

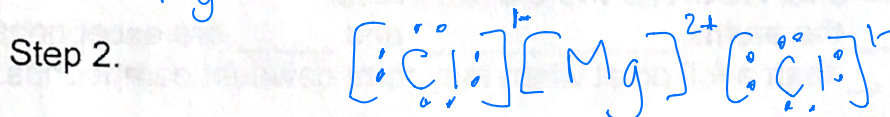
Chemistry 11 LEWIS DOT STRUCTURES

Lewis DOT Structures of **IONIC** compounds are easy to construct: *metal + non-metal*.
HERE ARE THE RULES:

1. determine the charge on the ionic species
2. arrange the ions "symmetrically"

Example 1. Draw the Lewis Structure of $MgCl_2$. ← 1 Mg 2 Cl

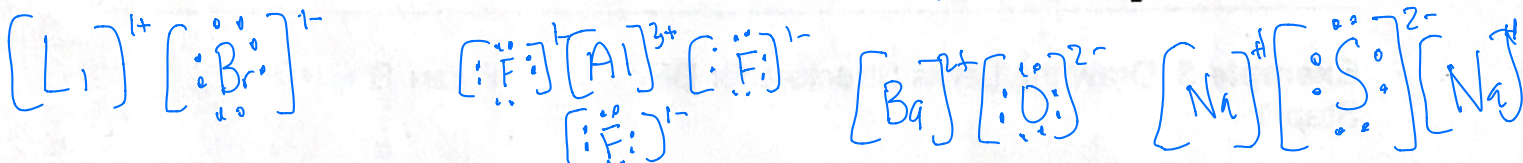
Step 1. Mg^{2+} $2Cl^{-}$



85
Pg
183

Example 2. Draw the Lewis Structure for each of the following compounds:

a. $LiBr$ $Li^{+} Br^{-}$ b. AlF_3 $Al^{3+} 3F^{-}$ c. BaO ← $Ba^{2+} O^{2-}$ d. Na_2S $2Na^{+} S^{2-}$

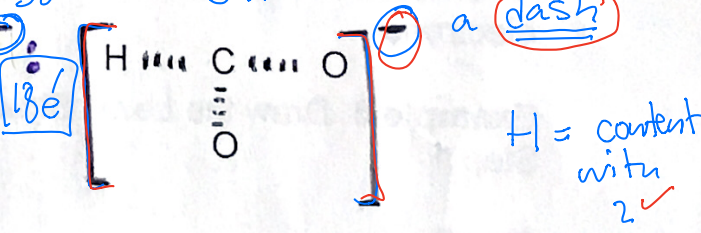


Lewis DOT Structures of **COVALENT** compounds are somewhat more difficult to construct: HERE ARE THE RULES FOR THOSE THAT OBEY THE OCTET RULE

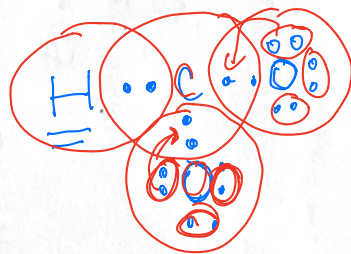
- ① count up the number of valence electrons brought in by each atom (adjust if it is a polyatomic ion)
- ② place 2 electrons between each connected atom (bond)
- ③ distribute "octets" to atoms starting with "outside" atoms first
- ④ if "central" atoms have less than an octet
5. Create multiple bonds (double or triple)
← tidy up your structure so that shared electrons are a dash

Example 3. Draw the Lewis Structure for CHO_2^{-}

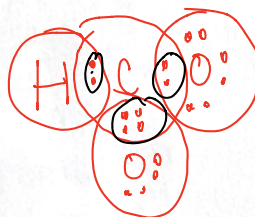
Step 1. $1H = (1)$ $1C = (4)$ $2O = (2)$ $1e^{-} = (1)$ = 18e⁻



Step 2.



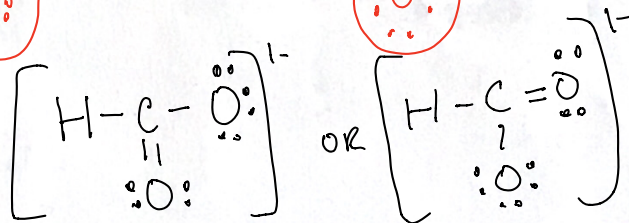
Step 3.



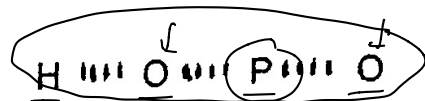
Step 4.



Step 5.



Example 4. Draw the Lewis Structure for HOPO :



Step 1. 1 H = 1e 1 P = 5e 2 O = 12e = 18e

Step 2.



Step 3.

Step 4.



Step 5.



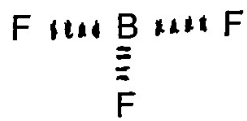
Ex 1 + 2

COVALENT compounds that VIOLATE the OCTET RULE

A. In addition to _____, the atoms _____, _____ and _____ are exceptions as they have _____ than a full octet when they form covalent compounds.

→ These atoms tend to _____

Example 5. Draw the Lewis Structure for BF₃:



Step 1.

Step 2.

Step 3.

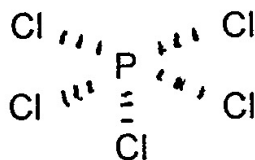
Step 4.

Step 5.

B. Elements in the _____ and _____ periods of the periodic table frequently attain _____ than a full octet when they form covalent compounds.

→ Therefore, the central atom will end up with _____ than eight valence electrons

Example 6. Draw the Lewis Structure for PCl₅ :



Step 1.

Step 2.

Step 3.

Step 4.