

The Families of the Periodic Table

Periodic Table of the Elements

* Lanthanide Series
 * Actinide Series

Adapted from:

Some images are from www.chem4kids.com

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Families on the Periodic Table

- Elements families are group based on their **chemical** properties.
- Each family has a **specific name**.
- The valance electrons are responsible for the properties of each family.

Periodic Table of the Elements

* Lanthanide Series
 * Actinide Series

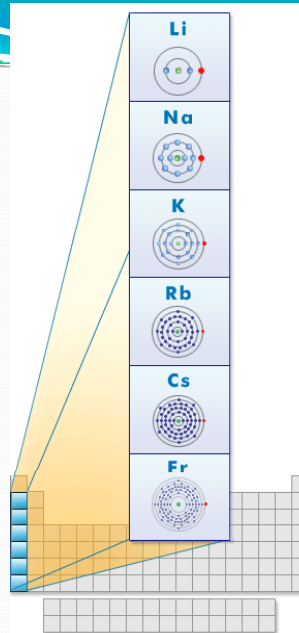
What We Already Know...

- Elements classified as Metals, Non-metals, or Metalloids
- ROWS = PERIODS (horizontal)
- COLUMNS = GROUPS or FAMILIES (vertical)

ALKALI METALS

Group 1A / 1

- Hydrogen is *not* a member, it is a **non-metal**
- 1 valance electron
- +1 charge
- Soft and silvery metals
- **Very** reactive, esp. with water
- Do not occur freely in nature
 - Usually found in compounds



ALKALINE EARTH METALS

4	Be	9.01
12	Mg	24.30
20	Ca	40.08
38	Sr	87.62
56	Ba	137.33
88	Ra	(226.03)

Group 2A / 2

- 2 valance electrons
- +2 charge
- Reactive, but less than Alkali metals

BORON FAMILY

Periodic Table of the Elements

Group 3A / 13

- 3 valance electrons
- +3 charge

CARBON FAMILY

Periodic Table of the Elements

Group 4A / 14

- 4 valance electrons
- +/- 4 charge

NITROGEN FAMILY

Periodic Table of the Elements

Group 5A / 15

- 5 valance electrons
- -3 charge

OXYGEN FAMILY

Group 6A / 16

Periodic Table of the Elements

- 6 valance electrons
- -2 charge

Halogens

Group 7A / 17

THE HALOGEN GROUP

- 7 valance electrons
- -1 charge
- **Very reactive**
- Varying states of matter at room temp.
 - F_2 and Cl_2 are gases, Br_2 is liquid, I_2 is solid

Noble Gases

THE INERT GASES (NOBLE GASES)

Group 8A / 18

- Also called Inert Gases
- 8 valance electrons= Full
- Helium (He) has only 2 valance electrons = Full
- Not reactive with other elements (no charge)

Representative Elements

- All elements that are found in the s and p blocks
- Columns 1-2 and 13-18
- Columns 1A-8A (no B cloumns!)

The Periodic Table

Transition metals

Rare earth elements

Lanthanides

Actinides

TRANSITION METALS

Periodic Table of the Elements

The diagram shows a periodic table with the transition metals (d-block) highlighted in pink. These include elements from Scandium (Sc) to Zinc (Zn) in the first row, Yttrium (Y) to Cadmium (Cd) in the second row, and Lanthanum (La) to Mercury (Hg) in the third row. The coinage metals (Cu, Ag, Au) are highlighted in yellow. An arrow points to these three elements with the label "Coinage metals".

The d-block or
"B" columns

- All have 2 valance electrons
- Can have multiple charges

Rare Earth Metals

Periodic Table of the Elements

The diagram shows a periodic table with the rare earth metals (f-block) highlighted in yellow. These include the lanthanide series (elements 57-71) and the actinide series (elements 89-103).

- Also called Inner - Transition Metals
- f-block
- 2 valance electrons
- All actinides are radioactive

58	59	60	62	63	64	65	66	67	68	69	70	71	← Lanthanide series	
Ce	Pr	Nd	Pm	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb	Lu	
140.12	140.91	144.24	144.91	150.36	151.97	157.25	158.93	162.50	164.93	167.26	168.93	173.04	174.97	
90	91	92												← Actinide series
Th	Pa	U	Np	Pu	Am	Cm	Bk	Cf	Es	Fm	Md	No	Lr	
232.04	231.04	238.03	237.05	244.06	243.06	247.07	247.07	251.08	252.08	257.10	258.10	262.11	261.11	