

Periodic Table of the Elements

**an elements position on the
periodic table gives indications
of its various physical and
chemical properties**

Metals, Nonmetals and Metalloids

Group	1	2		3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
	1A	2A		3B	4B	5B	6B	7B	8B			1B	2B	3A	4A	5A	6A	7A	8A
Period																			
1	1 H																		2 He
2	3 Li	4 Be												5 B	6 C	7 N	8 O	9 F	10 Ne
3	11 Na	12 Mg												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	*	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	**	103 Lr	104 Rf	105 Db	106 Sg	107 Bh	108 Hs	109 Mt	110 Uun	111 Uuu	112 Uub	113 Uut	114 Uuq	115 Uup	116 Uuh	117 Uus	118 Uuo
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		

← Metals
Metalloids
→ Nonmetals

In chemical reactions **metals** tend to lose electrons to **nonmetals**

metals

**good conductors of heat
and electricity**

malleable

ductile

lustrous

**tend to lose
electrons in
chemical reactions**

nonmetals

poor conductors

brittle

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**tend to gain
electrons in
chemical reactions**

Specific Groups

Main groups

group numbers indentified by suffix A

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5	37 Rb	38 Sr											49 In	50 Sn	51 Sb	52 Te	53 I	54 Xe
6	55 Cs	56 Ba											81 Tl	82 Pb	83 Bi	84 Po	85 At	86 Rn
7	87 Fr	88 Ra											113 Uut	114 Uuq	115 Uup	116 Uuh	117 Uus	118 Uuo

Main group metals

Alkali metals



Alkaline earth metals



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4	19 K	20 Ca																
5	37 Rb	38 Sr																
6	55 Cs	56 Ba																
7	87 Fr	88 Ra																

13 Al			
31 Ga	32 Ge		
49 In	50 Sn	51 Sb	
81 Tl	82 Pb	83 Bi	84 Po

Actinides

Lanthanides

transition metals

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Electronegativity

Electronegativity

measure of an elements ability to attract electrons toward itself when bonded to another element

An electronegative element attracts electrons.

An electropositive element releases electrons.

Electronegativity

Increases from left to right in periodic table.

Decreases going down a group.

Fluorine is the most electronegative element.

Francium is the least electronegative element.

decreasing
electronegativity

Increasing electronegativity



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Pauling Electronegativity Scale

4.0 is maximum (F)

Second period of periodic table

Li	Be	B	C	N	O	F
1.0	1.5	2.0	2.5	3.0	3.5	4.0

Pauling Electronegativity Scale

Li	Be	B	C	N	O	F
1.0	1.5	2.0	2.5	3.0	3.5	4.0
Na	Mg	Al	Si	P	S	Cl
0.9	1.2	1.5	1.8	2.1	2.5	3.0

Points about electronegativity

in general:

the greater the difference in electronegativity between two bonded atoms, the more polar the bond

electronegativity concept is more often applied in a qualitative sense than a quantitative one