

# Families on the Periodic Table

- Column = Group = Family
- Elements on the periodic table can be grouped into families based on their chemical properties (how they react).
- Each family has a specific name.
- Elements in each family react differently with other elements.

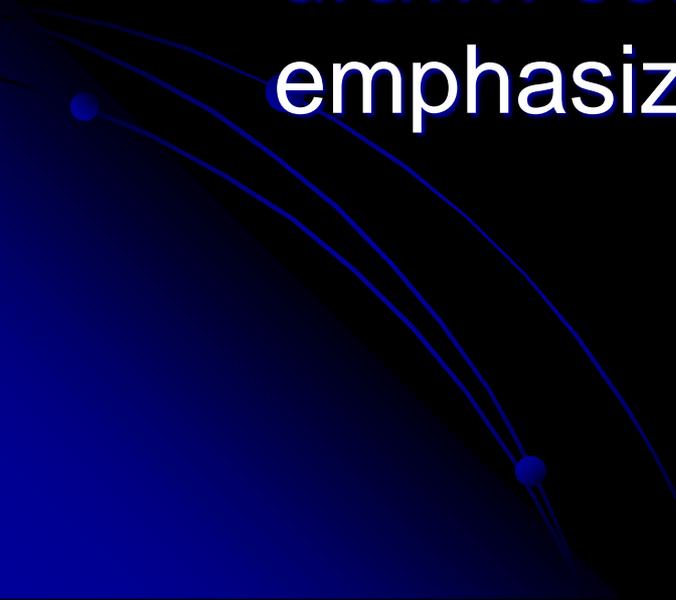
Periodic Table of the Elements

1	IA																IIA										0									
2	H																He																			
3	3		4																		5		6		7		8		9		10					
4	Li		Be																		B		C		N		O		F		Ne					
5	11		12																		13		14		15		16		17		18					
6	Na		Mg																		Al		Si		P		S		Cl		Ar					
7	19		20		21		22		23		24		25		26		27		28		29		30		31		32		33		34		35		36	
8	K		Ca		Sc		Ti		V		Cr		Mn		Fe		Co		Ni		Cu		Zn		Ga		Ge		As		Se		Br		Kr	
9	37		38		39		40		41		42		43		44		45		46		47		48		49		50		51		52		53		54	
10	Rb		Sr		Y		Zr		Nb		Mo		Tc		Ru		Rh		Pd		Ag		Cd		In		Sn		Sb		Te		I		Xe	
11	55		56		57		72		73		74		75		76		77		78		79		80		81		82		83		84		85		86	
12	Cs		Ba		*La		Hf		Ta		W		Re		Os		Ir		Pt		Au		Hg		Tl		Pb		Bi		Po		At		Rn	
13	87		88		89		104		105		106		107		108		109		110																	
14	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

# ATTENTION: HYDROGEN

- Part of NO FAMILY on the periodic table.
    - Sometimes its tile is physically not drawn connected to any other tile to emphasize this.
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# ALKALI METALS

## Group 1 – LIGHT BLUE

- 1 valence electron.
- Very reactive, esp. with water.
- Conduct electricity.

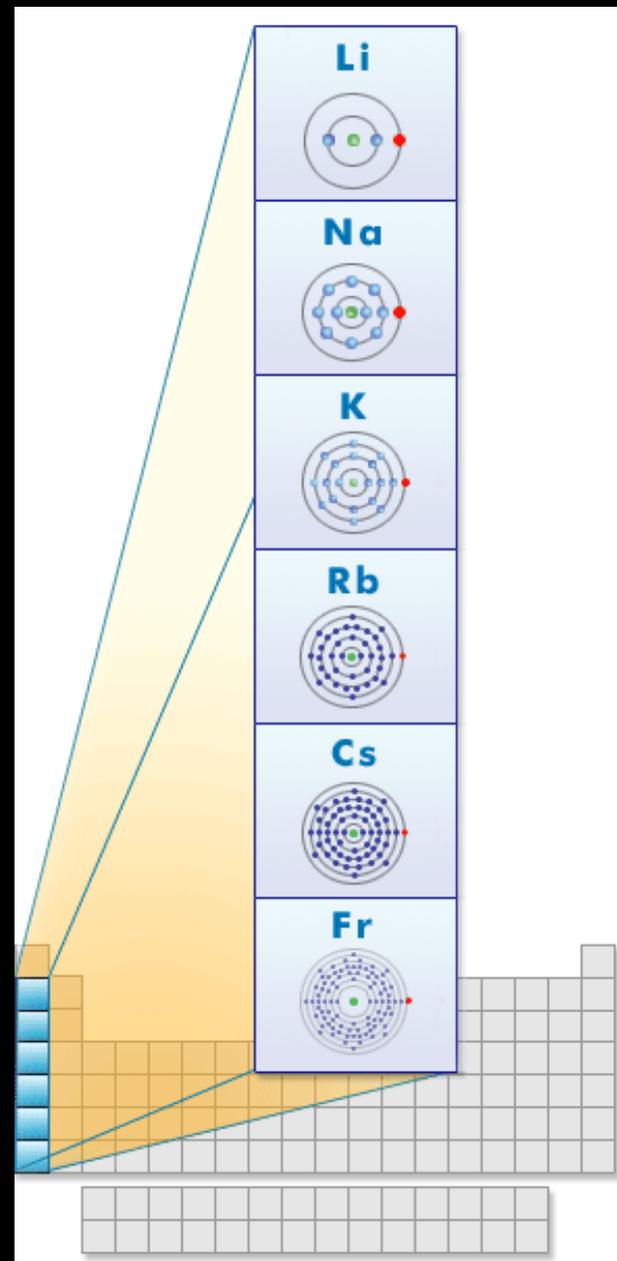


Image: <http://www.learner.org/interactives/periodic/groups2.html>

# ALKALI METALS

- <https://www.youtube.com/watch?v=U00CKJ0ubwM>
- <https://www.youtube.com/watch?v=qjtJRPHKVZI> (MythBusters)





# “BORON FAMILY”

## Group 13 - RED

Periodic Table  
of the Elements

- 3 valence electrons
- Most are metals
- Boron (B) is a **metalloid**

# “CARBON FAMILY”

Periodic Table  
of the Elements

A simplified periodic table with a grid of 18 columns and 7 rows. The first two columns are on the left, and the last two are on the right. A vertical column of four cells in the 14th column is highlighted in yellow. The text 'Periodic Table of the Elements' is written in the top left area.

A simplified periodic table showing the f-block as a separate row of 14 cells below the main body of the table.

## Group 14 - YELLOW

- 4 valence electrons
- Silicon (Si) and Germanium (Ge) are **metalloids**



# “OXYGEN FAMILY”

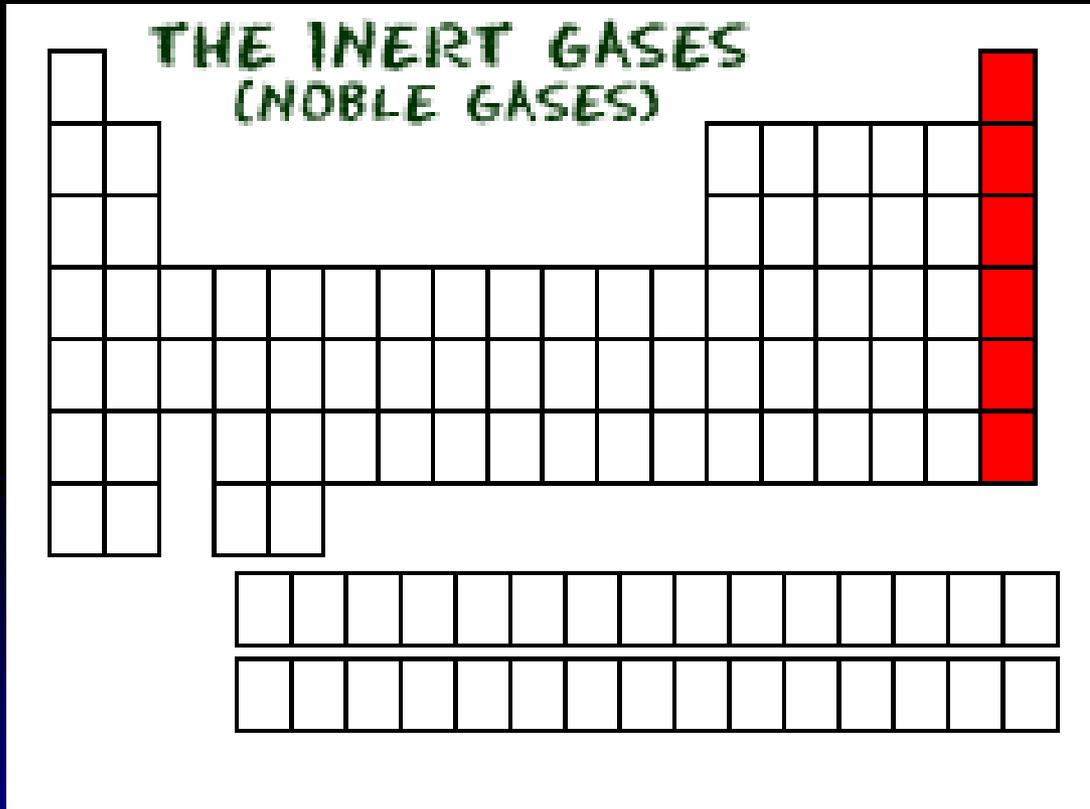
Periodic Table  
of the Elements

## Group 16 - PURPLE

- 6 valence electrons
- Tellurium (Te) is a **metalloid**.



# Noble Gases



## Group 18 - RED STRIPES

- Exist as gases
- Non-metals
- 8 valence electrons = HAPPY!
- Helium (He) has only 2 electrons in the outer shell = HAPPY!
- Not reactive with other elements (hence the nobility)

# Rare Earth Metals (Lanthanides + 2)

Periodic Table of the Elements



**LANTHANIDE  
SERIES - PINK**

- “Technology Metals” - Make possible our high-tech world.
- Not all that rare on earth (just rare in large quantities).

# Rare Earth Metals (Lanthanides + 2)

- Cell Phones

- Color Screen (Y, La, Pr, Eu, Gd, Tb, Dy)
- Phone Circuitry (La, Pr, Nd, Eu, Gd)
- Speakers (Pr, Nd, Gd, Dy)
- Vibration Unit (Nd, Tb, Dy)

- Clean Energy

- Most “rare” of them all? Dy, Nd, Eu, Y, Tb

# Actinides

Periodic Table  
of the Elements

**ACTINIDE SERIES  
- BROWN**

- All radioactive
- Majority are synthetically made by particle accelerators

# Pop Quiz!

- 1. Which side of the periodic table are most of the metals located? (Right or Left)
- 2. Name three families on the periodic table
- 3. Except for the transition metals, the group number tells you this about the elements in that group...