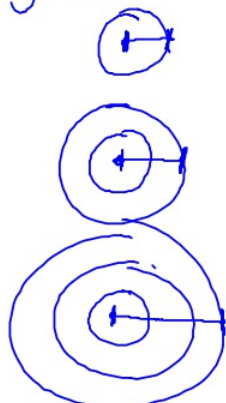


# Periodic Trends

## #1 Atomic Size/Radius

group



More E levels  
 =  
 nucleus distance to valence  $e^-$  increases  
 =  
 decrease attractive forces  
 =  
 Bigger atom

period

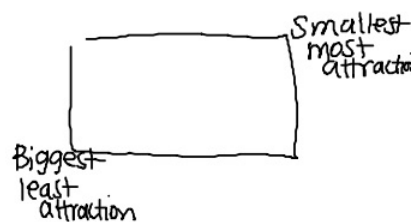


same # E levels →

more  $p^+$  = nucleus = more attractive force = Smaller atom  
 Stronger

Examples Which atom is Bigger? Why

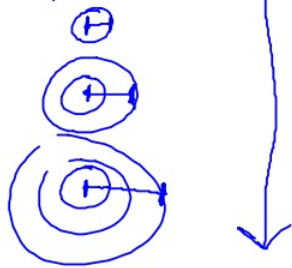
- A. **Ca** or Br less  $p^+$  = less attraction
- B. Ge or **Pb** more E levels = less attraction
- C. **O** or Ne less  $p^+$  = less attraction
- D. Mg or **Ba** more E levels = less attraction



## #2 Ionization Energy: E needed to remove an $e^-$

\* more attraction takes more E to remove  $e^-$

group



more E levels

more distance b/w nucleus & valence  $e^-$

less attraction

less E needed to remove  $e^-$

less ionization energy

period



same # E levels

more  $p^+$  = stronger nucleus = more attraction = more E needed to remove  $e^-$  = higher ionization energy

examples: Which atom has a higher ionization energy? why?

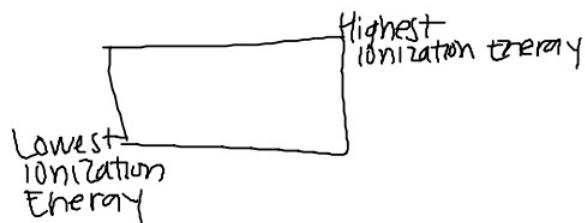
A. Ca or **Br** more  $p^+$  = more attraction = more E needed to remove  $e^-$

B. **Ge** or Pb less E levels = more attraction = more E needed to remove  $e^-$

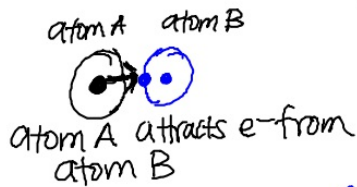
C. O or **Ne** more  $p^+$  = more attraction = more E to remove  $e^-$

D. **Mg** or Ba less E levels = more attraction = more E to remove  $e^-$

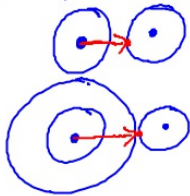
summary:



#3 Electronegativity ability to attract an  $e^-$  from a different atom w/in a bond.



Group



more E levels  
 more distance  
 less attraction  
 less able to attract  $e^-$  from other atom  
 lower electroneg.

period

more  $p^+$  = Stronger nucleus = more attraction = more able to attract  $e^-$  from other atom = higher electroneg.

examples: Which atom has a higher electroneg. ? why

- A. Ca or Br more  $p^+$  = more attraction = more able to attract  $e^-$  from other atom
- B. Ge or Ph less E levels = more attraction = more able to attract  $e^-$  from other atom
- C. O or Ne Neon is stable = doesn't Bond
- D. Mg or Ba less E levels = more attraction = more able to attract  $e^-$  from other atom

Summary:

