

# Coloring the Periodic Table Families

Periodic Table  
of the Elements

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\* Lanthanide Series  
+ Actinide Series

8<sup>th</sup> Grade Science  
Mrs. Winters

Some images are from [www.chem4kids.com](http://www.chem4kids.com)

[www.middleschoolscience.com](http://www.middleschoolscience.com) 2008

hydrogen 1 <b>H</b> 1.0079																				helium 2 <b>He</b> 4.0026
lithium 3 <b>Li</b> 6.941	beryllium 4 <b>Be</b> 9.0122													boron 5 <b>B</b> 10.811	carbon 6 <b>C</b> 12.011	nitrogen 7 <b>N</b> 14.007	oxygen 8 <b>O</b> 15.999	fluorine 9 <b>F</b> 18.998	neon 10 <b>Ne</b> 20.180	
sodium 11 <b>Na</b> 22.990	magnesium 12 <b>Mg</b> 24.305													aluminium 13 <b>Al</b> 26.982	silicon 14 <b>Si</b> 28.086	phosphorus 15 <b>P</b> 30.974	sulfur 16 <b>S</b> 32.065	chlorine 17 <b>Cl</b> 35.453	argon 18 <b>Ar</b> 39.948	
potassium 19 <b>K</b> 39.098	calcium 20 <b>Ca</b> 40.078	scandium 21 <b>Sc</b> 44.956	titanium 22 <b>Ti</b> 47.867	vanadium 23 <b>V</b> 50.942	chromium 24 <b>Cr</b> 51.996	manganese 25 <b>Mn</b> 54.938	iron 26 <b>Fe</b> 55.845	cobalt 27 <b>Co</b> 58.933	nickel 28 <b>Ni</b> 58.693	copper 29 <b>Cu</b> 63.546	zinc 30 <b>Zn</b> 65.39	gallium 31 <b>Ga</b> 69.723	germanium 32 <b>Ge</b> 72.61	arsenic 33 <b>As</b> 74.922	selenium 34 <b>Se</b> 78.96	bromine 35 <b>Br</b> 79.904	krypton 36 <b>Kr</b> 83.80			
rubidium 37 <b>Rb</b> 85.468	strontium 38 <b>Sr</b> 87.62	yttrium 39 <b>Y</b> 88.906	zirconium 40 <b>Zr</b> 91.224	niobium 41 <b>Nb</b> 92.906	molybdenum 42 <b>Mo</b> 95.94	technetium 43 <b>Tc</b> [98]	ruthenium 44 <b>Ru</b> 101.07	rhodium 45 <b>Rh</b> 102.91	palladium 46 <b>Pd</b> 106.42	silver 47 <b>Ag</b> 107.87	cadmium 48 <b>Cd</b> 112.41	indium 49 <b>In</b> 114.82	tin 50 <b>Sn</b> 118.71	antimony 51 <b>Sb</b> 121.76	tellurium 52 <b>Te</b> 127.60	iodine 53 <b>I</b> 126.90	xenon 54 <b>Xe</b> 131.29			
caesium 55 <b>Cs</b> 132.91	barium 56 <b>Ba</b> 137.33	57-70 *	lutetium 71 <b>Lu</b> 174.97	hafnium 72 <b>Hf</b> 178.49	tantalum 73 <b>Ta</b> 180.95	tungsten 74 <b>W</b> 183.84	rhenium 75 <b>Re</b> 186.21	osmium 76 <b>Os</b> 190.23	iridium 77 <b>Ir</b> 192.22	platinum 78 <b>Pt</b> 195.08	gold 79 <b>Au</b> 196.97	mercury 80 <b>Hg</b> 200.59	thallium 81 <b>Tl</b> 204.38	lead 82 <b>Pb</b> 207.2	bismuth 83 <b>Bi</b> 208.98	polonium 84 <b>Po</b> [209]	astatine 85 <b>At</b> [210]	radon 86 <b>Rn</b> [222]		
francium 87 <b>Fr</b> [223]	radium 88 <b>Ra</b> [226]	89-102 **	lawrencium 103 <b>Lr</b> [262]	rutherfordium 104 <b>Rf</b> [261]	dubnium 105 <b>Db</b> [262]	seaborgium 106 <b>Sg</b> [266]	bohrium 107 <b>Bh</b> [264]	hassium 108 <b>Hs</b> [269]	meitnerium 109 <b>Mt</b> [268]	ununnium 110 <b>Uun</b> [271]	ununium 111 <b>Uuu</b> [272]	ununium 112 <b>Uub</b> [277]		ununquadium 114 <b>Uuq</b> [289]						

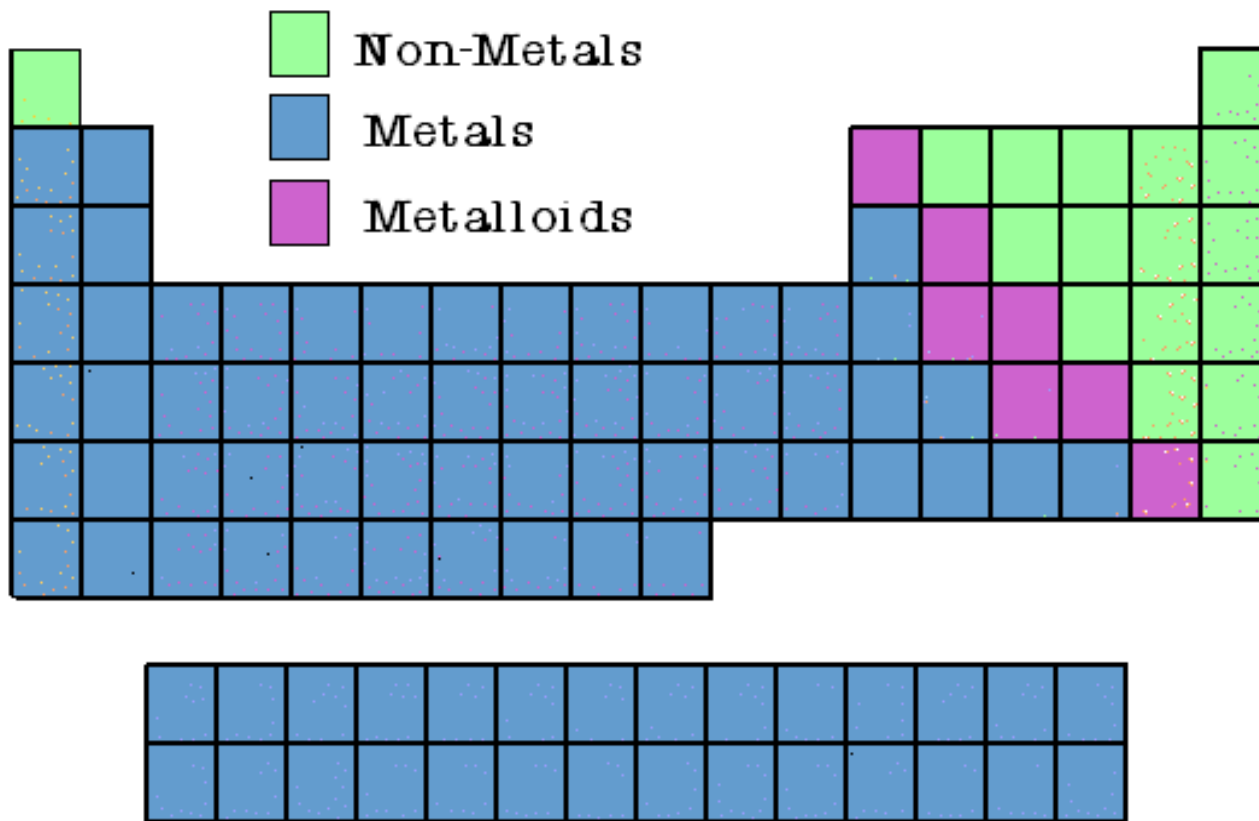
\* Lanthanide series

lanthanum 57 <b>La</b> 138.91	cerium 58 <b>Ce</b> 140.12	praseodymium 59 <b>Pr</b> 140.91	neodymium 60 <b>Nd</b> 144.24	promethium 61 <b>Pm</b> [145]	samarium 62 <b>Sm</b> 150.36	europium 63 <b>Eu</b> 151.96	gadolinium 64 <b>Gd</b> 157.25	terbium 65 <b>Tb</b> 158.93	dysprosium 66 <b>Dy</b> 162.50	holmium 67 <b>Ho</b> 164.93	erbium 68 <b>Er</b> 167.26	thulium 69 <b>Tm</b> 168.93	ytterbium 70 <b>Yb</b> 173.04
actinium 89 <b>Ac</b> [227]	thorium 90 <b>Th</b> 232.04	protactinium 91 <b>Pa</b> 231.04	uranium 92 <b>U</b> 238.03	neptunium 93 <b>Np</b> [237]	plutonium 94 <b>Pu</b> [244]	americium 95 <b>Am</b> [243]	curium 96 <b>Cm</b> [247]	berkelium 97 <b>Bk</b> [247]	californium 98 <b>Cf</b> [251]	einsteinium 99 <b>Es</b> [252]	fermium 100 <b>Fm</b> [257]	mendelevium 101 <b>Md</b> [258]	nobelium 102 <b>No</b> [259]

\*\* Actinide series

# Periodic Table

The elements of the periodic table can be divided into three main categories: Metals, Non-Metals, and Metalloids.



# Families on the Periodic Table

- Elements on the periodic table can be grouped into families based on their **chemical** properties.
- Each family has a **specific name** to differentiate it from the other families in the periodic table.
- Elements in each family **react** differently with other elements.

Periodic Table of the Elements

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3	Na																Mg										Al										Si										P										S										Cl										Ar																																																																																																													
4	K																Ca										Sc										Ti										V										Cr										Mn										Fe										Co										Ni										Cu										Zn										Ga										Ge										As										Se										Br										Kr									
5	Rb																Sr										Y										Zr										Nb										Mo										Tc										Ru										Rh										Pd										Ag										Cd										In										Sn										Sb										Te										I										Xe									
6	Cs																Ba										*La										Hf										Ta										W										Re										Os										Ir										Pt										Au										Hg										Tl										Pb										Bi										Po										At										Rn									
7	Fr																Ra										+Ac										Rf										Ha										106										107										108										109										110																																																																																									

\* Lanthanide Series

58	59	60	61	62	63	64	65	66	67	68	69	70	71
Ce	Pr	Nd	Pm	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb	Lu

+ Actinide Series

90	91	92	93	94	95	96	97	98	99	100	101	102	103
Th	Pa	U	Np	Pu	Am	Cm	Bk	Cf	Es	Fm	Md	No	Lr

# ALKALI METALS

## Group 1

- 1 electron in the outer shell
- **Soft and silvery metals**
- **Very** reactive, esp. with water
- Conduct electricity
- Hydrogen is ***not*** a member, because hydrogen is a non-metal

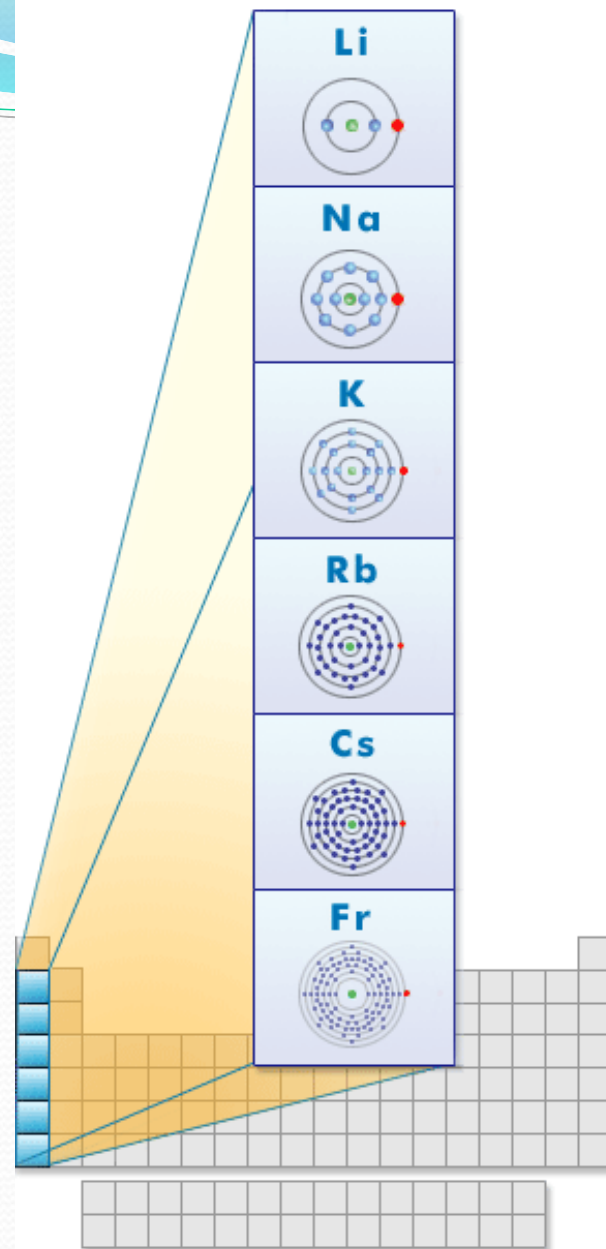
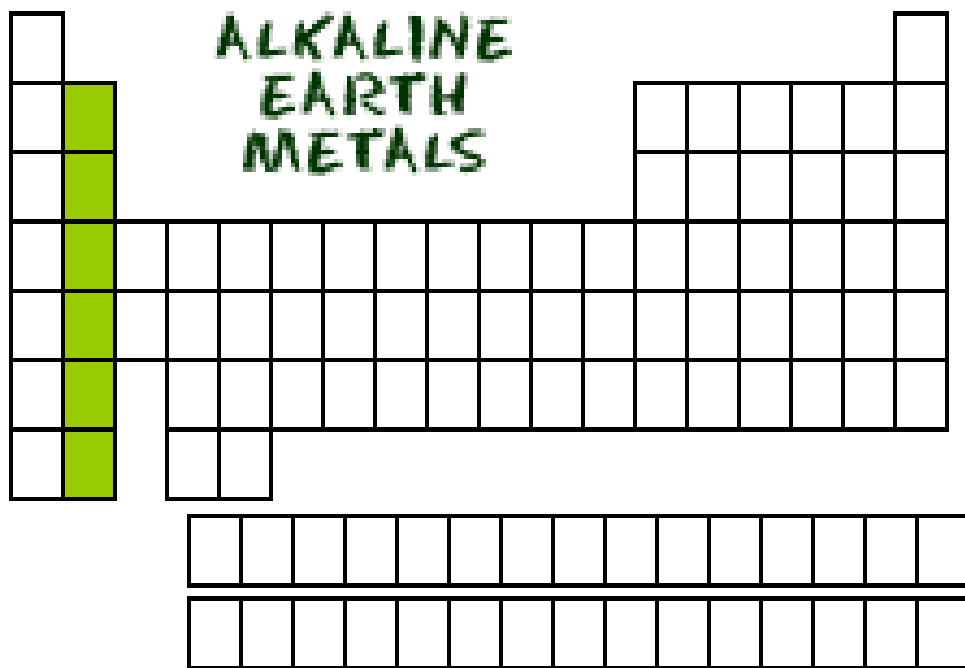


Image: <http://www.learner.org/interactives/periodic/groups2.html>

# ALKALINE EARTH METALS



## Group 2

- 2 electrons in the outer shell
- White and malleable
- Reactive, but less than Alkali metals
- Conduct electricity

# TRANSITION METALS

Periodic Table  
of the Elements

The diagram shows a simplified periodic table with a grid of cells. The transition metal block, consisting of 10 columns and 4 rows, is highlighted in blue. The rest of the table is shown in grey. The blue block starts at the beginning of the 4th, 5th, and 6th rows and ends at the beginning of the 7th row. The 7th row is shorter than the others.

A separate grid representing the transition metal block, consisting of 10 columns and 2 rows of grey cells.

## Groups in the middle

- Good conductors of heat and electricity.
- Some are used for jewelry.
- The transition metals are able to put up to 32 electrons in their second to last shell.
- Can bond with many elements in a variety of shapes.







# NITROGEN FAMILY

Periodic Table  
of the Elements

The image shows a simplified periodic table with a grid of grey cells. The title 'Periodic Table of the Elements' is centered at the top. The grid is divided into two main sections. The upper section represents the main body of the periodic table, with a vertical column of five cells highlighted in green, representing the Nitrogen family. The lower section is a separate horizontal row of ten cells, representing the lanthanide and actinide series.

## Group 5

- 5 electrons in the outer shell
- Can share electrons to form compounds
- Contains metals, metalloids, and **non-metals**

# OXYGEN FAMILY

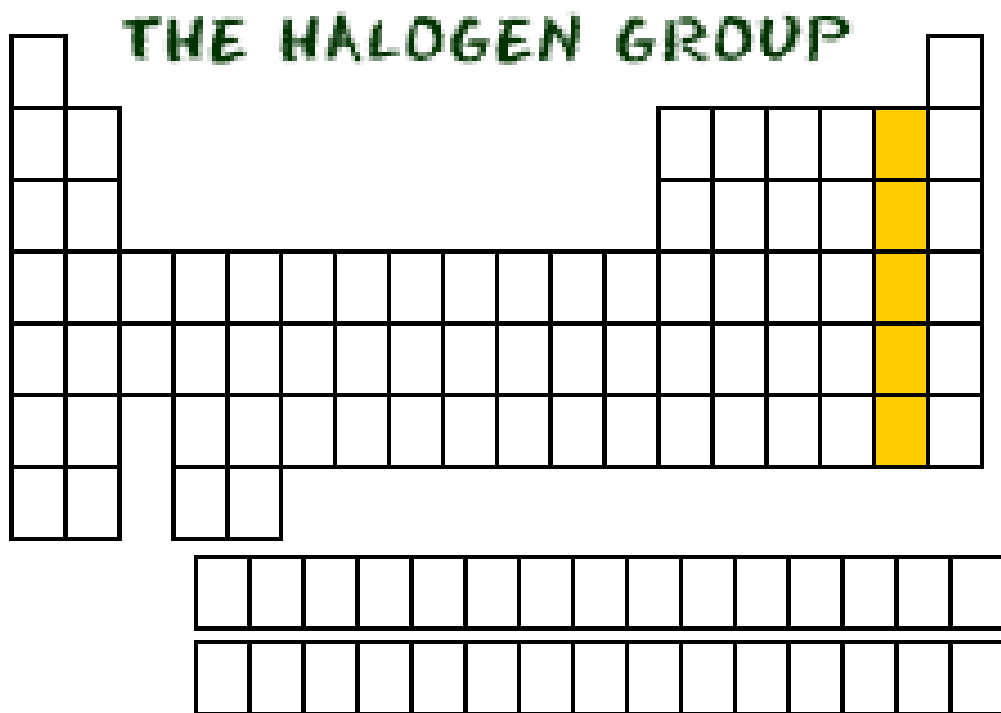
Periodic Table  
of the Elements



## Group 6

- 6 electrons in the outer shell
- Contains metals, metalloids, and **non-metals**
- Reactive

# Halogens



## Group 7

- 7 electrons in the outer shell
- All are **non-metals**
- **Very reactive** are often bonded with elements from Group 1



# Rare Earth Metals

Periodic Table  
of the Elements

The image shows a simplified periodic table with a grid of gray cells. The f-block, consisting of two rows of 14 cells each, is highlighted in blue. The text 'Periodic Table of the Elements' is written above the grid.

- Some are Radioactive
- The rare earths are silver, silvery-white, or gray metals.
- Conduct electricity

**Make flash cards for  
elements 1-10**