

Periodic Table of the Elements

Period	1	1s	1	1A	H hydrogen 1.008	2	2A	18	VIII A	He helium 4.003
	2	2s	3	+1	Li lithium 6.941	4	+2	Be beryllium 9.012	10	Ne neon 20.18
	3	3s	11	+1	Na sodium 22.99	12	+2	Mg magnesium 24.31	18	Ar argon 39.95
	4	4s	19	+1	K potassium 39.10	20	+2	Ca calcium 40.08	36	Kr krypton 83.80
	5	5s	37	+1	Rb rubidium 85.47	38	+2	Sr strontium 87.62	54	Xe xenon 131.3
	6	6s	55	+1	Cs cesium 132.9	56	+2	Ba barium 137.3	86	Rn radon 222
	7	7s	87	+1	Fr francium 223	88	+2	Ra radium 226	118	Og oganesson 294

atomic # →	29	+2,1	← ions commonly formed
atomic symbol →	Cu		
English element name →	copper		
	63.55		← atomic mass (rounded)

3	4	5	6	7	8	9	10	11	12
III B	IV B	V B	VI B	VII B	VIII B	VIII B	VIII B	I B	II B

3d	21	+3	22	+4,3,2	23	+5,2,3,4	24	+3,2,6	25	+2,3,4,6,7	26	+3,2	27	+2,3	28	+2,3	29	+2,1	30	+2
	Sc		Ti		V		Cr		Mn		Fe		Co		Ni		Cu		Zn	
	scandium		titanium		vanadium		chromium		manganese		iron		cobalt		nickel		copper		zinc	
	44.96		47.87		50.94		52.00		54.94		55.85		58.93		58.69		63.55		65.41	
4d	39	+3	40	+4	41	+5,3	42	+6,3,5	43	+7,4,6	44	+4,3,6,8	45	+3,4,6	46	+2,4	47	+1	48	+2
	Y		Zr		Nb		Mo		Tc		Ru		Rh		Pd		Ag		Cd	
	yttrium		zirconium		niobium		molybdenum		technetium		ruthenium		rhodium		palladium		silver		cadmium	
	88.91		91.22		92.91		95.94		98		101.1		102.9		106.4		107.9		112.4	
† 5d	71	+3	72	+4	73	+5	74	+6,4	75	+7,4,6	76	+4,6,8	77	+4,3,6	78	+4,2	79	+3,1	80	+2,1
	Lu		Hf		Ta		W		Re		Os		Ir		Pt		Au		Hg	
	lutetium		hafnium		tantalum		tungsten		rhenium		osmium		iridium		platinum		gold		mercury	
	175.0		178.5		180.9		183.8		186.2		190.2		192.2		195.1		197.0		200.6	
‡ 6d	103	+3	104		105		106		107		108		109		110		111		112	
	Lr		Rf		Db		Sg		Bh		Hs		Mt		Ds		Rg		Cn	
	lawrencium		rutherfordium		dubnium		seaborgium		bohrium		hassium		meitnerium		darmstadtium		roentgenium		copernicium	
	262		261		262		266		264		277		268		281		272		285	

lanthanides (rare earth metals)	† 4f	57	+3	58	+3,4	59	+3,4	60	+3	61	+3	62	+3,2	63	+3,2	64	+3	65	+3,4	66	+3	67	+3	68	+3	69	+3,2	70	+3,2
		La		Ce		Pr		Nd		Pm		Sm		Eu		Gd		Tb		Dy		Ho		Er		Tm		Yb	
		lanthanum		cerium		praseodymium		neodymium		promethium		samarium		europium		gadolinium		terbium		dysprosium		holmium		erbium		thulium		ytterbium	
		138.9		140.1		140.9		144.2		145		150.4		152.0		157.3		158.9		162.5		164.9		167.3		168.9		173.0	
actinides	‡ 5f	89	+3	90	+4	91	+5,4	92	+6,3,4,5	93	+5,3,4,6	94	+4,3,5,6	95	+3,4,5,6	96	+3	97	+3,4	98	+3	99	+3	100	+3	101	+3,2	102	+2,3
		Ac		Th		Pa		U		Np		Pu		Am		Cm		Bk		Cf		Es		Fm		Md		No	
		actinium		thorium		protactinium		uranium		neptunium		plutonium		americium		curium		berkelium		californium		einsteinium		fermium		mendelevium		nobelium	
		227		232.0		231.0		238.0		237		239		243		247		247		251		252		257		258		259	

Common Polyatomic Ions			
ammonium	NH ₄ ⁺¹	perchlorate	ClO ₄ ⁻¹
hydronium	H ₃ O ⁺¹	chlorate	ClO ₃ ⁻¹
acetate	C ₂ H ₃ O ₂ ⁻¹	chlorite	ClO ₂ ⁻¹
	CH ₃ COO ⁻¹	hypochlorite	ClO ⁻¹
hydroxide	OH ⁻¹	nitrate	NO ₃ ⁻¹
cyanide	CN ⁻¹	nitrite	NO ₂ ⁻¹
cyanate	OCN ⁻¹	bromate	BrO ₃ ⁻¹
thiocyanate	SCN ⁻¹	iodate	IO ₃ ⁻¹
hydrogen sulfate	HSO ₄ ⁻¹	hydrogen carbonate	HCO ₃ ⁻¹
permanganate	MnO ₄ ⁻¹	dihydrogen phosphate	H ₂ PO ₄ ⁻¹
periodate	IO ₄ ⁻¹	hydrogen phosphate	HPO ₄ ⁻²
sulfate	SO ₄ ⁻²	sulfite	SO ₃ ⁻²
chromate	CrO ₄ ⁻²	carbonate	CO ₃ ⁻²
dichromate	Cr ₂ O ₇ ⁻²	hydrogen phosphate	HPO ₄ ⁻²
oxalate	C ₂ O ₄ ⁻²	orthosilicate	SiO ₄ ⁻⁴
silicate	SiO ₃ ⁻²		
phthalate	C ₈ H ₄ O ₄ ⁻²		
tetraborate	B ₄ O ₇ ⁻²		
borate	BO ₃ ⁻³		
arsenate	AsO ₄ ⁻³		
phosphate	PO ₄ ⁻³		