

# Groups and Families of the Periodic Table

ALKALI METALS	ALKALINE EARTH METALS	TRANSITION METALS		OTHER NON-METALS METALLOIDS METALS	HALOGENS	NOBLE GASES
Member Elements	Member Elements	Member Elements		Member Elements	Member Elements	Member Elements
Li, Na, K, Rb, Cs, Fr	Be, Mg, Ca, Sr, Ba, Ra			Non-Metals-H, N, O, S, P, Se Metals-Al, Ga, In, Tl, Uuq, Pb, Sn, Bi Metalloids- B, C, Si, Ge, As, Sb, Te, Po, At	F, Cl, Br, I, At	He, Ne, Ar, Kr, Xe, Rn
Electron Configuration Characteristic	Electron Configuration Characteristic	D-Filling		Electron Configuration Characteristic	Electron Configuration Characteristic	Electron Configuration Characteristic
(1-7)s <sup>1</sup>	(1-7)s <sup>2</sup>	(3-6)d(1-10)		(2-6)p <sup>(1-4)</sup>	(2-6)p <sup>5</sup>	(2-6)p <sup>6</sup> Except He - 1s <sup>2</sup>
Relative Reactivity	Relative Reactivity	Electron Configuration Characteristic		Relative Reactivity	Relative Reactivity	Relative Reactivity
High reactivity, react with nonmetals,	Less reactive, 2 e <sup>-</sup> must be lost	Relative Reactivity		depends on the metal with which they are reacting	high reactivity, esp. with alkali and alkaline	for the most part, no reactivity
Properties	Properties	Properties		Properties	Properties	Properties
lower densities than other metals one loosely bound valence e <sup>-</sup> large atomic radii low ionization energy low electronegativity Highly reactive	two electrons in outer shell low electron affinities low electronegativities readily form divalent cations	low reaction, almost none. man electrons must be lost - leads to high boiling and melting points		electronegativities between those of metals and nonmetals ionization energies between those of metals and nonmetals possess some characteristics of metals/ some of nonmetals reactivity depends on properties of other elements in reaction often make good semiconductors	very high electronegativities seven valence electrons (on short of a stable octet)	fairly nonreactive complete valence shell high ionization energy very low electronegativities low boiling points (all gases at room temperature)
		low ionization energies positive oxidation states very hard high melting points high boiling points high electrical conductivity malleable five d orbitals become more filled, from left to right				

	Member Elements	Electron Configuration Characteristic	Relative Reactivity	Properties
<b>LANTHANIDES</b>	Ce, Pr, Nd, Pm, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb, Lu	4f <sup>(1-14)</sup>	highly reactive	shiny in luster tarnish when exposed to air relatively soft
<b>ACTINIDES</b>	Th, Pa, U, Np, Pu, Am, Cm, Bk, Cf, Es, Fm, Md, No, Lr	5f <sup>(1-14)</sup>	highly reactive due to unstable nuclei	radioactive highly electropositive tarnish readily in air dense metals combine most directly with nonmetals