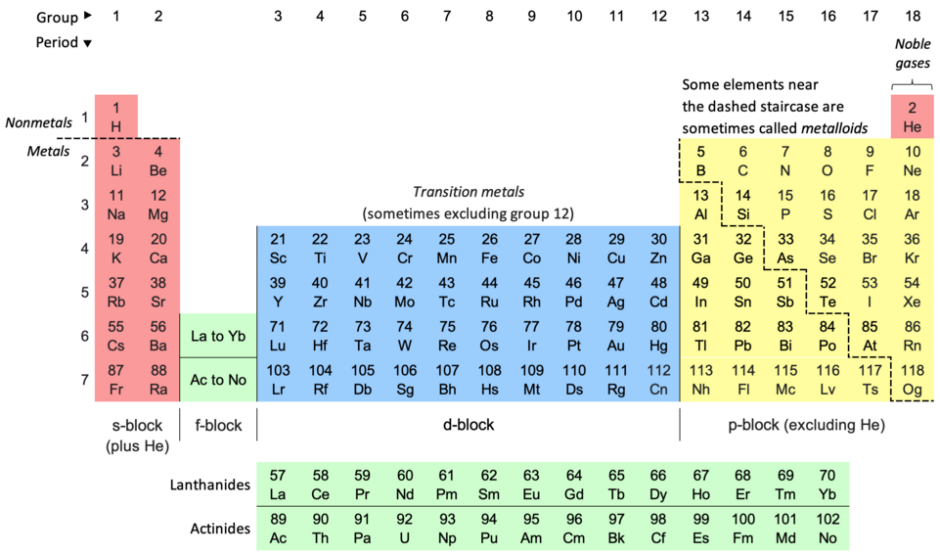


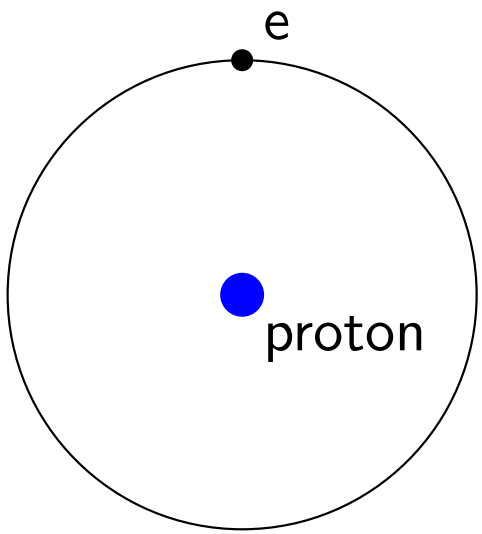


For atoms in groups one and the number of are equal to the group number.

For atoms in groups to the number of are equal to the group number minus 10.

Valence Electrons

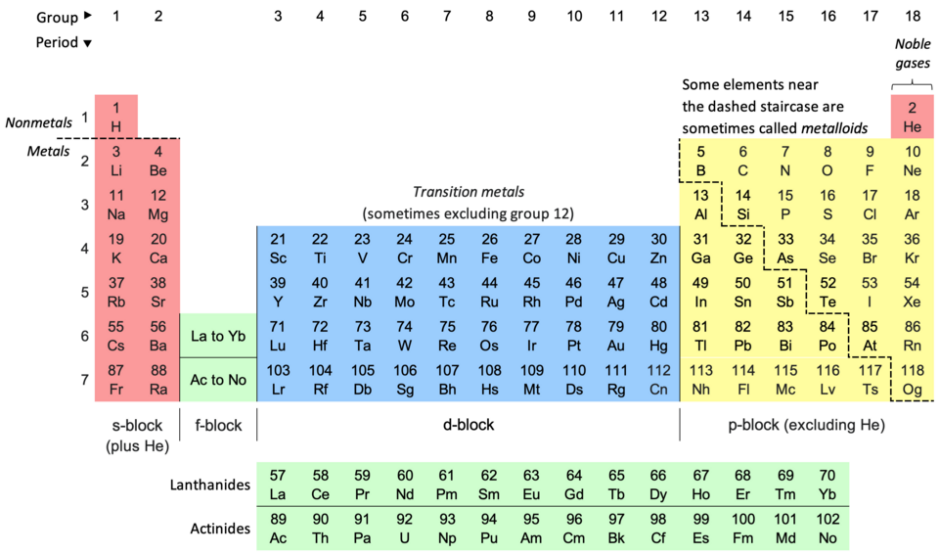


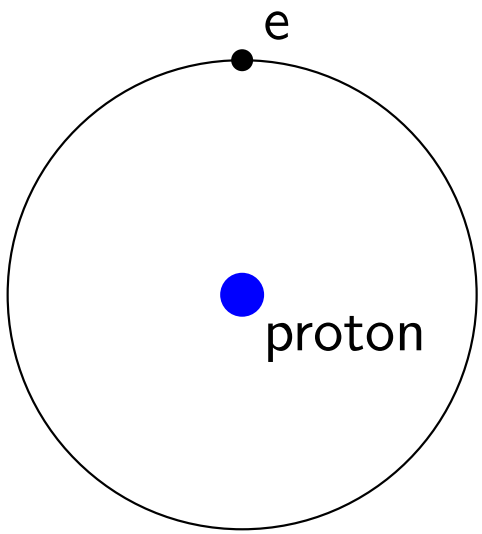


For atoms in groups one and two, the number of are equal to the group number.

For atoms in groups to the number of are equal to the group number minus 10.

Valence Electrons

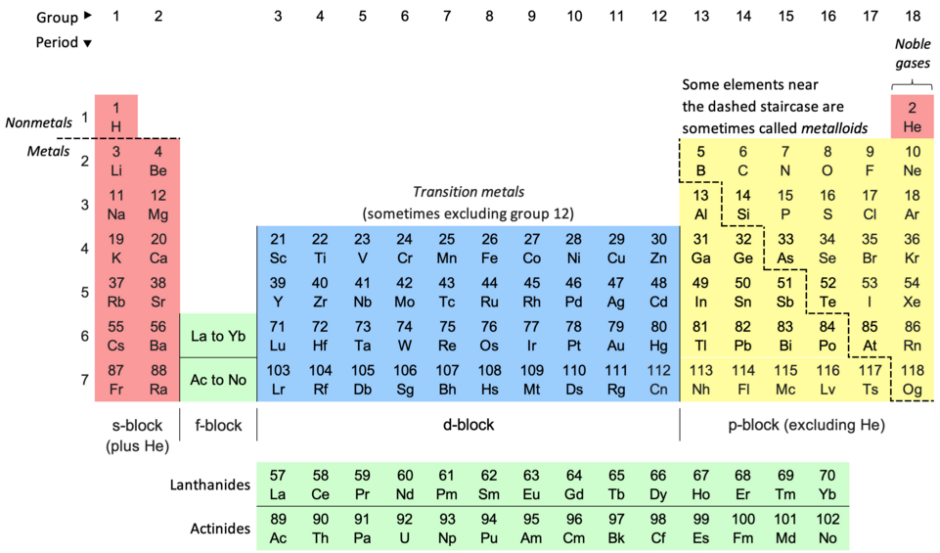


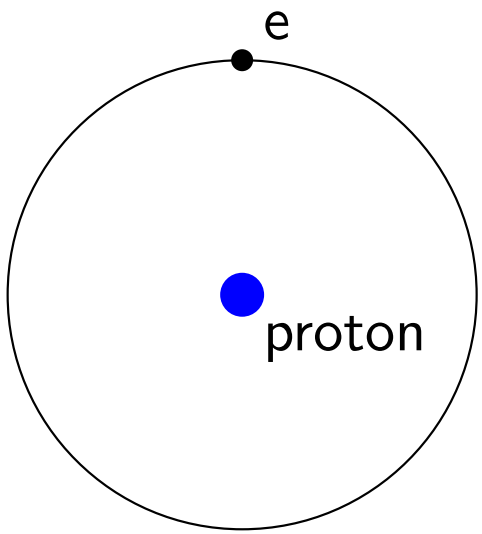


For atoms in groups one and two, the number of valence electrons are equal to the group number.

For atoms in groups to the number of are equal to the group number minus 10.

Valence Electrons

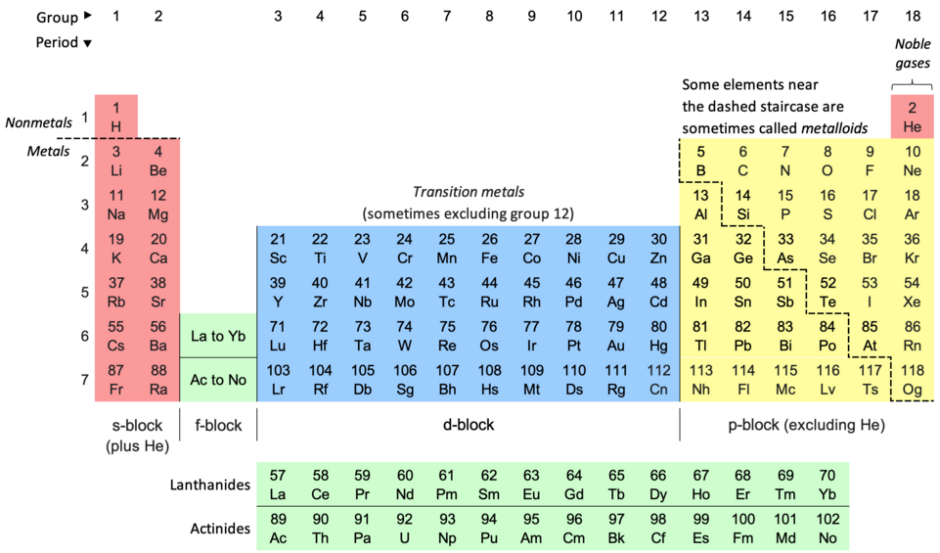


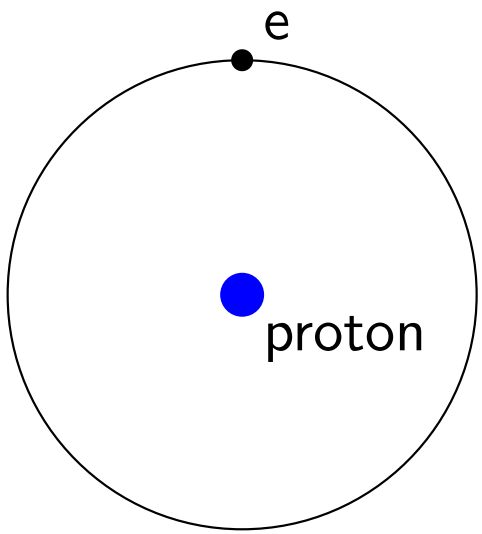


For atoms in groups one and two, the number of valence electrons are equal to the group number.

For atoms in groups 13 to the number of are equal to the group number minus 10.

Valence Electrons

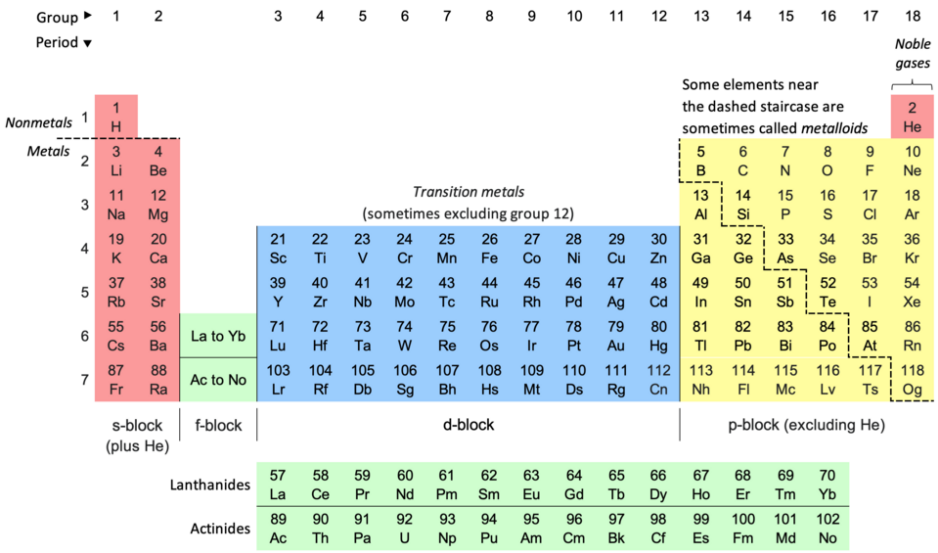


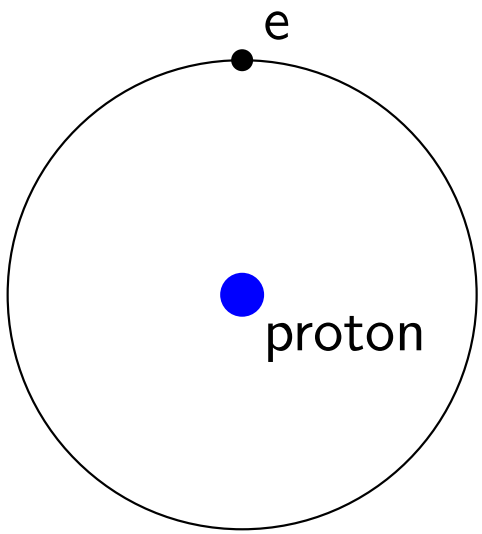


For atoms in groups one and two, the number of valence electrons are equal to the group number.

For atoms in groups 13 to 18, the number of are equal to the group number minus 10.

Valence Electrons



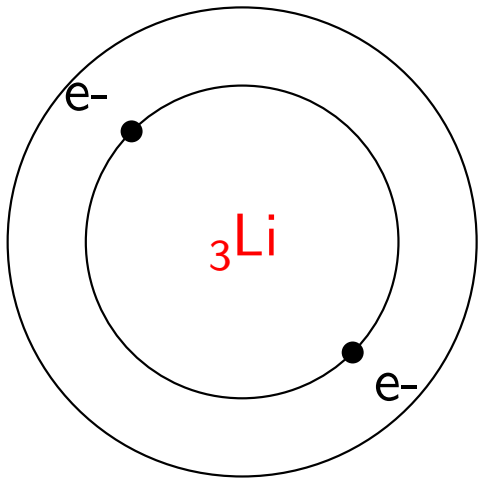


For atoms in groups one and two, the number of valence electrons are equal to the group number.

For atoms in groups 13 to 18, the number of valence electrons are equal to the group number minus 10.

Valence Electrons of Li

Group ▸	1	2		3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Period ▾																			*Noble gases*
Nonmetals 1	1 H													Some elements near the dashed staircase are sometimes called *metalloids*					2 He
Metals 2	3 Li	4 Be												5 B	6 C	7 N	8 O	9 F	10 Ne
3	11 Na	12 Mg						*Transition metals* (sometimes excluding group 12)						13 Al	14 Si	15 P	16 S	17 Cl	18 Ar
4	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
5	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
6	55 Cs	56 Ba	La to Yb	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
7	87 Fr	88 Ra	Ac to No	103 Lr	104 Rf	105 Db	106 Sg	107 Bh	108 Hs	109 Mt	110 Ds	111 Rg	112 Cn	113 Nh	114 Fl	115 Mc	116 Lv	117 Ts	118 Og
	s-block (plus He)		f-block	d-block										p-block (excluding He)					
Lanthanides				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		
Actinides				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		



Valence Electrons of Li