PERIODIC TABLE DR. SMITA SURESH GIRI 9881423750 smitagiri2012@gmail.com

Reihen $\frac{11}{R^2O}$ $\frac{11}{RO}$ $\frac{11}{R^2O^3}$ $\frac{11}{RO^2}$ $\frac{11}{R^2O^3}$ $\frac{11}{RO^2}$ $\frac{11}{R^2O^3}$ $\frac{11}{RO^3}$ $\frac{11}{R^2O^7}$ $\frac{11}{RO^4}$ 1 $\frac{11}{Li=7}$ $Be=9,4$ $B=11$ $C=12$ $N=14$ $O=16$ $F=19$ 3 $Na=23$ $Mg=24$ $AI=27,3$ $Si=28$ $P=31$ $S=32$ $CI=35,5$ 4 $K=39$ $Ca=40$ $-=44$ $Ti=48$ $V=51$ $Cr=52$ $Mn=55$ $Fe=56, Co=59$ 5 $(Cu=63)$ $Zn=65$ $-=68$ $-=72$ $As=75$ $Se=78$ $Br=80$ $Ni=59, Cu=63.$ 6 $Rb=85$ $Sr=87$ $?Yt=88$ $Zr=90$ $Nb=94$ $Mo=96$ $-=100$ $Ru=104, Rh=104$ 7 $(Ag=108)$ $Cd=112$ $In=113$ $Sn=118$ $Sb=122$ $Te=125$ $J=127$ $Pd=106, Ag=108$ 7 $(Ag=108)$ $Cd=112$ $In=113$ $Sn=118$ $Sb=122$ $Te=125$ $J=127$ $Pd=106, Ag=108$ 9 $(-)$ $ Te=778$ $2La=180$ $Ta=182$ $W=184$ $ Os=195, Ir=197, Pt=198, Au=199$ 11 $(Au=199)$ $Hg=200$ $TI=204$ $Pb=207$ $Bi=208$ $U=247$ $MeEA2EEBA$ $\mathcal{A}L=2L+1$ $\mathcal{A}L=2$		Gruppe L	Gruppe II.	Gruppe III.	Gruppe IV.	Gruppe V.	Gruppe VI.	Gruppe VII.	Gruppe VIII.	
Reihen $\mathbb{R}^2 O$ $\mathbb{R} O$ $\mathbb{R}^2 O^3$ $\mathbb{R} O^2$ $\mathbb{R}^2 O^3$ $\mathbb{R} O^3$ $\mathbb{R}^2 O^7$ $\mathbb{R} O^4$ 1H=1H=1H=1C=12N=14 $O=16$ F=19 $\mathbb{R}^2 O^3$ $\mathbb{R} O^4$ 3Na=23Mg=24AI=27,3Si=28P=31S=32 $\mathbb{C}I=35,5$ $\mathbb{N}i=59, \mathbb{C}u=63.$ 4K=39 $\mathbb{C}a=40$ $-=44$ Ti=48V=51 $\mathbb{C}r=52$ $\mathbb{M}n=55$ $\mathbb{P}e=56, \mathbb{C}o=59, \mathbb{N}i=59, \mathbb{C}u=63.$ 5($\mathbb{C}u=63$) $\mathbb{Z}n=65$ $-=68$ $-=72$ $\mathbb{A}s=75$ $\mathbb{S}e=78$ $\mathbb{B}r=80$ 6Rb=85 $Sr=87$?Yt=88 $\mathbb{Z}r=90$ Nb=94Mo=96 $-=100$ $\mathbb{R}u=104, \mathbb{R}h=104, \mathbb{P}d=106, \mathbb{A}g=108$ 7(Ag=108) $\mathbb{C}d=112$ In=113 $Sn=118$ $Sb=122$ $Te=125$ $J=127$ $Pd=106, \mathbb{A}g=108$ 8 $\mathbb{C}s=133$ $\mathbb{B}a=137$?Di=138?Ce=140 $ -$ 9(-) $-$?Er=178?La=180Ta=182 $W=184$ $ -$ 11(Au=199)Hg=200TI=204Pb=207Bi=208 $U=246$ $\mathbb{C}TOAETME INEPMOAM4ECKOFO 3AKCM=2p_{14}\mathcal{A}=2p_{14}\mathcal{A}=2p_{14}\mathcal{A}=2p_{14}\mathcal{A}=2p_{14}\mathcal{A}=2p_{14}\mathcal{A}=2p_{14}\mathcal{A}=2p_{14}\mathcal{A}=2p_{14}\mathcal{A}=2p_{14}\mathcal{A}=2p_{14}\mathcal{A}=2p_{14}\mathcal{A}=2p_{14}\mathcal{A}=2p_{14}\mathcal{A}=2p_{14}\mathcal{A}=2p_{14}$		-		_	RH ⁴	RH ³	RH ²	RH		
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	Reihen	R ² O	RO	R^2O^3	RO ²	R ² O ⁵	RO ³	R ² O ⁷	RO ⁴	
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	1	H = 1			-stor-			Tree and	- Antiputs an	
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	2	Li = 7	Be = 9,4	B = 11	C = 12	N = 14	O = 16	F = 19	Chemical States	
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	3	Na = 23	Mg = 24	Al = 27,3	Si = 28	P = 31	S = 32	Cl = 35,5	and the second second	
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	4	K = 39	Ca = 40	-= 44	Ti = 48	V = 51	Cr = 52	Mn = 55	Fe = 56, Co = 59,	
	5	(Cu = 63)	Zn = 65	-= 68	-=72	As = 75	Se = 78	Br = 80	$N_1 = 59$, $Cu = 63$.	
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	6	Rb = 85	Sr = 87	?Yt = 88	Zr = 90	Nb = 94	Mo = 96	-= 100	Ru = 104, Rh = 104,	
$\frac{1}{9} (x_{B} = 133) (x_{B} = 137) (x_{B} = 138) (x_{B} = 140) (x$	-	$(A\sigma = 108)$	Cd = 112	In = 113	Sn = 118	Sh = 122	Te = 125	I = 127	Pd = 106, Ag = 108	
$ \begin{array}{c} 9 \\ 10 \\ 11 \\ (Au = 199) \\ 11 \\ (Au = 199) \\ - \\ - \\ - \\ - \\ - \\ - \\ - \\ - \\ - \\ $	8	$C_{s} = 133$	Ba = 137	2Di = 138	2Ce = 140	-	-	_		
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	9	(-)	-	-	-	-	-	-	and the second second	
11 $(Au = 199)$ $Hg = 200$ $TI = 204$ $Pb = 207$ $Th = 231$ $Bi = 208$ $U = 240$ $CTOAETHE REPHOAMUSCKOFO 3AKO AMMEHAEAEEBA Al = 2l + 4 g_{2} = 686y f_{MV} = 106/13 g_{2} = 600 g_{2} = 60$	10	-	-	?Er = 178	?La = 180	Ta = 182	W = 184	-	Os = 195, Ir = 197,	
$\frac{11}{1} + \frac{1}{1} + 1$	11 30	(An = 100)	Ha = 200	TI - 204	Ph - 207	D: - 208	training and		Pt = 198, Au = 199	
Al-24: S2 = 6869 SHUE = 116/13 Al-24: S2 = 6869 SHUE = 116/13 IOVITA CCCP 1969 C	11	f(Au = 199)	Hg = 200	11=204	P0 = 207 Th = 231	BI = 208	11 = 240	CTOALTIN	TERMONINECK	
А <i>l</i> =2 <i>f</i> : <i>g</i> : =6869 <i>y</i> :us=11613 ПОЧТА СССР 1969 С	1000	Contraction of		12-16-55		A STATE OF		А.И.МЕНА	EAEEBA	OIO SARO
98 = 6869 5441 = 116/13 TIOYTA CCCP 1969 6							1	Al=9h	4 1000	ha
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TIOYTA CCCP 1969 G		-						Ja -00	0 ⁹ 🕤 🖉 🖓	
								Jur Ello	13 1 (18)	
								4		
IIO4TA CCCP 1969 6						26		-	IN IT	
ПОЧТА СССР 1969 О								TO DOM DOCHES		SIC
	1 de	-						ПОЧТ	A CCCP19	690
		<u>6</u> .								
	1	10								
	and a	12								
	2421									

PERIODIC PROPERTIES

• When elements are arranged in order of increasing atomic number, certain sets of properties recur periodically.

WHAT ARE THESE PROPERTIES?

- Metallic, nonmetallic and metalloid properties
- Atomic radius
- Ionization energies (energy necessary to remove the outermost electron from the atom)
- Electron affinities (energy change when an electron is added to a neutral atom)
- Reactivity
- Electronegativity

More nonmetallic character

More negative electron affinity

Increasing ionization energy



Increasing atomic radius

More metallic character

MODERN PERIODIC TABLE

GROUPS

	1 1 H	2		I	Met	als	M	etallo	ids	N	onme	etals		13	14	15	16	17	18 2 He
	3 Li	4 Be												5 B	6 C	7 N	8 0	9 F	10 Ne
	11 Na	12 Mg	_	3	4	5	6	7	8	9	10	11	12	13 Al	14 Si	15 P	16 S	17 CI	18 Ar
►	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 Rh	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	54 Xe
	55 Cs	56 Ba		71	72 Hf	73 Ta	74 W	75 Re	76 0s	77 Jr	78 Pt	79 Au	80 Hg	81 TI	82 Ph	83 Bi	84 Po	85 At	86 Rn
	87 Fr	88 Ra	t	103 Lr	104 Rf	105 Db	106 Sg	107 Bh	108 Hs	 109 Mt	110 Ds	111 Rg	112 Uub	113	114	115	116	117	118
	Lanth series	anide	l	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		
	Actini series	ide		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		

PERIODS

Modern Periodic Table

1 1A																	18 8A
	Þ											13 3A	14 4A	15 5A	16 6A	17 7A	2 He
ii.	ali											5 B	6 C	7 N	8 0	i	1) Ne
Alka	Ear	3 3B	4 4B	5 5B	6 6B	7 7B	8	9 	10	11 1B	12 2B	13 Al	14 51	15 P	16 S		Nob
ii M	th M	21 Sc	22 Ti	Per	iod	25 Mn	26 Fe	27 Co	28 Ni	29 Cu	30 Zn	31 Ga	Gro	33 As	34 Se	Halo	ole (
etal	eta	39 ¥	40 Zr	41 Nb	42 Mo	43 Tc	44 Ru	45 Rh	46 Pd	47 Ag	48 Cd	49 In	quo	51 Sb	52 Te	gen	Gas
55 Cs	5) Ba	57 La	72 Hf	73 Ta	74 W	75 Re	76 Os	77 Ir	78 Pt	79 Au	80 Hg	81 TI	82 Fb	83 Bi	84 Po	85 At	85 Rn
87 Hr	8 RA	89 Ac	104 Rf	105 Db	106 Sg	107 Bh	108 Hs	109 Mt	110	ш	112	(113)	14	(115)	116	(1.7)	1.8
	1			69	50		61	62	63	64	65		67	69	60	20	71
	Meta	ls		Ce	Pr	Nd	Pm	Sm	Eu	Gd	ТЪ	Dy	Ho	Er	Tm	Yb	Lu
	Meta	lloids		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	103 Lr

Nonmetals

ELEMENT FAMILIES

- Elements can be divided into groups, or families.
- Each column of the periodic table contains one element family.
- Just as human family members often have similar looks and traits, members of element families have similar chemical properties because they have the same number of electrons in their outer energy levels.
- Hydrogen is usually considered separately, so the first element family begins with lithium and sodium in the first column.

Periodic Table of Elements Google Image Top Results





Noble Gases

- Neon and the elements below it in Group 18 have eight electrons in their outer energy levels.
- Their energy levels are stable, so they do not combine easily with other elements.



1 1A				Repres	entative ts			Zinc Cadiur Mercu	n ry								18 8A
1 H	2 2A			Noble	gases			Lantha	nides			13 3A	14 4A	15 5A	16 6A	17 7A	2 He
3 Li	4 Be			Transit metals	ion			Actinic	les			5 B	6 C	7 N	8 0	9 F	10 Ne
11 Na	12 Mg	3 3B	4 4B	5 5B	6 6B	7 7B	8	9 	10	11 1B	12 2B	13 Al	14 Si	15 P	16 S	17 Cl	18 Ar
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	57 La	72 Hf	73 Ta	74 W	75 Re	76 Os	77 Ir	78 Pt	79 Au	80 Hg	81 TI	82 Pb	83 Bi	84 Po	85 At	86 Rn
87 Fr	88 Ra	89 Ac	104 Rf	105 Db	106 Sg	107 Bh	108 Hs	109 Mt	110	111	112	(113)	114	(115)	116	(117)	118
				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	71 Lu
				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	103 Lr

Halogens

- The elements in Group 17 are called the halogens.
- Fluorine is the most reactive of the halogens because its outer energy level is closest to the nucleus.



1 1A				Represe	entative ts			Zinc Cadiun Mercui	n 'Y								18 8A
1 H	2 2A			Noble	gases			Lantha	nides			13 3A	14 4A	15 5A	16 6A	17 7A	2 He
3 Li	4 Be			Transit metals	ion			Actinic	les			5 B	6 C	7 N	8 0	9 F	10 Ne
11 Na	12 Mg	3 3B	4 4B	5 5B	6 6B	7 7B	8	9 	10	11 1B	12 2B	13 AI	14 Si	15 P	16 S	17 Cl	18 Ar
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	57 La	72 Hf	73 Ta	74 W	75 Re	76 Os	77 Ir	78 Pt	79 Au	80 Hg	81 TI	82 Pb	83 Bi	84 Po	85 At	86 Rn
87 Fr	88 Ra	89 Ac	104 Rf	105 Db	106 Sg	107 Bh	108 Hs	109 Mt	110	111	112	(113)	114	(115)	116	(117)	118
				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	71 Lu
				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	103 Lr

Alkali Metals

- The alkali metals form compounds that are similar to each other.
- Alkali metals each have one outer energy level electron.
- It is this electron that is removed when alkali metals react.
- The easier it is to remove an electron, the more reactive the atom is.
- Unlike halogens, the reactivities of alkali metals increase down the group.

Alkali Metals



1 1A				Represe	entative its			Zinc Cadiun Mercur	n 'Y								18 8A	
1 H	2 2A			Noble :	gases			Lantha	nides			13 3A	14 4A	15 5A	16 6A	17 7A	2 He	
3 Li	4 Be			Transit metals	ion			Actinid	les			5 B	6 C	7 N	8 0	9 F	10 Ne	
11 Na	12 Mg	3 3B	4 4B	5 5B	6 6B	7 7B	8	9 	10	11 1B	12 2B	13 Al	14 Si	15 P	16 S	17 Cl	18 Ar	
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	57 La	72 Hf	73 Ta	74 W	75 Re	76 Os	77 Ir	78 Pt	79 Au	80 Hg	81 TI	82 Pb	83 Bi	84 Po	85 At	86 Rn	
87 Fr	88 Ra	89 Ac	104 Rf	105 Db	106 Sg	107 Bh	108 Hs	109 Mt	110	111	112	(113)	114	(115)	116	(117)	118	

58	59	60	61	62	63	64	65	66	67	68	69	70	71
Ce	Pr	Nd	Pm	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb	Lu
90	91	92	93	94	95	96	97	98	99	100	101	102	103
Th	Pa	U	Np	Pu	Am	Cm	Bk	Cf	Es	Fm	Md	No	Lr

Classification of Elements According to the Type of Subshells Being Filled



4 <i>f</i>
5 <i>1</i>

Trends in Atomic Size



decrease across a period

Choose the Larger Atom in Each Pair

- **C** or **O**
- Li or K
- C or Al
- Se or I?

1 1A				Represe	entative ts			Zinc Cadiun Mercur	n 'Y								18 8A
1 H	2 2A			Noble :	gases			Lantha	nides			13 3A	14 4A	15 5A	16 6A	17 7A	2 He
3 Li	4 Be			Transit metals	ion			Actinid	les			5 B	6 C	7 N	8 0	9 F	10 Ne
11 Na	12 Mg	3 3B	4 4B	5 5B	6 6B	7 7B	8	9 	10	11 1B	12 2B	13 Al	14 Si	15 P	16 S	17 Cl	18 Ar
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	57 La	72 Hf	73 Ta	74 W	75 Re	76 Os	77 Ir	78 Pt	79 Au	80 Hg	81 TI	82 Pb	83 Bi	84 Po	85 At	86 Rn
87 Fr	88 Ra	89 Ac	104 Rf	105 Db	106 Sg	107 Bh	108 Hs	109 Mt	110	111	112	(113)	114	(115)	116	(117)	118
				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	71 Lu
				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	103 Lr



Variation of atomic (molar) volume within each period.

Atomic number

1 1A				Repressed	entative ts			Zinc Cadiun Mercui	n 'Y								18 8A
1 H	2 2A			Noble §	gases			Lantha	nides			13 3A	14 4A	15 5A	16 6A	17 7A	2 He
3 Li	4 Be			Transit metals	ion			Actinic	les			5 B	6 C	7 N	8 0	9 F	10 Ne
11 Na	12 Mg	3 3B	4 4B	5 5B	6 6B	7 7B	8	9 	10	11 1B	12 2B	13 Al	14 Si	15 P	16 S	17 Cl	18 Ar
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	57 La	72 Hf	73 Ta	74 W	75 Re	76 Os	77 Ir	78 Pt	79 Au	80 Hg	81 TI	82 Pb	83 Bi	84 Po	85 At	86 Rn
87 Fr	88 Ra	89 Ac	104 Rf	105 Db	106 Sg	107 Bh	108 Hs	109 Mt	110	111	112	(113)	114	(115)	116	(117)	118

58	59	60	61	62	63	64	65	66	67	68	69	70	71
Ce	Pr	Nd	Pm	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb	Lu
90	91	92	93	94	95	96	97	98	99	100	101	102	103
Th	Pa	U	Np	Pu	Am	Cm	Bk	Cf	Es	Fm	Md	No	Lr

Atomic Radii





An *ion* is formed when an atom, or group of atoms, has a net positive or negative charge (why?).

If a neutral atom **looses** one or more electrons it becomes a cation.





protons
electrons

If a neutral atom **gains** one or more electrons it becomes an anion.



17 protons17 electrons





Cation is always smaller than atom from which it is formed. Anion is always larger than atom from which it is formed.

Tendency of metals to gain electon(s)



Tendency of non-metals to gain electron(s)



Ionization Energies of Elements



Periodic Properties



ELECTRON AFFINITY

Electron affinity is the energy change when an electron is added to an atom



Generally, the energy that results from this process (the electron affinity) is negative or close to zero. The more negative this energy the more this process is favored. The more negative this energy the more this process is favored.

ELECTRON AFFINITY



ELECTRONEGATIVITY

- Electronegativity is a measure of the tendency of an atom to attract a bonding pair of electrons.
- The Pauling scale is the most commonly used. Fluorine (the most electronegative element) is assigned a value of 4.0, and values range down to caesium and francium which are the least electronegative at 0.7.



Electrons are evenly attracted by atoms A and B as in H-H, Cl-Cl



Electrons are slightly more attracted To atom B than A as in H-Cl



Electron are totally attracted by B and atom A has lost the control of electron as in NaCl



Lowest Electronegativity

1A																
H 2.1	2A		be	low 1.	0		2.0	0 - 2.4				3A	4A	5A	6A	7A
Li 1.0	Be 1.5		1.0	0 - 1.4 5 - 1.9			2.:	5 - 2.9 0 - 4.0				В 2.0	C 2.5	N 3.0	0 3.5	F 4.0
Na 0.9	Mg 1.2	3B	4B	5B	6B	7B		- 8B -		1B	2B	Al 1.5	Si 1.8	Р 2.1	\$ 2.5	C1 3.0
К 0.8	Ca 1.0	Sc 1.3	Ti 1.5	V 1.6	Cr 1.6	Mn 1.5	Fe 1.8	Co 1.8	Ni 1.8	Cu 1.9	Zn 1.6	Ga 1.6	Ge 1.8	As 2.0	Se 2,4	Br 2.8
Rb 0.8	Sr 1.0	Y 1.2	Zr 1.4	Nb 1.6	Mo 1.8	Tc 1.9	Ru 2.2	Rh 2.2	Pd 2.2	Ag 1.9	Cd 1.7	In 1.7	Sn 1.8	Sb 1.9	Te 2.1	1 2.5
Cs 0.8	Ba 0.9	La* 1.1	Hf 1.3	Та 1.5	W 2.4	Re 1.9	Os 2.2	Ir 2.2	Pt 2.2	Au 2.4	Hg 1.9	Tl 1.8	РЬ 1.8	Bi 1.9	Po 2.0	At 2.2
Fr 0.7	Ra 0.9	Ac [†] 1.1	[*] Lan	thanid inides:	es: 1.1 1.3 - 1	- 1.3 .5										

Other properties that relate to the periodicity of elements

- Melting and boiling points within a group
- Ability to conduct heat and electricity across a period
- Reducing and oxidizing abilities with in a group
- Acid-base nature of element oxides