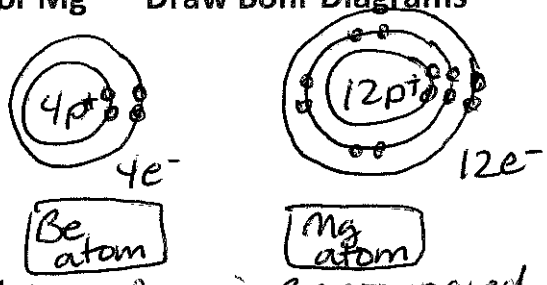
Ionization Energy Practice #2-3

↑ the amount of energy required to remove an electrons

1. Which element has a larger ionization energy? **Be or Mg** **Draw Bohr Diagrams**

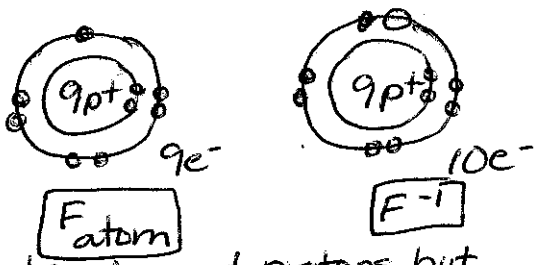
Coulomb's Law parameter	Be	Mg
Energy levels: (distance)	2	3
Number of P^+ (charge)		
Number of e^- (repelling)		



Explain in a full sentence using Coulomb's Law/energy levels.
The valence electrons are closer to the nucleus in Be compared to Mg, therefore, according to Coulomb's Law, more energy is required to remove an electron from Be.

2. Which element has a larger ionization energy? **F or F^{-1}** **Draw Bohr Diagrams**

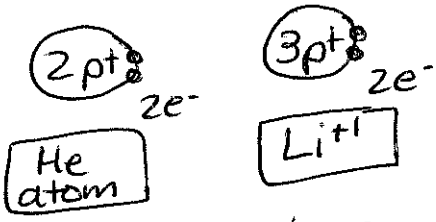
Coulomb's Law parameter	F	F^{-1}
Energy levels: (distance)	2	2
Number of P^+ (charge)	9p+	9p+
Number of e^- (repelling)	9e-	10e-



Explain in a full sentence using Coulomb's Law/energy levels.
F and F^{-1} have the same number of ~~p+~~ energy levels and protons, but different number of electrons. More valence electrons on F^{-1} will repel, making the radius slightly larger and requires less energy to remove an electron on F^{-1}

3. Which element has a larger Ionization energy? **He or Li^+ Draw Bohr Diagrar**

Coulomb's Law parameter	He	Li^{+1}
Energy levels: (distance)	1	1
Number of P^+ (charge)	2p+	3p+
Number of e^- (repelling)		



Explain in a full sentence using Coulomb's Law/energy levels.
Li^{+1} and He both have 1 energy level, but Li^{+1} has more protons, giving Li^{+1} a greater nuclear charge for greater coulombic attraction ~~to it~~ with its valence electrons. Li^{+1} would require more energy to remove an electron.

For the following indicate (</>) the relative ionization energy. Justify with Coulomb's Law. Circle th atom with more Coulombic attraction of valence electron to the nucleus. ***Explain in a full sentence using Coulomb's Law/energy levels.***

Se < O
4 2
The valence electrons of O are closer to the nucleus and would require more energy to remove an electron from O, according to Coulombs Law.

Ca^{+2} > Cl
3 3
$20p^+$ $17p^+$
Both Ca^{+2} and Cl have the same number of energy levels, but Ca^{+2} has more protons, giving Ca^{+2} greater Coulombic attraction with its valence electrons, therefore, Ca^{+2} would require more energy to remove an electron

F > F^{-1}
2 2
9p+ 9p+
9e- 10e-
Both F and F^{-1} have the same amount of energy levels+protons, but different amounts of electrons. F^{-1} has 1 more electron, which will cause the 35 electrons to repel, making F^{-1} slightly larger an requires less energy to remove an electron.