57	19	68	16
La	K	Er	S
138.91	39.10	167.26	32.07

Key:

13	Atomic number
Al	Symbol
Aluminium	Name
26.9	Atomic mass

Main group metals
Transition metals
Metalloids
Nonmetals
Noble gases

IA	IIA	IIIB	IVB	VB	VIB	VIIB	VIIIB			IB	IIB	IIIA	IVA	VA	VIA	VIIA	VIIIA
1 H Hydrogen 1.008																	2 He Helium 4.003
3 Li Lithium 6.94	4 Be Beryllium 9.01											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
11 Na Sodium 22.99	12 Mg Magnesium 24.31											13 Al Aluminium 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
19 K Potassium 39.10	20 Ca Calcium 40.08	21 Sc Scandium 44.96	22 Ti Titanium 47.87	23 V Vanadium 50.94	24 Cr Chromium 52.00	25 Mn Manganese 54.94	26 Fe Iron 55.85	27 Co Cobalt 58.93	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
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 Molybdenium 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
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)
87 Fr Francium (223)	88 Ra Radium (226)	89 Ac** Actinium (227)	104 Rf Rutherfordium (265)	105 Db Dubnium (268)	106 Sg Seaborgium (272)	107 Bh Bohrium (273)	108 Hs Hassium (276)	109 Mt Meitnerium (279)	110 Ds Darmstadtium (278)	111 Rg Roentgenium (283)	112 Uub Ununbium (285)	113 Uut Ununtrium (287)	114 Fl Flerovium (289)	115 Uup Ununpentium (291)	116 Lv Livermorium (293)	117 Uus Ununseptium (292)	118 Uuo Ununoctium (294)

(#) = most stable isotope mass number

*Lanthanides	58 Ce Cerium 140.12	59 Pr Praseodymium 140.91	60 Nd Neodymium 144.24	61 Pm Promethium (145)	62 Sm Samarium 150.14	63 Eu Europium 151.96	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
**Actinides	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 (262)

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Quantity	Symbol	Value	Units
Speed of light	c	$2.99792458 \cdot 10^{8}$	m/s
Planck constant	h	$6.6260755 \cdot 10^{-34}$	J·s
	$h/2\pi$	$1.0545727 \cdot 10^{-34}$	J·s
	h	$4.1356692 \cdot 10^{-15}$	eV·s
Boltzmann constant	k_B	$1.380658 \cdot 10^{-23}$	J/K
		$8.617385 \cdot 10^{-5}$	eV/K
Elementary charge	e	$1.60217733 \cdot 10^{-19}$	C
One Coulomb	C	$6.24150 \cdot 10^{18}$	electron charges
Electron Volt	eV	$1.60217733 \cdot 10^{-19}$	J
Avogadro number	N_A	$6.0221367 \cdot 10^{23}$	particles/mol
Electron rest mass	m_e	$9.1093897 \cdot 10^{-31}$	kg
Proton rest mass	m_p	$1.6726231 \cdot 10^{-27}$	kg
Neutron rest mass	m_n	$1.6749286 \cdot 10^{-27}$	kg
Charge-to-mass ratio	e / m_e	$1.75880 \cdot 10^{11}$	C/kg
Atomic mass unit	amu	$1.66054 \cdot 10^{-27}$	kg
Bohr radius	a_0	$5.29177 \cdot 10^{-11}$	m
Gas constant	R	8.3144621	J / mol K
	R	$R = N_A k_B$	$m^2 \cdot kg/s^2 \cdot K \cdot mol$
Molar volume (@STP)	V_{mol}	22.41383	L/mol
Faraday constant	F	$9.64846 \cdot 10^{4}$	C/mol
Gravitational constant	G	$6.67390 \cdot 10^{-11}$	$m^3/kg \cdot s^2$
Accel. due to gravity	g	9.80665	m/s^2
Speed of Sound		$\sim 3.3 \cdot 10^{2}$	m/s
Rydberg constant	R_H	$1.097 \cdot 10^{7}$	m^{-1}

Length	**Force Energy and Work**
1 in = 2.54 cm	1lb = 4.45 N
1cm = 0.394 in	1 N = 0.225 lb
1 ft = 30.5 cm	1J = 10^7 ergs = 0.239 cal
1 m = 39.4 in = 3.28 ft = 1.09 yd	1 cal = 4.184 J
1 mi = 5280 ft = 1609 m = 1.609 km	1 ft·lb = 1.356 J
1 km = 0.621 mi	1 BTU = 1060 J = 252 cal
1 angstrom Å = 10^{-10}m = 100pm	1 eV = $1.602 \cdot 10^{-19}$ J
Volume and Density	1kWh = $3.60 \cdot 10^{6}$ J
1 liter L = 1000 cm^3 = 61.02 in^3	**Power**
1 gallon = 3.79 liters L = 0.832 imp. gal.	1 W = 1 J/s = 0.738 ft·lb/s
1 m^3 = 1000 L = 264 gallons	1 hp (U.S.) = 550 ft·lb/s = 746 W
1 $kg/m^3 = 10^{-3} g/cm^3$	
1 US dry pint = 33.6 cu in = 0.551 L	**Pressure**
1 US liq. pint = 0.8327 imp. pint = 0.4732 L	1 atm = 1.01 bar = $1.01 \cdot 10^5$ N/m^2
Speed	1 atm = 14.7 lb/in^2 = 760 torr
1 mi/h = 1.47 ft/s = 1.61 km/h = 0.447 m/s	1 lb/in^2 = $6.90 \cdot 10^3$ N/m^2
1 km/h = 0.278 m/s = 0.621 mi/h	1 Pa = 1 N/m^2 = $1.45 \cdot 10^{-4}$ lb/in^2
1 ft/s = 0.305 m/s = 0.682 mi/h	**Angle**
1 m/s = 3.28 ft/s = 3.60 km/h	1 rad = 57.30° = 180°/π
Mass	1° = 0.01745 rad
1 amu = $1.660 \cdot 10^{-27}$ kg = 931.5 MeV/c^2	1 rev = 360° = 2π rad
1 kg = 2.20 lb at g = 9.81 m/s^2	1 Hz = 1 cycle/s = 360°/s
1 g = 0.0353 ounce (oz) = 438 grains	**Temperature**
1 lb = 0.454 kg = 16 oz	degrees C = 5/9 * (degrees F - 32)
	degrees F =(9/5 * degree C) + 32

Source: National Institute of Standards and Technology (NIST)

LSSU Physical Sciences

(Degree Programs)

***Certified by American Chemical Society**

Chemistry, B.S.*
Forensic Chemistry, B.S.*
Biochemistry (Pre-Professional), B.S.*
- -Pre-Med
- -Pre-Pharmacy

Environmental Science, B.S.
- -Environmental Chemistry concentration*
- -Physical Science concentration
- -Policy & Management concentration

Environmental Health, B.S.
Geology, B.S.
- -Environmental Geology option available

Secondary Education, B.S.
- -Chemistry
- -Physical Science

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Prefix	Symbol	Notation
tera	T	10^{12}
giga	G	10^{9}
mega	M	10^{6}
kilo	k	10^{3}
deci	d	10^{-1}
centi	c	10^{-2}
milli	m	10^{-3}
micro	μ	10^{-6}
nano	n	10^{-9}
pico	p	10^{-12}
femto	f	10^{-15}

Symbol	Name	Symbol	Name	Symbol	Name
NO_3^-	nitrate	ClO_4^-	perchlorate	SO_4^{2-}	sulfate
NO_2^-	nitrite	ClO_3^-	chlorate	HSO_4^-	hydrogen sulfate
CrO_4^{2-}	chromate	ClO_2^-	chlorite	SO_3^{2-}	sulfite
$Cr_2O_7^{2-}$	dichromate	ClO^-	hypochlorite	HSO_3^-	hydrogen sulfite
CN^-	cyanide	IO_4^-	periodate	$C_2O_4^{2-}$	oxalate
MnO_4^-	permanganate	IO_3^-	iodate	$HC_2O_4^-$	hydrogen oxalate
OH^-	hydroxide	IO^-	hypoiodite	PO_4^{3-}	phosphate
O_2^{2-}	peroxide	BrO_3^-	bromate	HPO_4^{2-}	hydrogen phosphate
NH_2^-	amide	BrO^-	hypobromite	HPO_3^{3-}	phosphite
CO_3^{2-}	carbonate	HCO_3^-	hydrogen carbonate	$H_2PO_4^-$	dihydrogen phosphate