

Periodic Table of the Elements

	1 1A	s											p					18 8A
1	1 H Hydrogen 1.0079												13 3A	14 4A	15 5A	16 6A	17 7A	2 He Helium 4.003
2	3 Li Lithium 6.941	4 Be Beryllium 9.012	d (n-1)										5 B Boron 10.811	6 C Carbon 12.011	7 N Nitrogen 14.007	8 O Oxygen 15.999	9 F Fluorine 18.998	10 Ne Neon 20.180
3	11 Na Sodium 22.990	12 Mg Magnesium 24.305	3 3B	4 4B	5 5B	6 6B	7 7B	8 8B	9 8B	10 8B	11 1B	12 2B	13 Al Aluminum 26.982	14 Si Silicon 28.086	15 P Phosphorus 30.974	16 S Sulfur 32.066	17 Cl Chlorine 35.453	18 Ar Argon 39.948
4	19 K Potassium 39.098	20 Ca Calcium 40.078	21 Sc Scandium 44.956	22 Ti Titanium 47.88	23 V Vanadium 50.942	24 Cr Chromium 51.996	25 Mn Manganese 54.938	26 Fe Iron 55.847	27 Co Cobalt 58.933	28 Ni Nickel 58.693	29 Cu Copper 63.546	30 Zn Zinc 65.39	31 Ga Gallium 69.723	32 Ge Germanium 72.61	33 As Arsenic 74.922	34 Se Selenium 78.96	35 Br Bromine 79.904	36 Kr Krypton 83.80
5	37 Rb Rubidium 84.468	38 Sr Strontium 87.62	39 Y Yttrium 88.906	40 Zr Zirconium 91.224	41 Nb Niobium 92.906	42 Mo Molybdenum 95.94	43 Tc Technetium (98)	44 Ru Ruthenium 101.07	45 Rh Rhodium 102.91	46 Pd Palladium 106.42	47 Ag Silver 107.87	48 Cd Cadmium 112.41	49 In Indium 114.82	50 Sn Tin 118.71	51 Sb Antimony 121.76	52 Te Tellurium 127.60	53 I Iodine 126.90	54 Xe Xenon 131.29
6	55 Cs Cesium 132.91	56 Ba Barium 137.33	57 La Lanthanum 138.91	72 Hf Hafnium 178.49	73 Ta Tantalum 180.95	74 W Tungsten 183.84	75 Re Rhenium 186.21	76 Os Osmium 190.23	77 Ir Iridium 192.22	78 Pt Platinum 195.08	79 Au Gold 196.97	80 Hg Mercury 200.59	81 Tl Thallium 204.38	82 Pb Lead 207.2	83 Bi Bismuth 208.98	84 Po Polonium (209)	85 At Astatine (210)	86 Rn Radon (222)
7	87 Fr Francium (223)	88 Ra Radium (226)	89 Ac Actinium 227.03	104 Rf Rutherfordium (261)	105 Db Dubnium (262)	106 Sg Seaborgium (263)	107 Bh Bohrium (264)	108 Hs Hassium (265)	109 Mt Meitnerium (266)	110 Uun Ununnilium (269)	111 Uuu Unununium (272)	112 Uub Ununbium (277)		114 Uuq Ununquadium (285)				

f (n-2)

6	58 Ce Cerium 140.12	59 Pr Praseodymium 140.91	60 Nd Neodymium 144.24	61 Pm Promethium (145)	62 Sm Samarium 150.36	63 Eu Europium 151.97	64 Gd Gadolinium 157.25	65 Tb Terbium 158.93	66 Dy Dysprosium 162.50	67 Ho Holmium 164.93	68 Er Erbium 167.26	69 Tm Thulium 168.93	70 Yb Ytterbium 173.04	71 Lu Lutetium 174.97
7	90 Th Thorium 232.04	91 Pa Protactinium 231.04	92 U Uranium 238.03	93 Np Neptunium (237)	94 Pu Plutonium (244)	95 Am Americium (243)	96 Cm Curium (247)	97 Bk Berkelium (247)	98 Cf Californium (251)	99 Es Einsteinium (252)	100 Fm Fermium (257)	101 Md Mendelevium (258)	102 No Nobelium (259)	103 Lr Lawrencium (260)

CHEMISTRY REFERENCE INFORMATION

Common Transition Metal and Polyatomic Ions			
Positive ions (Cations)		Negative ions (Anions)	
ammonium	NH ₄ ⁺	acetate	C ₂ H ₃ O ₂ ⁻
cadmium	Cd ²⁺	bicarbonate	HCO ₃ ⁻
chromium(II)	Cr ²⁺	carbonate	CO ₃ ²⁻
chromium(III)	Cr ³⁺	chlorate	ClO ₃ ⁻
cobalt	Co ²⁺	chlorite	ClO ₂ ⁻
copper(I)	Cu ⁺	chromate	CrO ₄ ²⁻
copper(II)	Cu ²⁺	dichromate	Cr ₂ O ₇ ²⁻
iron(II)	Fe ²⁺	hydride	H ⁻
iron(III)	Fe ³⁺	hydroxide	OH ⁻
lead(II)	Pb ²⁺	hypochlorite	ClO ⁻
manganese(II)	Mn ²⁺	nitrate	NO ₃ ⁻
mercury(I)	Hg ₂ ²⁺	nitrite	NO ₂ ⁻
mercury(II)	Hg ²⁺	oxalate	C ₂ O ₄ ²⁻
nickel	Ni ²⁺	perchlorate	ClO ₄ ⁻
silver	Ag ⁺	permanganate	MnO ₄ ⁻
tin(II)	Sn ²⁺	phosphate	PO ₄ ³⁻
tin(IV)	Sn ⁴⁺	sulfate	SO ₄ ²⁻
zinc	Zn ²⁺	sulfite	SO ₃ ²⁻

Solubility of Some Ionic Compounds in Water			
Negative Ion	+	Positive Ion	Will be...
Any negative ion	+	Alkali metal ions (Li ⁺ , Na ⁺ , K ⁺ , Rb ⁺ , or Cs ⁺)	Soluble
Any negative ion	+	Ammonium ion, NH ₄ ⁺	Soluble
Nitrate, NO ₃ ⁻	+	Any positive ion	Soluble
Acetate, CH ₃ COO ⁻	+	Any positive ion except Ag ⁺ or Hg ²⁺	Soluble
Chloride, Cl ⁻ , or Bromide, Br ⁻ , or Iodide, I ⁻	+	Ag ⁺ , Pb ²⁺ , Hg ₂ ²⁺ , or Cu ⁺	Insoluble
	+	Any other positive ion	Soluble
Sulfate, SO ₄ ²⁻	+	Ca ²⁺ , Sr ²⁺ , Ba ²⁺ , Ra ²⁺ , Ag ⁺ , or Pb ²⁺	Insoluble
	+	Any other positive ion	Soluble
Sulfide, S ²⁻	+	Alkali ions or NH ₄ ⁺	Soluble
	+	Be ²⁺ , Mg ²⁺ , Ca ²⁺ , Sr ²⁺ , Ba ²⁺ , or Ra ²⁺	Soluble
	+	Any other positive ion	Insoluble
Hydroxide, OH ⁻	+	Alkali ions or NH ₄ ⁺	Soluble
	+	Any other positive ion	Insoluble
Phosphate, PO ₄ ³⁻ , or Carbonate, CO ₃ ²⁻ , or Sulfite, SO ₃ ²⁻	+	Alkali ions or NH ₄ ⁺	Soluble
	+	Any other positive ion	Insoluble

Activity Series	
Metals	Halogens
lithium	fluorine
potassium	chlorine
calcium	bromine
sodium	iodine
magnesium	
aluminum	
zinc	
chromium	
iron	
nickel	
tin	
lead	
hydrogen	
copper	
mercury	
silver	
platinum	
gold	

SI Prefixes				
Prefix	Symbol	Factor	Example	
mega	M	10 ⁶	1 Mm = 1 000 000 m	
kilo	k	10 ³	1 km = 1 000 m	
BASE UNIT	---	10 ⁰	---	
deci	d	10 ⁻¹	1 m = 10 dm	
centi	c	10 ⁻²	1 m = 100 cm	
milli	m	10 ⁻³	1 m = 1 000 mm	
micro	μ	10 ⁻⁶	1 m = 1 000 000 μm	
nano	n	10 ⁻⁹	1 m = 1 000 000 000 nm	
pico	p	10 ⁻¹²	1 m = 1 000 000 000 000 pm	

Temperature Conversions		
$^{\circ}\text{F} = \frac{9}{5}(^{\circ}\text{C}) + 32$ $^{\circ}\text{C} = \frac{5}{9}(^{\circ}\text{F} - 32)$ $\text{K} = ^{\circ}\text{C} + 273$		

SI-SI
1 cm ³ = 1 mL
1 dm ³ = 1 L

English-English
1 ton = 2000 lbs
1 ft = 12 in
1 yd = 3 ft
1 mi = 5280 ft

SI-English
1 kg = 2.2 lbs
1 in = 2.54 cm
1 L = 1.057 qt
1.609 km = 1 mi