

Group
Family

Period

- Boiling points higher
- Conduct electricity
- Conduct thermal energy
- Densities are higher
- Ductile (can be drawn into wire)
- Left side of staircase line
- Luster (shiny, reflective)
- Malleable (moldable)
- Melting points are higher
- Mercury is only liquid metal

- Most are solid
- Over 3/4 of the elements
- Stronger than other groups

Act as semiconductors
Not like metals at

Right side of staircase line
Solid ores are dull

high temps.
Not like nonmetals at low temps

Silicon is most abundant in this group.
Touching

Soft except diamond
Liquid
Gas

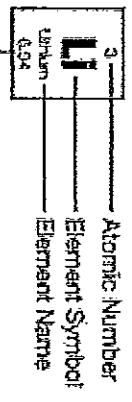
58 Cerium Ce 140.12	59 Praseodymium Pr 140.91	60 Neodymium Nd 144.24	61 Promethium Pm 144.91	62 Samarium Sm 150.36	63 Europium Eu 151.96	64 Gadolinium Gd 157.25	65 Terbium Tb 158.93	66 Dysprosium Dy 162.50	67 Holmium Ho 164.93	68 Erbium Er 167.26	69 Thulium Tm 168.93	70 Ytterbium Yb 173.04	71 Lutetium Lu 174.97
90 Thorium Th 232.04	91 Protactinium Pa 231.04	92 Uranium U 238.03	93 Neptunium Np 237	94 Plutonium Pu 244	95 Americium Am 243	96 Curium Cm 247	97 Berkelium Bk 247	98 Californium Cf 251	99 Einsteinium Es 252	100 Fermium Fm 257	101 Mendelevium Md 258	102 Nobelium No 259	103 Lawrencium Lr 262

- Key:
- Metals
 - Metalloids
 - Nonmetals

Lt. Col.
Phillips

Group
Family

The Periodic Table of the Elements



1 H Hydrogen 1.01	2 He Helium 4.00	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 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	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 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 72.64	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 Molybdenum 95.94	43 Tc Technetium 98.91	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 126.91	54 Xe Xenon 131.29	55 Cs Cesium 132.91	56 Ba Barium 137.33	57 La Lanthanum 138.91	58 Ce Cerium 140.12	59 Pr Praseodymium 140.91	60 Nd Neodymium 144.24	61 Pm Promethium 144.91	62 Sm Samarium 150.36	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 173.05	71 Lu Lutetium 174.97	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 204.39	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	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 260
----------------------------	---------------------------	----------------------------	------------------------------	--------------------------	---------------------------	-----------------------------	---------------------------	-----------------------------	---------------------------	-----------------------------	--------------------------------	-------------------------------	------------------------------	--------------------------------	----------------------------	-------------------------------	----------------------------	-------------------------------	------------------------------	-------------------------------	-------------------------------	------------------------------	-------------------------------	--------------------------------	---------------------------	-----------------------------	-----------------------------	-----------------------------	---------------------------	------------------------------	--------------------------------	------------------------------	-------------------------------	------------------------------	------------------------------	-------------------------------	--------------------------------	-----------------------------	--------------------------------	------------------------------	---------------------------------	---------------------------------	---------------------------------	-------------------------------	---------------------------------	------------------------------	-------------------------------	------------------------------	---------------------------	--------------------------------	---------------------------------	-----------------------------	-----------------------------	------------------------------	------------------------------	---------------------------------	------------------------------	------------------------------------	---------------------------------	----------------------------------	--------------------------------	--------------------------------	----------------------------------	-------------------------------	----------------------------------	-------------------------------	------------------------------	-------------------------------	---------------------------------	--------------------------------	-------------------------------	--------------------------------	-------------------------------	-------------------------------	------------------------------	-------------------------------	--------------------------------	----------------------------	-------------------------------	--------------------------------	---------------------------	-------------------------------	-----------------------------	-----------------------------	--------------------------	-----------------------------	---------------------------	-----------------------------	-------------------------------	------------------------------------	------------------------------	------------------------------	------------------------------	------------------------------	---------------------------	------------------------------	--------------------------------	--------------------------------	-----------------------------	---------------------------------	------------------------------	--------------------------------

• Don't conduct electricity
 • Includes hydrogen
 • Insulators
 • Many are gases
 • Need these to live
 • Poor conductors of heat

• Right side of staircase line
 • Solid ones are dull

• Soft except diamond

• 5 solid
 • 1 liquid
 • 6 gases

Key:

- Metals
- Metalloids
- Nonmetals

58 Ce Cerium 140.12	59 Pr Praseodymium 140.91	60 Nd Neodymium 144.24	61 Pm Promethium 144.91	62 Sm Samarium 150.36	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 173.05	71 Lu Lutetium 174.97
------------------------------	------------------------------------	---------------------------------	----------------------------------	--------------------------------	--------------------------------	----------------------------------	-------------------------------	----------------------------------	-------------------------------	------------------------------	-------------------------------	---------------------------------	--------------------------------