

Periodic Table of the Elements

	1 (1A)											13 (3A)	14 (4A)	15 (5A)	16 (6A)	17 (7A)	18 (8A)	
1	1 H 1.008																2 He 4.003	
2	3 Li 6.941	4 Be 9.012											5 B 10.81	6 C 12.01	7 N 14.01	8 O 16.00	9 F 19.00	10 Ne 20.18
3	11 Na 22.99	12 Mg 24.31	3 (3B)	4 (4B)	5 (5B)	6 (6B)	7 (7B)	8 ()	9 8B	10 ()	11 (1B)	12 (2B)	13 Al* 26.98	14 Si 28.09	15 P 30.97	16 S 32.06	17 Cl 35.45	18 Ar 39.95
4	19 K 39.10	20 Ca 40.08	21 Sc 44.96	22 Ti 47.88	23 V 50.94	24 Cr 52.00	25 Mn 54.94	26 Fe 55.85	27 Co 58.93	28 Ni 58.69	29 Cu 63.55	30 Zn* 65.38	31 Ga 69.72	32 Ge 72.59	33 As 74.92	34 Se 78.96	35 Br 79.90	36 Kr 83.80
5	37 Rb 85.47	38 Sr 87.62	39 Y 88.91	40 Zr 91.22	41 Nb 92.91	42 Mo 95.94	43 Tc (98)	44 Ru 101.1	45 Rh 102.9	46 Pd 106.4	47 Ag* 107.9	48 Cd* 112.4	49 In 114.8	50 Sn 118.7	51 Sb 121.8	52 Te 127.6	53 I 126.9	54 Xe 131.3
6	55 Cs 132.9	56 Ba 137.3	57 La 138.9	72 Hf 178.5	73 Ta 180.9	74 W 183.9	75 Re 186.2	76 Os 190.2	77 Ir 192.2	78 Pt 195.1	79 Au 197.0	80 Hg 200.6	81 Tl 204.4	82 Pb 207.2	83 Bi 209.0	84 Po (209)	85 At (210)	86 Rn (222)
7	87 Fr (223)	88 Ra (226)	89 Ac (227)	104 Rf (265)	105 Db/Ha (268)	106 Sg (271)	107 Bh (270)	108 Hs (277)	109 Mt (276)	110 Ds (281)	111 Rg (280)	112 Cn (285)	113 Uut (284)	114 Fl (289)	115 Uup (288)	116 Lv (293)	117 Uus (294)	118 Uuo (294)
		6 4f	58 Ce 140.1	59 Pr 140.9	60 Nd 144.2	61 Pm (145)	62 Sm 150.4	63 Eu 152.0	64 Gd 157.3	65 Tb 158.9	66 Dy 162.5	67 Ho 164.9	68 Er 167.3	69 Tm 168.9	70 Yb 173.0	71 Lu 175.0		
		7 5f	90 Th 232.0	91 Pa (231)	92 U 238.0	93 Np (237)	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 (262)		

Diatomic elements: H₂, O₂, N₂, F₂, Cl₂, Br₂, I₂; The most common **gases** are H₂, O₂, N₂, F₂, Cl₂, CO₂, SO₂, NH₃, and NO₂

Common acids: HCl, H₂SO₄, HNO₃, HC₂H₃O₂, H₃PO₄, H₂CO₃

Precipitate Solubility Rules

- Most nitrate (NO₃⁻) and (C₂H₃O₂⁻) salts are soluble.
- Salts of Li⁺, Na⁺, K⁺, Rb⁺, Cs⁺ and NH₄⁺ are soluble.
- Most chloride, bromide, iodide salts are soluble. Notable exceptions are Cu⁺, Ag⁺, Pb²⁺, and Hg²⁺.
- Most sulfate salts are soluble. Notable exceptions are BaSO₄, PbSO₄, CaSO₄ and SrSO₄.
- Most hydroxide compounds are only slightly soluble (not soluble). The *soluble* hydroxides are Li⁺, Na⁺, K⁺, Rb⁺, Cs⁺ and Ca²⁺, Sr²⁺ and Ba²⁺.
- Most sulfide (S²⁻) are not soluble. Except Li⁺, Na⁺, K⁺, Rb⁺, Cs⁺ and Mg²⁺, Ca²⁺, Sr²⁺ and Ba²⁺.
- All salts containing CO₃²⁻, PO₄³⁻, AsO₄³⁻, CrO₄²⁻, IO₃⁻ are insoluble, except those containing Li⁺, Na⁺, K⁺, Rb⁺, Cs⁺ and NH₄⁺.

Names of Polyatomic Ions

Ion	Name	Ion	Name
NH ₄ ⁺	Ammonium	CO ₃ ²⁻	Carbonate
NO ₂ ⁻	Nitrite	HCO ₃ ⁻	Hydrogen Carbonate
NO ₃ ⁻	Nitrate		(Bicarbonate is a widely used common name)
SO ₃ ²⁻	Sulfite	ClO ⁻	Hypochlorite
SO ₄ ²⁻	Sulfate	ClO ₂ ⁻	Chlorite
HSO ₄ ⁻	Hydrogen Sulfate	ClO ₃ ⁻	Chlorate
	(Bisulfate is a widely used common name)	ClO ₄ ⁻	Perchlorate
OH ⁻	Hydroxide	C ₂ H ₃ O ₂ ⁻	Acetate
CN ⁻	Cyanide	MnO ₄ ⁻	Permanganate
PO ₄ ³⁻	Phosphate	Cr ₂ O ₇ ²⁻	Dichromate
HPO ₄ ²⁻	Hydrogen Phosphate	CrO ₄ ²⁻	Chromate
H ₂ PO ₄ ⁻	Dihydrogen Phosphate	O ₂ ²⁻	Peroxide

Note: Use your knowledge of electron configuration to predict ion charges for most elements; Examples:
 Group I ions 1+
 Group II ions 2+
 Group 17 ions 1-
 Group 16 ions 2-

NOTE: Use Roman numerals for all **transition element ions**. Examples:
 Cu²⁺ copper (II)
 Cu¹⁺ copper (I)
 Exceptions (no Roman numerals):
 Zn²⁺ zinc Cd²⁺ cadmium
 Ag¹⁺ silver Al³⁺ aluminum

Activity Series

Li	F
K	Cl
Ba	Br
Ca	I
Na	
Mg	
Al	
Zn	
Fe	
Cr	
Cd	
Co	
Ni	
Sn	
Pb	
H*	
Cu	
Hg	
Ag	
Pt	
Au	

Energy		Length		Volume		Mass		Pressure	
SI Unit: joule (J)		SI Unit: meter (m)		SI Unit: cubic meter (m ³)		SI Unit: kilogram (kg)		SI Unit: Pascal (Pa)	
1 joule	=0.23901 calorie	1 meter	=1.0936 yd.	1 liter	=10 ⁻³ m ³	1 kilogram	=1000 grams	1 atmosphere	=101.325 kPa
1 calorie	=4.184 joules	1 centimeter	=0.39370 in.		=1 dm ³		=2.2046 lbs.	(atm.)	=760 torr
		1 in. (exact)	=2.54 cm.		=1.0567 quarts	1 pound	=453.59 g.		=760 mm Hg
		1 kilometer	=0.62137 mi.	1 gallon	=4 quarts		=0.45359 kg.		=14.70 psi
		1 mile	=5280 feet		=8 pints		=16 ounces		(pounds per square inch)
			=1.6093 km.		=3.7854 liters	1 AMU	=1.66056 X		
				1 quart	=32 fluid ounces	(atomic mass unit)	10 ⁻²⁷ kilogram		
					=0.94633 liter				