Coulombic Attraction

WHAT IS IT? HOW DOES IT RELATE TO WHAT WE ARE STUDYING?

LET'S FIND OUT!

Coulombic Attraction
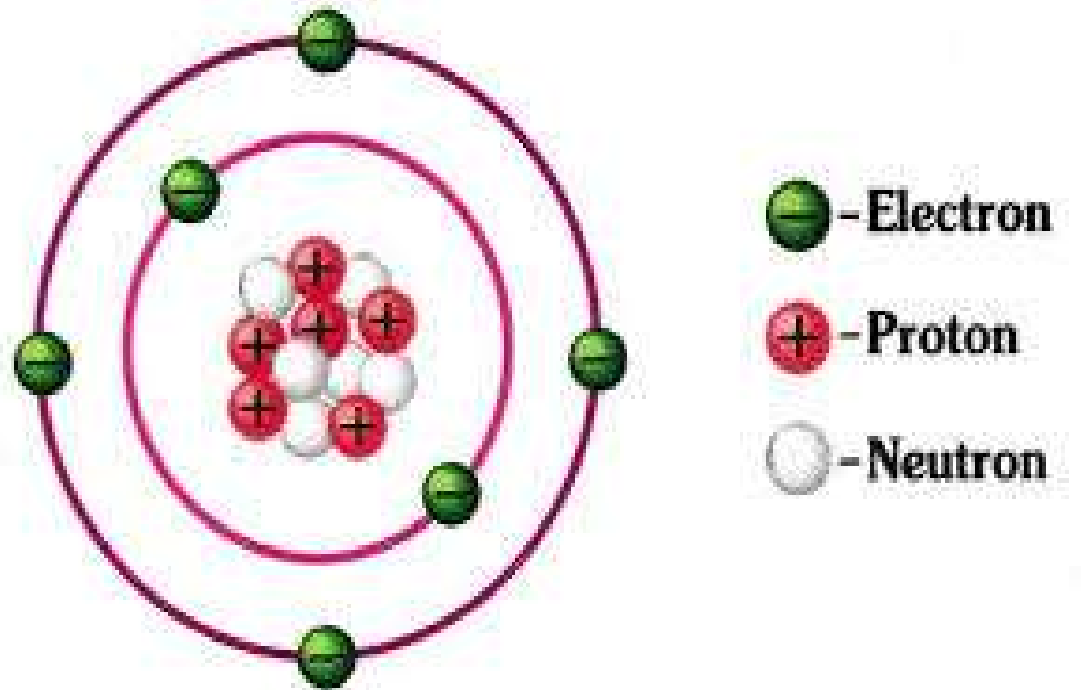
This is the Force of attraction between positive and negative charges. In our case, this represents the attraction between the positive protons in the nucleus and the negatively charged electrons in the energy levels and orbitals.
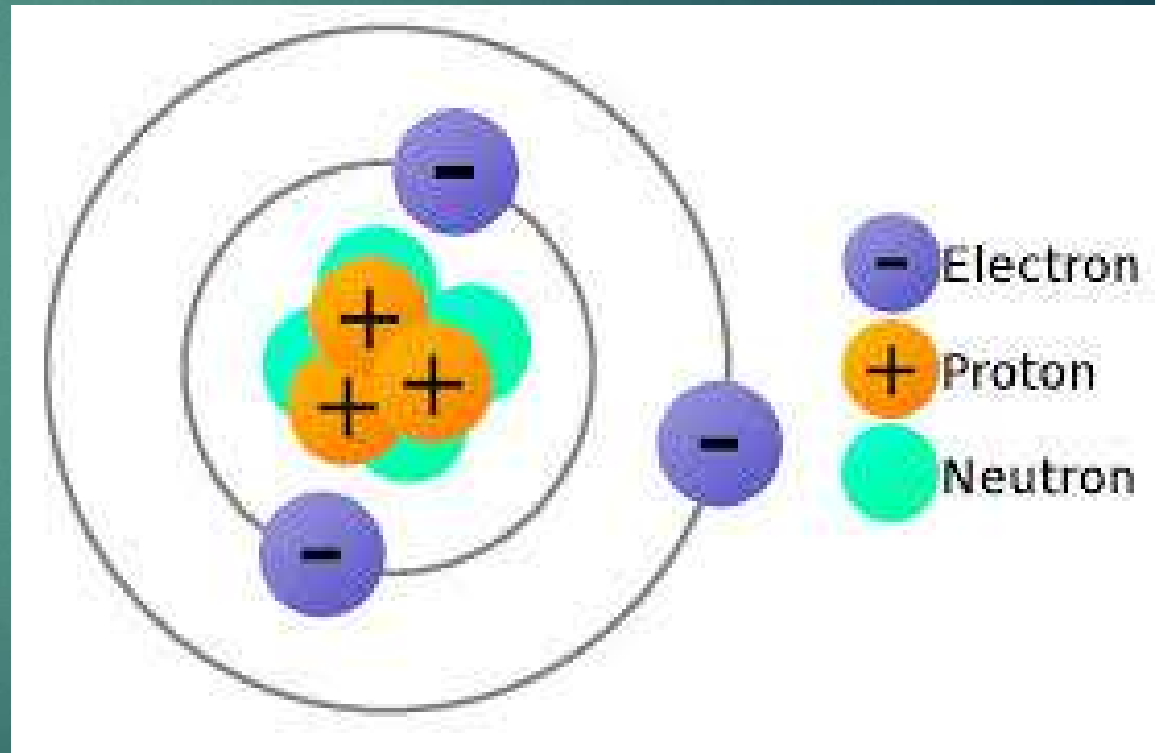

- Electron
+ Proton
Neutron

https://cdn.sparkfun.com/assets/3/4/1/a/3/51a65d7bce395f156c000000.png
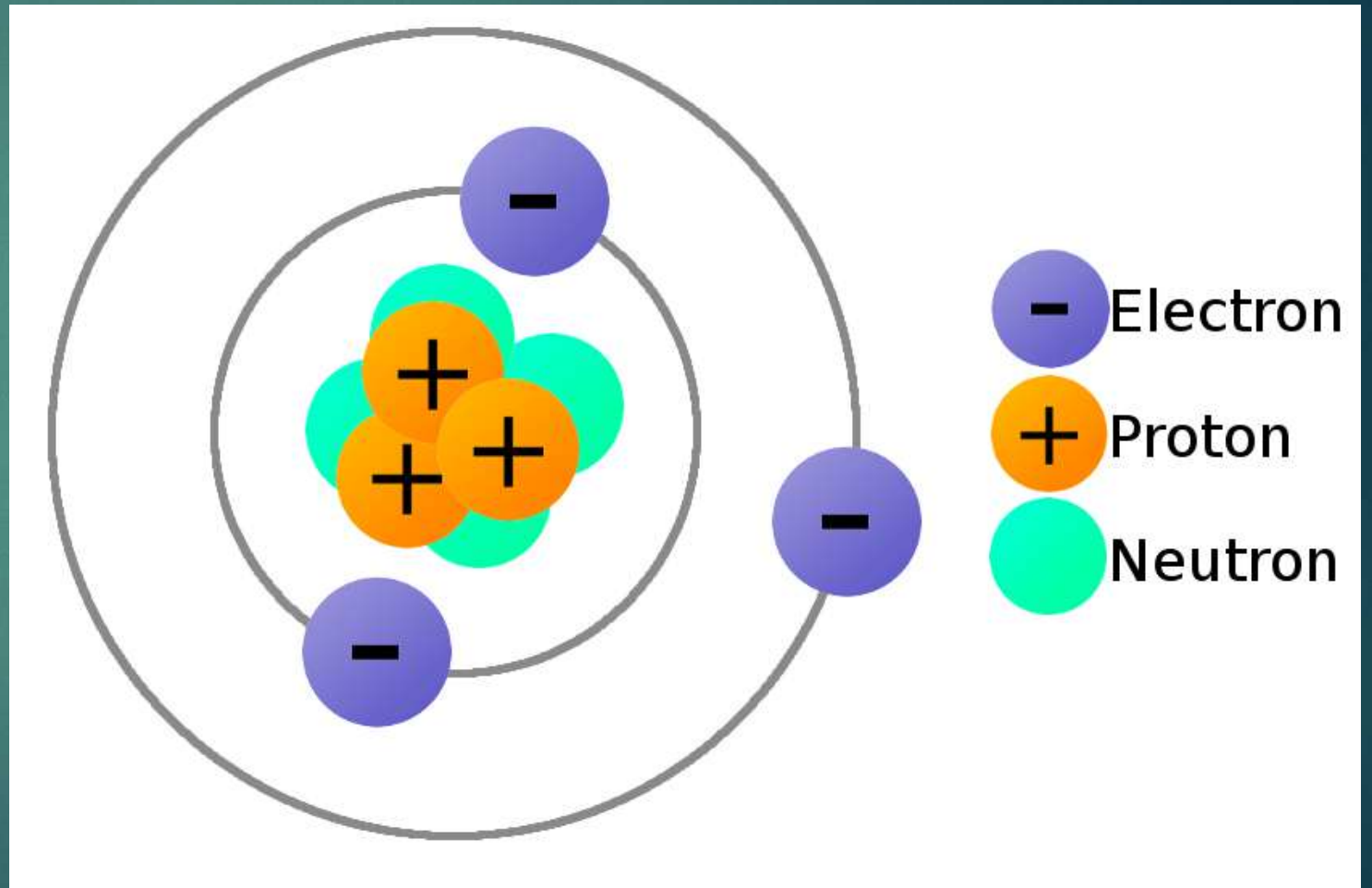
Which atom do you think has the strongest Coulombic attraction/Force? What makes you say that?

Atom 1
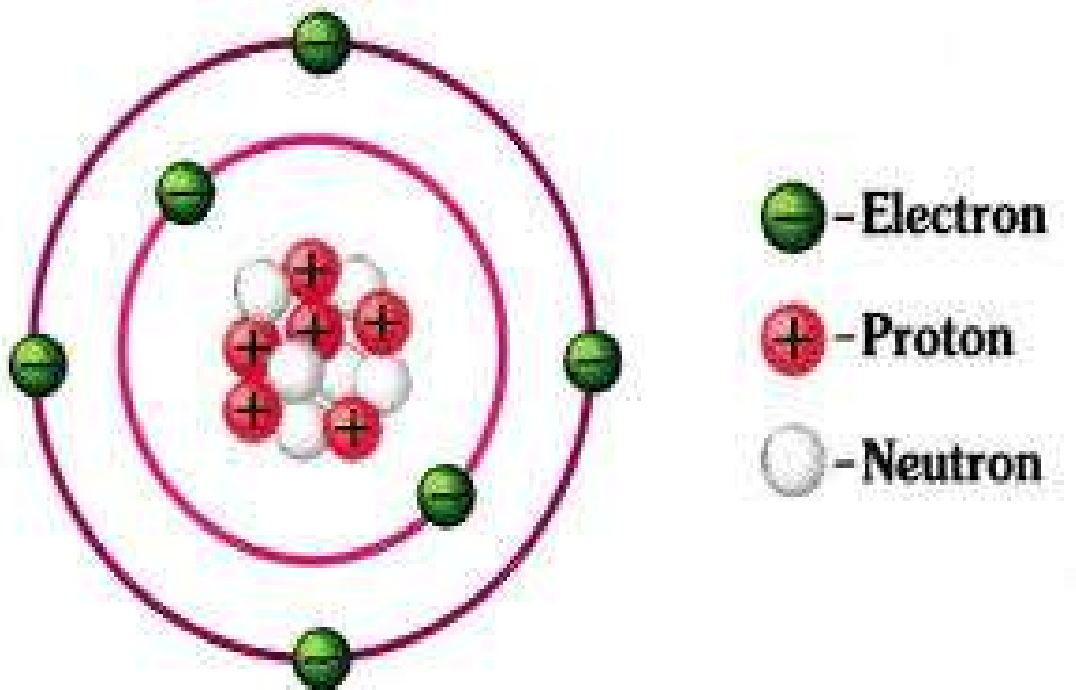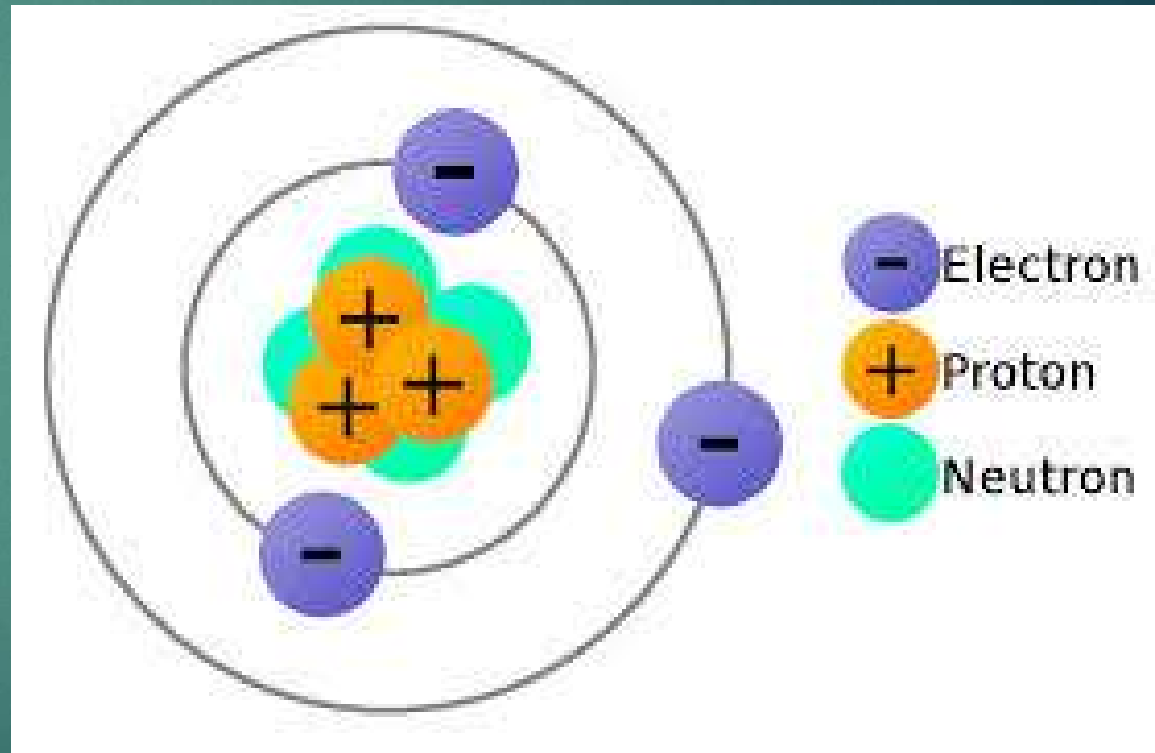
Atom 2

Which atom do you think would be the easiest to take an electron from? What makes you say that?
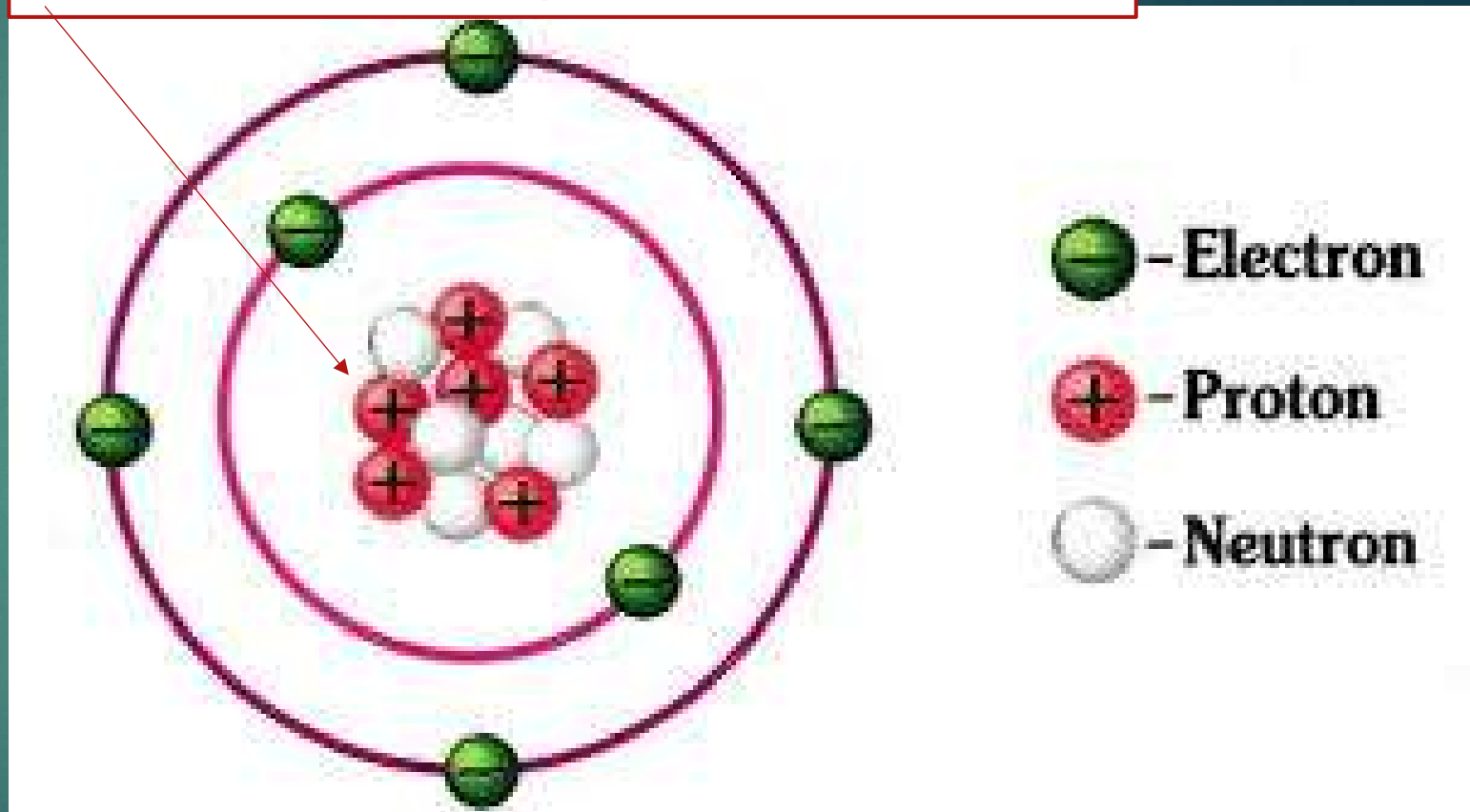
Atom 1

Atom 2

https://encrypted-tbn0.gstatic.com/images?q=tbn:ANd9GcQtjlwWQETrNJUaLYmaZCTXf5ebSOdxPu6l7hhLfRiJ-A8RZxqH

If we added more protons to this atom, would the electrons move closer to the nucleus or further away?

What makes you say that?

Add 4 more protons the nucleus = 10 protons!

- Electron
- Proton
- Neutron

Based on your answer to the last question, would the atomic radius increase or decrease?
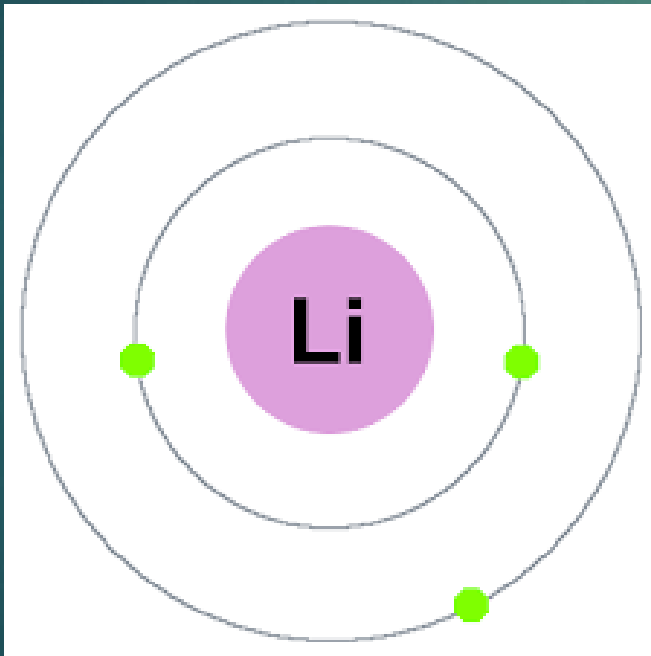
What makes you say that?

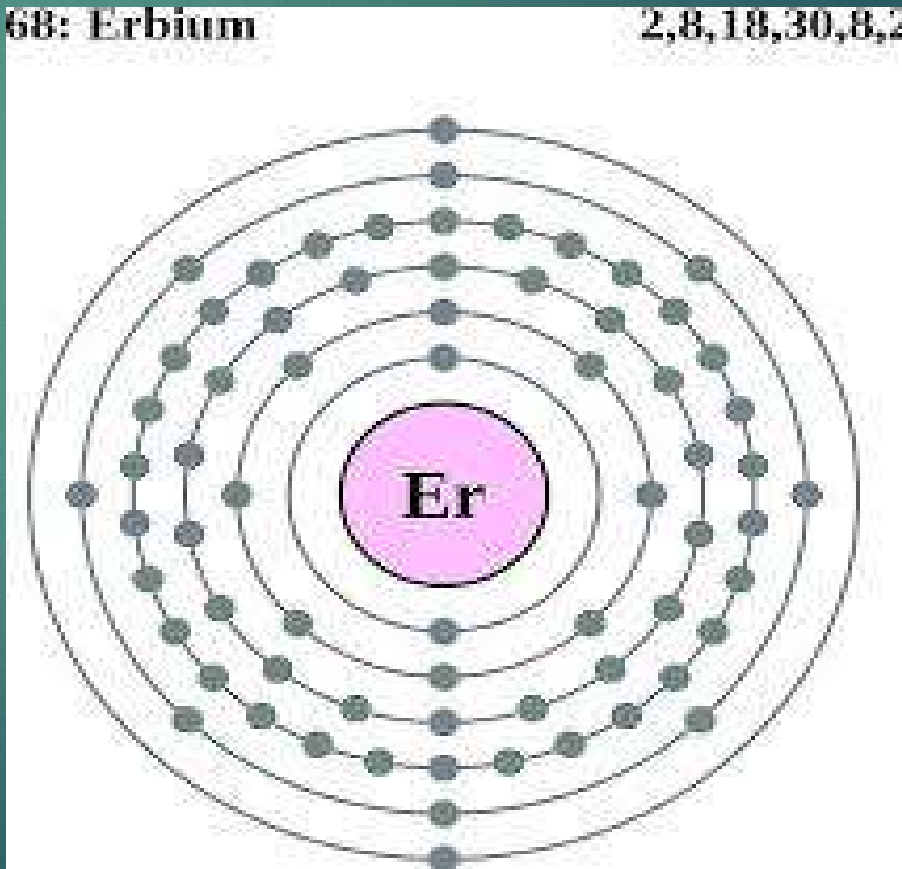Which atom do you think has the strongest Coulombic attraction for its valence electrons? What makes you say that?

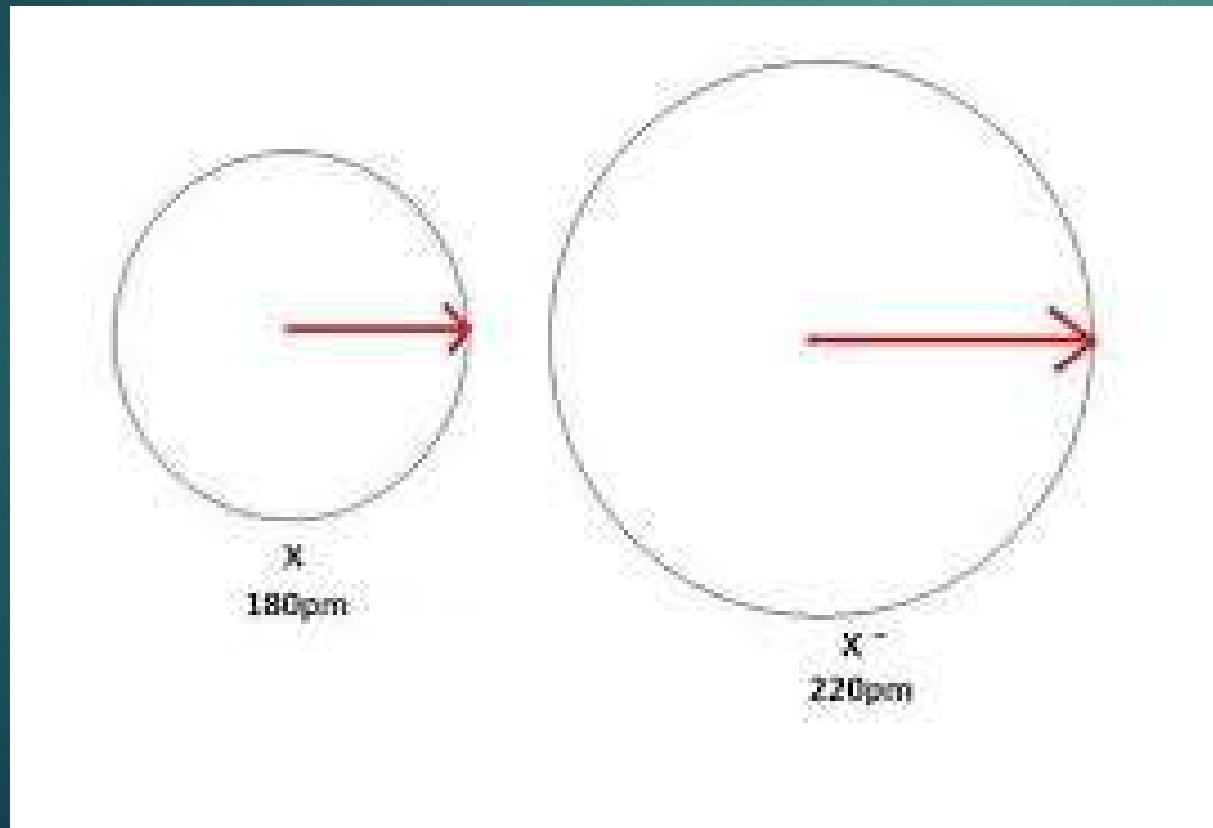Atom 1

Atom 2

68: Erbium   2,8,18,30,8,2

DO you think the distance from the nucleus "matters"?

In what way?

Look at this – Which atom would have more Coulombic Attraction for its valence electrons?

Atom 1   Atom 2

X
180pm

X⁻
220pm

What makes you say that?

Which factors seem to play a role in the strength of Coulombic force?

Things that make the force increase

- 1.

- 2.

Things that can make the force decrease

- 1.

Discussion? Need to go back a few slides?

Check out this formula – What does this mean?

Coulomb's Law

$$V = \frac{kq_1q_2}{d}$$

V- the force of attraction or repulsion measured in N

k- is a constant with the value 8.99×10^9 N•m^2/C^2

q_1 and q_2- charge on the particles measured in C

d- distance measured in m

Need help?
Check out this video!

https://www.youtube.com/watch?v=iC-Lysn9IvA