

Physical Science Reference Tables

MOTION AND ENERGY

$$\bar{v} = \frac{\Delta d}{\Delta t}$$

$$a = \frac{v_f - v_i}{\Delta t}$$

$$F = ma$$

$$F_g = mg$$

$$p = mv$$

$$W = F\Delta d$$

$$P = \frac{W}{\Delta t}$$

$$PE_g = mgh = F_g h$$

$$KE = \frac{1}{2}mv^2$$

$$IMA = \frac{d_E}{d_R}$$

$$AMA = \frac{F_R}{F_E}$$

$$\text{Efficiency} = \frac{W_{out}}{W_{in}} \times 100$$

$$v_w = f\lambda$$

v = velocity

d = position

t = time

a = uniform acceleration

F = force

m = mass

F_g = weight

g = acceleration due to gravity on Earth
= 9.8 m/s/s

p = momentum

W = work

P = power

PE_g = gravitational potential energy

h = height

KE = kinetic energy

IMA = ideal mechanical advantage

AMA = actual mechanical advantage

R = resistance

E = effort

v_w = wave velocity

f = frequency

λ = wavelength

ELECTRICITY

$$V = IR$$

$$P = VI$$

V = electrical potential difference

I = current

R = resistance

P = power

DENSITY

$$D = \frac{m}{V}$$

D = density

m = mass

V = volume

PERIODIC TABLE

1 IA								
1 H Hydrogen 1.008	2 IIA							
3 Li Lithium 6.941	4 Be Beryllium 9.012							
11 Na Sodium 22.99	12 Mg Magnesium 24.31	3 IIIB	4 IVB	5 VB	6 VIB	7 VIIB	8 VIIIB	9 VIIIB
19 K Potassium 39.10	20 Ca Calcium 40.08	21 Sc Scandium 44.96	22 Ti Titanium 47.88	23 V Vanadium 50.94	24 Cr Chromium 51.99	25 Mn Manganese 54.94	26 Fe Iron 55.85	27 Co Cobalt 58.93
37 Rb Rubidium 85.47	38 Sr Strontium 87.62	39 Y Yttrium 88.91	40 Zr Zirconium 91.22	41 Nb Niobium 92.91	42 Mo Molybdenum 95.94	43 Tc Technetium (98)	44 Ru Ruthenium 101.07	45 Rh Rhodium 102.91
55 Cs Cesium 132.91	56 Ba Barium 137.38	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
87 Fr Francium (223)	88 Ra Radium (226)	89 Ac Actinium (227)	104 Rf Rutherfordium (261)	105 Db Dubnium (262)	106 Sg Seaborgium (263)	107 Bh Bohrium (264)	108 Hs Hassium (269)	109 Mt Meitnerium (268)

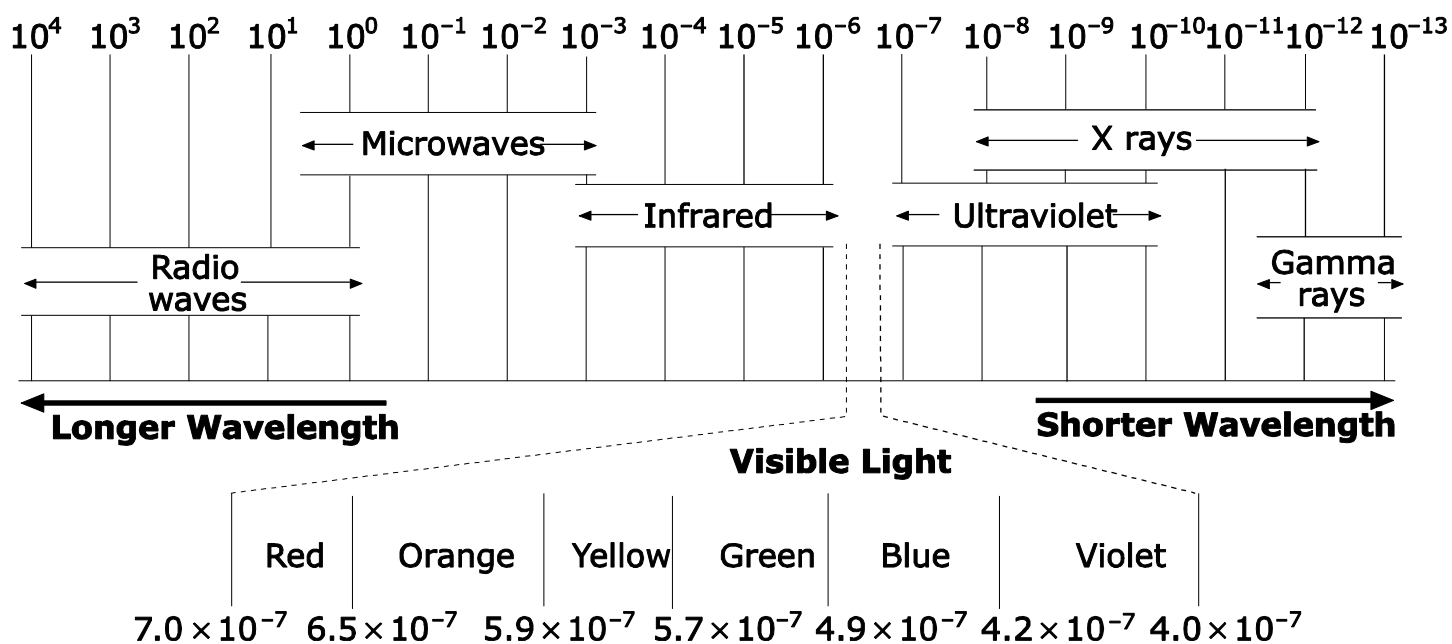
58 Ce Cerium 140.12	59 Pr Praseodymium 140.91	60 Nd Neodymium 144.24	61 Pm Promethium (145)	62 Sm Samarium 150.36	63 Eu Europium 151.96	64 Gd Gadolinium 157.25
90 Th Thorium 232.04	91 Pa Protactinium 231.04	92 U Uranium 238.04	93 Np Neptunium (237)	94 Pu Plutonium (244)	95 Am Americium (243)	96 Cm Curium (247)

OF THE ELEMENTS

							18 VIIIA	
			13 IIIA	14 IVA	15 VA	16 VIA	17 VIIA	2 He Helium 4.003
			5 B Boron 10.81	6 C Carbon 12.01	7 N Nitrogen 14.01	8 O Oxygen 16.00	9 F Fluorine 19.00	10 Ne Neon 20.18
10 VIIIB	11 IB	12 IIB	13 Al Aluminum 26.98	14 Si Silicon 28.09	15 P Phosphorus 30.97	16 S Sulfur 32.07	17 Cl Chlorine 35.45	18 Ar Argon 39.95
28 Ni Nickel 58.69	29 Cu Copper 63.55	30 Zn Zinc 65.39	31 Ga Gallium 69.72	32 Ge Germanium 72.61	33 As Arsenic 74.92	34 Se Selenium 78.96	35 Br Bromine 79.90	36 Kr Krypton 83.80
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
78 Pt Platinum 195.08	79 Au Gold 196.97	80 Hg Mercury 200.59	81 Tl Thallium 204.38	82 Pb Lead 207.20	83 Bi Bismuth 208.98	84 Po Polonium (209)	85 At Astatine (210)	86 Rn Radon (222)
110 Ds Darmstadtium (271)	111 Rg Roentgenium (272)	112 Cn Copernicium (285)						

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
97 Bk Berkelium (247)	98 Cf Californium (251)	99 Es Einsteinium (252)	100 Fm Fermium (257)	101 Md Mendelevium (258)	102 No Nobelium (254)	103 Lr Lawrencium (262)

Electromagnetic Spectrum (measurement in meters)



Polyatomic Ions	
NH_4^+	Ammonium
$\text{C}_2\text{H}_3\text{O}_2^-$	Acetate
ClO_3^-	Chlorate
NO_3^-	Nitrate
OH^-	Hydroxide
CO_3^{2-}	Carbonate
SO_4^{2-}	Sulfate
PO_4^{3-}	Phosphate