

# Periodic Table of the Elements

Period	s-block	
	1 IA	
1	1.00794 1 1s <sup>1</sup>	H +1 -1

**KEY**

Atomic Mass → 12.0111

Symbol → **C**

Atomic Number → 6

Electron Configuration → 1s<sup>2</sup>2s<sup>2</sup>2p<sup>2</sup>

Selected Oxidation States → -4, +2, +4

Relative atomic masses are based on <sup>12</sup>C = 12.00000

s-block  
**GROUP**

1  
IA

2  
IIA

**New Designation**

**Former Designation**  
(prior to 1984 IUPAC decision)

2	6.941 3 1s <sup>2</sup> 2s <sup>1</sup>	9.01218 4 1s <sup>2</sup> 2s <sup>2</sup>										
	Li	Be										
3	22.98977 11 [Ne]3s <sup>1</sup>	24.305 12 [Ne]3s <sup>2</sup>										
	Na	Mg										
4	39.0983 19 [Ar]4s <sup>1</sup>	40.08 20 [Ar]4s <sup>2</sup>	44.9559 21 [Ar]3d <sup>1</sup> 4s <sup>2</sup>	47.88 22 [Ar]3d <sup>2</sup> 4s <sup>2</sup>	50.9415 23 [Ar]3d <sup>3</sup> 4s <sup>2</sup>	51.996 24 [Ar]3d <sup>4</sup> 4s <sup>1</sup>	54.9380 25 [Ar]3d <sup>5</sup> 4s <sup>2</sup>	55.847 26 [Ar]3d <sup>6</sup> 4s <sup>2</sup>	58.9332 27 [Ar]3d <sup>7</sup> 4s <sup>2</sup>	58.69 28 [Ar]3d <sup>8</sup> 4s <sup>2</sup>	58.9332 29 [Ar]3d <sup>9</sup> 4s <sup>2</sup>	
	K	Ca	Sc	Ti	V	Cr	Mn	Fe	Co	Ni		
5	85.4678 37 [Kr]5s <sup>1</sup>	87.62 38 [Kr]5s <sup>2</sup>	88.9059 39 [Kr]4d <sup>1</sup> 5s <sup>2</sup>	91.224 40 [Kr]4d <sup>2</sup> 5s <sup>2</sup>	92.9064 41 [Kr]4d <sup>3</sup> 5s <sup>1</sup>	95.94 42 [Kr]4d <sup>4</sup> 5s <sup>1</sup>	(98) 43 [Kr]4d <sup>5</sup> 5s <sup>1</sup>	101.07 44 [Kr]4d <sup>6</sup> 5s <sup>1</sup>	102.906 45 [Kr]4d <sup>7</sup> 5s <sup>1</sup>	106.42 46 [Kr]4d <sup>8</sup> 5s <sup>0</sup>	107.86 47 [Kr]4d <sup>9</sup> 5s <sup>0</sup>	
	Rb	Sr	Y	Zr	Nb	Mo	Tc	Ru	Rh	Pd		
6	132.905 55 [Xe]6s <sup>1</sup>	137.33 56 [Xe]6s <sup>2</sup>	178.49 57 [Xe]4f <sup>1</sup> 5d <sup>1</sup> 6s <sup>2</sup>	178.49 71 [Xe]4f <sup>14</sup> 5d <sup>1</sup> 6s <sup>2</sup>	180.948 72 [Xe]4f <sup>14</sup> 5d <sup>2</sup> 6s <sup>2</sup>	183.85 73 [Xe]4f <sup>14</sup> 5d <sup>3</sup> 6s <sup>2</sup>	186.207 74 [Xe]4f <sup>14</sup> 5d <sup>4</sup> 6s <sup>2</sup>	190.2 75 [Xe]4f <sup>14</sup> 5d <sup>5</sup> 6s <sup>2</sup>	192.22 76 [Xe]4f <sup>14</sup> 5d <sup>6</sup> 6s <sup>2</sup>	195.08 77 [Xe]4f <sup>14</sup> 5d <sup>7</sup> 6s <sup>2</sup>	196.96 78 [Xe]4f <sup>14</sup> 5d <sup>8</sup> 6s <sup>2</sup>	196.96 79 [Xe]4f <sup>14</sup> 5d <sup>9</sup> 6s <sup>2</sup>
	Cs	Ba	La-Lu	Hf	Ta	W	Re	Os	Ir	Pt		
7	(223) 87 [Rn]7s <sup>1</sup>	226.025 88 [Rn]7s <sup>2</sup>	226.025 89 [Rn]7s <sup>2</sup>	226.025 103 [Rn]7s <sup>2</sup>	(261) 104 [Rn]7s <sup>2</sup>	(262) 105 [Rn]7s <sup>2</sup>	(263) 106 [Rn]7s <sup>2</sup>	(262) 107 [Rn]7s <sup>2</sup>	(262) 108 [Rn]7s <sup>2</sup>	(262) 109 [Rn]7s <sup>2</sup>	(262) 110 [Rn]7s <sup>2</sup>	(262) 111 [Rn]7s <sup>2</sup>
	Fr	Ra	Ac-Lr	Unq*	Unp	Unh	Uns	Uno	Une			

MASS NUMBERS IN PARENTHESES ARE MASS NUMBERS OF THE MOST STABLE OR COMMON ISOTOPE

*d*-block

138.906 57 [Xe]5d <sup>1</sup> 6s <sup>2</sup>	140.12 58 [Xe]5d <sup>2</sup> 6s <sup>2</sup>	140.908 59 [Xe]5d <sup>3</sup> 6s <sup>2</sup>	144.24 60 [Xe]5d <sup>4</sup> 6s <sup>2</sup>	(145) 61 [Xe]5d <sup>5</sup> 6s <sup>2</sup>	150.36 62 [Xe]5d <sup>6</sup> 6s <sup>2</sup>	151.96 63 [Xe]5d <sup>7</sup> 6s <sup>2</sup>	157.25 64 [Xe]5d <sup>8</sup> 6s <sup>2</sup>
La	Ce	Pr	Nd	Pm	Sm	Eu	
227.028 89 [Rn]6d <sup>1</sup> 7s <sup>2</sup>	232.038 90 [Rn]6d <sup>2</sup> 7s <sup>2</sup>	231.036 91 [Rn]6d <sup>3</sup> 7s <sup>2</sup>	238.029 92 [Rn]6d <sup>4</sup> 7s <sup>2</sup>	237.048 93 [Rn]6d <sup>5</sup> 7s <sup>2</sup>	(244) 94 [Rn]6d <sup>6</sup> 7s <sup>2</sup>	(243) 95 [Rn]6d <sup>7</sup> 7s <sup>2</sup>	(247) 96 [Rn]6d <sup>8</sup> 7s <sup>2</sup>
Ac	Th	Pa	U	Np	Pu	Am	

# lements

masses are  
2.00000

ation States

s-block  
18  
0

4.00260	0
<b>He</b>	
2	
$1s^2$	

			p-block GROUP								
			13 IIIA	14 IVA	15 VA	16 VIA	17 VIIA	18 0			
			10.81 5 <b>B</b> $1s^2 2s^2 2p^1$	12.0111 6 <b>C</b> $1s^2 2s^2 2p^2$	14.0067 7 <b>N</b> $1s^2 2s^2 2p^3$	15.9994 8 <b>O</b> $1s^2 2s^2 2p^4$	18.998403 9 <b>F</b> $1s^2 2s^2 2p^5$	20.179 10 <b>Ne</b> $1s^2 2s^2 2p^6$			
			26.98154 13 <b>Al</b> $[Ne] 3s^2 3p^1$	28.0855 14 <b>Si</b> $[Ne] 3s^2 3p^2$	30.97376 15 <b>P</b> $[Ne] 3s^2 3p^3$	32.06 16 <b>S</b> $[Ne] 3s^2 3p^4$	35.453 17 <b>Cl</b> $[Ne] 3s^2 3p^5$	39.948 18 <b>Ar</b> $[Ne] 3s^2 3p^6$			
10	11 IB	12 IIB	58.69 28 <b>Ni</b> $[Ar] 3d^8 4s^2$	63.546 29 <b>Cu</b> $[Ar] 3d^{10} 4s^1$	65.39 30 <b>Zn</b> $[Ar] 3d^{10} 4s^2$	69.72 31 <b>Ga</b> $[Ar] 3d^{10} 4s^2 4p^1$	72.59 32 <b>Ge</b> $[Ar] 3d^{10} 4s^2 4p^2$	74.9216 33 <b>As</b> $[Ar] 3d^{10} 4s^2 4p^3$	78.96 34 <b>Se</b> $[Ar] 3d^{10} 4s^2 4p^4$	79.904 35 <b>Br</b> $[Ar] 3d^{10} 4s^2 4p^5$	83.80 36 <b>Kr</b> $[Ar] 3d^{10} 4s^2 4p^6$
			106.42 46 <b>Pd</b> $[Kr] 4d^{10} 5s^0$	107.868 47 <b>Ag</b> $[Kr] 4d^{10} 5s^1$	112.41 48 <b>Cd</b> $[Kr] 4d^{10} 5s^2$	114.82 49 <b>In</b> $[Kr] 4d^{10} 5s^2 5p^1$	118.71 50 <b>Sn</b> $[Kr] 4d^{10} 5s^2 5p^2$	121.75 51 <b>Sb</b> $[Kr] 4d^{10} 5s^2 5p^3$	127.60 52 <b>Te</b> $[Kr] 4d^{10} 5s^2 5p^4$	128.905 53 <b>I</b> $[Kr] 4d^{10} 5s^2 5p^5$	131.29 54 <b>Xe</b> $[Kr] 4d^{10} 5s^2 5p^6$
			195.08 78 <b>Pt</b> $[Xe] 4f^{14} 5d^9 6s^1$	196.967 79 <b>Au</b> $[Xe] 4f^{14} 5d^{10} 6s^1$	200.59 80 <b>Hg</b> $[Xe] 4f^{14} 5d^{10} 6s^2$	204.383 81 <b>Tl</b> $[Xe] 4f^{14} 5d^{10} 6s^2 6p^1$	207.2 82 <b>Pb</b> $[Xe] 4f^{14} 5d^{10} 6s^2 6p^2$	208.980 83 <b>Bi</b> $[Xe] 4f^{14} 5d^{10} 6s^2 6p^3$	(209) 84 <b>Po</b> $[Xe] 4f^{14} 5d^{10} 6s^2 6p^4$	(210) 85 <b>At</b> $[Xe] 4f^{14} 5d^{10} 6s^2 6p^5$	(222) 86 <b>Rn</b> $[Xe] 4f^{14} 5d^{10} 6s^2 6p^6$
<p>* The systematic names and symbols for elements of atomic numbers greater than 103 will be used until the approval of trivial names by IUPAC.</p>											

MBERS

f-block

151.96 63 <b>Eu</b>	157.25 64 <b>Gd</b>	158.925 65 <b>Tb</b>	162.50 66 <b>Dy</b>	164.930 67 <b>Ho</b>	167.26 68 <b>Er</b>	168.934 69 <b>Tm</b>	173.04 70 <b>Yb</b>	174.967 71 <b>Lu</b>	Lanthanoid Series
(243) 95 <b>Am</b>	(247) 96 <b>Cm</b>	(247) 97 <b>Bk</b>	(251) 98 <b>Cf</b>	(252) 99 <b>Es</b>	(257) 100 <b>Fm</b>	(258) 101 <b>Md</b>	(259) 102 <b>No</b>	(260) 103 <b>Lr</b>	Actinoid Series

1 - group IUPAC  
1A - group CAS

period

1 **H**  
hydrogen  
1.0079

2 **He**  
helium  
4.0026

3 **Li**  
lithium  
6.941

4 **Be**  
beryllium  
9.012

5 **Na**  
sodium  
22.990

6 **Mg**  
magnesium  
24.305

7 **K**  
potassium  
39.098

8 **Ca**  
calcium  
40.078

9 **Rb**  
rubidium  
85.468

10 **Sr**  
strontium  
87.62

11 **Cs**  
cesium  
132.905

12 **Ba**  
barium  
137.327

13 **Fr**  
francium  
(223)

14 **Ra**  
radium  
(226)

15 **B**  
boron  
10.811

16 **C**  
carbon  
12.011

17 **N**  
nitrogen  
14.007

18 **O**  
oxygen  
15.999

19 **Al**  
aluminum  
26.982

20 **Si**  
silicon  
28.086

21 **P**  
phosphorus  
30.976

22 **S**  
sulfur  
32.065

23 **Cl**  
chlorine  
35.453

24 **Ar**  
argon  
39.948

25 **Sc**  
scandium  
44.956

26 **Ti**  
titanium  
47.867

27 **V**  
vanadium  
50.942

28 **Cr**  
chromium  
51.996

29 **Mn**  
manganese  
54.938

30 **Fe**  
iron  
55.845

31 **Co**  
cobalt  
58.933

32 **Ni**  
nickel  
58.693

33 **Cu**  
copper  
63.546

34 **Zn**  
zinc  
65.38

35 **Ga**  
gallium  
69.723

36 **Ge**  
germanium  
72.64

37 **As**  
arsenic  
74.922

38 **Se**  
selenium  
78.96

39 **Br**  
bromine  
79.904

40 **Kr**  
krypton  
83.798

41 **Y**  
yttrium  
88.906

42 **Zr**  
zirconium  
91.224

43 **Nb**  
niobium  
92.906

44 **Mo**  
molybdenum  
95.96

45 **Tc**  
technetium  
(98)

46 **Ru**  
ruthenium  
101.07

47 **Rh**  
rhodium  
102.91

48 **Pd**  
palladium  
106.42

49 **Ag**  
silver  
107.87

50 **Cd**  
cadmium  
112.411

51 **In**  
indium  
114.818

52 **Sn**  
tin  
118.710

53 **Sb**  
antimony  
121.760

54 **Te**  
tellurium  
127.60

55 **I**  
iodine  
126.904

56 **Xe**  
xenon  
131.293

57 **Lu**  
lutetium  
174.97

58 **Hf**  
hafnium  
178.49

59 **Ta**  
tantalum  
180.948

60 **W**  
tungsten  
183.84

61 **Re**  
rhenium  
186.207

62 **Os**  
osmium  
190.23

63 **Ir**  
iridium  
192.217

64 **Pt**  
platinum  
195.084

65 **Au**  
gold  
196.967

66 **Hg**  
mercury  
200.59

67 **Tl**  
thallium  
204.383

68 **Pb**  
lead  
207.2

69 **Bi**  
bismuth  
208.980

70 **Po**  
polonium  
(210)

71 **At**  
astatine  
(210)

72 **Rn**  
radon  
(220)

73 **Lr**  
lawrencium  
(262)

74 **Rf**  
rutherfordium  
(261)

75 **Db**  
dubnium  
(262)

76 **Sg**  
seaborgium  
(266)

77 **Bh**  
bohrium  
(264)

78 **Hs**  
hassium  
(277)

79 **Mt**  
meitnerium  
(268)

80 **Ds**  
darmstadtium  
(271)

81 **Rg**  
roentgenium  
(272)

82 **Cn**  
copernicium  
(285)

83 **Nh**  
nihonium  
(286)

84 **Fl**  
flerovium  
(289)

85 **Mc**  
moscovium  
(289)

86 **Lv**  
livermorium  
(293)

87 **Ts**  
tennessine  
(294)

88 **Og**  
oganesson  
(294)

atomic number — 6  
symbol — **C**  
name — carbon  
12.011 — atomic mass

—4  
+2  
+4 — common oxidation states

metals  
metalloids  
nonmetals  
unknown

3 IIB 4 IVB 5 VB 6 VIB 7 VIIB 8 VIIIIB 9 VIIIIB 10 VIIIIB 11 IB 12 IIB

Lanthanides

\* **La**  
lanthanum  
138.905

\* **Ce**  
cerium  
140.116

\* **Pr**  
praseodymium  
140.908

\* **Nd**  
neodymium  
144.242

\* **Pm**  
promethium  
(145)

\* **Sm**  
samarium  
150.36

\* **Eu**  
europium  
151.964

\* **Gd**  
gadolinium  
157.25

\* **Tb**  
terbium  
158.925

\* **Dy**  
dysprosium  
162.500

\* **Ho**  
holmium  
164.930

\* **Er**  
erbium  
167.259

\* **Tm**  
thulium  
168.934

\* **Yb**  
ytterbium  
173.054

Actinides

\* **Ac**  
actinium  
(227)

\* **Th**  
thorium  
232.038

\* **Pa**  
protactinium  
231.036

\* **U**  
uranium  
238.029

\* **Np**  
neptunium  
(237)

\* **Pu**  
plutonium  
(244)

\* **Am**  
americium  
(243)

\* **Cm**  
curium  
(247)

\* **Bk**  
berkelium  
(247)

\* **Cf**  
californium  
(251)

\* **Es**  
einsteinium  
(252)

\* **Fm**  
fermium  
(257)

\* **Md**  
mendelevium  
(258)

\* **No**  
nobelium  
(259)