Cl $[1s^2 2s^2 2p^6] 3s^2 3p^5$ = 7 valence e^-

$[Ne] 3s^2 3p^5$

Noble gas e^- config

Fe $[1s^2 2s^2 2p^6 3s^2 3p^6] 4s^2 3d^6$

$[Ar] 4s^2 3d^6$

2 valence e^-

N

Atomic #

E levels

short cut e^- config

valence e^-

Group #

Coulombic Attraction & Periodic Trends Notes

① How does distance affect strength of attraction?

longer distance = weaker attraction

shorter distance = stronger attraction

② How does # of protons affect strength of attraction?

more protons = stronger attraction

③ How does strength of attraction affect how easy it is to remove an e- (football) from an atom?

weak attraction = easy to remove e-

strong attraction = hard to remove e-

Ionization energy (IE) - the energy needed to remove an e- from an atom

Stronger attraction = higher IE

Weaker attraction = lower IE

IE Examples

a) F vs. Cl

F	Cl
- 2 E levels	- 3 E levels
- 9 protons	- 17 protons
- shorter distance = stronger attraction = harder to remove e- = higher IE	- greater distance = weaker attraction = easier to remove e- = lower IE

b) Li vs. C

Li	C
- 2 E levels	- 2 E levels
- 3 protons	- 6 protons
	- more protons = stronger attraction = harder to remove e- = higher IE

④ How does strength of attraction affect the ability to "grab the fumbled football"?

stronger attraction = greater ability

Electronegativity (EN) – the ability to attract an e^- from another atom in a chemical bond.

EN example

c)

N	vs. P
- 2 E levels	- 3 E levels
- 7 protons	- 15 protons
- shorter distance = stronger attraction = greater ability = higher EN	

* He has the highest IE
  (it is the smallest atomic radius)

* F has the highest EN
  (exclude noble gases for EN
  b/c noble gases do not bond)