

H																	He				
Li	Be															B	C	N	O	F	Ne
Na	Mg															Al	Si	P	S	Cl	Ar
K	Ca	Sc	Ti	V	Cr	Mn	Fe	Co	Ni**	Cu	Zn	Ga	Ge	As	Se	Br	Kr				
Rb	Sr	Y	Zr	Nb	Mo	Tc	Ru	Rh	Pd	Ag	Cd	In	Sn	Sb	Te	I	Xe				
Cs	Ba	Lu	Hf	Ta	W	Re	Os	Ir	Pt	Au	Hg	Tl	Pb	Bi	Po	At	Rn				
Fr	Ra	Lr	Rf	Db	Sg	Bh	Hs	Mt													

La	Ce	Pr	Nd	Pm	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb
Ac	Th	Pa	U	Np	Pu	Am	Cm	Bk	Cf	Es	Fm	Md	No

H	1s ¹											He	1s ²						
Li	2s ¹	Be	2s ²									Ne							
Na	3s ¹	Mg	3s ²									Ar							
K	4s ¹	Ca	4s ²	Sc	Ti	V	Cr	Mn	Fe	Co	Ni ^{**}	Cu	Zn	Ga	Ge	As	Se	Br	Kr
Rb	5s ¹	Sr	5s ²	Y	Zr	Nb	Mo	Tc	Ru	Rh	Pd	Ag	Cd	In	Sn	Sb	Te	I	Xe
Cs	6s ¹	Ba	6s ²	Lu	Hf	Ta	W	Re	Os	Ir	Pt	Au	Hg	Tl	Pb	Bi	Po	At	Rn
Fr	7s ¹	Ra	7s ²	Lr	Rf	Db	Sg	Bh	Hs	Mt									

La	Ce	Pr	Nd	Pm	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb
Ac	Th	Pa	U	Np	Pu	Am	Cm	Bk	Cf	Es	Fm	Md	No

H	1s ¹											He	1s ²				
Li	2s ¹	Be	2s ²											Ne	2p ⁶		
Na	3s ¹	Mg	3s ²											Ar	3p ⁶		
K	4s ¹	Ca	4s ²	Sc	Ti	V	Cr	Mn	Fe	Co	Ni**	Cu	Zn	Ga	4p ¹	Br	4p ⁶
Rb	5s ¹	Sr	5s ²	Y	Zr	Nb	Mo	Tc	Ru	Rh	Pd	Ag	Cd	In	5p ¹	I	5p ⁶
Cs	6s ¹	Ba	6s ²	Lu	Hf	Ta	W	Re	Os	Ir	Pt	Au	Hg	Tl	6p ¹	At	6p ⁶
Fr	7s ¹	Ra	7s ²	Lr	Rf	Db	Sg	Bh	Hs	Mt							

La	Ce	Pr	Nd	Pm	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb
Ac	Th	Pa	U	Np	Pu	Am	Cm	Bk	Cf	Es	Fm	Md	No

H	1s ¹	He	1s ²
Li	2s ¹	Be	2s ²
Na	3s ¹	Mg	3s ²
K	4s ¹	Ca	4s ²
Rb	5s ¹	Sr	5s ²
Cs	6s ¹	Ba	6s ²
Fr	7s ¹	Ra	7s ²
		Sc	3d ¹
		Ti	3d ²
		V	3d ³
		Cr	3d ⁴
		Mn	3d ⁵
		Fe	3d ⁶
		Co	3d ⁷
		Ni**	3d ⁸
		Cu	3d ⁹
		Zn	3d ¹⁰
		Y	4d ¹
		Zr	
		Nb	
		Mo	
		Tc	
		Ru	
		Rh	
		Pd	
		Ag	
		Cd	
		Lu	5d ¹
		Hf	
		Ta	
		W	
		Re	
		Os	
		Ir	
		Pt	
		Au	
		Hg	
		Lr	6d ¹
		Rf	
		Db	
		Sg	
		Bh	
		Hs	
		Mt	
		Tl	6p ¹
		Pb	
		Bi	
		Po	
		At	
		Rn	
		Sn	5p ¹
		Sb	
		Te	
		I	
		Xe	
		Br	4p ¹
		Se	
		As	
		Ge	
		Ga	
		Al	3p ¹
		Si	
		P	
		S	
		Cl	
		Ar	
		F	2p ⁵
		O	
		N	
		C	
		B	
		Ne	2p ⁶
		He	1s ²

La	Ce	Pr	Nd	Pm	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb
Ac	Th	Pa	U	Np	Pu	Am	Cm	Bk	Cf	Es	Fm	Md	No

He	$1s^2$				
Ne	F	O	N	C	B
$2p^6$	$2p^5$	$2p^4$	$2p^3$	$2p^2$	$2p^1$
Ar	Cl	S	P	Si	Al
$\rightarrow 3p^6$			$3p^3$	$3p^2$	$3p^1$
Kr	Br	Se	As	Ge	Ga
$\rightarrow 4p^6$					$4p^1$
Xe	I	Te	Sb	Sn	In
$\rightarrow 5p^6$					$5p^1$
Rn	At	Po	Bi	Pb	Tl
$\rightarrow 6p^6$					$6p^1$

H	$1s^1$													
Li	Be													
$2s^1$	$2s^2$													
Na	Mg													
$3s^1$	$3s^2$													
K	Ca	Sc	Ti	V	Cr	Mn	Fe	Co	Ni**	Cu	Zn			
$4s^1$	$4s^2$	$3d^1$	$3d^2$	$3d^3$	$3d^4$	$3d^5$	$3d^6$	$3d^7$	$3d^8$	$3d^9$	$3d^{10}$			
Rb	Sr	Y	Zr	Nb	Mo	Tc	Ru	Rh	Pd	Ag	Cd			
$5s^1$	$5s^2$	$4d^1$								$\rightarrow 4d^{10}$				
Cs	Ba	Lu	Hf	Ta	W	Re	Os	Ir	Pt	Au	Hg			
$6s^1$	$6s^2$	$5d^1$								$\rightarrow 5d^{10}$				
Fr	Ra	Lr	Rf	Db	Sg	Bh	Hs	Mt						
$7s^1$	$7s^2$	$6d^1$								$\rightarrow 6d^{10}$				

La	Ce	Pr	Nd	Pm	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb
$4f^1$	$4f^2$	$4f^3$	$4f^4$	$4f^5$	$4f^6$	$4f^7$	$4f^8$	$4f^9$	$4f^{10}$	$4f^{11}$	$4f^{12}$	$4f^{13}$	$4f^{14}$
Ac	Th	Pa	U	Np	Pu	Am	Cm	Bk	Cf	Es	Fm	Md	No
$5f^1$												$\rightarrow 5f^{14}$	$5f^{14}$

Alkali Metals

Alkaline Earth Metals

H	1s ¹
Li	2s ¹
Na	3s ¹
K	4s ¹
Rb	5s ¹
Cs	6s ¹
Fr	7s ¹

Be	2s ²
Mg	3s ²
Ca	4s ²
Sr	5s ²
Ba	6s ²
Ra	7s ²

Sc	3d ¹
Y	4d ¹
Lu	5d ¹
Lr	6d ¹

Ti	3d ²
Zr	
Hf	
Rf	

V	3d ³
Nb	
Ta	
Db	

Cr	3d ⁴
Mo	
W	
Sg	

Mn	3d ⁵
Tc	
Re	
Bh	

Fe	3d ⁶
Ru	
Os	
Hs	

Co	3d ⁷
Rh	
Ir	
Mt	

Ni**	3d ⁸
Pd	
Pt	

Cu	3d ⁹
Ag	
Au	

Zn	3d ¹⁰
Cd	
Hg	

He	1s ²
Ne	2p ⁶
Ar	3p ⁶
Kr	4p ⁶
Xe	5p ⁶
Rn	6p ⁶

Noble Gases (inert)

Boron Group

Carbon Group

Nitrogen Group

Oxygen Group

Halogens

La	4f	Ce	4f ²	Pr	4f ³	Nd	4f ⁴	Pm	4f ⁵	Sm	4f ⁶	Eu	4f ⁷	Gd	4f ⁷	Tb	4f ⁹	Dy	4f ¹⁰	Ho	4f ¹¹	Er	4f ¹²	Tm	4f ¹³	Yb	4f ¹⁴
Ac	5f ¹	Th		Pa		U		Np		Pu		Am		Cm		Bk		Cf		Es		Fm		Md		No	5f ⁴

Metals ← Main Group




Noble Gases (inert)

Boron Group
Carbon Group
Nitrogen Group
Oxygen Group
Halogens

Li 2s ¹	Be 2s ²	B 2p ¹	C 2p ²	N 2p ³	O 2p ⁴	F 2p ⁵	Ne 2p ⁶				
Na 3s ¹	Mg 3s ²	Al 3p ¹	Si 3p ²	P 3p ³	S 3p ⁴	Cl 3p ⁵	Ar 3p ⁶				
K 4s ¹	Ca 4s ²	Sc 3d ¹	Ti 3d ²	V 3d ³	Cr 3d ⁴	Mn 3d ⁵	Fe 3d ⁶	Co 3d ⁷	Ni 3d ⁸	Cu 3d ⁹	Zn 3d ¹⁰
Rb 5s ¹	Sr 5s ²	Y 4d ¹	Zr 4d ²	Nb 4d ³	Mo 4d ⁴	Tc 4d ⁵	Ru 4d ⁶	Rh 4d ⁷	Pd 4d ⁸	Ag 4d ⁹	Cd 4d ¹⁰
Cs 6s ¹	Ba 6s ²	Lu 5d ¹	Hf 5d ²	Ta 5d ³	W 5d ⁴	Re 5d ⁵	Os 5d ⁶	Ir 5d ⁷	Pt 5d ⁸	Au 5d ⁹	Hg 5d ¹⁰
Fr 7s ¹	Ra 7s ²	Lr 6d ¹	Rf 6d ²	Db 6d ³	Sg 6d ⁴	Bh 6d ⁵	Hs 6d ⁶	Mt 6d ⁷			

Non-Metals - above + right of stairs
Metals - below + left of stairs

Transition Metals

-  Diatomic Gases
-  Monatomic Gases
-  Liquids

La 4f ¹	Ce 4f ²	Pr 4f ³	Nd 4f ⁴	Pm 4f ⁵	Sm 4f ⁶	Eu 4f ⁷	Gd 4f ⁸	Tb 4f ⁹	Dy 4f ¹⁰	Ho 4f ¹¹	Er 4f ¹²	Tm 4f ¹³	Yb 4f ¹⁴
Ac 5f ¹	Th 5f ²	Pa 5f ³	U 5f ⁴	Np 5f ⁵	Pu 5f ⁶	Am 5f ⁷	Cm 5f ⁸	Bk 5f ⁹	Cf 5f ¹⁰	Es 5f ¹¹	Fm 5f ¹²	Md 5f ¹³	No 5f ¹⁴

Rare Earth Metals

Main Group

Noble Gases (inert)

Halogens
Oxygen Group
Nitrogen Group
Carbon Group
Boron Group

He	Ne	Ar	Kr	Xe	Rn												
H	Li	Be	B	C	N	O	F	Ne									
Na	Mg	Al	Si	P	S	Cl	Ar	K									
K	Ca	Sc	Ti	V	Cr	Mn	Fe	Co	Ni	Cu	Zn	Ga	Ge	As	Se	Br	Kr
Rb	Sr	Y	Zr	Nb	Mo	Tc	Ru	Rh	Pd	Ag	Cd	In	Sn	Sb	Te	I	Xe
Cs	Ba	Lu	Hf	Ta	W	Re	Os	Ir	Pt	Au	Hg	Tl	Pb	Bi	Po	At	Rn
Fr	Ra	Lr	Rf	Db	Sg	Bh	Hs	Mt									

Non-Metals - above + right of stairs
Metals - below + left of stairs

Transition Metals

Li	Be	Sc	Ti	V	Cr	Mn	Fe	Co	Ni	Cu	Zn				
2s ¹	2s ²	3d ¹	3d ²	3d ³	3d ⁴	3d ⁵	3d ⁶	3d ⁷	3d ⁸	3d ⁹	3d ¹⁰				
Na	Mg	Ca	Sr	Rb	K	Ca	Sr	Rb	K	Ca	Sr				
3s ¹	3s ²	4s ¹	4s ²	5s ¹	5s ²	6s ¹	6s ²	7s ¹	7s ²	8s ¹	8s ²				
Y	Zr	Nb	Mo	Tc	Ru	Rh	Pd	Ag	Cd	In	Sn	Sb	Te	I	Xe
4d ¹	4d ²	4d ³	4d ⁴	4d ⁵	4d ⁶	4d ⁷	4d ⁸	4d ⁹	4d ¹⁰	5d ¹	5d ²	5d ³	5d ⁴	5d ⁵	5d ⁶
Lu	Hf	Ta	W	Re	Os	Ir	Pt	Au	Hg	Tl	Pb	Bi	Po	At	Rn
5d ¹	5d ²	5d ³	5d ⁴	5d ⁵	5d ⁶	5d ⁷	5d ⁸	5d ⁹	5d ¹⁰	6d ¹	6d ²	6d ³	6d ⁴	6d ⁵	6d ⁶
Lr	Rf	Db	Sg	Bh	Hs	Mt									
6d ¹	6d ²	6d ³	6d ⁴	6d ⁵	6d ⁶	6d ⁷	6d ⁸	6d ⁹	6d ¹⁰	7d ¹	7d ²	7d ³	7d ⁴	7d ⁵	7d ⁶

Diatomic Gases

Monatomic Gases

Liquids

Rare Earth Metals

La	Ce	Pr	Nd	Pm	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb
4f ¹	4f ²	4f ³	4f ⁴	4f ⁵	4f ⁶	4f ⁷	4f ⁸	4f ⁹	4f ¹⁰	4f ¹¹	4f ¹²	4f ¹³	4f ¹⁴
Ac	Th	Pa	U	Np	Pu	Am	Cm	Bk	Cf	Es	Fm	Md	No
5f ¹	5f ²	5f ³	5f ⁴	5f ⁵	5f ⁶	5f ⁷	5f ⁸	5f ⁹	5f ¹⁰	5f ¹¹	5f ¹²	5f ¹³	5f ¹⁴

Shells

K L M N O P Q

P

f

d

s