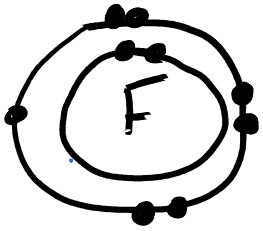
Name: Date:

Science 10: Ionic Compounds

- Ions are formed when an atom gains or loses an electron.
- Electrons have a negative charge.
- If an atom gains an electron it becomes a negative ion, called an anion.
- If an atom loses an electron it becomes a positive ion, called a cation.
- ~~All~~ Most atoms want to have 8 valence electrons. This is when they are the most stable.
  - ↳ outer shell electrons
  - (except Li & Be, which want 2)

Example #1:

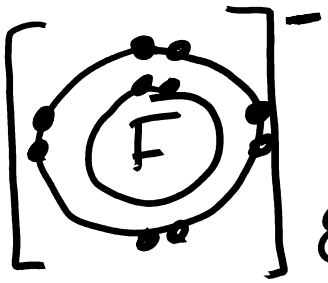
Fluorine atom
# of protons = 9 (atomic number)
# of electrons = 9
# of neutrons = 10
Mass # − # protons
19 − 9



7 valence electrons

Fluorine ion
# of protons = 9
# of electrons = 10
# of neutrons = 10

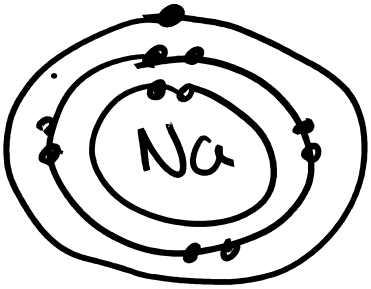
#p + #e = −1
(+9) + (−10) = −1



8 Valence electrons

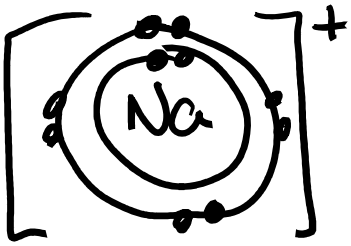
Example #2: You try ☺

Sodium atom
# of protons = 11
# of electrons = 11
neutrons = 12



1 valence e⁻

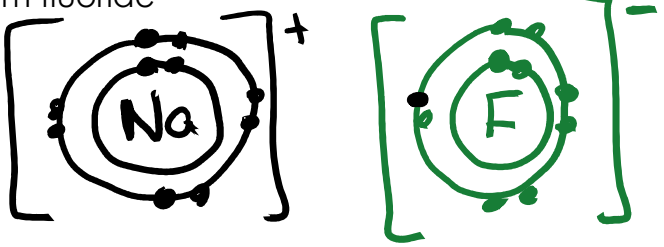
Sodium ion
# of protons = 11
of electrons = 10
12



8 valence e⁻

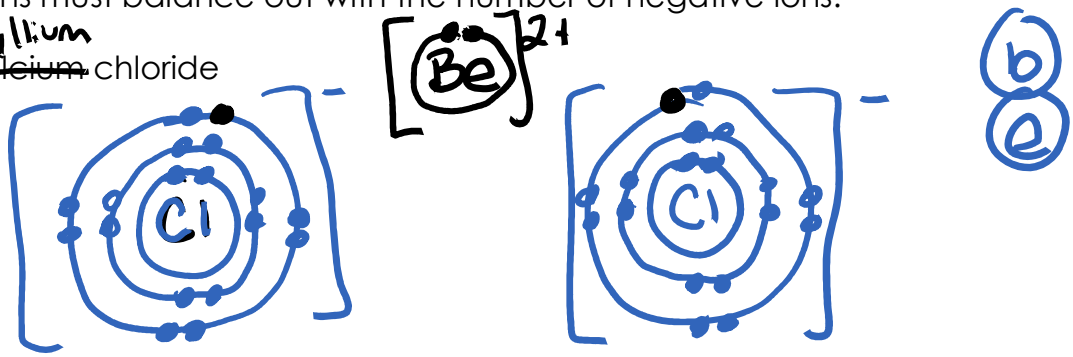
These ions are made when ionic compounds are made. an anion and a cation combining

Example: sodium fluoride



When an ionic compound is made the overall charge is zero (it is neutral). So the number of positive ions must balance out with the number of negative ions.

Example: ~~calcium~~ Beryllium chloride

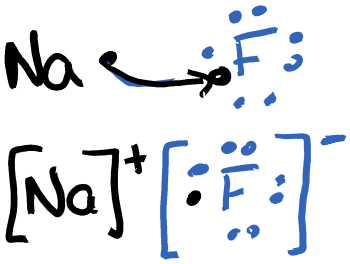


We can also use LEWIS STRUCTURES to draw these compounds. Lewis structures involve only drawing the valence electrons.

Example: sodium fluoride

Na - Group #1 ∴ 1 Ve^-

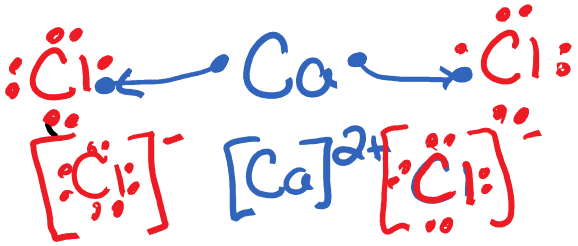
F - Group #17 ∴ 7 Ve^-



Example: calcium chloride

Ca - 2 Ve^-

Cl - 7 Ve^-



You Try:

a) Strontium nitride
~~c) Silver sulphide~~
e) Sodium nitride

Lewis

b) Lithium oxide
d) Barium phosphide
f) Potassium selenide