# Special Names

Group Names

Group 1 - Alkali Metals

Group 2 - Alkali Earth Metals

Groups 3 - 12 -Transition Metals

Group 17 - Halogens

Group 18 - Noble Gases

Period Names

4f - Lanthanide series

5f - Actinide series

both technically in group 3 (inner transition metals)

<sup>+</sup> Atomic Radius Trends

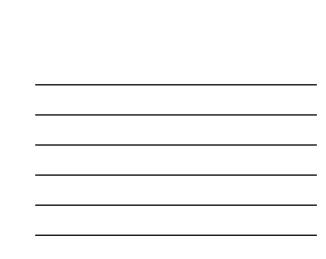
nic Radii c	of Representative	Elements (nm)				
1A	2A	3A	4A	5A	6▲	7A
u	Во	6	• c	e N	0	•
0.152	0.111	0.088	0.077	0.070	0.066	0.064
Na	Mo	Al	Si	0	(8)	(1)
0.186	0.160	0.143	0.117	0.110	0.104	0.099
к	Ca	Ga	6	6	6	(B)
0.231	0.197	0.122	0.122	0.121	0.116	0.115
Rb	Sr	(in)	Sn	Sb	To	0
0.244	0.215	0.162	0.14	0.141	0.137	0.133
Os	Ba	n	Ph	Bi	Po	At
0.262	0.217	0.171	0.175	0.146	0.14	0.140

### + Periodic Trends

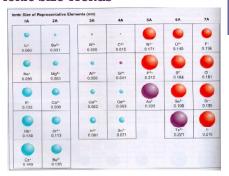
Atomic radius - the distance from the center of the atom to the outer edge.

### Trends:

- 1) Atomic radius increases down a group.
- 2) Atoms get smaller as you move across the period.
- Explanation of (2) As you move left to right across the period, there are more protons which give a stronger pull on the outermost electrons.



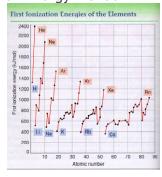
# <sup>+</sup> Ionic Size Trends



# **Ionic Size Trends**

- ■When atoms lose electrons, their radius decreases.
- ■When atoms gain electrons, their radius increases.
- Atoms within the same group form the same ions.

<sup>+</sup> Ionization Energy Trends



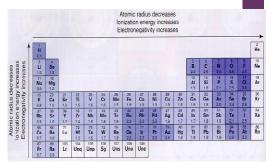


# Ionization Energy Trends

Energy required to remove one of the atom's electrons.

- Ionization energies decrease as you move down a group.
- Ionization energies increase as you move left to right across the period.

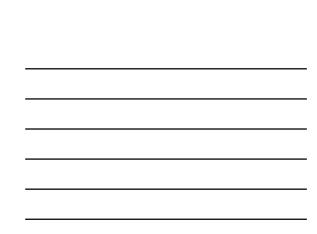
# Trends



# **Electronegativity Trends**

Atoms ability to pull electrons towards it.

- Electronegativity decreases as you move down a group.
- Electronegativity increases as you move left to right across the period.



### Groups

#### Alkali Metals:

- highly reactive due to single
  - s-orbital electron.
- Forms a +1 charge
- Reacts with oxygen & water rapidly, must be stored in oil.
- Soft metal, very abundant

#### Alkali Earth Metals:

- Very reactive, but not as much as alkali metals.
- Soft metal, very abundant
- Forms +2 charge



# Groups:

- Nonmetals with high reactivity.
- Very common in compound form
- Gas or liquid at room temp.
- Forms a -1 charge.

#### Noble Gases:

- Gases with a full p-orbital.
- Very few compounds of noble gases made because of stable porbital.
- Commonly used in gas tubes for neon-type signs.



### Groups



Transition Metals: (d-orbital)

- Metals found throughout the Earth, sometimes in elemental form.
- Varying charges, most commonly form +2 charge.
- $\blacksquare$  Most applications of industry from these elements

C	
Groups	
Inner Transition Metals: (f-orbital)	
■ Group of highly unstable elements used in nuclear	
reactions, and lighting.	
Instability due to size of atoms.	
Graph Print Sin En Sin Eu Gdd Th Dy Ho Er Tim Yo Lin   10004 1000	
Decision   Decision	
Bank Banki Banki Bakki Bank Banki Bakki Banki Banki Banki Banki Banki Banki	