

Periodic Table of the Elements

1 IA H Hydrogen 1.00794	2 IIA He Helium 4.002602	Nonmetals Other nonmetals Halogens Noble gases										13 IIIA B Boron 10.811	14 IVA C Carbon 12.0107	15 VA N Nitrogen 14.00674	16 VIA O Oxygen 15.9994	17 VIIA F Fluorine 18.9984032	18 VIIIA Ne Neon 20.1797
3 Li Lithium 6.941	4 Be Beryllium 9.012182	Metals Alkali metals Alkaline earth metals Lanthanoids Actinoids Transition metals Metalloids										5 B Boron 10.811	6 C Carbon 12.0107	7 N Nitrogen 14.00674	8 O Oxygen 15.9994	9 F Fluorine 18.9984032	10 Ne Neon 20.1797
11 Na Sodium 22.989770	12 Mg Magnesium 24.3050	3 IIIB	4 IVB	5 VB	6 VIB	7 VIIB	8 VIII	9 VIII	10 VIII	11 IB	12 IIB	13 Al Aluminum 26.981538	14 Si Silicon 28.0855	15 P Phosphorus 30.973761	16 S Sulfur 32.066	17 Cl Chlorine 35.453	18 Ar Argon 39.948
19 K Potassium 39.0983	20 Ca Calcium 40.078	21 Sc Scandium 44.955910	22 Ti Titanium 47.867	23 V Vanadium 50.9415	24 Cr Chromium 51.9961	25 Mn Manganese 54.938049	26 Fe Iron 55.8457	27 Co Cobalt 58.933200	28 Ni Nickel 58.6934	29 Cu Copper 63.546	30 Zn Zinc 65.409	31 Ga Gallium 69.723	32 Ge Germanium 72.64	33 As Arsenic 74.92160	34 Se Selenium 78.96	35 Br Bromine 79.904	36 Kr Krypton 83.798
37 Rb Rubidium 85.4678	38 Sr Strontium 87.62	39 Y Yttrium 88.90585	40 Zr Zirconium 91.224	41 Nb Niobium 92.90638	42 Mo Molybdenum 95.94	43 Tc Technetium (98)	44 Ru Ruthenium 101.07	45 Rh Rhodium 102.90550	46 Pd Palladium 106.42	47 Ag Silver 107.8682	48 Cd Cadmium 112.411	49 In Indium 114.818	50 Sn Tin 118.710	51 Sb Antimony 121.760	52 Te Tellurium 127.60	53 I Iodine 126.90447	54 Xe Xenon 131.293
55 Cs Cesium 132.90545	56 Ba Barium 137.327	57 to 71	72 Hf Hafnium 178.49	73 Ta Tantalum 180.9479	74 W Tungsten 183.84	75 Re Rhenium 186.207	76 Os Osmium 190.23	77 Ir Iridium 192.217	78 Pt Platinum 195.078	79 Au Gold 196.96655	80 Hg Mercury 200.59	81 Tl Thallium 204.3833	82 Pb Lead 207.2	83 Bi Bismuth 208.98038	84 Po Polonium (209)	85 At Astatine (210)	86 Rn Radon (222)
87 Fr Francium (223)	88 Ra Radium (226)	89 to 103	104 Rf Rutherfordium (261)	105 Db Dubnium (262)	106 Sg Seaborgium (266)	107 Bh Bohrium (264)	108 Hs Hassium (269)	109 Mt Meitnerium (268)	110 Ds Darmstadtium (271)	111 Rg Roentgenium (272)	112 Cn Copernicium (285)	113 Uut Ununtrium (284)	114 Uuq Ununquadium (289)	115 Uup Ununpentium (288)	116 Uuh Ununhexium (293)	117 Uus Ununseptium (294)	118 Uuo Ununoctium (294)

Atomic masses in parentheses are those of the most stable or common isotope.

KEY

Electron Configuration → **6** **2** **4**

Atomic Number → **6**

Symbol → **C**

Atomic Mass → **12.0107**

Carbon

57 La Lanthanum 138.9055	58 Ce Cerium 140.116	59 Pr Praseodymium 140.90765	60 Nd Neodymium 144.24	61 Pm Promethium (145)	62 Sm Samarium 150.36	63 Eu Europium 151.964	64 Gd Gadolinium 157.25	65 Tb Terbium 158.92534	66 Dy Dysprosium 162.500	67 Ho Holmium 164.93032	68 Er Erbium 167.259	69 Tm Thulium 168.93421	70 Yb Ytterbium 173.04	71 Lu Lutetium 174.967
89 Ac Actinium (227)	90 Th Thorium 232.0381	91 Pa Protactinium 231.03588	92 U Uranium 238.02891	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 (262)

Kaye Schmidt

Common Ions and Their Charges

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Name	Symbol & Charge	Name	Symbol & Charge
Ammonium	NH ₄ ¹⁺	Acetate	C ₂ H ₃ O ₂ ¹⁻
Antimony (III) or antimonous	Sb ³⁺	Arsenate	AsO ₄ ³⁻
Arsenic (III) or arsenious	As ³⁺	Benzoate	C ₇ H ₆ O ₂ ²⁻
Bismuth	Bi ³⁺	Borate	BO ₃ ³⁻
Cadmium	Cd ²⁺	Bromate	BrO ₃ ¹⁻
Cerium (IV) or ceric	Ce ⁴⁺	Carbonate	CO ₃ ²⁻
Cerium (III) or cerous	Ce ³⁺	Chlorate	ClO ₃ ¹⁻
Chromium (III) or chromic	Cr ³⁺	Chlorite	ClO ₂ ¹⁻
Chromium (II) or chromous	Cr ²⁺	Chromate	CrO ₄ ²⁻
Cobalt (III) or cobaltic	Co ³⁺	Citrate	C ₆ H ₅ O ₇ ³⁻
Cobalt (II) or cobaltous	Co ²⁺	Cyanate	CNO ¹⁻
Copper (II) or cupric	Cu ²⁺	Cyanide	CN ¹⁻
Copper (I) or cuprous	Cu ¹⁺	Dichromate	Cr ₂ O ₇ ²⁻
Gallium	Ga ³⁺	Dihydrogen phosphate	H ₂ PO ₄ ¹⁻
Gold (III) or auric	Au ³⁺	Hydride	H ¹⁻
Gold (I) or aurous	Au ¹⁺	Hexacyanoferrate (III) or ferricyanide	Fe(CN) ₆ ³⁻
Hydrogen	H ¹⁺	Hexacyanoferrate (II) or ferrocyanide	Fe(CN) ₆ ⁴⁻
Hydronium	H ₃ O ¹⁺	Hydrogen carbonate or bicarbonate	HCO ₃ ¹⁻
Iron (III) or ferric	Fe ³⁺	Hydrogen oxalate or bioxalate	HC ₂ O ₄ ¹⁻
Iron (II) or ferrous	Fe ²⁺	Hydrogen phthalate or biphthalate	HC ₈ H ₈ H ₄ O ₄ ¹⁻
Lead (IV) or plumbic	Pb ⁴⁺	Hydrogen sulfate or bisulfate	HSO ₄ ¹⁻
Lead (II) or plumbous	Pb ²⁺	Hydrogen sulfide or bisulfide	HS ¹⁻
Mercury (II) or mercuric	Hg ²⁺	Hydrogen sulfite or bisulfite	HSO ₃ ¹⁻
Mercury (I) or mercurous	Hg ₂ ²⁺	Hydroxide	OH ¹⁻
Nickel (III)	Ni ³⁺	Hypochlorite	ClO ¹⁻
Nickel (II)	Ni ²⁺	Iodate	IO ₃ ¹⁻
Silver	Ag ¹⁺	Monohydrogen phosphate	HPO ₄ ²⁻
Thallium (III) or thallic	Tl ³⁺	Nitrate	NO ₃ ¹⁻
Thallium (I) or thalious	Tl ¹⁺	Nitrite	NO ₂ ¹⁻
Tin (IV) or stannic	Sn ⁴⁺	Orthosilicate	SiO ₄ ⁴⁻
Tin (II) or stannous	Sn ²⁺	Oxalate	C ₂ O ₄ ²⁻
Titanium (IV) or titanic	Ti ⁴⁺	Perchlorate	ClO ₄ ¹⁻
Titanium (III) or titanous	Ti ³⁺	Periodate	IO ₄ ¹⁻
Vanadium (III)	V ³⁺	Permanganate	MnO ₄ ¹⁻
Zinc	Zn ²⁺	Peroxide	O ₂ ²⁻
		Phosphate	PO ₄ ³⁻
		Phosphite	PO ₃ ³⁻
		Pyrophosphate	P ₂ O ₇ ⁴⁻
		Silicate	SiO ₃ ²⁻
		Sulfate	SO ₄ ²⁻
		Sulfite	SO ₃ ²⁻
		Thiocyanate	SCN ¹⁻
		Thiosulfate	S ₂ O ₃ ²⁻

Note: Ions that are easily predicted using the periodic table are not included in this list.

Solubility Rules

- All compounds containing nitrate, acetate, or chlorate anions are **soluble**.
- All compounds containing ammonium, sodium, potassium, rubidium, or cesium cations are **soluble**.
- Compounds containing chloride, bromide, or iodide anions are **soluble**, except for AgCl, PbCl₂, HgCl₂, AgBr, PbBr₂, HgBr₂, AgI, PbI₂, and HgI₂ which are **insoluble**.
- Compounds containing sulfate are **soluble**, except BaSO₄, Sr SO₄, Ca SO₄, and Pb SO₄ which are **insoluble**.
- Compounds containing a metal cation and carbonate, chromate, hydroxide, phosphate, or sulfide are **insoluble**. Compounds containing hydrogen vary: HOH is a liquid (H₂O_(l)), H₂CO₃ decomposes to H₂O_(l) & CO₂ gas, and H₂S is a gas.

Number of atoms	Prefix
1	Mono
2	Di
3	Tri
4	Tetra
5	Penta
6	Hexa
7	Hepta
8	Octa
9	Nona
10	Deca

Prefix (abbreviation)	Power	Decimal
Giga (G)	10 ⁹	1,000,000,000
Mega (M)	10 ⁶	1,000,000
Kilo (K)	10 ³	1,000
Hecto (H)	10 ²	100
Deca (D)	10 ¹	10
(none)	10 ⁰	1
Deci (d)	10 ⁻¹	0.1
Centi (c)	10 ⁻²	0.01
Milli (m)	10 ⁻³	0.001
Micro (μ)	10 ⁻⁶	0.000 001
Nano (n)	10 ⁻⁹	0.000 000 001

Activity Series of Metals

Metal	Oxidation Rxn
Lithium	Li _(s) → Li ⁺ _(aq) + e ⁻
Potassium	K _(s) → K ⁺ _(aq) + e ⁻
Barium	Ba _(s) → Ba ²⁺ _(aq) + 2e ⁻
Calcium	Ca _(s) → Ca ²⁺ _(aq) + 2e ⁻
Sodium	Na _(s) → Na ⁺ _(aq) + e ⁻
Magnesium	Mg _(s) → Mg ²⁺ _(aq) + 2e ⁻
Aluminum	Al _(s) → Al ³⁺ _(aq) + 3e ⁻
Manganese	Mn _(s) → Mn ²⁺ _(aq) + 2e ⁻
Zinc	Zn _(s) → Zn ²⁺ _(aq) + 2e ⁻
Chromium	Cr _(s) → Cr ³⁺ _(aq) + 3e ⁻
Iron	Fe _(s) → Fe ²⁺ _(aq) + 2e ⁻
Cobalt	Co _(s) → Co ²⁺ _(aq) + 2e ⁻
Nickel	Ni _(s) → Ni ²⁺ _(aq) + 2e ⁻
Tin	Sn _(s) → Sn ²⁺ _(aq) + 2e ⁻
Lead	Pb _(s) → Pb ²⁺ _(aq) + 2e ⁻
Hydrogen	H _{2(g)} → 2H ⁺ _(aq) + 2e ⁻
Copper	Cu _(s) → Cu ²⁺ _(aq) + 2e ⁻
Silver	Ag _(s) → Ag ⁺ _(aq) + e ⁻
Mercury	Hg _(l) → Hg ²⁺ _(aq) + 2e ⁻
Platinum	Pt _(s) → Pt ²⁺ _(aq) + 2e ⁻
Gold	Au _(s) → Au ³⁺ _(aq) + 3e ⁻

↑ Most Reactive
 Least Reactive

Elements in red will replace Hydrogen from both acids and water

Physical State	Indicates the physical state of the substance whose formula it follows.
(l)	Indicates the substance is a liquid.
(s)	Indicates the substance is a solid.
(aq)	Indicates the substance is in an aqueous solution (H ₂ O).