

configuration. Periods also possess similar trends in electronegativity, ionization energy, atomic radii, as well as electron affinity. Moving from the left of the periodic table to the right, atomic radii decreases which causes the ionization energy to increase. As well, moving left to right, electronegativity and electron affinity increase.

For large cell versions, see [Periodic table \(large cells\)](#).

V-T-E		Periodic table																		[hid]
Group	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18		
	Alkali metals	Alkaline earth metals													Pnictogens	Chalcogens	Halogens	Noble gases		
Period	Hydrogen																	Helium		
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	Scandium	Titanium	Vanadium	Chromium	Manganese	Iron	Cobalt	Nickel	Copper	Zinc	Gallium	Germanium	Arsenic	Selenium	Bromine	Krypton		
	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	Yttrium	Zirconium	Niobium	Molybdenum	Technetium	Ruthenium	Rhodium	Palladium	Silver	Cadmium	Indium	Tin	Antimony	Tellurium	Iodine	Xenon		
	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	Lutetium	Hafnium	Tantalum	Tungsten	Rhenium	Osmium	Iridium	Platinum	Gold	Mercury	Thallium	Lead	Bismuth	Polonium	Astatine	Radon		
	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	Lanthanum	Rutherfordium	Dubnium	Seaborgium	Bohrium	Hassium	Meitnerium	Darmstadtium	Roentgenium	Copernicium	Ununtrium	Flerovium	Ununpentium	Livermorium	Ununseptium	Unsoctium		
	103 Lr	104 Rf	105 Db	106 Sg	107 Bh	108 Hs	109 Mt	110 Ds	111 Rg	112 Cn	113 Uut	114 Fl	115 Uup	116 Lv	117 Uus	118 Uuo				
			Lanthanum	Cerium	Praseodymium	Neodymium	Promethium	Samarium	Europium	Gadolinium	Terbium	Dysprosium	Holmium	Erbium	Thulium	Ytterbium				
	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						
		Actinium	Thorium	Protactinium	Uranium	Neptunium	Plutonium	Americium	Curium	Berkelium	Californium	Einsteinium	Fermium	Mendelevium	Nobelium					
	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						

black/solid

green/liquid

red/gas

gray/unknown

Color of the atomic number shows state of matter (at 0 °C and 1 atm)

Primordial

Radioactive

Synthetic

Border shows natural occurrence of the element

Background color shows subcategory in the metal-metalloid-nonmetal trend:

Alkali metal

Alkaline earth metal

Lanthanide

Actinide

Transition metal

Post-transition metal

Metalloid

Polyatomic nonmetal

Diatomic nonmetal

Noble gas

Unknown chemical properties

Periodic table groups

Alkali metals: The alkali metals make up Group 1 of the table, and comprise lithium (Li) through francium (Fr). These elements have very similar behavior and characteristics. Hydrogen is Group 1, but it exhibits few characteristics of a metal and is often categorized with the nonmetals.

Alkaline earth metals: The alkaline earth metals make up Group 2 of the periodic table, from beryllium (Be) through radium (Ra). The alkaline earth metals have very high melting points and oxides that have basic alkaline solutions.

Lanthanides: The lanthanides comprise elements 57 lanthanum (La), hence

the name of the set through 71, lutetium (Lu). They, along with the actinides, are often called "the f-elements" because they have valence electrons in the f shell.

Actinides: The actinides comprise elements 89, actinium (Ac), through 103, lawrencium (Lr). They, along with the lanthanides, are often called "the f-elements" because they have valence electrons in the f shell. Only thorium (Th) and uranium (U) occur naturally with significant abundance. They are all radioactive.

Transition metals: The transition elements are metals that have a partially filled d subshell and comprise Groups 3 through 12 and the lanthanides and actinides.

Post-transition metals: The post-transition elements are aluminum (Al), gallium (Ga), indium (In), thallium (Tl), Tin (Sn), lead (Pb) and bismuth (Bi). As the name implies, these elements have some of the characteristics of the transition metals, but they tend to be softer and conduct more poorly than the transition metals.

Metalloid: The metalloids are boron (B), silicon (Si), germanium (Ge), arsenic (As), antimony (Sb), tellurium (Te) and polonium (Po). They sometimes behave as semiconductors (B, Si, Ge) rather than as conductors. Metalloids are also called "semi-metals" or "poor metals."

Nonmetals: The term "nonmetals" is used to classify hydrogen (H), carbon (C), nitrogen (N), phosphorus (P), oxygen (O), sulfur (S) and selenium (Se).

Halogens: The halogen elements are a subset of the nonmetals. They comprise Group 17 of the periodic table, from fluorine (F) through astatine (At). They are generally very chemically reactive and are present in the environment as compounds rather than as pure elements.

Noble gases: The inert, or noble, gases comprise Group 18. They are generally very stable chemically and exhibit similar properties of being colorless and odorless.

Not: According to their shared physical and chemical properties, the elements can be classified into the major categories of metals, metalloids and nonmetals. **Metals** are generally shiny, highly conducting solids that form alloys with one another and salt-like ionic compounds with nonmetals (other than the noble gases). The majority of **nonmetals** are coloured or colourless insulating gases; nonmetals that form compounds with other nonmetals feature covalent bonding. In between metals and nonmetals are **metalloids**, which have intermediate or mixed properties.

Group	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Period	1 1 H 1.00794																	2 He 4.0026
2	3 Li 6.941	4 Be 9.01218											5 B 10.811	6 C 12.0107	7 N 14.0067	8 O 15.9994	9 F 18.9984	10 Ne 20.1797
3	11 Na 22.9897	12 Mg 24.305											13 Al 26.9815	14 Si 28.0855	15 P 30.9737	16 S 32.06	17 Cl 35.4527	18 Ar 39.948
4	19 K 39.0983	20 Ca 40.078	21 Sc 44.9559	22 Ti 47.867	23 V 50.9415	24 Cr 51.9961	25 Mn 54.938	26 Fe 55.845	27 Co 58.9332	28 Ni 58.6934	29 Cu 63.546	30 Zn 65.38	31 Ga 69.723	32 Ge 72.61	33 As 74.9216	34 Se 78.96	35 Br 79.904	36 Kr 83.798
5	37 Rb 85.4678	38 Sr 87.62	39 Y 88.9058	40 Zr 91.224	41 Nb 92.9063	42 Mo 95.94	43 Tc 98	44 Ru 101.07	45 Rh 101.905	46 Pd 106.42	47 Ag 107.868	48 Cd 112.411	49 In 114.818	50 Sn 118.71	51 Sb 121.76	52 Te 127.6	53 I 126.904	54 Xe 131.293
6	55 Cs 132.905	56 Ba 137.327	57 * La 138.905	72 Hf 178.49	73 Ta 180.948	74 W 183.84	75 Re 186.207	76 Os 190.23	77 Ir 192.217	78 Pt 195.078	79 Au 196.966	80 Hg 200.59	81 Tl 204.383	82 Pb 207.2	83 Bi 208.98	84 Po 209	85 At 210	86 Rn 222
7	87 Fr 223	88 Ra 226	89 ** Ac 227	104 Rf 261	105 Db 262	106 Sg 266	107 Bh 270	108 Hs 269	109 Mt 278	110 Ds 281	111 Rg 281	112 Cn 285	113 Uut 286	114 Fl 289	115 Uup 289	116 Lv 293	117 Uus 294	118 Uuo 294

○ Non Metals	● Noble Gases
● Alkali Metals	● Metalloids
● Alkaline Earth Metals	● Halogens
● Transition Metals	● Other Metals
● Lanthanides	● Unknown
● Actinides	

*Lanthanides	58 Ce 140.116	59 Pr 140.907	60 Nd 144.24	61 Pm 145	62 Sm 150.36	63 Eu 151.964	64 Gd 157.25	65 Tb 158.925	66 Dy 162.5	67 Ho 164.93	68 Er 167.26	69 Tm 168.934	70 Yb 173.054	71 Lu 174.967
**Actinides	90 Th 232.038	91 Pa 231.036	92 U 238.028	93 Np 237.048	94 Pu 244	95 Am 243	96 Cm 247	97 Bk 247	98 Cf 251	99 Es 252	100 Fm 257	101 Md 258	102 No 259	103 Lr 260

Patterns in the Table

classifications

hydrogen 1 1.0079 H	helium 2 4.0026 He																	boron 5 10.811 B	carbon 6 12.011 C	nitrogen 7 14.007 N	oxygen 8 15.999 O	fluorine 9 18.998 F	neon 10 20.180 Ne										
lithium 3 6.941 Li	beryllium 4 9.012 Be																	aluminum 13 26.982 Al	silicon 14 28.086 Si	phosphorus 15 30.974 P	sulfur 16 32.065 S	chlorine 17 35.453 Cl	argon 18 39.948 Ar										
sodium 11 22.990 Na	magnesium 12 24.305 Mg																	scandium 21 44.956 Sc	titanium 22 47.867 Ti	vanadium 23 50.942 V	chromium 24 51.996 Cr	manganese 25 54.938 Mn	iron 26 55.845 Fe	cobalt 27 58.933 Co	nickel 28 58.693 Ni	copper 29 63.546 Cu	zinc 30 65.39 Zn	gallium 31 69.723 Ga	germanium 32 72.64 Ge	arsenic 33 74.922 As	selenium 34 78.96 Se	bromine 35 79.904 Br	krypton 36 83.80 Kr
potassium 19 39.098 K	calcium 20 40.078 Ca																	ytrium 39 88.906 Y	zirconium 40 91.224 Zr	niobium 41 92.906 Nb	molybdenum 42 95.94 Mo	technetium 43 [98] Tc	ruthenium 44 101.07 Ru	rhodium 45 102.91 Rh	palladium 46 106.91 Pd	silver 47 107.87 Ag	cadmium 48 112.41 Cd	indium 49 114.82 In	tin 50 118.71 Sn	antimony 51 121.76 Sb	tellurium 52 127.60 Te	iodine 53 126.91 I	xenon 54 131.29 Xe
rubidium 37 85.468 Rb	strontium 38 87.62 Sr																	barium 56 137.33 Ba	lanthanum 57 138.91 La	cerium 58 140.12 Ce	praseodymium 59 140.91 Pr	neodymium 60 144.24 Nd	promethium 61 [145] Pm	samarium 62 150.36 Sm	europtium 63 151.96 Eu	gadolinium 64 157.25 Gd	terbium 65 158.93 Tb	dysprosium 66 162.50 Dy	holmium 67 164.93 Ho	erbium 68 167.26 Er	thulium 69 168.93 Tm	ytterbium 70 173.04 Yb	lutetium 71 174.97 Lu
cesium 55 132.91 Cs	barium 56 137.33 Ba																	hafnium 72 178.49 Hf	tantalum 73 180.95 Ta	tungsten 74 183.84 W	rhenium 75 186.21 Re	osmium 76 190.23 Os	iridium 77 192.22 Ir	platinum 78 195.08 Pt	gold 79 196.97 Au	mercury 80 200.59 Hg	thallium 81 204.38 Tl	lead 82 207.2 Pb	bismuth 83 208.98 Bi	polonium 84 [209] Po	astatine 85 [210] At	radon 86 [222] Rn	
francium 87 [223] Fr	radium 88 [226] Ra																	actinium 89 [227] Ac	thorium 90 232.04 Th	protactinium 91 231.04 Pa	uranium 92 238.03 U	neptunium 93 [237] Np	plutonium 94 [244] Pu	americium 95 [243] Am	curium 96 [247] Cm	berkelium 97 [247] Bk	californium 98 [251] Cf	einsteinium 99 [252] Es	fermium 100 [257] Fm	mendelevium 101 [258] Md	nobelium 102 [259] No	lawrencium 103 [260] Lr	

Alkaline Earth Metals

Transition Metals

Post Transition Metals

Halogens

Noble Gases

Lanthanide series

Actinide series

Chemical Symbol

The chemical symbol is an abbreviation of the element's name. Many are derived from the element's name in a language such as Latin or German. Ag is the chemical symbol for the element silver. Its symbol comes from the Latin word for silver, *argentum*. Note that the first letter in the symbol is upper case and the second is lower case. Writing symbols this way allows us to represent all of the elements without getting confused. There is a big difference between the element cobalt, with its symbol Co, and the compound carbon monoxide, written as CO.

Atomic number The number of protons in the nucleus of the atom.	CARBON 6	Element name Usually from a Greek or Latin word for the element or a substance containing the element.
	C	Symbol Short-hand abbreviation for the element name.
Atomic mass The average mass of the atoms in an element.	12.01	

<div>PERIODIC TABLE ELEMENTS 1–20</div>							
<div>HYDROGEN 1 H 1.01</div>							<div>HELIUM 2 He 4.00</div>
<div>LITHIUM 3 Li 6.94</div>	<div>BERYLLIUM 4 Be 9.01</div>	<div>BORON 5 B 10.81</div>	<div>CARBON 6 C 12.01</div>	<div>NITROGEN 7 N 14.01</div>	<div>OXYGEN 8 O 16.00</div>	<div>FLUORINE 9 F 19.00</div>	<div>NEON 10 Ne 20.18</div>
<div>SODIUM 11 Na 22.99</div>	<div>MAGNESIUM 12 Mg 24.31</div>	<div>ALUMINUM 13 Al 26.98</div>	<div>SILICON 14 Si 28.09</div>	<div>PHOSPHORUS 15 P 30.97</div>	<div>SULFUR 16 S 32.07</div>	<div>CHLORINE 17 Cl 35.45</div>	<div>ARGON 18 Ar 39.95</div>
<div>POTASSIUM 19 K 39.10</div>	<div>CALCIUM 20 Ca 40.08</div>						