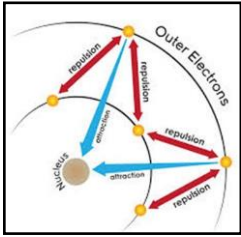


**EVERYTHING is about...**

1)

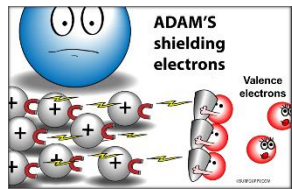
2)



**Shielding Effect**

Inner shell electrons \_\_\_\_\_

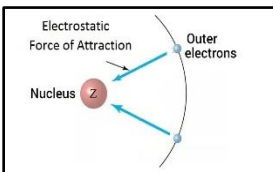
the outer \_\_\_\_\_ electrons



Keeps valence electrons from feeling the:

**Effective Nuclear Charge ( $Z_{eff}$ )**

The relative \_\_\_\_\_ the valence electrons have for the \_\_\_\_\_ in the nucleus.



Adding a proton has a \_\_\_\_\_ effect than adding an  $e^-$ .

$Z_{eff} =$  \_\_\_\_\_

$Z =$  nuclear attraction = # protons

$S =$  core/inner  $e^-$  shielding the valence  $e^-$

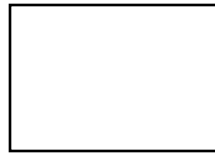
$=$  total number of  $e^-$  minus the  $e^-$  in the highest occupied s and p energy levels

Magnesium:

Aluminum:

**Radius**

What is it?



INCREASES DOWN because....

Increased Shielding

or

Increased Nuclear Charge

- 
- 
- 
- 

DECREASES TO RIGHT because....

Increased Shielding

or

Increased Nuclear Charge

- 
- 
- 

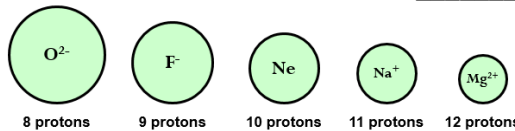
**Ionic Radius**

Cations

Anions

**Isoelectric Species**

Atoms/Ions that have the same # of \_\_\_\_\_



- Increased protons pull \_\_\_\_\_ on valence electrons.
- Radius ends up \_\_\_\_\_

### Ionization Energy

What is it?

DECREASES DOWN because....

Increased Shielding      or      Increased Nuclear Charge

- 
- 
- 
- 

INCREASES TO RIGHT because....

Increased Shielding      or      Increased Nuclear Charge

- 
- 
- 

### Subsequent Ionizations

- Each time e- removed →  
\_\_\_\_\_ to take next one
- Radius is getting \_\_\_\_\_ →  
\_\_\_\_\_ attraction
- HUGE leap in I.E. once it achieves  
\_\_\_\_\_

Element	IE <sub>1</sub>	IE <sub>2</sub>	IE <sub>3</sub>	IE <sub>4</sub>
Na	496	4560		
Mg	738	1450	7730	
Al	578	1820	2750	11,600

### Electronegativity

What is it?

DECREASES DOWN because....

Increased Shielding      or      Increased Nuclear Charge

- 
- 
- 
- 

INCREASES TO RIGHT because....

Increased Shielding      or      Increased Nuclear Charge

- 
- 
- 
-

**Reactivity**

What is it?



METALS INCREASE DOWN because....

Increased Shielding or Increased Nuclear Charge

- 
- 
- 
- 

NON-METALS INCREASE UP because....

Increased Shielding or Increased Nuclear Charge

- 
- 
- 
- 

